

ARRC FLOATING RATE NOTES WORKING GROUP

STATEMENT ON USE OF THE SOFR INDEX

MAY 2020

This statement by the ARRC Floating Rate Notes (“FRN”) Working Group¹ is intended to provide information about how the New York Fed’s daily published SOFR Index (“Index”) may be referenced in FRNs.²

Index Considerations

- The Index could be used to simplify documentation, reduce operational risk and streamline system development by allowing market participants to more easily calculate and reconcile payment amounts.
- The Index is intended to be used in pairs and reflects the value of an investment from, and including, the Index_{Start} value date to, but excluding, the Index_{End} value date (with the overnight repurchase agreements that underpin the final daily SOFR maturing on the Index_{End} value date).³ Therefore, in order to calculate interest over a period up to but excluding the end date, the Index should be treated as being published on its value date.
- An Index_{Start} and Index_{End} could have the same value, in which case the compounded SOFR over the relevant Interest Period would be zero. The Index_{End} value could be lower than the Index_{Start} value, resulting in a negative compounded SOFR (before applying any interest rate floor).⁴
- To encourage use of the Index, the Working Group has prepared sample key terms for an FRN referencing the Index (see Appendix).

¹ The Board of Governors of the Federal Reserve System and the Federal Reserve Bank of New York (“New York Fed”) convened the Alternative Reference Rates Committee (“ARRC”) in 2014 to identify alternative reference rates for U.S. dollar LIBOR (“LIBOR”), identify best practices for contract robustness in the interest rate market, and create an implementation plan to support an orderly adoption of new reference rates.

² The Index is available at: <https://apps.newyorkfed.org/markets/autorates/sofr-avg-ind> and information about the calculation and methodology of the Index is available at: <https://www.newyorkfed.org/markets/treasury-repo-reference-rates-information>.

³ The first Index value of 1.000000 on April 2, 2018 is point zero (*i.e.*, the point when \$1 is invested and no interest has been earned yet) and the Index is compounded by the value of each daily SOFR published thereafter. When a given Index_{End} value is divided by a given Index_{Start} value, all of the overlapping dates (from the April 2, 2018 to, but excluding, the Index_{Start} value date) are cancelled out, and interest is accrued from the applicable Index_{Start} value date to, but excluding, the Index_{End} value date.

⁴ Daily SOFR values may be negative and the published Index does not have a floor on such daily values. Parties may contractually agree to a floor for the compounded average resulting from use of the Index or a floor on the total coupon payment (Appendix A hereto provides an example of the latter).

- Third-party technology and operations vendors relevant to the transition should complete all necessary enhancements to support references to the Index in FRNs by the end of 2020.

Structuring Considerations

- The Index can be used by FRNs that use a lookback *with* a backward-shifted Observation Period (“Observation Period Shift”). With this structure, weighting of each day’s SOFR is applied according to the day of the *Observation Period*.
- The Index cannot be used by FRNs that use a lookback *without* an Observation Period Shift (which would weight each day’s SOFR according to the day of the *Interest Period*).⁵
- An FRN with a payment delay structure could also use the Index. The Working Group notes that a “lockout” during the final Interest Period requires drafting modifications.⁶
- The Credit Roundtable conducted a survey in which most buy-side FRN participants expressed a preference for the Observation Period Shift structure.⁷
- The standard convention for cleared derivatives referencing SOFR is a two-day payment delay. However, parties can execute an over-the-counter swap with a two-day Observation Period Shift.⁸

⁵ SONIA-linked floating rate notes have been issued with a lookback *without* an Observation Period Shift. <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/statement-on-bond-market-conventions.pdf?la=en&hash=B34F5906448B0A1455CF4308523FF1CD62FA13A5>.

⁶ A SOFR FRN with a payment delay might reference the Index for each Interest Period prior to the lockout and then reference a compounding formula to calculate rates during the lockout period.

⁷ The results of The Credit Roundtable Survey are available at:

https://cdn.ymaws.com/thecreditroundtable.org/resource/resmgr/surveys&results/crt_libor_to_sofr_transition.pdf.

⁸ To facilitate interest accruals that must be known in advance of a payment date (without modifying such payment date), a swap with a two-day Observation Period Shift is generally expected to apply to many derivatives that fall back from LIBOR to SOFR. <https://www.isda.org/2019/11/15/isda-publishes-results-of-consultation-on-final-parameters-for-benchmark-fallback-adjustments/>. To more closely align an FRN with an Observation Period Shift and a swap with an Observation Period Shift, the FRN should apply the annualized rate to the number of calendar days in the Observation Period (see footnote 9).

Disclosure

This statement has been prepared by the Working Group for the purpose of highlighting to market participants the potential use of the Index and its implications for existing market conventions. It is provided for informational purposes only and does not constitute a comprehensive outline of all relevant considerations. This statement is not intended in any way to mandate, prescribe or limit the ways in which the Index may be used in new issuances. The extent to which any market participant decides to implement or adopt any recommendations, practices, or considerations discussed in this statement is completely voluntary. Market participants, including those serving on the Working Group, should make their own independent evaluation and decision about whether or to what extent the Index should be used in new issuances. Accordingly, nothing herein is intended to be binding on any market participant or give rise to any legal rights or obligations of the ARRC.

APPENDIX A

KEY PROVISIONS FOR SOFR INDEX FRN

WITH OBSERVATION PERIOD SHIFT⁹

Interest Amount: The amount of interest accrued and payable on the notes for each Interest Period will be equal to the product of (i) the outstanding principal amount of the notes multiplied by (ii) the product of (a) the Rate of Interest for the relevant Interest Period multiplied by (b) the quotient of the actual number of calendar days in such Interest Period divided by 360.¹⁰

Rate of Interest: The Benchmark plus the Margin. In no event will the Rate of Interest for any Interest Period be less than the Minimum Rate of Interest.

Benchmark: Compounded SOFR, which is a compounded average of daily SOFR, as determined for each [quarterly] Interest Period in accordance with the definition of Compounded SOFR and other provisions set forth herein.

Margin: [Plus]/[Minus] ___ basis points per annum.

Interest Periods: Each [quarterly]¹¹ period from, and including, an Interest Payment Date (or, in the case of the first Interest Period, the Interest Commencement Date) to, but excluding, the next Interest Payment Date (or, in the case of the final Interest Period, the Maturity Date or, if the issuer elects to redeem the notes on the redemption date, the redemption date).

Interest Payment Dates: The [20th] day of each [August], [November], [February] and [May], commencing [August 2020] and ending on the Maturity Date or, if the issuer elects to redeem the notes on the redemption date, the redemption date.

Interest Determination Dates: The date [two] U.S. Government Securities Business Days before each Interest Payment Date.

Business Day Convention: Modified Following; Adjusted. If any scheduled Interest Payment Date, other than the Maturity Date or redemption date, if applicable, falls on a day that is not a Business Day, such Interest Payment Date will be postponed to the following Business Day, except that, if that Business Day

⁹ This Appendix A is intended to show the key provisions of an FRN with an Observation Period Shift that references the SOFR Index. The Observation Period Shift of two business days set forth in brackets herein is provided for illustrative purposes only. A fixed-to-floating rate FRN structure would require revisions. With an Observation Period Shift structure, the period over which SOFR is observed is “backward-shifted” and this backward-shift applies to both the daily SOFR rates and the weighting of those rates. The SOFR rate and weighting are determined based on the day of the Observation Period rather than the day of the Interest Period. The weighting is intended to account for calendar days on which SOFR is not published and on most days, the weighting of a rate will be equal to “1,” however a daily SOFR that represents a Friday during the Observation Period will generally be given the weight of “3” (to account for Saturday and Sunday) and a daily SOFR representing the day before a holiday during the Observation Period will also be given a weight greater than 1.

¹⁰ This FRN uses an “Interest Period weighted shift” meaning that the coupon is calculated by applying the interest rate from the Observation Period to the number of calendar days in the Interest Period. As an alternative, the interest rate could be multiplied by the number of days in the relevant Observation Period divided by 360 (*i.e.*, “(b) the quotient of the actual number of calendar days in such Observation Period divided by 360”). This would result in a calculation of interest payable for the Interest Period being equal to the value of a swap calculated over the Observation Period but may require other changes.

¹¹ Quarterly Interest Periods and dates in brackets are included for illustrative purposes only.

would fall in the next calendar month, the Interest Payment Date will be the immediately preceding Business Day. If the scheduled final Interest Payment Date (i.e., the Maturity Date or, if the issuer elects to redeem the notes on the redemption date, the redemption date) falls on a day that is not a Business Day, the payment of principal and interest will be made on the next succeeding Business Day, but the final Interest Payment Date will not be postponed and interest on that payment will not accrue during the period from and after the scheduled final Interest Payment Date.¹²

U.S. Government Securities Business Day: Any day except for a Saturday, a Sunday or a day on which the Securities Industry and Financial Markets Association recommends that the fixed income departments of its members be closed for the entire day for purposes of trading in U.S. government securities.

Business Day:¹³ Any weekday that is [a U.S. Government Securities Business Day and is] not a legal holiday in New York [or Tokyo]¹⁴ and is not a date on which banking institutions in those cities are authorized or required by law or regulation to be closed.

Day count convention: Actual/360

Minimum Rate of Interest: 0% per Interest Period.¹⁵

Observation Period: In respect of each Interest Period, the period from, and including, the date [two] U.S. Government Securities Business Days preceding the first date in such Interest Period to, but excluding, the date [two] U.S. Government Securities Business Days preceding the Interest Payment Date for such Interest Period.

SOFR Index: With respect to any U.S. Government Securities Business Day, means:

(1) the SOFR Index value as published by the SOFR Administrator as such index appears on the SOFR Administrator's Website at 3:00 p.m. (New York time) on such U.S. Government Securities Business Day (the "**SOFR Determination Time**"); provided that:

(2) if a SOFR Index value does not so appear as specified in (1) above at the SOFR Determination Time, then:

(i) if a Benchmark Transition Event and its related Benchmark Replacement Date have not occurred with respect to SOFR, then Compounded SOFR shall be the rate determined pursuant to the "SOFR Index Unavailable" provisions¹⁶; or

(ii) if a Benchmark Transition Event and its related Benchmark Replacement Date have occurred with respect to SOFR, then Compounded SOFR shall be the rate determined pursuant to the

¹² It is general market practice to adjust each Interest Period other than the final Interest Period.

¹³ The definition of "Business Day" does not need to include U.S. Government Securities Business Days so long as the Observation Period definition references U.S. Government Securities Business Days. This is because the definition of "Business Day" will impact the Interest Payment Dates but will not be used in the Compounded SOFR formula or the backward-shift.

¹⁴ Cities other than New York may be added to this definition.

¹⁵ The Working Group has observed that FRN coupons predominantly, if not uniformly, are floored at zero because, among other reasons, operational systems are not designed to accommodate investor payments to an issuer. The Minimum Interest Rate identified above for illustrative purposes only as part of these key provisions is based on the assumption that an FRN using SOFR likewise would not contemplate investors making coupon payments to an issuer.

¹⁶ The "SOFR Index Unavailable" provisions address a temporary unavailability of the Index.

“Effect of a Benchmark Transition Event” provisions.¹⁷

where:

“**SOFR**” means the daily secured overnight financing rate as provided by the SOFR Administrator on the SOFR Administrator’s Website.

“**SOFR Administrator**” means the Federal Reserve Bank of New York (or a successor administrator of SOFR); and

“**SOFR Administrator’s Website**” means the website of the Federal Reserve Bank of New York, or any successor source.

Compounded SOFR:¹⁸ With respect to any Interest Period, means the rate computed in accordance with the following formula (and the resulting percentage will be rounded, if necessary, to the nearest one hundred-thousandth of a percentage point *e.g.*, 9.876541% (or .09876541) being rounded down to 9.87654% (or .0987654) and 9.876545% (or .09876545) being rounded up to 9.87655% (or .0987655)):

$$\left(\frac{SOFR\ Index_{End}}{SOFR\ Index_{Start}} - 1 \right) \times \left(\frac{360}{d_c} \right)$$

where:

“**SOFR Index_{Start}**” is the SOFR Index value for the day which is [two] U.S. Government Securities Business Days preceding the first date of the relevant Interest Period;

“**SOFR Index_{End}**” is the SOFR Index value for the day which is [two] U.S. Government Securities Business Days preceding the Interest Payment Date relating to such Interest Period; and

“**d_c**” is the number of calendar days from (and including) SOFR Index_{Start} to (but excluding) SOFR Index_{End} [(the number of calendar days in the applicable Observation Period)].¹⁹

¹⁷ The “Effect of a Benchmark Transition Event” provisions address a permanent transition away from compounded SOFR to a different benchmark. This is the fallback language included in **Appendix B**.

¹⁸ The calculation of Compounded SOFR excludes the Margin.

¹⁹ The Working Group considered how to define SOFR Index_{Start} and SOFR Index_{End} when preparing key terms for an FRN with a two-day Observation Period Shift. It is useful to consider the example of an FRN with an Interest Period from, and including, August 20, 2020 to, but excluding, November 20, 2020. The related Observation Period would be from, and including, August 18, 2020 to, but excluding, November 18, 2020. In this example:

- The SOFR Index value for the SOFR Index_{Start} of August 18, 2020 represents the effect of compounding SOFR from April 2, 2018 to, but excluding, August 18, 2020.
- The SOFR Index value for the SOFR Index_{End} date of November 18, 2020 represents the effect of compounding SOFR from April 2, 2018 to, but excluding, November 18, 2020.
- The Index_{End} is divided by the Index_{Start} in a formula to determine Compounded SOFR.
- The overlapping dates are cancelled out, and compound interest is accrued from, and including, August 18, 2020 to, but excluding, November 18, 2020.

SOFR Index Unavailable: If a SOFR Index_{Start} or SOFR Index_{End} is not published on the associated Interest Determination Date and a Benchmark Transition Event and its related Benchmark Replacement Date have not occurred with respect to SOFR, “Compounded SOFR” means, for the applicable Interest Period for which such index is not available, the rate of return on a daily compounded interest investment calculated in accordance with the formula for SOFR Averages, and definitions required for such formula, published on the SOFR Administrator’s Website at <https://www.newyorkfed.org/markets/treasury-repo-reference-rates-information>. For the purposes of this provision, references in the SOFR Averages compounding formula and related definitions to “calculation period” shall be replaced with “Observation Period” and the words “that is, 30-, 90-, or 180- calendar days” shall be removed. If the daily SOFR (“SOFR_{*i*}”) does not so appear for any day, “*i*” in the Observation Period, SOFR_{*i*} for such day “*i*” shall be SOFR published in respect of the first preceding U.S. Government Securities Business Day for which SOFR was published on the SOFR Administrator's Website.²⁰

²⁰ If a Benchmark Replacement Date has not occurred with respect to SOFR, but the Index is not published on a relevant Interest Determination Date, the Working Group suggests that a compounding formula be used to calculate the compounded rate. The SOFR Averages compounding formula (rather than the SOFR Index formula) is incorporated as a temporary method of calculating Compounded SOFR because it requires fewer daily SOFR observations (*i.e.*, the Index observations must go back to April 2, 2018 while use of the SOFR Averages compounding formula would only require daily SOFR rates over the relevant Observation Period). The SOFR Averages compounding formula can be found on the New York Fed’s website at <https://www.newyorkfed.org/markets/treasury-repo-reference-rates-information> in the section titled “Data and Calculation Methodology for SOFR Averages and SOFR Index.”

APPENDIX B

SOFR FRN FALLBACK PROVISIONS

Effect of a Benchmark Transition Event:

If [the issuer, or its designee,]²¹ determines on or prior to the relevant Reference Time that a Benchmark Transition Event and its related Benchmark Replacement Date have occurred with respect to the then-current Benchmark, the Benchmark Replacement will replace the then-current Benchmark for all purposes relating to the notes in respect of all determinations on such date and for all determinations on all subsequent dates.

In connection with the implementation of a Benchmark Replacement, the issuer or its designee will have the right to make Benchmark Replacement Conforming Changes from time to time.

Any determination, decision or election that may be made by the issuer or the issuer's designee pursuant to this section, including any determination with respect to a tenor, rate or adjustment or of the occurrence or non-occurrence of an event, circumstance or date and any decision to take or refrain from taking any action or any selection:

- (1) will be conclusive and binding absent manifest error;
- (2) will be made in the sole discretion of the issuer or its designee, as applicable; and
- (3) notwithstanding anything to the contrary in the documentation relating to the notes, shall become effective without consent from the holders of the notes or any other party.

"Benchmark" means, initially, Compounded SOFR, as such terms are defined above; provided that if the issuer or its designee determines on or prior to the Reference Time that a Benchmark Transition Event and its related Benchmark Replacement Date have occurred with respect to Compounded SOFR (or the published daily SOFR used in the calculation thereof) or the then-current Benchmark, then "Benchmark" means the applicable Benchmark Replacement.

"Benchmark Replacement" means the first alternative set forth in the order below that can be determined by the issuer or its designee as of the Benchmark Replacement Date.

- (1) the sum of: (a) the alternate rate of interest that has been selected or recommended by the Relevant Governmental Body as the replacement for the then-current Benchmark and (b) the Benchmark Replacement Adjustment;
- (2) the sum of: (a) the ISDA Fallback Rate and (b) the Benchmark Replacement Adjustment; or

²¹ Documents may specify which of the issuer or its designee will make various determinations in the fallback language.

- (3) the sum of: (a) the alternate rate of interest that has been selected by the issuer or its designee as the replacement for the then-current Benchmark giving due consideration to any industry-accepted rate of interest as a replacement for the then-current Benchmark for U.S. dollar-denominated floating rate notes at such time and (b) the Benchmark Replacement Adjustment.

“Benchmark Replacement Adjustment” means the first alternative set forth in the order below that can be determined by the issuer or its designee as of the Benchmark Replacement Date:

- (1) the spread adjustment, or method for calculating or determining such spread adjustment, (which may be a positive or negative value or zero) that has been selected or recommended by the Relevant Governmental Body for the applicable Unadjusted Benchmark Replacement;
- (2) [if the applicable Unadjusted Benchmark Replacement is equivalent to the ISDA Fallback Rate] the ISDA Fallback Adjustment; or
- (3) the spread adjustment (which may be a positive or negative value or zero) that has been selected by the issuer or its designee giving due consideration to any industry-accepted spread adjustment, or method for calculating or determining such spread adjustment, for the replacement of the then-current Benchmark with the applicable Unadjusted Benchmark Replacement for U.S. dollar-denominated floating rate notes at such time.

“Benchmark Replacement Conforming Changes” means, with respect to any Benchmark Replacement, any technical, administrative or operational changes (including changes to the timing and frequency of determining rates and making payments of interest, rounding of amounts or tenors, and other administrative matters) that the issuer or its designee decides may be appropriate to reflect the adoption of such Benchmark Replacement in a manner substantially consistent with market practice (or, if the issuer or its designee decides that adoption of any portion of such market practice is not administratively feasible or if the issuer or its designee determine that no market practice for use of the Benchmark Replacement exists, in such other manner as the issuer or its designee determines is reasonably necessary).

“Benchmark Replacement Date” means the earliest to occur of the following events with respect to the then-current Benchmark (including the daily published component used in the calculation thereof):

- (1) in the case of clause (1) or (2) of the definition of “Benchmark Transition Event,” the later of (a) the date of the public statement or publication of information referenced therein and (b) the date on which the administrator of the Benchmark permanently or indefinitely ceases to provide the Benchmark (or such component); or
- (2) in the case of clause (3) of the definition of “Benchmark Transition Event,” the date of the public statement or publication of information referenced therein.

For the avoidance of doubt, if the event that gives rise to the Benchmark Replacement Date occurs on the same day as, but earlier than, the Reference Time in respect of any determination, the Benchmark Replacement Date will be deemed to have occurred prior to the Reference Time for such

determination.

“Benchmark Transition Event” means the occurrence of one or more of the following events with respect to the then-current Benchmark (including the daily published component used in the calculation thereof):

- (1) a public statement or publication of information by or on behalf of the administrator of the Benchmark (or such component) announcing that such administrator has ceased or will cease to provide the Benchmark (or such component), permanently or indefinitely, provided that, at the time of such statement or publication, there is no successor administrator that will continue to provide the Benchmark (or such component); or
- (2) a public statement or publication of information by the regulatory supervisor for the administrator of the Benchmark (or such component), the central bank for the currency of the Benchmark (or such component), an insolvency official with jurisdiction over the administrator for the Benchmark (or such component), a resolution authority with jurisdiction over the administrator for the Benchmark (or such component) or a court or an entity with similar insolvency or resolution authority over the administrator for the Benchmark, which states that the administrator of the Benchmark (or such component) has ceased or will cease to provide the Benchmark (or such component) permanently or indefinitely, provided that, at the time of such statement or publication, there is no successor administrator that will continue to provide the Benchmark (or such component); or
- (3) a public statement or publication of information by the regulatory supervisor for the administrator of the Benchmark announcing that the Benchmark is no longer representative.

“ISDA Definitions” means the 2006 ISDA Definitions published by the International Swaps and Derivatives Association, Inc. or any successor thereto, as amended or supplemented from time to time, or any successor definitional booklet for interest rate derivatives published from time to time.

“ISDA Fallback Adjustment” means the spread adjustment (which may be a positive or negative value or zero) that would apply for derivatives transactions referencing the ISDA Definitions to be determined upon the occurrence of an index cessation event with respect to the Benchmark.

“ISDA Fallback Rate” means the rate that would apply for derivatives transactions referencing the ISDA Definitions to be effective upon the occurrence of an index cessation date with respect to the Benchmark for the applicable tenor excluding the applicable ISDA Fallback Adjustment.

“Reference Time” with respect to any determination of the Benchmark means (1) if the Benchmark is Compounded SOFR, the SOFR Determination Time, and (2) if the Benchmark is not Compounded SOFR, the time determined by the issuer or its designee after giving effect to the Benchmark Replacement Conforming Changes.

“Relevant Governmental Body” means the Federal Reserve Board and/or the Federal Reserve Bank of New York, or a committee officially endorsed or convened by the Federal Reserve Board and/or the Federal Reserve Bank of New York or any successor thereto.

“Unadjusted Benchmark Replacement” means the Benchmark Replacement excluding the Benchmark Replacement Adjustment.