Canadian Alternative Reference Rate
Working Group

October 2021

This document is out of date. For the most recent version of CARR's transition roadmap, please visit the documents page of CARR's website.

Interest-rate benchmark reform: Transition to risk-free rates

Introduction: Global benchmark reform matters to Canadian markets

Over the next few years, global financial markets will undergo a rapid and monumental transformation

- Key USD LIBOR (London Interbank Offered Rate) settings are set to disappear after June 2023, affecting hundreds of trillions of dollars of financial instruments, contracts and agreements
    - LIBOR benchmark interest rates are published for seven tenors in five currencies (USD, GBP, JPY, EUR, CHF)
    - Non-USD LIBOR set to disappear after end-2021
- Market participants without direct LIBOR exposure will also be affected as global liquidity shifts from interbank offered rates (IBOR) to risk-free rates (RFR) even in non-LIBOR jurisdictions
- **Global authorities support the move away from IBOR benchmarks, especially for derivatives, given their potential fragilities and financial stability concerns**
- Canadian benchmark reform efforts are being coordinated by the Bank of Canada through the Canadian Alternative Reference Rate working group (CARR):
    i. Make sure Canadian interest rate benchmarks are robust and effective
    ii. Align with global efforts to move derivatives and cash products to reference risk-free rates

Introduction: What do we mean by interest rate benchmarks

Interest rate benchmarks are referenced in hundreds of trillions of dollars of financial products globally, including in derivatives, floating rate notes, various types of loan products, structured products etc. They are used to calculate the interest due for a certain time period. Two types of interest rate benchmarks have been in focus:

Interbank Offered Rates (IBOR):

- These are currently the most prevalent globally and have been around for decades. They include LIBOR, Euribor, TIBOR, BBSW and CDOR etc. They are:
  - Based on short-dated interbank markets
  - They can be based on transactions or expert judgement
  - They are published for a specific term e.g., 3-month (i.e. are a forward looking term rate)
  - They incorporate a credit component i.e. have a spread relative to equivalent term risk-free rates

Risk-free rates (RFR):

- These are more recent and were previously used only in overnight index swaps. They include SOFR, SONIA, TONA, SARON, €STR, AONIA and CORRA etc. They are:
  - Risk-free (secured) or near risk-free rates (unsecured)
  - Based on overnight transactions

Global developments

Background

Confidence in the reliability and robustness of major interest rate benchmarks was undermined by attempted market manipulation, false reporting and declining liquidity in the interbank unsecured market. These benchmarks form a cornerstone of the global financial system: between 300 to 400 trillion US dollars worth of products reference them.

- G20 tasked the Financial Stability Board (FSB) in February 2013 to undertake a review of the most widely used benchmarks globally
- The FSB formed in June 2013 the Official Sector Steering Group (OSSG), comprised of senior officials from central banks and regulatory agencies, to conduct this review:
  - Focus was first on the three major interbank offered rate benchmarks (LIBOR, EURIBOR and TIBOR)
  - Work was supported by a Market Participants Group (MPG) of global buy- and sell-side institutions

Background

In 2014, the FSB recommended steps to strengthen key IBOR benchmarks, and to promote the development and adoption of alternative nearly risk-free reference rates where appropriate:

- Reform IBORs by making them more transaction based
- Develop viable RFRs to potentially replace IBORs for certain types of transactions (e.g. derivatives)
- Improve fallback provisions/language in contracts referencing IBORs

From 2014 to the middle of 2017 the global benchmark reform efforts focussed on:

1. Making existing IBORs more transaction based (benchmark administrators)
2. Refining existing or creating new RFRs (public-private partnerships)
3. Developing more robust fallback language for both derivative and cash products (public-private partnerships and industry associations)

Background

Markets had expected that most jurisdictions would continue to have both an IBOR and an RFR as viable benchmarks (i.e. "multi-rate approach")

- This changed **in July 2017 when the UK Financial Conduct Authority (FCA)** announced **that they will no longer compel LIBOR panel member banks to contribute to the benchmark after the end of 2021**. This left open the potential for LIBOR to disappear after 2021:
  - Exposure to LIBOR contributes for the bulk of the global IBOR exposure, with the vast majority to USD LIBOR
  - According to the LMA close to 120 jurisdictions have exposure to LIBOR (mostly USD) through syndicated loans

Benchmark reform has major global implications

- Key areas of focus since the FCA speech:
  - Determining whether a term RFR is needed to support the transition to overnight RFR benchmarks
  - Developing or modifying financial market infrastructures to handle overnight RFRs
  - Developing robust IBOR fallbacks for new products and having processes to handle legacy contracts
  - Market participants assessing their exposure to LIBOR

The pace of global transition accelerated in 2020 as it became clear that LIBOR was going to disappear after the end of 2021

A world without LIBOR

On March 5, 2021 Ice Benchmark Administration announced its intention to cease the publication of LIBOR as follows:

- All GBP, EUR, CHF and JPY LIBOR settings at end-2021
- 1-week and 2-month USD LIBOR tenors at end-2021 and remaining tenors at end-June 2023

Globally regulated financial institutions, including in Canada, are also expected to no longer book new USD LIBOR transactions after the end of 2021

LIBOR's end is in sight

Work needs to be done <u>now</u> to make sure markets are prepared

Systems need to be ready, fallbacks need to be incorporated into contracts

Canada must be prepared for a world without LIBOR

Market participants without direct LIBOR exposure will also be affected as global liquidity shifts from IBORs to RFRs even in non-LIBOR jurisdictions

Calculation methodology needs to adapt as a result of this transition

The global financial system is built around forward-looking term interest rates, which include both USD LIBOR and CAD CDOR

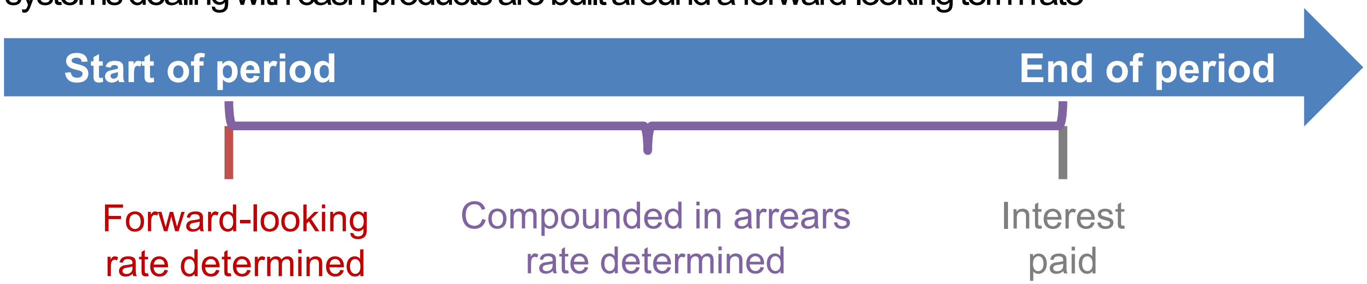
- **But the new rates are overnight risk-free rates**:
  - They are NOT forward-looking term rates
  - They do not incorporate a bank credit component

Changes are required to adopt these overnight rates

Payments/coupons need to be calculated in arrears

RFR-based payments/coupons are calculated in arrears (i.e. not known until the end of the calculation period)

- Most systems dealing with cash products are built around a forward-looking term rate



This means that:

- Systems or processes need to be adjusted to handle the new methodology
- Legacy transactions may need to be modified
- New products need to be created
- Pricing needs to re-adjust to incorporate the basis between the IBOR and the RFR

Since many borrowers and lenders would prefer to know their payments in advance, work is being done to potentially develop forward-looking term RFRs

- Many jurisdictions have developed (or are developing) term versions of their domestic risk-free rates. ARRC has formally recommended a term version of SOFR developed by the CME
- Some alternative credit sensitive benchmarks have also been recently developed in the US and may play a role in global benchmark transition for some types of products (e.g., revolving loan facilities)

Fallback language has been a key part of transition

Trillions of dollars' worth of contracts reference LIBOR, often in contracts that will not mature until after LIBOR will cease being published. Legal "fallback language" describes what happens to these contracts when the main benchmark disappears

Derivatives: International Swaps and Derivatives Association (ISDA) has developed fallback language and updated its derivatives documentation to prepare derivatives markets for LIBOR's cessation

- ISDA's IBOR Fallbacks Supplement added robust fallbacks to ISDA's standard definitions for new interest rate derivatives entered after January 25^{th}, 2021 linked to certain IBORs, including LIBOR and CDOR

- ISDA's IBOR fallbacks protocol will incorporate these new fallbacks to all legacy contracts entered between any two counterparties that sign the protocol, providing contract certainty once LIBOR is no longer published. Firms that do not opt into the protocol will have to bilaterally renegotiate every derivative, liquidate their exposure, or face large risks

Cash products: Some cash instruments reference LIBOR but have either no fallbacks or flawed fallbacks (eg LIBOR's last print). These "tough legacy" contracts need to be amended before LIBOR ceases being published

- Some jurisdictions (e.g. the US) are pursuing "legislative solutions", while others (the UK) are consulting on powers to create to create a temporary "synthetic" GBP (and potentially JPY) LIBOR

- Where legislative solutions or synthetic LIBOR are not available, firms will have to bilaterally negotiate fallbacks

Reforming global markets requires international cooperation

Having global consistency, to the extent possible, across both products and jurisdictions (currencies) will help promote liquidity, ease system (process) changes, promote a more efficient financial system and facilitate an easier global transition to using RFRs

- Products such as cross-currency basis swaps and multi-currency lending/borrowing facilities will drive the need for increased consistency
  - ARRC is leading the global coordination efforts for RFR cross-currency basis swap conventions
  - The LMA, LSTA and the various national benchmark working group are coordinating and developing syndicated multi-currency in-arrears RFR loan documentation/conventions
- National working groups are reaching out to system vendors to make sure that front-, middle- and back-office systems can adapt to the in-arrears calculation methodology needed for using overnight RFRs

Cross-border cooperation and information sharing is necessary to facilitate the global transition to RFRs

Global benchmark transition impacts multi-rate jurisdictions

- Canada and some other other jurisdictions like Australia are considered “multi-rate jurisdictions”—they are expected to have more than one key interest rate benchmark in the near term (ie CDOR and CORRA for Canada)
- As we get closer LIBOR’s end date, **global liquidity is expected to move to RFR-based products/markets in LIBOR jurisdictions. This will potentially drive liquidity into RFRs in multi-rate jurisdictions**

Products such as cross-currency basis swaps and multi-currency lending/borrowing facilities will drive the need for increased trading in CORRA based products

International market participants are expected to want equivalent RFR products (e.g. CORRA futures) to participate and trade in local markets

Global issuers may potentially cease to issue IBOR-based products preferring to only issue RFR based FRNs, or at least will only do so if the cost advantage is significantly larger

Canadian developments

Canadian benchmark reform efforts are led by CARR

Benchmark reform is a global issue, so the Bank of Canada created CARR (the Canadian Alternative Reference Rate working group), sponsored by the Canadian Fixed-Income Forum (CFIF), in March 2018

- CARR's membership includes both the public and private sectors (both the buy and sell sides)
  - CARR also works closely with other stakeholders like the CBA, CBIA, IIAC, CTA, ISDA, Canadian regulatory authorities and other national benchmarks working groups
- CARR's initial work was focused on enhancing CORRA
- CFIF expanded CARR's terms of reference in September 2020 to encompass two main objectives:

1. **RFR Transition** - supporting the adoption of, and transition to, CORRA as a key financial benchmark for Canadian derivatives and securities

2. **Credit Benchmarks** - analyzing for the current status of CDOR and its efficacy as a benchmark, as well as making recommendations based on the analysis to ensure Canada's benchmark regime is robust, relevant and effective in the years ahead

CORRA is Canada’s risk-free rate

- CORRA is a transaction-based overnight risk-free interest rate benchmark that has been published since 1997
    - CORRA is meant to be a robust, reliable and representative measure of the secured overnight funding rate in Canada
    - It is referenced in over $1.7 trillion in financial instruments including overnight index swaps, a sizable derivatives market
- The Bank of Canada became CORRA’s administrator in June 2020 and implemented a new calculation methodology developed by CARR
    - It is calculated based on GoC repo transactions conducted between any two unaffiliated counterparties
    - The Bank of Canada provides CORRA data on its website at no cost as a public good. It also publishes a CORRA Compounded Index to facilitate the use of CORRA
- The Bank of Canada also established a CORRA Advisory Group (CAG) to advise the Bank of Canada on changes in repo market functioning and emerging methodology issues, as well as on methodology or production changes undertaken as part of methodology reviews
    - CAG is comprised of a wide range of market participants from across Canada’s financial system

CDOR is Canada's risk-sensitive rate

- CDOR measures the rate that Canadian banks are willing to lend to clients with existing credit agreements via banker's acceptances
  - CDOR is a survey-based rate (i.e. it is not a strictly transaction-based benchmark) that reflects both term risk and credit risk
  - BAs outstanding total about $160 billion of which approximately 45% are sold into market, while CDOR is referenced in over $17 trillion worth of derivatives
- CDOR is administered by Refinitiv Benchmark Services (UK) Limited (RBSL)
  - CDOR is calculated as the average of the CDOR contributions from Canada's big-6 banks, after trimming the highest and lowest contributions. More details on CDOR's calculation methodology can be found here
  - CDOR currently has three tenors (1-month; 2-month and 3-month). After a public consultation, RBSL discontinued CDOR's 6- and 12-month tenors from Monday May 17, 2021 due to a lack of underlying BAs in those tenors
- The OSC and AMF will designate CDOR a domestically critical interest rate benchmark this month, making it subject to the OSC and AMF's regulatory regime for financial benchmarks

CARR's significant milestones so far

- Developed, in consultation with industry, an enhanced methodology for calculating CORRA
- Bank of Canada became administrator of CORRA from June 15, 2020
- Coordinated with the Montreal Exchange in its launch of three-month CORRA futures
- Reconstituted CARR with senior membership and an enhanced mandate
- Published recommended legal fallback language for FRNs referencing CDOR. CORRA fallbacks language to follow soon
- Will publish soon recommended conventions for CORRA FRNs and for inter-bank swaps referencing CORRA
- Published a calculation methodology for CORRA-in-arrears; the Bank of Canada began publishing a CORRA Compounded Index on April 6, 2021

All published market conventions or fallback language is voluntary for market participants to use

CARR’s Transition subgroup is preparing Canada to rely on CORRA

- Transition’s focus is on facilitating and promoting the use of CORRA in Canadian financial products
  - Encouraging CORRA FRN issuance
  - Increasing liquidity of CORRA based derivatives (i.e. OIS), including in longer maturities
- This work has resulted in enhancements to CORRA’s methodology (implemented when the Bank of Canada became administrator), the publication of fallback language for FRNs referencing CDOR and CORRA, conventions for CDOR FRNs and interbank swaps referencing CORRA (and either CDOR or SOFR), CORRA loan conventions in multi-currency loan facilities and much more
- Transition’s efforts are supported by a number of workstreams:

Fallback language	Cash conventions	Swaps conventions
Futures	CORRA production	Accounting, Tax and Regulation

CARR members expect CORRA to become Canada’s primary interest-rate benchmark

CARR's Credit Sensitive subgroup formed to review BAs & CDOR

- In light of various changes to market structure and regulations, CARR is reviewing the structure of BAs and CDOR, which have not materially changed since their introduction decades ago
- The Credit Sensitive subgroup has begun with three workstreams, focused on: the size and scope of the use of CDOR and the market for BAs, the CDOR submission process, and the efficacy of the BA market
- The goal of this workstream is to publish a white paper detailing the current status of CDOR and, if there is a need, potentially also some next steps

Key areas for the analysis of CDOR architecture						
CDOR is voluntary and survey-based: potentially subject to discontinuation risks like LIBOR	Refinitiv: 6M & 12M CDOR settings have been discontinued	BAs concentrated in short term tenors (primarily 1M)	Survey-based submission, panel has shrunk from 9 to 6 banks	Post-crisis regulatory reforms have impacted the effectiveness of BAs as funding tool	Potential implications from recent CSA benchmark rules	Lack of transparency does not reflect a "market price"

CDOR is under increasing pressure

CDOR is a voluntary, survey-based measure that is potentially subject to the same discontinuation risks as other global IBORs

- The BA market remains relatively robust, but BA issuance is concentrated in the very short tenors
- Post-crisis regulatory changes make the short-dated BAs a relatively expensive funding tool for banks
- The number of panel banks has declined from 9 to 6 over the past few years

Other jurisdictions with similar loan products, have made substantial changes over the past decades to their underlying loan structures to better adapt to the new regulatory environment with potential implications to their benchmarks and underlying money market products/securities

Conclusion

Is your institution ready for this transition to RFRs?

1. **Know your exposures to benchmark rates like LIBOR and CDOR**
   - Derivatives, loans and bonds, but these rates may also be embedded in purchase contracts, leases etc
2. **Know how these exposures will be affected if their benchmark stops being published**
   - What rate do your contracts fall back to if the existing rate is no longer published ?
   - Are you updating your fallback language to incorporate for the potential termination of LIBOR/CDOR for any new transactions
3. **Make sure your processes or systems able to handle overnight benchmarks (e.g. computation/payment of interest in arrears)**
4. **Consider proactively managing your exposures**
   - As global markets transition from LIBOR to risk-free rates, liquidity in products referencing risk-free rates will improve and they may become the cheaper alternative.
   - Even if products have robust fallbacks, it may be operationally less intense or risky to instead renegotiate or close out positions that might end up using fallbacks.

Annex

Size and scope of CORRA / CDOR

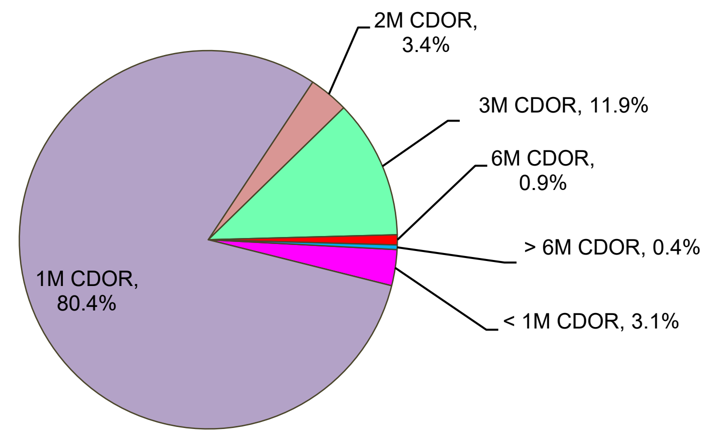
- CARR is currently completing a survey on the size and scope of CDOR's use across the Canadian financial system. **These numbers are preliminary and confidential, please do not distribute.**

Product	Outstanding (CAD billions)
OTC Interest Rate Derivatives	16,611
Exchange Traded Derivatives	756
Loans	218
Deposits	58
FRNs	234
BDNs	39
Securitized Products	127
Total	**18,043**

Source: CARR data survey, LCH, Bloomberg.

Chart 2: Bankers Acceptance ('BA') Liabilities

BAs outstanding by reference rate



Source: Survey data

Last observation: October 31, 2020

Evolution of Benchmark Reform

Feb. 2013
G-20 tasks FSB to improve oversight and governance frameworks of benchmarks

June 2013
FSB establishes OSSG

July 2014
FSB Report: Reforming Major Interest Rate Benchmarks is published

June 2017
SOFR selected as preferred USD RFR

July 2017
Andrew Bailey announces that FCA would not compel banks to submit LIBOR quotes after 2021

March 2018
CARR created

Apr. 2018
SOFR published
Reformed SONIA published

July 2018
Recommended "enhanced CORRA as the Canadian RFR

Jan / Feb 2019
Enhanced CORRA Consultation paper published.
Fallback Principles published

July 2019
New CORRA methodology approved
Bank of Canada announced new CORRA administrator role

Q4 2019
ISDA's final term & spread adjustment methodology published

June 15, 2020
Bank of Canada became CORRA's administrator
Montreal Exchange launched CORRA futures product.

Q3 2020
Bloomberg publishes final adjustments and fallback rates

October 2020
CME and LCH to begin discounting cleared USD derivatives using SOFR

November 2020
Refinitiv announces cessation of 6m and 12m CDOR

December 2020
Ice Benchmark Administration (IBA) to announces consultations on ending LIBOR benchmarks

January 25, 2021
ISDA's new fallbacks come into effect

May 17, 2021
Refinitiv to no longer publish 6m and 12m CDOR

Q4 2021: End of LIBOR
Ice Benchmark Administration (IBA) to discontinue all tenors for GBP, CHF, JPY and EUR LIBORs, as well as the 1-week and 2-month USD LIBOR tenors.

End-June 2023
IBA to discontinue remainder of USD LIBOR tenors

* Future dates are subject to revision

Key global RFRs

LIBOR currencies

Jurisdiction	RFR	Description
US	Secured overnight financing rate (SOFR)	Secured overnight repo rate Administered by FRBNY Data source: tri-party repo, FICC GCF, FICC bilateral
UK	Reformed Sterling overnight Index Average (SONIA)	Unsecured overnight rate Administered by Bank of England Data source: Form SMMD
European Union	Euro short-term rate (€STR)	Unsecured overnight rate Administered by ECB (October 2, 2019) Data source: MMSR
Japan	Tokyo overnight average rate (TONA)	Uncollateralized call rate Administered by Bank of Japan Data source: MM brokers
Switzerland	Swiss Average Rate Overnight (SARON)	Secured overnight rate Administered by SIX Swiss Exchange Data source: CHF interbank repo
Canada	Canadian Overnight Repo Rate Average (CORRA)	Secured overnight rate Administered by BoC Data source: Designated inter-dealer brokers; MTRS2
Australia	Interbank overnight cash rate (Cash Rate) Also known as the Australian Overnight Index Average (AONIA)	Unsecured overnight rate Administered by the Reserve Bank of Australia Data source: Reserve Bank Information and Transfer System

Committees Working on Interest Rate Benchmark Reform

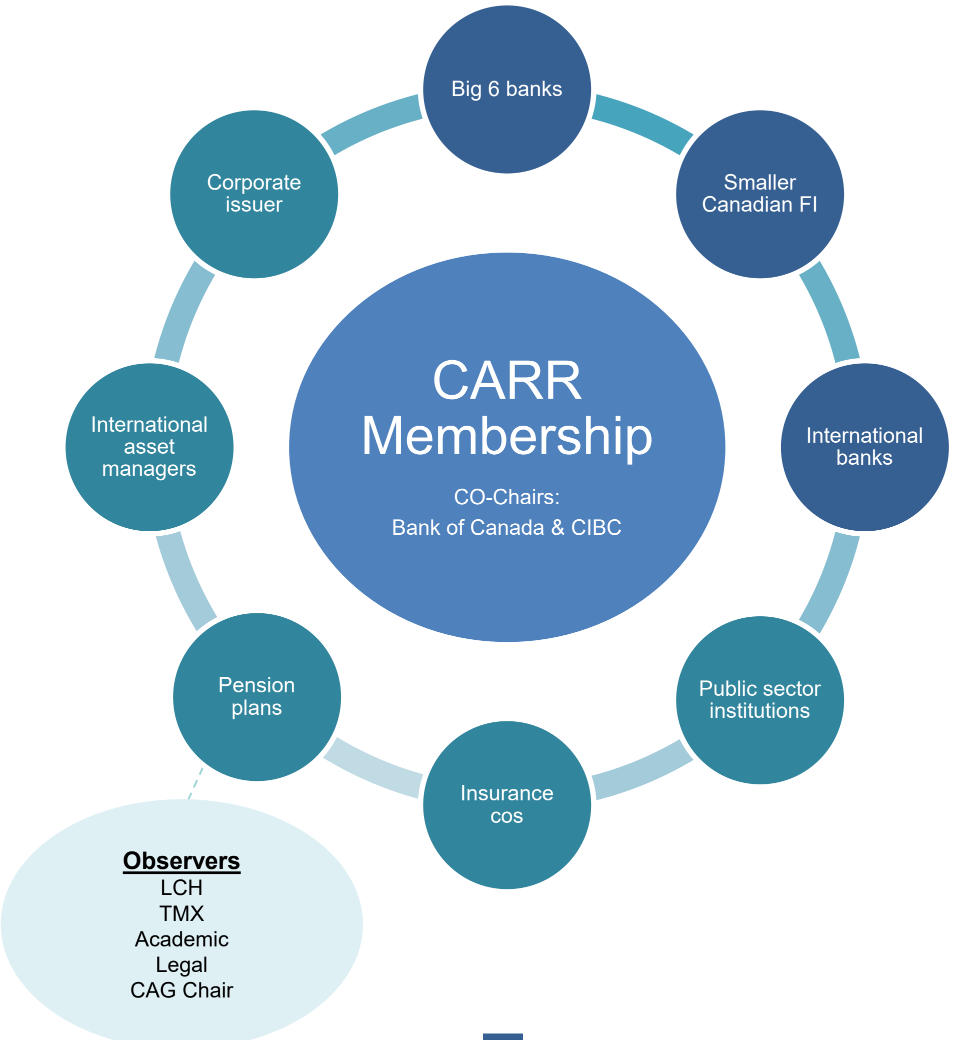
LIBOR currencies (US, UK, Europe, Japan, Switzerland)

Jurisdiction	Committees	Link
US	Alternative Reference Rate Committee (ARRC)	https://www.newyorkfed.org/arrc
UK	The Working Group on Sterling Risk-Free Reference Rates	https://www.bankofengland.co.uk/markets/transition-to-sterling-risk-free-rates-from-libor
Europe	Working group on euro risk-free rates	https://www.ecb.europa.eu/paym/initiatives/interest_rate_benchmarks/WG_euro_risk-free_rates/html/index.en.html
Japan	Cross-Industry Committee on Japanese Yen Interest Rate Benchmarks	https://www.boj.or.jp/en/paym/market/jpy_cmte/index.htm/
Switzerland	National Working Group on Swiss Franc Reference Rates	https://www.snb.ch/en/ifor/finmkt/fnmkt_benchm/id/finmkt_reformrates
Canada	Canadian Alternative Reference Rate working group (CARR)	https://www.bankofcanada.ca/markets/canadian-alternative-reference-rate-working-group/

Other Useful Links

Organization	Link
International Swaps and Derivatives Association, Inc. (ISDA)	https://www.isda.org/category/legal/benchmarks/
Financial Stability Board - Official Sector Steering Group (OSSG)	http://www.fsb.org/work-of-the-fsb/policy-development/additional-policy-areas/financial-benchmarks/
Financial Conduct Authority (FCA)	https://www.fca.org.uk/markets/benchmarks
ICE Benchmark Administration (IBA)	https://www.theice.com/iba

CARR's current membership composition



= Sell-side = Buy-side

- 18 institutions plus the Bank of Canada
- Membership composition is meant to capture all aspects of benchmark usage
- Decision making meant to be by consensus
- Bank of Canada provides secretariat functions
- Monthly meetings, either virtually or in-person

Acronyms

Acronym	
ARRC	US Alternative Reference Rate Committee
BA	Bankers acceptance
BoC	Bank of Canada
CARR	Canadian Alternative Reference Rate working group
CDOR	Canadian Dollar Offered Rate
CHF	Swiss Franc
CME	CME Group
CORRA	Canadian Overnight Repo Rate Average
EONIA	Euro Overnight Index Average
EUR	Euro
EURIBOR	Euro Interbank Offered Rate
FCA	UK Financial Conduct Authority
FSB	Financial Stability Board
FRN	Floating rate note
G20	Group of 20
GBP	UK pound sterling
GoC	Government of Canada

Acronym	
JPY	Japanese Yen
IBOR	Interbank offered rate
LCH	LCH Group
LIBOR	London Interbank Offered Rate
LMA	Loan Markets Association
LTSA	Loan Syndications and Trading Association
MPG	FSB OSSG Market Participants Group
MTRS	Market Trade Reporting System
OIS	Overnight Index Swap
OSSG	FSB Official Sector Steering Group
RFR	Risk-free rate
SARON	Swiss Average Rate Overnight
SONIA	Sterling Overnight Index Average
SOFR	Secured Overnight Financing Rate
USD	US Dollar
€STR	Euro short-term rate