USD LIBOR® METHODOLOGY

This methodology is applicable only to USD LIBOR.

1. Introduction

ICE Benchmark Administration Limited (IBA) is the Benchmark Administrator of USD LIBOR.

The USD LIBOR Methodology is designed to produce an average rate that is representative of the rates at which large, leading internationally active banks with access to the wholesale, unsecured funding market could fund themselves in such market in US dollars for certain tenors.

Following the cessation of certain LIBOR currencies and tenors after 31 December 2021, this "panel bank" Methodology relates only to USD LIBOR calculated using USD LIBOR panel bank ("Contributor Bank") submissions from 4 January 2022 until 30 June 2023 in five tenors (overnight, one month, three months, six months and twelve months).

2. The USD LIBOR Output Statement and the Waterfall Methodology

The USD LIBOR Output Statement sets out a standardised, transaction data-driven methodology for Contributor Banks' submissions.

Each Contributor Bank's submissions made in accordance with the USD LIBOR Output Statement are determined through the use of a "Waterfall Submission Methodology", which utilises eligible transaction data where available, transaction-derived data otherwise, and, if neither is available, market and transaction data-based expert judgement, appropriately framed, using the bank's own internally approved procedure (based on a set of permitted inputs and agreed with IBA).

IBA's objective in using the USD LIBOR Output Statement is to publish, in all market circumstances, a wholesale funding rate anchored in unsecured, wholesale funding transactions to the greatest extent possible.

3. Review

This USD LIBOR Methodology document will be kept under review by IBA in conjunction with the LIBOR Oversight Committee.

USD LIBOR METHODOLOGY

1. Introduction

Objectives of the USD LIBOR Output Statement and Waterfall Methodology are to:

- Produce a wholesale funding rate, anchored in unsecured, wholesale funding transactions to the greatest extent possible;
- Provide a standardised, transparent and robust methodology for USD LIBOR and a single, clear and comprehensive USD LIBOR definition; and
- Ensure the rate can adapt to changing market conditions and stakeholder needs.

USD LIBOR is calculated using Contributor Bank submissions, determined in response to the USD LIBOR Output Statement through the use of a standardised, transaction data-driven Waterfall Methodology (the "Waterfall Submission Methodology"), which is set out below:

Level 1 (Transaction-Based)

Where a Contributor Bank has sufficient eligible transactions, a volume weighted average price (VWAP) of such eligible transactions, with a higher weighting for transactions booked closer to 11:00 London time. Eligibility criteria for transactions are specified by IBA.

Level 2 (Transaction-Derived)

Where a Contributor Bank has insufficient eligible transactions to make a Level 1 submission, it will seek to make a submission based on transaction-derived data, including time-weighted historical eligible transactions adjusted for market movements and linear interpolation. Eligibility criteria for transaction derived-data are specified by IBA.

Level 3 (Expert Judgement)

Where a Contributor Bank has insufficient eligible transactions or transaction-derived data to make a Level 1 or a Level 2 submission, it will submit the rate at which it could fund itself at 11:00 London time with reference to the unsecured, wholesale funding market. Each Contributor Bank agrees its defined Level 3 submission methodology with IBA, basing its rate on transactional data, related market instruments, broker quotes and other market observations.

Level 1 and Level 2 submissions are mathematically based on transaction data and the methodology is common to all Contributor Banks and the Contributor Banks have no discretion.

Contributor Banks must establish their Level 3 (Expert Judgement) benchmark submissions on the basis of internally approved procedures and inputs allowed by IBA. A bank must review this methodology as and when market circumstances require, to ensure that its USD LIBOR submissions remain credible and robust at all times.

2. USD LIBOR Output Statement:

USD LIBOR OUTPUT STATEMENT

The LIBOR Output Statement is applicable only to USD LIBOR and all references to LIBOR below are solely to USD LIBOR.

LIBOR is the benchmark published under that name and calculated by ICE Benchmark Administration Limited (IBA) on London business days.

It is a wholesale funding rate anchored in LIBOR panel banks' unsecured wholesale transactions to the greatest extent possible, with a waterfall to enable a rate to be published in all market circumstances:

Level 1:

A volume weighted average price (VWAP) of transactions in unsecured deposits and primary issuances of commercial paper and certificates of deposit since the previous submission, with a higher weighting for transactions booked closer to 11:00 London time.

Eligible counterparties are providers of wholesale unsecured funding including:

- banks
- central banks
- governmental entities
- multilateral development banks
- non-bank financial institutions
- sovereign wealth funds
- supranationals, and
- corporations as counterparties to a bank's funding transactions for maturities greater than 35 days.

Transactions in approved major funding centres are taken into account without price adjustment, subject to minimum transaction sizes and number of trades as specified by IBA.

Level 2:

Transaction-derived data, including time-weighted historical transactions adjusted for market movements and linear interpolation.

Level 3:

If the LIBOR panel bank has insufficient Level 1 and Level 2 transactions, it should submit the rate at which it could fund itself at 11:00 London time with reference to the unsecured wholesale funding market. In order to determine this rate the bank should follow its internally approved procedure agreed with IBA.

LIBOR is calculated as of 11:00 every London business day and normally published by IBA at 11:55 London time; it is a trimmed arithmetic mean that excludes the highest and lowest quartile of submissions. Each panel bank's submission carries an equal weight, subject to the trimming.

The panel banks' individual submissions are published by IBA after 3 months on a non-attributed basis.

Further details are published at www.theice.com/IBA.

IBA is authorised and regulated by the Financial Conduct Authority.

3. USD LIBOR input data

USD LIBOR submissions must be based to the greatest extent possible on wholesale unsecured funding transactions.

A Contributor Bank must formulate its submissions based on eligible transactions where these meet the specifications set out below in terms of:

- the required quality and accuracy of the input data
- the required quantity of the input data
- the priority in which input data is to be used.

Contributor Banks must follow the provisions in the "ICE LIBOR USD submission methodology" document provided to the banks by IBA. The main provisions are summarised below.

<u>Eligible trades</u>

Eligible trades are vanilla funding transactions in the following funding types:

- Unsecured term deposit
- Commercial paper (CP) - fixed rate and primary issuance, or
- Certificate of deposit (CD) - fixed rate and primary issuance.

A minimum of two trades with different counterparties are required for a transaction (Level 1) or a transaction derived (Level 2) submission.

For a Level 1 and Level 2 submission, the notional amount of a trade must equal or exceed USD 10 Million.

The thresholds apply to all tenors.

Eligible counterparty types

The counterparty type must be in one of the following categories:

- Banks
- Sovereign Wealth Funds
- Supranational Corporations, Central Banks and Multilateral Development Banks
- Government entities (including local /quasi-governmental organisations)
- Non-Bank Financial Institutions, including: Brokers, Building Societies, Money Market Managers and Insurers
- Corporates as counterparties to a bank's funding transactions and only for maturities greater than 35 calendar days (i.e. longer than 1 month tenor bucket). Transactions with corporates as counterparties with maturities of 35 days or less can only be included in a Level 3 submission if it is a part of a bank's internally approved procedure and must be used consistently.

Different counterparties are defined as having different legal entities and different immediate parent legal entities for the trades which have been aggregated.

A trade is ineligible if it is an internal trade (i.e. with a subsidiary of the bank), a retail trade or a trade with a counterparty which is not listed above.

The definition of subsidiaries is set out in Section 1159 of the UK Companies Act 2006.

Tenor bucketing

Eligible trades must be assigned to a USD LIBOR tenor based on their duration (start/value to maturity date) as follows:

Tenor	From	To
	Business Days	
ON	01	01

Tenor	Calendar Days	
1M	25	35
3M	80	100
6M	150	210
12M	330	390

For Level 1 submissions the overnight tenor can only include overnight trades.

For the overnight tenor, where the tenor run for the submission day crosses a month-end, i.e. the start (value) date is in month "A" and the end (maturity) date is in month "B", then only trades which also have a value date in month "A" and a maturity date in month "B" should be included in the Level 1 VWAP calculation.

Trades in non-LIBOR Tenors

Trades which have maturities of less than 330 days but which do not fit into one of the above buckets may still be used for Level 2 and 3 submissions.

Funding Centres

A list of approved funding centres is maintained by IBA and will be reviewed with the LIBOR Oversight Committee and each Contributor Bank periodically.

The approved list is based on the major centres in Canada, USA, Cayman Islands, EU, UK, EFTA, Hong Kong, Singapore, Japan and Australia.

The funding centre of the trade must be one of the approved centres bilaterally agreed between each Contributor Bank and IBA.

Transactions not in one of the approved funding centres may only be used in a Level 3 submission.

Transaction Window

The transaction window for each day's submission is the period from 11:00:01 (London time) on the previous submission date to 11:00:00 (London time) on the current submission date.

4. Calculation Methodology

Contributor Banks' submissions for each USD LIBOR tenor are ranked by IBA and the upper and lower quartiles are excluded to remove outliers.

The relevant rate is then calculated as the arithmetic mean of the remaining submissions, rounded to five decimal places.

Each Contributor Bank's submission carries an equal weight, subject to the trimming.

Details are shown in the table below:

Number of USD LIBOR contributors	Trimming methodology	Number of contributor rates averaged
15	4 highest and 4 lowest rates	7

In the event that IBA receives fewer than the expected number of submissions by the time that USD LIBOR is due to be published, the USD LIBOR reduced submissions policy will apply.
