Oracle Financial Services Liquidity Risk Regulatory Calculations for Bank Negara Malaysia

User Guide

Release 8.1.2.0.0

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OFS Liquidity Risk Regulatory Calculations for Bank Negara Malaysia User Guide

Document Control

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1.0	Created: July 2022	Captured updates for 8.1.2.0.0 release

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1 Preface

This section 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:

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 Bank Negara Malaysia, Release 8.1.2.0.0. This document is intended to help you understand the methodologies involved in computing the LCR and NSFR 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 OFS Liquidity Risk Regulatory Calculations for Bank Negara Malaysia (LRRCBNM) have been leveraged, and the configurations required for addressing the regulatory requirements.

1.2 Intended Audience

Welcome to Release 8.1.2.0.0 of the Oracle Financial Services Liquidity Risk Regulatory Calculations for Bank Negara Malaysia. This manual is intended for the following audience:

- Business Users: This user reviews the functional requirements and information sources, such as 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 Release Notes
- OFS Liquidity Risk Solution Application Pack Installation Guide
- OFS Liquidity Risk Solution Release Analytics User Guide
- OFS Liquidity Risk Measurement and Management Release 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
- OFS Analytical Applications Technology Matrix
- OFS Analytical Applications Infrastructure Security Guide
- OFS LRS Security Guides Release
- Oracle Financial Services Analytical Applications Infrastructure Cloning Guide
- OFS LRS Cloning Guide Release
- OFS LRS Cloning Guide Release

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
LRRCBNM	Liquidity Risk Regulatory Calculations for Bank Negara Malaysia
LRRCBOT	Liquidity Risk Regulatory Calculations for the Bank of Thailand
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
DICLRM	Deposit Insurance Calculations for Liquidity Risk Management

Abbreviation	Description
PIDM	Perbadanan Insurans Deposit Malaysia
OFS	Oracle Financial Services

1.6 What is New in this Release

The Oracle Financial Services Liquidity Risk Regulatory Calculations for Bank Negara Malaysia Release 8.1.2.0.0 is an enhancement of the existing Oracle Financial Services Liquidity Risk Regulatory Calculations for Bank Negara Malaysia Release 8.1.0.0.0 and includes bug fixes.

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.

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 Bank Negara Malaysia (LRRCBNM) application calculates the following two types of ratios:

Topics:

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.

3 Liquidity Coverage Ratio Calculation

LCR is the first standard that assesses the short-term liquidity challenges of a bank. The two standards - LCR and NSFR, complement each other, and are aimed at providing a holistic picture of a bank's funding risk profile, and aid in better liquidity risk management practices.

Topics:

3.1 Inputs

The OFS Liquidity Risk Regulatory Calculations for Bank Negara Malaysia (LRRCBNM) application requires the following inputs for LCR calculation:

- Liquidity haircut for each asset level should be provided through business assumptions, with the assumption category as valuation change, and assumption subcategory as the haircut.
- Business assumption which defines the outflow percentage should be defined through appropriate business assumptions. For example, Retail Deposit Run-off is defined through a business assumption with the assumption category as Incremental Cash Flow, and subcategory as Run-off.
- Business assumption which defines the inflow percentage should be defined through appropriate business assumptions. For example, Rollover Reverse Repo is defined through a business assumption with the assumption category as Cash Flow Movement, and subcategory as Rollover.
- Liquidity Horizon is specified as the Runtime parameter.

3.2 Process Flow

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

Topics:

- 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

3.2.1 Identifying Asset Levels

High-Quality Liquid Assets (HQLA) are unencumbered high-quality liquid assets, that can be easily sold or used as collaterals to obtain funds at little or no loss of value even under stress scenarios. All assets, whether owned by the bank or received from counterparties as collaterals, that meet the high quality liquid asset criteria specified by Bank Negara Malaysia (BNM), are classified by the application as follows:

- Level 1 Assets
- Level 2A Assets
- Level 2B Assets
- Level 2B Non-RMBS I Assets
- Level 2B Non-RMBS II Assets

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

Topics:

- Identifying and Treating Level 1 Assets
- Identifying and Treating Level 2A Assets
- Identifying and Treating Level 2B RMBS Assets
- Identifying and Treating Level 2B Non-RMBS I Assets
- Identifying Eligible HQLA

3.2.1.1 Identifying and Treating Level 1 Assets

The application identifies the following as HQLA Level 1 assets:

For placements within the banks, these include:

1. Cash in all currencies, including deposits and reserves at central banks.

   Central bank reserves (including required reserves), to the extent that the central bank policies allow them to be drawn down in times of stress. These include:

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).

c. The Wadiah acceptances.

d. The commodity Murabahah program.

e. Surplus cash balances that are held in the eSPICK and RENTAS accounts.

f. The bank's balances that are held under the Statutory Reserve Requirement (SRR).

For Placements with other central banks, these include:

2. Overnight and term deposits with other central banks that:

a. Are explicitly and contractually repayable on notice.

or

b. Constitute a loan against which the bank can borrow on a term basis, or an overnight basis with an automatic renewal.

3. Foreign bank branches can include the RCLF from Bank as HQLA up to 40% of the minimum LCR requirement.

4. Debt securities issued in currencies other than Malaysian Ringgit, 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 sovereign is greater than 0%.

5. Excess reserves held with foreign central banks, where an international rating agency has assigned a 0% risk weight to the foreign sovereign.

6. Excess reserves held with foreign central banks, where an international rating agency has assigned a non-0% risk weight to the foreign sovereign and a 0% risk weight has been assigned at national discretion under Basel II Framework, to the extent these balances cover the bank's stressed net cash outflows in that specific currency.

7. Central bank excess reserves include the balance held by a bank at the central bank directly or through a correspondent bank less any minimum reserve requirement. It also includes overnight deposits or term deposits held with the central bank that meet the regulatory criteria. The value of eligible term deposits that are included in the net amount of any withdrawal penalty.

> **NOTE** The process of identifying the value to be included in the stock of HQLA up to the extent of a bank stressed net cash outflows in a particular currency is documented in the following section.

8. Marketable securities representing claims on or claims explicitly guaranteed by sovereign and central banks, PSEs, the Bank for International Settlements, the International Monetary Fund,

the European Commission, or multilateral development banks that satisfy all of the following conditions:

- They have been assigned a rating corresponding to a 0% risk-weight as per the Capital Adequacy Framework or the Capital Adequacy Framework for Islamic Banks (Risk-Weighted Assets) by a recognized external credit assessment institution (ECAI).
- Issuer type or guarantor type is a foreign sovereign.
- A rating corresponding to a 0% risk-weight as per the Capital Adequacy Framework or the Capital Adequacy Framework for Islamic Banks (Risk-Weighted Assets) by a recognized external credit assessment institution (ECAI) has been assigned to them.
- Traded in large, deep, and active repo or cash markets characterized by a low level of concentration.
- Have a proven record as a reliable source of liquidity in the markets (repo or sale) even during stressed market conditions.
- Not an obligation of a financial institution or any of its affiliated entities.

9. Non-0% risk-weighted sovereign or central bank debt securities denominated in Malaysian ringgit:

- In the country where the liquidity risk is being taken or in the home country of the banking institution.

  or

- Where the holdings of the debt and the currency requirements of the banking institution's operations are a match.

  or

- Where an arrangement has been established between central banks of the country, which enable financial institutions operating in one jurisdiction to obtain liquidity denominated in that jurisdiction's local currency from the local central bank in which the liquidity risk is being taken by the sovereign or central bank.

To meet this requirement the application identifies and updates the following flag:

Account Country Liquidity Risk Flag

a. The existence of the bank's operations in a particular jurisdiction is identified. If the bank holds either liabilities or non-marketable assets in that jurisdiction, the application assumes that the bank has operations in that specific jurisdiction. This is identified in a country and currency combination.

b. The application then identifies whether the asset is held to meet the bank's net stressed cash outflows in that currency arising from the bank's operations in that specific jurisdiction by checking the following conditions:

i. If the issuer's country is the same as the account country.

ii. If the issuer's country is the same as the country in which local operations are present in a particular jurisdiction as identified in step (i) above.

iii. If the account currency is the same as the currency in which local operations are present in a particular jurisdiction as identified in step (i) above.

If all the above criteria are met, the account country's liquidity risk flag is updated as Yes. This indicates that the particular asset is held to meet the net cash outflows in a particular jurisdiction.

c. Finally, the application identifies the amount to be included in the stock of HQLA when account country liquidity risk flag = Yes using the following calculation:

$$\begin{aligned}&\textbf{\textit{Amount to be Included in Stock Due to Local Operations Related Restrictions}}\\&= \textbf{\textit{Minimum}}\left(\textbf{\textit{Haircut Adjusted Market Value of Asset}}_{\textbf{\textit{Currency,Country}}},\ \textbf{\textit{Net Cash Outflows}}_{\textbf{\textit{Currency,Country}}}\right)\end{aligned}$$

Account and Branch Currency Match Flag

a. Identifies all branches in the given solo and consolidated Run.

b. Identifies the currency of the branches in step (i), which are equal to the account currency.

c. If the condition in step (ii) is fulfilled, then the application updates the flag as Yes else No.

10. Debt securities issued by a non-0% risk-weighted domestic sovereign or central bank denominated in foreign currencies, where the holdings of such debt match the currency requirements of the banking institution's operations in that jurisdiction.

11. 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 jurisdiction where the bank's liquidity risk is being taken, where the issuer type is domestic sovereign or central bank assigned a non-0% risk weight. Such marketable securities are included in the stock of HQLA only up to the extent of the bank's net stressed cash outflows in that currency arising from bank's operations in that foreign jurisdiction.

Assets classified as HQLA Level 1 are assigned a 0% haircut under the regulatory scenario prescribed by BNM.

3.2.1.2 Identifying and Treating Level 2A Assets

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

1. Marketable securities which satisfy the following conditions:

- Issuer type or guarantor type is one of the following:
  - Sovereign
  - Governments
  - Central banks
  - Local government organizations
  - State agencies, state enterprises
  - Public Sector Entity (PSE)
- Multi-lateral Development Bank (MDB)
- Assigned a 20% risk-weight under the standardized Approach of Basel II
- Not an obligation of a financial institution or any of its affiliated entities

2. Price has not decreased, or haircut has not increased by more than 10% over 30 days during a relevant period of significant liquidity stress specified by the bank.

3. Corporate debt securities (including commercial paper) and covered bonds or sukuk that satisfy the following conditions:
   - Issuer type is not a financial institution or its affiliated entities.
   - Issuer type is not the bank itself for which the computations are being carried out or any of its affiliated entities (in case of covered bonds).
   - Either has:
     - A long-term credit rating by a recognized External Credit Assessment Institution (ECAI) equal to or greater than AAA or,
     - If the long-term rating is not available, then a short-term credit rating by a recognized ECAI which is equal to or greater than P1 or,
     - If it does not have an assessment by a recognized ECAI, the probability of default as per the internal rating corresponding to a rating which is equal to or greater than AAA.

   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.
4. Marketable debt securities, including commercial papers, issued by Cagamas Berhad with a rating of AAA/P1 by a recognized ECAI or internally rated as having a PD corresponding to a credit rating of AAA.
5. Either has a long-term rating of AAA and short-term rating of P1.
6. Banker's Acceptance and Islamic Bill of Exchange. Banker's Acceptance and Islamic Bill of Exchange which satisfies the following conditions:
   - Issuer type is not the bank itself for which the computations are being carried.
   - Either has:
     - A long-term credit rating by a recognized External Credit Assessment Institution (ECAI) equal to or greater than AA or,
     - If the long-term rating is not available, then a short-term credit rating by a recognized ECAI which is equal to or greater than P2 or MARC2,

   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.
7. Negotiable Instruments of Deposit (NIDs) or Islamic Negotiable Instruments which satisfy the following conditions:
   - Issuer type is not the bank itself for which the computations are being carried.
   - Either has:
     - A long-term credit rating by a recognized External Credit Assessment Institution (ECAI) equal to or greater than AA or,
     - If the long-term rating is not available, then a short-term credit rating by a recognized ECAI which is equal to or greater than P2 or MARC2.

   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.

3.2.1.3 Identifying and Treating Level 2B RMBS Assets

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

1. Residential mortgage-backed securities (RMBS) issued by Cagamas MBS Berhad that either has long term rating of AAA by a recognized ECAI or equivalent short-term rating.
2. Are already included in a Level 1 asset.

   Assets classified as HQLA Level 2B RMBS asset and not Level 2B Non-RMBS are assigned a 15% haircut under the regulatory scenario prescribed by BNM.

3.2.1.4 Identifying and Treating Level 2B Non-RMBS I Assets

Corporate debt securities (including commercial paper) which satisfy the following conditions:

- Issuer type is not a financial institution or its affiliated entities.
- Issuer type is not the bank itself for which the computations are being carried out or any of its affiliated entities.
- Either has:
  - A long-term credit rating by a recognized External Credit Assessment Institution (ECAI) between AA- to 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.

Assets classified as HQLA Level 2B Non-RBMS I are assigned a 20% haircut under the regulatory scenario prescribed by BNM.

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

Corporate debt securities (including commercial paper) which satisfy the following conditions:

- Denominated in non-Ringgit currencies.
- Issuer type is not a financial institution or its affiliated entities.
- Issuer type is not the bank itself for which the computations are being carried out or any of its affiliated entities.
- Either has:
  - A long-term credit rating by a recognized External Credit Assessment Institution (ECAI) between A- to A+, 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.

3.2.1.6 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 BNM. 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:

1. **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.

2. **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.

3. **Inclusion and Exclusion of Certain Re-hypothecated Assets**

   Assets received under rehypothecation rights as part of the reverse repo and securities financing transactions are considered as eligible HQLA if they are not re-hypothecated. An asset pledged to central banks or PSEs, but not used is considered eligible HQLA. Any asset that a bank receives under a 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.

4. **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.

5. **HQLA Under the Control of the Treasurer**

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

6. **Exclusion of the HQLA assets used for Hedging**

   The application assesses whether an HQLA is encumbered based on the following factors:

   a. An asset must not be included in the stock if the sale of it without a replacement within 30 days removes a hedge that creates an open risk to the banking institution in the excess of an internal limit.

3.2.2 Calculating Stock of High-Quality Liquid Assets

All unencumbered assets classified as Level 1, 2A or 2B, which meet the HQLA eligibility criteria, are included in the stock of high-quality liquid assets (SHQLA). The formula for calculating SHQLA is as follows:

$$\begin{aligned} \textbf{\textit{Stock of HQLA}} = {} & \textbf{\textit{Post Haircut Stock of Level}}\ \mathbf{1}\ \textbf{\textit{Assets}} + \textbf{\textit{Post Haircut Stock of Level}}\ \mathbf{2A}\ \textbf{\textit{Assets}} \\ & + \textbf{\textit{Post Haircut Stock of Level}}\ \mathbf{2B}\ \textbf{\textit{RMBS Assets}} \\ & + \textbf{\textit{Post Haircut Stock of Level}}\ \mathbf{2B}\ \textbf{\textit{Non}} - \textbf{\textit{RMBS Assets I}} + \textbf{\textit{Assets}} \\ & + \textbf{\textit{Post Haircut Stock of Level}}\ \mathbf{2B}\ \textbf{\textit{Non}} - \textbf{\textit{RMBS II Assets}} \\ & - \textbf{\textit{Adjustment due to Cap on Level}}\ \mathbf{2B}\ \textbf{\textit{Assets}} \\ & - \textbf{\textit{Adjustment due to Cap on Level}}\ \mathbf{2}\ \textbf{\textit{Assets}} \end{aligned}$$

Where,

Adjustment due to Cap on Level 2B Assets: Adjustment for 15% cap

Adjustment due to Cap on Level 2 Assets : Adjustment for 40% cap

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 re-hypothecated.

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

The steps involved in computing the stock of HQLA are:

Topics:

3.2.2.1 Calculating Stock of Liquid Assets

The process for calculation of stock of liquid assets is as follows.

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 on the calculation date that is eligible HQLA, less the amount of the minimum/mandatory reserves 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 on the calculation date that are eligible HQLA, less hedge termination costs (if any).

3. **Calculating Stock of Level 2B Assets**

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

4. **Calculating Stock of Level 2B RMBS Assets**

   The stock of level 2B 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 Non-RMBS I Assets**

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

6. **Calculating Stock of Level 2B Non-RMBS II Assets**

   The stock of level 2B liquid assets include a deduction of 50 percent of the market value of all level 2B non-RMBS liquid assets held by the bank as of the calculation date that are eligible HQLA, less hedge termination costs (if any).

3.2.2.2 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 unwind if it fulfills all of the following criteria:

- Asset Level is level 1, 2A, 2B RMBS or 2B non-RMBS I and non-RBMS II assets
- Meets HQLA operational requirements on unwind

3.2.2.3 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 unwound that is, the original position is reversed and the cash or stock of HQLA is 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.

3.2.2.4 Calculating Adjusted Stock of HQLA

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

   The formula for calculating adjusted stock of level 1 asset is as follows:

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

> **NOTE** Adjustments relate to the cash received or paid, and the eligible level 1 assets posted or received as collaterals, or underlying assets as part of secured funding, secured lending and asset exchange transactions.

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

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

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

> **NOTE** Adjustments relate to eligible level 2A assets posted or received as collaterals, or underlying assets as part of secured funding, secured lending and asset exchange transactions.

3. Adjusted Stock of Level 2B Assets

The formula for calculating adjusted stock of level 2B assets is as follows:

$$\boldsymbol{Adjusted\ Stock\ of\ Level\ 2B\ Assets} = \boldsymbol{Post - Haircut\ Stock\ of\ Level\ 2B\ Assets} + \boldsymbol{Post\ Haircut\ Adjustments\ to\ Stock\ of\ Level\ 2B\ Assets}$$

> **NOTE** Adjustments relate to eligible level 2B assets posted or received as collaterals, or underlying assets as part of secured funding, secured lending and asset exchange transactions.

4. Adjusted Stock of Level 2B RMBS Assets

The formula for calculating adjusted stock of level 2B RMBS assets is as follows:

$$\boldsymbol{Adjusted\ Stock\ of\ Level\ 2B\ RMBS\ Assets} = \boldsymbol{Post - Haircut\ Stock\ of\ Level\ 2B\ RMBS\ Assets} + \boldsymbol{Post\ Haircut\ Adjustments\ to\ Stock\ of\ Level\ 2B\ RMBS\ Assets}$$

> **NOTE** Adjustments relate to eligible level 2B 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 Non-RMBS I Assets

The formula for calculating adjusted stock of level 2B non-RMBS I assets is as follows:

$$\boldsymbol{Adjusted\ Stock\ of\ Level\ 2B\ Non-RMBS\ Assets} = \boldsymbol{Post - Haircut\ Stock\ of\ Level\ 2B\ Non-RMBS\ Assets} + \boldsymbol{Post\ Haircut\ Adjustments\ to\ Stock\ of\ Level\ 2B\ Non-RMBS\ Assets}$$

> **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.

6. Adjusted Stock of Level 2B Non-RMBS II Assets

The formula for calculating adjusted stock of level 2B non-RMBS II assets are as follows:

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

> **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.

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

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

   Level 2B assets can only constitute up to 15% of the stock of HQLA after considering the impact of unwinding transactions maturing within the LCR horizon. Adjustment to the stock of HQLA due to a cap on Level 2B assets that is adjustment for 15% cap is calculated as follows:

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

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

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

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

3.2.3 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 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 must 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.

3.2.4 Insurance Allocation

This section provides the steps involved in insurance allocation.

Topics:

3.2.4.1 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**

   OFS LRRCBNM allocates the insurance limit separately for each ownership category level. Ownership categories include single accounts, joint accounts, trust accounts and so on. As per the Perbadanan Insurans Deposit Malaysia (PIDM), 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 customer accounts whose product types match those covered by the deposit insurance. In the case of Malaysia, PIDM 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 Perbadanan Insurans Deposit Malaysia (PIDM) insures only Malaysian Ringgit denominated deposits. The eligible currency against the PIDM insurance scheme should be provided as Malaysian Ringgit.

   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.

3.2.4.2 Allocating Deposit Insurance

As part of the BNM Run, the application allocates the deposit insurance to accounts based on the guidelines specified by the PIDM. 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, that 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. In the case of the PIDM insurance scheme, the limit amount must be provided in Stage Insurance Scheme Master Table at the granularity of the insurance scheme.

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

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:

$$Insured\ Amount = If\ [\{(Insurance\ Limit\ Available - Outstanding\ Balance) \geq 0\}; Outstanding\ Balance\ else\ 0]$$

Where,

Insurance Limit Available: Limit available post allocation to previous accounts

= Insurance Limit Availablex-1 – Insured Amount x-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

The remaining available insurance is allocated to the last account that is account n for which insurance was not allocated.

5. 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.

Following is an illustration of this procedure. It considers an insurance limit of 2,50000 Malaysian Ringgit for each depositor combination under each ownership category for each legal entity. The inputs to this calculation, including account details and customer details, are as follows.

Table 2: Illustration: Insurance Allocation

Legal Entity	Account Number	Account Balance	Principal Balance	Accrued Interest	Account Holding Type	Primary Holder	Secondary Holder 1	Secondary Holder 2	Insurance Scheme	Availability of Joint Account Balance Split	Number of Account Holders	Principal Balance Per Customer	Accrued Interest Per Customer
Legal Entity 1	100001	959967	959967		Single	Customer A			DPA		1		
Legal Entity 1	100002	100980	95931	5049	Single	Customer A			DPA		1		
Legal Entity 1	100003	124342	112602	11740	Single	Customer A			DPA		1		
Legal Entity 1	100004	80900	73619	7281	Joint	Customer A	Customer B		DPA	Yes	2		
Legal Entity 1	100005	55226	55226		Joint	Customer A	Customer B	Customer D	DPA	No	3	18408.67	0.00
Legal Entity 2	200001	713335	713335		Single	Customer A			DPA		1		
Legal Entity 2	200002	127132	127132		Joint	Customer B	Customer C		DPA	No	2	63566.00	0.00
Legal Entity 2	200003	138828	124946	13882	Joint	Customer C	Customer B		DPA	Yes	2		

Legal Entity 2	200004	135429	135429		Joint	Customer B	Customer A	Customer C	DPA	No	3	45143.00	0.00
Legal Entity 3	300001	117603	95259	22344	Single	Customer B			FDIC		1		
Legal Entity 3	300002	124775	107121	17654	Single	Customer B			FDIC		1		
Legal Entity 3	300003	76065	76065		Single	Customer C			FDIC		1		
Legal Entity 3	300004	82622	82622		Joint	Customer A	Customer B		FDIC	No	2	41311.00	0.00
Legal Entity 3	300005	113340	113340		Joint	Customer B	Customer A		FDIC	No	2	56670.00	0.00

Table 3: Illustration continued: Insurance Allocation

Customer A Principal Balance	Customer B Principal Balance	Customer C Principal Balance	Customer D Principal Balance	Customer A Accrued Interest	Customer B Accrued Interest	Customer C Accrued Interest	Customer D Accrued Interest
959967.00				0.00			
95931.00				5049.00			
112602.00				11740.00			
47852.35	25766.65			5096.7	2184.3		
18408.67	18408.67		18408.67	0.00	0.00		0.00
713335.00				0.00			
	63566.00	63566.00			0.00	0.00	
	24989.2	99956.8			2776.4	11105.6	
45143.00	45143.00	45143.00		0.00	0.00	0.00	
	95259.00				22344.00		
	107121.00				17654.00		
		76065.00				0.00	
41311.00	41311.00			0.00	0.00		
56670.00	56670.00			0.00	0.00		

The application allocates the insurance limit of Malaysian Ringgit 10,000,000 to all eligible accounts as follows:

Insurance Allocation for Customer A

Table 4: Insurance Allocation for Customer A

Insurance Scheme	Legal Entity	Account Number	Account Type	Account Currency	Principal Balance	Accrued Interest	Available Insurance Limit	Insured Principal Balance	Available Insurance Limit - Interest	Insured Accrued Interest	Total Insured Amount	Uninsured Principal Balance	Uninsured Accrued Interest	Total Uninsured Amount
PIDM	Legal Entity 1	100001	Current Account	MYR	Y	Single	959967.00	0.00	250000.00	250000.00	64924.67	0.00	250000.00	709967.00
		100002	Savings Account	SGD	N	Single	95931.00	5049.00	250000.00	95931.00	24630.30	5049.00	100980.00	0.00
		100005	Current Account	MYR	Y	Joint	18408.67	0.00	83333.33	18408.67	64924.67	0.00	18408.67	0.00
		100004	Savings Account	MYR	N	Joint	47852.35	5096.70	162500.00	47852.35	29727.00	5096.70	52949.05	0.00
		100003	Term Deposit	MYR	N	Single	112602.00	11740.00	154069.00	112602.00	41467.00	11740.00	124342.00	0.00
	Legal Entity 2	200001	Current Account	MYR	Y	Single	713335.00	0.00	250,000	250000.00	0.00	0.00	250000.00	463335.00
		200004	Current Account	MYR	N	Joint	45143.00	0.00	83,333	45143.00	38190.33	0.00	45143.00	0.00
	Legal Entity 3	300004	Current Account	INR	N	Joint	41311.00	0.00	125,000	41311.00	83689.00	0.00	41311.00	0.00

		300005	Current Account	INR	N	Joint	56670.00	0.00	83,689	56670.00	27019.00	0.00	56670.00	0.00

Insurance Allocation of Customer B

Table 5: Insurance Allocation for Customer B

Insurance Scheme	Legal Entity	Account Number	Account Type	Account Currency	Principal Balance	Accrued Interest	Available Insurance Limit	Insured Principal Balance	Available Insurance Limit - Interest	Insured Accrued Interest	Total Insured Amount	Uninsured Principal Balance	Uninsured Accrued Interest	Total Uninsured Amount
PIDM	Legal Entity 1	100005	Current Account	MYR	Y	Joint	18408.67	0.00	83333.33	18408.67	64924.67	0.00	18408.67	0.00
		100004	Savings Account	MYR	N	Joint	25766.65	2184.30	87500.00	25766.65	61733.35	2184.30	27950.95	0.00
	Legal Entity 2	200002	Current Account	MYR	N	Joint	63566.00	0.00	87500.00	63566.00	0.00	0.00	63566.00	0.00
		200004	Current Account	MYR	N	Joint	45143.00	0.00	83333.33	45143.00	0.00	0.00	45143.00	0.00
		200003	Savings Account	MYR	N	Joint	24989.20	2776.40	23934.00	23934.00	0.00	0.00	23934.00	1055.20
	Legal Entity 3	300001	Term Deposit	MYR	N	Single	95259.00	22344.00	250000.00	95259.00	9365.00	9365.00	104624.00	0.00
		300002	Savings Account	MYR	N	Single	107121.00	17654.00	154741.00	107121.00	27019.00	17654.00	124775.00	0.00
		300004	Current Account	INR	N	Joint	41311.00	0.00	125000.00	41311.00	27019.00	0.00	41311.00	0.00
		300005	Current Account	INR	N	Joint	56670.00	0.00	83689.00	56670.00	27019.00	0.00	56670.00	0.00

Insurance Allocation of Customer C

Table 6: Insurance Allocation for Customer C

Insurance Scheme	Legal Entity	Account Number	Account Type	Account Currency	Principal Balance	Accrued Interest	Available Insurance Limit	Insured Principal Balance	Available Insurance Limit - Interest	Insured Accrued Interest	Total Insured Amount	Uninsured Principal Balance	Uninsured Accrued Interest	Total Uninsured Amount
PIDM	Legal Entity 2	200002	Current Account	THB	63566.00	0.00	1000000	63566.00	780228.60	0.00	63566.00	0.00	0.00	0.00
		200003	Current Account	THB	45143.00	0.00	936434.00	45143.00	780228.60	0.00	45143.00	0.00	0.00	0.00
		200004	Savings Account	THB	99956.80	11105.60	891291.00	99956.80	791334.20	11105.60	111062.40	0.00	0.00	0.00
	Legal Entity 3	300003	Current Account	INR	N	Single	76065.00	0.00	250000.00	76065.00	173935.00	0.00	76065.00	0.00

Insurance Allocation of Customer D

Table 7: Insurance Allocation for Customer D

Insurance Scheme	Legal Entity	Account Number	Account Type	Account Currency	Principal Balance	Accrued Interest	Available Insurance Limit	Insured Principal Balance	Available Insurance Limit - Interest	Insured Accrued Interest	Total Insured Amount	Uninsured Principal Balance	Uninsured Accrued Interest	Total Uninsured Amount
PIDM	Legal Entity 1	100005	Current Account	MYR	Y	Joint	18408.67	0.00	83,333	18408.67	64924.67	0.00	18408.67	0.00

3.2.5 Identifying Deposit Stability

Once 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 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:

   - It is held in a transactional account by the depositor

     Or

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

     The application identifies the existence of an established relationship if the depositor meets one of the following criteria:

     — The depositor holds more than one account with the bank, with at least one account of a type other than a deposit.

     Or

     — The bank has assigned a customer relationship manager to the depositor.

   If a deposit is partially covered by insurance and meets the other criteria, the insured portion of such deposits is treated as stable while the uninsured portion is treated as less stable. Stable deposits receive a 5% Run-off rate.

2. **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:

   - Uninsured balance of deposits meeting stable deposits criteria
   - Insured balance of deposits which are not transactional account and the customer has no established relationship with the bank
   - Deposit balance where the insurance coverage status is Uninsured

     Less stable deposits receive a 10% Run-off rate.

3.2.6 Treating Lien Marked Deposits

A bank does lien marking of a deposit when the bank's deposit or deposits 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 lien marked deposits.

For lien marked deposits, the deposit proceeds are paid out only when the loan against the deposit is repaid in full. This indicates that the deposit placed against the loan is encumbered for the entire term of the loan until it is repaid. 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 lien marked 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:

- Identifying Lien Marked Deposits
- Treating Lien Marked Deposits

3.2.6.1 Identifying Lien Marked Deposits

Lien marked deposits are identified against deposits in the staging area by the Lien Marked Indicator flag. The mapping between deposits which are lien marked and the lien against it is many to many and is a download for the application.

3.2.6.2 Treating Lien Marked Deposits

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

To cater to lien marked deposits, the following based measures are used in the business assumptions.

- 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 Regulation Addressed through Business Assumptions for details of the preseeded assumptions on lien marked deposits.

3.2.7 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.

3.2.8 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 of two types based on the direction of the exposure, Excess Collateral Due or Excess Collateral Receivable.

Topics:

3.2.8.1 For Derivatives

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

Topics:

3.2.8.1.1 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:

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

Where,

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

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

3.2.8.1.2 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 follows, if one of the following conditions are met.

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

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

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 generate reports.

3.2.8.2 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

3.2.8.2.1 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

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

3.2.8.2.2 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:

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

3.2.9 Calculating Excess Collateral

Excess collateral is the value of collateral posted or received that is more than 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 of two types, Excess Collateral Due or Excess Collateral Receivable.

Topics:

- For Derivatives
- For Other Assets and Liabilities

3.2.9.1 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

3.2.9.1.1 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:

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

Where,

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

Customer withdrawable collateral: Collateral received under re-hypothecation rights that can be contractually withdrawn by the customer within the LCR horizon without a significant penalty associated with such a withdrawal.

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

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

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 pre-configured business assumptions for LCR calculations.

3.2.9.1.2 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 re-hypothecation rights that can be contractually withdrawn by the bank within the LCR horizon without a significant penalty associated with such a 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.

3.2.9.2 For Other Assets and Liabilities

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

Topics

3.2.9.2.1 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:

$$Excess\ Collateral\ Due = Min[Max\{0, Adjusted\ Collateral\ Received - EOP\ Balance\ of\ Asset\}, Non - segregated\ Collateral\ Received]$$

3.2.9.2.2 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:

$$Excess\ Collateral\ Receivable = Min[Max\{0, Adjusted\ Collateral\ Posted - EOP\ Balance\ of\ Liability\}, Non - segregated\ Collateral\ Posted]$$

3.2.10 Calculating Downgrade Impact Amount

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

Topics:

3.2.10.1 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:

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

3.2.10.2 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 pre-configured business assumptions for LCR calculations.

3.2.11 Calculating Net Derivative Cash Inflows and Outflows

Topics:

3.2.11.1 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.

3.2.11.2 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.

3.2.12 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 (i) to (iv) are repeated for each rolling 30-day historical time window.

- 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 8: Illustration: 24-month look-back calculations

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
	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
	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
	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
	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
	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
	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
	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
	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) is computed as follows:

Table 9: Illustration continued: 24-month look-back calculations

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	
As of Date - 4 to As of Date - 33	140	

3.2.13 Calculating Operational Amount

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 steps involved in computing the operational balance are as follows:

1. All deposits classified as operational as per regulatory guidelines are identified. This is a separate process in LRRCBNM.
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 Liquidity Risk Solution (LRS) Run Management Execution Summary user interface. 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.

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

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 a historical balance approach.

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

   $$\boldsymbol{Non-operational\ Balance = Current\ EOP\ Balance - Operational\ Balance}$$

7. The operational insured balance is calculated as follows:

   $$\boldsymbol{Operational\ Insured\ Balance = Min\ (Operational\ Balance, Insured\ Balance)}$$

   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:

   $$\boldsymbol{Operational\ Uninsured\ Balance = Operational\ Balance - Insured\ Operational\ Balance}$$

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

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

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

    $$\boldsymbol{Non-operational\ Uninsured\ Balance = Non-operational\ Balance - Insured\ Non-operational\ Balance}$$

The operational deposit computation process is illustrated 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 provided as follows.

Table 10: Computation of Operational Deposit

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 average and cumulative average are computed as follows:

Table 11: Computation of Rolling Average and Cumulative Average

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 12: Computation of Operational and Non-operational Balances

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

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

3.2.14 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 must be treated appropriately. In the LCR consolidation process, OFS LRS 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, by 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. The flag F_TRANSFERABILITY_RESTRICTION will be derived as part of processing, based on the account country and currency.
3. The application checks whether the stock of restricted level 1 assets is 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 is included in the consolidated calculations.
4. The application checks whether the 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 assets. If no, the entire stock of restricted level 2A assets is 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, refer to Consolidation, where the consolidation process is described.

3.2.15 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 Regulation Addressed through Business Assumptions section are pre-defined and packaged as part of the out-of-the-box 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 Regulation Addressed through Business Assumptions section are pre-defined and packaged as part of the out-of-the-box Run to determine the outflows over the liquidity horizon. The business assumption adjusted cash outflows occurring over the liquidity horizon are 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**

   The total net cash outflows are defined as the total expected cash outflows minus total expected cash inflows for the LCR horizon, for example, the subsequent 30 calendar days. Total expected cash outflows are calculated by multiplying the outstanding balances of various categories or types of liabilities and off-balance sheet commitments by the rates at which they are expected to run off or be drawn down. Total expected cash inflows are calculated by multiplying the outstanding balances of various categories of contractual receivables by the rates at which they are expected to flow in up to an aggregate cap of 75% of total expected cash outflows. This requires that a bank must maintain a minimum amount of stock of HQLA equal to 25% of the total cash outflows.

   Net cash outflow is computed as follows:

$$\begin{aligned} &\boldsymbol{Net\ Cash\ Outflows_{LCR\ Horizon}} \\ &\quad = \boldsymbol{Total\ Cash\ Outflows_{LCR\ Horizon}} \\ &\quad - \boldsymbol{Minimum}\{\boldsymbol{Total\ Cash\ Inflows_{LCR\ Horizon}}; (75\% \\ &\quad \times \boldsymbol{Total\ Cash\ Outflows_{LCR\ Horizon}}) \end{aligned}$$

   Banks will not be permitted to double count items. For example, if an asset is included as part of the "stock of HQLA" (like the numerator), the associated cash inflows cannot also be counted as cash inflows (part of the denominator). Where an item could be counted in multiple outflow categories, (such as, committed liquidity facilities granted to cover debt maturing within the 30 calendar day period), a bank should assume only up to the maximum contractual outflow for that product.

NOTE The inflow and outflow rates as prescribed by BNM for computing LCR are pre-defined within the application and ready to be used. Users are also allowed to define bank-specific inflow and outflow rates and apply them to the contractual cash flows to view the stock of HQLA, net cash outflows, and LCR across multiple scenarios.

3.2.16 Consolidation

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

1. **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.

2. **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:

   a. 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 transactions 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.

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

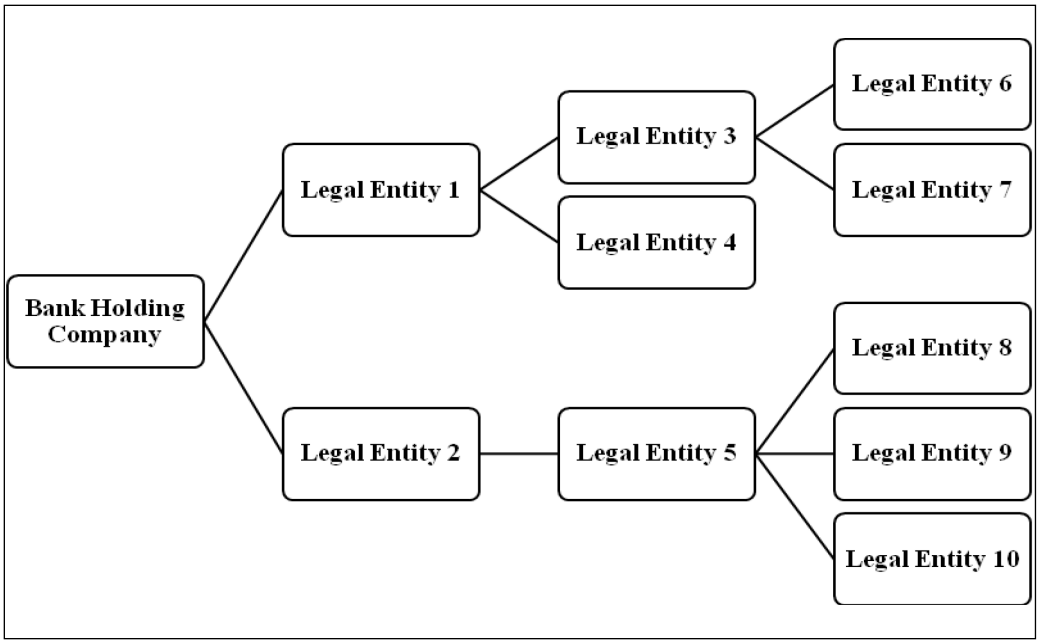
- The application identifies whether the subsidiary is a consolidated subsidiary.
- If condition (a) is fulfilled, it identifies whether the consolidated subsidiary is subject to minimum LCR requirement that is, whether the subsidiary in question is a regulated entity.
- If condition (b) is not fulfilled, it eliminates all inter-company transactions until 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.

3. 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 by the LCR approach.

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

Figure 1: 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.

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

3.2.17 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:

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

3.2.17.1 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:

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

According to the BNM announcement as follows, significant currency indicates aggregate of liabilities denominated in that currency amount including off-market balance sheet, foreign exchange forward and cross-currency swap to 5% or more of the bank's total liabilities.

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 as per BNM

OFS LRRCBNM supports an out-of-the-box BNM LCR which has the regulatory scenario with associated HQLA haircuts, inflow and outflow percentage/ 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 the 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 Regulation Addressed through Business Assumptions and Regulations Addressed through Business Rules sections.

Table 13: Document Identifiers for the Regulatory References

Regulation Reference Number	Document Number	Document Name	Issued Date
MC	BNM/RH/PD 029-13	Liquidity Coverage Ratio	25 Aug2016
BNMFAQ		Deposit Insurance Handbook	

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

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.

Topics:

3.3.1 Regulation Addressed through Business Rules

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

Table 14: Preconfigured BNM LCR Business Rules

Sl. No.	Rule Name	Rule Description	Regulatory Requirement Addressed	Regulatory Reference BNM/RH/PD 029-13
1	LRM - BNM - HQLA Level 1 - Cash and Central Bank Reserve	This rule reclassifies cash, central bank reserves as HQLA Level 1 assets by the criteria specified by BNM.	The classification of cash and central bank reserves as HQLA level 1 asset is configured as part of this rule.	Paragraph 10.1
2	LRM - BNM - HQLA Level 1 - Sovereign, CB, PSE, and MDB Issued Zero Risk Weight Securities	This rule reclassifies zero risk weight securities issued by central banks, sovereigns, Public Sector Enterprises, International Organizations, and multilateral development banks as HQLA Level 1 assets, by the criteria specified by BNM.	The classification of marketable zero risk weight securities, issued by foreign sovereigns, central banks, and multinational development banks as HQLA Level 1 assets is configured as part of this rule.	Paragraph 10.1
3	LRM - BNM - HQLA Level 1 - Sovereign, CB, PSE, and MDB Guaranteed Zero Risk Weight Securities	This rule reclassifies zero risk weight securities guaranteed by central banks, sovereigns, Public Sector Enterprises, International Organizations, and multilateral development banks as HQLA Level 1 assets, by the criteria specified by BNM.	The classification of marketable zero risk weight securities, guaranteed by foreign sovereigns, central banks, and multinational development banks as HQLA Level 1 assets is configured as part of this rule.	Paragraph 10.1
4	LRM - BNM - HQLA Level 1 - Sec by Sovereign and CB with Non-Zero Risk Weight in Domestic Currencies	This rule reclassifies non-zero risk weight securities issued by sovereigns and central banks, denominated in their local currency as HQLA Level 1 assets, by the criteria specified by BNM.	The classification of marketable securities, issued by non-zero risk weight foreign sovereigns, central banks, and multinational development banks, denominated in their local currency as HQLA Level 1 assets are configured as part of this rule.	Paragraph 10.1
5	LRM - BNM - HQLA Level 1 - Sec by Sovereign and CB with Non-Zero Risk Weight in Foreign Currency	This rule reclassifies non-zero risk weight securities issued by sovereigns and central banks, denominated in foreign currency as HQLA Level 1 assets, by the criteria specified by BNM.	The classification of marketable securities, issued by non-zero risk weight foreign sovereigns, central banks, and multinational development banks, denominated in their foreign currency as HQLA Level 1 assets are configured as part of this rule.	Paragraph 10.1

6	LRM - BNM - HQLA Level 1 - Restricted Committed Liquidity Facility	This rule reclassifies the undrawn portion of committed facilities received from Central Bank of Malaysia under Restricted Committed Liquidity Facilities as HQLA Level 1 assets by the criteria specified by BNM.	The classification of the undrawn portion of committed facilities received from Central Bank of Malaysia under Restricted Committed Liquidity Facilities as HQLA Level 1 assets is configured as part of this rule.	Paragraph 10.1
7	LRM - BNM - HQLA Level 2A - Sovereign, CB, PSE, and MDB 20 percent Risk Weight Securities	This rule reclassifies the non-zero risk weight securities either issued or guaranteed by Sovereign, Central Bank, PSE and Multilateral Development Bank as HQLA Level 2A assets, by the criteria specified by BNM.	The classification of marketable zero and non-zero risk weight securities either issued or guaranteed by foreign sovereigns, central banks, and multinational development banks as HQLA Level 2A assets is configured as part of this rule.	Paragraph 10.1
8	LRM - BNM - HQLA Level 2A - Corporate Debt Securities	This rule reclassifies the corporate debt securities as HQLA Level 2A assets, by the criteria specified by BNM.	The classification of debt securities issued by corporates and covered bonds as HQLA Level 2A assets are configured as part of this rule.it also classifies	Paragraph 10.1
9	LRM - BNM - HQLA Level 2A - Bankers Acceptance and Islamic Instruments	This rule reclassifies banker's acceptance, Cagamas Berhad debt securities, negotiable instruments of deposit and Islamic negotiable instruments as HQLA Level 2A assets by the criteria specified by BNM. This rule also reclassifies those securities that are guaranteed by sovereigns, multilateral development banks as HQLA Level 2A by the criteria specified by BNM.	The classification of debt securities issued by Cagmas Berhad as HQLA Level 2A assets is configured as part of this rule. It also classifies banker's acceptance, certificate of deposits, negotiable instruments of deposit and Islamic negotiable instruments as HQLA Level 2A assets as part of this rule.	Paragraphs 10.1, 10.2 and 10.3
10	LRM - BNM - HQLA Level 2B - Corporate Debt Securities and RMBS Securities	This rule reclassifies the corporate debt securities and residential mortgage-backed securities as HQLA level 2B RMBS and level 2B Non-RMBS assets by the criteria specified by BNM.	The classification of a residential mortgage-backed security, issued by Cagmas Berhad as HQLA level 2B RMBS assets is configured as part of this rule. It also classifies the debt securities including commercial papers, issued by non-financial corporates as HQLA level 2B Non-RMBS I and HQLA level 2B RMBS II as part of this rule.	Paragraph 10.1

11	LRM - BNM - Bank Own Assets - Meets HQLA Operational Requirements Flag Update	This rule identifies whether the bank's assets, both unencumbered assets as well as those placed as collateral, meet the operational requirements prescribed by BNM guidelines, except for being unencumbered in the case of placed collateral. In the case of unencumbered assets, it updates the Meets HQLA Operational Requirements Flag. In case of placed collateral, it updates the Meets HQLA Operational Requirements on Unwind Flag.	The identification of whether an asset owned by the bank meets the operational requirements set forth by BNM for its inclusion in the stock of HQLA is configured as part of this rule.	Paragraphs 11 and 12
12	LRM - BNM - Mitigants - Meets HQLA Operational Requirements Flag Update	This rule identifies whether a mitigant meets the operational requirements prescribed by BNM guidelines, to be considered for inclusion in the stock of HQLA. It updates the Meets HQLA Operational Requirements Flag for such mitigants.	The identification of whether collateral received from a counterparty, that is further placed as collateral, meets the operational requirements set forth by BNM on unwinding is configured as part of this rule.	Paragraphs 11 and 12
13	LRM - BNM - Re-hypothecated Mitigants - Meets HQLA Operational Requirements Flag Update	This rule identifies whether a re-hypothecated mitigant meets the operational requirements prescribed by BNM guidelines, except for being unencumbered. It updates the Meets HQLA Operational Requirements on Unwind Flag for such mitigants.	The identification of whether the collateral received from counterparty meets the operational requirements set forth by BNM is configured as part of this rule.	Paragraphs 11 and 12

14	LRM - BNM - Instruments - Eligible High-Quality Liquid Assets Flag Update	This computation rule updates the HQLA Eligibility Flag for the bank's unencumbered assets classified as HQLA that fulfill the HQLA operational requirements and therefore can be included in the stock of HQLA. It also updates the Eligible HQLA on the Unwind flag for all assets placed as collateral that are classified as HQLA that fulfill the HQLA operational requirements on unwinding and therefore are to be unwound.	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.	Paragraphs 11 and 12
15	LRM - BNM - Mitigants - Eligible High-Quality Liquid Assets Flag Update	This computation rule updates the HQLA Eligibility Flag for mitigants classified as HQLA that fulfill the HQLA operational requirements prescribed by BNM guidelines, and therefore can be included in the stock of HQLA.	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.	Paragraphs 11 and 12
16	LRM - BNM - Level 1 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 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 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 deduction of the collateral received.	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.	Paragraph 10.6

17	LRM - BNM - Level 1 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. In the 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 addition 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 addition of the collateral posted.	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.	Paragraph 10.6
18	LRM - BNM - Level 2A 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 2A 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 2A 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 2A assets due to such an unwind is configured as part of this rule.	Paragraph 10.6

19	LRM - BNM - Level 2A 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 2A 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 2A 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 2A assets due to such an unwind is configured as part of this rule.	Paragraph 10.6
20	LRM - BNM - Level 2B 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 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 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 RMBS assets due to such an unwind is configured as part of this rule.	Paragraph 10.6

21	LRM - BNM - Level 2B 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 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 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 RMBS assets due to such an unwind is configured as part of this rule.	Paragraph 10.6

22	LRM - BNM - Level 2B(I) 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 I 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 I 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 I Non-RMBS assets due to such an unwind is configured as part of this rule.	Paragraph 10.6

23	LRM - BNM - Level 2B(I) 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 I 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 I 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 I Non-RMBS assets due to such an unwind is configured as part of this rule.	Paragraph 10.6

24	LRM - BNM - 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 2B II Non-RMBS assets due to such an unwind is configured as part of this rule.	Paragraph 10.6

25	LRM - BNM - 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 2B II Non-RMBS assets due to such an unwind is configured as part of this rule.	Paragraph 10.6
26	LRM - BNM - HQLA Level 1 - Cash and Central Bank Reserve	This rule reclassifies cash, central bank reserves as HQLA Level 1 assets by the criteria specified by BNM.	The classification of cash and central bank reserves as HQLA level 1 asset is configured as part of this rule.	Paragraph 10.1
27	LRM - BNM - HQLA Level 1 - Sovereign, CB, PSE, and MDB Issued Zero Risk Weight Securities	This rule reclassifies zero risk weight securities issued by central banks, sovereigns, Public Sector Enterprises, International Organizations, and multilateral development banks as HQLA Level 1 assets, by the criteria specified by BNM.	The classification of marketable zero risk weight securities, issued by foreign sovereigns, central banks, and multinational development banks as HQLA Level 1 assets is configured as part of this rule.	Paragraph 10.1
28	LRM - BNM - HQLA Level 1 - Sovereign, CB, PSE, and MDB Guaranteed Zero Risk Weight Securities	This rule reclassifies zero risk weight securities guaranteed by central banks, sovereigns, Public Sector Enterprises, International Organizations, and multilateral development banks as HQLA Level 1 assets, by the criteria specified by BNM.	The classification of marketable zero risk weight securities, guaranteed by foreign sovereigns, central banks, and multinational development banks as HQLA Level 1 assets is configured as part of this rule.	Paragraph 10.1

29	LRM - BNM - HQLA Level 1 - Sec by Sovereign and CB with Non-Zero Risk Weight in Domestic Currencies	This rule reclassifies non-zero risk weight securities issued by sovereigns and central banks, denominated in their local currency as HQLA Level 1 assets, by the criteria specified by BNM.	The classification of marketable securities, issued by non-zero risk weight foreign sovereigns, central banks, and multinational development banks, denominated in their local currency as HQLA Level 1 assets are configured as part of this rule.	Paragraph 10.1

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 15: Preconfigured BNM LCR Business Assumptions

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference BNM/RH/PD 029-13
Outflows				
1	BNM-Non-operational stable retail deposits	Run-offs on the stable portion of non-operational deposits from retail customers and unsecured wholesale funding from SMEs treated as retail.	The outflow rate on the stable portion of non-operational deposits, from retail customers and SMEs treated as retail customers, for LCR, is pre-defined 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 LCR horizon, which either mature or result in early withdrawal, without incurring a significant penalty, within the LCR horizon.	Paragraphs 14.1 to 14.3, 14.8, 15.17 to 15.18
2	BNM-Non-operational less stable retail deposits	Run-offs on the less stable portion of non-operational deposits from retail customers and unsecured wholesale funding from SMEs treated as retail.	The outflow rate on the less stable portion of non-operational deposits, from retail customers and SMEs treated as retail customers, for LCR, is pre-defined 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 LCR horizon, which either mature or result in early withdrawal, without incurring a significant penalty, within the LCR horizon.	Paragraphs 14.1 to 14.2, 14.7, 14.8, 15.17 to 15.18

3	BNM-Non-op less stable retail deposit within 30 day	Run-offs on the less stable portion of non-operational deposits, maturing within 30 days from retail customers and unsecured wholesale funding from SMEs treated as retail.	The outflow rate on the less stable portion of non-operational deposits, from retail customers and SMEs treated as retail customers, for LCR, is pre-defined 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 LCR horizon, which either mature or result in early withdrawal, without incurring a significant penalty, within the LCR horizon.	Paragraphs 14.1 to 14.2, 14.7, 14.8, 15.17 to 15.18
4	BNM-Insured Operational deposits	Run-off on the portion of the operational balance, from deposits generated by clearing, custody, and cash management activities, that is fully covered by deposit insurance.	The outflow rate on the insured portion of the balance held in operational accounts, with other financial institutions, for clearing, custody, and cash management are pre-defined as part of this assumption. This assumption applies a 5% run-off on insured operational balances that are covered by deposit insurance.	Paragraph 15.6
5	BNM-Uninsured Operational deposits	Run-off on the portion of the operational balance, from deposits generated by clearing, custody, and cash management activities, that are not covered by deposit insurance.	The outflow rate on the uninsured portion of the balance held in operational accounts, with other financial institutions, for clearing, custody, and cash management are pre-defined as part of this assumption. This assumption applies a 25% run-off on uninsured operational balances that are not covered by deposit insurance.	Paragraph 15.6

6	BNM-Outflows on non-operational part of operational account	Outflows on the non-operational portion of an operational deposit, provided by corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB.	The outflow rate on the non-operational portion of the balance held in operational accounts, with other financial institutions, for clearing, custody, and cash management are pre-defined as part of this assumption. This assumption applies a 20% run-off on non-operational balances that are fully covered under deposit insurance and 40% run-off on accounts that are not fully covered under deposit insurance.	Paragraphs 15.12 to 15.13, 15.19, 15.20
7	BNM-Unsecured fully insured non-operational funding	Run-off on the portion of the non-operational balance, from deposits generated by clearing, custody, and cash management activities, that is fully covered by deposit insurance.	The outflow rate on the unsecured fully insured non-operational funding, received from non-financial corporates, sovereigns, central banks, multilateral development banks, and PSEs, are pre-defined as part of this assumption. This assumption applies a 20% run-off on these balances.	Paragraphs 15.3, 15.20
8	BNM-Unsecured non-operational funding	Outflows on funding provided by corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB, that is not fully insured	The outflow rate on the unsecured non-operational funding that is not fully covered under deposit insurance received from non-financial corporates, sovereigns, central banks, multilateral development banks, and PSEs, are pre-defined as part of this assumption. This assumption applies a 40% run-off on these balances.	Paragraphs 15.3, 15.19
9	BNM-UWF from Non-qualifying Borrowings and Annuity Contracts	Outflows on non-qualified term funding from annuity contracts and borrowings from the central bank, sovereign, local government, PSE, state enterprise, and MDB.	The outflow rate on the non-qualified borrowings and annuity contracts, received from non-financial corporates, sovereigns, central banks, multilateral development banks, and PSEs, are pre-defined as part of this assumption. This assumption applies a 40% run-off on these balances.	Paragraphs 15.3, 15.19, 15.21

10	BNM-UWF from qualified Borrowings and Annuity Contract	Outflows on qualified term funding from annuity contracts and borrowings from the central bank, sovereign, local government, PSE, state enterprise, and MDB.	The outflow rate on the qualified borrowings and annuity contracts, received from non-financial corporates, sovereigns, central banks, multilateral development banks, and PSEs, are pre-defined as part of this assumption. This assumption applies a 40% run-off rate on these balances in the form of a 60% rollover rate.	Paragraphs 15.3, 15.19, 15.21
11	BNM-Unsecured part of secured non-op funding from Sov	Outflows on the unsecured portion of secured funding, provided by sovereigns, local governments or state enterprises, which are not classified as an operational deposit.	The run-off rates on the unsecured portion of secured funding, that is not classified as an operational deposit, received from sovereigns, local governments or state enterprises, are pre-defined as part of this assumption. This assumption applies a 20% run-off on unsecured balance from non-operational secured deposits that are fully covered by deposit insurance.	Paragraphs 15.9, 15.3, 15.20
12	BNM-Unsec part of Sec Non-qualifying Borrowings and Annuity	Outflows on the unsecured non-qualifying portion of qualified secured borrowings and annuity contracts, provided by the central bank, sovereign, local government, PSE, state enterprise, and MDB.	The outflow rate on the unsecured portion of secured non-qualified borrowings and annuity contracts, received from non-financial corporates, sovereigns, central banks, multilateral development banks, and PSEs, are pre-defined as part of this assumption. This assumption applies a 40% run-off rate on these balances.	Paragraphs 15.3, 15.19, 15.21
13	BNM-Outflows on non-op part of operational dep from other LE	Run-off on the portion of the non-operational balance, from deposits generated by clearing, custody, and cash management activities from entities other than corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB.	The outflow rate on the non-operational portion of the balance held in operational accounts received from entities other than corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB is pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances	Paragraphs 15.12 to 15.13, 15.22

14	BNM-Non-op part of unsecured Operational deposits	Outflows on the non-operational balance of unsecured deposits generated by clearing, custody, and cash management activities.	The outflow rate on the non-operational portion of the unsecured balance held in operational accounts, with other financial institutions, for clearing, custody and cash management are pre-defined as part of this assumption are pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances	Paragraphs 15.12 to 15.13, 15.22
15	BNM-Outflows on Unsec CASA deposits from other LE	Outflows on the CASA deposits, provided by entities other than clearing, custody, and cash management activities from entities other than corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB, that are not classified as operational deposits.	The outflow rate on the funding from CASA deposits, provided by entities other than clearing, custody, and cash management activities, received from entities other than corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB are pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances	Paragraph 15.19
16	BNM-Outflows on Unsec CASA deposits	Outflows on the unsecured CASA deposits.	The outflow rate on the funding from unsecured CASA deposits, provided by entities other than clearing, custody, and cash management activities are pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances	Paragraph 15.19
17	BNM-Unsec non-op dep from other LE with non-qualifying Amt	Outflows on the non-qualifying portion of unsecured qualifying term deposits from entities other than the central bank, corporates, SMEs, sovereign, local government, PSE, state enterprise, and MDB, which are not classified as operational deposits.	The outflow rate on the funding from a non-qualifying portion of unsecured qualifying term deposits, relieved from entities other than corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB are pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances	Paragraphs 15.3, 15.22

18	BNM-Unsec non-op dep with non-qualifying Amt	Outflows on the non-qualifying portion of unsecured qualifying term deposits, which are not classified as operational deposits.	The outflow rate on the funding from a non-qualifying portion of the unsecured qualifying term deposit received from wholesale counterparties is pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances	Paragraphs 15.3, 15.22
19	BNM-Unsec dep from other LE with qualifying Amt	Outflows on the qualifying portion of unsecured qualifying term deposits from entities other than the central bank, corporates, SMEs, sovereign, local government, PSE, state enterprise, and MDB.	The outflow rate on the funding from qualifying portion of unsecured qualifying term deposit received from entities other than corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB is pre-defined as part of this assumption. This assumption applies a 0% run-off on these balances	Paragraphs 15.3, 15.22
20	BNM-Unsec funding from Term and Certificate of deposit	Outflows on the qualifying portion of unsecured qualifying term deposits and certificates of deposit.	The outflow rate on the funding from the qualifying portion of unsecured qualifying term deposits and certificates of deposit received from wholesale counterparties are pre-defined as part of this assumption. This assumption applies a 0% run-off on these balances	Paragraphs 15.3, 15.22
21	BNM-Other LE Unsec Funding from Non-qualifying Borrowings	Outflows on the non-qualifying borrowings, provided by entities other than the central bank, corporates, SMEs, sovereign, local government, PSE, state enterprise, and MDB.	The outflow rate on the funding from non-qualifying borrowings received from entities other than corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB is pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances	Paragraphs 15.3, 15.22
22	BNM-Outflows from Unsec Borrowings and Annuity Contracts	Outflows on the unsecured non-qualifying borrowings and annuity contracts.	The outflow rate on the funding from borrowings and annuity contracts, received from wholesale counterparties are pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances	Paragraphs 15.3, 15.22

23	BNM-Outflows from Unsec cash flows from other LE	Outflows on the unsecured cash flows of qualifying borrowings and annuity contracts, provided by entities other than the central bank, corporates, SMEs, sovereign, local government, PSE, state enterprise, and MDB.	The outflow rate on the funding from unsecured cash flows of qualifying borrowings and annuity contracts received from entities other than the central bank, corporates, SMEs, sovereign, local government, PSE, state enterprise, and MDB are pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances in the form of a 0% rollover rate.	Paragraphs 15.3, 15.22
24	BNM-Outflows from Unsec qualified borrowings	Outflows on the unsecured cash flows of qualified borrowings and annuity contracts.	The outflow rate on the funding from unsecured cash flows of qualifying borrowings and annuity contracts, received from wholesale counterparties are pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances.	Paragraphs 15.3, 15.22
25	BNM-Unsec part of sec non-qualified funding from other LE	Outflows on the unsecured portion of secured non-qualifying term funding from entities other than the central bank, corporates, SMEs, sovereign, local government, PSE, state enterprise, and MDB.	The outflow rate on the funding from an unsecured portion of secured non-qualifying borrowings and annuity contracts received from entities other than the central bank, corporates, SMEs, sovereign, local government, PSE, state enterprise, and MDB are pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances.	Paragraphs 15.3, 15.22
26	BNM-Unsec part of sec non-qualified funding	Outflows on the unsecured portion of secured non-qualifying term funding.	The outflow rate on the funding from the unsecured portion of secured non-qualifying borrowings and annuity contracts, received from wholesale counterparties are pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances.	Paragraphs 15.3, 15.22

27	BNM-Unsec part of sec qualified funding from other LE	Outflows on the unsecured portion of secured qualifying term funding from entities other than the central bank, corporates, SMEs, sovereign, local government, PSE, state enterprise, and MDB.	The outflow rate on the funding from an unsecured portion of secured qualifying borrowings and annuity contracts received from entities other than the central bank, corporates, SMEs, sovereign, local government, PSE, state enterprise, and MDB are pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances in the form of a 0% rollover rate.	Paragraphs 15.3, 15.22
28	BNM-Outflows on Non-op unsecured funding	Outflows on unsecured funding that are not classified as operational deposits.	The outflow rate on the unsecured funding from debt securities and sukuks, which are not classified as operational deposits are pre-defined as part of this assumption. This assumption applies a 0% run-off on the qualified funding from debt securities and sukuk's. It also applies run off of 10% and 100% for non-qualified securities issued exclusively to retail counterparties and those issued to counterparties other than retail respectively.	Paragraphs 15.3, 15.24 to 15.25
29	BNM-Unsec part of Sec cash flows from qualifying to fund	Outflows on the unsecured cash flows of qualified secured borrowings and annuity contracts, provided by the central bank, sovereign, local government, PSE, state enterprise, and MDB.	The outflow rate on the funding from an unsecured portion of cash flows of qualified secured borrowings and annuity contracts received from the central bank, corporates, SMEs, sovereign, local government, PSE, state enterprise, and MDB are pre-defined as part of this assumption. This assumption applies a 40% run-off on these balances in the form of a 60% rollover rate.	Paragraphs 15.3, 15.19, 15.21

30	BNM-Non-Qualifying Unsecured part of secured non-op funding	Outflows on the unsecured non-qualifying portion of qualified secured term funding, provided by sovereigns, that is not classified as an operational deposit.	The run-off rates on the funding from an unsecured non-qualifying portion of qualified secured term funding, that is not classified as an operational deposit, received from sovereigns, local governments or state enterprises, are pre-defined as part of this assumption. This assumption applies a 20% run-off on unsecured balance from non-operational secured deposits that are fully covered by deposit insurance.	Paragraphs 15.3, 15.20
31	BNM-Unsecured Non-Op Funding with qualifying Amt	Outflows on the qualified portion of qualifying term deposit, provided by corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB, that is not classified as an operational deposit.	The run-off rates on the funding from an unsecured qualified portion of qualifying term deposit, that is not classified as an operational deposit, received from sovereigns, local governments or state enterprises, are pre-defined as part of this assumption. This assumption applies a 0% run-off on unsecured balance from non-operational secured deposits that are fully covered by deposit insurance.	Paragraphs 15.3, 15.19
32	BNM-Non Op Unsec Wholesale Funding with Non-qualifying Amt	Outflows on the non-qualifying portion of qualifying term deposit, provided by corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB, that is not classified as an operational deposit.	The outflow rate on the non-qualifying portion of qualifying term deposit, that are not classified as operational deposits, received from corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB, pre-defined as part of this assumption. This assumption applies a 20% run-off on non-operational balances that are fully covered under deposit insurance and 40% run-off on accounts that are not fully covered under deposit insurance.	Paragraphs 15.3, 15.19, 15.20

33	BNM-Secured Funding -Security Lending and Collateral Swaps	Outflows on collateral swap transactions and security lending from entities such as central banks, sovereigns, local governments, PSEs, state enterprises, and MDBs.	The run-off rates on the secured funding, including collateral swaps, from all counterparties, are pre-defined as part of this assumption. This assumption applies the regulatory run-offs applicable to each counterparty type.	Paragraphs 16.1 to 16.3
34	BNM-Secured funding outflows based on the secured balance	Outflows on repurchase agreement and security lending from entities such as central banks, sovereigns, local governments, PSEs, state enterprises, and MDBs.	The outflow rates on the repurchase agreement and secured lending, received from the central bank, sovereign, local government, PSE, state enterprise, MDB, are pre-defined as part of this assumption. This assumption applies the regulatory run-off rates applicable to each counterparty type on a secured balance.	Paragraphs 16.1 to 16.3
35	BNM-Additional Collateral Required Due to Ratings Downgrade	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 pre-defined as part of this assumption. This assumption applies a 100% outflow on the downgrade impact amount arising from a 3-notch rating downgrade.	Paragraph 17.7
36	BNM-Loss of Rehypothecation Rights Due to Ratings 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, which result in a loss of rehypothecation rights due to a 3-notch rating downgrade, is pre-defined 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 17.7

37	BNM-Increased Liquidity Needs Due to Change in Coll Val	Increased liquidity needs arising from the potential change in the value of posted collateral.	The outflow rate on the additional cash outflow due to a potential loss in the market value of non-level 1 asset posted as collateral is pre-defined 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 17.5
389	BNM-Increased Liquidity Needs Due To 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 pre-defined as part of this assumption. This assumption applies a 100% outflow on the value of excess collateral.	Paragraph 17.9
39	BNM-Increased Liquidity Needs from Contractually Due Coll	Increased liquidity needs arising from the collateral that is contractually required to be posted to the counterparty but has 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 pre-defined as part of this assumption. This assumption applies a 100% outflow on the value of contractually due collateral.	Paragraph 17.6
40	BNM-Increased Liquidity Needs 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 pre-defined 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 17.5

41	BNM-Loss of Funding from Financing Facility Maturing Debt	Loss of funding on asset-backed commercial paper, conduits, securities investment vehicles and other such financing facilities due to inability to refinance maturing debt.	The run-off rate on the maturing amounts of asset-backed commercial paper, conduits, securities investment vehicles and other such financing facilities is pre-defined 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. It also applied 100% run-off on the EOP balance of the structured financing facilities that mature beyond the LCR horizon but have a redemption notice period of 30 days or less.	Paragraph 18
42	BNM-Loss of Funding from Financing Facility, Return of Asset	Loss of funding on asset-backed commercial paper, 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 paper, conduits, securities investment vehicles and other such financing facilities is pre-defined 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. It also applies a 100% run-off on the value of the assets that are returnable beyond the LCR horizon but have a redemption notice period of 30 days or less	Paragraph 18
43	BNM-Loss of Funding from Financing Facility Liquidity Draws	Loss of funding on asset-backed commercial paper, 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 pre-defined 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 18

44	BNM-Draws on Committed Facilities Extended to Banks	Drawdowns on committed credit and liquidity facilities extended to banks.	The outflow rate on the undrawn amount available to be drawn down on the committed credit and liquidity facilities extended to banks is pre-defined as part of this assumption. This assumption applies the relevant outflow as a drawdown rate.	Paragraphs 19.1 to 19.6
45	BNM-Drawdowns on Committed Credit and Liquidity Facilities	Drawdowns on the cash flows occurring on the loan that has been approved but not yet disbursed, within the LCR horizon.	The outflow rate on the cash flows occurring on the loan that has been approved but not yet disbursed, within the LCR horizon is pre-defined as part of this assumption. This assumption applies a 100% outflow rate as a drawdown rate.	Paragraphs 19.1 to 19.6
46	BNM-Draws on Committed Facilities Extended to Other Entity	Drawdowns on committed credit and liquidity facilities to other legal entities	The outflow rate on the undrawn amount available to be drawn down on the committed credit and liquidity facilities extended to other legal entities is pre-defined as part of this assumption. This assumption applies the relevant outflow as a drawdown rate.	Paragraphs 19.1 to 19.6
47	BNM-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 pre-defined as part of this assumption. This assumption applies a 0% drawdown on the uncommitted facilities. The drawdown rates are allowed to be updated to reflect the rates specified by national regulators.	Paragraphs 21.1
48	BNM-Other Contingent Funding Obligation Outflows	Outflows related to trade and non-trade finance related instruments.	The outflow rate on the trade and non-trade finance related instruments is pre-defined as part of this assumption. This assumption applies a 0.5% run-off on such trade finance obligations.	Paragraphs 21.1

49	BNM-Other Contractual Obligations to Non-Financial Customers	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, more than 50% of contractual inflows from such customers within the LCR horizon, is pre-defined as part of this assumption. This assumption applies a 100% outflow on the excess contractual obligation amount.	Paragraph 20.1 (ii)
50	BNM-Other Contractual Obligations to Financial Institutions	Outflows related to other contractual obligations to extend funds within 30 days to financial institutions.	The outflow rate on the other contractual obligations to extend funds to retail and non-financial corporate customers, more than 50% of contractual inflows from such customers within the LCR horizon, is pre-defined as part of this assumption. This assumption applies a 100% outflow on the excess contractual obligation amount.	Paragraph 20.1 (i)
51	BNM-Contractual Interest Payment Outflows	Outflows related to contractual payments of interest.	The outflow rate on the interest payments contractually due within the LCR horizon is pre-defined as part of this assumption. This assumption applies a 100% outflow on interest in the form of a 0% rollover rate.	Paragraph 20.2
52	BNM-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 pre-defined as part of this assumption. This assumption applies a 0% outflow rate on non-contractual obligations. The outflow rate is allowed to be updated to reflect the rates specified by national regulators.	Paragraph 21.1

53	BNM-Outflows Related to Short Positions	Outflows related to customer and bank short positions.	The outflow rate on the customer and firm short positions is pre-defined as part of this assumption. This assumption specifies outflows on the short positions based on assets covering such short positions.	Paragraph 21.1
54	BNM-Derivative cash outflows	Net cash outflows from derivative transactions.	The inflow rate on the 30-day cash inflows from derivative transactions is pre-defined 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 17.1
55	BNM-Non-qualifying retail stable deposits	Runoffs on the Non-qualifying stable portion of qualifying term deposits from customers treated as retail.	The run-off rates on the Non-qualifying stable portion of qualifying term deposits from retail customers and SMEs who are treated like retail customers for LCR are pre-defined as part of this assumption. This assumption applies a 5% run-off on the stable portion of retail deposits.	Paragraphs 14.1 to 14.3, 14.8, 15.17 to 15.18
56	BNM-Non-qualifying retail less stable deposits	Runoffs on the Non-qualifying less stable portion of qualifying term deposits from customers treated as retail.	The run-off rates on the Non-qualifying less stable portion of qualifying term deposits from retail customers and SMEs who are treated like retail customers for LCR are pre-defined as part of this assumption. This assumption applies a 10% run-off on the less stable portion of retail deposits.	Paragraphs 14.1 to 14.2, 14.7, 14.8, 15.17 to 15.18
57	BNM-Qualifying retail deposits	Runoffs on the qualifying portion of qualifying term deposits from customers treated as retail.	The run-off rates on the qualifying portion of qualifying term deposits from retail customers and SMEs who are treated like retail customers for LCR are pre-defined as part of this assumption. This assumption applies a 0% run-off on these balances.	Paragraph 14.8, 15.17 to 15.18

58	BNM-Secured funding outflows from other entities	Outflows on security lending from entities other than corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB	The outflow rates on secured funding, excluding collateral swaps from entities other than the central bank, sovereign, local government, PSE, state enterprise, MDB, are pre-defined as part of this assumption. This assumption applies the regulatory run-off rates applicable to each counterparty type on the market value of received collateral.	Paragraphs 16.1 to 16.3
59	BNM-Secured balance outflows from other entities	Outflows on repurchase agreements and secured lending from entities other than corporates, SMEs, sovereign, the central bank, local government, state enterprise or MDB.	The outflow rates on the repurchase agreement and security lending from entities other than the central bank, sovereign, local government, PSE, state enterprise, MDB, are pre-defined as part of this assumption. This assumption applies the regulatory run-off rates applicable to each counterparty type on a secured balance.	Paragraphs 16.1 to 16.3
60	BNM-Drawdowns on Committed Funding Facilities	Drawdowns on committed facilities received by the bank.	The inflow rate on the undrawn amount available to be drawn down, on the committed credit and liquidity facilities received by the bank, is pre-defined as part of this assumption. This assumption applies a 0% inflow rate on the credit and liquidity lines received by the bank.	Paragraph 21.1
61	BNM-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 pre-defined as part of this assumption. This assumption applies a 100% run-off on structured financing instruments that mature within the LCR horizon.	Paragraph 18.1

62	BNM-Increased Liquidity Needs Due to 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 pre-defined 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 17.10
63	BNM-Other Contingent Funding Obligations with DS issued	Outflows related to debt securities issued by the bank having maturity greater than 30 days.	The run-off rate on the debt securities issued where the bank is the dealer or market maker, with remaining maturity greater than 30 days are pre-defined as part of this assumption. This assumption applies a 10% run-off on the market value of the debt security.	Paragraph 21.1
64	BNM - Contractual Dividend Payment Outflows	Outflows related to contractual payments of dividends.	The outflow rate on the dividends payable within the LCR horizon is pre-defined as part of this assumption. This assumption applies a 100% outflow on dividends payable.	Paragraph 20.2
65	BNM-Secured funding outflows based on secured cash flow	Outflows on annuity contracts, borrowings and deposits from the central bank, sovereign, local government, PSE, state enterprise, and MDB.	The outflow rates on secured funding, excluding repos, security lending transactions, derivatives, issued securities and credit/liquidity facilities, received from the central bank, sovereign, local government, PSE, state enterprise, MDB, are pre-defined as part of this assumption. This assumption applies the regulatory run-off rates applicable to each counterparty type in the form of rollover rates that is 1 – run-off rates on secured cash flows.	Paragraphs 16.1 to 16.3

66	BNM- Secured cash flow from other entities	Outflows on annuity contracts, borrowings and deposits from entities other than the central bank, SMEs, corporates, sovereign, local government, PSE, state enterprise, and MDB.	The outflow rates on the annuity contracts, borrowings from entities other than the central bank, sovereign, local government, PSE, state enterprise, MDB, are pre-defined 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 on secured cash flows.	Paragraphs 16.1 to 16.3
71	BNM-Funds Fully Invested in Liquid Assets	Outflows on the total value of the funds which are fully invested in liquid assets	The outflow rate on the total value of the fund which is fully invested in liquid assets is pre-defined as part of this assumption. This assumption applies a 10% run-off on these balances	Paragraph 27.7
72	BNM-Funds Not Fully Invested In Liquid Assets-Based on Party	Outflows on funding provided by the corporate, sovereign, central bank, MDB and PSE, retail, unsecured wholesale counterparties for UA funds that are not fully invested in liquid assets	The outflow rate on the value of the fund received from the retail, central bank, corporates, SMEs, sovereign, PSE, and MDB, where the fund is not fully invested in liquid assets are pre-defined as part of this assumption. This assumption applies a 10% run-off on the outflows from retail and SME's treated as retail and customers and 40% for all other customers.	Paragraph 27.7
73	BNM-Funds Not Fully Invested In Liquid Assets-Others	Outflows on funding provided by parties other than the corporate, sovereign, central bank, MDB and PSE, retail, unsecured wholesale counterparties for UA funds that are not fully invested in liquid assets	The outflow rate on the value of the fund received from customers other than retail, the central bank, corporates, SMEs, sovereign, PSE, and MDB, where the fund is not fully invested in liquid assets are pre-defined as part of this assumption. This assumption applies a 100% run-off on these balances.	Paragraph 27.7
Inflows				

1	BNM-Revolving, Non-Maturity and Non-Performing Inflow Excl	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 is pre-defined as part of this assumption. This assumption applies a 100% rollover on the inflows from such assets. The inflow rate on the deposits, held by the bank at other institutions for operational purposes, are also pre-defined as part of this assumption. It applies a 0% inflow on such operational deposits.	Paragraphs 22.3, 22.4, 26.2
2	BNM - Open Maturity Loans-retail and wholesale parties	Inflows due to minimum payments received within the LCR horizon on open maturity loans with retail counterparties	The inflow rate on the minimum payments of principal, interest, and fee, that are contractually due within the LCR horizon, on an open maturity loan with retail counterparties and SMEs that are treated as wholesale, is pre-defined as part of this assumption. This assumption applies a 50% inflow on such minimum payments from retail counterparties and non-financial wholesale counterparties. it also applies a 100% inflow on such minimum payments from financial wholesale counterparties	Paragraph 22.4
3	BNM - Other Deposit Inflows	Inflows from deposits placed with the central bank or with other banks that are not included as a level 1 asset in the stock of HQLA.	The inflow rate on the deposits held with central banks and other financial institutions maturing within the LCR horizon is pre-defined as part of this assumption. This assumption applies a 100% inflow on interest in the form of a 0% rollover rate.	Paragraph 26.1
4	BNM - Secured Lending - Repo and Security Borrowings	Inflows from secured lending transactions excluding collateral swaps.	The inflow rates on the secured lending, excluding collateral swaps, are pre-defined as part of this assumption. This assumption applies the regulatory inflows to secured lending transactions based on the asset level of the collateral received.	Paragraphs 23.1 to 23.2

5	BNM-Other Inflows from Retail and SME	Other inflows from fully performing loans, which have a specified maturity and are extended to retail customers and SMEs treated as retail.	The inflow rate on the fully performing loans with a stated maturity, extended to retail customers and SMEs who are treated like retail customers for LCR, is pre-defined as part of this assumption. This assumption applies a 50% rollover that is 50% inflow on performing retail loans.	Paragraph 22.2
6	BNM - Other Inflows from WSME, NFC, Sov, CB, MDB and PSE	Other inflows from fully performing loans, which have a specified maturity and are extended to small and medium enterprises treated as wholesale (WSME), non-financial corporate (NFC), sovereigns (Sov), central banks (CB), multilateral development banks (MDB) and public sector enterprises (PSE).	The inflow rate on the fully performing loans with a stated maturity, extended to wholesale SMEs, non-financial corporates, sovereigns, central banks, multilateral development banks, and public sector enterprises is pre-defined as part of this assumption. This assumption applies a 0% rollover that is 100% inflow on performing loans from central banks and a 50% rollover that is 50% inflow on those from other non-financial counterparties specified earlier.	Paragraph 22.2
7	BNM - Secured Lending - Collateral Swaps	Inflows from collateral swap transactions.	The inflow rates on collateral swaps are pre-defined 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 a higher quality than the collateral received, as the difference between the liquidity haircuts applicable to the placed and received collateral.	Paragraphs 23.1 to 23.2
8	BNM-Derivative cash inflows	Net cash inflows from derivative transactions.	The inflow rate on the 30-day cash inflows from derivative transactions is pre-defined 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 24

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. 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:

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 LRRCBNM 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 pre-defined business assumptions for ASF and RSF as defined in the NSFR guidelines are prepackaged in the application. For the complete list of pre-seeded ASF and RSF, assumptions , see the Regulation Addressed through Business Assumptions section.

Topics:

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 BNM NSFR band is pre-defined 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 to 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 meeting the minimum requirement of NSFR.

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

$$\textit{Available Amount of Stable Funding} = \sum_{i=1}^{n} \textbf{Carrying value of capital or liability instrument}_i * \textit{Factor}_i$$

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

The following is an example of applying the ASF factor:

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

Table 16: Illustration – Application of ASF Factor

Dimensional Combination			ASF Factor
Product	Retail/Wholesale Indicator	Residual Maturity Band	
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 is as follows.

Table 17: Illustration continued– Application of ASF Factor

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

LRRCBNM 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, the LRRCBNM application 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 as 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. following formula is used for calculating the Required Amount of Stable Funding:

$$\textit{Required Amount of Stable Funding} = \left(\sum_{i=1}^{n} \text{Carrying value of asset}_i * \textit{Factor}_i\right) + \left(\sum_{i=1}^{m} \textit{Off Balance Sheet}_i * \textit{Factor}_i\right)$$

$$\textit{where } n = \textit{Number of asset accounts}$$

$$\textit{where } m = \textit{Number of off balance sheet accounts}$$

4.2.3.1 Computing 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 the lines of credit have a pre-defined RSF factor as guided and are available as pre-seeded assumptions. Other off-balance sheet products such as Variable Rate Demand Notes (VRDN) and Adjustable Rate Notes (ARN) do not have pre-defined 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 described 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 BNM Regulatory NSFR Scenarios

OFS LRRCBNM supports out-of-the-box BNM NSFR assumptions according to BNM guidelines on the Net stable funding ratio.

This section explains the business assumptions which support NSFR as per BNM master circular BNM/RH/ED 029-3: Regulations on the Net Stable Funding Ratio (NSFR), September 2017.

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

Table 18: Document Identifiers for Regulatory References in NSFR

Regulation Reference Number	Document Number	Document Name	Issued Date
MC	BNM/RH/ED 029-3	Regulations on the Net Stable Funding Ratio (NSFR)	27 Sept 17
BNM FAQ		Deposit Insurance Handbook	

> **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 pre-seeded assumptions acting on liabilities and capital items which receive an ASF factor.

Table 19: Preconfigured ASF Assumptions BNM NSFR

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference BNM/RH/PD 029-13
1	BNM- ASF-Capital items, DTL and minority interest	Tier 1 and 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.	Paragraphs 8.9, 8.12(c), 8.13(a), 8.14(a), 8.15
2	BNM-ASF-Stable retail deposits	ASF- Stable and highly stable deposits as defined in the LCR from customers treated as retail.	The ASF factors applicable to the stable portion of deposits, from retail customers and SMEs treated like retail customers for LCR are pre-defined as part of this assumption. This assumption applies a 95% ASF factor on the stable portion of the retail deposits and a 100% ASF factor on the stable portion of retail deposits with a remaining maturity of 1 year or more.	Paragraphs 8.9, 8.10
3	BNM-ASF-Stable retail deposits-Cash flow basis	ASF- Stable and highly stable deposits as defined in the LCR from customers treated as retail with a remaining maturity of more than 1 year and cash flow maturity of within 1 year and greater than 1 year.	The ASF factors applicable to the stable portion of deposits, from retail customers and SMEs treated like retail customers for LCR, with a remaining maturity of more than 1 year with cash flow maturities within 1 year and greater than 1 year, are pre-defined as part of this assumption. This assumption applies a 95% ASF factor on the stable portion of cash flows with cash flow maturity within 1 year and a 100% ASF factor on the stable portion of cash flows with cash flow maturity of 1 year or more.	Paragraphs 8.9, 8.10
4	BNM-ASF-Less stable retail deposits	ASF- Less stable deposits as defined in the LCR from customers treated as retail.	The ASF factors applicable to the less stable portion of deposits, from retail customers and SMEs treated like retail customers for LCR, are pre-defined as part of this assumption. This assumption applies a 90% ASF factor on the stable portion of retail deposits with a remaining maturity of less than 1 year and a 100% ASF factor on the stable portion of retail deposits with a remaining maturity of 1 year or more.	Paragraphs 8.9, 8.11(a)
5	BNM-ASF-Less stable retail deposits-Cash flow basis	ASF- Less stable deposits as defined in the LCR from customers treated as retail with a remaining maturity of more than 1 yr and cash flow maturity of less than 1 year and 1 year or more.	The ASF factors applicable to the less stable portion of deposits from retail customers and SMEs treated like retail customers for LCR, with a remaining maturity of more than 1 year with cash flow maturity within 1 year and greater than 1 year, are pre-defined as part of this assumption. This assumption applies a 90% ASF factor on the stable portion of cash flows with cash flow maturity of less than 1 year and a 100% ASF factor on the stable portion of cash flows with cash flow maturity of 1 year or more.	Paragraphs 8.9, 8.11(a)

6	BNM-ASF-Other funds from retail	Other funding from customers treated as retail.	The ASF factors applicable to the funding other than deposits, from customers who are treated as retail for LCR, are pre-defined as part of this assumption. This assumption applies a 0% ASF factor on the funding with a remaining maturity of less than 6 months and 50% on the funding with a remaining maturity between 6 months to 1 year and 100% on the funding with a remaining maturity of 1 year or more.	Paragraphs 8.9, 8.11(b)
7	BNM-ASF-Other funds from retail with mat more than 1yr	Other funding from customers treated as retail with an account residual maturity of more than 1 year	The ASF factors applicable to the funding other than deposits, from customers who are treated as retail for LCR, with a remaining maturity of more than 1 year with cash flow maturity within 1 year and greater than 1 year, are pre-defined as part of this assumption. This assumption applies a 0% ASF factor on cash flows with maturity less than 6 months and a 50% to cash flows with maturity between 6 months to 1 year and a 100% ASF factor on cash flows with the maturity of 1 year or more.	Paragraphs 8.9, 8.11(b)
8	BNM- ASF - Op dep with mat less than 1 yr	BNM ASF on the operational portion of operational deposits, generated by clearing, custody, and cash management activities, with a remaining maturity of less than 1 year.	The ASF factor applicable to the balance held in operational accounts to fulfill operational requirements is pre-defined as part of this assumption. This assumption applies a 50% ASF factor on the operational balances with a remaining maturity of less than 1 year.	Paragraphs 8.9, 8.12(c), 8.13(a)
9	BNM-ASF-Non op portion of op dep from SME with mat 1 yr	BNM ASF on the non-operational portion for operational accounts from SMEs AoP, Trusts, partnerships, and HUFs not treated as retail, with remaining maturity less than 1 year.	The ASF factor on the non-operational portion of operational accounts, from small and medium enterprises, an association of persons, trusts, partnerships and Hindu undivided families not treated as retail, with a remaining maturity of less than 1 year are pre-defined as part of this assumption. This assumption applies a 0% ASF factor on non-operational balances of operational accounts with a remaining maturity of less than 1 year.	Paragraphs 8.9, 8.12(c), 8.13(a)
10	BNM-ASF-Non op dep from SME	BNM ASF on non-operational wholesale funding, from SMEs AoP, Trusts, partnerships and HUFs not treated as retail.	The ASF factor on non-operational wholesale funding, from small and medium enterprises, association of persons, trusts, partnerships and Hindu undivided families not treated as retail, are pre-defined as part of this assumption. This assumption applies a 0% ASF factor on non-operational funding with a remaining maturity of less than 6 months and a 50% ASF factor on non-operational funding with a remaining maturity between 6 months to 1 year and 100% ASF factor on non-operational funding with a remaining maturity of 1 year or more	Paragraphs 8.9, 8.12(c), 8.13(a)

11	BNM-ASF-Non op dep from SME - Cash flow basis	BNM ASF on non-operational wholesale funding, from SMEs AoP, Trusts, partnerships, and HUFs not treated as retail, with remaining maturity greater than 1 year and where the cash flow maturity is within 1 year and greater than 1 year	The ASF factor applicable to non-operational cash flows, from SMEs AoP, Trusts, partnerships, and HUFs not treated as retail, with a remaining maturity of greater than 1 year with cash flow maturity within 1 year and greater than 1 year, are pre-defined as part of this assumption. This assumption applies a 0% ASF factor on non-operational cash flows with cash flow maturity of less than 6 months and a 50% ASF factor on non-operational cash flows with a remaining maturity between 6 months to 1 year and a 100% ASF factor on non-operational cash flows with cash flow maturity of 1 year or more.	Paragraphs 8.9, 8.12(c), 8.13(a)
12	BNM-ASF-Non op portion of op dep-CB with mat less than 1 yr	BNM ASF on the non-operational portion of operational deposits, from Central banks, PSE, MDB, NDB, generated by clearing, custody, and cash management activities, with a remaining maturity of less than 1 year.	The ASF factor applicable to the non-operational portion of operational accounts from central banks, public sector entity (PSE), multilateral development bank (MDB), national development bank (NDB), with a remaining maturity of less than 1 year, are pre-defined as part of this assumption. This assumption applies a 0% ASF factor on a non-operational portion of operational accounts from central banks with a remaining maturity of less than 1 year and a 50% ASF factor on a non-operational portion of operational accounts from central banks, PSE, MDB, and NDB with a remaining maturity of less than 1 year.	Paragraphs 8.9, 8.12(a), 8.12(b), 8.12(c), 8.13(a)
13	BNM-ASF-Non op funds from CB PSE MDB NDB - Cash Flow Basis	BNM ASF on non-operational funding, from central banks, PSE, MDB, NDB, with remaining maturity greater than 1 year and where the cash flows are maturing within 1 year and greater than 1 year.	The ASF factor applicable to non-operational cash flows from central banks, PSE, MDB, NDB, with a remaining maturity of greater than 1 year with cash flow maturity within 1 year and greater than 1 year, are pre-defined as part of this assumption. This assumption applies a 0% ASF factor on non-operational cash flows from central banks with cash flow maturity of less than 6 months, a 50% ASF factor for cash flow maturity between 6 months to 1 year, a 50% ASF factor on non-operational cash flows from PSE, MDB, and NDB with cash flow maturity of less than 1 year and a 100% ASF factor on non-operational cash flows from PSE, MDB, and NDB with cash flow maturity of 1 year or more.	Paragraphs 8.9, 8.12(a), 8.12(b), 8.12(c), 8.13(a)
14	BNM-ASF-Non op funds from CB PSE MDB NDB	BNM ASF on non-operational funding, from Central banks, financial institutions (banks) PSE, MDB, NDB.	The ASF factor on non-operational funding from central banks, PSE, MDB, NDB, are pre-defined as part of this assumption. This assumption applies a 0% ASF factor on non-operational funding from central banks with a remaining maturity of less than 6 months, a 50% ASF factor for non-operational funding from PSE, MDB, and NDB between 6 months to 1 year and 100% ASF factor on non-operational funding from PSE, MDB, and NDB with a remaining maturity of 1 year or more.	Paragraphs 8.9, 8.12(a), 8.12(b), 8.12(c), 8.13(a)

15	BNM-ASF-Non op portion of op dep-corp with mat less than 1yr	BNM ASF on the non-operational portion of operational deposits, from financial and non-financial corporates, generated by clearing, custody, and cash management activities, with a remaining maturity of less than 1 year.	The ASF factor applicable to the non-operational portion of operational accounts from financial and non-financial corporates, with a remaining maturity of less than 1 year, are pre-defined as part of this assumption. This assumption applies a 0% ASF factor on a non-operational portion of operational accounts from financial corporates with a remaining maturity of less than 1 year and a 50% ASF factor on a non-operational portion of operational accounts from non-financial corporates with a remaining maturity of less than 1 year.	Paragraphs 8.9, 8.12(a), 8.12(b), 8.12(c), 8.13(a)
16	BNM-ASF-Non op funds from Corp - Cash flow basis	BNM ASF on non-operational funding, from financial and non-financial corporates, with remaining maturity greater than 1 year and where the cash flows are occurring within 1 year and greater than 1 year.	The ASF factor applicable to non-operational cash flows from financial and non-financial corporates, with a remaining maturity of greater than 1 year with cash flow maturity within 1 year and greater than 1 year, are pre-defined as part of this assumption. This assumption applies a 50% ASF factor on non-operational cash flows from non-financial corporates with cash flow maturity of less than 6 months and between 6 months to 1 year. The assumptions apply a 0% ASF factor on non-operational cash flows from financial corporates with cash flow maturity of less than 6 months and a 50% ASF factor on non-operational cash flows from financial corporates with cash flow maturity between 6 months to 1 year and a 100% ASF factor on non-operational cash flows from financial corporates with cash flow maturity of 1 year or more.	Paragraphs 8.9, 8.12(a), 8.12(b), 8.12(c), 8.13(a)
17	BNM-ASF-Non op funds from Corp	BNM ASF on non-operational funding, from financial and non-financial corporates.	The ASF factor on non-operational funding from financial and non-financial corporates are pre-defined as part of this assumption. This assumption applies a 0% ASF factor on non-operational funding from financial corporates with a remaining maturity of less than 6 months and a 50% ASF factor for non-operational funding from financial corporates with a remaining maturity between 6 months to 1 year. The assumptions also apply a 50% ASF factor on non-operational funding from non-financial corporates with a remaining maturity of less than 6 months, between 6 months to 1 year and a 50% ASF factor on non-operational funding from non-financial corporates with a remaining maturity of 1 year or more.	Paragraphs 8.9, 8.12(a), 8.12(b), 8.12(c), 8.13(a)

18	BNM-ASF-Non op of op dep oth party with mat less than 1 yr	BNM ASF on the non-operational portion of operational deposits, from all except retail, SME, AoP, Trusts, partnerships, HUF, corporates, banks, central banks, sovereign, PSE, MDB and NDB, generated by clearing, custody, and cash management activities, with a remaining maturity of less than 1 year.	The ASF factor applicable to the non-operational portion of operational accounts from all except retail, SME, AoP, Trusts, partnerships, HUF, corporates, banks, central banks, sovereign, PSE, MDB, and NDB, with remaining maturity less than 1 year, are pre-defined as part of this assumption. This assumption applies a 0% ASF factor on the non-operational portion of operational accounts from all except retail, SME, AoP, Trusts, partnerships, HUF, corporates, banks, central banks, and sovereign, PSE, MDB and NDB with a remaining maturity of less than 1 year.	Paragraphs 8.9, 8.12(a), 8.12(b), 8.12(c), 8.13(a)
19	BNM-ASF-Non op funds other parties	BNM ASF on non-operational funding, from all except retail, SME, AoP, Trusts, partnerships, HUF, corporates, banks, central banks, sovereign, PSE, MDB, and NDB.	The ASF factor applicable to non-operational funding, from all except retail, SME, AoP, Trusts, partnerships, HUF, corporates, banks, central banks, sovereign, PSE, MDB, and NDB, with remaining maturity less than 1 year are pre-defined as part of this assumption. This assumption applies a 0% ASF factor and a 50% ASF factor on non-operational funding from all except retail, SME, AoP, Trusts, partnerships, HUF, corporates, banks, central banks, sovereign, PSE, MDB and NDB with a remaining maturity of less than 6 months and between 6 months to 1 year respectively. It applies a 100% ASF factor on non-operational funding from all except retail, SME, AoP, Trusts, partnerships, HUF, corporates, banks, central banks, sovereign, PSE, MDB and NDB with a remaining maturity of 1 year or more.	Paragraphs 8.9, 8.12(a), 8.12(b), 8.12(c), 8.13(a)
20	BNM-ASF-Non op funds other parties - Cash flow basis	BNM ASF on non-operational funding, from all except retail, SME, AoP, Trusts, partnerships, HUF, corporates, banks, central banks, sovereign, PSE, MDB, and NDB, with remaining maturity greater than 1 year and where the cash flows are occurring within 1 year and greater than 1 year.	The ASF factor applicable to non-operational cash flows, from all except retail, SME, AoP, Trusts, partnerships, HUF, corporates, banks, central banks, sovereign, PSE, MDB, and NDB, with remaining maturity greater than 1 year with cash flow maturity within 1 year and greater than 1 year, are pre-defined as part of this assumption. This assumption applies a 0% ASF factor and 50% ASF factor on non-operational cash flows from all except retail, SME, AoP, Trusts, partnerships, HUF, corporates, banks, central banks, sovereign, PSE, MDB and NDB with cash flow maturity of less than 6 months and between 6 months to 1 year respectively. It applies a 100 % ASF factor on non-operational cash flows from all except retail, SME, AoP, Trusts, partnerships, HUF, corporates, banks, central banks, sovereign, PSE, MDB and NDB with cash flow maturity of 1 year or more.	Paragraphs 8.9, 8.12(a), 8.12(b), 8.12(c), 8.13(a)

21	BNM-ASF-Trade date payables	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 pre-defined in this assumption. This assumption applies a 0% ASF factor on the trade payable cash flows.	Paragraph 8.13(d)
22	BNM-ASF-Liabilities with open maturity	[BNM] : Secured deposits and all other borrowings and which do not have a stated maturity.	The ASF factor applicable to all the other funding without any stated maturity is pre-defined in this assumption. This assumption applies a 0% ASF factor on all the fundings without any maturity.	Paragraphs 8.13 (a), 8.13 (b)
23	BNM- ASF-Borr and Liabilities with maturities beyond 1 year (Catch all for cash flows beyond 1 year)	Borrowings and liabilities with residual maturities and cash flows falling beyond 1 year.	The ASF factors applicable to all other funding are with a remaining maturity of greater than 1 year with cash flow maturity within 1 year, are pre-defined in this assumption. This assumption applies a 0% ASF factor on the cash flows.	Paragraph 8.9

4.3.1.2 Required Stable Funding Factor

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

Table 20 Preconfigured RSF Assumptions BNM NSFR

Serial No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference : BNM/RH/ED 029-3
1	BNM-RSF-Coins and banknotes	Coins, banknotes, cash and restricted cash held by the bank.	The RSF factor applicable to coins, banknotes, and cash held by the bank, is pre-defined as a part of this assumption. This assumption applies a 0% RSF factor on the coins, banknotes, and cash held by the bank.	Paragraph S 9.11.a
2	BNM-RSF-Central Bank Reserves	All central bank reserves, including, required reserves and excess reserves.	The RSF factors applicable to required and excess central bank reserves are pre-defined as a part of this assumption. This assumption applies a 0% RSF factor to all central bank reserves.	Paragraph S 9.11.b
3	BNM-RSF-Unencumbered Claims on Central Banks	Unencumbered loans and other claims on central banks	The RSF factors applicable to fully performing unencumbered loans and claims on central banks, with a remaining maturity of less than 1 year, are pre-defined as part of this assumption. This assumption applies 0%, 50% and 100% RSF factors to the loans and claims on central banks with a remaining maturity of less than 6 months, between 6 months and 1 year, and 1 year or more respectively.	Paragraphs S.9.11.c S.9.15.e S.9.18.c
4	BNM-RSF-Encumbered Claims on Central Banks	Encumbered loans and other claims on central banks	The RSF factors applicable to fully performing encumbered loans and claims on central banks, maturing within a year and encumbrance period 1 year or more, are pre-defined as part of this assumption. For the qualifying assets with an encumbrance period of fewer 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 1 year or more.	Paragraphs S.9.11.c S.9.15.e S.9.18.c

5	BNM-RSF-Unenc loans to fin insti sec by level 1 asset	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 given to financial institutions secured by a level 1 asset, with residual maturity less than 1 year, are pre-defined 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 S.9.13 S.9.14.d S.9.15.e S.9.18.c
6	BNM-RSF-Encum loans to fin insti sec by level 1 asset	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 encumbered loans given to financial institutions secured by a level 1 asset, with residual maturity less than 1 year, are pre-defined as a part of this assumption. The assumption applies relevant RSF factors on the encumbered secured loans based on the encumbrance period and residual maturity. The Level 1 asset received as collateral can further be re-hypothecated to raise funds.	Paragraphs S.9.13 S.9.14.d S.9.15.e S.9.18.c
7	BNM-RSF-Unenc loans to fin insti sec by assets of oth lvls	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 pre-defined 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 S.9.13 S.9.14.d S.9.15.e S.9.18.c

8	BNM-RSF-Encum loans to fin insti sec by assets of oth lvls	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, with residual maturity less than 1 year, are pre-defined 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.	Paragraphs S.9.13 S.9.14.d S.9.15.e S.9.18.c
9	BNM-RSF-Unenc unsec loans to financial institutions	Unencumbered unsecured loans excluding overdrafts to financial institutions.	The RSF factors applicable to the unencumbered unsecured loans given to financial institutions, with residual maturity less than 1 year, are pre-defined 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 S.9.13 S.9.14.d S.9.15.e S.9.18.c
10	BNM -RSF- Enc unsecured loans to financial institutions	Encumbered unsecured loans to financial institutions.	The RSF factors applicable to the encumbered unsecured loans given to financial institutions, with residual maturity less than 1 year, are pre-defined 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 S.9.13 S.9.14.d S.9.15.e S.9.18.c
11	BNM-RSF-Unenc loans to others, mat less than 1yr	Unencumbered loans with residual maturity less than a year to other counterparties that is Non-financial corporates, retail and small business customers, sovereigns, Public sector enterprises, and sovereigns.	The RSF factors applicable to fully performing unencumbered loans to non-financial corporates, retail and small business customers, sovereigns, Public sector enterprises, and sovereigns, with a remaining maturity of less than 1 year, are per defined as part of this assumption. This assumption applies 50% RSF factors on the loans to non-financial corporates, retail and small business customers, sovereigns, Public sector enterprises and sovereigns with a remaining maturity of less than 1 year.	Paragraphs S.9.16.b S.9.17.c

12	BNM-RSF-Enc loans to others, mat less than 1yr	Encumbered loans with residual maturity less than a year to other counterparties that is Non-financial corporates, retail and small business customers, sovereigns, Public sector enterprises, and sovereigns.	The RSF factors applicable to fully performing encumbered loans to non-financial corporates, retail and small business customers, sovereigns, Public sector enterprises, and sovereigns, with a remaining maturity of less than 1 year, are per defined as part of this assumption. This assumption applies 50% RSF factors on the encumbered loans to non-financial corporates, retail and small business customers, sovereigns, Public sector enterprises and sovereigns with a remaining maturity of less than 1 year.	Paragraphs S.9.16.b S.9.17.c
13	BNM-RSF-Unenc loans to others, mat more than 1 yr	Unencumbered loans with residual maturity more than a year to other counterparties that is Non-financial corporates, retail and small business customers, sovereigns, Public sector enterprises, and sovereigns.	The RSF factors applicable to fully performing unencumbered loans to non-financial corporates, retail and small business customers, sovereigns, Public sector enterprises, and sovereigns, with a remaining maturity of more than 1 year with standardized risk weights under Basel 2 approach, are per defined as part of this assumption. This assumption applies a 65 % RSF factors on the loans to non-financial corporates, retail and small business customers, sovereigns, Public sector enterprises and sovereigns with a remaining maturity of more than 1 year and risk weight more than or equal to 35%. It applies an RSF factor of 85% on the loans to non-financial corporates, retail and small business customers, sovereigns, Public sector enterprises and sovereigns with a remaining maturity of more than 1 year and risk weight greater than 35%.	Paragraphs S.9.16.b S.9.17.c
14	BNM-RSF-Enc Loans to others, mat more than 1yr	Encumbered loans with residual maturity more than a year to other counterparties that is Non-financial corporates, retail and small business customers, sovereigns, Public sector enterprises, and sovereigns.	The RSF factors applicable to fully performing encumbered loans to non-financial corporates, retail and small business customers, sovereigns, Public sector enterprises, and sovereigns, with a remaining maturity of more than 1 year with standardized risk weights under Basel 2 approach, are per defined as part of this assumption. This assumption applies relevant RSF factors on the encumbered loans based on the residual maturity, encumbrance period and the risk weight associated with the loan.	Paragraphs S.9.16.b S.9.17.c

15	BNM-RSF-Unenc non HQLA assets	Unencumbered securities, with maturity less than 1 year, which do not qualify as High quality liquid assets under the 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 pre-defined 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 S.9.15.g, S.9.17.d
16	BNM-RSF-Unenc non-HQLA securities mat greater than 1yr	Unencumbered securities, with a maturity greater than 1 year which do not qualify as HQLA under the LCR Rule	The RSF factors applicable to 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, are pre-defined 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 S.9.15.g, S.9.17.d
17	BNM-RSF-Enc non HQLA assets	The encumbered portion of securities, with maturity less than 1 year which do not qualify as High quality liquid assets under the 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 pre-defined as part of this assumption. The assumption applies a 50% RSF factor on the encumbered portion of the securities, with a remaining maturity of less than 1 year, encumbrance period of less than 1 year and which do not qualify as High quality liquid assets under the LCR Rule. It applies a 100% RSF factor on the encumbered portion of the securities, with a remaining maturity of less than 1 year, encumbrance period of 1 year or more and which do not qualify as High quality liquid assets under the LCR Rule.	Paragraphs S.9.15.g, S.9.17.d

18	BNM-RSF-Enc non HQLA assets mat greater than 1yr	The encumbered portion of securities, with a maturity greater than 1 year which does not qualify as HQLA under the LCR Rule	The RSF factors applicable to the encumbered portion of the securities, with a remaining maturity of more than 1 year and which do not qualify as High quality liquid assets under the LCR Rule, are pre-defined as part of this assumption. The assumption applies an 85% RSF factor on the encumbered portion of the securities, with a remaining maturity of 1 year or more, encumbrance period of less than 1 year and which do not qualify as High quality liquid assets under the LCR Rule. It applies a 100% RSF factor on an encumbered portion of the securities, with a remaining maturity of 1 year or more, encumbrance period of 1 year or more and which do not qualify as High quality liquid assets under the LCR Rule.	Paragraphs S.9.15.g, S.9.17.d
19	BNM-RSF-Unencumbered level 1 assets	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 pre-defined as a part of this assumption. The assumption applies a 5% RSF factor on the unencumbered Level 1 assets.	Paragraphs S.9.12
20	BNM-RSF-Unencumbered level 2A assets	Unencumbered assets that qualify for inclusion in Level 2A and 2B 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 pre-defined as a part of this assumption. The assumption applies a 15% RSF factor on the unencumbered Level 2A assets and an RSF factor of 50% on the unencumbered Level 2B assets.	
21	BNM-RSF-Encumbered level 1 assets	The encumbered portion of assets which 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 pre-defined as a part of this assumption. The assumption applies 50% and 100% RSF factors on the encumbered portion of Level 1 assets, with encumbrance period of less than 1-year and1 year or more respectively.	Paragraphs S.9.12

22	BNM-RSF-Encumbered level 2A assets	Encumbered level 2 assets	The RSF factors applicable to the encumbered portion of assets, which qualify for inclusion in Level 2A, and 2B of High-quality liquid assets as defined in the LCR, are pre-defined 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 and1 year or more respectively. It applies 50% and 100% RSF factors on the encumbered portion of Level 2B assets, with encumbrance period of less than 1-year and1 year or more respectively.	
23	BNM-RSF-Unenc Operational bal with other banks	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, with a remaining maturity of less than 1 year, are pre-defined 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 and1 year or more respectively.	S.9.14.c S.9.15.d S.9.15.f
24	BNM-RSF-Unenc Non-Op balances with other banks	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 to fulfill the operational requirements, with a remaining maturity of less than 1 year, are pre-defined 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 and1 year or more respectively.	S.9.14.c S.9.15.d S.9.15.f

25	BNM-RSF-Unencumbered Residential Mortgage Loans	Unencumbered residential mortgage loans which would qualify for a) 35% or lesser risk weight and b) higher than 35% risk weight as per Capital Adequacy framework and Capital Adequacy Framework for Islamic banks	The RSF factors applicable to unencumbered residential mortgage loans, with standardized risk weights under Basel 2 approach, are per 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 and1 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 and1 year or more respectively, with risk weights greater than 35%.	Paragraphs S.9.16.a S.9.17.c
26	BNM-RSF-Encumbered Residential Mortgage loans	Encumbered residential mortgage loans which would qualify for a) 35% or lesser risk weight and b) higher than 35% risk weight as per Capital Adequacy framework and Capital Adequacy Framework for Islamic banks	The RSF factors applicable to fully performing encumbered residential mortgage loans, with standardized risk weights under Basel 2 approach, are per defined as part of this assumption. This assumption applies RSF factors of 50% and 65 % on the encumbered residential mortgage loans, with a remaining maturity of less than 1 year and greater than equal to 1 year respectively, encumbrance period is less than 1 year, and risk weight is less than or equal to 35%. It applies an RSF factor of 100% on the encumbered residential mortgage loans with a remaining maturity of more than 1 year, encumbrance period of more than 1 year and risk weight is more than 35%.	Paragraphs S.9.16.a S.9.17.c
27	BNM-RSF-Trade date receivables	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 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, are pre-defined as part of this assumption. The assumption applies a 0% RSF factor to the trade receivables, which expected to settle within the settlement cycle.	Paragraphs S.9.17.f
28	BNM-RSF-Undrawn amount from credit lines received	The undrawn portion from credit lines received from the central bank of Malaysia which qualifies as Level 1 HQLA.	The RSF Factor applicable to the undrawn portion of Credit lines, which qualifies for a Level 1 asset is defined in this assumption. The assumption applies a 5% factor.	Paragraphs S.9.12.

29	BNM-RSF-Unenc Level 1 Debt securities	Unencumbered Level 1 qualified debt securities and Sukuk with customers other than Central bank	The RSF Factor applicable to Unencumbered Level 1 qualifying Debt securities and Sukuk, with all counterparties except Central Bank are defined in this assumption. The assumption applies a 5% factor.	Paragraphs S.9.12.
30	BNM-RSF-Enc Level 1 Debt securities	Encumbered Level 1 qualified debt securities and Sukuk with customers other than Central bank	The RSF Factor applicable to Encumbered Level 1 qualifying Debt securities and Sukuk, with all counterparties except Central Bank are defined in this assumption. The assumption applies a factor based on the encumbrance period.	Paragraphs S.9.12, S.9.17.c
31	BNM-RSF-Enc deposits with other banks	Encumbered deposits, held at other financial institutions	The RSF Factor applicable to Encumbered deposits held at financial institutions are defined as a part of this assumption. The assumption applies a factor based on the encumbrance period.	Paragraphs S.9.14.c, S.9.15.d, S.9.15.f
32	BNM-RSF-Unencumbered commodities	Unencumbered physically traded commodities, including gold.	The RSF Factor applicable to unencumbered physically traded commodities is defined as a part of this assumption. The assumption applies an 85% factor.	Paragraphs S.9.17 f
33	BNM-RSF-Encumbered commodities	Encumbered physically traded commodities including gold.	The RSF Factor applicable to encumbered physically traded commodities is defined as a part of this assumption. The assumption applies a factor based on the encumbrance period	Paragraphs S.9.17 f
34	BNM-RSF-Unenc debt securities issued by non-fin corp	Unencumbered debt securities issued by non-financial corporates which are assigned an ECAI rating between A- and A+ and are denominated in Ringgit.	The RSF Factor for Unencumbered debt securities issued by non-financial corporates that are assigned an ECAI rating between A- and A+ and are denominated in Ringgit are defined as a part of this assumption. The assumption applies a 50% Factor.	Paragraphs S.9.15 c
35	BNM-RSF-Enc debt securities issued by non-fin corp	Encumbered debt securities issued by non-financial corporates which are assigned an ECAI rating between A- and A+ and are denominated in Ringgit.	The RSF Factor for Encumbered debt securities issued by non-financial corporates that are assigned an ECAI rating between A- and A+ and are denominated in Ringgit are defined as a part of this assumption. The factor applied is based on the encumbrance period.	Paragraphs S.9.15 c
36	BNM-RSF-Unencumbered common equity shares	Unencumbered common equity shares that are issued by non-financial corporates.	The RSF Factor for unencumbered common equity shares issued by non-financial corporates is defined as a part of this assumption. The factor applied is 50%.	Paragraphs S.9.15 b

37	BNM-RSF-Encumbered common equity shares	Encumbered common equity shares that are issued by non-financial corporates.	The RSF Factor for encumbered common equity shares issued by non-financial corporates is defined as a part of this assumption. The factor applied is based on the encumbrance period.	Paragraphs S.9.15 b

4.3.1.3 Derivatives

This section enlists all the pre-seeded assumptions for NSFR Derivatives.

Table 21: Preconfigured Derivatives Assumptions BNM NSFR

Serial No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference : BNM/RH/ED 029-3
1	BNM-Additional Derivative Liability for RSF	RSF Additional 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 pre-defined as part of this assumption. The assumption applies a 100% RSF factor to the 20% of negative mark-to-mark value for the aforementioned derivative contracts.	Paragraph 9.18(d)
2	BNM-Net NSFR Derivative Liabilities	ASF 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 pre-defined 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 8.13(c), 10.3
3	BNM-Net NSFR Derivative assets	RSF 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 pre-defined 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 9.18(b), 10.7
4	BNM-Margin 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 pre-defined as part of this assumption. The assumption applies an 85% RSF factor to the initial margin posted against the derivative contracts.	9.17(b)

4.3.1.4 Off-Balance Sheet Items

This section enlists all the pre-seeded assumptions for NSFR Off-Balance Sheet items.

Table 22: Preconfigured Off-Balance Sheet Assumptions BNM NSFR

Sl. No.	Assumption Name	Assumption Description	Regulatory Requirement Addressed	Regulatory Reference : BNM/RH/ED 029-3
1	BNM-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 pre-defined 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 9.22
2	BNM-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 pre-defined as part of this assumption. The assumption applies a 0.5% RSF factor to the EOP balance of the trade-related Guarantees and Letters of credit and RSF factor of 1% for non-trade related Guarantees and Letters of credit.	Paragraph 9.22
3	BNM-RSF- Non-contractual obligations type	Non-contractual obligations type such as managed funds and so on	The RSF factor applicable to the non-contractual obligations type such as managed funds is pre-defined as part of this assumption. The assumption applies a 5% RSF factor to the aforesaid non-contractual obligations amount.	Paragraph 9.22
4	BNM-RSF- Non-contractual obligations	Non-contractual obligations type such as Adjustable Rate Notes and Variable Rate Demand Notes (VRDNs).	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 pre-defined as part of this assumption. The assumption applies a 100% RSF factor to the EOP balance for aforesaid non-contractual obligations.	Paragraph 9.22
5	BNM-RSF- Debt Buy Back Requests	Non-contractual obligations type such as requests for debt repurchases.	The RSF factor applicable to the non-contractual obligations for debt repurchase is pre-defined as part of this assumption. The assumption applies a 10% RSF factor to the debt buy-back amount if the bank acts as dealer or market maker and 5% in case the bank is not the market maker or dealer for the debt securities issued or sponsored.	Paragraph 9.22

Undrawn contractual committed facilities are configured as a T2T.

5 Investment Accounts

Investment accounts are a Shariah-compliant source of financing for banks and their customers. The returns on the underlying asset depend on the type of Shariah contract applied to the investment account. The three types of Shariah contracts are:

- Musharakah – Profit and loss sharing
- Mudarabah – Profit sharing and loss bearing
- Wakalah – Customer pays an agency fee based on the profits

The two types of Investment Accounts are Restricted Investment Accounts (RA) and Unrestricted Investment Accounts (UA). The differences between the two are illustrated in the following table:

Table 23: Differences Between Restricted Investment Accounts (RA) and Unrestricted Investment Accounts (UA)

Restricted Investment Accounts (RA)	Unrestricted Investment Accounts (UA)
Specific underlying assets	General underlying assets
Fixed/unfixed tenure and balance	Fixed tenure and balance
Specific withdrawal terms	Flexible withdrawal terms

5.1 Liquidity Coverage Ratio (LCR)

The Liquidity Coverage Ratio ensures that the bank holds sufficient High-Quality Liquid Assets (HQLA). For LCR computations in Investment Accounts, the bank uses only Unrestricted Investment Accounts (UA) as Restricted Investment Accounts (RA) are subject to redemption conditions, the fulfillment of which would significantly mitigate the liquidity risk.

- Calculating LCR
- Calculating NSFR

5.1.1 Calculating LCR

In case of Investment Accounts, if the LCR ratio is lower than the minimum required level, then the deficit amount to the total net cash outflows must be added to the bank's net total cash flow while calculating the LCR at the banking level

Topics:

- Calculating Stock of HQLA
- Calculating Net Cash Outflows
- Regulation Addressed through Business Assumptions
- Calculating UA fully invested in Liquid Assets

5.1.1.1 Calculating Stock of HQLA

The bank must calculate the LCR for each UA fund by including the HQLA specific to that UA fund. These calculations must be done based on the specified haircuts, definitions, and limits. Any asset that is held specifically for investment accounts cannot be included in the LCR calculations for the bank.

All unencumbered assets classified as Level 1, 2A or 2B, which meet the HQLA eligibility criteria, are included in the stock of high-quality liquid assets (SHQLA). The formula for calculating SHQLA is as follows:

$$\begin{aligned} \textbf{\textit{Stock of HQLA}} = {} & \textbf{\textit{Post Haircut Stock of Level 1 Assets}} + \textbf{\textit{Post Haircut Stock of Level 2A Assets}} \\ & + \textbf{\textit{Post Haircut Stock of Level 2B RMBS Assets}} \\ & + \textbf{\textit{Post Haircut Stock of Level 2B Non} - \textit{RMBS Assets I}} + \textbf{\textit{Assets}} \\ & + \textbf{\textit{Post Haircut Stock of Level 2B Non} - \textit{RMBS II Assets}} \\ & - \textbf{\textit{Adjustment due to Cap on Level 2B Assets}} \\ & - \textbf{\textit{Adjustment due to Cap on Level 2 Assets}} \end{aligned}$$

Where,

Adjustment due to Cap on Level 2B Assets: Adjustment for 15% cap

Adjustment due to Cap on Level 2 Assets : Adjustment for 40% cap

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 re-hypothecated.

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

5.1.1.2 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 provided 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 section Regulations Addressed through Business Assumptions are pre-defined and packaged as part of the out-of-the-box 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, held specific for a UA fund.

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 section Regulations Addressed through Business Assumptions are pre-defined and packaged as part of

the out-of-the-box Run to determine the outflows over the liquidity horizon. The business assumption adjusted cash outflows occurring over the liquidity horizon are summed up to obtain the total cash outflow. These include outflows from liabilities, derivatives outflows, outflows due to changes in financial conditions such as ratings downgrade and valuation changes and so on, held specific for a UA fund.

3. **Calculation of Net Cash Outflow**

The total net cash outflows are defined as the total expected cash outflows minus total expected cash inflows for the LCR horizon that is subsequent 30 calendar days. Total expected cash outflows are calculated by multiplying the outstanding balances of various categories or types of liabilities and off-balance sheet commitments by the rates at which they are expected to run off or be drawn down. Total expected cash inflows are calculated by multiplying the outstanding balances of various categories of contractual receivables by the rates at which they are expected to flow in up to an aggregate cap of 75% of total expected cash outflows. This requires that a bank must maintain a minimum amount of stock of HQLA equal to 25% of the total cash outflows.

Net cash outflow is computed as follows:

$$Net\ Cash\ Outflows_{LCR\ Horizon} = Total\ Cash\ Outflows_{LCR\ Horizon} - Minimum\{Total\ Cash\ Inflows_{LCR\ Horizon}; (75\% \times Total\ Cash\ Outflows_{LCR\ Horizon})$$

Banks will not be permitted to double count items, that is if an asset is included as part of the "stock of HQLA" (that is the numerator), the associated cash inflows cannot also be counted as cash inflows (that is part of the denominator). Where there is potential that an item could be counted in multiple outflow categories, (e.g. committed liquidity facilities granted to cover debt maturing within the 30 calendar day period), a bank only has to assume up to the maximum contractual outflow for that product.

NOTE The inflow and outflow rates as prescribed by BNM for computing LCR are pre-defined within the application and ready to be used. Users are also allowed to define bank-specific inflow and outflow rates and apply them to the contractual cash flows to view the stock of HQLA, net cash outflows, and LCR across multiple scenarios.

5.1.1.3 Regulation Addressed through Business Assumptions

The application supports multiple preconfigured rules and scenarios based on BNM specified scenario parameters. The table displays the assumptions for Investment accounts.

Sl. No.	Business Assumption Name	Business Assumption Description	Regulatory Requirement Addressed	Regulatory Reference BNM/RH/PD 029-13
1	BNM-Funds Fully Invested in Liquid Assets	Outflows on the total value of the funds which are fully invested in liquid assets	The outflow rate on the total value of the fund which is fully invested in liquid assets is pre-defined as part of this assumption. This assumption applies a 10% run-off on these balances	Paragraph 27.7
2	BNM-Funds Not Fully Invested In Liquid Assets-Based on Party	Outflows on funding provided by the corporate, sovereign, central bank, MDB and PSE, retail, unsecured wholesale counterparties for UA funds that are not fully invested in liquid assets	The outflow rate on the value of the fund received from the retail, central bank, corporates, SMEs, sovereign, PSE, and MDB, where the fund is not fully invested in liquid assets are pre-defined as part of this assumption. This assumption applies a 10% run-off on the outflows from retail and SME's treated as retail and customers and 40% for all other customers.	Paragraph 27.7

5.1.1.4 Calculation of UA fully invested in Liquid Assets

1. The application identifies the underlying asset of the fund as a quick asset by checking the following conditions.
   - **Eligible HQLA**

     The application captures this information by using the Eligible HQLA flag.
   - **Active Secondary Market**

     The application checks if the UA fund is invested in assets that are traded in secondary markets using the Active Secondary Market flag.
   - **Exchange-Traded Commodities**

     Identifies if the UA fund is invested in exchange-traded commodities
   - **Balances** with banks with residential maturity/callable period within 30 days

     Identifies the deposits with residual maturity within 30 days or if the callable period for the deposit is within 30 days.

     If the underlying asset of the fund meets the above conditions then the application will mark the underlying asset as a quick asset.
2. If the conditions in Step (1) is fulfilled for all the underlying assets of the fund, then the application updates the value of the flag as “Yes” else “No”.

5.1.2 Calculating NSFR

For NSFR calculation, only UA funds are considered. RA funds are excluded from this calculation. For more details on the calculation of NSFR, see Net Stable Funding Ratio Calculation section.

Topics:

- Calculating Available Amount of Stable Funding
- Calculating Required Amount of Stable Funding
- Consolidation

5.1.2.1 Calculation of Available Amount of Stable Funding

For detailed calculations of ASF and the regulation addressed through business rules, refer to Calculation of ASF

5.1.2.2 Calculation of Required Amount of Stable Funding

For detailed calculations of RSF and the regulation addressed through business rules, refer to Calculation of RSF

5.1.2.3 Consolidation

5.1.2.3.1 Legal Entity Consolidation

For the legal entity (LE) consolidation, the application removes all the intercompany transactions and then computes the NSFR for the Bank.

5.1.2.3.2 Legal Entity Consolidation with UA funds

Case 1: Where the UA fund has excess NSFR and the legal entity has a deficit NSFR

1. The application compares the investment mandate of the fund with the RSF attribute of the legal entity. If the assets of the fund are not the same as that held in the bank, then no transfer will occur between the fund and the bank
2. If the above condition is met, then the following conditions must be checked:
3. **Encumbered flag = 'N' and revised maturity <= 1 year**

If the above conditions, in step 1 and 2 are met, then the amount to be the transferred between the UA fund and the bank is calculated by using the following formula:

Maximum Amount to be transferred to calculated as: MIN (Amount of eligible asset available in Bank, an Amount equivalent to the composition of UA fund)

> **NOTE** Only weighted amounts are used for the calculation

NOTE If the NSFR ratio for the UA fund goes below 100%, then no transfer will occur between the UA fund and the bank

Case 2: Where UA fund has deficit NSFR

The deficit for the fund is met by the transfer of the excess RSF amount from the fund to the RSF amount of the bank so that the fund achieves the minimum required NSFR ratio. The transfer shall occur even if post transfer the NSFR ratio for the bank falls below the minimum required ratio.

6 Appendix A: Data Transformations/Functions used in LRRCBNM

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

- **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 a loan contract 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/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:

1. 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.
2. Assigns the underlying asset level.
3. 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.
4. 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.

7 Appendix B: User Configuration and Settings

This section includes details about the user configurations and settings.

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 LRRCBNM respectively.

7.1.1 Standard Product Type Reclassification

Banks should map their specific product types to the Standard Product Types as part of the rule BNM 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.

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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