Oracle Financial Services Liquidity Risk Regulatory Calculations for Monetary Authority of Singapore

User Guide

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1 Preface

This chapter provides a brief description of the scope, the audience, the references, the organization of the user guide, and conventions incorporated into the user guide.

Topics:

- Scope of the guide
- Intended Audience
- Related Information Sources
- Abbreviations
- What Is new In This Release

1.1 Scope of the Guide

The objective of this user guide is to provide comprehensive information about the regulatory calculations supported in the Oracle Financial Services Liquidity Risk Regulatory Calculations for Monetary Authority of Singapore, Release 8.0.7.0.0. This document is intended to help you understand the methodologies involved in computing the LCR, NSFR, MLA ratio, and other regulatory metrics and computations.

This User Guide should be used in conjunction with the documents listed in the Related Information Sources section to get a complete view of how the general capabilities of LRRCMAS have been leveraged and the configurations required for addressing the regulatory requirements.

1.2 Intended Audience

Welcome to Release 8.1.0.0.0 of the Oracle Financial Services Liquidity Risk Regulatory Calculations for Monetary Authority of Singapore. This manual is intended for the following audience:

- Business Users: This user reviews the functional requirements and information sources, like reports.
- Strategists: This user identifies strategies to maintain an ideal liquidity ratio and liquidity gap based on the estimated inflow and outflow of cash.
- Data Analysts: This user helps clean, validate, and import data into the OFSAA Download Specification Format.

1.3 Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support (MOS). For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info

Or, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

1.4 Related Information Sources

We strive to keep this document and all other related documents updated regularly; visit the OHC Documentation Library to download the latest version available. The list of related documents is provided here:

OHC Documentation Library **for OFS Liquidity Risk Solution**

- OFS Liquidity Risk Solution Application Pack 8.1.0.0.0 Release Notes
- OFS Liquidity Risk Solution Application Pack 8.1.0.0.0 Installation Guide
- OFS Liquidity Risk Solution Release 8.1.0.0.0 Analytics User Guide
- OFS Liquidity Risk Measurement and Management Release 8.1.0.0.0 User Guide

OHC Documentation Library **for OFS AAAI Application Pack:**

- OFS Advanced Analytical Applications Infrastructure (OFS AAAI) Application Pack Installation and Configuration Guide
- OFS Analytical Applications Infrastructure User Guide

Additional Reference Documents:

- OFSAA Licensing User Manual, Release 8.1.0.0.0
- OFS Analytical Applications 8.1.0.0.0 Technology Matrix
- OFS Analytical Applications Infrastructure Security Guide
- OFS LRS Security Guides Release 8.1.x
- Oracle Financial Services Analytical Applications Infrastructure Cloning Guide
- OFS LRS Cloning Guide Release 8.0.x
- OFS LRS Cloning Guide Release 8.1.x

1.5 Abbreviations

The following table lists the abbreviations used in this document.

Table 1: Abbreviations

Abbreviation	Description
LRS	Liquidity Risk Solution
LRMM	Liquidity Risk Measurement and Management
LRRCHKMA	Liquidity Risk Regulatory Calculations for the Hong Kong Monetary Authority
LRRCEBA	Liquidity Risk Regulatory Calculations for the European Banking Authority
LRRCRBI	Liquidity Risk Regulatory Calculations for Reserve Bank of India
LRRCUSFED	Liquidity Risk Regulatory Calculations for US Federal Reserve

Abbreviation	Description
DICLRM	Deposit Insurance Calculations for Liquidity Risk Management
OFS	Oracle Financial Services
LCR	Liquidity Coverage Ratio
NSFR	Net Stable Funding Ratio
LMR	Liquidity Maintenance Ratio
CFR	Core Funding Ratio

1.6 What is New in this Release

The Oracle Financial Services Liquidity Risk Regulatory Calculations for Monetary Authority of Singapore 8.1.0.0.0 is an enhancement of the existing Oracle Financial Services Liquidity Risk Regulatory Calculations for Monetary Authority of Singapore Release 8.0.8.0.0 and includes bug fixes only.

1.6.1 Installing this Major Release

For detailed instructions to install this Major Release, see the Oracle Financial Services Liquidity Risk Solution Installation Guide Release 8.1.0.0.0.

2 Introduction

Various parameters in Liquidity Risk Management help in analyzing the liquidity status of the bank. Liquidity ratios are one such parameter prescribed by the Basel III Guidelines. Oracle Financial Services Liquidity Risk Regulatory Calculations for Monetary Authority of Singapore (LRRCMAS) application calculates the following types of ratios:

Topics:

- Liquidity Coverage Ratio (LCR)
- Net Stable Funding Ratio (NSFR)
- Minimum Liquid Assets Ratio (MLA)

2.1 Liquidity Coverage Ratio

The Liquidity Coverage Ratio (LCR) addresses the short-term liquidity requirements of a bank or financial institution during a stressful situation. It estimates whether the stock of high-quality liquid assets is sufficient to cover the net cash outflows under stress situations over a specified future period, in general, lasting 30 calendar days (or LCR horizon). LCR is calculated at the legal entity level, on a standalone and consolidated basis.

2.2 Net Stable Funding Ratio

The Net Stable Funding Ratio (NSFR) addresses the medium and long-term liquidity requirements of a bank, or financial institution during a stressful situation. It specifies the minimum amount of stable funding required to be maintained to promote stable long-term funding.

2.3 Minimum Liquid Assets Ratio

The Minimum Liquid Asset (MLA) addresses the liquidity requirements of a bank or financial institution that is neither headquartered in Singapore nor is domestic systematically important banks.

3 Liquidity Coverage Ratio Calculation

LCR is the first standard that assesses the short-term liquidity challenges of a bank.

Topics:

- Inputs
- Process Flow
- Preconfigured Regulatory LCR Scenario

3.1 Inputs

The LRRCMAS application requires the following inputs for LCR calculation:

- Liquidity haircut for each asset level should be provided through business assumption with assumption category as valuation change and assumption subcategory as the haircut.
- The business assumption which defines the outflow percentage should be defined through appropriate business assumptions. For example, retail deposit Run-off is defined through business assumption with category as incremental cash flow and sub-category as Run-off.
- The business assumption which defines the inflow percentage should be defined through appropriate business assumptions. For example, Rollover Reverse Repo is defined through business assumption with category as cash flow movement and subcategory as a Roll Over.
- Liquidity Horizon is specified as the Runtime parameter.

3.2 Process Flow

The application supports a ready-to-use MAS LCR, which has the regulatory scenario with associated HQLA haircuts, inflow, and outflow percentage or rates preconfigured in the form of rules and business assumptions.

Topics:

- Identifying Asset Levels
- Identifying Eligible HQLA
- Calculating Stock of HQLA
- Determining Maturity of Cash Flows
- Insurance Allocation
- Identifying Deposit Stability
- Identifying and Treating Pledged Deposits
- Secured Funding
- Classifying Operational Deposits
- Calculating Contractually Required Collateral
- Calculating Excess Collateral

- Calculating Downgrade Impact Amount
- Calculating Net Derivative Cash Inflows and Outflows
- Calculating Twenty-Four Month Look-back Amount
- Calculating Operational Amount
- Calculating HQLA Transferability Restriction
- Calculating Net Cash Outflows
- Consolidation
- Calculating Liquidity Coverage Ratio
- Significant Currency Liquidity Coverage Ratio Calculation

3.2.1 Identifying Asset Levels

All assets, whether owned by the bank or received from counterparties as collateral, that meet the high quality liquid asset criteria specified by MAS, are classified as follows:

- Level 1 Assets
- Level 2A Assets
- Level 2B(I) Assets
- Level 2B(II) RMBS Assets
- Level 2B(II) non-RMBS Assets

Level 1 assets can be included in the stock of HQLA without limit and Level 2 assets can only include 40% of the stock of HQLA. Of this, Level 2B and Level 2B(II) assets can only include of 15% and 5% of the stock of HQLA, respectively. Any asset not classified as an HQLA is considered as an Other Asset.

Topics:

- Identifying and Treating Level 1 Assets
- Identifying and Treating Level 2A Assets
- Identifying and Treating Level 2B(I) Assets
- Identifying and Treating Level 2B(II) RMBS Assets
- Identifying and Treating Level 2B(II) Non-RMBS Assets

3.2.1.1 Identifying and Treating Level 1 Assets

Level 1 assets are assets which qualify to be fully included as part of the stock of high-quality liquid assets computing LCR. The application identifies the following as HQLA Level 1 assets:

1. Cash which includes coins, banknotes, and restricted cash. The value included in the stock of HQLA is the cash balance.
2. Central bank reserves (including excess and required reserves), to the extent that the central bank policies allow them to be drawn down in times of stress. These include the following:

a. Banks' overnight deposits with the central bank.

b. Term deposits with the central bank that satisfy the following conditions:

— They are explicitly and contractually repayable on notice from the depositing bank.

— They constitute a loan against which the bank can borrow on a term basis or an overnight but automatically renewable basis (only where the bank has an existing deposit with the relevant central bank).

The value of eligible term deposits that are included in the amount net of any withdrawal penalty.

3. Sukuk issued by Singapore Sukuk Pte. Ltd.

4. Marketable securities, assigned a 0% risk-weight, which satisfy the following conditions:

- Issuer type or Guarantor type is one of the following:
  - Sovereign
  - Central Bank
  - Public Sector Entity
  - Regional Government, Municipalities, and State Agencies
  - Multi-lateral Development Bank
  - The Bank For International Settlements (BIS)
  - The International Monetary Fund
  - The European Central Bank and European Commission
- Not an obligation of a financial institution or any of its affiliated entities

5. Debt securities issued in domestic currencies in the country in which the liquidity risk is being taken or in the bank's home country where the issuer type is the sovereign or central bank and the risk weight assigned to the issuer is greater than 0%.

6. Debt securities issued in foreign currencies are eligible up to the amount of the bank's stressed net cash outflows in that specific foreign currency stemming from the bank's operations in the country in which the liquidity risk is being taken or in the bank's home country where the issuer type is the sovereign or central bank and the risk weight assigned to the issuer is greater than 0%.

3.2.1.2 Identifying and Treating Level 2A Assets

The application identifies the following as HQLA Level 2A assets.

1. Marketable securities, assigned a 20% risk-weight, which satisfy the following conditions:

- Issuer type or Guarantor Type is one of the following:
  - Sovereign
  - Central Bank
  - Public Sector Entity

- Regional Government, Municipalities, and State Agencies
- Multi-lateral Development Bank

- Price has not decreased, or haircut has not increased by more than 10% over 30 days during a relevant period of significant liquidity stress which is specified by the bank.
- Not an obligation of a financial institution or any of its affiliated entities.

2. Debt securities (including commercial paper) issued by corporates, Sukuk issued by an institution other than Singapore Sukuk Pte Ltd. and covered bonds, which satisfy the following conditions:
    - Issuer type is not the bank itself for which the computations are being carried out or any of its affiliated entities
    - Assigned a rating equal to or greater than AA- or,
    - Price has not decreased, or haircut has not increased by more than 10% over 30 days during a relevant period of significant liquidity stress which is specified by the bank.
    - For corporate debt securities, the issuer type is not a financial institution or its affiliated entities.

3.2.1.3 Identifying and Treating Level 2B(I) Assets

The application identifies the following as HQLA Level 2B(I) assets:

Debt securities (including commercial paper) issued by corporates, and Sukuk issued by institutions other than Singapore Sukuk Pte Ltd. satisfying the following conditions:

- Issuer type is not the bank itself for which the computations are being carried out or any of its affiliated entities.
- Assigned a rating between A+ to A-
- Price has not decreased, or haircut has not increased by more than 20% over 30 days during a relevant period of significant liquidity stress which is specified by the bank.
- For corporate debt securities, issuer type is not a financial institution or its affiliated entities

3.2.1.4 Identifying and Treating Level 2B(II) RMBS Assets

The application identifies the Residential Mortgage-Backed Securities (RMBS) satisfying the following conditions listed as HQLA Level 2B(II) RMBS assets:

- Issuer type is not the bank for which the computations are being carried out or any of its affiliated entities.
- Issuer type of the underlying assets is not the bank itself for which the computations are being carried out or any of its affiliated entities.
- Assigned a rating equal to or greater than AA.
- Price has not decreased, or haircut has not increased by 20% over a 30-day period during a relevant period of significant liquidity stress specified by the bank.

- The underlying asset pool consists of residential mortgages only and does not contain any structured products.
- The underlying mortgages are "full recourse" loans, and have a maximum Loan-To-Value ratio (LTV) of less than or equal to 80%
- The securitizations are subject to "risk retention" regulations which require issuers to retain an interest in the assets they securitize.

3.2.1.5 Identifying and Treating Level 2B(II) Non-RMBS Assets

The application identifies the following assets as HQLA Level 2B(II) Non-RMBS assets:

1. Marketable securities which satisfy the following conditions:
   - Issuer type is not a financial institution or its affiliated entities.
   - Issuer and guarantor type is a Sovereign or Central Bank.
   - Assigned a rating between BBB+ and BBB-.
   - Price has not decreased, or haircut has not increased by more than 20% over a 30-day period during a relevant period of significant liquidity stress which is specified by the bank.
2. Debt securities issued by corporates, and Sukuk issued by institutions other than Singapore Sukuk Pte Ltd, which satisfy the following conditions:
   - Issuer type is not a financial institution or its affiliated entities (in case of corporate debt securities).
   - Assigned a rating between BBB+ and BBB-.
   - Price has not decreased, or haircut has not increased by more than 20% over a 30-day period, during a relevant period of significant liquidity stress which is specified by the bank.
3. Common equities which satisfy the following conditions:
   - Issuer type is not a financial institution or its affiliated entities.
   - Are exchange-traded and centrally cleared.
   - Are a constituent of the major stock index in the legal entity's home jurisdiction, or where the liquidity risk is taken, as decided by the supervisor in the jurisdiction where the index is located.
   - Are denominated in the domestic currency of the legal entity's home jurisdiction or in the currency of the jurisdiction where the liquidity risk is taken.
   - Price has not decreased, or haircut has not increased by more than 40% over a 30-day period during a relevant period of significant liquidity stress specified by the bank.

NOTE	The value of eligible securities included in the HQLA is the market value less hedge termination cost if any.

3.2.2 Identifying Eligible HQLA

The application identifies whether a bank's asset or a mitigant received under rehypothecation rights meets all the operational requirements prescribed by MAS. If an asset classified as HQLA meets all the relevant operational criteria it is identified as eligible HQLA and included in the stock of HQLA.

The application checks for the following operational criteria:

a. **Operational Capability to Monetize HQLA**

   An asset is considered HQLA only if the bank has demonstrated the operational capability to monetize such an asset and has periodically monetized such an asset. The application captures this information for each asset as a flag.

b. **Unencumbered**

   The application looks at the encumbrance status and includes only those assets in the stock which are unencumbered. If partially encumbered, then the portion of the asset that is unencumbered is considered as HQLA and included in the stock. If an asset is pledged to the central bank or a PSE but is not used, the unused portion of such an asset is included in the stock. The application assigns the usage of a pledged asset in the ascending order of asset quality that is the lowest quality collateral is marked as used first.

c. **HQLA Under the Control of the Liquidity Management Function**

   To be considered eligible HQLA the asset is under the control of the management function of the bank that manages liquidity. The application captures this information for each asset as a flag.

d. **Termination of Transaction Hedging HQLA**

   If an HQLA is hedged by a specific transaction, then the application considers the impact of closing out the hedge to liquidate the asset that is, the cost of terminating the hedge while computing the stock of HQLA. The hedge termination cost is deducted from the market value of the asset and the difference is included in the stock of HQLA.

e. **Transferability Restriction during Consolidation**

   Surplus HQLA held by a subsidiary can be included in the stock of the parent company only if it is freely available to the parent during times of stress. The assets that have transfer restrictions are identified through a flag. The application only includes the restricted assets to the extent required to cover the subsidiary's net cash outflows while including the unrestricted assets fully into the consolidated stock of HQLA.

f. **Exclusion of Certain Rehypothecated Assets**

   Any asset that a bank receives under rehypothecation right is not considered eligible HQLA if the counterparty or beneficial owner of the asset has a contractual right to withdraw the asset at any time within 30 calendar days.

g. **Unsegregated Assets**

   The application includes unsegregated assets, received as collateral under rehypothecation rights, for derivative transactions, in the stock of HQLA. Conversely, it excludes all segregated assets from the stock of HQLA.

3.2.3 Calculating Stock of HQLA

The stock of High-Quality Liquid Assets (SHQLA) is calculated at the legal entity and currency granularity. This is performed by the rule LRM - Stock of High-Quality Liquid Asset Computation.

All unencumbered assets classified as Level 1, 2A, or 2B, which meet the HQLA eligibility criteria, are included in the SHQLA. The formula for calculating SHQLA is as follows:

$$Stock\ of\ HQLA = Unadjusted\ Level\ 1\ HQLA + Unadjusted\ Level\ 2A\ HQLA + Unadjusted\ Level\ 2B(I)\ HQLA + Unadjusted\ Level\ 2B(II)\ HQLA - Adjustment\ due\ to\ Cap\ on\ 5\%\ Level\ 2B(II) HQLA - Adjustment\ due\ to\ Cap\ on\ 15\%\ Level\ 2B\ HQLA - Adjustment\ due\ to\ Cap\ on\ 40\%\ Level\ 2\ HQLA$$

Where,

Adjustment for 5% Level 2B(II) HQLA cap = MAX [Adjusted Level 2B(II) HQLA - (5/95){Adjusted Level 1 HQLA + Adjusted Level 2A HQLA + Adjusted Level 2B(I)HQLA}*

, Adjusted Level 2B(II) HQLA - (5/85){Adjusted Level 1HQLA + Adjusted Level 2A HQLA}*

*, Adjusted Level 2B(II) HQLA - (5/60)*Adjusted Level 1 HQLA,0]*

Adjustment for 15% Level 2B HQLA cap = MAX [{Adjusted Level 2B(I) HQLA+ Adjusted Level 2B(II) HQLA – Adjustment for 5% Level 2B(II) HQLA cap}

- (15/85)(Adjusted Level 1 HQLA + Adjusted Level 2A HQLA)*

*,Adjusted Level 2B(I) HQLA+ Adjusted Level 2B(II) HQLA – Adjustment for 5% Level 2B(II) HQLA cap - (15/60)*Adjusted Level 1 HQLA,0]*

Adjustment for 40% Level 2 HQLA cap = MAX [{Adjusted Level 2A HQLA + Adjusted Level 2B(I) HQLA + Adjusted Level 2B(II) HQLA

*- Adjustment for 5% Level 2B(II) HQLA cap - Adjustment for 15% Level 2B(I) HQLA cap} - (2/3)*Adjusted Level 1 HQLA,0]*

The application applies the relevant liquidity haircuts to the market value of each eligible HQLA based on the haircuts specified as part of a business assumption. The sum of haircut adjusted market value of all assets which are not other assets, and which are classified as eligible HQLA comprises of the stock of HQLA. The stock includes the bank's assets which are unencumbered, that is not placed as collateral; as well as assets received from counterparties where the bank has a rehypothecation right and where such assets are not rehypothecated.

NOTE All calculations are based on the market value of assets.

The following steps are involved in computing the stock of HQLA:

Topics:

- Calculating Stock of Liquid Assets
- Identifying Eligible HQLA on Unwind
- Unwinding of Transactions Involving Eligible HQLA
- Calculating Adjusted Stock of HQLA
- Calculating Adjustments to Stock of HQLA Due to Cap on Level 2 Assets

3.2.3.1 Calculating Stock of Liquid Assets

1. **Calculating Stock of Level 1 Assets**

   The stock of Level 1 assets equals the market value of all Level 1 liquid assets held by the bank as of the calculation date that is eligible HQLA, less the amount of the minimum reserve, less hedge termination costs (if any), less withdrawal penalty on time deposits (if any).

2. **Calculating Stock of Level 2A Assets**

   The stock of Level 2A liquid assets equals 85 percent of the market value of all Level 2A liquid assets held by the bank as of the calculation date that are eligible HQLA, less hedge termination costs (if any).

3. **Calculating Stock of Level 2B(I) Assets**

   The stock of Level 2B(I) liquid assets equals 50 percent of the market value of all Level 2B(I) liquid assets held by the bank as of the calculation date that are eligible HQLA, less hedge termination costs (if any).

4. **Calculating Stock of Level 2B(II) RMBS Assets**

   The stock of Level 2B(II) RMBS liquid asset amount equals 75 percent of the market value of all Level 2B RMBS liquid assets held by the bank as of the calculation date that is eligible HQLA, less hedge termination costs (if any).

5. **Calculating Stock of Level 2B(II) Non-RMBS Assets**

   The stock of Level 2B(II) liquid assets equal 50 percent of the market value of all Level 2B non-RMBS liquid assets held by the bank as of the calculation date that is eligible HQLA, less hedge termination costs (if any).

3.2.3.2 Identifying Eligible HQLA on Unwind

The application identifies the assets placed as collateral which are eligible HQLA if they are not encumbered. Placed collateral is marked as eligible HQLA on unwinding if it fulfills all of the following criteria:

- Asset Level is Level 1, Level 2A, Level 2B(I), Level 2B(II) RMBS, or Level 2B(II) non-RMBS asset.
- Meets HQLA Operational Requirements on Unwind.

3.2.3.3 Unwinding of Transactions Involving Eligible HQLA

The application identifies all transactions maturing within the LCR horizon where HQLA is placed or received. These transactions include repos, reverse repos, secured lending transactions, collateral swaps, and so on. Such transactions are to be unwound that is, the original position is to be reversed and the cash or stock of HQLA has adjusted accordingly. This is done to avoid including any asset in the stock that should be returned to its owner before the end of the LCR horizon. The unwinding of transactions results in adjustments to the stock of HQLA, such as additions to or deductions from the stock of HQLA.

3.2.3.4 Calculating Adjusted Stock of HQLA

The total stock of HQLA is determined as a minimum of two Stocks. The formula for this calculation is as follows:

1. **Adjusted Stock of Level 1 Assets**

   The formula for calculating adjusted stock of Level 1 assets is as follows:

$$\begin{aligned}&\textit{Adjusted Stock of Level 1 Assets}\\&\quad = \textit{Post Haircut Stock of Level 1 Assets}\\&\quad + \textit{Post Haircut Adjustments to Stock of Level 1 Assets}\end{aligned}$$

NOTE	Adjustments relate to the cash received or paid and the eligible Level 1 asset posted or received as collateral or underlying assets as part of a secured funding transaction, secured lending transaction, asset exchanges, or collateralized derivatives transaction.

2. **Adjusted Stock of Level 2A Assets**

   The formula for calculating adjusted stock of Level 2A assets is as follows:

$$\begin{aligned}&\textit{Adjusted Stock of Level 2A Assets}\\&\quad = \textit{Post} - \textit{Haircut Level 2A Assets}\\&\quad + \textit{Post Haircut Adjustments to Stock of Level 2A Assets}\end{aligned}$$

NOTE	Adjustments relate to eligible Level 2A assets posted or received as collateral or underlying assets as part of a secured funding transaction, secured lending transaction, asset exchanges, or collateralized derivatives transaction.

3. **Adjusted Stock of Level 2B(I) Assets**

   The formula for calculating adjusted stock of Level 2B(I) assets is as follows:

$$\begin{aligned}&\textit{Adjusted Stock of Level 2B (I)Assets}\\&\quad = \textit{Post} - \textit{Haircut Stock of Level 2B (I)Assets}\\&\quad + \textit{Post Haircut Adjustments to Stock of Level 2B (I)Assets}\end{aligned}$$

> **NOTE** Adjustments relate to eligible Level 2B(I) assets posted or received as collateral or underlying assets as part of a secured funding transaction, secured lending transaction, asset exchanges, or collateralized derivatives transaction.

4. **Adjusted Stock of Level 2B(II)RMBS Assets**

   The formula for calculating adjusted stock of Level 2B(II) RMBS assets is as follows:

$$\begin{aligned}&\textbf{Adjusted Stock of Level 2B (II) RMBS Assets}\\ &\quad = \textbf{Post} - \textbf{Haircut Stock of Level 2B (II)RMBS Assets}\\ &\quad + \textbf{Post Haircut Adjustments to Stock of Level 2B (II) RMBS Assets}\end{aligned}$$

> **NOTE** Adjustments relate to eligible Level 2B(II) RMBS assets posted or received as collateral or underlying assets as part of a secured funding transaction, secured lending transaction, asset exchanges, or collateralized derivatives transaction.

5. **Adjusted Stock of Level 2B(II) Non-RMBS Assets**

   The formula for calculating adjusted stock of Level 2B(II) non-RMBS assets is as follows:

$$\begin{aligned}&\textbf{Adjusted Stock of Level 2B (II)Non} - \textbf{RMBS Assets}\\ &\quad = \textbf{Post} - \textbf{Haircut Stock of Level 2B (II) Non} - \textbf{RMBS Assets}\\ &\quad + \textbf{Post Haircut Adjustments to Stock of Level 2B (II) Non}\\ &\quad - \textbf{RMBS Assets}\end{aligned}$$

> **NOTE** Adjustments relate to eligible Level 2B Non-RMBS assets posted or received as collateral or underlying assets as part of a secured funding transaction, secured lending transaction, asset exchanges, or collateralized derivatives transaction.

3.2.3.5 Calculating Adjustments to Stock of HQLA Due to Cap on Level 2 Assets

This section includes the computations involved in the calculation of adjustments to SHQLA due to the cap on Level 2 assets.

1. **Adjustment Due to Cap on Level 2B(II) Assets**

   Level 2B(II) assets can only constitute up to 5% of the stock of HQLA after taking into account the impact of unwinding transactions maturing within the LCR horizon. Adjustment to the stock of HQLA due to cap on Level 2B(II) assets is calculated as follows:

$$\begin{aligned}
&\textit{Adjustment due to Cap on Level 2B (II) Assets} \\
&\quad = \textit{Maximum}\Bigg[\Bigg\{\textit{Adjusted Level 2B (II)Assets} \\
&\quad - \left(\frac{5}{95}\right. \\
&\quad \times (\textit{Adjusted Level 1 Assets} + \textit{Adjusted Level 2A Assets} \\
&\quad + \textit{Adjusted Level 2B (I) Assets})\Bigg)\Bigg\}, \Bigg\{\textit{Adjusted Level 2B (II)Assets} \\
&\quad - \left(\frac{5}{85}\right. \\
&\quad \times (\textit{Adjusted Level 1 Assets} \\
&\quad + \textit{Adjusted Level 2A Assets})\Bigg)\Bigg\}, \Bigg\{\textit{Adjusted Level 2B (II) Assets} \\
&\quad - \left(\frac{5}{60} \times \textit{Adjusted Level 1 Assets}\right)\Bigg\}, 0\Bigg]
\end{aligned}$$

2. **Adjustment Due to Cap on Level 2B Assets**

   Level 2(B) assets can only constitute up to 15 % of the stock of HQLA after taking into account the impact of unwinding transactions maturing within the LCR horizon. Adjustment to Stock of HQLA due to the cap on Level 2B assets is calculated as follows:

$$\begin{aligned}
&\textit{Adjustment due to Cap on Level 2B Assets} \\
&\quad = \textit{Maximum}\Bigg[\Bigg\{\textit{Adjusted Level 2B (I)Assets} \\
&\quad + \textit{Adjusted Level 2B(II)Assets} \\
&\quad - \textit{Adjustment due to Cap on Level 2B(II)Assets} - \left(\frac{15}{85}\right) \\
&\quad \times \left(\begin{matrix}\textit{Adjusted Level 1 Assets} \\ +\textit{Adjusted Level 2A Assets}\end{matrix}\right), \textit{Adjusted Level 2B(I)Assets} \\
&\quad + \textit{Adjusted Level 2B(II)Assets} \\
&\quad - \textit{Adjustment due to Cap on Level 2B(II)Assets} \\
&\quad - \left(\frac{15}{60} \times \textit{Adjusted Level 1 Assets}\right)\Bigg\}, 0\Bigg]
\end{aligned}$$

3. **Adjustment Due to Cap on Level 2 Assets**

   Level 2 assets can only constitute up to 40% of the stock of HQLA after taking into account the impact of unwinding transactions maturing within the LCR horizon. Adjustment to Stock of HQLA due to the cap on Level 2 assets is calculated as follows:

$$\begin{aligned}
&\textit{Adjustment due to Cap on Level 2 Assets} \\
&\quad = \textit{Maximum}\Bigg[\Bigg\{\textit{Adjusted Level 2A Assets} + \textit{Adjusted Level 2B (I)Assets} \\
&\quad + \textit{Adjusted Level 2B (II)Assets} \\
&\quad - \textit{Adjustment due to Cap on Level 2B (II) Assets} \\
&\quad - \textit{Adjustment due to Cap on Level 2B (I) Assets} \\
&\quad - \left(\frac{2}{3} \times \textit{Adjusted Level 1 Assets}\right)\Bigg\}, 0\Bigg]
\end{aligned}$$

3.2.4 Determining the Maturity of Cash Flows

To calculate the Liquidity Coverage Ratio, the application identifies the maturity of certain transactions as follows:

1. For liabilities having embedded optionality, such as callable features, that reduces the maturity of the account, the application considers the earliest date, which is the first call date, as the revised maturity date.
2. For assets having embedded optionality that reduces the maturity of the account, where the collateral received is not rehypothecated, the application considers the earliest date, which is the first call date, plus notice period as the revised maturity date.
3. For derivatives having embedded optionality that reduces the maturity of the account, where the collateral received is not rehypothecated, the application considers the earliest date, which is the first call date, as the revised maturity date.
4. For assets or derivatives, where the collateral received has been re-hypothecated for a period greater than the maturity of the asset itself, the application considers the maturity date of the liability, against which the collateral received is rehypothecated, as the revised maturity of the asset.
5. For assets or derivatives having embedded optionality that reduces the maturity of the account, where the collateral received has been rehypothecated for a period greater than the first call date plus notice period but less than the original maturity of the asset itself, the application considers the maturity date of the liability, against which the collateral received is rehypothecated, as the revised maturity of the asset.
6. For derivatives having embedded optionality that reduces the maturity of the account, where the collateral received has been rehypothecated for a period greater than the first call date but less than the original maturity of the asset itself, the application considers the maturity date of the liability, against which the collateral received is rehypothecated, as the revised maturity of the asset.
7. For assets having embedded optionality that reduces the maturity of the account, where the collateral received has been rehypothecated for a period less than the first call date plus notice period, the application considers the first call date plus notice period as the revised maturity of the asset.
8. For derivatives having embedded optionality that reduces the maturity of the account, where the collateral received has been rehypothecated for a period less than the first call date plus notice period, the application considers the first call date as the revised maturity of the asset.
9. For assets and derivatives which do not have embedded optionality that reduces the maturity of the account, where the collateral received has been rehypothecated for a period less than the maturity of the asset itself, the application considers the original maturity date of the asset, as the revised maturity of the asset.
10. For assets and derivatives which do not have embedded optionality that reduces the maturity of the account, where the collateral received has not been rehypothecated, the application considers the original maturity date of the asset, as the revised maturity of the asset.

NOTE The revised maturity is computed by the application as per regulatory expectation and is used for the calculation of LCR.

3.2.5 Insurance Allocation

This section provides the steps involved in insurance allocation.

Topics:

- Identifying Insurance Eligible Accounts
- Allocating Deposit Insurance

3.2.5.1 Identifying Insurance Eligible Accounts

The identification of insurance eligible accounts involves looking at the inclusion as well as the exclusion criteria. The application requires users to provide the following inclusion criteria:

1. **Ownership Category**

   There are three ownership categories available in LRRCMAS:

   - **SDIC-DI**: Ownership categories include single accounts, joint accounts, sole proprietorship, trusts, and company.
   - **SDIC-CPFRS**: Ownership categories include CPF Retirement Sum Scheme (CPFRS).
   - **SDIC-CPFIS**: Ownership categories include CPF Investment Scheme (CPFIS).

   As per the Singapore Deposit Insurance Corporation (SDIC), a separate limit is assigned to a depositor combination based on the ownership category of accounts. Users are required to provide the ownership categories that get a separate limit. If a particular customer gets a single limit irrespective of whether the accounts are held as single, joint, or a combination, the ownership category should have a single default value.

2. **Product Type**

   This is a list of product types that are covered under the respective jurisdiction's deposit insurance scheme. The insurance limit is allocated to only those accounts of a customer whose product types match those that are covered by the deposit insurance. For Singapore, SDIC Deposit Insurance covers all types of deposits such as current accounts, savings accounts, and term deposits, which must be provided as inputs.

3. **Product Type Prioritization**

   The sequence in which the insured amount is to be allocated to each product type is captured. For instance, product prioritization may be specified as a current account, savings account, and term deposit. This indicates that the insured amount is allocated first to a current account held by the customer. After current accounts have been fully covered, the remaining amount is allocated to savings accounts and finally to term deposits.

NOTE	In case product type prioritization is not specified, the default allocation will be proportionate to the EOP balance of each account irrespective of the product type.

4. **Currency Eligibility for Insurance**

This is a list of currencies in which the accounts are denominated that are eligible for insurance coverage under a deposit insurance scheme. Some jurisdictions cover foreign currency deposits under their deposit insurance schemes. If eligible currencies are specified for insurance, then the insured balance is allocated to all accounts belonging to the particular legal entity which have the associated attributes required for assigning the insured balance. For instance, if SDIC Deposit Insurance ensures only Singapore Dollar-denominated deposits. The eligible currency against SDIC Deposit Insurance should be provided as the Singapore Dollar.

The application includes insurance exemption criteria covering deposits of foreign sovereigns, central and state governments, and banks, and so on. The deposits that are eligible for insurance under a particular insurance scheme are identified based on the inclusion and exclusion criteria as specified by the users.

3.2.5.2 Allocating Deposit Insurance

As part of the MAS Run, the application allocates the deposit insurance to accounts based on the guidelines specified by the SDIC Deposit Insurance. The insurance limit captured against each deposit insurance scheme is allocated to the insurance-eligible accounts under that scheme based on the ownership category and the depositor combination.

The insurance limit, which is the maximum deposit balance covered by an insurance scheme per customer, is captured against each insurance scheme – ownership category combination. Customers having an account in multiple legal entities get a separate deposit insurance limit per legal entity. As per the SDIC Deposit Insurance scheme, the limit amount must be provided in the Stage Insurance Scheme Master table at the granularity of insurance scheme.

The insurance limit is allocated to accounts as per the procedure given as follows:

1. The application identifies the established relationship flag at a customer level.
2. The accounts are sorted by the specified product type prioritizations.
3. The insurance allocation is done based on the principal balance from the highest to the least, in the order of product type prioritization.
4. The insurance limit available is allocated to account 1 to n – 1 as per the following formula:

$$\begin{aligned}\boldsymbol{Insured\ Amount} \\ &= \boldsymbol{If}\ [\{(\boldsymbol{Insurance\ Limit\ Available} - \boldsymbol{Outstanding\ Balance}) \\ &\geq \mathbf{0}\}; \boldsymbol{Outstanding\ Balance\ else\ \mathbf{0}}]\end{aligned}$$

Where,

Insurance Limit Available:

$$\boldsymbol{Limit\ available\ post\ allocation\ to\ previous\ accounts} = \boldsymbol{Insurance\ Limit\ Available_{x\text{-}1} - Insured\ Amount_{x\text{-}1}}$$

x: Number of accounts up to the current account to which insured amount is to be allocated

n: Total number of accounts of a customer which are eligible for insurance coverage under a given ownership category

5. The remaining available insurance is allocated to the last account that is account *n* for which insurance was not allocated.
6. If the insurance limit is available after allocating to the principal balances, it is allocated to the accrued interest from the highest to the least in the order of Product Type prioritization.

An illustration of this procedure is provided as follows considering an insurance limit of 50,000 Singapore Dollar (SGD) for each depositor combination under each ownership category for each legal entity as follows.

NOTE

- For the Single, Joint, and Sole proprietorship category, the insurance limit is aggregated for each customer per legal entity.
- Each account holder in the joint ownership category has an equal share for insurance calculation until specifically provided by the legal entity.
- Trusts with distinct account numbers are treated separately. Trust accounts are insured on a per account–beneficiary basis without aggregation.
- Client accounts with distinct account numbers are treated separately. Client accounts are insured on a per-account basis without aggregation.

The inputs to this calculation, including account details and customer details, are as follows.

Table 2: Illustration - Allocation of Deposit Insurance

Legal Entity	Account Number	Standard Product Type	Account Balance	Account Currency	Ownership Category	Primary Holder	Secondary Holder	Account Attribute	Unique Depositor Combination	Limit Applicable	Total Deposit per Unique Depositor	Insured Amount	Uninsured Amount
Legal Entity 1	100001	Saving Account	40,000	SGD	Single	Customer 001			1	50,000	110,665	50,000	60,665
Legal Entity 1	100002	Current Account	36,903	SGD	Single	Customer 001							
Legal Entity 1	100003	Term Deposit	33,762	SGD	Single	Customer 001							
Legal Entity 1	100004	Term Deposit	40,681	USD	Single	Customer 001				-	40,681	-	40,681
Legal Entity 1	100005	Saving Account	7,355	SGD	Single	Customer 002			2	50,000	29,852.50	29,852.50	-
Legal Entity 1	100006	Term Deposit	44,995	SGD	Joint	Customer 002	Joint Account with Customer 003						
Legal Entity 1	100007	Term Deposit	44,995	SGD	Joint	Customer 003	Joint Account with Customer 002		3	50,000	22,497.50	22,497.50	-
Legal Entity 1	100008	Saving Account	7,568	SGD	Single	Customer 004			4	50,000	44,773	44,773.00	-

Legal Entity	Account Number	Standard Product Type	Account Balance	Account Currency	Ownership Category	Primary Holder	Secondary Holder	Account Attribute	Unique Depositor Combination	Limit Applicable	Total Deposit per Unique Depositor	Insured Amount	Uninsured Amount
Legal Entity 1	100009	Saving Account	37,205	SGD	Sole proprietor ship	Customer 004							
Legal Entity 1	200100	Saving Account	29,451	SGD	Single	Customer 101			5	50,000	86,390	50,000	36,390
Legal Entity 1	200101	Current Account	79,640	SGD	Joint	Customer 101	Joint Account with Customer 102						
Legal Entity 1	200102	Term Deposit	10,700	SGD	Joint	Customer 101	Joint Account with Customer 103						
Legal Entity 1	200103	Term Deposit	11,769	SGD	Sole proprietor ship	Customer 101							
Legal Entity 1	200103	Term Deposit	79,640	SGD	Joint	Customer 102	Joint Account with Customer 101		6	50,000	39,820	39,820.00	-
Legal Entity 2	100010	Saving Account	7,337	SGD	Single	Customer 005			7	50,000	7,337	7,337.00	-

Legal Entity	Account Number	Standard Product Type	Account Balance	Account Currency	Ownership Category	Primary Holder	Secondary Holder	Account Attribute	Unique Depositor Combination	Limit Applicable	Total Deposit per Unique Depositor	Insured Amount	Uninsured Amount
Legal Entity 3	100011	Term Deposit	45,016	SGD	Trust	Customer 005		For benefit of son	8	50,000	45,016	45,016.00	-
Legal Entity 4	100012	Term Deposit	6,574	SGD	Trust	Customer 005		For benefit of daughter	9	50,000	6,574	6,574.00	-
Legal Entity 5	100013	Saving Account	4,759	SGD	Trust	Customer 005		For benefit of spouse	10	50,000	4,759	4,759.00	-
Legal Entity 6	100014	Saving Account	20,517	SGD	Company	Customer 008		Office Account	11	50,000	20,517	20,517.00	-
Legal Entity 7	100015	Saving Account	24,254	SGD	Company	Customer 008		Client Account for Customer X	12	50,000	24,254	24,254.00	-
Legal Entity 8	100016	Saving Account	68,691	SGD	Company	Customer 008		Client Account for Customer Y	13	50,000	68,691	50,000.00	18,691.00
Legal Entity 9	100017	Saving Account	68,691	SGD	Single	Customer X			14	50,000	68,691	50,000.00	18,691.00
Legal Entity 1	100018	Deposit	50,101	SGD	CPFIS	Customer 501			15	50,000	50,101	50,000.00	101.00

Legal Entity	Account Number	Standard Product Type	Account Balance	Account Currency	Ownership Category	Primary Holder	Secondary Holder	Account Attribute	Unique Depositor Combination	Limit Applicable	Total Deposit per Unique Depositor	Insured Amount	Uninsured Amount
Legal Entity 1	100019	Deposit	45,493	SGD	CPFRS	Customer 502			16	50,000	45,493	45,493.00	-
Legal Entity 1	100020	Deposit	14,252	SGD	CPFRS	Customer 503			17	50000	64,590	50000	14590
Legal Entity 1	100021	Deposit	50,338	SGD	CPFIS	Customer 503							
Legal Entity 1	100022	Deposit	58,412	SGD	Single	Customer 504			18	50,000	58,412	50,000.00	8,412.00
Legal Entity 1	100023	Deposit	10,700	SGD	CPFRS	Customer 504			19	50000	52,469	50000	2469
Legal Entity 1	100024	Deposit	41,769	SGD	CPFIS	Customer 504							

3.2.6 Identifying Deposit Stability

After the insurance limit is allocated at an account level, the application determines the deposit stability as follows:

1. **Stable Deposits**

   A stable deposit is the portion of a deposit which is fully covered by deposit insurance provided by an effective deposit insurance scheme or a public guarantee that provides equivalent protection and which satisfies one of the following conditions:

   a. It is held in a transactional account by the depositor.

   Or,

   b. The depositor has an established relationship with the reporting legal entity.

   For MAS, if a deposit is partially covered by insurance and meets the other criteria, the insured portion of such deposits is considered stable while the uninsured portion is considered less stable.

   Stable deposits receive a 5% Run-off rate unless they meet additional deposit criteria.

2. **Highly Stable Deposits**

   All stable deposits identified as per the criteria specified in point 1 above are classified as meeting additional insurance criteria if the insurance scheme under which they are covered satisfies the following conditions:

   a. It is based on a system of prefunding via the periodic collection of levies on banks with insured deposits.

   b. Has adequate means of ensuring ready access to additional funding in the event of a large call on its reserves, for example, an explicit and legally binding guarantee from the government, or a standing authority to borrow from the government.

   c. Access to insured deposits is available to depositors in a short period once the deposit insurance scheme is triggered.

   Such deposits receive a 3% Run-off rate.

3. **Less Stable Deposits**

   All insured and uninsured deposit or funding balances that do not meet the stable deposits criteria are classified as less stable deposits: This includes the following:

   a. Insured balance of deposits meeting stable deposits criteria but denominated in ineligible foreign currencies.

   b. Uninsured balance of deposits meeting stable deposits criteria.

   c. Insured balance of deposits which are not transactional accounts and the customer has no established relationship with the bank.

   d. Deposit balance where the insurance coverage status is Uninsured.

   Such deposits receive a 10% Run-off rate.

3.2.7 Identifying and Treating Pledged Deposits

A deposit is considered a pledged deposit when it is placed as a security against a loan or loans extended by the bank. It indicates that when a customer receives a loan from a bank and contractually places the deposits held within the same bank as collateral, then the bank marks the respective deposits as pledged deposits.

For pledged deposits, the pledged portion of the deposit proceeds is paid out only when the loan against the deposit is repaid in full. Multiple deposits can be placed against multiple liens, such as loans, line of credit, guarantees, and so on forming many-to-many relationships.

The outflows for pledged deposits which will not mature within the LCR horizon may be excluded from LCR calculation if the following conditions are met:

- The loan will not mature or settle in the next 30 days.
- The pledge arrangement is subject to a legally enforceable contract disallowing withdrawal of the deposit before the loan is fully settled or repaid.
- The amount of deposit to be excluded cannot exceed the outstanding balance of the loan.

Topics:

- Identification of Pledged Deposits
- Treatment of Pledged Deposits

3.2.7.1 Identifying Pledged Deposits

Pledged deposits are identified against deposits in the staging area by the lien marked indicator flag. The mapping between pledged deposits and the pledge against it is many-to-many and is a download for the application.

3.2.7.2 Treating Pledged Deposits

When all the guideline conditions are satisfied, the encumbered portion of pledged deposits is excluded and receives a 0% factor. The unencumbered portion of the pledged deposits is included and receives an appropriate Run-off rate as applicable.

To cater to pledged deposits, the following based measures are used in the business assumptions:

- Unencumbered highly stable balance: This measure populates the portion of the highly stable amount, which is unencumbered.
- Unencumbered stable balance: This measure populates the portion of a stable amount, which is unencumbered.
- Unencumbered less stable balance: This measure populates the portion of the less stable amount, which is unencumbered.
- Encumbered balance: This measure populates the encumbered amount of the deposit.

See Regulations Addressed through Business Assumptions for details of the preseeded assumptions on pledged deposits.

3.2.8 Secured Funding

For Secured Accounts involving collateral placed or collateral received, there is an option to compute balances and cash flows in two granularities:

- Account-level
- Account-collateral level

This option enables the treatment of partially secured accounts and granular processing of an account with multiple collaterals. By default, secured funding computations happen at the account level for partially secured accounts. This can be changed to the Account-collateral level by updating the value of the SETUP_MASTER table entry for SEC_TRANS_TREATMENT_PURPOSE_VAL to YES.

Account-level

By default, all computations are done at the account level. This means that if multiple collaterals are securing an account, the collateral level information will be aggregated and processed at an account level.

Account-collateral level

Collateral level measures, such as the ones at the HQLA Asset level, encumbrance period, and so on, are computed at the account- collateral level. This means that if multiple collaterals are securing an account, the collateral level information is processed at the same account- collateral level without aggregating any data.

3.2.9 Classifying Operational Deposits

Operational deposits are those deposits placed by customers with a bank or balances kept by the bank with other financial institutions to meet their payment and settlement requirements and other operational requirements. The application classifies accounts as operational if they meet the following criteria:

1. They are held in specifically designated accounts that are held as operational accounts, by the customers at the bank.
2. They are priced without giving economic incentives to the customer to leave excess funds in the account.
3. They arise out of a clearing, custody, or cash management relationship with the bank.
4. They do not arise out of correspondent banking services or in the context of prime brokerage services.
5. The termination of such agreements requires a minimum notice period of 30 days.
6. If the agreement can be terminated within 30 days, the customer has to pay significant switching or termination costs to the bank.

Any excess balances held in an account classified as an operational deposit over and above that which is required to meet the operational requirements of the customer is assigned a higher outflow rate by the regulator. The application supports a methodology for computing the portion of the balance held for operational purposes which are truly required to meet the operational requirements of the customer. For details see Calculating Operational Amount.

3.2.10 Calculating Contractually Required Collateral

Contractually required collateral is the amount of collateral that is contractually due from one party to the other based on the current exposure and collateral position. This amount must be paid to the party soon and results in outflow for the party owing the collateral and inflow to the party to whom the collateral is due. It can be Contractually Due Collateral or Contractually Receivable Collateral based on the direction of the exposure:

Topics:

- For Derivatives
- For Other Assets and Liabilities

3.2.10.1 For Derivatives

This section details the calculation of contractually due collateral and contractually receivable collateral for derivatives.

Topics:

- Calculating Contractually Due Collateral
- Calculating Contractually Receivable Collateral

3.2.10.1.1 Calculating Contractually Due Collateral

The application computes the value of the collateral that a bank is required to post contractually to its derivative counterparty as follows, if one of the following conditions are met:

1. If Secured Indicator is No, then the contractually due collateral is 0.
2. If Secured Indicator is Yes and CSA Type is One way, then the contractually due collateral is 0.
3. If Secured Indicator is Yes, CSA Type is Two way and Gross Exposure is greater than or equal to 0, then the contractually due collateral is 0.
4. If Secured Indicator is Yes, CSA Type is Two way and Gross Exposure is less than 0, the application computes the contractually due collateral as follows:

$$\textit{Contractually Due Collateral} = \textit{Max}[0, \{\textit{Abs}(\textit{Gross Exposure}) - \textit{Threshold} - \textit{Collateral Posted}\}]$$

   Where,

   Threshold is the unsecured exposure that a party to a netting agreement is willing to assume before making collateral calls.

5. If Secured Indicator = Yes, CSA Type = Two way and Gross Exposure is <0, then the application computes contractually due collateral for Non-Netted Derivatives as follows:

$$\textit{Contractually Due Collateral} = \textit{Max}[0, \{\textit{Abs}(\textit{Matk To Market Value}) - \textit{Threshold} - \textit{Collateral Posted}\}]$$

   The contractually due collateral is assumed to be posted and therefore receives the relevant outflow rate specified by the regulator as part of the preconfigured business assumptions for LCR calculations.

3.2.10.1.2 Calculating Contractually Receivable Collateral

The application computes the value of the collateral that a derivative counterparty is required to post contractually to the bank as per the following procedure:

1. If Secured Indicator is No, then the contractually receivable collateral is 0. Otherwise,
2. If Secured Indicator is Yes and Gross Exposure is less than or equal to 0, then the contractually receivable collateral is 0. Otherwise,
3. If Secured Indicator is Yes and Gross Exposure is is greater than 0, then the application computes the contractually receivable collateral as follows:

   $$Contractually\ Receivable\ Collateral = Max[0, \{Abs(Gross\ Exposure) - Threshold - Collateral\ Received\}]$$

   The contractually receivable collateral does not receive a pre-specified inflow rate from the regulator and is, therefore, excluded from the LCR calculations. However, the application computes this to report.

3.2.10.2 For Other Assets and Liabilities

This section details the calculation of contractually due collateral and contractually receivable collateral for other assets and liabilities.

Topics:

- Calculating Contractually Due Collateral
- Calculating Contractually Receivable Collateral

3.2.10.2.1 Calculating Contractually Due Collateral

The application calculates contractually due collateral for other assets and liabilities as follows, if one of the following conditions are met:

1. If Balance Sheet Category is Asset, then the contractually due collateral is 0.
2. If Balance Sheet Category is Liability, and Secured Indicator is N, then the contractually due collateral is 0.
3. If Balance Sheet Category is Liability, and Secured Indicator is Y, then the application computes the contractually due collateral as follows:

   $$\boldsymbol{Contractually\ Due\ Collateral = Max[0, \{EOP\ Balance\ of\ Liability - Collateral\ Posted\}]}$$

3.2.10.2.2 Calculating Contractually Receivable Collateral

The application calculates contractually receivable collateral for other assets and liabilities as follows, if one of the following conditions are met:

1. If Balance Sheet Category is Liability, then the contractually due collateral is 0.
2. If Balance Sheet Category is Asset, and Secured Indicator is N, then the contractually due collateral is 0.

3. If Balance Sheet Category is Asset, and Secured Indicator is Y then the application computes the contractually due collateral as follows:

$$\textit{Contractually Receivable Collateral} = \textit{Max}[0, \{\textit{EOP Balance of Asset} - \textit{Collateral Received}\}]$$

3.2.11 Calculating Excess Collateral

Excess collateral is the value of collateral posted or received that is over the collateral required based on the current levels of exposure and collateral position. This amount can be withdrawn by the party which has provided the collateral over its exposure and results in outflow to the party holding the excess collateral and an inflow to the party who has provided the excess collateral. It can be Excess Collateral Due or Excess Collateral Receivable types.

Topics:

- For Derivatives
- For Other Assets and Liabilities

3.2.11.1 For Derivatives

This section details the calculation of excess collateral due and excess collateral receivable for derivatives.

Topics:

- Calculating Excess Collateral Due
- Calculating Excess Collateral Receivable

3.2.11.1.1 Calculating Excess Collateral Due

The application computes the value of the collateral that a derivative counterparty has posted to the bank, over the contractually required collateral, and therefore can be withdrawn by the counterparty, as follows:

1. If Secured Indicator is No, then the excess collateral due is 0.
2. If Secured Indicator is Y and Gross Exposure are less than or equal to 0, the application computes the excess collateral due as follows:

$$\textit{Excess Collateral Due} = \textit{Min}[\textit{Adjusted Collateral Received}, \textit{Non} - \textit{segregated Collateral Received}]$$

   Where,

   Adjusted collateral received: Collateral received from the counterparty less customer withdrawable collateral.

   Customer withdrawable collateral: Collateral received under rehypothecation rights that can be contractually withdrawn by the customer within the LCR horizon without a significant penalty associated with such withdrawal.
3. If Secured Indicator is Y and Gross Exposure are greater than 0, the application computes the excess collateral due as follows:

$$Excess\ Collateral\ Due = Min[Max\{0, Adjusted\ Collateral\ Received - Gross\ Exposure\}, Non - segregated\ Collateral\ Received]$$

4. If Secured Indicator is Y and Gross Exposure are greater than 0, then the application computes excess collateral due for Non-Netted Derivatives as follows:

$$Excess\ Collateral\ Due = Min[Max\{0, Adjusted\ Collateral\ Received - Matk\ To\ Market\ Value\}, Non - segregated\ Collateral\ Received]$$

The excess collateral due is assumed to be recalled by the counterparty and therefore receives the relevant outflow rate specified by the regulator as part of the preconfigured business assumptions for LCR calculations.

3.2.11.1.2 Calculating Excess Collateral Receivable

The application computes the value of the collateral that the bank has posted to its derivative counterparty, over the contractually required collateral, and therefore can be withdrawn by the bank, as follows:

1. If Secured Indicator is No, then the excess collateral receivable is 0.
2. If Secured Indicator is Y and Gross Exposure are greater than or equal to 0, the application computes the excess collateral receivable as follows:

$$Excess\ Collateral\ Receivable = Min[Adjusted\ Collateral\ Posted, Non - segregated\ Collateral\ Posted]$$

Where,

Adjusted collateral posted: Collateral posted by the bank less firm withdrawable collateral.

Firm withdrawable collateral: Collateral provided under rehypothecation rights that can be contractually withdrawn by the bank within the LCR horizon without a significant penalty associated with such withdrawal.

3. If Secured Indicator is Y and Gross Exposure are less than 0, the application computes the excess collateral receivable as follows:

$$Excess\ Collateral\ Receivable = Min[Max\{0, Adjusted\ Collateral\ Posted - Abs(Gross\ Exposure)\}, Non - segregated\ Collateral\ Posted]$$

The excess collateral receivable does not receive a pre-specified inflow rate from the regulator and is, therefore, excluded from the LCR calculations. However, the application computes this to report.

3.2.11.2 For Other Assets and Liabilities

This section details the calculation of excess collateral due and excess collateral receivable for other assets and liabilities.

Topics

- Calculating Excess Collateral Due
- Calculating Excess Collateral Receivable

3.2.11.2.1 Calculating Excess Collateral Due

The application calculates the excess collateral due for other assets and liabilities as follows, if one of the following conditions are met:

1. If Balance Sheet Category is Liability, then the contractually due collateral is 0.
2. If Balance Sheet Category is Asset, and Secured Indicator is N, then the contractually due collateral is 0.
3. If Balance Sheet Category is Asset, and Secured Indicator is Y, then the application computes the contractually due collateral as follows:

$$\begin{aligned}&\boldsymbol{Excess\ Collateral\ Due}\\&\quad = \boldsymbol{Min[Max\{0, Adjusted\ Collateral\ Received - EOP\ Balance\ of\ Asset\}, Non}\\&\quad \boldsymbol{-\ segregated\ Collateral\ Received]}\end{aligned}$$

3.2.11.2.2 Calculating Excess Collateral Receivable

The application calculates the excess collateral receivable for other assets and liabilities as follows, if one of the following conditions are met:

1. If Balance Sheet Category is Asset, then the contractually due collateral is 0.
2. If Balance Sheet Category is Liability, and Secured Indicator is N, then the contractually due collateral is 0.
3. If Balance Sheet Category is Liability, and Secured Indicator is Y, then the application computes the contractually due collateral as follows:

$$\begin{aligned}&\boldsymbol{Excess\ Collateral\ Receivable}\\&\quad = \boldsymbol{Min[Max\{0, Adjusted\ Collateral\ Posted - EOP\ Balance\ of\ Liability\}, Non}\\&\quad \boldsymbol{-\ segregated\ Collateral\ Posted]}\end{aligned}$$

3.2.12 Calculating Downgrade Impact Amount

This section details the calculation of downgrade impact amount for derivatives and other liabilities.

Topics:

- Calculating Downgrade Impact Amount for Derivatives
- Calculating Downgrade Impact Amount for Other Liabilities

3.2.12.1 Calculating Downgrade Impact Amount for Derivatives

The application calculates the downgrade impact amount for derivatives as follows, if one of the following conditions are met:

1. If a downgrade trigger does not exist for the derivatives contract or netting agreement, the downgrade impact amount is 0.
2. If Net Exposure greater than 0, the downgrade impact amount is 0.
3. If Net Exposure less than or equal to 0, the downgrade impact amount is calculated as follows:

$$\boldsymbol{Downgrade\ Impact\ Amount = Max[0, \{Abs(Net\ Exposure) - Contractually\ Due\ Collateral\}]}$$

3.2.12.2 Calculating Downgrade Impact Amount for Other Liabilities

The application calculates the downgrade impact amount for other liabilities, including annuities, that have an associated downgrade, derivatives as follows, if one of the following conditions are met.

1. If a downgrade trigger does not exist for the liability account, the downgrade impact amount is 0.
2. The downgrade impact amount for liabilities other than derivatives and securitizations is calculated as follows:

$$Downgrade\ Impact\ Amount = Max[0, (EOP\ Balance - Collateral\ Posted)]$$

NOTE	Any liability account that is triggered due to a particular level of rating downgrade has an outflow corresponding to a pre-specified percentage of the downgrade impact amount. For instance, if a 3-notch downgrade is specified, then the downgrade impact amount will outflow only for those accounts that have a trigger of 1-notch, 2-notches, and 3-notches. If a 2-notch downgrade is specified, then the downgrade impact amount will outflow only for those accounts that have a trigger of 1-notch and 2-notches. The rating downgrade and the outflow percentage as specified by the regulator are part of the preconfigured business assumptions for LCR calculations.

3.2.13 Calculating Net Derivative Cash Inflows and Outflows

This section provides info ration about calculating net derivative cash inflows and outflows.

Topics:

- Cash Flow Netting at Derivative Contract Level
- Cash Flow Netting at Netting Agreement Level

3.2.13.1 Cash Flow Netting at Derivative Contract Level

Cash flows from each derivative contract are netted as follows:

1. When cash inflows and outflows are denominated in the same currency and occur at the same time bucket:
   a. The cash inflows and outflows are summed up and the net value is computed as follows:

   $$Net\ Cash\ Flow = Cash\ Outflow - Cash\ Inflow$$

   b. If the net cash flow is positive and there is no netting agreement associated with the derivative contract, the value is treated as net derivative cash outflow.
   c. If the net cash flow is negative and there is no netting agreement associated with the derivative contract, the value is treated as net derivative cash inflow.

2. When cash inflows and outflows are denominated in different currencies but settle within the same day:
    a. The cash inflows and outflows are summed up after being converted to the reporting currency and the net value is computed.
    b. If the net cash flow is positive and there is no netting agreement associated with the derivative contract, the value is treated as net derivative cash outflow.
    c. If the net cash flow is negative and there is no netting agreement associated with the derivative contract, the value is treated as net derivative cash inflow.
3. When cash inflows and outflows are denominated in different currencies and do not settle within the same day:
    a. The cash outflows from each derivative contract without an associated netting agreement are summed up and treated as net derivative cash outflows.
    b. The cash inflows from each derivative contract without an associated netting agreement are summed up and treated as net derivative cash inflow.

NOTE If a derivative contract has a netting agreement associated with it, the cash flow is further netted across contracts at the netting agreement level.

3.2.13.2 Cash Flow Netting at Netting Agreement Level

For derivative contracts which have a netting agreement associated with them, the net cash flows computed at the derivative contract level are further netted across multiple contracts under the same netting agreement as follows:

1. For derivative contracts, that belong to a single netting agreement, whose payment netting agreement flag is Yes:
    a. The cash inflows and outflows occurring in each time bucket, denominated in each currency, are summed up across all contracts whose payment netting agreement flag is Yes, and the net value is computed.
    b. If the net cash flow is positive, the value is treated as net derivative cash outflow.
    c. If the net cash flow is negative, the value is treated as net derivative cash inflow.
2. For derivative contracts, that belong to a single netting agreement, whose payment netting agreement flag is No:
    a. The cash outflows occurring in each time bucket, denominated in each currency, are summed up separately for each derivative contract whose payment netting agreement flag is No, and treated as net derivative cash outflow.
    b. The cash inflows occurring in each time bucket, denominated in each currency, are summed up separately for each derivative contract whose payment netting agreement flag is No and treated as net derivative cash inflow.

NOTE	Cash flow netting for netting agreements is done separately for each currency. Cash flows are not netted across currencies, instead, the inflows and outflows converted into the reporting currency are summed up separately to report the net derivatives cash inflow and net derivatives cash outflow at an entity level.

3.2.14 Calculating Twenty-Four Month Look-back Amount

The application computes the 24-month look-back amount, to define outflows due to increased liquidity requirements related to market valuation changes on derivatives as follows:

- The Mark-to-Market (MTM) value of collateral outflows and inflows due to valuation changes on derivative transactions are captured at a legal entity level. The values over a 24-month historical time window from the as of date are identified.
- The application computes the largest 30-day absolute net collateral flow occurring within each rolling 30-day historical time window as follows:

  a. The net Mark-to-Market collateral change is computed for each day within a particular 30-day historical time window as follows:

  $$Net\ MTM\ Collateral\ Change = MTM\ Colateral\ Outflows - MTM\ Collateral\ Inflows$$

  b. The cumulative net Mark-to-Market collateral change is computed for each day within a particular 30-day historical time window as follows:

  $$Cumulative\ Net\ MTM\ Collateral\ Change = \sum_{1}^{i} Net\ MTM\ Collateral\ Change$$

  Where,

  i: Each day within a particular 30-day historical time window.

  n: Each 30-day historical time window.

  c. The absolute net Mark-to-Market collateral change is computed for each day within the rolling 30-day historical time window as follows:

  $$Absolute\ Net\ MTM\ Collateral\ Change = Abs(Cumulative\ Net\ MTM\ Collateral\ Change)$$

  d. The largest 30-day absolute net collateral flow occurring within the rolling 30-day historical time window is identified as follows:

$$Largest\ 30 - day\ Absolute\ Net\ Collateral\ Flow = Max(Absolute\ Net\ MTM\ Collateral\ Change_i)$$

NOTE	Steps (a) to (d) are repeated for each rolling 30-day historical time window.

3. The 24-month look-back amount is calculated as follows:

$$24 - Month\ Lookback\ Amount = Max(Largest\ 30 - day\ Absolute\ Net\ Collateral\ Flow_n)$$

NOTE

1. This calculation is done for each legal entity separately.
2. The largest 30-day absolute net collateral flow is computed in 30-day blocks on a rolling basis. For example, the first 30-day block is As of Date to As of Date - 29; the second 30-day block is As of Date - 1 to As of Date - 30 and so on.
3. The 24-month look-back amount is computed as the maximum of the largest absolute net collateral flow during all rolling 30-day periods in every 24 months.

The 24-month look-back calculations are illustrated in the following table, considering a 34-day historical time window instead of 24-months. This results in 5 rolling 30-day windows.

Table 3: Illustration: 24-month Look-back Calculation

Rolling 30-Day Period	Day	Mark-To-Market Collateral Outflows Due To Derivative Transaction Valuation Changes (a)	Mark-To-Market Collateral Inflows Due To Derivative Transaction Valuation Changes (b)	Net Mark-To-Market Collateral Change (c = a – b)	Cumulative Net Mark-To-Market Collateral Change (d = Cumulative c)	Absolute Net Mark-To-Market Collateral Change [e = Abs (d)]
As of Date to As of Date - 29	As of Date	65	14	51	51	51
	As of Date - 1	65	9	56	107	107
	As of Date - 2	74	83	-9	98	98
	As of Date - 3	71	97	-26	72	72
	As of Date - 4	84	89	-5	67	67
	As of Date - 5	8	57	-49	18	18
	As of Date - 6	40	59	-19	-1	1
	As of Date - 7	42	87	-45	-46	46
	As of Date - 8	100	6	94	48	48
	As of Date - 9	41	30	11	59	59
	As of Date - 10	45	9	36	95	95
	As of Date - 11	9	32	-23	72	72
	As of Date - 12	59	67	-8	64	64
	As of Date - 13	61	10	51	115	115
	As of Date - 14	22	36	-14	101	101
	As of Date - 15	63	81	-18	83	83
	As of Date - 16	36	3	33	116	116

Rolling 30-Day Period	Day	Mark-To-Market Collateral Outflows Due To Derivative Transaction Valuation Changes (a)	Mark-To-Market Collateral Inflows Due To Derivative Transaction Valuation Changes (b)	Net Mark-To-Market Collateral Change (c = a – b)	Cumulative Net Mark-To-Market Collateral Change (d = Cumulative c)	Absolute Net Mark-To-Market Collateral Change [e = Abs (d)]
	As of Date - 17	61	22	39	155	155
	As of Date - 18	94	37	57	212	212
	As of Date - 19	3	18	-15	197	197
	As of Date - 20	13	27	-14	183	183
	As of Date - 21	24	56	-32	151	151
	As of Date - 22	57	75	-18	133	133
	As of Date - 23	66	87	-21	112	112
	As of Date - 24	33	71	-38	74	74
	As of Date - 25	29	30	-1	73	73
	As of Date - 26	64	25	39	112	112
	As of Date - 27	54	39	15	127	127
	As of Date - 28	51	6	45	172	172
	As of Date - 29	35	31	4	176	176
As of Date - 1 to As of Date - 30	As of Date - 1	65	9	56	56	56
	As of Date - 2	74	83	-9	47	47
	As of Date - 3	71	97	-26	21	21
	As of Date - 4	84	89	-5	16	16
	As of Date - 5	8	57	-49	-33	33

Rolling 30-Day Period	Day	Mark-To-Market Collateral Outflows Due To Derivative Transaction Valuation Changes (a)	Mark-To-Market Collateral Inflows Due To Derivative Transaction Valuation Changes (b)	Net Mark-To-Market Collateral Change (c = a – b)	Cumulative Net Mark-To-Market Collateral Change (d = Cumulative c)	Absolute Net Mark-To-Market Collateral Change [e = Abs (d)]
	As of Date - 6	40	59	-19	-52	52
	As of Date - 7	42	87	-45	-97	97
	As of Date - 8	100	6	94	-3	3
	As of Date - 9	41	30	11	8	8
	As of Date - 10	45	9	36	44	44
	As of Date - 11	9	32	-23	21	21
	As of Date - 12	59	67	-8	13	13
	As of Date - 13	61	10	51	64	64
	As of Date - 14	22	36	-14	50	50
	As of Date - 15	63	81	-18	32	32
	As of Date - 16	36	3	33	65	65
	As of Date - 17	61	22	39	104	104
	As of Date - 18	94	37	57	161	161
	As of Date - 19	3	18	-15	146	146
	As of Date - 20	13	27	-14	132	132
	As of Date - 21	24	56	-32	100	100
	As of Date - 22	57	75	-18	82	82
	As of Date - 23	66	87	-21	61	61

Rolling 30-Day Period	Day	Mark-To-Market Collateral Outflows Due To Derivative Transaction Valuation Changes (a)	Mark-To-Market Collateral Inflows Due To Derivative Transaction Valuation Changes (b)	Net Mark-To-Market Collateral Change (c = a – b)	Cumulative Net Mark-To-Market Collateral Change (d = Cumulative c)	Absolute Net Mark-To-Market Collateral Change [e = Abs (d)]
	As of Date - 24	33	71	-38	23	23
	As of Date - 25	29	30	-1	22	22
	As of Date - 26	64	25	39	61	61
	As of Date - 27	54	39	15	76	76
	As of Date - 28	51	6	45	121	121
	As of Date - 29	35	31	4	125	125
	As of Date - 30	93	68	25	150	150
As of Date - 2 to As of Date - 31	As of Date - 2	74	83	-9	-9	9
	As of Date - 3	71	97	-26	-35	35
	As of Date - 4	84	89	-5	-40	40
	As of Date - 5	8	57	-49	-89	89
	As of Date - 6	40	59	-19	-108	108
	As of Date - 7	42	87	-45	-153	153
	As of Date - 8	100	6	94	-59	59
	As of Date - 9	41	30	11	-48	48
	As of Date - 10	45	9	36	-12	12
	As of Date - 11	9	32	-23	-35	35
	As of Date - 12	59	67	-8	-43	43

Rolling 30-Day Period	Day	Mark-To-Market Collateral Outflows Due To Derivative Transaction Valuation Changes (a)	Mark-To-Market Collateral Inflows Due To Derivative Transaction Valuation Changes (b)	Net Mark-To-Market Collateral Change (c = a – b)	Cumulative Net Mark-To-Market Collateral Change (d = Cumulative c)	Absolute Net Mark-To-Market Collateral Change [e = Abs (d)]
	As of Date - 13	61	10	51	8	8
	As of Date - 14	22	36	-14	-6	6
	As of Date - 15	63	81	-18	-24	24
	As of Date - 16	36	3	33	9	9
	As of Date - 17	61	22	39	48	48
	As of Date - 18	94	37	57	105	105
	As of Date - 19	3	18	-15	90	90
	As of Date - 20	13	27	-14	76	76
	As of Date - 21	24	56	-32	44	44
	As of Date - 22	57	75	-18	26	26
	As of Date - 23	66	87	-21	5	5
	As of Date - 24	33	71	-38	-33	33
	As of Date - 25	29	30	-1	-34	34
	As of Date - 26	64	25	39	5	5
	As of Date - 27	54	39	15	20	20
	As of Date - 28	51	6	45	65	65
	As of Date - 29	35	31	4	69	69
	As of Date - 30	93	68	25	94	94

Rolling 30-Day Period	Day	Mark-To-Market Collateral Outflows Due To Derivative Transaction Valuation Changes (a)	Mark-To-Market Collateral Inflows Due To Derivative Transaction Valuation Changes (b)	Net Mark-To-Market Collateral Change (c = a – b)	Cumulative Net Mark-To-Market Collateral Change (d = Cumulative c)	Absolute Net Mark-To-Market Collateral Change [e = Abs (d)]
	As of Date - 31	51	97	-46	48	48
As of Date - 3 to As of Date - 32	As of Date - 3	71	97	-26	-26	26
	As of Date - 4	84	89	-5	-31	31
	As of Date - 5	8	57	-49	-80	80
	As of Date - 6	40	59	-19	-99	99
	As of Date - 7	42	87	-45	-144	144
	As of Date - 8	100	6	94	-50	50
	As of Date - 9	41	30	11	-39	39
	As of Date - 10	45	9	36	-3	3
	As of Date - 11	9	32	-23	-26	26
	As of Date - 12	59	67	-8	-34	34
	As of Date - 13	61	10	51	17	17
	As of Date - 14	22	36	-14	3	3
	As of Date - 15	63	81	-18	-15	15
	As of Date - 16	36	3	33	18	18
	As of Date - 17	61	22	39	57	57
	As of Date - 18	94	37	57	114	114
	As of Date - 19	3	18	-15	99	99

Rolling 30-Day Period	Day	Mark-To-Market Collateral Outflows Due To Derivative Transaction Valuation Changes (a)	Mark-To-Market Collateral Inflows Due To Derivative Transaction Valuation Changes (b)	Net Mark-To-Market Collateral Change (c = a – b)	Cumulative Net Mark-To-Market Collateral Change (d = Cumulative c)	Absolute Net Mark-To-Market Collateral Change [e = Abs (d)]
	As of Date - 20	13	27	-14	85	85
	As of Date - 21	24	56	-32	53	53
	As of Date - 22	57	75	-18	35	35
	As of Date - 23	66	87	-21	14	14
	As of Date - 24	33	71	-38	-24	24
	As of Date - 25	29	30	-1	-25	25
	As of Date - 26	64	25	39	14	14
	As of Date - 27	54	39	15	29	29
	As of Date - 28	51	6	45	74	74
	As of Date - 29	35	31	4	78	78
	As of Date - 30	93	68	25	103	103
	As of Date - 31	51	97	-46	57	57
	As of Date - 32	12	31	-19	38	38
As of Date - 4 to As of Date - 33	As of Date - 4	84	89	-5	-5	5
	As of Date - 5	8	57	-49	-54	54
	As of Date - 6	40	59	-19	-73	73
	As of Date - 7	42	87	-45	-118	118
	As of Date - 8	100	6	94	-24	24

Rolling 30-Day Period	Day	Mark-To-Market Collateral Outflows Due To Derivative Transaction Valuation Changes (a)	Mark-To-Market Collateral Inflows Due To Derivative Transaction Valuation Changes (b)	Net Mark-To-Market Collateral Change (c = a – b)	Cumulative Net Mark-To-Market Collateral Change (d = Cumulative c)	Absolute Net Mark-To-Market Collateral Change [e = Abs (d)]
	As of Date - 9	41	30	11	-13	13
	As of Date - 10	45	9	36	23	23
	As of Date - 11	9	32	-23	0	0
	As of Date - 12	59	67	-8	-8	8
	As of Date - 13	61	10	51	43	43
	As of Date - 14	22	36	-14	29	29
	As of Date - 15	63	81	-18	11	11
	As of Date - 16	36	3	33	44	44
	As of Date - 17	61	22	39	83	83
	As of Date - 18	94	37	57	140	140
	As of Date - 19	3	18	-15	125	125
	As of Date - 20	13	27	-14	111	111
	As of Date - 21	24	56	-32	79	79
	As of Date - 22	57	75	-18	61	61
	As of Date - 23	66	87	-21	40	40
	As of Date - 24	33	71	-38	2	2
	As of Date - 25	29	30	-1	1	1
	As of Date - 26	64	25	39	40	40

Rolling 30-Day Period	Day	Mark-To-Market Collateral Outflows Due To Derivative Transaction Valuation Changes (a)	Mark-To-Market Collateral Inflows Due To Derivative Transaction Valuation Changes (b)	Net Mark-To-Market Collateral Change (c = a – b)	Cumulative Net Mark-To-Market Collateral Change (d = Cumulative c)	Absolute Net Mark-To-Market Collateral Change [e = Abs (d)]
	As of Date - 27	54	39	15	55	55
	As of Date - 28	51	6	45	100	100
	As of Date - 29	35	31	4	104	104
	As of Date - 30	93	68	25	129	129
	As of Date - 31	51	97	-46	83	83
	As of Date - 32	12	31	-19	64	64
	As of Date - 33	34	36	-2	62	62

The largest 30-day absolute net collateral flow for each rolling 30-day period and the 24-month look-back value (in this example, the 34-day look-back value) are computed as follows:

Table 4: Illustration continued: 24-month Look-back Calculation

Rolling 30-Day Period	Largest 30-Day Absolute Net Collateral Flow [f = Max (e)]	24 Month Look-back Value [Max (f)]
As of Date to As of Date - 29	212	212
As of Date - 1 to As of Date - 30	161	
As of Date - 2 to As of Date - 31	153	
As of Date - 3 to As of Date - 32	144	

Rolling 30-Day Period	Largest 30-Day Absolute Net Collateral Flow [f = Max (e)]	24 Month Look-back Value [Max (f)]
As of Date - 4 to As of Date - 33	140	

3.2.15 Calculating Operational Amount

The regulator-prescribed lower outflow rate for operational deposits should be applied only to the portion of the EOP balance that is truly held to meet operational requirements. The application supports a new methodology to compute the operational portion of the EOP balance of operational deposits. The following steps are involved in computing the operational balance:

1. All deposits classified as operational as per regulatory guidelines are identified. This is a separate process in LRM.
2. The EOP balances of eligible operational accounts are obtained over a 90-day historical window including the As of Date. For example, As of Date – 89 days. To identify historical observations, the f_reporting_flag must be updated as Y for one execution of the Run per day in the LRM Run Management Execution Summary UI. The application looks up the balance for such accounts against the Run execution for which the Reporting Flag is updated as Y for each day in the past.

> **NOTE** The historical time window is captured as a parameter in the SETUP_MASTER table. The default value is 90 days which can be modified by the user. To modify this value. Update the value under the component code DAYS_HIST_OPER_BAL_CALC_UPD

3. A rolling 5-day average is calculated for each account over the historical window.
4. The average of the 5-day rolling averages computed in Step 3 is calculated.

5. The operational balance is calculated as follows:

> **NOTE** The calculation of the operational balance can be either a direct download from the staging tables or through the historical balance approach.

$$Operational\ Balance = Min\ (Current\ EOP\ Balance, Average\ Computed\ in\ Step\ 4)$$

> **NOTE** The operational balance calculation based on historical lookback is optional. You can choose to compute the operational balances using this method or provide the value as a download. To provide the value as a download, update the value in the SETUP_MASTER table under the component code HIST_OPERATIONAL_BAL_CALC_UPD as N. If the value is 'Y' then the value would be calculated through historical balance approach.

6. The non-operational balance is calculated as follows:

$$Non-operational\ Balance = Current\ EOP\ Balance - Operational\ Balance$$

7. The operational insured balance is calculated as follows:

$$Operational\ Insured\ Balance = Min\ (Operational\ Balance, Insured\ Balance)$$

The insured and uninsured balances are calculated as part of a separate process, for example, the insurance allocation process, which is explained in detail in the relevant section under each jurisdiction.

8. The operational uninsured balance is calculated as follows:

$$Operational\ Uninsured\ Balance = Operational\ Balance - Insured\ Operational\ Balance$$

9. The non-operational insured balance is calculated as follows:

$$Non-operational\ Insured\ Balance = Min\ [Non-operational\ Balance, (Insured\ Balance - Insured\ Operational\ Balance)]$$

10. The non-operational uninsured balance is calculated as follows:

$$Non-operational\ Uninsured\ Balance = Non-operational\ Balance - Insured\ Non-operational\ Balance$$

The operational deposit computation process is illustrated as follows assuming a 15-day historical window instead of 90-days and for the as of date 28th February 2017. The historical balances for 15-days including the as of date are as follows.

Table 5: Illustration - Operational Deposit Computation

Clients With Operational Accounts	Eligible Operational Accounts	Historical Time Window														As of Date
		2/14/2017	2/15/2017	2/16/2017	2/17/2017	2/18/2017	2/19/2017	2/20/2017	2/21/2017	2/22/2017	2/23/2017	2/24/2017	2/25/2017	2/26/2017	2/27/2017	2/28/2017
A	10001	102,000	102,125	102,250	102,375	102,500	102,625	102,750	102,875	103,000	103,125	103,250	103,375	103,500	103,625	103,750
	10296	23,500	23,550	23,600	23,650	23,700	23,750	23,800	23,850	23,900	23,950	24,000	24,050	24,100	24,150	24,200
B	31652	65,877	59,259	59,234	59,209	59,184	59,159	59,134	59,109	59,084	59,059	59,034	59,009	58,984	58,959	58,934

The rolling averages and cumulative average are computed as follows.

Table 6: Illustration - Rolling Average and Cumulative Average Computation

Clients with Operational Accounts	Eligible Operational Accounts	5-day Rolling Average											Cumulative Average (a)
		2/18/2017	2/19/2017	2/20/2017	2/21/2017	2/22/2017	2/23/2017	2/24/2017	2/25/2017	2/26/2017	2/27/2017	2/28/2017	
A	10001	102,250	102,375	102,500	102,625	102,750	102,875	103,000	103,125	103,250	103,375	103,500	95136
	10296	23,600	23,650	23,700	23,750	23,800	23,850	23,900	23,950	24,000	24,050	24,100	22721
B	31652	60,553	59,209	59,184	59,159	59,134	59,109	59,084	59,059	59,034	59,009	58,984	56931

The operational and non-operational balances are computed as follows.

Table 7: Illustration - Operational and Non-operational Balances Computation

Clients with Operational Accounts	Eligible Operational Accounts	Current Balance (b)	Operational Balance (c = a – b)	Non-Operational Balance	Insured Balance	Uninsured Balance	Insured Operational Balance	Uninsured Operational Balance	Insured Non-Operational Balance	Uninsured Non-Operational Balance
A	10001	103,750	95,136	8,615	100,000	3,750	95,136		4,865	3,750
	10296	24,200	22,721	1,480		24,200		22,721		1,480
B	31652	58,934	56,931	2,003	58,934		56,931		2,003	

NOTE

- Negative historical balances are replaced by zero for this computation.
- For operational accounts that have an account start date is greater than or equal to historical days including the as of date, missing balances are replaced by previously available balance.
- For operational accounts that have an account start date is less than the historical days including the as of date:
    - **a.** Missing balances between the account start date and as of date are replaced by previously available balance.
    - **b.** The rolling average is calculated only for the period from the account start date to the as of date.
- The methodology to compute operational balance is optional. This can be turned On or Off using the SETUP_MASTER table, where component code is equal to HIST_OPERATIONAL_BAL_CALC_UPD. The option to provide the operational balance as a download is supported by the application.

3.2.16 Calculating HQLA Transferability Restriction

Regulators across jurisdictions recognize the existence of liquidity transfer restrictions, for banks that operate in multiple jurisdictions. Such transfer restrictions have implications for the group-wide consolidated LCR calculations and hence must be treated appropriately. In the LCR consolidation process, OFS LRRCMAS includes the restricted HQLA from a subsidiary in the consolidated stock of HQLA only to the extent of that subsidiary's liquidity requirements such as its net cash outflow, per the regulatory requirements. The treatment of transferability restriction during consolidation is as follows:

1. The net cash outflows are computed for a subsidiary, on a consolidated basis. The consolidation entity is the subsidiary itself in this case. If the subsidiary is a leaf level entity, then the net cash outflow is calculated on a standalone basis.
2. The restricted and unrestricted stock of Level 1, Level 2A and Level 2B is computed for the subsidiary on a consolidated basis. OFS LRM captures the HQLA transferability restriction at an account level through the flag F_TRANSFERABILITY_RESTRICTION.
3. The application checks whether the stock of restricted Level 1 assets are greater than the net cash outflows. If yes, it includes the stock of restricted Level 1 assets in the calculation of its immediate parent entity's stock of HQLA up to the extent of its net cash outflows computed as part of step 1. If no, the entire stock of restricted Level 1 assets are included in the consolidated calculations.

4. The application checks whether the sum of stock of restricted Level 1 and Level 2A assets is greater than the net cash outflows. If yes, it includes the stock of restricted Level 2A assets in the calculation of its immediate parent entity's stock of HQLA up to the extent of its net cash outflows computed as part of step 1 less stock of restricted Level 1 asset. If no, the entire stock of restricted Level 2A assets are included in the consolidated calculations.
5. The application checks whether the sum of stock of restricted Level 1, Level 2A and Level 2B assets is greater than the net cash outflows. If yes, it includes the stock of restricted Level 2B assets in the calculation of its immediate parent entity's stock of HQLA up to the extent of its net cash outflows computed as part of step 1 less stock of restricted Level 1 and Level 2A assets. If no, the entire stock of restricted Level 2B assets is included in the consolidated calculations.
6. The unrestricted Level 1, 2A, and 2B assets are included fully in the calculation of its immediate parent entity's stock of HQLA.
7. Steps 1 to 6 are repeated for each sub-consolidation level within the organization structure of the consolidation entity until the consolidation entity itself.

NOTE

1. The allocation of restricted assets is done in the descending order of asset quality to maximize the stock of HQLA.
2. This calculation is part of the LCR consolidation process. To get a complete view of the process, see Consolidation, where the consolidation process is described.

3.2.17 Calculating Net Cash Outflows

The net cash outflows are computed after applying the scenario specified by the user, as a set of business assumptions, to the contractual cash flows. The process of computing the net cash outflows is as follows:

1. Calculation of Total Cash Inflows

   The application applies the business assumptions, specified on products involving cash inflows, selected as part of the Run. The regulatory assumptions specified in the Regulations Addressed through Business Assumptions section are predefined and packaged as part of the ready-to-use Run to determine the inflows over the liquidity horizon. The business assumption adjusted cash inflows occurring over the liquidity horizon are summed up to obtain the total cash inflow. These include inflows from earning assets such as loans, assets that are not eligible for inclusion in the stock of HQLA, derivatives inflows, and so on.

2. Calculation of Total Cash Outflows

   The application applies the business assumptions, specified on products involving cash outflows, selected as part of the Run. The regulatory assumptions specified in the Regulations Addressed through Business Assumptions section are predefined and packaged as part of the ready-to-use Run to determine the outflows over the liquidity horizon. The business assumption adjusted cash outflows occurring over the liquidity horizon is summed up to obtain the total cash outflow. These include outflows from liabilities, derivatives outflows, outflows due to changes in financial conditions such as rating downgrade and valuation changes, and so on.

3. Calculation of Net Cash Outflow

   Net cash outflow is computed as follows:

$$
\begin{aligned}
&\textit{Net Cash Outflows}_{LCR\ Horizon}\\
&\qquad = \textit{Total Cash Outflows}_{LCR\ Horizon}\\
&\qquad - \textit{Minimum}\{\textit{Total Cash Inflows}_{LCR\ Horizon}; (75\%\\
&\qquad \times \textit{Total Cash Outflows}_{LCR\ Horizon})
\end{aligned}
$$

3.2.18 Consolidation

The approach to consolidation as per LCR approach followed by OFS LRRCMAS is as follows:

a. **Identification and Treatment of Unconsolidated Subsidiary**

   The application assesses whether a subsidiary is to be consolidated or not by checking the regulatory consolidated flag F_REGULATORY_ENTITY_IND against each legal entity. The application consolidates the cash inflows and outflows of a subsidiary and computes the consolidated LCR, only if the subsidiary is a regulatory consolidated subsidiary. If the entity is an unconsolidated subsidiary, the cash inflows and outflows from the operations of such subsidiaries are ignored (unless otherwise specifically included in the denominator of LCR per regulations) and only the equity investment in such subsidiaries is considered as the bank's asset and appropriately taken into the numerator or denominator based on the asset level classification.

   For instance, legal entity 1 has 3 subsidiaries, legal entity 2, legal entity 3, and legal entity 4. The regulatory consolidated flag F_REGULATORY_ENTITY_IND for legal entity 4 is 'No'. In this case, legal entity 4 is treated as a third party for consolidation and its assets and cash flows are completely excluded from calculations. Legal entity 1's interest in legal entity 4 including common equity of legal entity 4 and assets and liabilities where legal entity 4 is the counterparty will not be eliminated as legal entity 4 is considered a third-party during consolidation.

b. **HQLA Consolidation by Subsidiary Type**

   The process of consolidating HQLA differs slightly based on whether the subsidiary is a material entity that is expected to report LCR separately from the parent or not. This is done to ensure consistency in the results when consolidating at a parent level and when calculating the LCR at the material subsidiary level as well. The methods followed for consolidating HQLA are:

   For material subsidiaries subject to individual LCR requirements, consolidation is done as follows:

   — The application identifies whether the subsidiary is a consolidated subsidiary.

   — If condition (a) is fulfilled, it identifies whether the consolidated subsidiary is subject to LCR requirement that is, whether the subsidiary in question is a regulated entity.

- If condition (b) is fulfilled, then it calculates the net cash outflow by eliminating all the inter-branch transactions at each country level of the consolidated subsidiary. If the consolidated subsidiary has operations in three countries, then the transaction between all the branches lying in the same country are eliminated. The application consolidates post-haircut restricted HQLA to the extent of the consolidated subsidiary's net cash outflow that is, to the extent required to satisfy minimum LCR requirements of that subsidiary as part of the covered company's HQLA. Restricted HQLA are the assets that have a restriction on their transferability to the parent entity or are the assets that are denominated in non-convertible currencies.
- It consolidates the entire amount of post-haircut unrestricted HQLA held at the consolidated subsidiary as part of the covered company's HQLA.
- It consolidates all cash inflows and outflows which are part of the net cash flow calculation.

For subsidiaries not subject to individual LCR requirements, consolidation is done as follows:

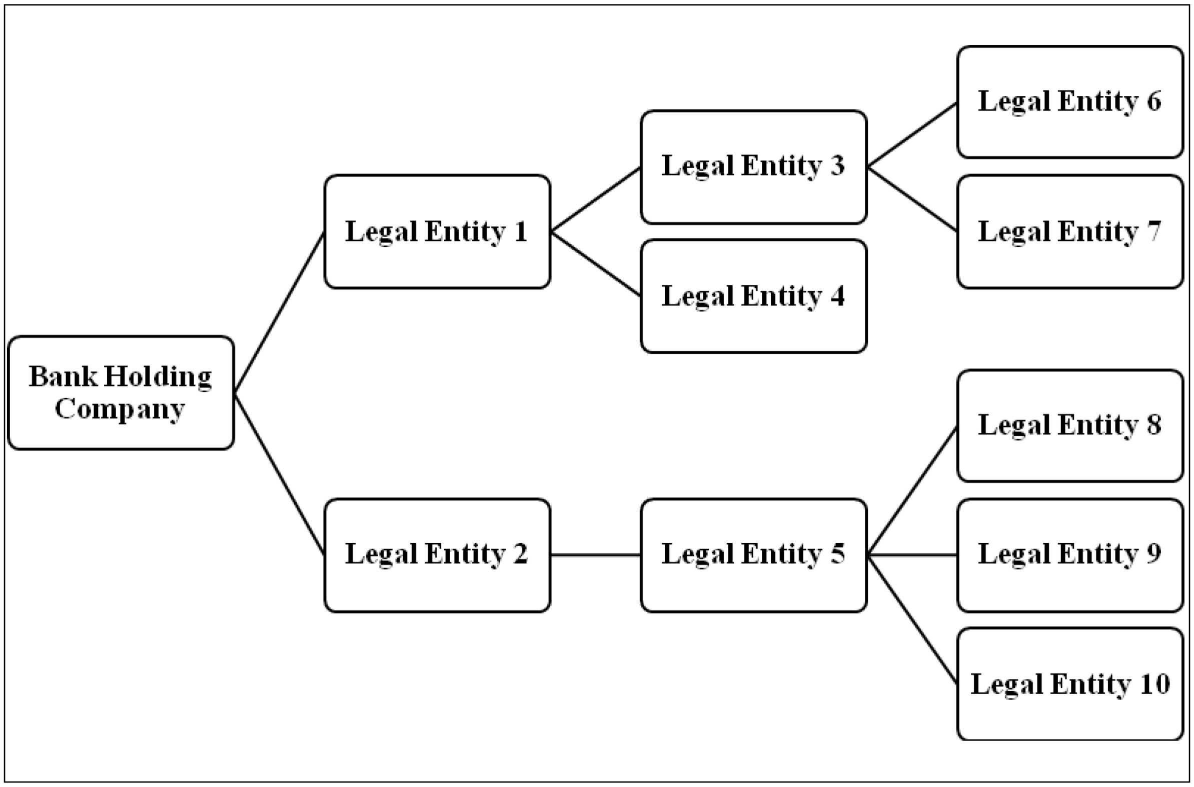
- The application identifies whether the subsidiary is a consolidated subsidiary.
- If condition (a) is fulfilled, it identifies whether the consolidated subsidiary is subject to minimum LCR requirement that is, whether the subsidiary in question is a regulated entity.
- If condition (b) is not fulfilled, it eliminates all inter-company transactions to the level of the immediate parent of the consolidated subsidiary and then calculates the net cash outflow.
- The application consolidates post-haircut restricted HQLA to the extent of the consolidated subsidiary's net cash outflow and the entire amount of post-haircut unrestricted HQLA as part of the covered company's HQLA.
- It consolidates all cash inflows and outflows which are part of the net cash flow calculation.

c. **Consolidated LCR Calculation**

Consolidation is done on a step by step basis based on each level of the organization structure starting from the most granular level. This indicates that intercompany transactions are eliminated at each sub-consolidation level till the final level of the consolidation (generally BHC) is reached. The consolidated HQLA calculated at the level of the immediate subsidiary of the BHC is added to the HQLA held by the BHC. All intercompany cash flows are eliminated and the LCR is calculated per the LCR approach.

For instance, a bank's organizational structure is as follows:

Figure 1: Banks Organization Structure



In this case, at the first level of consolidation, calculation of net cash outflows and HQLA is done on a solo basis for legal entities 6, 7, 8, 9, and 10 as they do not have any subsidiaries. For regulated entities, such as material entities, intercompany transactions are not eliminated; whereas for non-regulated entities, intercompany transactions are eliminated to the next level of consolidation that is, legal entities 3 and 5. The restricted HQLA from entities 6 and 7 are consolidated to the extent of their net cash outflows, while the unrestricted HQLA is transferred fully to legal entity 3. The cash inflows and outflows are consolidated to the full extent.

At the second level of consolidation that is, legal entity 3, intercompany transactions are eliminated till legal entity 1, if LE 3 is a non-regulated entity. The HQLA is calculated as a sum of the consolidated restricted and unrestricted HQLA of entities 6 and 7 and the HQLA of legal entity 3. The net cash outflow is calculated based on the cash flows of entities 3, 6, and 7, post-elimination of intercompany transactions if applicable. The consolidated HQLA is calculated based on the procedure detailed in Step 2 above.

This process continues in a step-by-step manner until the highest parent level, which is the bank holding company in this example.

3.2.19 Calculating Liquidity Coverage Ratio

The liquidity coverage ratio is calculated for a legal entity on both solo and consolidated basis. The formula for calculating the liquidity coverage ratio is as follows:

$$\textit{Liquidity Coverage Ratio} = \frac{\textit{Stock of High Quality Liquid Asset}}{\textit{Net Cash Outflow}}$$

3.2.20 Significant Currency Liquidity Coverage Ratio Calculation

The liquidity coverage ratio is also calculated for each legal entity at the level of each significant currency to identify potential currency mismatches. This is done by first identifying significant currencies for a legal entity, at a solo or consolidated level as specified in the Run, as follows:

$$\textit{Significant Currency} = \left[\frac{\textit{Total Liabilities}_{\textit{Legal Entity,Currency}}}{\textit{Total Liabilities}_{\textit{Legal Entity}}} \times 100\right] > 5\%$$

The application further computes and reports the stock of HQLA, net cash outflows, and LCR for each currency identified as significant in the manner detailed in the earlier sections. This calculation is done on both a solo and consolidated basis.

3.3 Preconfigured Regulatory LCR Scenario

OFS LRRCMAS supports a ready-to-use MAS LCR which has the regulatory scenario with associated HQLA haircuts, inflow, and outflow percentage or rates preconfigured in the form of business assumptions. This section explains the business assumptions and the corresponding regulatory reference.

> **NOTE** This section provides only contextual information about business assumptions. For more detailed information, see the OFS LRS application (UI). For detailed processes and tasks, see the Run Chart.

The following table lists the Document Identifiers provided in the Regulatory Reference column of the Regulations Addressed through Business Assumptions and Regulations Addressed through Business Rules sections.

Table 8: Document Identifiers for Regulatory References

Regulation Reference Number	Document Number	Document Name	Issued Date
MC	MAS Notice 649	MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio	28 Nov 14
	SDIC	SDIC	24 Aug 18

The list of preconfigured business Rules and assumptions as well as the corresponding reference to the regulatory requirement that it addresses are provided in the tables listed in the Regulations Addressed through Business Assumptions and Regulations Addressed through Business Rules sections.

Topics:

- Regulation Addressed through Business Rules
- Regulation Addressed through Business Assumptions

3.3.1 Regulation Addressed through Business Rules

The application supports multiple preconfigured rules and scenarios based on MAS specified scenario parameters such as inflow rates, outflow rates, Run-offs, haircuts, and so on.

Table 9: Preconfigured LCR Business Rules

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
1	LRM - MAS - HQLA Level 1 - Cash, Central Bank Reserves and Sukuk	This rule reclassifies cash, central bank reserves and undrawn portion of committed facilities that foreign bank branches have received from its head office, reserves and Sukuk issued by Singapore Sukuk Pte Ltd as HQLA Level 1 assets per the criteria specified by MAS.	The classification of cash, central bank reserves, and Sukuk issued by Singapore Sukuk Pte Ltd. as HQLA Level 1 asset is configured as part of this rule. Additionally, it classifies the undrawn portion of committed facilities that foreign bank branches have received from its head office as HQLA Level 1 asset.	Paragraph 21 (a) Paragraph 21 (b) Paragraph 21 (c)
2	LRM - MAS - HQLA Level 1 - Sovereign, Central Bank, and MDB Issued Zero Risk Weight Securities	This rule reclassifies marketable zero risk weight securities, issued by sovereigns, central banks, public sector enterprises, regional governments, municipalities, state agencies, state enterprises, Bank for International Settlements, International Monetary Fund, European Central Bank, European Community, and Multilateral Development Banks as HQLA Level 1 assets, per the criteria specified by MAS.	The classification of marketable zero risk weight securities, issued by sovereigns, central banks, public sector enterprises, regional governments, municipalities, state agencies, state enterprises, Bank for International Settlements, International Monetary Fund, European Central Bank, European Community, and Multilateral Development Banks as HQLA Level 1 assets are configured as part of this rule.	Paragraph 21 (d)

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
3	LRM - MAS - HQLA Level 1 - Sovereign, Central Bank, and MDB Guaranteed Zero Risk Weight Securities	This rule reclassifies marketable zero risk weight securities, guaranteed by sovereigns, central banks, public sector enterprises, regional governments, municipalities, state agencies, state enterprises, Bank for International Settlements, International Monetary Fund, European Central Bank, European Community, and Multilateral Development Banks as HQLA Level 1 assets, per the criteria specified by MAS.	The classification of marketable zero risk weight securities, guaranteed by sovereigns, central banks, public sector enterprises, regional governments, municipalities, state agencies, state enterprises, Bank for International Settlements, International Monetary Fund, European Central Bank, European Community, and Multilateral Development Banks as HQLA Level 1 assets are configured as part of this rule.	Paragraph 21 (d)
4	LRM - MAS - HQLA Level 1 - Sovereign and Central Bank Non-Zero Risk Weight Securities	This rule reclassifies non-zero risk weight securities issued by foreign sovereigns and central banks as HQLA Level 1 assets, per the criteria specified by MAS.	The classification of marketable securities, issued by non-zero risk weight foreign sovereigns and central banks as HQLA Level 1 assets is configured as part of this rule.	Paragraph 21 (g) Paragraph 21 (h)
5	LRM - MAS - HQLA Level 2A - Debt Securities	This rule reclassifies 20 percent risk-weighted securities issued or guaranteed by sovereigns, central banks, PSEs, regional governments, municipalities, state agencies, state enterprises, and MDBs as HQLA Level 2A assets, per the criteria specified by MAS.	The classification of twenty percent risk-weighted marketable securities either issued or guaranteed by foreign sovereigns, central banks, public sector enterprises, regional governments, municipalities, state agencies, state enterprises, and Multilateral Development Banks as HQLA Level 2A assets are configured as part of this rule.	Paragraph 21 (e)
6	LRM - MAS - HQLA Level 2A -Corporate Debt Securities, Sukuk	This rule reclassifies debt securities rated >=AA- issued by non-financial corporates, covered bonds and Sukuk issued by other than Singapore Sukuk Pte Ltd. as HQLA Level 2A assets.	The classification of >=AA- rated debt securities issued by non-financial corporates, covered bonds and Sukuk issued by other than Singapore Sukuk Pte Ltd. as HQLA Level 2A assets is configured as part of this rule.	Paragraph 21 (i)

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
7	LRM - MAS - HQLA Level 2B(I) Asset	This rule reclassifies corporate debt securities rated A+ to A-, issued by non-financial corporates, and Sukuk issued by other than Singapore Sukuk Pte Ltd. As HQLA Level 2A assets, in accordance with the criteria specified by MAS.	The classification of A+ to A-rated debt securities issued by non-financial corporates and Sukuk issued by other than Singapore Sukuk Pte Ltd. as HQLA Level (II) non-RMBS assets is configured as part of this rule.	Paragraph 21 (j)
8	LRM - MAS - HQLA Level 2B(II) non-RMBS Asset - Corporate Dept Securities	This rule reclassifies debt securities rated BBB+ and BBB-, issued by specialized sovereigns, central banks, non-financial corporates, and Sukuk issued by other than Singapore Sukuk Pte Ltd. as HQLA Level (II) non-RMBS assets, in accordance with the criteria specified by MAS.	The classification of BBB+ and BBB- rated debt securities issued by sovereigns; central banks; non-financial corporates and Sukuk issued by other than Singapore Sukuk Pte Ltd. as HQLA Level (II) non-RMBS assets is configured as part of this rule. Additionally, the classification of BBB+ and BBB- rated debt securities guaranteed by sovereigns and central banks	Paragraph 21 (f) Paragraph 21 (k)
9	LRM - MAS - HQLA Level 2B(II) non-RMBS Asset - Shares	This rule reclassifies equities issued by non-financial entities as HQLA Level (II) non-RMBS assets as HQLA Level (II) non-RMBS assets, in accordance with the criteria specified by MAS.	The classification of common equities issued by non-financial entities as HQLA Level (II) non-RMBS assets is configured as part of this rule.	Paragraph 21 (m)
10	LRM - MAS - HQLA Level 2B(II) RMBS Asset	This rule reclassifies residential mortgage-backed securities of >= AA, without any restructured underlying, as HQLA Level 2B assets in accordance with the criteria specified by MAS.	The classification of >= AA rated residential mortgage-backed securities without any restructured underlying as HQLA Level 2B(II) RMBS assets is configured as part of this rule.	Paragraph 21 (l)

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
11	LRM - MAS - Level 1 Stock Adjustment - Deduction	This rule identifies all secured lending and asset exchange transactions involving HQLA that mature within the LCR horizon which are, therefore, required to be unwound and reclassifies them to the appropriate adjustment rule. In case of secured lending transactions, where the collateral received is a non-Level 1 HQLA, the type of adjustment to the stock of HQLA due to such an unwind is updated as the deduction of the amount paid. In case of asset exchange transactions, where the collateral received is a non-Level 1 HQLA and the collateral posted in a Level 1 HQLA, the type of adjustment to the stock of HQLA due to such an unwind is updated as the deduction of the collateral posted.	The identification of secured funding and asset exchange transactions required to be unwound and the amount to be deducted from the stock of Level 1 assets due to such an unwind is configured as part of this rule.	Appendix 6 Paragraph 5
12	LRM - MAS - Level 1 Stock Adjustment - Addition	This rule identifies all secured funding and asset exchange transactions involving HQLA that mature within the LCR horizon which are, therefore, required to be unwound and reclassifies them to the appropriate adjustment rule. In case of secured funding transactions, where the collateral posted is a non-Level 1 HQLA, the type of adjustment to the stock of HQLA due to such an unwind is updated as the addition of the amount received. In case of asset exchange transactions, where the collateral posted is a non-Level 1 HQLA and the collateral received in a Level 1 HQLA the type of adjustment to the stock of HQLA due to such an unwind is updated as the addition of the collateral received.	The identification of secured lending and asset exchange transactions required to be unwound and the amount to be added to the stock of Level 1 assets due to such an unwind is configured as part of this rule.	Appendix 6 Paragraph 6

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
13	LRM - MAS - Level 2A Stock Adjustment - Deduction	This rule identifies all secured funding and asset exchange transactions involving HQLA that mature within the LCR horizon which are, therefore, required to be unwound and reclassifies them to the appropriate adjustment rule. In case of secured funding transactions, where the collateral posted is a Level 2A HQLA, the type of adjustment to the stock of HQLA due to such an unwind is updated as the deduction of the collateral posted. In case of asset exchange transactions, where the collateral received is an HQLA and the collateral posted is a Level 2A asset, the type of adjustment to the stock of HQLA due to such an unwind is updated as the deduction of the collateral posted.	The identification of secured lending and asset exchange transactions required to be unwound and the amount to be deducted from the stock of Level 2A assets due to such an unwind is configured as part of this rule.	Appendix 6 Paragraph 7
14	LRM - MAS - Level 2A Stock Adjustment - Addition	This rule identifies all secured lending and asset exchange transactions involving HQLA that mature within the LCR horizon which are, therefore, required to be unwound and reclassifies them to the appropriate adjustment rule. For secured lending transactions, where the collateral received is a Level 2A HQLA, the type of adjustment to the stock of HQLA due to such an unwind is updated as the addition of the collateral received. In case of asset exchange transactions, where the collateral posted is an HQLA and the collateral received is a Level 2A asset, the type of adjustment to the stock of HQLA due to such an unwind is updated as the addition of the collateral received.	The identification of secured funding and asset exchange transactions required to be unwound and the amount to be added to the stock of Level 2A assets due to such an unwind is configured as part of this rule.	Appendix 6 Paragraph 8

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
15	LRM - MAS - Level 2B(I) Stock Adjustment - Deduction	This rule identifies all secured funding and asset exchange transactions involving HQLA that mature within the LCR horizon which are, therefore, required to be unwound and reclassifies them to the appropriate adjustment rule. In case of secured funding transactions, where the collateral posted is a Level 2B(I) HQLA, the type of adjustment to the stock of HQLA due to such an unwind is updated as the deduction of the collateral posted. In case of asset exchange transactions, where the collateral received is an HQLA and the collateral posted is a Level 2B(I) asset, the type of adjustment to the stock of HQLA due to such an unwind is updated as the deduction of the collateral posted.	The identification of secured lending and asset exchange transactions required to be unwound and the amount to be deducted from the stock of Level 2B(I) assets due to such an unwind is configured as part of this rule.	Appendix 6 Paragraph 9
16	LRM - MAS - Level 2B(I) Stock Adjustment - Addition	This rule identifies all secured lending and asset exchange transactions involving HQLA that mature within the LCR horizon which are, therefore, required to be unwound and reclassifies them to the appropriate adjustment rule. For secured lending transactions, where the collateral received is a Level 2B HQLA, the type of adjustment to the stock of HQLA due to such an unwind is updated as the addition of the collateral received. In case of asset exchange transactions, where the collateral posted is an HQLA and the collateral received is a Level 2B asset, the type of adjustment to the stock of HQLA due to such an unwind is updated as the addition of the collateral received.	The identification of secured funding and asset exchange transactions required to be unwound and the amount to be added to the stock of Level 2B(I) assets due to such an unwind is configured as part of this rule.	Appendix 6 Paragraph 10

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
17	LRM - MAS - Level 2B(II) RMBS Stock Adjustment - Deduction	This rule identifies all secured lending and asset exchange transactions involving HQLA that mature within the LCR horizon which are, therefore, required to be unwound and reclassifies them to the appropriate adjustment rule. In case of secured lending transactions, where the collateral received is a Level 2B(II) RMBS HQLA, the type of adjustment to the stock of HQLA due to such an unwind is updated as the deduction of the collateral received. In case of asset exchange transactions, where the collateral posted is an HQLA and the collateral received is a Level 2B(II) RMBS asset, the type of adjustment to the stock of HQLA due to such an unwind is updated as the deduction of the collateral received.	The identification of secured lending and asset exchange transactions required to be unwound and the amount to be deducted from the stock of Level 2B(II) RMBS assets due to such an unwind is configured as part of this rule.	Appendix 6 Paragraph 11
18	LRM - MAS - Level 2B(II) RMBS Stock Adjustment - Addition	This rule identifies all secured funding and asset exchange transactions involving HQLA that mature within the LCR horizon which are, therefore, required to be unwound and reclassifies them to the appropriate adjustment rule. In case of secured funding transactions, where the collateral posted is a Level 2B(II) RMBS HQLA, the type of adjustment to the stock of HQLA due to such an unwind is updated as the addition of the collateral posted. In case of asset exchange transactions, where the collateral received is an HQLA and the collateral posted is a Level 2B(II) RMBS asset, the type of adjustment to the stock of HQLA due to such an unwind is updated as the addition of the collateral posted.	The identification of secured funding and asset exchange transactions required to be unwound and the amount to be added to the stock of Level 2B(II) RMBS assets due to such an unwind is configured as part of this rule.	Appendix 6 Paragraph 12

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
19	LRM - MAS - Level 2B(II) Non-RMBS Stock Adjustment - Deduction	This rule identifies all secured lending and asset exchange transactions involving HQLA that mature within the LCR horizon which are, therefore, required to be unwound and reclassifies them to the appropriate adjustment rule. In case of secured lending transactions, where the collateral received is a Level 2B(II) Non-RMBS HQLA, the type of adjustment to the stock of HQLA due to such an unwind is updated as the deduction of the collateral received. In case of asset exchange transactions, where the collateral posted is an HQLA and the collateral received is a Level 2B(II) Non-RMBS asset, the type of adjustment to the stock of HQLA due to such an unwind is updated as the deduction of the collateral received.	The identification of secured lending and asset exchange transactions required to be unwound and the amount to be deducted from the stock of Level 2B(II) Non-RMBS assets due to such an unwind is configured as part of this rule.	Appendix 6 Paragraph 13
20	LRM - MAS - Level 2B(II) Non-RMBS Stock Adjustment - Addition	This rule identifies all secured funding and asset exchange transactions involving HQLA that mature within the LCR horizon which are, therefore, required to be unwound and reclassifies them to the appropriate adjustment rule. In case of secured funding transactions, where the collateral posted is a Level 2B(II) Non-RMBS HQLA, the type of adjustment to the stock of HQLA due to such an unwind is updated as the addition of the collateral posted. In case of asset exchange transactions, where the collateral received is an HQLA and the collateral posted is a Level 2B(II) Non-RMBS asset, the type of adjustment to the stock of HQLA due to such an unwind is updated as the addition of the collateral posted.	The identification of secured funding and asset exchange transactions required to be unwound and the amount to be added to the stock of Level 2B(II) Non-RMBS assets due to such an unwind is configured as part of this rule.	Appendix 6 Paragraph 14

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
21	LRM - MAS - Bank Own Assets - Meets HQLA Operational Requirements Flag Update	This rule reclassifies corporate debt securities rated A+ to A-, issued by non-financial corporates, and Sukuk issued by institutions other than Singapore Sukuk Pte Ltd. As HQLA Level 2A assets, in accordance with the criteria specified by MAS.	The identification of whether an asset owned by the bank meets the operational requirements set forth by MAS for its inclusion in the stock of HQLA is configured as part of this rule.	Paragraph 22
22	LRM - MAS - Mitigants - Meets HQLA Operational Requirements Flag Update	This rule reclassifies debt securities rated BBB+ and BBB-, issued by specialized sovereigns, central banks, non-financial corporates, and Sukuk issued by other than Singapore Sukuk Pte Ltd. as HQLA Level (II) non-RMBS assets, in accordance with the criteria specified by MAS.	The identification of whether the collateral received from counterparty meets the operational requirements set forth by MAS is configured as part of this rule.	Paragraph 22
23	LRM - MAS - Re-hypothecated Mitigants - Meets HQLA Operational Requirements Flag Update	This rule reclassifies equities issued by non-financial entities as HQLA Level (II) non-RMBS assets as HQLA Level (II) non-RMBS assets, in accordance with the criteria specified by MAS.	The identification of whether collateral received from a counterparty, that is further placed as collateral, meets the operational requirements set forth by MAS on unwinding is configured as part of this rule.	Paragraph 22
24	LRM - MAS - Instruments - Eligible High-Quality Liquid Assets Flag Update	This rule reclassifies residential mortgage-backed securities of >= AA, without any restructured underlying, as HQLA Level 2B assets in accordance with the criteria specified by MAS.	The identification of whether a bank's asset classified as an HQLA, meets all the operational criteria and is therefore eligible to be included in the stock of HQLA is configured as part of this rule.	Paragraph 22

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
25	LRM - MAS - Mitigants - Eligible High-Quality Liquid Assets Flag Update	This rule identifies all secured lending and asset exchange transactions involving HQLA that mature within the LCR horizon which are, therefore, required to be unwound and reclassifies them to the appropriate adjustment rule. In case of secured lending transactions, where the collateral received is a non-Level 1 HQLA, the type of adjustment to the stock of HQLA due to such an unwind is updated as the deduction of the amount paid. In case of asset exchange transactions, where the collateral received is a non-Level 1 HQLA and the collateral posted in a Level 1 HQLA, the type of adjustment to the stock of HQLA due to such an unwind is updated as the deduction of the collateral posted.	The identification of whether the collateral received from the counterparty, classified as an HQLA, meets all the operational criteria and is therefore eligible to be included in the stock of HQLA is configured as part of this rule.	Paragraph 22

3.3.2 Regulation Addressed through Business Assumptions

The application supports multiple assumptions with preconfigured rules and scenarios based on regulator specified scenario parameters such as HQLA haircuts, inflow and outflow percentage/rates, and so on. The list of preconfigured business assumptions and the corresponding reference to the regulatory requirement that it addresses is provided in the following table.

Table 10: Preconfigured LCR Business Assumptions

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
Inflow				

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
1	MAS-Secured lending inflows where the collateral is not reused	Inflows from secured lending transactions, where the collateral received are not reused to cover the customer or firm short positions.	The inflow rate on secured lending transactions where the collateral received is not reused to cover customer or firm short positions, are predefined as part of this assumption. This assumption applies 0%, 15%, 25%, 50% and 100% inflow rate when collateral received is Level 1, Level 2A, Level 2B(I), Level 2B(II) RMBS, Level 2B(II) non-RMBS and non-HQLA respectively, on the secured balance per collateral (that is, used a portion of Collateral) for secured lending transactions specified earlier.	Paragraph 92
2	MAS-Secured lending inflow where collateral reused for <=30d	Inflows from secured lending transactions, where the collateral received are reused to cover the customer or firm short positions for a period less than the LCR horizon.	The inflow rate on secured lending transactions where the collateral received is reused to cover customer or firm short positions, for a period less than the LCR horizon, are predefined as part of this assumption. This assumption applies 0%, 15%, 25%, 50% and 100% inflow rate when collateral received is Level 1, Level 2A, Level 2B(I), Level 2B(II) RMBS, Level 2B(II) non-RMBS and non-HQLA respectively, on the secured balance per collateral (that is, used a portion of Collateral) for secured lending transactions specified earlier.	Paragraph 92
3	MAS-Secured lending inflow where collateral reused for >30d	Inflows from secured lending transactions, where the collateral received are reused to cover the customer or firm short positions for a period greater than the LCR horizon.	The inflow rate on secured lending transactions where the collateral received is reused to cover customer or firm short positions for a period more than the LCR horizon, are predefined as part of this assumption. This assumption applies a 0% inflow rate on the secured balance per collateral (that is, used a portion of Collateral) for secured lending transactions specified earlier.	Paragraph 93

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
4	MAS-Drawdowns on Committed Funding Facilities	Drawdowns on committed facilities received by the bank.	The inflow rate on the undrawn amount available for drawdown, on the committed credit, liquidity, and other contingent funding facilities received by the bank, is predefined as part of this assumption. This assumption applies a 0% inflow rate on the credit and liquidity lines received by the bank.	Paragraph 99
5	MAS-Inflows from fully performing loans	Inflows from fully performing loans, which have a specified maturity and are extended to retail customers, SMEs, non-financial Corporates, sovereigns, central banks, multilateral development banks, PSEs, and central banks.	The inflow rate on the fully performing loans and leases is predefined as part of this assumption. This assumption applies a 50 % inflow (that is 50% rollover) on cash flows occurring within the LCR horizon from loans and leases extended to retail customers, SMEs, Sovereigns, MDBs, PSEs, and non-financial corporate. Additionally, it applies a 100% inflow (that is 0% rollover) on cash flow occurring within the LCR horizon from loans and leases extended to the central bank.	Paragraphs 102 and 103
6	MAS-Other entity inflows from fully performing loans	Inflows from fully performing loans, which have a specified maturity and are extended to wholesale customers other than SMEs, non-financial corporates, sovereigns, central banks, multilateral development banks, PSEs, and central banks.	The inflow rate on the fully performing loans and leases is predefined as part of this assumption. This assumption applies a 50 % inflow (that is 50% rollover) on cash flows occurring within the LCR horizon from loans and leases extended to non-financial entities apart from corporates. Additionally, it applies 100% inflow (that is 0% rollover) on cash flow occurring within the LCR horizon from loans and leases extended to financial entities.	Paragraph 103

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
7	MAS-Inflows from deposits placed at financial entities	Inflows from deposits held with other financial institutions and deposits held with the centralized institution of a cooperative banking network.	The inflow rate on deposits placed at banks or financial entities is predefined as part of this assumption. This assumption applies a 0% inflow (that is 100% rollover) on cash flows from deposits placed with other financial institutions and deposits placed with the centralized institution of a cooperative banking network.	Paragraphs 105 and 108
8	MAS-Open maturity loan minimum payment inflows	Inflows due to minimum payments received within the LCR horizon on open maturity loans.	The inflow rate on the minimum payments that are contractually due within the LCR horizon, on an open maturity loan, credit cards, overdrafts, leases, or line of credits is predefined as part of this assumption. This assumption applies a 100% inflow on such a minimum amount of dues to the central bank and financial customers. Additionally, it applies a 50% inflow on minimum amount dues to retail and non-financial customers.	Paragraph 101
9	MAS-Revolving, non-maturity, non-performing inflow exclusion	Exclusion of inflows from revolving products, products that do not have a specified maturity, and products that are not fully performing.	The exclusion of cash inflows from revolving assets, assets that do not have a stated maturity, and assets that are not fully performing are predefined as part of this assumption. This assumption applies a 0% inflow (that is 100% rollover) on the principal inflows from open maturity fully performing assets. Additionally, it applies a 0% inflow (that is 100% rollover) on the inflows from non-performing assets.	Paragraph 100

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
10	MAS-Non-HQLA security inflows	Inflows from securities not included in the stock of HQLA.	The inflow rate on the performing debt securities that are excluded from the stock of HQLA is predefined as part of this assumption. This assumption applies a 100% inflow (that is 0% rollover) on cash flows from securities classified as Other Assets, and securities classified as HQLA but do not meet the eligibility criteria for inclusion in the stock of HQLA. It also applies a 0% inflow (that is 100% rollover) on non-performing securities or securities that are classified as HQLA and meet the criteria for inclusion in the stock of HQLA, to avoid double counting.	Paragraph 104
11	MAS-Inflow from intra-group transactions	Inflows from net intra-group transactions.	Inflows from net intra-group transactions are predefined as part of this assumption. This assumption applies a 100% inflow if the netted value of cash flows at the group level is positive. Another assumption, MAS-Outflow from intra-group transactions, applies a 100% outflow if the netted value of cash flows at the group level is negative.	Paragraph 106
12	MAS-Derivative cash inflows	Net cash outflows from derivative transactions.	The inflow rate on the 30-day cash inflows from derivative transactions is predefined as part of this assumption. This assumption applies a 100% inflow on derivative cash inflows, on a net basis in case of derivatives, which are part of a netting agreement, and on a non-net basis for other derivatives.	Paragraph 107

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
13	MAS-Funding loss inflow on structured financing Instruments	Inflows from loss of funding on asset-backed securities, covered bonds, and other structured financing instruments.	The Run-off rate on the maturing asset-backed securities, covered bonds, and other structured financing instruments is predefined as part of this assumption. This assumption applies a 100% Run-off on the EOP Balance Net of Underlying HQLA for structured financing instruments that mature within the LCR horizon.	Paragraphs 71 and 108
Outflow				
14	MAS-Highly Stable retail deposits Run-off	Run-offs on the highly stable portion of deposits from retail customers and unsecured wholesale funding from SMEs treated as retail.	The outflow rate on the highly stable portion of deposits, from retail customers and SMEs treated as retail customers, for LCR, is predefined as part of this assumption. This assumption applies a 3% Run-off on the highly stable portion of retail deposits that are either not encumbered, or the encumbrance period is less than LCR horizon, which either mature or results in early withdrawal, without incurring a significant penalty, within the LCR horizon.	Paragraphs 37, 40, 55 and Footnote 15
15	MAS-Unencumbered part of highly stable retail deposit runoff	Run-offs on the unencumbered less stable portion of deposits from retail customers, and unsecured wholesale funding from SMEs treated as retail, that has encumbrance period beyond the LCR horizon.	The outflow rate on the unencumbered portion of stable deposits, from retail customers and SMEs treated as retail customers, for LCR, is predefined as part of this assumption. This assumption applies a 3% Run-off on the unencumbered portion of the stable deposit, having encumbrance period more than LCR horizon, which either mature or results in early withdrawal, without incurring a significant penalty, within the LCR horizon.	Paragraphs 37, 40, 55 and Footnote 15

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
16	MAS-Stable retail deposits Run-off	Run-offs on the stable portion of deposits from retail customers and unsecured wholesale funding from SMEs treated as retail.	The outflow rate on the stable portion of deposits, from retail customers and SMEs treated as retail customers, for LCR, is predefined as part of this assumption. This assumption applies a 5% Run-off on the stable portion of retail deposits that are either not encumbered, or encumbrance period is less than the LCR horizon, which either mature or results in early withdrawal, without incurring a significant penalty, within the LCR horizon.	Paragraphs 37, 40, 45 and 55
17	MAS-Unencumbered part of stable retail deposit Run-off	Run-offs on the unencumbered stable portion of deposits from retail customers and unsecured wholesale funding from SMEs treated as retail.	The outflow rate on the unencumbered portion of stable deposits, from retail customers and SMEs treated as retail customers, for the purpose of LCR, is predefined as part of this assumption. This assumption applies a 5% Run-off on the unencumbered portion of stable deposits, having encumbrance period more than the LCR horizon, which either mature or results in early withdrawal, without incurring a significant penalty, within the LCR horizon.	Paragraphs 37, 40, 45 and 55
18	MAS-Less Stable retail deposits Run-off	Run-offs on the less stable portion of deposits from retail customers and unsecured wholesale funding from SMEs treated as retail, that is either not pledged, or have encumbrance period within the LCR horizon.	The outflow rate on the less stable portion of deposits, from retail customers and SMEs treated as retail customers, for the purpose of LCR, is predefined as part of this assumption. This assumption applies a 10% Run-off on the less stable portion of retail deposits that are either not encumbered, or encumbrance period is less than the LCR horizon, which either mature or result in early withdrawal, without incurring a significant penalty, within the LCR horizon.	Paragraphs 37, 39, 40, 45 and 55

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
19	MAS-Unencumbered part of less stable retail deposit Run-off	Run-offs on the unencumbered less stable portion of deposits from retail customers, and unsecured wholesale funding from SMEs treated as retail, that has encumbrance period beyond the LCR horizon.	The outflow rate on the unencumbered portion of less stable deposits, from retail customers and SMEs treated as retail customers, for the purpose of LCR, is predefined as part of this assumption. This assumption applies a 10% Run-off on the unencumbered portion of the less stable deposit, having encumbrance period more than the LCR horizon, which either mature or results in early withdrawal, without incurring a significant penalty, within the LCR horizon.	Paragraphs 37, 39, 40, 45 and 55
20	MAS-Insured operational balance Run-off	Run-offs on the portion of operational balances from deposits generated by clearing, custody, and cash management activities that are fully covered by deposit insurance.	The Run-off rates on the insured portion of the balance held in operational accounts to fulfill operational requirements are predefined as part of this assumption. This assumption applies a 3% Run-off on insured operational balances that meet the additional criteria for deposit insurance schemes and a 5% Run-off on those that do not meet the additional criteria.	Paragraph 46 to 52
21	MAS-Uninsured operational balance Run-off	Run-offs on the portion of operational balances from deposits generated by clearing, custody, and cash management activities that are not covered by deposit insurance.	The Run-off rates on the uninsured portion of the balance held in operational accounts to fulfill operational requirements are predefined as part of this assumption. This assumption applies a 25% Run-off on operational balances that are not covered by deposit insurance.	Paragraph 46 to 52

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
22	MAS- Deposits in institutional network of Co-op banks Run-off	Run-offs on deposits placed with the central institutions, or specialized central service providers of an institutional network of co-operative banks due to statutory minimum deposit requirements, or in the context of common task sharing and legal, statutory or contractual arrangements.	The Run-off rates on deposits placed by a member institution with the central institution or specialized central service providers of an institutional network of co-operative banks are predefined as part of this assumption. This assumption applies a 75% rollover that is a 25% Run-off on deposits in institutional networks of cooperative banks, which are non-operational in nature, placed due to statutory minimum deposit requirements or in the context of common task sharing and legal, statutory or contractual arrangements.	Paragraph 53 to 54
23	MAS-Outflows from correspondent banking	Outflows from deposits arising out of correspondent banking relationship.	The Run-off rates from Vostro balances are predefined as part of this assumption. This assumption applies a 100% Run-off on the EOP balance.	Paragraph 54
24	MAS-Outflows on unsecured non-operational funding	Run-offs on the unsecured wholesale funding, provided by SMEs, non-financial corporates, sovereigns, central banks, multilateral development banks, and PSEs, that are not classified as operational deposits.	The Run-off rates on the cash flows, from unsecured funding that are not classified as operational deposits, received from SME's and non-financial corporates treated as wholesale customers, sovereigns, central banks, multilateral development banks, and PSEs, are predefined as part of this assumption. This assumption applies an 80% rollover that is 20% Run-off on cash flows from non-operational funding accounts that are fully covered by deposit insurance and a 60% rollover that is 40% Run-off on those non-operational funding accounts that are not fully covered by deposit insurance.	Paragraph 56

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
25	MAS-Outflows on non-operational part of operational account	Run-offs on unsecured wholesale funding, from wholesale customers other than SMEs, non-financial corporates, sovereigns, central banks, multilateral development banks, and PSEs, provided for non-operational	The Run-off rates on the non-operational portion of operational deposits from non-financial corporates, sovereigns, central banks, multilateral development banks, and PSEs, are predefined as part of this assumption. This assumption applies a 20% Run-off on the non-operational portion of operational deposits that are fully covered by deposit insurance and a 40% Run-off on the non-operational portion of operational deposits that are not fully covered by deposit insurance.	Paragraph 56
26	MAS-Other legal entity unsecured wholesale funding Run-off	Run-offs on unsecured wholesale funding, from wholesale customers other than SMEs, non-financial corporates, sovereigns, central banks, multilateral development banks, and PSEs, provided for non-operational purposes.	The Run-off rates on the cash flows, from unsecured funding, that not classified as operational deposits, received from all financial counterparties other than SME's and non-financial corporates, sovereigns, central banks, multilateral development banks, and PSEs, are predefined as part of this assumption. This assumption applies a 0% rollover that is 100% Run-off on cash flows from non-operational funding.	Paragraph 57
27	MAS-Co-operative Bank unsecured wholesale funding Run-off	Run-offs on unsecured wholesale funding from credit co-operative banks provided for non-operational purposes.	The Run-off rates on the cash flows, from unsecured funding, that not classified as operational deposits, received from credit co-operative banks are predefined as part of this assumption. This assumption applies a 0% rollover that is 100% Run-off on cash flows from non-operational funding.	Paragraph 57

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
28	MAS-Run-off on the nonoperational balance of other entities	Run-offs on the non-operational portion of unsecured wholesale funding provided by customers other than SMEs, non-financial corporates, sovereigns, central banks, multilateral development banks, and PSEs that are classified as operational deposits.	The Run-off rates on the non-operational portion of operational deposits received from all financial counterparties other than SME's and non-financial corporates, sovereigns, central banks, multilateral development banks, and PSEs, are predefined as part of this assumption. This assumption applies a 100% Run-off on the non-operational portion of operational deposits.	Paragraph 57
29	MAS-Runoff from issued debt security	Outflows on debt securities issued by the bank itself.	The Run-off rates on the debt securities issued by the bank itself are predefined as part of this assumption. This assumption applies a 90% rollover that is 10% Run-off on issued securities that are sold exclusively in the retail market and held in retail accounts, and 0% rollover that is 100% Run-off on all other issued securities.	Paragraph 58
30	MAS-Outflow from intra-group transactions	Outflows from net intra-group transactions	Outflows from net intra-group transactions are predefined as part of this assumption. This assumption applies 100% outflow if the netted value of cash flows at the group level is negative. Another assumption, MAS-Inflow from intra-group transactions applies 100% inflow if the netted value of cash flows at the group level is positive.	Paragraph 57

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
31	MAS-Secured funding Run-off	Run-offs on secured funding, excluding collateral swaps.	The Run-off rates on the secured funding, excluding collateral swaps, received from sovereigns, central banks, multilateral development banks, and PSEs, are predefined as part of this assumption. This assumption applies the regulatory Run-offs applicable to each counterparty type in the form of rollover rates that is 1 – Run-off rates.	Paragraphs 60 to 69
32	MAS-Secured funding Run-off from other legal entities	Run-off on secured funding, excluding collateral swaps, received from counterparties other than sovereigns, central banks, multilateral development banks, and PSEs where the transaction is backed by Level 2B(I), Level 2B(II) non-RMBS or other assets.	The Run-off rates on the secured funding, excluding collateral swaps, received from counterparties other than sovereigns, central banks, multilateral development banks, and PSEs, where the transaction is backed by Level 2B(I), Level 2B(II) non-RMBS or other assets, are predefined as part of this assumption. This assumption applies the regulatory Run-offs applicable to other counterparties, based on the asset quality of the placed collateral, in the form of rollover rates that is 1 – Run-off rates.	Paragraphs 60 to 69
33	MAS-Outflows from deliverable derivatives	Outflows from derivatives with physical delivery settlement.	The outflow rate on the 30-day cash outflows from derivative transactions that are physically delivered is predefined as part of this assumption. This assumption applies the regulatory Run-offs applicable to other counterparties, based on the asset quality of the delivered assets, in the form of rollover rates that is 1 – Run-off rates.	Paragraphs 60 to 64

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
34	MAS-Deliverable derivatives outflows from other entities	Outflows from derivatives, with the physical delivery settlement, from all counterparties other than sovereigns, MDBs and PSEs.	The outflow rate on the 30-day cash outflows from derivative transactions that are physically delivered is predefined as part of this assumption. This assumption applies the regulatory Run-offs applicable to counterparties other than sovereigns, MDB and PSE, based on the asset quality of the delivered assets, in the form of rollover rates that is 1 – Run-off rates.	Paragraphs 60 to 64
35	MAS-Derivative cash outflows	Net cash outflows from derivative transactions.	The outflow rate on the 30-day cash outflows from derivative transactions is predefined as part of this assumption. This assumption applies a 100% outflow on derivatives cash outflows, on a net basis in case of derivatives which are part of a netting agreement and on a non-net basis for other derivatives.	Paragraph 64
36	MAS-Rating downgrade related collateral outflow	Increased liquidity needs arising from the requirement to post additional collateral due to a 3-notch rating downgrade.	The outflow rate, on the additional collateral required to be posted on contracts with downgrade triggers, due to a 3-notch rating downgrade, is predefined as part of this assumption. This assumption applies a 100% outflow on the downgrade impact amount arising from a 3-notch rating downgrade.	Paragraph 65
37	MAS-Rehypothecation rights lost due to rating downgrade	Increased liquidity needs arising from a loss of rehypothecation rights on assets received as collateral due to a 3-notch rating downgrade.	The outflow rate, on the additional cash outflows arising on contracts with downgrade triggers, resulting in a loss of rehypothecation rights due to a 3-notch rating downgrade, is predefined as part of this assumption. This assumption applies a 100% outflow on the value of mitigants received under rehypothecation rights corresponding to accounts whose downgrade trigger is activated due to the 3-notch ratings downgrade.	Paragraph 65

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
38	MAS-Increased liquidity needs due to collateral value change	Increased liquidity needs arising from the potential change in the value of a posted collateral.	The outflow rate on the additional cash outflow due to a potential loss in the market value of non-Level 1 assets posted as collateral is predefined as part of this assumption. This assumption applies a 100% outflow on the value of non-Level 1 posted collateral computed after netting the non-Level 1 collateral received under rehypothecation rights on the same transaction.	Paragraph 66
39	MAS-Outflow of excess collateral	Increased liquidity needs arising from excess non-segregated collateral received that can be recalled by the counterparty.	The outflow rate on the excess unsegregated collateral held by a bank, which can potentially be withdrawn by the counterparty, is predefined as part of this assumption. This assumption applies a 100% outflow on the value of excess collateral.	Paragraph 67
40	MAS-Outflow of contractually due collateral	Increased liquidity needs arising from collaterals that are contractually required to be posted to the counterparty but have not yet been posted.	The outflow rate on the collateral that the bank is contractually required to post to its counterparty, but has not yet posted, is predefined as part of this assumption. This assumption applies a 100% outflow on the value of contractually due collateral.	Paragraph 68
41	MAS-Outflows from substitutable collateral	Increased liquidity needs arising from contracts that allow a counterparty to substitute lower quality collateral for the current higher quality collateral.	The outflow rate on the collateral that the counterparty can contractually substitute with lower quality collateral is predefined as part of this assumption. This assumption applies an outflow rate equal to the difference between the liquidity haircuts of collateral that can be potentially substituted by the counterparty and the collateral that substitutes it.	Paragraph 69

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
42	MAS-Increased liquidity need due to market valuation change	Increased liquidity needs arising from market valuation changes on derivatives and other transactions.	The outflow rate on the collateral outflows occurring due to market valuation changes on derivatives and other transactions is predefined as part of this assumption. This assumption applies a 100% outflow rate on the largest absolute net 30-day collateral flow occurring during the preceding 24 months under the historical look-back approach.	Paragraph 70
43	MAS-Loss of Funding on Structured Financing Instruments	Loss of funding on asset-backed securities, covered bonds, and other structured financing instruments.	The Run-off rate on the maturing asset-backed securities, covered bonds, and other structured financing instruments, is predefined as part of this assumption. This assumption applies a 100% Run-off on the EOP Balance Net of Underlying HQLA for structured financing instruments that mature within the LCR horizon.	Paragraph 71
44	MAS-Loss of Funding from Financing Facility-Liquidity Draws	Loss of funding on asset-backed commercial papers, conduits, securities investment vehicles, and other such financing facilities due to drawdown of liquidity facilities provided by the bank.	The outflow rate on the undrawn amount available to be drawn down on the liquidity facility extended to the structured financing facility is predefined as part of this assumption. This assumption applies a 100% outflow as a drawdown rate on the liquidity facilities extended as support for structured financing purposes.	Paragraph 72
45	MAS-Loss of Funding from Financing Facility-Maturing debt	Loss of funding on asset-backed commercial papers, conduits, securities investment vehicles, and other such financing facilities due to the inability to refinance the maturing debt.	The Run-off rate on the maturing amounts of asset-backed commercial papers, conduits, securities investment vehicles, and other such financing facilities, is predefined as part of this assumption. This assumption applies a 100% Run-off on the EOP balance of the structured financing facilities that mature within the LCR horizon.	Paragraph 72

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
46	MAS-Loss of Funding from Financing Facility-Return of assets	Loss of funding on asset-backed commercial papers, conduits, securities investment vehicles, and other such financing facilities due to potential return of assets.	The Run-off rate on the returnable assets underlying asset-backed commercial papers, conduits, securities investment vehicles, and other such financing facilities is predefined as part of this assumption. This assumption applies a 100% Run-off on the value of the assets that are returnable within the LCR horizon.	Paragraph 72
47	MAS-Draws on committed credit and liquidity facilities	Drawdowns on committed credit and liquidity facilities extended to retail customers, SMEs, non-financial corporates and PSEs, sovereigns, central banks, MDBs, and banks excluding SPEs.	The outflow rate on the undrawn amount available to be drawn down on the committed credit and liquidity facilities extended to retail customers, non-financial corporates and PSEs, sovereigns, central banks, and MDBs is predefined as part of this assumption. This assumption applies the relevant outflow as a drawdown rate, based on the counterparty type, for the aforementioned counterparties.	Paragraphs 73 to 79
48	MAS-Draws on committed facility to other FI, legal entity	Drawdowns on committed credit and liquidity facilities extended to entities other than retail customers, SMEs, non-financial corporates and PSEs, sovereigns, central banks, MDBs, PSEs, and banks excluding SPEs. Additionally, drawdowns on committed credit and liquidity facilities extended to hedge funds, money market funds, and SPEs.	The outflow rate on the undrawn amount available to be drawn down on the committed credit and liquidity facilities extended to customers other than retail customers, non-financial corporates and PSEs, sovereigns, central banks, MDBs, hedge funds, mutual funds, SPEs, and banks is predefined as part of this assumption. This assumption applies the relevant outflow as a drawdown rate, based on the counterparty type.	Paragraphs 73 to 79

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
49	Draws on committed credit and liquidity facility by bank	Drawdowns on committed credit and liquidity facilities extended to banks excluding SPEs.	The outflow rate on the undrawn amount available to be drawn down on the committed credit and liquidity facilities extended to customers is predefined as part of this assumption. This assumption applies the relevant outflow as a drawdown rate, for banks excluding SPEs.	Paragraphs 73 to 79
50	MAS-Draws on facility to hedge and money market fund, SPE	Drawdowns on committed credit and liquidity facilities extended to hedge funds, money market funds, and SPEs.	The outflow rate on the undrawn amount available to be drawn down on the committed credit and liquidity facilities extended to hedge funds, mutual funds, and SPEs, is predefined as part of this assumption. This assumption applies the relevant outflow as a drawdown rate, based on the counterparty type.	Paragraph 77
51	MAS-Other contractual obligation to financial institution	Outflows related to other contractual obligations to extend funds within 30 days to financial institutions.	The outflow rate on other contractual obligations to extend funds to financial institutions, not covered in the previous assumptions, is predefined as part of this business assumption. This assumption applies a 100% outflow rate on such contractual obligations.	Paragraph 80
52	MAS-Other contractual obligation to nonfinancial institution	Outflows related to other contractual obligations to extend funds within 30 days to retail and non-financial wholesale counterparties.	The outflow rate on the other contractual obligations to extend funds to retail and non-financial corporate customers, in excess of 50% of contractual inflows from such customers within the LCR horizon, is predefined as part of this assumption. This assumption applies a 100% outflow on the excess contractual obligation amount.	Paragraph 81

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
53	MAS-Other contractual obligation outflows	Outflows related to trade finance related instruments.	The outflow rate on guarantees, letters of credit, and bills of exchange are predefined as part of this assumption. This assumption applies a 3% Run-off on such instruments when used for the trade finance whereas 100% Run-off is applied if used for the non-trade finance-related obligation.	Paragraphs 82 to 88
54	MAS-Uncommitted Facility Outflows	Drawdowns on uncommitted credit and liquidity facilities extended to customers.	The outflow rate on the undrawn amount available to be drawn down on the uncommitted credit and liquidity facilities extended to customers is predefined as part of this assumption. This assumption applies a 100% drawdown on the uncommitted facilities.	Paragraphs 82 to 88
55	MAS-Outflows Related to Short Positions	Outflows related to customer and bank short positions.	The outflow rate on the short positions is predefined as part of this assumption. This assumption specifies Run-off rates on the short positions based on assets covering such short positions.	Paragraphs 82 to 88
56	MAS-Non-contractual obligation outflows	Outflows from non-contractual obligations related to joint ventures, minority investments, debt buy-back requests, structured products, managed funds, and any other similar obligations.	The outflow rate on the non-contractual obligations related to joint ventures, minority investments, debt buy-back requests, structured products, managed funds, and any other similar obligations is predefined as part of this assumption. This assumption applies a 100% outflow rate on the non-contractual obligations.	Paragraphs 82 to 88
57	MAS-Contractual interest payment outflows	Outflows related to contractual payments of interests.	The outflow rate on the interest payments contractually due within the LCR horizon is predefined as part of this assumption. This assumption applies a 100% outflow on interest in the form of a 0% rollover rate.	Paragraph 89

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
58	MAS-Contractual dividend payment outflows	Outflows related to contractual payments of dividends.	The outflow rate on the dividends payable within the LCR horizon is predefined as part of this assumption. This assumption applies a 100% outflow on dividends payable.	Paragraph 89
Collateral Swap				
59	MAS-Outflows from collateral swaps	Outflows from collateral swap transactions.	The outflow rates on collateral swaps are predefined as part of this assumption. This assumption applies the outflows applicable to the market value of received collateral when the collateral placed under a swap transaction is of lower or equal quality than the collateral received, as the difference between the liquidity haircuts applicable to the placed and received collateral.	Paragraphs 60 to 63
60	MAS-Collateral swap inflows where collateral is not reused	Inflows from collateral swap transactions where the collateral received are not reused to cover customer or firm short positions.	The inflow rates on collateral swaps where the collateral received are not reused to cover customer or firm short positions, are predefined as part of this assumption. This assumption applies the inflows applicable to the market value of placed collateral, when the collateral placed under a swap transaction is of higher or equal quality than the collateral received, as the difference between the liquidity haircuts applicable to the placed and received collateral.	Paragraph 92

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio
61	MAS-Collateral swap inflow where collateral reused for <=30d	Inflows from collateral swap transactions where the collateral received are reused to cover customer or firm short positions for a period less than the LCR horizon.	The inflow rates on collateral swaps where the collateral received are reused to cover customer or firm short positions for a period less than the LCR horizon, are predefined as part of this assumption. This assumption applies the inflows applicable to the market value of placed collateral, when the collateral placed under a swap transaction is of higher or equal quality than the collateral received, as the difference between the liquidity haircuts applicable to the placed and received collateral.	Paragraph 92
62	MAS-Collateral swap inflow where collateral reused for >30d	Inflows from collateral swap transactions where the collateral received are reused to cover customer or firm short positions for a period greater than the LCR horizon.	The inflow rates on collateral swaps where the collateral received are reused to cover customer or firm short positions for a period more than LCR horizon, are predefined as part of this assumption. This assumption applies the inflows applicable to the market value of placed collateral, when the collateral placed under a swap transaction is of higher or equal quality than the collateral received, as the difference between the liquidity haircuts applicable to the placed and received collateral.	Paragraph 93

4 Net Stable Funding Ratio Calculation

Net Stable Funding Ratio (NSFR) is one of the two minimum standards developed to promote funding and liquidity management in financial institutions. Liquidity Coverage Ratio (LCR) is the first standard that assesses the short term liquidity challenges of a bank. NSFR assesses the bank's liquidity risks over a longer time horizon. Both the standards, complement each other, are aimed at providing a holistic picture of a bank's funding risk profile, and aid in better liquidity risk management practices.

Topics:

- Overview
- Process Flow
- Preconfigured MAS Regulatory NSFR Scenarios

4.1 Overview

NSFR is defined as the amount of available stable funding relative to the required stable funding. Available stable funding refers to the portion of capital and liabilities expected to be reliable over the horizon of 1 year. Required stable funding refers to the portion of assets and off-balance sheet exposures over the same horizon. The NSFR ratio is expected to be at least 100%.

$$\left(\frac{Available\ stable\ funding}{Required\ stable\ funding}\right) \geq 100\%$$

4.2 Process Flow

The Available Stable Funding (ASF) factor and Required Stable Funding (RSF) factor is applied through business assumptions and reflects through the execution of a Business as Usual (BaU) run in the OFS LRRCMAS application. The ASF and RSF factors are applied as weights at the account level and the Total ASF and Total RSF are obtained by taking a sum of all the weighted amounts. The ratio is then computed by the application as the Total ASF amount divided by the Total RSF amount. A set of predefined business assumptions for ASF and RSF as defined in the NSFR guidelines are prepackaged in the application. For the complete list of preseeded ASF and RSF assumptions, see the Regulation Addressed through Business Assumptions section.

Topics:

- Identifying Maturity Bands
- Computing Available Amount of Stable Funding
- Computing Required Amount of Stable Funding
- Computing Derivatives
- Computing Net Stable Funding Ratio

4.2.1 Identifying Maturity Bands

One of the various dimensions used to allocate ASF and RSF factors is the maturity bucket of the instrument. For NSFR computation, maturity bands are used to allocate the factors. The MAS NSFR band is predefined as per regulatory guidelines and has the following values:

- Less than 6 months
- Greater than or equal to 6 months but less than 1 year
- Greater than or equal one year
- Open maturity

All accounts will be categorized on one of these bands depending on the maturity date. Note that to categorize any product into open maturity, the LRM - Classification of Products as Open Maturity rule should be edited, and the product must be included in the rule.

4.2.2 Computing Available Amount of Stable Funding

The available stable funding factor is a pre-determined weight ranging from 0% to 100% which is applied through business assumptions for accounts falling under the dimensional combinations defined. The weights are guided by the NSFR standard. The available stable funding is then taken as a total of all the weighted amounts where an ASF factor is applied.

Foreign bank branches can account for the undrawn contractual committed facilities from its head office or other branches which are the same entity and are regional hubs as ASF up to 40% of the minimum ASF required to meet the minimum requirement of NSFR.

The formula for calculating Available Amount of Stable Funding is as follows:

$$\textit{Available Amount of Stable Funding} = \sum_{i=1}^{n} \textit{Liability}_i * \textit{Factor}_i$$

$$\textit{where } n = \textit{ The number of capital and liability accounts}$$

The following is an example of applying the ASF factor:

Consider an assumption defined with the following dimensional combination and ASF factors, with them based on the measure being Total Stable Balance.

Table 11: Example: Application of ASF Factors

Dimensional Combination			
Product	**Retail/Wholesale Indicator**	**Residual Maturity Band**	**ASF Factor**
Deposits	R	<= 6 months	95%
Deposits	R	6 months - 1 year	95%
Deposits	R	>= 1 year	95%

If five accounts are falling under this combination, then after the assumption is applied the resulting amounts with the application of ASF factors are as follows.

Table 12: Example continued - Application of ASF Factors

Account	Stable Balance	ASF Weighted Amount
A1	3400	3230
A2	3873	3679.35
A3	9000	8550
A4	1000	950
A5	100	95

NOTE The LRRCMAS application does not compute ASF items such as Tier 1 and Tier 2 capital, deferred tax liabilities, and minority interest. The items are taken as a download from the OFS Basel application. By updating the latest Basel Run Skey as a setup parameter, LRRCMAS picks up the respective standard accounting head balances and applies the respective ASF factors.

If OFS Basel is not installed, then the following items must be provided as a download in the FCT_STANDARD_ACCT_HEAD table.

- Gross Tier 2 Capital
- Deferred Tax Liability related to Other Intangible Asset
- Deferred Tax Liability related to Goodwill
- Deferred Tax Liability related to MSR
- Deferred Tax Liability related to Deferred Tax Asset
- Deferred Tax Liability related to Defined Pension Fund Asset
- Net CET1 Capital post-Minority Interest Adjustment
- Net AT1 Capital post-Minority Interest Adjustment
- Total Minority Interest required for NSFR

4.2.3 Computing Required Amount of Stable Funding

The required stable funding factor is a pre-determined weight ranging from 0% to 100% which is applied through business assumptions for the accounts falling under the defined dimensional combinations. The weights are guided by the NSFR standard. The required stable funding is then considered as a sum of all the weighted amounts where an RSF factor is applied.

The required stable funding factor is a weight function and is applied similarly to that of the ASF. The following formula is used for calculating the Required Amount of Stable Funding:

$$\textit{Required Amount of Stable Funding} = \left(\sum_{i=1}^{n} Asset_i * Factor_i\right) + \left(\sum_{i=1}^{m} Off\ Balance\ Sheet_i * Factor_i\right)$$

$$where\ n = Number\ of\ asset\ accounts$$

$$where\ m = Number\ of\ off\ balance\ sheet\ accounts$$

4.2.3.1 Computation of Off-Balance Sheet Items

Off-balance sheet items are considered under the application of RSF factor and are given the appropriate factor as guided. Some combinations such as lines of credit, have a predefined RSF factor as guided and are available as preseeded assumptions. Other off-balance sheet products such as Variable Rate Demand Notes (VRDN) and Adjustable Rate Notes (ARN), do not have predefined factors and are left to the discretion of the jurisdictions. For such products, define assumptions and apply the desired RSF factors as applicable.

4.2.4 Computing Derivatives

Derivatives are handled by applying both ASF and RSF factors as applicable. They can behave as either an asset or a liability, depending on the marked-to-market value. The application of factors on derivatives is done on the market value after subtracting the variation margin posted/received against the account. The computation is as follows:

1. NSFR derivative liabilities = Derivative liabilities – (Total collateral posted as variation margin against the derivative liabilities)
2. NSFR derivative assets = Derivative assets – (Cash collateral received as variation margin against the derivative assets)
3. The factors are then applied as follows:
   - ASF factor application

     ASF amount for derivatives = 0% * Max ((NSFR derivative liabilities –NSFR derivative assets), 0)
   - RSF factor application

     RSF amount for derivatives = 100% * Max ((NSFR derivative assets- NSFR derivative liabilities), 0)

Derivative liabilities refer to those derivative accounts where the market value is negative. Derivative assets refer to those derivative accounts where the market value is positive. Apart from the variation margin, the initial margin against derivative contracts is also treated with the appropriate factor.

4.2.5 Computing Net Stable Funding Ratio

The Net Stable Funding Ratio is calculated as follows:

$$\textit{Net Stable Funding Ratio} = \frac{\textit{Available Amount of Stable Funding}}{\textit{Required Amount of Stable Funding}}$$

4.3 Preconfigured MAS Regulatory NSFR Scenarios

OFS LRRCMAS supports ready-to-use MAS NSFR assumptions according to MAS guidelines on the Net stable funding ratio.

This section explains the business assumptions which support NSFR as per MAS Notice 652 Net Stable Funding Ratio.

The following table lists the Document Identifiers provided in the Regulatory Reference column of the Regulations Addressed through Business Assumptions section.

Table 13: Document Identifiers for Regulatory References

Regulation Reference Number	Document Number	Document Name	Issued Date
MC	MAS 652	MAS Notice 652 Net Stable Funding Ratio	24 Apr 18

> **NOTE** This section provides only contextual information about business assumptions. For more detailed information, see the OFS LRS application (UI).

4.3.1 Regulation Addressed through Business Assumptions

The application supports multiple assumptions with preconfigured rules and scenarios based on regulator-specified NSFR scenario parameters. The list of preconfigured business assumptions and the corresponding reference to the regulatory requirement that it addresses is provided in the following tables:

Topics:

- Available Stable Funding Factor
- Required Stable Funding Factor
- Derivatives
- Off-Balance Sheet Items

4.3.1.1 Available Stable Funding Factor

This section enlists all the preseeded assumptions acting on liabilities and capital items which receive an ASF factor.

Table 14: Preconfigured NSFR Assumptions - ASF

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
1	MAS ASF-Capital items, DTL and minority interest	ASF on gross tier 1, additional tier 1, tier 2 capital, Deferred tax liabilities, and minority interest.	This assumption defines the long-term funding sources with an effective maturity of one year or more, primarily tier 1 and tier 2 capital instruments along with deferred tax liability and minority interest, which are assigned a 100% ASF factor for the NSFR computation.	Paragraph 6(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
2	MAS ASF- Stable retail deposits with maturity less than 1yr	ASF on stable and highly stable deposits as defined in the LCR from customers treated as retail with a remaining maturity of less than a year.	The ASF factors applicable to the stable and highly stable portion of deposits, from retail customers and SMEs treated like retail customers for LCR are predefined as part of this assumption. This assumption applies a 95% ASF factor on the stable and highly stable portion of the retail deposits with a maturity of less than 1 year.	Paragraph 6(c), 7(a), 7(b)
3	MAS ASF- Stable retail deposits with maturity more than 1yr	ASF on stable and highly stable deposits as defined in the LCR from customers treated as retail with a remaining maturity of more than a year.	The ASF factors applicable to the stable and highly stable portion of deposits, from retail customers and SMEs treated like retail customers for LCR are predefined as part of this assumption. This assumption applies a 95% ASF factor on the stable and highly stable portion of cash flows with cash flow maturity within 1 year and a 100% ASF factor on the stable and highly stable portion of cash flows with cash flow maturity of 1 year or more.	Paragraph 6(c), 7(a), 7(b)
4	MAS ASF-Less stable deposit with maturity less than 1yr	ASF on less stable deposits as defined in the LCR from customers treated as retail with a remaining maturity of less than a year.	The ASF factors applicable to the less stable portion of deposits, from retail customers and SMEs treated like retail customers for LCR are predefined as part of this assumption. This assumption applies a 90% ASF factor on the stable portion of the retail deposits with a maturity of less than 1 year.	Paragraph 6(c), 8(a), 8(b)
5	MAS ASF-Less stable retail deposits- Cash flow basis	ASF on less stable deposits as defined in the LCR from customers treated as retail with a remaining maturity of more than a year.	The ASF factors applicable to the less stable portion of deposits, from retail customers and SMEs treated like retail customers for LCR are predefined as part of this assumption. This assumption applies a 90% ASF factor on the less stable portion of cash flows with cash flow maturity within 1 year and a 100% ASF factor on the less stable portion of cash flows with cash flow maturity of 1 year or more.	Paragraph 6(c), 8(a), 8(b)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
6	MAS ASF-Unsec funds from nonfin corp with mat less than 1yr	ASF on unsecured funding other than deposits from non-financial corporates with a remaining maturity of less than a year.	The ASF factor to be applied to unsecured borrowings from non-financial corporates. This assumption applies a 50% ASF factor on the EOP balance of borrowings with maturity within 1 year.	Paragraph 6(c), 9(a)
7	MAS ASF-Unsec funds from nonfin corp with mat more than 1yr	ASF on unsecured funding other than deposits from non-financial corporates with a remaining maturity of more than a year.	The ASF factor to be applied to unsecured borrowings from non-financial corporates. This assumption applies a 50% ASF factor on the cash flows with cash flow maturity of less than 1 year and a 100% ASF factor on the cash flows with cash flow maturity of 1 year or more.	Paragraph 6(c), 9(a)
8	MAS ASF-Op dep from nonfin corp with maturity less than 1yr	ASF on unsecured operational deposits from non-financial corporates with a remaining maturity of less than a year.	The ASF factor to be applied to unsecured funding from non-financial corporates of which is an operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the operational balance of deposits with maturity within 1 year.	Paragraph 6(c), 9(a), 9(b)
9	MAS ASF-Op dep from nonfin corp with maturity more than 1yr	ASF on unsecured operational deposits from non-financial corporates with a remaining maturity of more than a year.	The ASF factor to be applied to unsecured funding from non-financial corporates of which is an operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the operational cash flows with cash flow maturity of 1 year and a 100% ASF factor on the operational cash flows with cash flow maturity of 1 year or more.	Paragraph 6(c), 9(a), 9(b)
10	MAS ASF-Non-op dep from nonfin corp with mat less than 1yr	ASF on unsecured non-operational deposits from non-financial corporates with a remaining maturity of less than a year. This includes the entire portion of deposits not classified as operational deposits and the non-operational portion of operational deposits.	This assumption specifies unsecured funding from non-financial corporates of which is a non-operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the non-operational balance of deposits with maturity within 1 year.	Paragraph 6(c), 9(a), 9(b)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
11	MAS ASF-Non-op dep from nonfin corp with mat more than 1yr	ASF on unsecured non-operational deposits from non-financial corporates with a remaining maturity of more than a year. This includes the entire portion of deposits not classified as operational deposits and the non-operational portion of operational deposits.	This assumption specifies unsecured funding from non-financial corporates of which is a non-operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the non-operational cash flows with cash flow maturity of 1 year or less and a 100% ASF factor on the non-operational cash flows with cash flow maturity of 1 year or more.	Paragraph 6(c), 9(a), 9(b)
12	MAS ASF-Unsec funds from central bank with mat less than 1yr	ASF on unsecured funding other than deposits from the central bank with a remaining maturity of less than a year.	The ASF factor to be applied to unsecured borrowings from the central bank. This assumption applies a 0% ASF factor on the EOP balance of borrowings with a maturity period of 6 months and a 50% ASF factor on the EOP balance of borrowings with maturity period within 6 months to less than 1 year.	Paragraph 6(c), 9(b), 9(d), 11(a)
13	MAS ASF-Unsec funds from central bank with mat more than 1yr	ASF on unsecured funding other than deposits from central banks with a remaining maturity of more than a year.	The ASF factor to be applied to unsecured borrowings from the central bank. This assumption applies a 0% ASF factor on the cash flows with a cash flow maturity period of 6 months, a 50% ASF factor on the cash flows with cash flow maturity period between 6 months to less than 1 year, and a 100% ASF factor on the cash flows with cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(b), 9(d), 11(a)
14	MAS ASF-Op dep from central bank with maturity less than 1yr	ASF on unsecured operational deposits from the central bank with a remaining maturity of less than a year.	The ASF factor to be applied to unsecured funding from the central bank of which is an operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the operational balance of deposits with a maturity period of less than 1 year.	Paragraph 6(c), 9(b), 9(d), 11(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
15	MAS ASF-Op dep from central bank with maturity more than 1yr	ASF on unsecured operational deposits from the central bank with a remaining maturity of more than a year.	The ASF factor to be applied to unsecured funding from the central bank of which is an operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the operational cash flows with cash flow maturity of 1 year and a 100% ASF factor on the operational cash flows with a cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(b), 9(d), 11(a)
16	MAS ASF-Non-op dep from central bank with mat less than 1yr	ASF on unsecured non-operational deposits from the central bank with a remaining maturity of less than a year. This includes the entire portion of deposits not classified as operational deposits and the non-operational portion of operational deposits.	This assumption specifies unsecured funding from central banks of which is a non-operational deposit (as defined in the LCR). This assumption applies a 0% ASF factor on the non-operational balances of deposits with a maturity period within 6 months, and a 50% ASF factor on the non-operational balance of deposits with a maturity period within 6 months to 1 year.	Paragraph 6(c), 9(b), 9(d), 11(a)
17	MAS ASF-Non-op dep from central bank with mat more than 1yr	ASF on unsecured non-operational deposits from the central bank with a remaining maturity of more than a year. This includes the entire portion of deposits not classified as operational deposits and the non-operational portion of operational deposits.	This assumption specifies unsecured funding from the central bank of which is a non-operational deposit (as defined in the LCR). This assumption applies a 0% ASF factor on the non-operational cash flows with a cash flow maturity period within 6 months, a 50% ASF factor on the non-operational cash flows with cash flow maturity period between 6 months to 1 year, and a 100% ASF factor on the non-operational cash flows with cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(b), 9(d), 11(a)
18	MAS ASF-Unsec funds from SOV, PSE, MDB with mat less than 1yr	ASF on unsecured funding other than deposits from sovereigns, public sector entities (PSE), multilateral development banks (MDB), and national development banks (NDB) with a remaining maturity of less than a year.	The ASF factor to be applied to unsecured borrowings from sovereigns, public sector entity (PSE), multilateral development bank (MDB), national development bank (NDB). This assumption applies a 50% ASF factor on the EOP balance of borrowings with a maturity period within 1 year.	Paragraph 6(c), 9(b), 9(c)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
19	MAS ASF-Unsec funds from SOV, PSE, MDB with mat more than 1yr	ASF on unsecured funding other than deposits from sovereigns, public sector entities (PSE), multilateral development banks (MDB), and national development banks (NDB) with a remaining maturity of more than a year.	The ASF factor to be applied to unsecured borrowings from sovereigns, public sector entity (PSE), multilateral development bank (MDB), national development bank (NDB). This assumption applies a 50% ASF factor on the cash flows with cash flow maturity of less than 1 year and a 100% ASF factor on the cash flows with cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(b), 9(c)
20	MAS ASF-Op deposit from SOV, PSE, MDB with mat less than 1yr	ASF on unsecured operational deposits from sovereigns, public sector entities (PSE), multilateral development banks (MDB), and national development banks (NDB) with a remaining maturity of less than a year.	The ASF factor to be applied to unsecured funding from sovereigns, public sector entity (PSE), multilateral development bank (MDB), national development bank (NDB) of which is an operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the operational balance of deposits with a maturity period within 1 year.	Paragraph 6(c), 9(b), 9(c)
21	MAS ASF-Op deposit from SOV, PSE, MDB with mat more than 1yr	ASF on unsecured operational deposits from sovereigns, public sector entities (PSE), multilateral development banks (MDB), and national development banks (NDB) with a remaining maturity of more than a year.	The ASF factor to be applied to unsecured funding from non-financial corporates of which is an operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the operational cash flows with a cash flow maturity period of less than 1 year, and a 100% ASF factor on the operational cash flows with cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(b), 9(c)
22	MAS ASF-Nonop deposit from SOV, PSE, MDB with mat less than 1yr	ASF on unsecured non-operational deposits from the central bank with a remaining maturity of less than a year. This includes the entire portion of deposits not classified as operational deposits and the non-operational portion of operational deposits.	This assumption specifies unsecured funding from non-financial corporates of which is a non-operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the Non-operational balance of deposits with maturity within 1 year.	Paragraph 6(c), 9(b), 9(c)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
23	MAS ASF-Nonop deposit from SOV, PSE, MDB with mat more than 1yr	ASF on unsecured non-operational deposits from the central bank with a remaining maturity of more than a year. This includes the entire portion of deposits not classified as operational deposits and the non-operational portion of operational deposits.	This assumption specifies unsecured funding from non-financial corporates of which is a non-operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the non-operational cash flows with a cash flow maturity period of less than 1 year and a 100% ASF factor on the non-operational cash flows with a cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(b), 9(c)
24	MAS ASF-Unsecured funds from fin corp with mat less than 1yr	ASF on unsecured funding other than deposits from financial corporates with a remaining maturity of less than a year.	The ASF factor to be applied to unsecured funding other than deposits from financial corporates. This assumption applies a 0% ASF factor on the EOP balance of borrowings with maturity period within 6 months and a 50% ASF factor on the EOP balance of borrowings with maturity period within 6 months to less than 1 year.	Paragraph 6(c), 9(b), 9(d), 11(a)
25	MAS ASF-Unsecured funds from fin corp with mat more than 1yr	ASF on unsecured funding other than deposits from financial corporates with a remaining maturity of more than a year.	The ASF factor to be applied to unsecured funding other than deposits from financial corporates. This assumption applies a 0% ASF factor on the cash flows with cash flow maturity period within 6 months, a 50% ASF factor on the cash flows with cash flow maturity period of 6 months to less than 1 year, and a 100% ASF factor on the cash flows with cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(b), 9(d), 11(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
26	MAS ASF-Unsec funds from other entity with mat less than 1yr	ASF on unsecured funding other than deposits from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and national development banks with a remaining maturity of less than a year.	The ASF factor to be applied to unsecured funding other than deposits from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and national development banks. This assumption applies a 0% ASF factor on the EOP balance of borrowings with maturity period within 6 months and a 50% ASF factor on the EOP balance of borrowings with a maturity period between 6 months to less than 1 year.	Paragraph 6(c), 9(b), 9(d), 11(a)
27	MAS ASF-Unsec funds from other entity with mat more than 1yr	ASF on unsecured funding other than deposits from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and national development banks with a remaining maturity of more than a year.	The ASF factor to be applied to unsecured funding other than deposits from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and national development banks. This assumption applies a 0% ASF factor on the cash flows with cash flow maturity period within 6 months, a 50% ASF factor on the cash flows with cash flow maturity period between 6 years to less than 1 year, and a 100% ASF factor on the cash flows with cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(b), 9(d), 11(a)
28	MAS ASF-Op deposit from fin corporate with mat less than 1yr	ASF on unsecured operational deposits from financial corporates with a remaining maturity of less than a year.	The ASF factor to be applied to unsecured funding from financial corporates of which is an operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the operational balance of deposits with a maturity period within 1 year.	Paragraph 6(c), 9(b), 9(d), 11(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
29	MAS ASF-Op deposit from other entity with mat less than 1yr	ASF on unsecured operational deposits from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and n with a remaining maturity of less than a year.	The ASF factor to be applied to unsecured funding from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and national development banks of which is an operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the operational balance of deposits with a maturity period within 1 year.	Paragraph 6(c), 9(b), 9(d), 11(a)
30	MAS ASF-Op deposit from fin corporate with mat more than 1yr	ASF on unsecured operational deposits from financial corporates with a remaining maturity of more than a year.	The ASF factor to be applied to unsecured funding from financial corporates of which is an operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the operational cash flows with a cash flow maturity period of less than 1 year and a 100% ASF factor on the operational cash flows with a cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(b), 9(d), 11(a)
31	MAS ASF-Op deposit from other entity with mat more than 1yr	ASF on unsecured operational deposits from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and n with a remaining maturity of less than a year.	The ASF factor to be applied to unsecured funding from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and national development banks of which is an operational deposit (as defined in the LCR). This assumption applies a 50% ASF factor on the operational cash flows with a cash flow maturity period of less than 1 year and a 100% ASF factor on the operational cash flows with a cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(b), 9(d), 11(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
32	MAS ASF-Nonop deposit from fin corp with mat less than 1yr	ASF on unsecured non-operational deposits from financial corporates with a remaining maturity of less than a year. This includes the entire portion of deposits not classified as operational deposits and the non-operational portion of operational deposits.	This assumption specifies unsecured funding from financial corporates of which is a non-operational deposit (as defined in the LCR). This assumption applies a 0% ASF factor on the non-operational balance of deposits with maturity period within 6 months and a 50% ASF factor on the non-operational balance of deposits with a maturity period between 6 months to less than 1 year.	Paragraph 6(c), 9(b), 9(d), 11(a)
33	MAS ASF-Nonop deposit from fin corp with mat more than 1yr	ASF on unsecured non-operational deposits from financial corporates with a remaining maturity of more than a year. This includes the entire portion of deposits not classified as operational deposits and the non-operational portion of operational deposits.	This assumption specifies unsecured funding from financial corporates of which is a non-operational deposit (as defined in the LCR). This assumption applies a 0% ASF factor on the non-operational cash flows with a cash flow maturity period within 6 months, a 50% ASF factor on the non-operational cash flows with a cash flow maturity period between 6 months to less than 1 year and a 100% ASF factor on the non-operational cash flows with cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(b), 9(d), 11(a)
34	MAS ASF-Nonop dep from other entity with mat less than 1yr	ASF on unsecured non-operational deposits from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and national development banks with a remaining maturity of less than a year. This includes the entire portion of deposits not classified as operational deposits and the non-operational portion of operational deposits.	This assumption specifies unsecured funding from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and national development banks of which is a non-operational deposit (as defined in the LCR). This assumption applies a 0% ASF factor on the non-operational balance of deposits with maturity period within 6 months and a 50% ASF factor on the non-operational balance of deposits with a maturity period between 6 months to less than 1 year.	Paragraph 6(c), 9(b), 9(d), 11(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
35	MAS ASF-Nonop dep from other entity with mat more than 1yr	ASF on unsecured non-operational deposits from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and national development banks with a remaining maturity of more than a year. This includes the entire portion of deposits not classified as operational deposits and the non-operational portion of operational deposits.	This assumption specifies unsecured funding from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and national development banks of which is a non-operational deposit (as defined in the LCR). This assumption applies a 0% ASF factor on the non-operational cash flows with cash flow maturity period within 6 months, a 50% ASF factor on the non-operational cash flows with cash flow maturity period between 6 months to less than 1 year and a 100% ASF factor on the non-operational cash flows with a cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(b), 9(d), 11(a)
36	MAS ASF: Co-op bank network deposits with mat less than 1yr	ASF on deposits from members of the same cooperative network of banks subject to national discretion with a remaining maturity of less than 1 year.	This assumption specifies the deposits between banks within the same cooperative network. This assumption applies a 0% ASF factor on the EOP balance of deposits with maturity within 6 months and a 50% ASF factor on the EOP balance of deposits with maturity between 6 months to less than 1 year.	Paragraph 6(c), 9(d), 11(a), 15
37	MAS ASF: Co-op bank network deposits with mat more than 1yr	ASF on deposits from members of the same cooperative network of banks subject to national discretion with a remaining maturity of more than 1 year	This assumption specifies the deposits between banks within the same cooperative network. This assumption applies a 0% ASF factor on the cash flows with cash flow maturity between within 6 months, a 50% ASF factor on the cash flows with cash flow maturity between 6 months to less than 1 year and a 100% ASF factor on the cash flows with cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(d), 11(a), 15

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
38	MAS ASF-Secured funding from retail with mat less than 1yr	ASF on secured funding from customers who are treated as retail with a remaining maturity of less than a year.	This assumption specifies the secured funding from customers who are treated as retail. This assumption applies a 0% ASF factor on the EOP balance of borrowings with maturity within 6 months and a 50% ASF factor on the EOP balance of borrowings with a maturity period between 6 months to less than 1 year.	Paragraph 6(c), 9(a), 9(c), 9(d), 11(a)
39	MAS ASF-Secured funding from retail with mat more than 1yr	ASF on secured funding from customers who are treated as retail with a remaining maturity of more than a year.	This assumption specifies the secured deposits from customers who are treated as retail. This assumption applies a 0% ASF factor on the cash flows with cash flow maturity period within 6 months, a 50% ASF factor on the cash flows with cash flow maturity period of 6 months to less than 1 year and a 100% ASF factor on the cash flows with cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(a), 9(c), 9(d), 11(a)
40	MAS ASF-Secured fund from nonfin corp with mat less than 1yr	ASF on secured funding from financial and non-financial corporates with a remaining maturity of less than a year.	This assumption specifies the secured funding from non-financial corporates. This assumption applies a 50% ASF factor on the EOP balance of borrowings with a maturity period within 1 year.	Paragraph 6(c), 9(a), 9(c), 9(d), 11(a)
41	MAS ASF-Secured funding from fin corp with mat less than 1yr	ASF on secured funding from financial and non-financial corporates with a remaining maturity of less than a year.	This assumption specifies the secured funding from financial corporates. This assumption applies a 0% ASF factor on the EOP balance of borrowings with maturity period within 6 months and a 50% ASF factor on the EOP balance of borrowings with a maturity period between 6 months to less than 1 year.	Paragraph 6(c), 9(a), 9(c), 9(d), 11(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
42	MAS-ASF-Secured fund from nonfin corp with mat more than 1yr	ASF on secured funding from financial and non-financial corporates with residual a remaining maturity of more than a year.	This assumption specifies the secured funding from non-financial corporates. This assumption applies a 50% ASF factor on the cash flows with a cash flow maturity period of less than 1 year and a 100% ASF factor on the cash flows with a cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(a), 9(c), 9(d), 11(a)
43	MAS-ASF-Secured funding from fin corp with mat more than 1yr	ASF on secured funding from financial and non-financial corporates with residual a remaining maturity of more than a year.	This assumption specifies the secured funding from financial corporates. This assumption applies a 0% ASF factor on the cash flows with a cash flow maturity period within 6 months, a 50% ASF factor on the cash flows with a cash flow maturity period between 6 months to less than 1 year and a 100% ASF factor on the cash flows with a cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(a), 9(c), 9(d), 11(a)
44	MAS-ASF-Sec funding from central bank with mat less than 1yr	ASF on secured funding from central banks with a remaining maturity of less than a year.	This assumption specifies the secured funding from central banks. This assumption applies a 0% ASF factor on the EOP balance of borrowings with a maturity period within 6 months and a 50% ASF factor on the EOP balance of borrowings with a maturity period between 6 months to less than 1 year.	Paragraph 6(c), 9(a), 9(c), 9(d), 11(a)
45	MAS-ASF-Sec funding from central bank with mat more than 1yr	ASF on secured funding from central banks with a remaining maturity of more than a year.	This assumption specifies the secured funding from central banks. This assumption applies a 0% ASF factor on the cash flows with cash flow maturity period within 6 months, a 50% ASF factor on the cash flows with cash flow maturity period between 6 months to less than 1 year and a 100% ASF factor on the cash flows with a cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(a), 9(c), 9(d), 11(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
46	MAS-ASF-Secured fund from SOV, PSE, MDB with mat less than 1yr	ASF on secured funding from sovereigns, public sector entities, multilateral development banks and national development banks with a residual maturity of less than a year.	This assumption specifies the secured funding from sovereigns, public sector entities, multilateral development banks, and national development banks. This assumption applies a 50% ASF factor on the EOP balance of funding with a maturity period within 1 year.	6(c), 9(a), 9(c), 9(d), 11(a)
47	MAS-ASF-Secured fund from SOV, PSE, MDB with mat more than 1yr	ASF on secured funding from sovereigns, public sector entities, multilateral development banks and national development banks with a residual maturity of more than a year.	This assumption specifies the secured funding from sovereigns, public sector entities, multilateral development banks, and national development banks. This assumption applies a 50% ASF factor on the cash flows with a cash flow maturity period of less than 1 year and a 100% ASF factor on the cash flows with a cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(a), 9(c), 9(d), 11(a)
48	MAS-ASF-Secured fund from other entity with mat less than 1yr	ASF on secured funding from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks and national development banks with a residual maturity of less than a year.	This assumption specifies the secured funding from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and national development banks. This assumption applies a 50% ASF factor on the EOP balance of borrowings with a maturity period within 1 year.	Paragraph 6(c), 9(a), 9(c), 9(d), 11(a)
49	MAS-ASF-Secured fund from other entity with mat more than 1yr	ASF on secured funding from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks and national development banks with a residual maturity of more than a year.	This assumption specifies the secured funding from all entities except retail, corporates, central banks, sovereigns, public sector entities, multilateral development banks, and national development banks. This assumption applies a 0% ASF factor on the cash flows with cash flow maturity period within 6 months, a 50% ASF factor on the cash flows with a cash flow maturity period between 6 months to less than 1 year and a 100% ASF factor on the cash flows with cash flow maturity period of 1 year or more.	Paragraph 6(c), 9(a), 9(c), 9(d), 11(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
50	MAS ASF-Trade date payables	ASF on trade date payables arising from purchases of foreign currencies, financial instruments, and commodities that are expected to settle or have failed but are expected to settle within the standard settlement cycle.	The ASF factor applicable to trade payable cash flows arising from purchases of foreign currencies, financial instruments, and commodities expected to settle within the standard settlement cycle, are predefined in this assumption. This assumption applies a 0% ASF factor on the trade payable cash flows.	Paragraph 11(d)
51	MAS ASF-Liabilities with open maturity	ASF on deposits and all other borrowings which do not have a stated maturity.	The ASF factor applicable to all the other funding without any stated maturity are predefined in this assumption. This assumption applies a 0% ASF factor on all the funding without any maturity.	Paragraph 11(b)

4.3.1.2 Required Stable Funding Factor

This section enlists all the preseeded assumptions acting on assets and off-balance sheet items that receive an RSF factor.

Table 15: Preconfigured NSFR Assumptions - RSF

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
1	MAS-RSF-Coins and banknotes	RSF on coins, banknotes, cash, and restricted cash held by the bank.	The RSF factor applicable to coins, banknotes, and cash held by the bank, is predefined as a part of this assumption. This assumption applies a 0% RSF factor on the coins, banknotes, and cash held by the bank.	Paragraph 32(a)
2	MAS-RSF-Central bank reserves	RSF on all central bank reserves, including, required reserves and excess reserves.	The RSF factors applicable to required and excess central bank reserves are predefined as a part of this assumption. This assumption applies a 0% RSF factor to all central bank reserves.	Paragraph 32(b)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
3	MAS-RSF- Unencumbered claims on central banks	RSF on unencumbered loans and other claims on central banks.	The RSF factors applicable to unencumbered loans, debt security, and claims on central banks are predefined as part of this assumption. This assumption applies 0%, 50%, and 100% RSF factors to the loans, debt security, and claims on central banks with a remaining maturity period of less than 6 months, between 6 months and 1 year, and 1 year or more, respectively.	Paragraphs 25, 32(c), 36(c), 40(a)
4	MAS-RSF- Encumbered claims on central banks	RSF on encumbered loans and other claims on central banks.	The RSF factors applicable to encumbered loans, debt security, and claims on central banks are predefined as part of this assumption. For the qualifying assets with an encumbrance period of less than 6 months, the assumption applies 0%, 50%, and 100% RSF factors based on a remaining maturity of less than 6 months, between 6 months and 1 year, and 1 year or more, respectively. For assets with encumbrance period of between 6 months and 1 year, the assumption applies 50%, and 100% RSF factors based on a remaining maturity of less than 1 year and 1 year or more respectively. A 100% RSF factor is applied to all assets maturing within a year and encumbrance period of 1 year or more.	Paragraphs 25, 32(c), 36(c), 40(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
5	MAS-RSF-Unencumbered loans to fin entity backed by Level 1 asset	RSF on unencumbered loans to financial institutions where the loan is secured against Level 1 assets as defined in the LCR.	The RSF factors applicable to the unencumbered loans and overdrafts are given to financial institutions secured by a Level 1 asset, are predefined as a part of this assumption. The assumption applies RSF factor of 10%,50%,100% on the unencumbered secured loans given to financial institutions secured by Level 1 asset with a remaining maturity of less than 6 months, 6 months to 1 year and 1 year or more, respectively, where the collateral received can be re-hypothecated for the life of the loan. The assumption applies RSF factor of 15%,50%,100% on the unencumbered secured loans given to financial institutions secured by Level 1 asset with a remaining maturity of less than 6 months, 6 months to 1 year and 1 year or more, respectively; where the collateral received cannot be re-hypothecated for the life of the loan.	Paragraphs 25, 34, 35(b), 36(c), 40(a), 40(c)
6	MAS-RSF-Encumbered loans to fin entity backed by Level 1 asset	RSF on encumbered loans to financial institutions where the loan is secured against Level 1 assets as defined in the LCR.	The RSF factors applicable to the loans and overdrafts are given to financial institutions secured by a Level 1 asset, are predefined as a part of this assumption. The assumption applies relevant RSF factors on the encumbered secured loans based on the residual maturity and encumbrance period of the loan.	Paragraphs 25, 34, 35(b), 36(c), 40(a), Paragraph 40(c)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
7	MAS-RSF-Unencum loans to fin entity backed by non-Level 1 asset	RSF on unencumbered loans to financial institutions where the loan is secured against assets belonging to levels other than Level 1, as defined in the LCR.	The RSF factors applicable to the unencumbered loans given to financial institutions secured by assets belonging to levels other than Level 1, with residual maturity less than 1 year, are predefined as a part of this assumption. The assumption applies RSF factor of 15%, 50%, 100% on the unencumbered secured loans given to financial institutions secured by assets belonging to levels other than Level 1 with a remaining maturity of less than 6 months, 6 months to 1 year and 1 year or more, respectively.	Paragraphs 25, 34, 35(b), 36(c), 40(a), 40(c)
8	MAS-RSF-Encumbered loan to fin entity backed by non-Level 1 asset	RSF on encumbered loans to financial institutions where the loan is secured against assets belonging to levels other than Level 1, as defined in the LCR.	The RSF factors applicable to the encumbered loans given to financial institutions secured by assets belonging to levels other than Level 1 are predefined as a part of this assumption. The assumption applies relevant RSF factor on the encumbered secured loans based on the residual maturity and encumbrance period of the loan.	
9	MAS-RSF-Unencumbered unsecured loans to financial entities	RSF on unencumbered unsecured loans to financial institutions.	The RSF factors applicable to the unencumbered unsecured loans given to financial institutions are predefined as a part of this assumption. The assumption applies RSF factor of 15%, 50%, and 100% on the unencumbered unsecured loans given to financial institutions, with a remaining maturity of less than 6 months, 6 months to 1 year, and 1 year or more, respectively.	Paragraphs 25, 35(b), 36(c), 40(a), 40(c)
10	MAS-RSF-Encumbered unsecured loans to financial entities	RSF on encumbered unsecured loans to financial institutions.	The RSF factors applicable to the encumbered unsecured loans given to financial institutions are predefined as a part of this assumption. The assumption applies relevant RSF factor on the encumbered secured loans given to financial institutions based on the residual maturity and encumbrance period of the loan.	Paragraphs 25, 35(b), 36(c), 40(a), 40(c)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
11	MAS-RSF-Unencumbered Level 1 assets	RSF on unencumbered assets that qualify for inclusion in Level 1 of High-quality liquid assets as defined in the LCR.	The RSF factors applicable to unencumbered assets, which qualify for inclusion in Level 1 of High-quality liquid assets as defined in the LCR, are predefined as a part of this assumption. The assumption applies a 5% RSF factor on the unencumbered Level 1 assets.	Paragraphs 25, 33, 36(b), 40(a)
12	MAS-RSF-Unencumbered Level 2A assets	RSF on unencumbered assets that qualify for inclusion in Level 1 of High quality liquid assets as defined in the LCR.	The RSF factors applicable to unencumbered assets, which qualify for inclusion in Level 2A, and 2B of High-quality liquid assets as defined in the LCR, are predefined as a part of this assumption. The assumption applies a 15% RSF factor on the unencumbered Level 2A assets.	Paragraphs 25, 35(a), 36(b), 40(a)
13	MAS-RSF-Unencumbered Level 2B assets	RSF on unencumbered assets that qualify for inclusion in Level 1 of High quality liquid assets as defined in the LCR.	The RSF factors applicable to unencumbered assets, which qualify for inclusion in Level 2A, and 2B of High-quality liquid assets as defined in the LCR, are predefined as a part of this assumption. The assumption applies an RSF factor of 50% on the unencumbered Level 2B assets.	Paragraphs 25, 36(a), 36(b), 40(a)
14	MAS-RSF- Encumbered Level 2B assets	RSF on the encumbered portion of assets that qualify for inclusion in Level 2B of High-quality liquid assets as defined in the LCR.	The RSF factors applicable to the encumbered portion of assets, which qualify for inclusion in Level 2B of High-quality liquid assets as defined in the LCR, are predefined as a part of this assumption. The assumption applies 50% and 100% RSF factors on the encumbered portion of Level 2B assets, with encumbrance period of less than 1 year and 1 year or more respectively.	Paragraphs 25, 36(a), 36(b), 40(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
15	MAS-RSF-Encumbered Level 1 assets	RSF on the encumbered portion of assets that qualify for inclusion in Level 1 of High quality liquid assets as defined in the LCR.	The RSF factors applicable to the encumbered portion of assets, which qualify for inclusion in Level 1 of High-quality liquid assets as defined in the LCR, are predefined as a part of this assumption. The assumption applies 5%, 50%, and 100% RSF factors on the encumbered portion of Level 1 assets, with encumbrance period of less than 6 months, between 6 months to 1 year and 1 year or more, respectively.	Paragraphs 25, 33, 36(b), 40(a)
16	MAS-RSF- Encumbered Level 2A assets	RSF on the encumbered portion of assets that qualify for inclusion in Level 2A of High quality liquid assets as defined in the LCR.	The RSF factors applicable to the encumbered portion of assets, which qualify for inclusion in Level 2A of High-quality liquid assets as defined in the LCR, are predefined as a part of this assumption. The assumption applies 15%, 50%, and 100% RSF factors on the encumbered portion of Level 2A assets, with encumbrance period of less than 6 months, between 6 months to 1 year and 1 year or more, respectively.	Paragraphs 25, 35(a), 36(b), 40(a)
17	MAS-RSF-Unencumbered operational deposits with financial entity	RSF on the operational portion of Unencumbered deposits held at other financial institutions, for operational purposes and are subject to the 50% ASF treatment.	The RSF factors applicable to the operational portion of unencumbered deposits held at other financial institutions to fulfill the operational requirements are predefined as part of this assumption. The assumption applies RSF factor of 50% and 100% on the operational portion of unencumbered deposits held at other financial institutions, with a remaining maturity of less than 1 year and 1 year or more, respectively.	Paragraphs 25, 36(d), 40(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
18	MAS-RSF-Unencumbered non-operational deposit with fin entity	RSF on the non-operational portion of Unencumbered deposits held at other financial institutions, for operational purposes and are subject to the 50% ASF treatment.	The RSF factors applicable to the non-operational portion of unencumbered deposits held at other financial institutions are predefined as part of this assumption. The assumption applies RSF factor of 15%, 50%, and 100% on the non-operational portion of unencumbered deposits held at other financial institutions, with a remaining maturity of less than 6 months, between 6 months to 1 year and 1 year or more, respectively.	Paragraphs 25, 36(d), 40(a)
19	MAS-RSF-Encumbered deposits with financial entity	RSF on encumbered deposits, held at other financial institutions, for operational purposes and are subject to the 50% ASF treatment.	The RSF factors applicable to the operational portion of encumbered deposits held at other financial institutions are predefined as part of this assumption. The assumption applies RSF factor of 50% and 100% on the operational portion of unencumbered deposits held at other financial institutions, with a remaining maturity of less than 1 year and 1 year or more, respectively.	Paragraphs 25, 36(d), 40(a)
20	MAS-RSF- Trade date receivables	RSF on trade date receivables arising from purchases of foreign currencies, financial instruments, and commodities that are expected to settle or have failed but are expected to settle within the standard settlement cycle.	The RSF factor applicable to trade date receivables arising from sell of foreign currencies, money market instruments, and commodities that are expected to settle or have failed but are expected to settle within the standard settlement cycle, are predefined as part of this assumption. The assumption applies a 0% RSF factor on cash flows of trade receivables, which are expected to settle within the settlement cycle.	Paragraph 32(d)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
21	MAS-RSF-Unencumbered residential mortgage loans	RSF on unencumbered residential mortgage loans which would qualify for a) 35% or lesser risk weight as per Basel 2 standardized approach for credit risk b) higher than 35% risk weight as per Basel 2 standardized approach for credit risk.	The RSF factors applicable to unencumbered residential mortgage loans, with standardized risk weights under Basel 2 approach, are defined as part of this assumption. The assumption applies RSF factors of 50% and 65% on the unencumbered residential mortgage loans, with a remaining maturity of less than 1 year and 1 year or more respectively, with risk weights less than or equal to 35%. It applies RSF factors of 50% and 85% on the unencumbered residential mortgage loans, with a remaining maturity of less than 1 year and 1 year or more, respectively; with risk weights greater than 35%.	Paragraphs 25, 36(e), 37(a), 40(a)
22	MAS-RSF-Encumbered residential mortgage loans	RSF on encumbered residential mortgage loans which would qualify for a) 35% or lesser risk weight as per Basel 2 standardized approach for credit risk b) higher than 35% risk weight as per Basel 2 standardized approach for credit risk.	The RSF factors applicable to encumbered residential mortgage loans, with standardized risk weights under Basel 2 approach, are defined as part of this assumption. The assumption applies relevant RSF factor on the encumbered residential mortgage loans based on the residual maturity and encumbrance period of the loan.	Paragraphs 25, 36(e), 37(a), 40(a)
23	MAS-RSF-Deposits placed within same co-operative network	RSF on deposits between banks within the same cooperative network, placed as required by law or in the context of common task sharing and legal, statutory, or contractual arrangements.	This assumption specifies the deposits between banks within the same cooperative network. This assumption applies a 15% RSF factor on the EOP carrying value of deposits with maturity within of 6 months, a 50% RSF factor on the EOP carrying value of deposits with maturity within of 6 months to less than 1 year and a 100% RSF factor on the EOP carrying value of deposits with a maturity of 1 year or more.	Paragraphs 15, 25, 35(b), 36(c), 40(a), 40(c)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
24	MAS-RSF-Unencumbered other deposits from co-operative network	RSF on unencumbered other deposits from cooperative banks.	This assumption specifies the other unencumbered deposits from cooperative banks. This assumption applies a 15% RSF factor on the Unencumbered balance of other deposits by cooperative banks with maturity within of 6 months, a 50% RSF factor on the Unencumbered balance of deposits with maturity within of 6 months to less than 1 year and a 100% RSF factor on the Unencumbered balance of deposits with a maturity of 1 year or more.	Paragraphs 15, 25, 35(b), 36(c), 40(a), 40(c)
25	MAS-RSF-Encumbered other deposits from co-operative network	RSF on encumbered other deposits from Cooperative banks.	This assumption specifies the other encumbered deposits from cooperative banks. This assumption applies a 15% RSF factor on the Encumbered carrying value of other deposits by cooperative banks with maturity within of 6 months, a 50% RSF factor on the Encumbered carrying value of deposits with maturity within of 6 months to less than 1 year and a 100% RSF factor on the Encumbered carrying value of deposits with a maturity of 1 year or more.	Paragraphs 15, 25, 35(b), 36(c), 40(a), 40(c)
26	MAS-RSF-Unenc loan to non-fin corp, SOV, PSE, MDB mat less than 1yr	RSF on encumbered loans with residual maturity of less than a year to non-financial corporates, retail customers, sovereigns (SOV), public sector entities (PSE), multilateral development banks (MDB), and national development banks (NDB).	The RSF factors applicable on the unencumbered loans given to non-financial corporates, retail customers, sovereigns (SOV), public sector entities (PSE), multilateral development banks (MDB) and national development banks (NDB), with residual maturity less than 1 year, are predefined as a part of this assumption. The assumption applies the RSF factor of 50% on the unencumbered carrying value.	Paragraphs 25, 36(e), 40(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
27	MAS-RSF-Encumbered loan to non-fin corporate, sovereign, PSE, MDB	RSF on encumbered loans to non-financial corporates, retail customers, sovereigns, public sector entities (PSE), multilateral development banks (MDB), and national development banks (NDB).	The RSF factors applicable on the encumbered loans given to non-financial corporates, retail customers, sovereigns (SOV), public sector entities (PSE), multilateral development banks (MDB) and national development banks (NDB), with residual maturity less than 1 year, are predefined as a part of this assumption. The assumption applies 50% and 100% RSF factors on the encumbered carrying value, with encumbrance period of less than 1 year and 1 year or more respectively.	Paragraphs 25, 36(e), 40(a)
28	MAS-RSF-Other unencumbered loan to non-fin corporate, SOV, PSE, MDB	RSF on other unencumbered loans having Basel risk weight of more than 35 % with any maturity or having Basel risk weight of less than 35 % but residual maturity of more than a year to non-financial corporates, retail customers, sovereigns(SOV), public sector entities (PSE), multilateral development banks (MDB) and national development banks (NDB).	The RSF factors applicable to unencumbered fully performing loans to non-financial corporates, retail customers, sovereigns (SOV), public sector entities (PSE), multilateral development banks (MDB) and national development banks (NDB), with standardized risk weights under Basel 2 approach, are per defined as part of this assumption. The assumption applies RSF factors of 65% on the unencumbered carrying value, with a remaining maturity of 1 year or more having risk weights less than or equal to 35%. It applies RSF factors of 50% and 85% on the unencumbered carrying value, with a remaining maturity of less than 1 year and 1 year or more, respectively; with risk weights greater than 35%.	Paragraphs 25, 37(b), 36(e), 38(b), 40(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
29	MAS-RSF-Other encumbered loans to non-fin corporate, SOV, PSE, MDB	RSF on other encumbered loans having Basel risk weight of more than 35 % with any maturity or having Basel risk weight of less than 35 % but residual maturity of more than a year to non-financial corporates, retail customers, sovereigns(SOV), public sector entities (PSE), multilateral development banks (MDB) and national development banks (NDB).	The RSF factors applicable to encumbered fully performing loans to non-financial corporates, retail customers, sovereigns (SOV), public sector entities (PSE), multilateral development banks (MDB) and national development banks (NDB), with standardized risk weights under Basel 2 approach, are per defined as part of this assumption. The assumption applies relevant RSF factor on the encumbered carrying value based on the residual maturity and encumbrance period of the loan.	Paragraphs 25, 37(b), 36(e), 38(b), 40(a)
30	MAS-RSF-Other unencumbered loan to other entities	RSF on other unencumbered loans with residual maturity of less than a year to all entities other than banks, central banks, corporates, retail customers, sovereigns(SOV), public sector entities (PSE), multilateral development banks (MDB) and national development banks (NDB).	The RSF factors applicable on the unencumbered loans given to all entities other than banks, central banks, corporates, retail customers, sovereigns(SOV), public sector entities (PSE), multilateral development banks (MDB) and national development banks (NDB), with residual maturity less than 1 year, are predefined as a part of this assumption. The assumption applies the RSF factor of 50% on the unencumbered carrying value.	Paragraphs 25, 36(e), 40(a)
31	MAS-RSF-Other encumbered loan to other entities	RSF on other encumbered loans to all entities other than banks, central banks, corporates, retail customers, sovereigns (SOV), public sector entities (PSE), multilateral development banks (MDB), and national development banks (NDB).	The RSF factors applicable on the encumbered loans given all entities other than banks, central banks, corporates, retail customers, sovereigns (SOV), public sector entities (PSE), multilateral development banks (MDB) and national development banks (NDB), are predefined as a part of this assumption. The assumption applies 50% and 100% RSF factors on the encumbered carrying value, with encumbrance period of less than 1 year and 1 year or more, respectively.	Paragraphs 25, 36(e), 40(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
32	MAS-RSF-Unencumbered non-HQLA securities maturity less than 1yr	RSF on unencumbered securities, with maturity less than 1 year, which do not qualify as high-quality liquid assets under the liquidity coverage ratio (LCR) rule.	The RSF factors applicable to unencumbered securities, with a remaining maturity of less than 1 year and which do not qualify, as High-quality liquid assets under the LCR Rule, are predefined as part of this assumption. The assumption applies a 50% RSF factor on unencumbered securities, which do not qualify as High quality liquid assets under the LCR Rule, with a remaining maturity of less than 1 year.	Paragraphs 25, 36(e), 38(c), 40(a)
33	MAS-RSF-Unencumbered non-HQLA securities maturity more than 1yr	RSF on unencumbered securities which are not in default, with a maturity greater than 1 year that does not qualify as high-quality liquid assets under the liquidity coverage ratio (LCR) rule.	The RSF factors applicable to unencumbered securities that are not in default, with a remaining maturity of more than 1 year and which do not qualify as High-quality liquid assets under the LCR Rule, are predefined as part of this assumption. The assumption applies an 85% RSF factor on unencumbered securities, with a remaining maturity of more than 1 year and which do not qualify as High quality liquid assets under the LCR Rule.	Paragraphs 25, 36(e), 38(c), 40(a)
34	MAS-RSF-Encumbered non-HQLA securities maturity less than 1yr	RSF on the encumbered portion of securities, with maturity less than 1 year that do not qualify as high-quality liquid assets under the liquidity coverage ratio (LCR) rule.	The RSF factors applicable to the encumbered portion of the securities, with a remaining maturity of less than 1 year and which do not qualify as High-quality liquid assets under the LCR Rule, are predefined as part of this assumption. The assumption applies 50% and 100% RSF factors on the encumbered portion of the securities, with encumbrance period of less than 1 year and 1 year or more respectively which do not qualify as High quality liquid assets under the LCR Rule.	Paragraphs 25, 36(e), 38(c), 40(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
35	MAS-RSF-Encumbered non-HQLA securities maturity more than 1yr	RSF on the encumbered portion of securities which are not in default, with a maturity greater than 1 year that does not qualify as high-quality liquid assets under the liquidity coverage ratio (LCR) rule.	The RSF factors applicable to the encumbered portion of the securities that are not in default, with a remaining maturity of more than 1 year and which do not qualify as High-quality liquid assets under the LCR Rule, are predefined as part of this assumption. The assumption applies 80% and 100% RSF factors on the encumbered portion of the securities, with encumbrance period of less than 1 year and 1 year or more respectively which do not qualify as High quality liquid assets under the LCR Rule.	Paragraphs 25, 36(e), 38(c), 40(a)
36	MAS-RSF-Encumbered non-HQLA exchange-traded equities	RSF on encumbered exchange-traded equities, that do not qualify as high-quality liquid assets under the liquidity coverage ratio (LCR) rule.	The RSF factors applicable to encumbered exchange-traded equities that are settled and do not qualify as High-quality liquid assets under the LCR Rule are predefined as part of this assumption. The assumption applies 85% and 100% RSF factors on the encumbered carrying value of the securities, with encumbrance period of less than 1 year and 1 year or more respectively which do not qualify as High quality liquid assets under the LCR rule.	Paragraphs 25, 38(c), 40(a)
37	MAS-RSF-Unencumbered non-HQLA exchange-traded equities	RSF on unencumbered exchange-traded equities, that do not qualify as high-quality liquid assets under the liquidity coverage ratio (LCR) rule.	The RSF factors applicable to unencumbered exchange-traded equities that are settled and do not qualify as High-quality liquid assets under the LCR Rule are predefined as part of this assumption. The assumption applies an 85% RSF factor on unencumbered carrying value.	Paragraphs 25, 38(c), 40(a)
38	MAS-RSF-Unencumbered commodities	RSF on unencumbered physically traded commodities, including gold.	The RSF factors applicable to unencumbered physically traded commodities, including gold, are predefined as part of this assumption. The assumption applies an 85% RSF factor on the unencumbered carrying value of the commodities.	Paragraphs 25, 38(d), 40(a)

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
39	MAS-RSF-Encumbered commodities	RSF on encumbered physically traded commodities including gold.	The RSF factors applicable to encumbered physically traded commodities, including gold, are predefined as part of this assumption. The assumption applies 85% and 100% RSF factors on the encumbered carrying value of the commodities, with encumbrance period of less than 1 year and 1 year or more respectively.	Paragraphs 25, 38(d), 40(a)
40	MAS-RSF-Non performing loans	RSF on non-performing loans.	The RSF factors applicable to non-performing loans are predefined as part of this assumption. The assumption applies a 100% RSF factor on the EOP carrying value of the non-performing loans.	Paragraph 40(c)
41	MAS-RSF-Defaulted securities	RSF on securities that are in default.	The RSF factors applicable to securities that are in default are predefined as part of this assumption. The assumption applies a 100% RSF factor on the EOP carrying value of the defaulted securities.	Paragraph 40(c)

4.3.1.3 Derivatives

This section includes the NSFR assumptions for Derivatives.

Table 16: Preconfigured NSFR Assumptions - Derivatives

Serial No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference : MAS Notice 652
1	MAS-ASF-Net NSFR derivative liabilities	ASF on derivative liabilities net of derivative assets, where derivative liability is net of any variation margin posted and the derivative asset is net of cash margin received.	The ASF factor applicable to all derivative contracts including netted derivative contracts, where the net aggregate mark to the market value of the contracts for an entity including any variation margin adjustment is negative, is predefined as part of this assumption. The assumption applies a 0% ASF factor to the derivative liabilities net of derivative assets, where the net aggregate mark to the market value of the contracts is negative.	Paragraphs 11(c), 16, 17, FN 13
2	MAS-RSF-Net NSFR derivative assets	RSF on derivative assets net of derivative liabilities, where derivative liability is net of any variation margin posted and the derivative asset is net of cash margin received.	The RSF factor applicable to all derivative contracts including netted derivative contracts, where the net aggregate mark to the market value of the contracts for an entity including any cash margin adjustment is positive, is predefined as part of this assumption. The assumption applies a 100% RSF factor to the derivative assets net of derivative liabilities, where the net aggregate mark to the market value of the contracts is positive.	Paragraphs 29, 30, 31, FN 19, 40(b)
3	MAS-RSF-Default fund contribution to CCP for derivatives	RSF treatment of default fund contributed to the central counterparty for derivative transactions.	The RSF factor applicable to all derivative contracts for default fund contribution to a central counterparty is predefined as part of this assumption. The assumption applies an 85% RSF factor to the market value of collateral posted.	Paragraphs 38(a)

Serial No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference : MAS Notice 652
4	MAS-RSF-Derivative liability portion inclusion as RSF	Additional 20% portion of derivative liabilities to be included as part of RSF.	The RSF factor applicable to all derivative contracts including netted derivative contracts, where the aggregate mark to the market value of the contracts before any variation margin adjustment is negative, is predefined as part of this assumption. The assumption applies a 0% RSF factor to the 20% of negative mark-to-mark value for the aforementioned derivative contracts.	Paragraphs 40(d)
5	MAS-RSF-Initial margin posted for derivatives	RSF treatment of initial margin posted against derivative transactions.	The RSF factor applicable to the initial margin posted for the derivative contracts is predefined as part of this assumption. The assumption applies an 85% RSF factor to the initial margin posted against the derivative contracts.	Paragraphs 38(a)

4.3.1.4 Off-Balance Sheet Items

This section includes the NSFR assumptions for Off-Balance sheet items.

Table 17: Preconfigured NSFR Assumptions - Off-Balance Sheet Items

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
1	MAS-RSF-Credit and liquidity facilities to the client	Off-balance sheet exposures- Irrevocable, revocable and conditionally revocable credit and liquidity facilities offered to any clients by the bank.	The RSF factor applicable to irrevocable, revocable, and conditionally revocable credit and liquidity facilities offered to any clients by the bank, is predefined as part of this assumption. The assumption applies a 5% RSF factor to the undrawn amount of irrevocable and conditionally revocable credit and liquidity facilities and RSF factor of 2% in case of revocable credit and liquidity facilities.	Paragraph 43

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference: MAS Notice 652
2	MAS-RSF-Guarantees and letters of credit	Off-balance sheet exposures-Guarantees and letters of credit.	The RSF factor applicable to the Guarantees and Letters of credit offered by the bank is predefined as part of this assumption. The assumption applies a 0% RSF factor to the EOP carrying value.	Paragraph 43
3	MAS-RSF-Non contractual obligations type	Non-contractual obligations type such as potential requests for debt repurchases managed funds and so on.	The RSF factor applicable to the non-contractual obligations type such as managed funds and debt buyback, is predefined as part of this assumption. The assumption applies a 0% RSF factor to the aforesaid non-contractual obligations amount.	Paragraph 43
4	MAS-RSF-Non contractual obligations	MAS: Non-contractual obligations type such as potential requests for debt repurchases, managed funds, and so on.	The RSF factor applicable to the non-contractual obligations for structured products such as Variable rate notes (VRDNs), Adjustable rate notes (ARDNs), and so on, offered by the bank, is predefined as part of this assumption. The assumption applies a 0% RSF factor to the EOP balance for aforesaid non-contractual obligations.	Paragraph 43

5 Minimum Liquid Assets Calculation

Minimum Liquid Asset (MLA) addresses the liquidity requirements of a bank or financial institution that are neither headquartered in Singapore nor are domestic systematically important banks.

Topics:

- Process Flow
- Preconfigured MAS Regulatory MLA Scenarios

5.1 Process Flow

This section details the MLA calculation process flow.

Topics:

- Identifying and Treating Qualifying Liabilities
- Identifying Liquid Assets
- Calculating Minimum Assets Ratio

5.1.1 Identifying and Treating Qualifying Liabilities

Qualifying liabilities are defined as liabilities that qualify to be fully included as part of the liabilities while computing Minimum Liquid Assets (MLA). Following are included under qualifying liabilities:

1. All liabilities, except bills of exchange, lines of credit, letters of credit and stored value facilities, from customers, other than banks and central banks.
2. All liabilities, except bills of exchange, lines of credit, letters of credit and stored value facilities, from central banks.
3. All liabilities, except bills of exchange, lines of credit, letters of credit and stored value facilities, from banks.
4. Lines of credit and letters of credit that are irrevocable.
5. Liabilities of the bank arising from stored value facilities.
6. Liabilities from bills of exchange that fulfill any of the following criteria:
    - Are trade transactions between Singapore domiciled parties
    - Are used for services
    - Are switch transactions between non-Singapore domiciled parties, financed locally after the switch
    - Are overdue and substituted by roll-over
    - Are used for import and financed by the seller
    - Where an invoice is already settled but has not been produced before the legal entity

100 % of the value of qualifying liabilities is included in the stock of qualifying liabilities.

5.1.2 Identifying Liquid Assets

All assets, whether owned by the bank or received from counterparties as collateral, that fulfill the liquid asset criteria specified by MAS, are classified as follows:

- Tier 1 Assets
- Tier 2 Assets

Topics:

- Identifying and Treating Tier 1 assets
- Identifying and Treating Tier 2 assets

5.1.2.1 Identifying and Treating Tier 1 assets

Tier 1 assets are assets which qualify to be fully included as part of the stock of liquid assets while computing MLA. They include:

1. Cash which includes coins, banknotes, and restricted cash. The value included in the stock of liquid assets is the cash balance.
2. Balances with the Central Bank of Singapore
3. Debt Security or Sukuk rated greater than or equal to AA- and issued by sovereigns or central banks.
4. Sukuk rated greater than or equal to AA and issued by Singapore Sukuk Pte. Ltd.
5. Debt Security or Sukuk, rated greater than or equal to AA- and issued by sovereigns or central banks, that are held under reverse repo.

100 % of the value of Tier 1 liquid assets is included in the stock of liquid assets.

5.1.2.2 Identifying and Treating Tier 2 assets

Tier 2 assets are assets which qualify to be fully included as part of the stock of liquid assets for MLA computation. They include:

1. Debt Security or Sukuk issued by the statutory board of Singapore. If the legal entity's holding is less than or equal to 20% of the issue size, then 90% of market value is included, whereas if holding more than 20%, then 50% of market value is included in the stock of liquid assets.
2. Debt Security or Sukuk rated AAA- issued by Bank for International Settlements and PSE. If the legal entity's holding is less than or equal to 20% of the issue size, then 100% of market value is included, whereas if the holding is more than 20%, then 50% of market value is included in the stock of liquid assets.
3. Debt Security or Sukuk rated AAA- issued by corporates and guaranteed by non-Singapore sovereigns. If the legal entity's holding is less than or equal to 20% of issue size then 100% of market value is included, whereas if the holding is more than 20% then 50% of market value is included in the stock of liquid assets.

4. Debt Security or Sukuk rated AAA to AA- or short term rated as A-1, issued by sovereigns, statutory board, Bank for International Settlements, International Monetary Fund, European Central Bank, European Community, and Multilateral Development Banks. If the legal entity's holding is less than or equal to 20% of issue size then 90% of market value is included, whereas if the holding is more than 20% then 50% of market value is included in the stock of liquid assets.
5. Debt Security or Sukuk rated AAA to AA- or short term rated as A-1, issued by corporates and guaranteed by non-Singapore sovereigns. If the legal entity's holding is less than or equal to 20% of issue size then 90% of market value is included, whereas if the holding more than 20% then 50% of market value is included in the stock of liquid assets.
6. Debt Security or Sukuk rated A- to A+ or short term rated as A-2, issued by sovereigns, statutory boards, Bank for International Settlements, International Monetary Fund, European Central Bank, European Community, and Multilateral Development Banks. If the legal entity's holding is less than or equal to 20% of issue size then 80% of market value is included, whereas if the holding is more than 20% then 50% of market value is included in the stock of liquid assets.
7. Debt Securities or Sukuk rated A- to A+ or short term rated as A-2 issued by corporates and guaranteed by non-Singapore sovereigns. If the legal entity's holding is less than or equal to 20% of the issue size then 80% of the market value is included, whereas if the holding is more than 20% then 50% of market value is included in the stock of liquid assets.
8. Debt Securities or Sukuk rated BBB to BBB+, or short term rated as A-3 issued by sovereigns, statutory boards, Bank for International Settlements, International Monetary Fund, European Central Banks, European Community, and Multilateral Development Banks. If the legal entity's holding is less than or equal to 20% of the issue size then 70% of market value is included, whereas if the holding more than 20% then 50% of market value is included in the stock of liquid assets.
9. Debt Securities or Sukuk rated BBB to BBB+ or short term rated as A-3, issued by corporates and guaranteed by non-Singapore sovereigns. If the legal entity's holding is less than or equal to 20% of the issue size then 70% of market value is included, whereas if the holding is more than 20% then 50% of market value is included in the stock of liquid assets.
10. Debt Securities rated AAA to AA- or short term rated as A-1 issued by banks. If the legal entity's holding is less than or equal to 20% of the issue size then 90% of market value is included, whereas if the holding is more than 20% then 50% of market value is included in the stock of liquid assets.
11. Debt Securities rated A- to A+ or short term rated as A-2, issued by banks. If the legal entity's holding is less than or equal to 20% of issue size then 80% of market value is included, whereas if holding more than 20% then 50% of market value is included in the stock of liquid assets.
12. Debt Security rated BBB to BBB+ or short term rated as A-3, issued by banks. If the legal entity's holding is less than or equal to 20% of the issue size then 70% of market value is included, whereas if the holding is more than 20% then 50% of market value is included in the stock of liquid assets.

13. Debt Security rated AAA to AA- or short term rated as A-1 issued by corporates that are not covered earlier. If the legal entity's holding is less than or equal to 20% of issue size then 90% of the market value is included, whereas if the holding is more than 20% then 50% of the market value is included in the stock of liquid assets.
14. Debt Security rated A- to A+ or short term rated as A-2 issued by corporates that are not covered earlier. If the legal entity's holding is less than or equal to 20% of the issue size then 80% of the market value is included, whereas if holding more than 20%, then 50% of the market value is included in the stock of liquid assets.
15. Debt Security rated BBB to BBB+ or short term rated as A-3 issued by corporates that are not covered earlier. If the legal entity's holding is less than or equal to 20% of the issue size then 70% of the market value is included, whereas if the holding is more than 20% then 50% of the market value is included in the stock of liquid assets.
16. For Bills Receivable and Bills Purchase and Discounted in Singapore dollars, 100% of the book value is included in the stock of liquid assets.

5.1.3 Calculating Minimum Liquid Assets Ratio

MLA is calculated as follows:

Minimum Liquid Asset (MLA) = Total Stock of Qualifying Liabilities / Total Stock of Liquid Asset

1. The application calculates the total stock of qualifying liabilities by taking the sum of all the qualifying liabilities mentioned in the Identification and Treatment of Qualifying Liabilities section.
2. The application calculates the stock of liquid assets by taking the sum of Tier 1 assets and tier 2 assets. The value of Tier 1 and 2 assets to be included in the total stock according to the Identification of Liquid Assets section.
3. The application calculates the Minimum Liquid Asset Ratio by dividing the Total Stock of Qualifying Liabilities by Total Stock of Liquid Assets.

5.2 Preconfigured MAS Regulatory MLA Scenarios

OFS LRRCMAS supports a ready-to-use MAS MLA which has the regulatory scenario preconfigured in the form of business assumptions or rules. This section explains the business rules along with the corresponding regulatory reference.

NOTE This section provides only contextual information about business assumptions. For more detailed information, see the OFS LRS application (UI). For detailed Processes and Tasks, see the Run Chart.

The following table lists the Document Identifiers provided in the Regulatory Reference column of the Regulations Addressed through Business Rules section.

Table 18 Document Identifiers for Regulatory References

Regulation Reference Number	Document Number	Document Name	Issued Date
MC	MAS Notice 649	MAS Notice 649 Minimum Liquid Assets and Liquidity Coverage Ratio	28 Nov 14

The list of preconfigured business rules and assumptions as well as the corresponding reference to the regulatory requirement that it addresses are provided in the tables listed in the Regulations Addressed through Business Rules section.

The Regulatory Reference column for each rule or assumption has reference to the name of the Document Identifiers such as MC and should be read in conjunction with the Document Identifier listed in the preceding table.

5.2.1 Regulation Addressed through Business Rules

The application supports multiple preconfigured rules and scenarios based on MAS specified scenario parameters such as inflow rates, outflow rates, Run-offs, haircuts, and so on.

Table 19: Preconfigured MLA Business Rules

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed
Tier 1			
1	MAS MLA- Reclassification- Tier 1- Cash, Central Bank Reserves and Bank Notes	This rule classifies the liquid assets as Tier 1 where the standard product type is cash, central bank reserves, and banknotes.	The classification of cash, banknotes, and Singapore's central bank reserves as Tier 1 asset is configured as part of this rule.
2	MAS MLA- Reclassification- Tier 1- Debt securities	This rule classifies the liquid assets as Tier 1 where the standard product type is debt securities, treasury bills, and Sukuk.	The classification of greater than AA- rated debt securities issued by sovereigns or central banks, and Sukuk issued by Singapore Sukuk Pte Ltd. as Tier 1 assets are configured as part of this rule.
3	MAS MLA- Reclassification- Tier 1- Debt securities held under reverse repo	This rule classifies the liquid assets as Tier 1 where Debt securities held under reverse repo.	The classification of AA- rated debt securities issued by sovereigns or central banks and Sukuk issued by Singapore Sukuk Pte Ltd., which are received as collateral under repurchase agreement as Tier 1 assets are configured as part of this rule.
Tier 2			
4	MAS MLA- Reclassification- Tier 2- Debt securities issued by statutory boards	This rule classifies the liquid assets as Tier 2 where debt securities issued by statutory boards.	The classification of debt securities and Sukuk issued by statutory boards of Singapore as Tier 2 assets are configured as part of this rule.
5	MAS MLA- Reclassification- Tier 2- Debt securities guaranteed by the sovereign, issued by super nationals	This rule classifies the liquid assets as Tier 2 where debt securities guaranteed, issued by super nationals.	The classification of AAA-rated debt securities and Sukuk issued by Bank for International Settlements and PSE as Tier 2 assets are configured as part of this rule. Additionally, the classification of AAA-rated corporate debt securities that are guaranteed by the sovereign, as Tier 2 assets are configured as part of this rule.

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed
6	MAS MLA- Reclassification- Tier 2- Debt securities issued by a sovereign or super nationals	This rule classifies the liquid assets as Tier 2 where the debt securities are issued by sovereigns or super national.	The classification of debt securities and Sukuk rated AAA to BBB- or short term rated A-1 to A-3, issued by sovereigns, statutory boards, Bank for International Settlements, International Monetary Fund, European Central Bank, European Community, and Multilateral Development, as Tier 2 assets are configured as part of this rule.
7	MAS MLA- Reclassification- Tier 2- Corporate debt securities guaranteed by a sovereign	This rule classifies the liquid assets as Tier 2 where corporate debt securities are guaranteed by sovereign.	The classification of debt securities and Sukuk rated AAA to BBB- or short term rated A-1 to A-3, having outstanding issue size greater than 200 Singapore dollars, that are guaranteed by the sovereign, as Tier 2 assets are configured as part of this rule.
8	MAS MLA- Reclassification- Tier 2- Debt securities issued by banks and other corporate	This rule classifies the liquid assets as Tier 2 where debt securities are issued by banks and corporates.	The classification of debt securities and Sukuk rated AAA to BBB- or short term rated A-1 to A-3, issued by banks, having outstanding issue size greater than 200 Singapore dollars, as Tier 2 assets are configured as part of this rule.
9	MAS MLA- Reclassification- Tier 2- Bills of Exchange	This rule classifies the liquid assets as Tier 2, which are issued by bills of exchange.	The classification of bills purchase and discounted and bills receivable as Tier 2 assets are configured as part of this rule.
Qualifying Liabilities			
10	MAS MLA- Reclassification- Qualifying Liabilities- Issued bills of exchange	This Rule classifies the Qualifying Liabilities - Issued by bills of exchange.	The classification of bills of exchange issued by a bank as qualifying liabilities assets under the MLA regime is configured as part of this rule.
11	MAS MLA- Reclassification- Qualifying Liabilities- Issued bills of exchange- Overdue	This Rule classifies the Qualifying Liabilities- Issued by bills of exchange which has overdue in bills of exchange.	The classification of bills of exchange issued by a bank that are overdue and are rolled-over, as qualifying liabilities under the MLA regime is configured as part of this rule.
12	LRM - MLA Qualifying Liabilities -All Liabilities Except central bank and banks	This rule classifies the qualifying liabilities for all liabilities except central bank and banks.	The classification of all the liabilities other than dues to central banks and banks, as qualifying liabilities under the MLA regime, is configured as part of this rule.

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed
13	LRM - MLA Qualifying Liabilities -All assets Except Bills of Exchange	This rule classifies the qualifying liabilities for all assets except bills of exchange.	The classification of all the assets due to central banks and banks on a gross basis is configured as part of this rule.
14	LRM - MLA Qualifying Liabilities -Central bank and banks	This rule classifies the qualifying liabilities for the central bank and banks.	The classification of all the liabilities due to central banks and banks on a net basis that is after subtracting any claims on the central bank and bank respectively, as qualifying liabilities under the MLA regime is configured as part of this rule.
15	LRM - MLA Qualifying Liabilities -Line of Credit, LC, and SVF	This rule classifies the qualifying liabilities for the line of credit, LC and SVF.	The classification of lines of credit and letters of credit that are irrevocable, as qualifying liabilities under the MLA regime is configured as part of this rule. Additionally, liabilities of the bank arising from stored value facilities are also configured as part of this rule.
16	MAS MLA-Value to be included in the Stock of Liquid Asset	This rule updates the stock of liquid asset in the FSI_LRM_INSTRUMENT table.	The computation of the value of the total stock of eligible liquid assets is configured as part of this rule.
17	MAS MLA-Mitigant Value to be included in the Stock of Liquid Asset	This rule updates the mitigant value to be included in the stock of liquid assets in the FSI_LRM_INSTRUMENT table.	The identification and computation of the value of the non-rehypothecated portion of liquid asset collateral received under rehypothecation rights are configured as part of this rule.

6 Appendix A: Data Transformations/Functions used in LRRCMAS

This section provides information about the Data Transformations (DTs) or functions used in the LRRCMAS application.

- **TB_DATE_ASSIGNMENT**

  This function performs the following actions:

  a. Identifies the dates between the bucket start day and bucket end day.

  b. Populates the intermediate dates based on the chosen FIC-MIS date, in the FSI_LRM_TIME_BUCKET_DAYS table.

  c. The business day convention (prior, conditional prior, following, no-Adjustment) is applied, taking into account the holiday calendar applicable for a Legal Entity, and is populated in the FSI_LRM_TIME_BUCKET_DETAILS table for each Legal Entity.

- **MAS_INS_UNINS_AMT_CALC**

  This function calculates the insured and uninsured amounts taking the data from FCT_DEPOSIT_INSURANCE_DETAILS and updates this information at an account-customer combination in the FSI_LRM_ACCT_CUST_DETAILS table. It then takes the insured and uninsured amounts from FSI_LRM_ACCT_CUST_DETAILS and aggregates the value at the account level and updates the FSI_LRM_INSTRUMENT table which will be further used in the application for processing.

- **UPD_PROCESS_SCENARIO_KEY**

  This function updates the process scenario SKey in the DIM_FCST_RATES_SCENARIO tables. It performs the following actions:

  a. Reads the current Run information from the FCT_LRM_RUN_PARAM and DIM_RUN tables.

  b. Populates the Contractual/Business As Usual, Run name, Run type, Run description into the DIM_FCST_RATES_SCENARIO table from DIM_RUN.

  c. Updates the process key for the current Run in the FCT_AGG_BASE_CCY_LR_GAP table storing liquidity risk gap measures in base currency.

  d. Updates the process key for the current Run in the FCT_AGG_BASE_CCY_LR_GAP table storing liquidity risk gap measures in consolidated currency.

  e. Updates both local and natural, inflow, and outflow amount columns in the FCT_AGG_CASH_FLOWS table using exchange rate conversion.

  f. Updates both inflow and outflow local currency amount columns in the FCT_ACCOUNT_CASH_FLOWS table using exchange rate conversion.

  g. Updates both local and natural currency amount columns in the FCT_LRM_LE_SUMMARY table using exchange rate conversion.

- **UPDATE_UNDERLYING_ASSETS**

  This function updates all the attributes of the underlying assets, mitigants or placed collateral of an account such as asset level, fair value, market value, and so on, in the FSI_LRM_INSTRUMENT table. For example, consider loan contracts for which a mitigant is received. This loan account is captured in the STG_LOAN_CONTRACTS table and the mitigant information is captured in the STG_MITIGANTS table. The link between the loan account and the mitigant is captured in the STG_ACCOUNT_MITIGANT_MAP table. From the STG_ACCOUNT_MITIGANT_MAP table, data moves to the FCT_ACCOUNT_MITIGANT_MAP table.

  The function identifies the account mitigant mapping from the FCT_ACCOUNT_MITIGANT_MAP table and updates the attributes of the mitigant against the loan account in the FSI_LRM_INSTRUMENT table. For example, if the market value of the mitigant is $500, then the function updates the column FSI_LRM_INSTRUMENT.N_UNDERLYING_RECV_LEG_MKT_RCY as $500 for the loan contract account.

  Similarly, consider another example of a repo contract where the bank has placed collateral. The repo contract is captured in the STG_REPO_CONTRACTS table and moved to the FSI_LRM_INSTRUMENT table. The collateral placed against the repo contract is captured in the STG_PLACED_COLLATERAL table. The relationship between placed collateral and the REPO contract is captured in the STG_ACCT_PLACED_COLL_MAP table and is moved to the FCT_ACCT_PLACED_COLL_MAP table.

  The function updates the asset level of the placed collateral against the repo contract in the FSI_LRM_ISNTRUMENT table, which indicates that the FSI_LRM_INSTRUMENT.N_UNDERLYING_ASSET_LEVEL_SKEY column is updated.

  Similarly, the function updates the following attributes of the underlying asset (Mitigant or Placed Collateral) in the FSI_LRM_ISNTURMENT table:

  - N_UNDERLYING_ASSET_LEVEL_SKEY
  - N_UNDERLYING_MKT_RCY
  - N_UNDERLYING_FAIR_RCY
  - F_UNDERLY_QUALIF_UNENCUMB
  - N_UNDERLY_RISK_WEIGHT_SKEY
  - N_UNDERLY_STD_ISSUER_TYPE_SKEY
  - N_UNDERLY_STD_PROD_TYPE_SKEY
  - N_UNDERLYING_INST_BASEL_RATING
  - F_UNDERLY_COLL_COVER_SHORT_POS
  - F_UNDRLY_COVER_BANK_SHORT_POS
  - F_UNDRLY_COVER_CUST_SHORT_POS
  - F_UNDERLY_ISSUER_FINAN_ENTITY
  - F_UNDERLY_REHYPOTHECATED_FLAG
  - F_UNDERLYING_ISSUER_US_FLAG

- F_UNDERLYING_GUARANTOR_US_FLAG
- F_UNDRLYNG_PLACED_HQLA_FLAG
- F_UNDERLYING_HELD_BY_CLIENT
- F_UNDRLYNG_ASST_SEGREGATED_IND
- N_HQLA_MIT_VAL_RCY
- N_NON_HQLA_MIT_VAL_RCY
- N_EXP_NOT_COV_BY_HQLA_MIT_RCY

These columns are used for calculating the adjustments to be performed in the stock of HQLA process and also in business as usual assumptions.

This data transformation identifies the underlying asset of an account from the mapping tables (FCT_ACCOUNT_MITIGANT_MAP and FCT_ACCT_PLACED_COLL_MAP), reads the attributes of the underlying asset (mitigant from FCT_MITIGANTS and placed collateral from FSI_LRM_INSTRUMENT tables) and updates it against the account in the FSI_LRM_INSTURMENT table using the following steps:

a. Assigns the used portion of a placed collateral in FCT_ACCT_PLACED_COLL_MAP table, that is, updates the FCT_ACCT_PLACED_COLL_MAP.N_DRWN_PORTION_COLL_AMT column.

b. Assigns the underlying asset level.

c. Assigns the underlying asset level SKey of SUBSTITUTABLE COLLATERAL to:

- Derivative Products
- Non-Derivative Products

Updates the N_COLL_SUBSTITU_ASSET_LVL_SKEY and N_SBSTBL_ASST_LVL_ENT_SKEY columns of the FSI_LRM_INSTRUMENT table

d. Assigns revised maturity date SKey for (CS, REVREPO, DRB, SECBORR) product, that is FLI.N_REVISED_MATURITY_DATE_SKEY.

Updates the encumbrance percent in the FSI_LRM_INSTRUMENT table against the placed collateral records, that is, FLI.N_PERCENT_ENCUMBERED.

- **FN_SECURED_TRANS_COLL_ALLOC**

This DT is used to populate the following attributes in FSI_ACCT_COLL_MAP_DETAILS table for all secured transactions:

- Account to Collateral level mapping
- collateral percentage
- End of period Balance
- Collateral Value
- Collateral Asset Level against each collateral for both received and posted collateral
- Account Covered by Collateral, Account Coverage Percentage
- Total Secured Portion in Percentage and Secured Balance Amount of an account

- Total Unsecured Portion in Percentage and Unsecured Balance Amount of an account
- Used and Unused portion of the collateral
- Collateral as a Percentage of Total Secured Balance

Any other Dimension required at this granularity for defining a Business Assumption on a Secured Transaction.

7 Appendix B: User Configuration and Settings

This section provides information about user configurations and settings.

Topics:

- Standard Reclassifications
- Mitigant Sub Type Classifications

7.1 Standard Reclassifications

The regulatory guidelines specify classifications and computations based on certain generic products and party types. Each bank, internally, will have its product and party types, which differ from bank to bank. To ensure consistency in computations, the application supports two standard dimensions based on the regulatory guidelines:

- Standard Product Type
- Standard Party Type

The bank-specific product and party types, which are accepted as a download in the staging tables, are required to be reclassified to standard product and party types supported by OFS LRRCMAS respectively.

Topics:

- Standard Product Type Reclassification
- Standard Party Type Reclassification

7.1.1 Standard Product Type Reclassification

Banks should map their specific product types to the Standard Product Types as part of the rule MAS LCR - Standard Product Type Reclassification. The application then reclassifies the bank product types to Standard Product Types and utilizes the Standard Product Types for further processing.

7.1.2 Standard Party Type Reclassification

Banks are required to map their specific party types to the Standard Party Types as part of the rule LRM - Standard Party Type Reclassification. The application then reclassifies the bank party types to Standard Party Types and utilizes the Standard Party Types for further processing. Party types include customer type, issuer type, and guarantor type.

NOTE	For MLA calculations reconfigure the rules MAS MLA – Reclassification - Tier 2- Bills of Exchange and MAS MLA - Reclassification - Qualifying Liabilities- Issued bills of exchange after account purpose table is loaded.

7.2 Mitigant Sub Type Classifications

Banks are required to map their mitigant product types to the Standard Product Types as part of the rule LRM - Mitigant Sub Type Classification. The application then reclassifies the bank mitigant types to Standard product Types and utilizes this for further processing.

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