WHAT IS LIBOR AND WHY DOES IT MATTER?

Interbank Offered Rates (IBORs) are unsecured interest rates published for periods ranging from overnight to 12 months. These rates are used for a vast number of financial instruments and products, including products that you may have entered into or may be considering entering into with BNY Mellon.

One of the most widely used IBORs is the London Interbank Offered Rate (LIBOR), which is quoted in British Pound Sterling (GBP), US Dollar (USD), Euro (EUR), Swiss Franc (CHF) and Japanese Yen (JPY). These rates are derived from quotes submitted by a group of panel banks that represent each bank’s cost of obtaining a loan from another member bank in the London interbank market for each of the published tenors.

Since the financial crisis, the aggregate amount of actual unsecured interbank borrowing transactions has declined sharply – sometimes this is less than $1 billion per day. However, the IBORs also act as a benchmark for short-term interest rates across a wide spectrum of cash and derivative products. The volume of these transactions exceeds $400 trillion globally.

TRANSITIONING AWAY FROM LIBOR

Given the structural weaknesses of LIBOR identified during these investigations, various regulatory authorities have announced support for a reduced reliance on IBORs in favor of rates based on actual underlying transaction rates. In particular, LIBOR is expected to be phased out as early as the end of 2021.

Regulators around the globe have initiated forums for market participants to identify alternative reference rates (ARRs).

These forums were tasked with three primary objectives:

- Identify a rate that was more firmly based on transactions from a robust underlying market and aligned with the International Organization of Securities Commissions (IOSCO) principles.
- Develop a plan to facilitate the acceptance and use of selected alternative rates by market participants.
- Consider best practices in contract design that would ensure resiliency in the event of possible cessation or material alteration to the selected alternative rate or any subsequent reference rate.
PROPOSED REGIONAL BENCHMARK REPLACEMENTS

As part of this work, regulators have identified various ARRs as possible replacements, and are considering ways of effecting the transition away from IBORs. Currently, it is not possible to confirm either the rates that will be used as alternatives to LIBOR or the adjustment spreads, if any, that may be applied to a given replacement rate.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Prior Benchmark (internally assumed end date)</th>
<th>Replacement Rate</th>
<th>Description</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD LIBOR</td>
<td></td>
<td>SOFR</td>
<td>Secured Overnight Financing Rate</td>
<td>Transition plan has been outlined</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Fully transaction based</td>
<td>Publication of rate since April 2018</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Covers multiple Treasury repo market segments</td>
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<tr>
<td>EONIA</td>
<td>EURIBOR (reformed)</td>
<td>ESTR – Euro Short Term Rate</td>
<td>Unsecured</td>
<td>Publication of ESTR since October 2019</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EURIBOR</td>
<td>• Transaction based</td>
<td>EURIBOR has been reformed and will continue as a BMR compliant rate</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Volume weighted-trimmed mean of transactions</td>
<td></td>
</tr>
<tr>
<td>JPY LIBOR</td>
<td></td>
<td>TONAR</td>
<td>Unsecured</td>
<td>Investigation of market practices and contract design of TONAR ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tokyo Overnight Average Rate</td>
<td>• Transaction based (call rate market)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• Calculated on market broker information</td>
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<td></td>
<td></td>
<td></td>
<td>• Weighted by volume</td>
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</tr>
<tr>
<td>GBP LIBOR</td>
<td></td>
<td>Reformed SONIA</td>
<td>Unsecured</td>
<td>Reformed SONIA since April 2018</td>
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<tr>
<td></td>
<td></td>
<td>Sterling Overnight Index Average</td>
<td>• Fully transaction based</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• Encompasses a robust underlying market</td>
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<td></td>
<td></td>
<td></td>
<td>• Includes volume-weighted trimmed mean</td>
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<tr>
<td>CHF LIBOR</td>
<td></td>
<td>SARON</td>
<td>Secured</td>
<td>TOIS now discontinued</td>
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<tr>
<td></td>
<td></td>
<td>Swiss Average Overnight Rate</td>
<td>• Introduced in 2009</td>
<td>SARON swaps began trading in April 2017</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Reflects interest paid on o/n repo</td>
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</tbody>
</table>

*BMR = Benchmarks Regulation

CONSIDERATIONS OF TRANSITIONING

BNY Mellon is currently preparing for this transition, at both an industry level and across our organization. We are actively involved in industry efforts to manage the transition from IBORs.

As they prepare for IBOR transition, it is critical for all entities to:

• Gauge their exposure to the IBORs
• Identify potential risks associated with this transition
• Determine what action, if any, is necessary to mitigate those risks

The transition will be two-fold:

1. Markets need to develop, accept and process new ARR products. Challenges and considerations during this phase include:
   • The new rates will likely have no term structure, requiring complex and extensive changes to IT systems and processes to support the new products
   • Use of daily interest rates with straight and compounding calculations may limit or delay standardization
   • Lack of clarity combined with the time constraints = action under uncertainty

2. Markets need to prepare for the transition of legacy LIBOR products, if and when LIBOR ceases to exist:
   • In order to transition legacy contracts into the new ARR world, various prerequisites need to be fulfilled:
     - Analysis and understanding of existing fallback language in contracts
     - Existence of new ARR products to which old IBOR products can be transitioned
     - Agreement on the P&L, risk and tax implications arising out of transition
KEY INDUSTRY DEPENDENCIES IMPACTING THE TRANSITION WORKPLAN

1H 2020 – ISDA seeking to amend definitions and offer a protocol
By Q2 2021 – CCPs to no longer accept new swap contracts for clearing with EFFR as PAI and discounting

2019

1H 2019 – Continued to build liquidity in SOFR markets. ARRC published final recommendations for better fallback language in FRNs, business loans and securitizations

2020

2H 2020 – LOH and CME to move PAI/discounting to SOFR

2021

EOY 2021 – Possible cessation of publication of LIBOR

IMPLEMENTATION CHECKLIST

As LIBOR is deeply embedded in the financial ecosystem, market participants will need to assess, mobilize, and execute a program that provides a solid foundation toward a smooth transition to the new benchmark rates. The information below, based on the Alternative Reference Rates Committee (ARRC) checklist, outlines a general list of action items that affected firms should consider as part of their overall strategy in transitioning to the new rates.

1 Establish Program Governance
Oversee the delivery and coordination of the firm’s enterprise-wide LIBOR transition program

2 Develop Transition Management Program
Evaluate and mitigate the risks associated with transition with specific considerations for unique product and client exposures

3 Implement Communications Strategy
Proactively engage, consistently communicate, and increase levels of education with impacted internal and external stakeholders

4 Identify and Validate Exposure
Value SOFR-based products as part of transition to using those products

5 Develop Product Strategy
Strategize on redesigning or transitioning the existing portfolio of LIBOR products, including creating or using new products based on SOFR

6 Oversee Risk Management
Identify, measure, monitor and control financial and non-financial risks of transition and establishing processes

7 Assess Contractual Remediation Impact and Design Plan
Understand the financial, customer, and legal impacts resulting from transitioning from LIBOR to SOFR

8 Develop Operational and Technology Readiness Plan
Address the large-scale operating model, data and technology implications required for LIBOR transition

9 Analyze Accounting and Reporting
Determine accounting considerations along with related reporting considerations

10 Assess Taxation and Regulation
Determine the tax and regulatory reporting considerations

BNY Mellon has established cross-functional working groups to assess the impact across our client base and develop a phased approach in transitioning impacted accounts from LIBOR to the final replacement benchmark rates.

As industry discussions on replacement benchmark rates progress, BNY Mellon continues to work with regulators, the industry and clients to execute this transition in a balanced and transparent manner.

For more information on BNY Mellon’s preparedness for LIBOR, please contact your BNY Mellon representative.