RBC Capital Markets

Interbank Offered Rate Transition

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INTERBANK OFFERED RATE TRANSITION

This document is meant to assist in updating you about the transition of key global benchmark interest rates and the possible impact on products that you may have with RBC Financial Group (RBC).[1]

What is happening to interest rates?

A number of interbank offered rates (**"IBORs"**) are being reformed to make them more robust and reliable or, in some cases, are being discontinued. Where the IBORs are being reformed they are expected to perform differently from the way they currently perform. The reform or discontinuation in turn may have an impact on the payments under and/or the value of the RBC products you currently use, and those RBC may provide you with in the future.

Regulatory authorities and public and private sector working groups in several jurisdictions have strongly encouraged the identification and use of alternative "risk-free rates" ("RFRs") to replace (or, in some cases, to be used alongside) certain IBORs. These working groups have also published recommendations which consider how to support a transition to, and the development of new products referencing, these RFRs.

What are "risk-free rates" or "RFRs"?

RFRs are overnight interest rate benchmarks which are perceived to (i) in some cases, be more representative and reliable than an IBOR and (ii) be more appropriate for use in certain products than an IBOR.

How are RFRs different from IBORs?

RFRs are overnight rates based on actual transactions, while IBORs are quoted term rates that may rely, in part, on expert judgment.

Is the same thing happening to interest rates for all currencies?

No. For some currencies, a "multiple rate" approach is being adopted, which means that the IBOR for the relevant currency will continue alongside the RFR. For other currencies, it is likely that the IBOR will cease to be provided and so the principal interest rate will be the RFR.

The table below shows the approach taken for IBORs for the principal currencies in which RBC products are denominated:

Currency	Impacted Rate	Reform/discontinuation	RFR	Multiple rate approach
GBP	LIBOR	The FCA has announced that it will not compel panel banks to contribute quotations beyond the end of 2021, which means it is likely that LIBOR will cease to be published or will no longer be representative of its underlying market at some point after the end of 2021.The FCA has accordingly emphasized the need for market participants to proactively transition away from LIBOR before the end of 2021.[2] The IBA has launched a consultation on the potential cessation of the publication of all LIBOR settings with, notably, a proposed cessation date for some USD LIBOR tenors of end of June 2023. Further details are on pages 4 and 5.	SONIA	No
CHF			SARON	No
JPY			TONA	Yes, consisting of TONA and JPY TIBOR
USD			SOFR	No
EUR			€STR	No
EUR	EURIBOR	Reforms to the methodology underpinning EURIBOR to ensure compliance with regulatory requirements have been implemented. EURIBOR (as revised) is currently expected to continue.[3]	€STR	Yes, consisting of EURIBOR and €STR
	EONIA	As of October 2, 2019, EONIA methodology has been recalibrated to become the sum of €STR plus a fixed spread of 8.5 basis points. EONIA is expected to be discontinued on 3 January 2022.[4]	€STR	No

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1. "RBC" is used in this letter to mean Royal Bank of Canada and its principal subsidiaries, including RBC Capital Markets, LLC, RBC Dominion Securities Inc. and RBC Europe Limited.
2. https://www.fca.org.uk/news/speeches/the-future-of-libor; https://www.fca.org.uk/news/speeches/libor-preparing-end
3. https://www.emmi-benchmarks.eu/assets/files/D0246A-2019-EURIBOR%20Benchmark%20Statement_final%20-%20FINAL.pdf
4. https://www.emmi-benchmarks.eu/euribor-eonia-org/about-eonia.html

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Currency	Impacted Rate	Reform/discontinuation	RFR	Multiple rate approach
AUD	BBSW	The calculation of BBSW has since 21 May 2018 used a re- formed VWAP methodology, and it is expected that BBSW (as revised) will continue.[5]	RBA Cash Rate	Yes, consisting of BBSW and RBA Cash Rate
CAD	CDOR	6-month and 12-month CDOR tenors will cease to be calculated and published from May 17, 2021 onwards. It is expected that 1-month, 2-month and 3-month CDOR tenors will continue to be published.[6] Changes have been made to enhance the methodology underlying CORRA.[7]	Enhanced CORRA	Yes, consisting of CDOR and CORRA

A number of RFRs have been introduced. For example, the Secured Overnight Financing Rate (**"SOFR"**) has been introduced as the new RFR for USD and the Euro Short Term Rate (**"€STR"**) has been introduced as the new RFR for EUR.

You should be aware that RBC is a contributor to CDOR, USD LIBOR, GBP LIBOR and EUR LIBOR. If any contributor (including Royal Bank of Canada) ceases to contribute to LIBOR, it will increase the likelihood that LIBOR will cease to be provided or that it will be considered to be unrepresentative of the market it is intended to measure.

Are there any specific milestones or timelines to be mindful of?

National RFR working groups in different countries have issued recommendations on fallback and transition milestones and there have been some other important recent developments. For instance:

1. In July 2020, the Working Group on Sterling Risk-Free Reference Rates updated and revised its priorities and roadmap for 2020-21. Its revised target milestones include the following:
   a. by the end of Q1 2021, ceasing new issuance of Sterling LIBOR referencing loan products, bonds and securitizations which mature after 2021;
   b. by the end of Q1 2021, ceasing initiation of new Sterling LIBOR linked linear derivatives expiring after 2021 (except for risk management of existing positions); and
   c. adhering to ISDA's IBOR Fallbacks Protocol before its "effective date".

2. The Alternative Reference Rates Committee ("ARRC") published "Recommended Best Practices for Completing the Transition from LIBOR" in May 2020 which include the following:
   a. the issuance of new USD LIBOR referencing floating rate notes utilizing USD LIBOR and maturing after 2021 should cease by 31 December 2020;
   b. no business loans using USD LIBOR and maturing after 2021 should be originated after 30 June 2021; and
   c. market participants should adhere to ISDA's IBOR Fallbacks Protocol within four months of its publication.

3. The IBA has launched a consultation[8] on the potential cessation of the publication of all LIBOR settings and has requested feedback from stakeholders on:
   a. its intention to cease publication of overnight, 1, 3, 6 and 12 month USD LIBOR after 30 June 2023; and
   b. its intention to cease publication of all other LIBOR settings (including all tenors for GBP, EUR, CHF and JPY LIBOR) after 31 December 2021.

5. https://www.asx.com.au/services/benchmark.htm
6. https://www.refinitiv.com/content/dam/marketing/en_us/documents/policies/cdor-change-consultation.pdf
7. https://www.bankofcanada.ca/wp-content/uploads/2019/07/results-carr-consultation.pdf
8. https://www.theice.com/publicdocs/ICE_LIBOR_Consultation_on_Potential_Cessation.pdf

Certain US regulatory agencies released a collective statement encouraging banks to cease entering into new contracts that use USD LIBOR after the end of 2021.[9] The FCA has also released a statement referring to the possibility of exercising the powers that it would receive to prohibit the new use of a critical benchmark such as LIBOR after the end of 2021.[10] The impact of these statements on the transition of existing contracts referencing USD LIBOR remains to be seen.

Will there be any laws introduced to facilitate transition away from LIBOR?

In March 2020, the ARRC published its "Proposed Legislative Solution to Minimize Legal Uncertainty and Adverse Economic Impact Associated with LIBOR Transition" which contains draft legislative proposal text intended to be implemented as part of New York law. There are draft bills in the New York state legislature and the US Congress which are substantially based on the ARRC legislative solution.

HM Treasury (UK) announced in June 2020 that it intends to extend the circumstances in which the FCA would be able to direct an administrator to change the methodology of a critical benchmark such as LIBOR. In October 2020, the Financial Services Bill was published which would provide the FCA with new powers, including a power to create a synthetic methodology for LIBOR to assist with addressing tough legacy contracts. The FCA is currently consulting on certain of these powers.

The European Commission published a proposal in July 2020 to amend the EU Benchmark Regulation. This proposal relates to the "designation of replacement benchmarks for benchmarks in cessation."

If these legislative proposals are passed there is no guarantee that these will be passed in their current form, that they will apply to all LIBOR referencing contracts, all currencies or tenors of LIBOR or that their application will result in commercially acceptable outcomes for parties. The FCA has reiterated in the context of the UK legislative proposal that a continued focus on the transition away from LIBOR remains necessary and desirable.

How will your RBC products be affected?

The implications of a reform of an interest rate, particularly if it involves its discontinuation, will differ depending on the product or service that you use.

For example:

1. different products or services have different fallbacks and some may not have fallbacks at all. "Fallbacks" are provisions which contemplate a change or cessation of an interest rate and, for example, provide for the introduction of a new interest rate or means of determining a new interest rate;
2. the operation of a fallback may lead to a change in the value or tax or accounting treatment of the product or service, or the product or service no longer meeting the purpose you originally intended it to serve;
3. there may be merit in updating the terms of some products, to refer to a relevant RFR or to introduce new fallback provisions;
4. replacement of an IBOR with the relevant RFR or a fallback to the relevant RFR may result in your paying more or receiving less than you would have otherwise;
5. replacement of an IBOR with the relevant RFR, fallback to the relevant RFR or entry into of a RFR linked product may mean that you have to update your internal booking and other systems;
6. we may no longer be able to offer you products linked to certain IBORs;
7. we will be offering you products that are linked to RFRs; and
8. there could be divergence in payment and other conventions across products and jurisdictions. This means that there could be mismatches, for example if a derivative is being used to hedge specific exposure under another product.

For further information, please refer to the product specific information contained in Annex 1.

9. https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20201130a1.pdf.
10. https://www.fca.org.uk/news/statements/fca-response-iba-proposed-consultation-intention-cease-us-dollar-libor.

What is RBC doing in relation to interest rate reform and/or discontinuation?
RBC has established a global program and is, amongst other things, (i) identifying the products which reference affected interest rates, (ii) engaging with clients on the consequences of the reform and/or discontinuation, (iii) considering how different products may be affected and (iv) considering steps to transition to RFRs (where relevant), including by issuing RFR floating rate notes, trading SOFR, SONIA, €STR and CORRA swaps and providing SOFR and SONIA loans.

What are the next steps?
RBC will continue to communicate further with you as the situation (including industry solutions) develops. In the meantime, you should raise awareness of these reforms internally, monitor future developments and seek independent professional advice on the potential impact of the reforms (including discontinuation) on your products with RBC as well as your organization more generally. RBC may also contact you to discuss contingency and transitional arrangements. If you hold or are party to a syndicated product, you may also be contacted by other lenders and/ or the facility agent of such product in respect of IBOR fallbacks.

Where can you find more information?
Annex 2 of this document contains details of where you can find additional information on this topic.

Please note that this document is provided to you for information only, is not complete or exhaustive and is based on information reasonably available to RBC as of the time this document has been prepared. RBC is not providing any advice or recommendation or offering any product or service in this document nor is it assuming any responsibility to provide advice. If you think other colleagues in your organization should be made aware of these reforms and/or this document, you may wish to forward this letter to those colleagues.

If you have any specific queries about the information set out in this document, please contact your Sales Representative or email us here.

ANNEX 1

1. Derivatives

For additional IBOR alternative reference rates disclosure please also see https://www.rbccm.com/en/legal/dodd-frank-disclosures.page.

What might be the impact on derivatives and what is happening to derivative documentation?

Derivative transactions which reference an IBOR typically incorporate the 2006 ISDA Definitions (or, for older transactions, earlier iterations thereof), as published by the International Swaps and Derivatives Association, Inc. ("ISDA"). Pursuant to those definitions, if the relevant interest rate were to be unavailable, the rate would be determined by reference to quotations from reference banks, with no alternative methodology provided.[11]

However, the 2006 ISDA Definitions generally do not address the consequences of no quotations being provided. If the relevant interest rate were permanently or indefinitely discontinued, it is unlikely that quotations would be provided by reference banks on a large scale and for a prolonged period of time in response to the discontinuance of the relevant IBOR. In this scenario, it may be unclear how payments under and/or the value of a transaction should be calculated. If the transaction is centrally cleared or traded on an exchange, the rules of the relevant central clearing house or exchange may allow it to determine a substitute rate.

There has been, and continues to be, much activity concerning references to benchmarks in derivative transactions among market participants, trade associations and regulators. ISDA has also finalized the 2006 ISDA Definitions addressing IBOR fallbacks ("IBOR Fallbacks Supplement") and published the ISDA 2020 IBOR Fallbacks Protocol ("IBOR Fallbacks Protocol"). The IBOR Fallbacks Supplement introduces fallback provisions in the definitions of rate options that use certain IBORs as the applicable rate. The fallback provisions would apply if the relevant IBOR ceases to be provided permanently or indefinitely, and, in the case only of London Interbank Offered Rate ("LIBOR"), after a determination and announcement by the Financial Conduct Authority that LIBOR is no longer representative. In these circumstances, if it is not possible to determine a rate using linear interpolation, the applicable rate for the relevant IBOR rate option will first fall back to a term adjusted risk-free rate ("RFR") in the same currency plus a spread. The RFR will be adjusted by being compounded in arrears for the relevant term to reflect the fact that the IBOR is a term rate rather than an overnight rate. The purpose of the spread is to account for the fact that IBORs, in contrast to RFRs, include a degree of perceived bank credit risk.

The new IBOR triggers and fallbacks contained in the IBOR Fallbacks Supplement will automatically apply to all transactions referencing the 2006 ISDA Definitions that are entered into on or after January 25, 2021 ("Effective Date") without any further action needed. Derivative transactions incorporating the 2006 ISDA Definitions entered into prior to the Effective Date will not automatically incorporate the new triggers and fallbacks from the IBOR Fallbacks Supplement. For derivative transactions entered into prior to the Effective Date, ISDA has published the IBOR Fallbacks Protocol, pursuant to which parties can agree to amend those transactions to incorporate the same triggers and fallbacks contained in the IBOR Fallbacks Supplement. By adhering to the IBOR Fallbacks Protocol on the ISDA website, parties can make such amendments to their existing derivative transactions with other adhering parties. Derivatives which are used to hedge a specific product such as a loan may require lender or other consent before any amendment can be made. As adherence to the Protocol has the effect of an amendment, we would encourage you to obtain any required consents before adhering.

It is important to understand that the RFRs, even with the adjustment and addition of a spread, are not direct replacements for, and may not operate in the same way as, their corresponding IBORs. Even with spreads or other adjustments, RFRs used as fallbacks may be only an estimate or approximation of the relevant IBOR and may not be subject to continued verification against the relevant IBOR if it is suspended, discontinued, unavailable or non-representative. In addition, the spread adjustment will become permanent in response to the permanent

11. Note that there are some exceptions to this. For example, the fallback for "AUD-BBR-BBSW" in the 2006 ISDA Definitions (which is a floating rate option for the Australian dollar IBOR, which is called the Bank Bill Swap Rate or "BBSW") is to a rate determined by the calculation agent having regard to comparable indices then available.

discontinuance of the relevant IBOR, in which case such spread adjustment may reflect a historical correlation or relationship between the relevant rates without taking into account future changes in the unsecured short-term funding costs of banks in the interbank market and without otherwise including a measure that reflects bank credit risk. Therefore, falling back to a rate based on the RFR may also cause the value of the derivative transaction to change. The extent of any such value change may not be known until the relevant spread is calculated, which may limit the parties' ability to prepare for the related economic effect.

Generally, there are risks associated with using a derivative transaction to hedge underlying exposure under a different product, such as a loan or a bond, which typically contain, in the case of a loan, a specific waterfall of fallback methods with a final fallback referencing the lender's cost of funding, the alternative base rate and/or PRIME, and in the case of a bond, a fallback to the rate for the previous interest period (which effectively converts the product into a fixed rate note). The time at which and the way in which the fallback operates under the derivative transaction may cause the derivative transaction to hedge any underlying exposure less effectively. Examples of differences in operation include differences in fallback rate (such as a difference in the way in which the RFR is adjusted or the spread is calculated), differences in interest accrual periods or payment dates resulting from varying accrual or payment conventions and a difference in triggers (such as the inclusion of a pre-cessation or non-representativeness trigger in one instrument but not the other). Any mismatches may also impact the accounting treatment (such as hedge accounting) and tax treatment. Parties to derivative transactions need to familiarize themselves with how the IBORs are defined within their documentation and how the related fallbacks apply and interact with related arrangements such as a cash product for which the derivative transaction is intended to serve as a hedge and take professional advice as to the potential impact and risks associated with the discontinuation of these IBORs. This should include assessing the effect of the triggers and fallbacks set out in the IBOR Fallbacks Supplement and the IBOR Fallbacks Protocol.

The way in which the updated fallbacks published by ISDA operate may cause challenges for some transaction types, such as 'non-linear' transactions (for example, swaptions; in-arrears swaps; interest rate caps and floors; and range accrual products) and multi-currency transactions where the way in which and the time at which the RFR for each currency is developed or applied may differ.

If the ISDA published provisions are not appropriate for a particular transaction, whether for a new or existing derivative transaction, parties will need to bilaterally negotiate and agree adjustments to the basis on which they adopt those provisions to reflect the needs of the particular transaction.

If a derivative transaction is cleared or traded on an exchange, parties need to familiarize themselves with the approach the relevant clearing house or exchange is planning to take both with respect to the introduction of a new rate in case of a permanent or indefinite discontinuance of the relevant IBOR as well as with respect to the way in which the transaction will be valued. Alongside familiarizing themselves with the output from industry efforts, parties to derivative transactions may need to also put in place processes to actively monitor and manage their derivatives exposure to benchmarks such as LIBOR. In each case they should take appropriate advice.

For derivative transactions that are documented under non-ISDA documentation, you should understand the potential legal, regulatory and financial impact on those transactions of possible changes in, disruption to, or discontinuance of, the interest rates referenced in those transactions. The scope of ISDA's work on IBOR fallbacks may not extend to all such derivative transactions and parties may be required to enter into bilateral negotiations and/or amendments to moderate the impact of changes in, disruption to, or discontinuance of, interest rates referenced in those transactions. RBC will continue to explore possible approaches to these transactions as market standards continue to develop.

You may also have entered into related credit support documentation, such as a credit support annex. These documents may also reference an interest rate and consideration must therefore be given to the consequences of any reform to or discontinuation of that interest rate.
The transition away from the existing overnight rate to the new overnight rate may also have an impact on the products and services RBC provides. For example, if a credit support annex references EONIA as the interest rate payable on euro denominated cash collateral, this may need to be amended to include fallbacks which apply upon the discontinuation of EONIA or to replace references to EONIA with references to €STR. This, in turn, may affect the rate at which derivative portfolios are discounted for valuation purposes, which may mean that the portfolio value may change. Similarly, if a credit support annex references the Federal Funds Rate as the interest rate payable on USD denominated cash collateral, parties may wish to update this to refer to SOFR. Rates such as EONIA and SOFR are not covered by the IBOR Fallbacks Supplement or the IBOR Fallbacks Protocol.

2. Loans

What might be the impact on loans and what is happening to loan documentation?

Syndicated loan documents and, to a lesser extent, bilateral loan documents typically, but not always, include provisions intended to address the short-term unavailability of interest rate benchmarks. These provisions usually do not permit the selection of an alternative benchmark should the original benchmark cease to be published on a permanent basis. Instead, if the relevant benchmark is not available for the required currency and interest period, a fallback mechanism to determine an alternative rate will typically apply, leading to the interest rate referencing the lender's cost of funding or PRIME. The application of a fallback rate, in these circumstances, may represent a material change to the amount of interest payable.

Consequently, if, in respect of a loan agreement with RBC as a lender ("RBC Loan"), the applicable benchmark ceases to be published on a permanent basis and one or more of the parties wish to use an alternative benchmark, to do so will typically require an amendment to the loan agreement and there is no guarantee that it will be possible to reach an agreement on the amendment in all cases. In these circumstances, it is likely that any provisions to address the short-term unavailability of the interest rate benchmark would apply. However, as market practice continues to evolve, some more recent RBC Loans may, in anticipation of the expected discontinuation of such benchmark(s), contain provisions addressing the process for selection of an alternative benchmark, in which case an amendment may not be required.

To allow parties to more easily reach agreement in the circumstances described above, the Loan Market Association ("LMA") published "replacement of screen rate" wording for future amendments to be implemented in syndicated loans in a way which requires the majority lenders rather than all lenders to agree. In line with the recommendation of the Working Group on Sterling Risk-Free Rates that all new and re-financed LIBOR-referencing loan products from the end of Q3 2020 should include clear contractual arrangements through pre-agreed conversion terms or an agreed process for renegotiation to facilitate conversion to a new rate ahead of the end-2021, this wording now also includes provision for good faith negotiations to agree a replacement by a specified date (with any pre-agreed terms to be included). The LMA has also published an exposure draft of its multicurrency rate switch facility agreement. This provides for a facility agreement with LIBOR-based interest to switch into interest based on SONIA, SOFR, SARON and/or €STR upon the occurrence of a "Rate Switch Date" for the relevant currency (and taking effect from the next interest period for existing loans). The rate switch date can be triggered by a "Rate Switch Trigger Event" – a concept which includes the permanent cessation of a benchmark. In addition, the US Alternative Reference Rates Committee ("ARRC") published in April 2019 two versions of its recommended contractual LIBOR fallback language for US syndicated and bilateral loans referencing USD LIBOR. One version prescribes from the outset an independent waterfall of fallbacks to apply in the event that USD LIBOR ceases to be provided (or is announced to be non-representative) (called the "hardwired approach"). The ARRC published updated hardwired fallback language in June 2020. The other version introduces an amendment mechanism for negotiating an alternative benchmark and therefore defers all decisions about the successor rate and adjustment until the relevant trigger event occurs (called the "amendment approach"). Among other things, the amendment approach fallback language provides for future amendments that implement the successor rate to be effected subject to a negative consent right of majority lenders rather than the affirmative consent of all lenders as would typically be required for modifications to applicable interest rates. Since its publication through the first half of 2020, loan agreements implementing the ARRC fallback language predominantly adopted the "amendment approach" since under the hardwired approach, the successor rate is hardwired to SOFR-based rates and market participants were not sufficiently prepared to operationalize SOFR-based rates. However, the ARRC has set recommended milestones for the transition away from LIBOR and one such milestone is for syndicated business loans to adopt hardwired fallback language by no later than the end of September 2020 and bilateral business loans by no later than the end of October 2020.

If, following the permanent cessation of a benchmark, the terms of a RBC Loan lead to the selection of an alternative benchmark, you should be aware that, even with the application of any "spread adjustment", it is possible that the alternative benchmark may result in a change to the amounts payable under the terms of the RBC Loan as well as changes to its value.

If the alternative benchmark is a RFR, it may be that, unless a term RFR is developed and used for the relevant currency, the interest rate is only determined at (or near) the end of an interest period based on the simple average of overnight rates or a series of compounded overnight rates, rather than at the start of an interest period as is currently the case. The markets are also exploring how best to calculate a spread adjustment that could be added to the relevant RFR, one such example being the historical median over a 5-year period of the difference between the applicable RFR and LIBOR for a comparable tenor. As RFRs in different currencies are being developed at different times, it may be that the consequences are different for different currencies. More generally, the loan markets continue to evolve in this area and language in RBC Loans dealing with the risk of benchmark discontinuance may be different to that of other products and may not always be consistent with the approach taken by other banks, although RBC is aiming for consistency with market practice in this respect.

The secondary market value of loans referencing an IBOR may therefore be affected. Additionally, mismatches may arise if a derivative transaction is used to hedge a loan and does not deal with the discontinuation of the IBOR or the calculation of RFRs in the same way. This may also impact the application of the hedge accounting rules to your financial arrangements.

3. Floating Rate Notes, Commercial Paper and Certificates of Deposit

What might be the impact on floating rate notes, commercial paper and certificates of deposit and what is happening to the associated documentation?

The documentation for floating rate notes, commercial paper and certificates of deposit referencing an IBOR generally (although not always) includes fallbacks which apply if that IBOR is unavailable but, as with loans and derivatives, those fallback provisions were historically drafted in the context of a temporary disruption and were not intended as a solution to a permanent discontinuation of an IBOR. For example, some floating rate notes provide that, in this scenario, the rate for the previous interest period applies which would effectively convert the floating rate note into a fixed rate note. Other floating rate notes, such as structured notes, provide that the rate will be determined on the same basis as the rate under a derivative incorporating the 2006 ISDA Definitions. As discussed in section 1 above, pursuant to those definitions, if the relevant interest rate were to be unavailable, the rate would be determined by reference to quotations from other banks. If the relevant interest rate were permanently discontinued, it is unlikely that quotations would be provided for some or all of the remaining term of the floating rate notes. In this scenario, it may be unclear how payments under and/or the value of the floating rate notes should be calculated. In some other circumstances, the interest rate may be required to be determined based on a screen rate. If such screen rate is unavailable and there are no quotations from other banks, the screen rate for the preceding interest period applies which would effectively convert the floating rate note into a fixed rate note.

Where additional fallbacks contemplating a permanent discontinuation of an IBOR have not been incorporated, there is typically no mechanism in the documentation to specify, after the issue date, an alternative interest rate and therefore the terms of each such floating rate note, commercial paper or certificate of deposit would require amendment, which in the case of floating rate notes is usually by obtaining consent from a specified percentage of holders. Due to the short-term nature of commercial paper and certificates of deposit, their terms do not typically include an amendment mechanism.

Amendments to include a different basis of calculating interest may be difficult where the floating rate notes are broadly held (and there are difficulties in reaching a quorum or approval threshold) or narrowly held (and investors with material stakes are not receptive to any amendments) and/or have high consent thresholds once a quorum is achieved.

Floating rate notes may also not reference an IBOR directly but may reference another index or benchmark which itself uses IBOR for its determination. The implications for such other index or benchmark of the reform or discontinuation of the relevant IBOR will depend on the rules of the index or benchmark and actions taken by the index sponsor or the benchmark administrator in connection with the reform or discontinuation of the relevant IBOR. Such index or benchmark may itself be discontinued or may be materially modified. The documentation for floating rate notes referencing an index or a benchmark generally (although not always) includes fallbacks which apply if that index or benchmark is discontinued or is materially amended. These fallbacks may, like the fallbacks for IBOR, be drafted in the context of a temporary disruption and may not operate to provide a solution to a permanent discontinuation of the index or benchmark. In such case the same issues as the ones discussed above in relation to the permanent discontinuation of IBOR will arise.

Floating rate notes issued more recently by RBC contain certain fallback arrangements with the purpose of providing a solution to the permanent discontinuation of an IBOR which will apply on the occurrence of certain trigger events. Depending upon the instrument and nature of the trigger event, the fallback provisions include the use of a replacement benchmark rate or index including a spread adjustment determined by the calculation agent and conforming changes to the terms of the floating rate notes or, in other cases, the ability of the issuer to redeem the floating rate notes early or instruct the calculation agent to adjust the terms of the floating rate notes, which may include selecting one or more successor benchmarks or indices and making related adjustments.

The operation of any existing fallback arrangements, including the additional fallbacks contemplating a permanent discontinuation of an IBOR, could result in a different return for the holder of the relevant product (which may include payment of a lower rate of interest or a fixed rate of interest until maturity) than they might receive under similar products which contain different or no fallback arrangements (including which they may otherwise receive in the event that legislative measures or other initiatives (if any) are introduced to transition from the relevant IBOR to an alternative rate). However, this risk is more acute for existing holders of floating rate notes than existing holders of commercial paper or certificates of deposit, as the latter products are generally non-interest bearing, and accordingly only rarely reference an IBOR, and are of a short-term nature and therefore less likely to be disrupted by the IBOR reforms in the manner described in this paragraph.

This area is constantly developing and language may therefore vary between products, different issuers and different markets. There may even be instances where issuances under the same program (but with a different issue date) contain different provisions in respect of an IBOR (or another index dependent on IBOR) discontinuation as the market approach to this issue evolves. For example, as described above, additional fallback language has been developed with the aim of providing a solution to the permanent discontinuation of an IBOR and specifically, ARRC published its recommended contractual LIBOR fallback language for floating rate notes referencing USD LIBOR in May 2019, which RBC is beginning to use (with modifications) for floating rate notes issued in certain jurisdictions including the US.

The secondary market value of floating rate notes, commercial paper and certificates of deposit referencing an IBOR or another index or benchmark dependent on an IBOR may therefore be affected. Additionally, mismatches may arise if a derivative transaction is used to hedge such a product and does not deal with the discontinuation of the IBOR, the discontinuation or material modification of the other index or benchmark in the same way. This may also impact the application of the hedge accounting rules to your financial arrangements.

Where RBC is not the issuer of the floating rate note, commercial paper or certificate of deposit but is offering a secondary market product, RBC does not set the terms of those products and you should be aware that such products may (i) not include any fallbacks, (ii) include fallbacks that differ from those included in a product issued by RBC and/or (iii) be subject to a change of the benchmark and/or repricing as a result of the discontinuation of the relevant IBOR.

4. Collateralized loan obligations

What might be the impact on collateralized loan obligations and what is happening to the associated documentation?

The documentation for notes issued by collateralized loan obligation vehicles (“CLO Notes”) which reference an IBOR generally (although not always) includes fallbacks which apply if that IBOR is unavailable. Many CLO Notes also rely on the presence of a swap, which may also reference an IBOR, in order to hedge interest rate or currency risk. As discussed above, fallback provisions for notes and swaps were historically drafted in the context of a temporary disruption and were not intended as a solution to a permanent discontinuation of an IBOR. Similarly, a change to the interest rate or other feature of the loans or bonds in the portfolio underlying the CLO Notes may have an impact on the way in which the CLO Notes perform.

The operation of any existing fallback arrangements could result in a different return for the holders of floating rate CLO Notes (which may include payment of a lower rate of interest or a fixed rate of interest until maturity) than they might receive under similar products which contain different or no fallback arrangements (including which they may otherwise receive in the event that legislative measures or other initiatives (if any) are introduced to transition from the relevant IBOR to an alternative rate).

If a relevant IBOR does not survive in its current form or at all, this could also adversely affect the value of, and amounts payable under, any loans or bonds in the portfolio underlying the CLO Notes, which pay interest calculated with reference to such IBOR. This could reduce amounts which may be available to the issuer to pay out to holders of CLO Notes. There may also be a mismatch between any replacement rate of interest applicable to the affected underlying loan or bond and the replacement rate of interest the issuer must pay under any applicable hedging arrangements. This could lead to the issuer receiving amounts from affected loans or bonds which are insufficient to make payments due under the relevant hedging arrangements, and their potential termination.

There was, historically, no mechanism in the documentation to specify, after the issue date, an alternative interest rate for the floating rate CLO Notes, or to amend references to IBORs in the other transaction documents. Therefore, the consent of a specified percentage of noteholders would be required to address any discontinuation of the relevant IBOR by replacing such IBOR on a permanent basis. If such consent could not be obtained, the floating rate CLO Notes would continue to rely on existing fallback arrangements, which (as noted above) are not intended for long-term use and may impact the performance of such CLO Notes. More recently the terms and conditions of CLO Notes may provide for an amendment to be made to the provisions of the transaction documents, without the consent of noteholders, to change the reference rate in respect of floating rate notes and to make such other necessary amendments due to a material disruption, a change in the methodology of calculation, or the cessation, in each case of an IBOR or other applicable or related index or benchmark.

5. Asset-backed securities and securitizations (other than synthetic securitizations)

What might be the impact on asset-backed securities and securitizations and what is happening to the associated documentation?

The documentation for floating rate asset-backed notes and securitizations (which, for the purposes of this section, shall exclude synthetic securitizations which are considered in section 6 below) (such floating rate asset-backed notes and securitizations together the "ABS Notes") which reference an IBOR generally (although not always) includes fallbacks which apply if that IBOR is unavailable. Many ABS Notes rely on the presence of a swap, which may also reference an IBOR, in order to hedge interest rate or currency risk. As discussed above, fallback provisions for notes and swaps were historically drafted in the context of a temporary disruption and were not intended as a solution to a permanent discontinuation of an IBOR. Similarly, a change to the interest rate or other feature of the assets backing the ABS Notes may have an impact on the way in which the ABS Notes perform.

There was, historically, no mechanism in the documentation to specify, after the issue date, an alternative interest rate for the ABS Notes, or to amend references to IBORs in the other transaction documents. Therefore, the consent of a specified percentage of holders would be required to address any discontinuation of the relevant IBOR by replacing such IBOR on a permanent basis.

However, amendments to include a different basis of calculating interest on the ABS Notes or to amend other transaction documents may be difficult where the floating rate notes are broadly held (and there are difficulties in reaching a quorum or approval threshold) or narrowly held (and investors with material stakes are not receptive to any amendments) and/or have high consent thresholds once a quorum is achieved.

The operation of any existing fallback arrangements could result in a different return for the holders of ABS Notes (which may include payment of a lower rate of interest or a fixed rate of interest until maturity) than they might receive under similar products which contain different or no fallback arrangements (including which they may otherwise receive in the event that legislative measures or other initiatives (if any) are introduced to transition from the relevant IBOR to an alternative rate).

This area is constantly developing and language may therefore vary between products, different issuers and different markets. There may also be instances where issuances under the same program (but with a different issue date) contain different provisions in respect of an IBOR discontinuation as the market approach to this issue evolves.

For example, ARRC published its recommended contractual LIBOR fallback language for securitizations referencing USD LIBOR in May 2019, which RBC has used in respect of some recent issues of ABS Notes. In addition, some recent UK ABS Notes have included a provision allowing the issuer to propose amendments to its transaction documents if an IBOR is discontinued using a "negative consent" procedure. The relevant amendments may include replacing the IBOR in the ABS Notes and in any hedging transactions, adjusting any relevant margin and allowing other references to the relevant IBOR in the underlying transaction documents to be replaced. The issuer's proposals will be carried into effect unless a specified percentage of ABS noteholders object. Originators and sponsors of GBP denominated ABS Notes are increasingly active in using this negative consent procedure or a full consent solicitation to change LIBOR-linked ABS Notes to a compounded daily SONIA benchmark.

The secondary market value and credit rating of floating rate ABS Notes referencing an IBOR may be affected. This is likely to be exacerbated if any derivatives entered into by the issuer as part of a securitization do not address the discontinuation of the IBOR in the same way as the ABS Notes, as this may lead to a mismatch in cash-flows available to the issuer to meet payment on the ABS Notes. In turn, this may affect the rating and/or secondary market value of the ABS Notes.

Where RBC is offering a secondary market product, RBC does not set the terms of those products and you should be aware that such products may (i) not include any fallbacks, (ii) include fallbacks that differ from those included in a product issued by RBC and/or (iii) be subject to a change of the benchmark and/or repricing as a result of the discontinuation of the relevant IBOR.

6. Synthetic collateralized loan obligations

What might be the impact on synthetic collateralized loan obligations and what is happening to the associated documentation?

The documentation for synthetic collateralized loan obligations ("Synthetic CLOs") (also called synthetic securitizations or risk transfer/sharing transactions) does not generally address the reform or discontinuation of IBORs referenced by the obligations in the underlying portfolio. This is because the fee payable by the originator to the protection provider is usually calculated independently of the interest cash flows received on the underlying portfolio. Furthermore, the protection fee is often based on a fixed rate and therefore will not be affected by the IBOR reforms.

However, if the Synthetic CLO is funded by the originator issuing credit linked notes, a floating rate will typically be payable on the funding element (i.e. as the interest under the notes). If the originator issues floating rate credit linked notes referencing an IBOR as part of the funded structure, the issues described in section 3 above in respect of floating rate notes will similarly apply in the context of such Synthetic CLO.

Alternatively, if the credit protection is provided by a special purpose vehicle ("SPV") which funds its obligations to the originator through the issuance of floating rate credit linked notes, the floating rate element of the interest payable to noteholders will typically be a pass-through of the interest received on any deposit, repo, swap or securities ("Investment") in which the SPV invests the note proceeds.

In a funded SPV structure, if the floating rate of interest payable on the Investment references an IBOR, the implications of the reform or discontinuation of that IBOR will depend on where the relevant rate is documented. If it is documented in the terms and conditions of the notes, the issues described in section 3 above in respect of floating rate notes will similarly apply in the context of the Synthetic CLO. However, if the terms and conditions of the notes simply refer to the interest amount received on the relevant Investment, the implications for noteholders of the reform or discontinuation of the relevant IBOR will depend on the terms governing that underlying Investment (in which case, please refer to the relevant section above for a description of the risks associated with the relevant product type).

ANNEX 2

You can find further information on the websites linked below.

Organization	Links
Alternative Reference Rates Committee (ARRC)	• https://www.newyorkfed.org/arrc/sofr-transition
Bank of England (BOE)	• https://www.bankofengland.co.uk/markets/transition-to-sterling-risk-free-rates-from-libor • https://www.bankofengland.co.uk/markets/sonia-benchmark
Bank of Japan (BOJ)	• https://www.boj.or.jp/en/paym/market/jpy_cmte/index.htm/
Canadian Alternative Reference Rate Working Group (CARR)	• https://www.bankofcanada.ca/markets/canadian-alternative-reference-rate-working-group/
European Central Bank (ECB)	• https://www.ecb.europa.eu/paym/initiatives/interest_rate_benchmarks/WG_euro_risk-free_rates/html/index.en.html
European Money Markets Institute (EMMI)	• https://www.emmi-benchmarks.eu/euribor-org/euribor-reform.html • https://www.emmi-benchmarks.eu/euribor-eonia-org/about-eonia.html
Financial Conduct Authority (FCA)	• https://www.fca.org.uk/markets/libor
Financial Stability Board – Official Sector Steering Group (OSSG)	• https://www.fsb.org/work-of-the-fsb/policy-development/additional-policy-areas/financial-benchmarks/
ICE Benchmark Administration (IBA)	• https://www.theice.com/iba
International Capital Market Association (ICMA)	• https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/benchmark-reform/
International Swaps and Derivatives Association, Inc. (ISDA)	• https://www.isda.org/category/legal/benchmarks/
Reserve Bank of Australia (RBA)	• https://www.rba.gov.au/mkt-operations/resources/interest-rate-benchmark-reform.html
Swiss National Bank (SNB)	• https://www.snb.ch/en/ifor/finmkt/fnmkt_benchm/id/finmkt_reformrates

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