NOTICE AND REQUEST FOR COMMENT –
MATERIAL AMENDMENTS TO CDS EXTERNAL PROCEDURES

Liquidity Risk Management

A. DESCRIPTION OF THE PROPOSED CDS EXTERNAL PROCEDURE AMENDMENTS

The proposed external procedure amendments will:

(i) require the Participants to the continuous net settlement function ("CNS" or "CNS Function") to provide money in Canadian dollars as the sole type of eligible collateral allowed in the CNS Default Fund.

(ii) require the Participants to the CNS Function to contribute to a new fund entitled Supplemental Liquidity Fund by providing money in Canadian dollars as the sole type of eligible collateral in that fund. The Supplemental Liquidity Fund will ensure that CDS has sufficient liquidity to meet its obligations to Participants during stressed market conditions.

(iii) require the Cross-Border Participants to the New York Link service to provide money in U.S. dollars as the sole type of eligible collateral allowed in the NYL Link Fund.

(iv) in addition to these proposed external procedure amendments, CDS will also take the opportunity to remove the provisions regarding the calculation of a "Soft-Cap" (or threshold amount) with respect to the payment obligations of a New York Link service Participant that may require prefunding through their DTC or NSCC account.

(v) in addition to these proposed external procedure amendments, CDS will also take the opportunity to propose an update description for the sequence of the collateral that may be used in a CDSX suspension and to reflect the addition of the new Supplement Liquid Fund.

All proposed amendments are provided in Appendix "A" to this Notice, and summarized below.

New York Link Participant Procedures

1. Chapter 3
   - Section 3.1 - Soft cap compliance
     - Delete Soft cap compliance
   - Section 3.1.1 - Soft cap non-compliance
     - Delete Soft cap non compliance

2. Chapter 7
   - Section 7.3 - CDS participant fund for New York Link (administered by CDS)
     - Amended paragraph to remove securities to pledge as collateral, and replaced with Cash is used to satisfy a CDS participant fund for New York Link contribution
     - Change the frequency update
     - Cash contributions are eligible to receive interest (Procedures regarding the interest payment distribution will be determined and communicated before the implementation of the New York Link Participant Procedures.)
   - Section 7.3.1 - DTC and NSCC settlements components
     - Revision of the existing methodology for the NSCC component

Participating in CDS Services

1. Chapter 1
   - Section 1.5 - Risk
     - Add Supplemental Liquidity Fund
2. Chapter 7
   - Section 7.8 - Making initial collateral contributions
     - Add Supplemental Liquidity Fund
   - Section 7.8.1 - Withdrawing from CNS
     - Add Supplemental Liquidity Fund
     - Add a provision for the treatment of Supplemental Liquidity Fund in the allocation of the residual loss
     - Adjust time period
3. Chapter 14
   - Section 14.2 - Central counterparty funds
     - Add Supplemental Liquidity Fund
   - Section 14.6.3 - Allocating the shortfall
     - Add a provision for the treatment of Supplemental Liquidity Fund in the allocation of the residual loss
   - Section 14.7 - Collateral
     - Add Supplemental Liquidity Fund
     - Addition of the term “deposit”
     - Update the description of the collateral that may be used in a CDSX suspension.
   - Section 14.7.1 - Collateral sequence
     - Add Supplemental Liquidity Fund
     - Revision and update of the column Primary use in the table describing the collateral sequence
   - Section 14.7.2 - Collateral administration ledgers
     - Add Supplemental Liquidity Fund
   - Section 14.8.1 - Processing a receiver of credit suspension
     - Add Supplemental Liquidity Fund
     - Addition of the term “deposit”
   - Section 14.8.2 - Processing an extender of credit suspension
     - Add Supplemental Liquidity Fund
     - Addition of the term “deposit”
   - Section 14.8.3 - Processing a settlement agent suspension
     - Add Supplemental Liquidity Fund
     - Addition of the term “deposit”
   - Section 14.8.4 - Processing a federated participant suspension
     - Add Supplemental Liquidity Fund
     - Addition of the term “deposit”
   - Section 14.8.5 - Central counterparty obligations
     - Revision and update of the section describing the execution of the close-out transactions
   - Section 14.8.7 - Processing a suspended NYL participant’s payment obligation
     - Revision and update of the allocation of the shortfall

4. Chapter 15 - Collateral Administration
   - Section 15.1 - Acceptable Collateral
     - Amend CDS participant fund for New York Link - USD Cash eligible only
     - Add CNS Supplemental Liquidity Fund - CAD Cash eligible only
     - Amend CNS Default Fund - CAD Cash eligible only
   - Section 15.1.1
     - Clarify that the substitution rule only applies to funds where securities are eligible
     - Add reference to CDS banking restrictions and confirmation to withdrawal timing
   - Section 15.1.2 - Delivering U.S. dollar cash as collateral
     - Delete USD receivers of credit pool section, not required
     - Add Fedwire instructions for the CDS participants fund for New York Link
     - Replace “pledge” with “deposit”
   - Section 15.1.3 - Interest rebates
     - Add Supplemental Liquidity Fund
   - Section 15.1.4 - Making collateral contributions
     - Add Supplemental Liquidity Fund
5. Chapter 16
   - Introduction
     - Add Supplemental Liquidity Fund
   - Section 16.1.2 - CDS Default Fund
     - Clarifications for the determination of the Triple Witching Activity
   - Section 16.2 - Supplemental Liquidity Fund
     - New section for the Supplemental Liquidity Fund
   - Section 16.7.1 - CNS Collateral requirements
     - Add Supplemental Liquidity Fund
6. Chapter 17
   - Section 17.6.1 - CDS participant fund for New York Link
     - Replace “securities are pledged” with “deposit cash collateral”
7. Global change: Updated fund name capitalization and nomenclature for consistency

B. NATURE AND PURPOSE OF THE PROPOSED CDS PROCEDURE AMENDMENTS

Principle 7 of the CPMI-IOSCO Principles for Financial Market Infrastructures (PFMIs), originally published in April, 2012, states that an “FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multi-day settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.”

A clarifying guidance was published in 2017 following a CPMI-IOSCO report on implementation update that uncovered that many FMIs had not made sufficient progress or had implemented risk management programs in substantially different ways.

Based on the foregoing, and after considering various options, CDS has decided to enhance its compliance to PFMI standards (Principle 7) and its risk management practices by:

- Requesting Participants of the CNS Function to satisfy their contributions to the CDS Default Fund by delivering only money in Canadian dollars (instead of Canada treasury bills, provincial treasury bills and similar permitted securities);
- Creating the Supplemental Liquidity Fund and requesting Participants of the CNS Function to contribute money in Canadian dollars. This new fund could be used by CDS to meet various payment obligations and cover liquidity shortfalls on time with a high degree of confidence under various potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation to the CDS in extreme but plausible market conditions.
- Requesting Cross-Border Participants of the New York Link service to satisfy their contributions to the NYL Link Fund by delivering money in US dollars (instead of Canada treasury bills and U.S treasury bills).

These additional liquidity resources, in the form of ready-available cash, will be coupled with CDS's existing credit facilities to meet its requirements under the PFMI standards.

Like for the current Participant Fund and Default Fund, details with respect to the sizing of the Participants' obligations to the Supplemental Liquidity Fund will be provided in the external procedures. In short, the Supplemental Liquidity Fund will be sized by CDS to have sufficient resources to cover potential liquidity stress scenarios. The Supplemental Liquidity Fund will consist of two tiers sizing based on the activity level of the Participants in the CNS Function. The tier 1 will be based on the daily CNS outstanding positions of all Participants of the CNS Function, excluding those outstanding positions that are included in tier 2. The tier 2 will be based on a specific subset of CNS outstanding positions: the positions of those CNS Participants whose activity levels have demonstrated spikes in CNS activity on certain specific business days (i.e. Triple Witching Period). For the CNS participants that have demonstrated CNS activity on any one of those specific business days in the lookback period, all specific business days will be included in the subset of CNS outstanding positions used to size the tier 2 Supplemental Liquidity Fund collateral requirement.

The use of two tiers is consistent with the longstanding operating principle that requires Participants to bear responsibility for the financial – or other - risks they pose to the operations of the clearing and settlement system.

CDS is the view that the proposed changes to the risk management process that are reflected through the proposed rule amendments will solidify CDS's liquidity risk framework that is required to manage the Participants' liquidity risks. The proposed rule amendments strengthen the operational tools that help CDS identify, monitor and measure the liquidity risk.

C. IMPACT OF THE PROPOSED CDS PROCEDURE AMENDMENTS

- All participants must fulfill their obligation to the CDS Default Fund and CDS Participant Fund for New York Link in cash only;
- All participants must fulfill their obligation to the new CNS Supplemental Liquidity Fund in cash only. This fund is established to ensure that CDS has sufficient liquidity to meet its obligations to Participants during stressed market conditions.
  -
- Operations team is working with Bank of Canada on the most effective approach for how we will receive the cash upon the implementation of the related rules changes. Operations needs to be mindful of the Bank of Canada's daily thresholds, as well as continue to provide flexibility for clearing members.

- Communication will be sent out to participants in January 2020 with the rollout approach for the cash to be received.

C.1 Competition

The proposed external procedure amendments will apply to all CDS Participants. As concerns fair access and conflict of interest issues, no CDS Participants will be disadvantaged or otherwise prejudiced by the introduction of the proposed changes.

C.2 Risks and Compliance Costs

The proposed external procedure amendments are intended to enhance CDS' compliance with PFMI standards (Principle 7). Financing cash may involve different costs than those incurred by financing securities and therefore, some CDS Participants may see some impacts in their cost of borrowing, or be faced with an opportunity cost. However, this burden will be partially offset since the CDS Participants generally receive the net amount of any interest, dividend or income received by CDS on the invested collateral of a Participant, in accordance with the Procedures, provided the Participant's obligations to CDS have been fulfilled.

C.3 Comparison to International Standards – (a) Committee on Payment and Settlement Systems of the Bank for International Settlements, (b) Technical Committee of the International Organization of Securities Commissions, and (c) the Group of Thirty

The proposed external procedure amendments are intended to enhance CDS' observance of PFMI standards (including Principle 7), as required under CDS' recognition orders as well as under National Instrument 24-102 (Clearing Agency Requirements) and related Companion Policy 24-102CP.

D. DESCRIPTION OF THE PROCEDURE DRAFTING PROCESS

D.1 Development Context

CDS legal, risk management and Operations representatives have prepared documents describing the proposed external procedure amendments.

D.2 Procedure Drafting Process

The proposed external procedure amendments were drafted by representatives of CDS Operations Team and the Risk Management team, in consultation with CDS Legal team.

CDS procedure amendments were reviewed and approved by CDS's strategic development review committee (SDRC) on October 24, 2019. The SDRC determines or reviews, prioritizes and oversees CDS-related systems development and other changes proposed by participants and CDS. The SDRC's membership includes representatives from the CDS participant community.

D.3 Issues Considered

In drafting the proposed external procedure amendment, CDS' primary consideration was to update its risk management practices with respect to PFMI 7 and amend, update or clarify CDS' external procedures related thereto.

D.4 Consultation

Users responsible for providing comments/updated to the external procedures were consulted to ensure effective implementation. The proposed procedure amendments were presented to the SDRC on October 24, 2019. The project office managed the various work streams deliverables including Operational process, Risk models/measurements, various Committees, external procedures and rule changes, to be presented for Board approval and for Public Comment.

D.5 Alternatives Considered

In considering the proposed procedure amendments, and the underlying change to CDS' risk management practices, CDS has reviewed whether it could rely on additional lines of credit. CDS also reviewed and determined the impediments of having highly marketable collateral that could still not be quickly converted into cash in short notice. CDS finally determined that it would require the Participants of the CNS Function (i) to provide money in Canadian dollars as the sole type of eligible collateral allowed in the Default Fund; and (ii) to contribute to the new Supplemental Liquidity Fund by providing money in Canadian dollars as the sole type of eligible collateral acceptable in that fund. In addition, CDS will require the Cross-Border Participants of the New York Link service to provide money in U.S. dollars as the sole type of eligible collateral allowed in the NYL Link Fund.

D.6 Implementation Plan

CDS is recognized as a clearing agency by the Ontario Securities Commission pursuant to section 21.2 of the Securities Act (Ontario), by the British Columbia Securities Commission pursuant to Section 24(d) of the Securities Act (British Columbia) and by the Autorité des marchés financiers ("AMF") pursuant to section 169 of the Securities Act (Québec). In addition CDS is deemed to be the clearing house for CDSX®, a clearing and settlement system designated by the Bank of Canada pursuant to section 4 of the Payment Clearing and Settlement Act. The Ontario Securities Commission, the British Columbia Securities Commission, the Autorité des marchés financiers and the Bank of Canada will hereafter be collectively referred to as the "Recognizing Regulators". The amendments to CDS Participant external procedures are expected to become effective on a date to be determined by CDS (such date expected to be in Q1 2020), such date to fall subsequent to approval of the amendments by the Recognizing Regulators following public notice and comment and be contingent on completion of appropriate testing and applicable notice to CDS participants.

E. TECHNOLOGICAL SYSTEMS CHANGES

Except for the creation of the new Supplemental Liquidity Fund in CDS's systems and other configuration changes, which will not require any material work from CDS, the proposed procedure amendments are not expected to have an impact on technological systems, or require changes to such systems for CDS, CDS participants, or other market participants.

F. COMPARISON TO OTHER CLEARING AGENCIES

The main international clearing agency that is comparable to CDS is the Depository Trust & Clearing Corporation (DTCC), and its subsidiary National Securities Clearing Corporation (NSCC) in the United States. CDS has reviewed the NSCC Rules, and has determined that NSCC's rules contained similar provisions (request for supplemental liquidity deposits in NSCC's clearing fund) to the ones proposed in this notice.

As another example, the Options Clearing Corporation has maintained and renewed a $2 billion committed credit facility from a consortium of banks, while reducing clearing member participation in such facilities to reduce concentration risk. The organization also enhanced the availability of pre-funded financial resources by requiring a minimum of $3 billion in cash in its clearing fund, which is held at the Chicago Federal Reserve Bank. Finally, the OCC also became the first and only systemically important clearing house to add a new $1 billion non-bank committed credit facility with a large U.S. pension fund.

G. PUBLIC INTEREST ASSESSMENT

CDS has determined that the proposed amendments are not contrary to the public interest.

H. COMMENTS

Comments on the proposed amendments should be in writing and submitted within 30 calendar days following the date of publication of this notice in the Ontario Securities Commission Bulletin to:

Jonathan Berube, Risk Management
Telephone: 514-787-6664
Email: jonathan.berube@tmx.com

Relationship Management
Email: CDSrelationshipmgmt@tmx.com

CDS Clearing and Depository Services Inc.
100 Adelaide Street West
Toronto, Ontario
M5H 1S3

Copies should also be provided to the Autorité des marchés financiers and the Ontario Securities Commission by forwarding a copy to each of the following individuals:

Philippe Lebel
Corporate Secretary and
Executive Director, Legal Affairs
Autorité des marchés financiers
Place de la Cité, tour Cominar
2640 Laurier boulevard, suite 400
Québec (Québec) G1V 5C1

Télécopieur: (514) 864-8381
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Manager, Market Regulation
Capital Markets Branch
Ontario Securities Commission
Suite 1903, Box 55,
20 Queen Street West
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CDS will make available to the public, upon request, all comments received during the comment period.

Contents

CHAPTER 3

~~New York Link soft cap~~

~~The New York Link soft cap establishes a threshold that serves to reduce the size of daily end-of-day net payment obligations at NSCC and DTC for New York Link service participants. The soft cap is the same for all participants and it is applied to individual participants' net payment obligations at NSCC and DTC.~~

~~The soft cap is determined quarterly by CDS using the following method.~~

Total available CDS liquidity	-	Liquidity facility required for Canadian dollar receivers' collateral pool	-	Liquidity facility required for U.S. dollar receivers' collateral pool	-	Liquidity facility required for DTC Direct Link service	=	Soft cap (USD equivalent)

~~For more information, see Soft cap compliance on page 20.~~

3.1 ~~Soft cap compliance~~

~~New York Link participants are required to manage their daily payment obligations to NSCC and DTC so that their individual net payment obligations to NSCC and DTC combined do not breach the soft cap. This may require that participants pre-fund their NSCC and/or DTC accounts.~~

~~CDS monitors soft cap compliance from settlement date -1 through to settlement date +1. Participants who breach the soft cap are subject to non-compliance measures. For more information see, Soft cap non-compliance on page 20.~~

~~Participants may subscribe to access daily compliance records and receive electronic alerts that indicate if their projected settlement obligations to NSCC, as well as their actual net payment obligations to NSCC and DTC breach the soft cap. For more information, refer to *Participating in CDS Services*.~~

3.1.1 ~~Soft cap non-compliance~~

~~The following non-compliance measures are imposed on New York Link participants who breach the soft cap:~~

- ~~CDS imposes a fixed and a variable non-compliance fee in each instance that a participant breaches the soft cap. For more information on fees, refer to the Price Schedule on the CDS website (www.cds.ca).~~

~~Non-compliance fee~~	~~Description~~
~~Fixed~~	~~Standard non-compliance – Applied to the first four instances that a participant breaches the soft cap over a rolling 12 month period~~
	~~Non-standard non-compliance – Applied to every instance that a participant breaches the soft cap, over and above four instances over a rolling 12 month period~~
~~Variable~~	~~In addition to the standard or non-standard compliance fee, this fee is applied to every instance that a participant exceeds the soft cap~~ ~~This fee is calculated as follows:~~ ~~The non-compliance amount (the amount that a participant has exceeded the soft cap by) multiplied by the overnight cost of borrowing and divided by 365. The daily variable non-compliance fee to be applied is calculated based on the number of calendar days (e.g., breaches occurring over a normal weekend would be counted as two calendar days) of non-compliance~~

- ~~CDS reports all soft cap breaches to the participant's primary regulator. Participants who subscribe to receive the soft cap compliance alert are also advised of their breach.~~
- ~~CDS reports soft cap breaches to other New York Link service participants once a participant breaches the soft cap more than four times over a rolling 12 month period.~~

If a requested collateral contribution is not delivered by the specified deadline, the participant may be suspended. For more information, refer to DTCC's website (www.dtcc.com).

Making initial collateral contributions

A minimum US$10,000 initial collateral contribution is required from each participant, with subsequent fund requirements being calculated based on each participant's trading activities. Participants must send their initial cash contribution to CDS through Fedwire.

Making daily collateral contributions

DTC assesses participants' trading activities on a daily basis and informs both CDS and the participant if an additional collateral contribution is required. For more information, refer to DTCC's website (www.dtcc.com).

Withdrawing excess collateral contributions

Each quarter, DTC informs CDS and the participant if they have excess collateral contributions. Upon request, excess collateral contributions are returned as part of daily settlement. For more information, refer to DTCC's website (www.dtcc.com).

Interest on cash contributions

Every month, DTC calculates the interest earned on each participant's cash contributions. The interest is paid in the participant's net settlement amount and is itemized on their monthly bill.

7.3 CDS participant fund for New York Link (administered by CDS)

New York Link participants must also contribute to a participant fund administered by CDS.

CDS calculates the participant fund requirement monthly~~quarterly~~.

All participant fund requirements may be satisfied in the form of eligible collateral. For more information, refer to *Participating in CDS Services*.

If a requested collateral contribution is not delivered by the specified deadline, the participant may be fined or suspended.

~~Securities~~Cash is used to satisfy a CDS participant fund for New York Link contribution. ~~are pledged from the participant's CUID to the restricted collateral account of CDS's New York Link CUID (NSCY) using the Pledge to CDS function. New York Link participants enter the pledge transaction to NSCY and CMS automatically confirms the pledge, provided that all the required edits are satisfied, and moves the securities into CDS's NSCY ledger.~~ For more information, see ~~Pledging securities~~ Delivering U.S. dollar cash as collateral in *Participating in CDS Services*.

Making initial collateral contributions

There is no minimum collateral contribution required from each participant.

Making monthly~~quarterly~~ collateral contributions

Participants are notified of their collateral contribution requirements on a monthly~~quarterly~~ basis. Collateral contribution requirements may be satisfied by delivering a collateral contribution to CDS in the form of eligible collateral and within the collateral limits.

All collateral contribution requirements must be delivered by 10~~2~~:00 a~~p~~.m. ET (~~10~~8:00 a.m. MT, ~~9~~7:00 a.m. PT) on the day it is due. If CDS does not receive the required collateral contribution by the specified deadline, the participant is fined. If the collateral contribution is still outstanding by 11:00 a~~p~~.m. ET (~~11~~9:00 a.m. MT, ~~10~~8:00 a.m. PT), the participant is suspended.

Participant cash contributions to the CDS participant fund for New York Link are eligible to earn interest.

7.3.1 DTC and NSCC settlements components

The CDS participant fund for New York Link is made up of the following components:

- DTC settlements component on page 33
- NSCC settlements component on page 34.

DTC settlements component

The DTC settlements component of the CDS participant fund for New York Link covers the risk of default for the New York Link participant with the largest payment obligation to DTC. In a default situation, CDS must pay DTC the amount owed by the New York Link participant by the end-of-day.

CDS updates the DTC settlements component requirements on a quarterly basis as follows:

1. Each New York Link participant is allocated DTC net debit cap by CDS. Each New York Link participant informs their CDS collateral administrator in writing if any changes are required to the amount of their CDS allocated DTC net debit cap at least 10 business days before the end of the quarter. In case of an increase in the DTC net debit cap, CDS may require the New York Link participant to provide information, such as the reasons for the increase, pre-funding incidents and a business plan.

   Note: New York Link participants can only adjust their CDS allocated DTC net debit cap on a quarterly basis.

2. In order to calculate the DTC settlements component for each New York Link participant, CDS calculates the leverage factor as follows:

$$\text{Leverage factor} = \frac{\text{Total of all New York Link particiants' allocated net debit caps}}{\text{Largest CDS allocated individual DTC net debit cap}}$$

3. CDS calculates each New York Link participant's required DTC settlement component collateral contribution as follows:

$$\begin{array}{l}\text{Individual participant's required}\\ \text{DTC settlement component}\end{array} = \frac{\text{CDS allocated net debit cap}}{\text{Leverage factor}}$$

   The maximum individual DTC net debit cap must be equal to the aggregate value of the DTC settlement component.

4. CDS informs each New York Link participant of their required DTC settlement component collateral contribution.

NSCC settlements component

The NSCC settlements component covers the liquidity shortfalls of the New York Link service with CDS participants' resources through a pooling-of-resources arrangement. The NSCC settlements component is sized to have resources sufficient to cover potential liquidity stress scenarios that include, but are not limited to, the default of a participant and its affiliates that would potentially cause the largest aggregate liquidity exposure in extreme but plausible market conditions.

CDS updates the NSCC settlements component requirements on a monthly basis and the requirements are based on the activity level of the participants in the New York Link service to reflect the risks that they pose to the operations of the clearing and settlement system.

To determine the size of the liquidity shortfalls used to calculate the NSCC settlements component, the liquidity shortfalls of unwinding New York Link outstanding positions on each day is calculated for every participant, for every day of the lookback periods, using stress-test scenarios and all available financial resources.

The daily liquidity shortfalls are calculated based on the following inputs:

1. Liquidity requirements over the close out period;

2. Qualifying financial resources.

The NSCC settlements component is then calculated so as to collateralize, the largest daily liquidity shortfalls over the lookback periods. The first lookback period corresponds to the previous month and the second lookback period is equal to the previous 20 business days.

Mutualization is achieved by allocating the NSCC settlements collateral requirements on a pro rata basis, taking account of the cumulative CDS participants for New York Link liquidity requirements over the last month.

As part of CDS's monthly review of the size of the NSCC settlements component, CDS participants for New York Link will be advised of any changes to their NSCC settlements component collateral requirement which may be required. NSCC settlement component collateral requirement will be enforced for all CDS participants for New York Link throughout the month (subject to intra-month re-sizing – see Regularly scheduled review of NCSS settlement component fund size and intra-month monitoring).

Regularly scheduled review of NCSS settlement component fund size and intra-month monitoring

CDS monitors the value of the NCSS settlement component fund on a daily basis to ensure that it covers the highest shortfall observed during either: (1) the previous month or (2) the previous 20 business days. As such, the size of the NCSS settlement component fund is revised, at a minimum, on a monthly basis. However, CDS can adjust the size of the fund between the monthly updates if a new highest shortfall is observed during the previous 20 business days. The intra-month collateral call is then allocated amongst all CDS Participants for NY Link with the same methodology as the scheduled monthly review.

~~Unlike DTC, where an individual participant's payment obligation is capped by the DTC net debit cap, NSCC does not cap an individual participant's payment obligation. Therefore, CDS estimates an individual participant's NSCC payment obligations within a pre-determined confidence level.~~

~~The NSCC settlements component of the CDS participant fund for New York Link covers the risk of default for the New York Link participant with the largest payment obligation to NSCC within a pre-determined confidence level. In a default situation, CDS must pay NSCC the amount owed by the New York Link participant by the end-of-day.~~

~~CDS updates the NSCC settlements component requirements on a quarterly basis as follows:~~

1. ~~CDS calculates the amount and number of instances in which each New York Link participant owed money to NSCC during the preceding quarter.~~
2. ~~CDS compares these amounts and numbers to the total amounts and number of instances in which all New York Link participants owed money to NSCC during the preceding quarter.~~
3. ~~CDS calculates the NSCC settlement component for each New York Link participant given a pre-determined confidence level.~~
4. ~~CDS informs each New York Link participant of their required NSCC settlement component collateral contribution.~~

Added new fund to Chapter 16

Updated capitalization for consistency

Billable activity in CDSX is reported against either of the following:

- The CUID initiating the activity
- The ledger's default CUID, when the activity is based on a ledger related activity (e.g., settlement)
- The invoice unit, for billable items reported at the company level.

Participants pay CDS on the ninth business day following the end of the month.

Note: Participants who subscribe to the Entitlements Messaging Service are billed directly by SWIFT. This requires participants to complete the appropriate SWIFT forms. Contact Customer Service to coordinate the completion of the forms.

Protesting invoices

If participants report discrepancies between the seventh and the ninth business day following the end of the month, and the investigation is finished before the payment is due, any adjustments will be included in the current month's billing amount. If the discrepancies are reported or resolved after the payment is due, any adjustments will be included on the next month's invoice.

To protest an invoice, contact CDS Customer Service.

1.5 Risk

The CDS Settlement Services Risk Model is in place to assign an appropriate collateral value against all transactions that affect a participant's Canadian funds or ledger positions and to provide for payment exchange protection in the event of a default.

Updated cross-reference to include new fund

The risk model's components include:

- System operating caps (for more information, see Caps on page 128 and Cap administration on page 138)
- Lines of credit (for more information, see Lines of credit on page 145)
- Pool and CNS service funds collateral (for more information, see Collateral administration on page 184, Collateral pools on page 220, CNS Participant Fund, ~~and~~ CNS Default Fund and Supplemental Liquidity Fund on page 204
- Aggregate collateral value (ACV) on securities transactions and sector limits on the value of eligible securities controlled by the ACV edit (for more information, see Aggregate collateral value on page 108)
- The Large Value Transfer System (LVTS).

7.8 Continuous Net Settlement Service

The Continuous Net Settlement Service nets CNS eligible trades by value date. Value-dated CNS positions that reach value date are netted with outstanding CNS positions and are eligible for settlement. For more information, refer to *Trade and Settlement Procedures*.

Participants register for this service by selecting CNS on the Application for Participation: Schedule C (CDSX789).

Making initial collateral contributions

Before participants can begin using CNS, they must make an initial contribution of collateral to the CNS Participant Fund, ~~and~~ CNS Default Fund and Supplemental Liquidity F~~f~~und. CDS will inform participants of the amount of their initial contributions.

7.8.1 Withdrawing from CNS

Before participants can withdraw from CNS, they must satisfy their CNS obligations. In particular, they must settle all of their CNS obligations (both outstanding and value-dated) with CDS and pay any mark-to-market amounts owing. Participants also must have paid their share of any residual loss from a default that occurred while they were a CNS participant.

To withdrawal from CNS:

1. Provide written notification to CDS of the intent to withdrawal from CNS.
2. Contact Customer Service to verbally request that CDS stop netting the trades. CDS Customer Service will provide assistance in withdrawing from CNS.
3. Pay or receive any mark-to-market payments.

Note: For the purpose of allocating any residual loss, if a participant is in the process of withdrawing from CNS, they are still considered to be a CNS participant for a period of 10~~5~~ business days following the date on which they have eliminated all of their CNS net trades with CDS and paid any outstanding mark-to-market amounts. CDS will return their CNS Participant Fund, ~~and~~ CNS Default Fund and Supplemental Liquidity Fund contributions after the 10~~-~~ business day period has ended, net of their share of any residual loss that was allocated to them (if they had not subsequently reconstituted their CNS service contributions, and at the exception of the Supplemental Liquidity Fund, which cannot be used to absorb any residual loss).

Updated cross-reference to include new fund

10.5 Haircuts

Haircuts are applied against the market price to determine the value of the security for the purposes of the ACV edit as follows:

- Debt instruments, haircuts are based on the security class, an issuer rating and its term to maturity.
- Equities, CDS uses a value-at-risk (VaR) based methodology to calculate haircut rates for equity securities. For more information, see CNS Participant Fund, ~~and~~ CNS Default Fund and Supplemental Liquidity Fund on page 204.

The haircut represents the dollar value that securities could decline by from default to liquidation. The size of the haircut depends on the level of risk associated with the securities.

CDSX debt haircuts

The table below indicates the haircut rates that CDS applies to the market value of each debt security type.

Security type	Term to maturity				
	0 to 1 year	1 to 3 years	3 to 5 years	5 to 10 years	Greater than 10 years
Government of Canada	0.5%	1.0%	1.5%	2.0%	3.0%
Federated guaranteed	1.0%	1.5%	2.5%	4.0%	4.5%
Provincial	1.5%	2.0%	3.0%	4.5%	6.0%
Provincial guaranteed	2.0%	2.5%	3.5%	5.0%	6.5%
Corporate AAA	3.0%	3.5%	4.0%	6.5%	9.0%
Corporate AA	3.0%	3.5%	4.0%	6.5%	9.0%
Corporate A	5.0%	5.5%	6.0%	8.5%	11.0%
Unrated public sector entities and government grants	15.0%	16.0%	17.0%	18.5%	20.0%
Unrated munis	20.0%	21.0%	22.0%	23.5%	25.0%
Corporate BBB	30.0%		32.0%	33.0%	35.0%
Corporate BB	100.0%				
Corporate B	100.0%				
Corporate C	100.0%				
U.S. Treasury bills, notes and bonds (interest-bearing and zero-coupon bonds)[1]	1.0%		1.5%	3.0%	4.5%

[1] The value of U.S. Treasury securities is determined using NSCC haircuts that apply to zero-coupon bonds.

Non-contributing credit rings for receivers of credit

If a receiver of credit elects not to belong to the contributing collateral pools, then they must belong to one of the following non-contributing credit rings:

- Canadian dollar
- U.S. dollar.

Members of non-contributing credit rings do not pledge collateral to CDS as part of their participation (in the non-contributing credit rings). Non-contributing credit rings are used to address certain obligations of a suspended participant that may not be covered by a line of credit, cap or a CCP service fund. For example, if a suspended participant does not have a line of credit, but owes funds to CDS due to an entitlement reversal, then this portion of the suspended participant's obligation becomes the responsibility of the non-contributing credit ring members.

14.2 Central counterparty funds

The following central counterparty participant funds and liquidity fund have~~s~~ been established to cover the risks generated by the use of CDS's central counterparty service:

- CNS Participant Fund
- CNS Default Fund
- Supplemental Liquidity Fund.

Participants that use the CNS central counterparty service must ~~belong~~contribute to the central counterparty CNS Participant Fund, ~~and~~ CNS Default Fund and Supplemental Liquidity Fund established for that service.

The central counterparty CNS Participant Fund covers only the mark-to-market payments and the future risk from the CNS positions, both outstanding and value-dated that are unique to the CNS service. In the event that a central counterparty CNS participant is suspended, the central counterparty ~~p~~Participant ~~f~~Fund is responsible for paying only these portions of the suspended participant's obligations.

The CNS Default Fund is designed to allow CDS to maintain additional financial resources for its CCP CNS service sufficient to cover a wide range of ~~potential stress scenarios~~stress test scenarios in extreme but plausible market conditions. The CNS Default Fund is a prefunded default arrangement that is composed of assets contributed by CNS participants that maybe used by the CCP in certain circumstances to cover losses or liquidity pressures resulting from participant defaults.

The Supplemental Liquidity Fund is designed to cover the liquidity shortfalls of the CCP CNS service with CNS participants' resources through a pooling-of-resources arrangement. The Supplemental Liquidity Fund is sized to have resources sufficient to cover extreme but plausible liquidity stress scenarios that include, but are not limited to, the default of a participant and its affiliates that would potentially cause the largest aggregate liquidity exposure for the CCP in extreme but plausible market conditions.

14.2.1 Covering obligations

The members of CDS's central counterparty service ~~the central counterparty CNS Participant Fund~~ guarantee the following obligations of the other members:

- Mark-to-market payments made as part of a central counterparty service
- Any loss generated by the close-out of an outstanding or value-dated position (i.e., an outstanding and/or value-dated to-deliver (short) position or an outstanding and/or value-dated to-receive (long) position).

The central counterparty participant funds associated with a service are responsible only for the obligations generated by that central counterparty service. For example, the CNS Participant Fund, ~~and~~ CNS Default Fund and Supplemental Liquidity Fund are responsible for only the CNS mark-to-market payments. ~~CNS positions, both outstanding and value-dated, from the CNS Service.~~

Each member of ~~a participant fund~~the CNS Participant Fund, CNS Default Fund and the Supplemental Liquidity Fund contributes collateral based on the formulae for the respective funds or Supplemental Liquidity Fund.

14.2.2 Arranging liquidity

CDS arranges standby liquidity for the three central counterparty participant funds.

14.2.3 Credit rings

Each participant fund has a credit ring associated with it. If the processing of a suspended participant requires that the surviving members of a participant fund pay CDS more than the value of the collateral they have pledged, the survivors are required to pay this shortfall as part of their obligations as members of the credit ring.

14.6.1 Allocating positive ledger balances

If a participant defaults in their obligation to make payments to CDS with respect to a negative balance in the funds account in one ledger, and the participant has a positive balance denominated in another currency in the funds account of another ledger, then CDS does not allocate the positive balance to the suspended participant's designated banker nor shall pay the positive balance to the suspended participant.

Instead, for the purpose of determining the net obligation owed by the suspended participant, CDS may apply the positive balance in a funds account of the suspended participant against any negative balance denominated in the same currency in any other funds account of the suspended participant. If the suspended participant has more than one funds account with a negative balance, the positive balance shall be allocated to reduce the negative balances denominated in the same currency on a pro rata basis.

14.6.2 Allocating partial payments

To determine the net obligation owed by the suspended participant, CDS may apply any partial payment made directly by the suspended participant, before it was suspended against any negative balance denominated in the same currency in any funds account of the suspended participant. If the partial payment has been made by a designated banker through the book entry payment method, the partial payment is returned to the designated banker. If the partial payment has been made by a qualified banker through the book entry payment method against the suspended participant's use of a line of credit, that partial payment shall be allocated by CDS to discharge the liability of the qualified banker as surety and shall applied against the negative balance in the funds account that the line of credit was established for.

14.6.3 Allocating the shortfall

Once CDS has determined the amount of the suspended participant's obligation that must be replaced, individual portions of the shortfall are allocated to the various risk containment mechanisms. The allocation of the shortfall is done as follows:

- Amounts drawn under a cap – Survivors in the suspended participant's collateral pool and category credit ring that generated the cap
- Amounts drawn under a line of credit – Suspended participant's extender(s) of credit
- Mark-to-market payments – Survivors in the suspended participant's central counterparty service fund(s) (i.e., CNS Participant Fund and CNS Default Fund)
- Other amounts that exceed the cap or line of credit – Survivors in the suspended participant's collateral pool and category credit ring (or the non-contributing credit ring).

14.7 Collateral

There are several sources of collateral that can be obtained for use during the processing of a suspension in CDSX. Part of this collateral comes from the suspended participant and part from the suspended participant's collateral pool or CNS Participant fund, CNS Default Fund or Supplemental Liquidity Fund~~central counterparty funds~~.

The types of collateral that may be used in a CDSX suspension are:

- Suspended participant's settlement service collateral – The collateral~~securities and funds~~ in the suspended participant's risk accounts (i.e., the general accounts and restricted collateral accounts). This type of collateral is also known as the ACV collateral since the purpose of the ACV edit is to ensure that this collateral is available and in place in the event of a suspension.
- Suspended participant's collateral pool contributions – The collateral~~securities~~ pledged/deposited by the suspended participant to a collateral pool and category credit ring.
- Suspended participant's ~~central counterparty CNS~~ Participant Fund ~~and CNS Default Fund~~ contributions – The collateral~~securities~~ pledged/deposited by the suspended participant to ~~the central counterparty fund(s). The suspended participant may be a member of more than one central counterparty participant fund (i.e., CNS~~ the CNS Participant Fund~~and CNS Default Fund)~~.
- Suspended participant's Default Fund contributions – The collateral pledged/deposited by the suspended participant to the CNS Default Fund.
- Suspended participant's Supplemental Liquidity Fund contributions – The collateral pledged/deposited by the suspended participant to the Supplemental Liquidity Fund.
- Suspended participant's specific collateral – The collateral~~securities~~ that have been pledged/deposited by the suspended participant to CDS as specific collateral. CDS may require a participant to pledge specific collateral if CDS determines that a participant's activities present extra risks to CDS and the other participants that may not be covered by the normal risk containment mechanisms. For example, CDS may require specific collateral from a participant with unusually large central counterparty outstanding and value-dated positions or central counterparty positions in very illiquid securities.
- Survivors' collateral pool contributions – The ~~securities~~collateral pledged/deposited by the other members of a suspended participant's collateral pool and category credit ring.
- Survivors' central counterparty CNS Participant Fund and CNS Default Fund contributions – The ~~securities~~collateral pledged/deposited by the other members of a suspended participant's central counterparty funds.

- Survivors' Supplemental Liquidity Fund contributions – The collateral pledged/ deposited by the other members to the suspended participant's CCP participant fund.

14.7.1 Collateral sequence

The sequence in which the collateral is used is designed to ensure that there is no spillover of risk between the various services (such as CNS) and between the various risk containment mechanisms. For example, the payment obligations that are covered by a collateral pool are never transferred to an extender of credit. Each type of collateral has a primary use.

In cases where there is excess collateral available from the suspended participant, the use of this excess collateral is also specified. For example, collateral pledged to the CNS Participant Fund and the CNS Default Fund must first be used to cover any CNS mark-to-market amounts of the suspended participant and any losses generated by the close-out of the suspended participant's CNS positions, both outstanding and value-dated. After these two items have been addressed, any excess amounts of CNS collateral from the suspended participant itself would be used by CDS to mitigate other losses.

The table below indicates the sequence in which each type of collateral is used after suspending a receiver of credit.

Using collateral of a suspended receiver of credit		
Type	**Primary use**	**Sequence of secondary use**
Suspended receiver of credit's settlement service collateral	CDS (on behalf of the members of the CAD receivers of credit CCR) and Extenders of credit (if any) according to the use and allocation methodology described in Processing a receiver of credit suspension on page 178	Any remaining collateral goes next to the survivors of the collateral pools in either currency (if the suspended receiver of credit was a member of that collateral pool) Any excess is used by CDS to mitigate other losses
Suspended receiver of credit's collateral pool contributions (if any)	Survivors of the collateral pools of which the suspended receiver of credit was a member	Any remaining collateral goes next to the extenders of credit (if necessary) Any excess is used by CDS to mitigate other losses

Using collateral of a suspended receiver of credit		
Type	**Primary use**	**Sequence of secondary use**
Suspended receiver of credit's CNS Participant Fund and CNS Default Fund contributions (if any)	~~Survivors of the central counterparty service~~Extinguish defaulter's losses in the central counterparty service	Any remaining collateral goes to CDS to mitigate other losses
Suspended receiver of credit's specific collateral (if any)	Survivors of the central counterparty service or collateral pool for which the specific collateral was required	Any excess specific collateral is shared pro rata by the suspended receiver of credit's extenders (if any) and the survivors of the receivers of credit collateral pools of which the suspended receiver of credit was a member
Survivor's central counterparty CNS Participant Fund and CNS Default Fund contributions	Extinguish the defaulter's losses in the central counterparty service	This type of collateral is never used for any other purpose

The table below indicates the sequence in which each type of collateral is used after suspending a non-receiver of credit.

Using collateral of a suspended non-receiver of credit (extenders, settlement agents, federated participants)		
Type	**Primary use**	**Sequence of secondary use**
Suspended participant's settlement service collateral	Collateral pool survivors	Any remaining collateral goes next to the suspended participant's credit extenders (if any) Any excess is used by CDS to mitigate other losses
Suspended participant's collateral pool contributions (if any)	Collateral pool survivors	Any remaining collateral goes next to the suspended participant's credit extenders (if any) Any excess is used by CDS to mitigate other losses
Suspended participant's central counterparty CNS Participant Fund,~~-~~ and CNS Default Fund contributions (if any)	~~Survivors of the central counterparty service~~Extinguish defaulter's losses in the central counterparty service	Any remaining collateral goes to CDS to mitigate other losses

Using collateral of a suspended non-receiver of credit (extenders, settlement agents, federated participants)		
Type	**Primary use**	**Sequence of secondary use**
Suspended participant's specific collateral (if any)	Survivors of the central counterparty service or collateral pool for which the specific collateral was required	Any excess specific collateral is shared pro rata by the suspended participant's extenders (if any) and the suspended participant's collateral pool (if any)
Survivor's collateral pool contributions	Collateral pool survivors	This type of collateral is never used for any other purpose
Survivor's central counterparty CNS Participant Fund and CNS Default Fund contributions	Extinguish the defaulter's losses in the ~~C~~central counterparty service	This type of collateral is never used for any other purpose

14.7.2 Collateral administration ledgers

CDS maintains collateral administration ledgers for each participant and for CDS. These ledgers hold all of the collateral pledged by the participant for various purposes (i.e., collateral pool contributions, central counterparty fund contributions, Supplemental Liquidity Fund contributions and specific collateral). During the processing of a suspension, the suspended participant's settlement service collateral is first moved to CDS's collateral administration ledger and then to the collateral administration ledgers of other participants.

The extenders of credit~~,~~ and the survivors in the suspended participant's collateral pool ~~and the survivors in the suspended participant's central counterparty service~~ are entitled to use their share of the suspended participant's own collateral to make their replacement payment to CDS to satisfy settled obligations.

In the case of the central counterparty service, CDS initially retains the collateral in its own collateral administration ledger for use in obtaining the liquidity to make the replacement payment(s). Later, CDS may ~~distribute~~use the suspended participant's central counterparty CNS Participant Fund and CNS Default Fund contributions ~~to the survivors pro rata based on their share of any replacement payment or loss~~to absorb residual losses.

In the case of the extenders, collateral is moved first to the lead extender (appointed by the other extenders) and then to the other surviving extenders.

In the case of the settlement agents, collateral is moved pro rata to the surviving settlement agents based on each survivor's replacement payment.

In the case of the federated participant, collateral is moved to the collateral administration ledger of the replacement federated participant.

In the case of the receiver's collateral pool, CDS initially retains the collateral in its own collateral administration ledger for use in obtaining the liquidity to make the replacement payment(s). Later, CDS may distribute the survivors pro rata based on their share of any replacement payment or loss.

14.8 Processing suspension

In the event that a participant fails to pay their payment obligation to CDS (or if some other failure causes CDS to invoke the suspension and default procedures) and CDS has exhausted all of the escalation procedures, the following occurs for all types of suspensions:

1. CDS immediately suspends the participant from all CDS services and functions.
2. CDS notifies all participants that the suspension procedures have been initiated against the participant.
3. CDS immediately moves all of the suspended participant's settlement service collateral from their risk accounts to CDS's collateral administration ledger.
4. CDS calculates the suspended participant's obligation to CDS. For more information, see Using book-entry payment method entries on page 171.
5. CDS determines the portion of the suspended participant's obligation that is the responsibility of each extender of credit, collateral pool, category credit ring survivor and central counterparty fund survivor.

14.8.1 Processing a receiver of credit suspension

To process a suspension of a receiver of credit:

1. CDS requests a replacement payment from each extender of credit equal to the used amount of each extender's line of credit.
2. CDS arranges for a replacement payment equal to the used amount of the suspended participant's cap (if any). To obtain the necessary liquidity to make the replacement payment, CDS uses the suspended participant's own collateral pool contributions, eligible settlement service collateral allocated to CDS and any specific collateral that the suspended participant had pledged to the collateral pool. If necessary, the contributions of the survivors in the suspended participant's collateral pool are also used by CDS to obtain liquidity.

   The suspended participant's settlement service collateral will be allocated to both CDS and the sureties according to the following ratio:

$X = [SOC_{utilized} – \text{Defaulter's Collateral Requirement to the CCR}] / [SOC_{utilized} – \text{Defaulter's Collateral Requirement to the CCR} + LOC_{utilized}]$

Where X defines the proportion of the suspended participant's settlement service collateral allocated to CDS to collateralize the exposure associated with the CAD receiver of credit's utilization of its SOC.

$LOC_{utilized}$ = the sum total of the line(s) of credit utilized.

The settlement service collateral not allocated to CDS is allocated to the sureties.

The allocation is done at the security level.

3. For each central counterparty service the suspended participant is a member of, CDS arranges for a replacement payment equal to the unpaid mark-to-market payment (if any) that the suspended participant made on the day of suspension. To obtain the necessary liquidity to make the replacement payment, CDS uses the suspended participant's ~~own central counterparty~~ CNS Participant Fund, ~~and~~ the suspended participant's CNS Default Fund, the suspended participant's Supplemental Liquidity Fund ~~contributions~~ and any specific collateral that the suspended participant had pledged/deposited to the central counterparty service. If necessary, the contributions of the survivors in the suspended participant's central counterparty service are also used by CDS to obtain liquidity.

4. CDS moves the suspended participant's settlement service collateral as allocated to its sureties (as described in step 2) who are required to make payments to CDS; or, if there is no such surety, then the suspended participant's settlement service collateral is transferred to the other members of its category credit rings.

5. CDS moves collateral to the collateral administration ledgers of CDS, the extenders and the survivors of the receiver's collateral pool and central counterparty service. For more information, see Collateral on page 174.

14.8.2 Processing an extender of credit suspension

To process suspension of an extender of credit:

1. CDS requests a replacement payment from each extender of credit equal to its proportionate share of the suspended participant's obligation to CDS.

2. For each central counterparty service the suspended participant is a member of, CDS arranges for a replacement payment equal to the mark-to-market payment (if any) that the suspended participant made on the day of suspension. To obtain the necessary liquidity to make the replacement payment, CDS uses the suspended participant's ~~own central counterparty~~ CNS Participant Fund, ~~and~~ the suspended participant's CNS Default Fund, the suspended participant's Supplemental Liquidity Fund ~~contributions~~ and any specific collateral that the suspended participant had pledged/deposited to the central counterparty CNS service. If necessary, the contributions of the survivors in the suspended participant's central counterparty CNS service are also used by CDS to obtain liquidity.

3. CDS moves collateral to the collateral administration ledgers of CDS, the extenders and central counterparty service. For more information, see Collateral on page 174.

14.8.3 Processing a settlement agent suspension

To process a suspension of a settlement agent:

1. CDS requests a replacement payment from each extender of credit equal to the used amount of each extender's line of credit.

2. CDS requests a replacement payment from each surviving settlement agent equal to their proportionate share of the suspended settlement agent's obligation to CDS.

3. For each central counterparty service the suspended participant is a member of, CDS arranges for a replacement payment equal to the mark-to-market payment (if any) that the suspended participant made on the day of suspension. To obtain the necessary liquidity to make the replacement payment, CDS uses the suspended participant's ~~own central counterparty~~ CNS Participant Fund, ~~and~~ the suspended participant's CNS Default Fund the suspended participant's Supplemental Liquidity Fund ~~contributions~~ and any specific collateral that the suspended participant had pledged/deposited to the central counterparty service. If necessary, the contributions of the survivors in the suspended participant's central counterparty service are also used by CDS to obtain liquidity.

4. CDS moves collateral to the collateral administration ledgers of CDS, the settlement agents and central counterparty service. For more information, see Collateral on page 174.

14.8.4 Processing a federated participant suspension

To process a suspension of a federated participant:

1. CDS requests a replacement payment from the replacement federated participant equal to the suspended federated participant's obligation to CDS.

2. For each central counterparty service the suspended participant is a member of, CDS arranges for a replacement payment equal to the mark-to-market payment (if any) that the suspended participant made on the day of default. To obtain the necessary liquidity to make the replacement payment, CDS uses the suspended participant's ~~own central counterparty~~ CNS Participant Fund, ~~and~~ the suspended participant's CNS Default Fund the suspended participant's Supplemental Liquidity Fund ~~contributions~~ and any specific collateral that the suspended participant had pledged/deposited to the central counterparty service. If necessary, the contributions of the survivors in the suspended participant's central counterparty participant service are also used by CDS to obtain liquidity.

3. CDS moves collateral to the collateral administration ledgers of CDS, the replacement federated participant and central counterparty service. For more information, see Collateral on page 174.

14.8.5 Central counterparty obligations

If a suspended participant has outstanding and/or value-dated central counterparty obligations (i.e., outstanding and/or value-dated to-deliver or to-receive positions in CNS), CDS executes close-out transactions to clear these CNS positions, both outstanding and value-dated. For example, if the suspended participant left a CNS outstanding or value-dated to-deliver position, CDS buys the securities in the market to clear the outstanding or value-dated position. Similarly, if the suspended participant left an outstanding or value-dated to-receive position, CDS sells the securities in the market to clear the outstanding or value-dated position.

Any loss that is generated by the execution of these close-out transactions ~~becomes~~ is allocated against the suspended financial resources (CNS Participant Fund contributions and CNS Default Fund contributions), CDS's Dedicated Own Resources and the survivors' Default Fund contributions. If, at a later point in time, CDS is able to recover any amount from the suspended participant, such amount shall be returned to the other participant to compensate for any amount charged to them and for the financial resources levied from them as part of Default Management. This return will be in the reverse order that these resources were used to cover the losses. With the exception of the Supplemental Liquidity Fund, which is not used in the loss allocation process.~~an obligation of the central counterparty CNS Participant Fund and CNS Default Fund for the service in which the outstanding and/or value-dated position originated. Any gain generated by the execution of these close-out transactions is allocated to the central counterparty service for the service in which the outstanding and/or value-dated position originated~~.

14.8.6 Credit ring obligations

Each collateral pool has a credit ring associated with it. In the event that the replacement payments owed by the collateral pool exceed the value of the collateral in the collateral pool, each member of the credit ring is responsible for paying their share of the excess obligation.

Each central counterparty service has a credit ring associated with it. In the event that the replacement payments owed by the central counterparty service exceed the value of the collateral in the central counterparty funds (E.g., CNS Participant Fund and CNS Default Fund), each member of the credit ring is responsible for paying their share of the excess obligation.

14.8.7 Processing a suspended NYL participant's payment obligation

Once CDS has determined the amount of the suspended NYL participant's payment obligation that must be replaced (i.e., the shortfall), individual portions of the shortfall are allocated to the surviving members of the NYL service. The allocation of the shortfall is done as follows:

1. ~~Apply the defaulter's USD CDSX credits to reduce the NYL payment obligation.~~
2. ~~Use the available portion of CDS's existing USD credit facility.~~
3. ~~Any remaining liquidity requirement not covered by CDS's credit facility will be allocated against NYL participants as follows:~~
   a. ~~Allocate against surviving NYL participants as a haircut to their USD credits based on each NYL participant's pro-rata share of total credits.~~
   b. ~~Allocate the defaulter's CAD credits to the surviving NYL participants.~~
4. ~~Any remaining shortfall will be managed via a same-day cash call on surviving CDS-sponsored NYL participants.~~

1. Apply the defaulter's CDS Participant Fund for New York Link.
2. Use CDS's existing USD LOC.
3. Allocate against surviving NYL participants based on each CDS Participant Fund for New York Link's pro-rata share of total CDS Participant Fund for New York Link.
4. Any remaining liquidity requirement will be allocated against NYL participants as follows:
   a. Apply the defaulter's USD CDSX credits to reduce the NYL payment obligation.

b. Allocate against surviving NYL participants as a haircut to their USD credits based on each NYL participant's pro-rata share of total credits.

c. Allocate the defaulter's CAD credits to the surviving NYL participants.

CHAPTER 15

Collateral administration

Each participant designates a collateral administrator who is responsible for maintaining their collateral pool or participant fund.

At all times, participants are required to maintain an amount of collateral with CDS that is at least equal to their required collateral pool or participant fund contribution.

If collateral requirements that are due to be paid on a given day are not in place by the imposed deadlines, participants may be fined or suspended, as described in the table below.

Contribution	Beginning of day requirement		Action
	All services (excluding the NSCC participant fund for New York Link)	NSCC participant fund for New York Link only	
Initial	10:00 a.m. ET/- 8:00 a.m. MT/- 7:00 a.m. PT	9:00 a.m. ET 7:00 a.m. MT 6:00 a.m. PT	If CDS does not receive the required contribution by the initial deadline, the participant is fined
Final	10:30 a.m. ET 8:30 a.m. MT 7:30 a.m. PT	9:30 a.m. ET 7:30 a.m. MT 6:30 a.m. PT	If CDS does not receive the required contribution by the final deadline, the participant is suspended

CDS's role in collateral administration includes:

- Managing the collateral administration ledgers (CALs) for each of the collateral pools and participant funds
- Assisting participants with the pool and fund collateralization process
- Processing the movement of collateral, as necessary, in a default.

Participants can contact the CDS collateral administrators at the numbers listed below.

Telephone:	416-365-8494 416-365-8439	Fax:	416-365-9185

Eligible collateral for collateral pools and Participant Funds

CDSX eligible collateral	Instrument type[1]	Extenders of credit	Settlement agents	Active federated participant	CAD receivers of credit	USD receivers of credit	CNS Participant Fund	CNS Default Fund	CNS Supplemental Liquidity Fund	NSCC ~~p~~Participant ~~f~~Fund for New York Link	CDS ~~p~~Participant ~~f~~Fund for New York Link	CDS ~~p~~Participant ~~f~~Fund for DTC Direct Link	~~CNS Default Fund~~
Banker's acceptances and promissory notes[3], [4] Minimum issuer rating of A by CDS[4], [5]	Banker's acceptance Bearer deposit note Certificate of deposit Guaranteed investment certificate		✔ [6]	✔	✔	✔	✔						
Commercial paper and short-term municipal paper[3], [4] Minimum issuer rating of A by CDS[4], [5]	Municipal treasury bill Commercial paper Municipal note		✔ [6]	✔	✔	✔	✔						
Corporate bonds and municipal bonds[3], [4] Minimum issuer rating of A by CDS[4], [7]	Corporate bond Municipal bond Other market bond		✔ [6]	✔	✔	✔	✔						
U.S. Treasury securities	U.S. Treasury bill U.S. Treasury bond or note					✔					~~✔~~	✔	
Cash (U.S. dollars) in the form of a Fedwire payment	N/A					✔				✔ [8]	✔		
Cash (Canadian dollars) in the form of a LVTS payment	N/A	✔	✔	✔	✔		✔	✔	✔				

1 Instrument type. For more information, refer to Security types, subtypes and instrument types in the CDSX Procedures and User Guide.
2 Rated R1 [low] for short-term debt by DBRS with a minimum issuer rating of A by CDS and rated AA [low] for long-term debt by DBRS with a minimum issuer rating of AA by CDS.
3 No more than 20 per cent of the value of collateral pledged can be the obligation of private and municipal sector issuers – subject to the additional restrictions that (i) only 10 percent of the collateral value pledged can be from LVTS and related issuers; and (ii) only 5 percent of the value of collateral pledged can be the obligation of a single private and municipal sector issuer.
4 Securities issued by members of a pool or fund, or "family" of a pool or fund member, are not eligible for collateral related to the pool or fund.
5 Rated R-1 [low] by DBRS or A-1 [mid] by S&P or P1 by Moody's.
6 Rated R1 [mid] by DBRS or A-1 [mid] by S&P. Minimum issuer rating of AA by CDS.
7 Rated A [low] by DBRS or A- by S&P or A3 by Moody's.
8 100 per cent of the contribution must be made in U.S. cash.

15.1.1 Delivering Canadian dollar cash as collateral

To pledge Canadian dollar cash as collateral, initiate an LVTS payment to CDS's cash collateral account held at the Bank of Canada using an MT205 SWIFT message. The Bank of Canada sends a confirmation to CDS that LVTS funds were deposited to CDS's account. CDS then enters the cash value received in the Collateral Management System.

The table below indicates the information to be provided in the MT205 SWIFT message.

Field	Description
RELATED REFERENCE	Enter the collateral pool ID or participant fund ID
BANK OF CANADA TRANSIT	00006177
SWIFT ADDRESS	BCANCAW2
BENEFICIARY NAME	CDS Clearing and Depository Services Inc.
BENEFICIARY ACCOUNT	15451003 (CDS's account number held by the Bank of Canada as CDS's LVTS banker)
BENEFICIARY BIC	CDSLCATT

Canadian dollar cash deposits

When using Canadian ~~funds~~ cash deposits as collateral:

- Participants may substitute securities for collateral amounts greater than $10 million by 1 p.m. ET on the day of deposit, if securities are deemed eligible collateral in the funds
- Any residual cash balance is to be less than or equal to $10 million.

Canadian dollar cash withdrawals

If a request for a cash withdrawal is received by 10 a.m. ET:

- Amounts less than or equal to $10 million may be withdrawn after 10 a.m. ET on the next business day following the withdrawal request[1]
- Amounts greater than $10 million may be withdrawn after 10 a.m. ET two business days following the withdrawal request

15.1.2 Delivering U.S. dollar cash as collateral

~~USD receivers of credit pool~~

~~To pledge U.S. dollar cash as collateral for the USD receivers of credit pool, initiate a Fedwire payment to the following CDS account at Harris National Association. CDS monitors the account to ensure that the funds are deposited to CDS's account. CDS then enters the cash value received in the Collateral Management System.~~

~~The table below indicates the information to be provided in the Fedwire payment.~~

~~Bank~~	~~Harris National Association~~
~~Telegraphic ID~~	~~HARRIS CHGO~~
~~Account number~~	~~203-213-4~~
~~ABA number~~	~~071000288~~
~~FAO~~	~~CDS Clearing and Depository Services Inc. (include the collateral pool ID)~~

~~NSCC participant fund for New York Link~~

To deposit~~pledge~~ U.S. dollar cash as collateral for ~~the NSCC participant fund for New York Link or NSCC participant fund for New York Link special margin,~~USD collateral pools and/or participant funds other than the CDS participant fund for New York Link, initiate a Fedwire payment to the following CDS account~~at Harris National Association~~. ~~CDS monitors the account to ensure that the funds are deposited to CDS's account. CDS then enters the cash value received in the Collateral Management System.~~

~~The table below indicates the information to be provided in the Fedwire payment.~~

Bank	Harris National Association
Telegraphic ID	HARRIS CHGO

[1] Cash collateral withdrawals may be subject to CDS's own banking restrictions. CDS will confirm by 10:30 a.m. ET to any participant with a withdrawal request if that request cannot be fulfilled by the next business day following the withdrawal request.

Account number	203-212-6
ABA number	071000288
FAO	CDS Clearing and Depository Services Inc. (include the P~~p~~articipant F~~f~~und ID)

To deposit U.S. dollar cash as collateral for the CDS participant fund for New York Link, initiate a Fedwire payment to the following CDS account.

Bank	[1]
Telegraphic ID	[1]
Account number	[1]
ABA number	[1]
FAO	CDS Clearing and Depository Services Inc. (include the Participant Fund ID)

1 Procedures regarding the interest payment distribution will be determined and communicated before the implementation of the New York Link Participant Procedures

CDS monitors the accounts to ensure that the funds are deposited to CDS's account. CDS then enters the cash value received in the Collateral Management System.

15.1.3 Interest rebates

Participants with cash contributions in the ~~participant funds or collateral pools~~ CNS Participant Fund, CNS Default Fund and Supplemental Liquidity Fund are eligible to receive interest on these funds on a semi-annual basis.

Interest is payable within 45 calendar days from the end of each semi-annual period, ending March 31 and September 30, provided that the participants' obligations to CDS have been fulfilled.

The interest rate is the rate earned by CDS in its current account on the first day of each month. The calculation of the interest payable is based on the participant's pro rata share of total cash on deposit, averaged over the six month period.

15.1.4 Making collateral contributions

Securities used as collateral are pledged using the Pledge to CDS Menu function from the participant's ledgers (non-risk account) to the CAL assigned for that pool, ~~or~~ funds or Supplemental Liquidity Fund. Pledges are confirmed only if all the required edits are satisfied. Settlement of the pledge moves the securities into the CAL and the securities are then managed by CDS in its role as the administrator.

Participants may substitute other securities into their CAL and release the original contribution back to their ledgers. A participant must maintain sufficient value of securities in their CAL at all times.

15.1.5 Valuation of contributions

A pledge is revalued whenever it is changed intraday or overnight as part of the IRMS process. The valuation of delivered collateral includes a market price, accrued interest (for bonds) and a haircut that is applied to each security that is pledged as margin collateral. The applicable value of a security that is contributed as margin collateral is calculated as indicated below.

$$\text{Applicable value} = \text{Market value} - (\text{Market value} \times \text{Haircut})$$

$$\text{Market value} = (\text{Par value} \times \text{Market price}) + \text{Accrued interest}$$

Note: U.S. securities pledged to a U.S. dollar pool have the FX risk subtracted using the following formula[1].

Applicable value = Market value - (Market value X (Haircut - FX risk[1]))

[1]FX risk = (Exchange rate 1 day VaR*sqrt of

Canadian securities pledged to a USD pool have the FX risk added using the following formula.

Applicable value = Market value - (Market value X (Haircut + FX risk[1]))

[1]FX risk = (Exchange rate 1 day VaR*sqrt of

15.1.6 Haircuts

In addition to market valuation, securities pledged as collateral will be discounted based on a haircut amount. For each security contributed as margin collateral, the haircuts listed in CDSX debt haircuts on page 111 must be applied to the market value.

The accrued interest calculation should be made on the basis that valuation prior to payable date includes interest due, and valuation on payable date does not include interest due.

For example, if a participant is required to have $1,000 in margin collateral contributed to their collateral pool or CNS P~~p~~articipant F~~f~~und, the participant must ensure that the securities pledged by the participant to CDS have a value, after the application of market prices, accrued interest and the haircut, of at least $1,000.

1 Haircuts for US securities include an FX risk component.

15.2 Collateral Management System

The Collateral Management System (CMS) provides participants with a valuation of the collateral pledged to CDS for various clearing and settlement services.

The Collateral Management System functions are:

- Inquire Collateral Valuation – Inquire on collateral pool and P~~p~~articipant F~~f~~und valuation details. For more information, see Inquiring on collateral value pledged to CDS on page 192.
- Inquire Collateral Requirement – Inquire on the collateral requirement for a selected pool or fund. For more information, see Inquiring on collateral requirements on page 193.
- Collateral Entry – Enter collateral items in a new pledge transaction. For more information, see Pledging securities as collateral on page 195.
- Collateral Inquiry – View information about collateral contributions. For more information, see Inquiring on collateral contributions on page 197.
- Collateral Modify – Increase, decrease or substitute collateral for pledges to CDS. For more information, see Changing collateral contributions on page 201.

15.2.1 Accessing the Collateral Management Menu

To access the Collateral Management Menu:

1. Log on to CDS systems. For more information, see Logging on to CDS systems on page 21.
2. On the CDS Clearing and Depository Services Inc. Main Menu, type the number identifying CDSX – Customer Functions in the SELECTION field and press ENTER. The CDSX – Customer Functions Menu on page 71 displays.
3. Type the number identifying Collateral Management Menu in the SELECTION field and press ENTER. The Collateral Management Menu on page 192 displays.

CHAPTER 16

CNS Participant Fund, ~~and~~ CNS Default Fund and Supplemental Liquidity Fund

CDS is the central counterparty to all domestic continuous net settlements in CNS. To manage the risk associated with being the central counterparty, CDS calculates ~~a CNS Participant Fund: and a CNS Default Fund collateral~~ requirements based on the following:

- CNS Participant Fund:
  - Mark-to-market component: Marks on newly netted trades and CNS positions, both outstanding and value-dated.
  - Outstanding position component: Estimates of the risk from each CNS participant's CNS positions, both outstanding and value-dated.
- CNS Default Fund:
  - Estimates the risk not covered by a defaulting participant's CNS Participant Fund contribution under a wide range of potential credit risk stress tests to determine the additional financial resources required to sufficiently cover the risk.
- Supplemental Liquidity Fund:
  - Estimates the value of fund required to cover the default of a Participant and its affiliates that would potentially cause the largest aggregate liquidity exposure for the CCP in extreme but plausible market conditions as indicated in Supplemental Liquidity Fund on page 210.

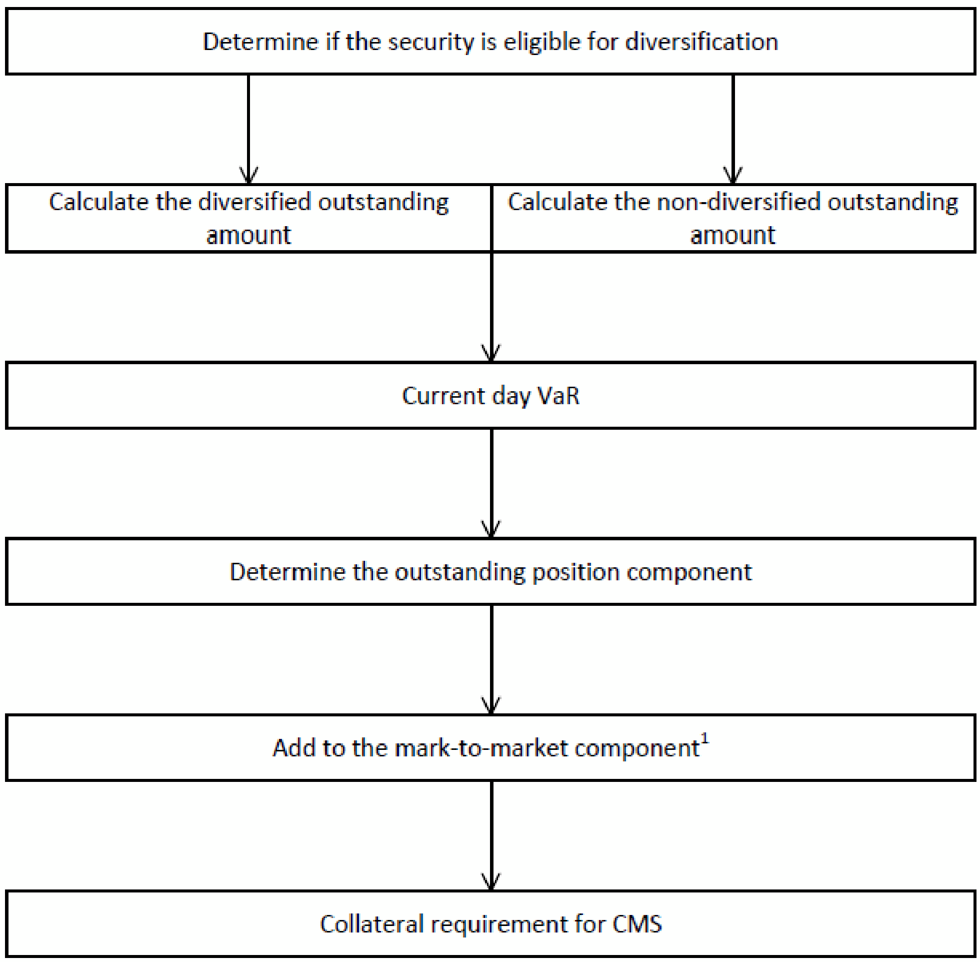
CNS acceptable collateral

All CNS participants must contribute to the CNS Participant Fund, ~~and~~ CNS Default Fund and Supplemental Liquidity Fund for the service. CDS calculates each CNS participant's required contribution daily. All contributions to the CNS Participant Fund, ~~and~~ CNS Default Fund and Supplemental Liquidity Fund ~~funds~~ must be in the form of the eligible collateral indicated in Acceptable collateral on page 185.

16.1 Collateral requirement calculation overview

16.1.1 CNS P~~p~~articipant F~~f~~und

The Internal Risk Management System (IRMS) calculates the collateral requirements for the CNS Participant Fund. IRMS values aggregate risk on a portfolio level of CNS positions, both outstanding (fails) and value-dated, using liquidity, concentration and diversification to calculate the collateral requirement for the Collateral Management System (CMS). The following diagram illustrates this process.



[1]The total collateral requirement recognizes the effect of all diversification between the two components. The total requirement is calculated using the following formula:

$$\sqrt{\text{Outstanding position component}^2 + \text{Mark-to-market component}^2}$$

16.1.2 CNS D~~d~~efault F~~f~~und

CDS calculates the CNS Default Fund collateral requirement on a monthly basis using stress testing results~~ to determine an appropriately funded default fund~~. CDS monitors the value of the CNS Default Fund on a daily basis and can adjust the size of the fund on an intra-month basis.

CDS's Tiered CNS Default Fund consists of two tiers, each based on the respective activity levels of the participant(s) in the Service. This tiered structure ensures that CDS remains compliant with international standards, including the requirement to account for uncovered residual risk (generally known as "Cover-1"), and ensures that ~~P~~participants bear responsibility for the financial – or other – risks they pose to the operations of the clearing and settlement system.

- Tier 1 CNS Default Fund is based on the daily CNS outstanding positions of all CNS p~~P~~articipants, *excluding* CNS outstanding positions included in Tier 2.
- Tier 2 CNS Default Fund is based on the specific subset of CNS outstanding positions attributed to those CNS participants whose activity levels have demonstrated spikes in CNS activity (in other words, volatility) on certain specific business days.[1] For these CNS participants, only CNS outstanding positions from those specific business days are used to size the Tier 2 CNS Default Fund collateral requirement. CNS outstanding positions for all other business days are used to size the Tier 1 CNS Default Fund collateral requirement.

~~Tier 1: Non-Triple Witching Activity~~

~~Non-Triple Witching Activity consists of all CNS Service participants' CNS activity *excluding activity on those days identified as Triple Witching days for CNS Service participants identified as having Triple Witching Activity on days which are defined as Triple Witching Activity days*.~~

~~Tier 2: ~~Triple Witching ~~Activity~~Days

Triple ~~W~~witching ~~activity~~days occurs once per quarter (four (4) times per year) on the third Friday of March, June, September and December.~~,~~ ~~and~~It affects CNS p~~P~~articipants whose outstanding equity positions submitted for CNS settlement increase coincident with the exercise date of index options, index futures, options on single stocks and single stock futures[2] (~~-~~"~~T~~triple ~~W~~witching ~~Activity~~days").

[1] For example, a subset of CNS participants have CNS activity spikes on days associated with the exercise of equity options and equity futures positions in the cash market – so-called ~~T~~triple~~-~~ ~~W~~witching ~~activity ~~days. The affected days are: (i) the day(s) on which CNS transactions deemed to be ~~T~~triple-~~W~~witching-related novate (i.e., value date minus one); and, (ii) the day on which CNS outstanding positions deemed to be ~~T~~triple-~~W~~witching~~-~~ related are eligible to settle (i.e., value date).

[2] Currently, CNS Participants identified as having ~~T~~triple ~~W~~witching ~~A~~activity are only required to post an *estimate* of the CNS Participant Fund collateral requirement prior to the date the corresponding positions are novated and guaranteed by the CNS service.

CNS transactions are novated on value date minus one and, as a result, the risk related to transactions sent for clearing and settlement on ~~T~~triple ~~W~~witching ~~Activity~~days impacts CNS outstanding position volumes, and the size of the CNS Default Fund, 8 days a year (triple witching activity).~~ – t~~These 8 days include the day the positions are scheduled to settle [1] (~~i.e., the third Friday of the last month of every quarter~~triple witching settlement day) and the day prior to that settlement day~~ (due to the novation of trades submitted for CNS settlement on value date minus one)~~.

CDS uses a volatility threshold to determine whether a CNS participant had ~~T~~triple ~~W~~witching ~~A~~activity. CDS measures the variation in the participant's contribution to the CNS Participant Fund between the triple witching settlement date and the previous business day. A participant will be deemed to have ~~T~~triple ~~W~~witching ~~A~~activity when the day-over-day increase in that participant's contribution to the CNS Participant Fund is greater than or equal to (≥) 100% of that participant's contribution~~ on the day such trading activity is first guaranteed by CNS (i.e., the corresponding value date minus one)~~.

To determine the scale of the residual stress-test losses used to calculate the CNS Default Fund, the residual profit, or the residual loss, resulting from unwinding each day's CNS outstanding positions is calculated for every participant for every day of the look-back period, using all of the stress-test scenarios, and net of the market value of the CNS collateral.

The CNS Default Fund is then calculated to collateralize the largest of the daily residual stress-test losses over the lookback period.

The daily residual stress-test profits and losses are calculated based on the following inputs:

- The post stress-test profit from, or cost of unwinding, a participant's CNS outstanding positions on that day, plus CDS mark-to-market payments owing;
- The post stress-test value of the lesser of: (a) a participant's CNS Participant Fund pledged collateral, and (b) the CNS Participant Fund collateral fund requirement on that day;
- The daily sum of items #1 and #2, above, for every stress-test scenario, consisting of either the daily residual stress-test profit or the daily residual stress-test loss.

The CNS Default Fund collateralizes, on a mutualized basis, the risk associated with CNS p~~P~~articipants' outstanding positions that would result in the *largest credit risk under extreme, but plausible, market conditions*; the CNS Default Fund allocates the collateral requirements on a ~~pro-rata~~pro rata basis, taking into account~~ of~~ the cumulative CNS Participant Fund collateral requirements, over the look-back period, for those business days associated with either of Tier 1 or Tier 2 activity.

[1] Otherwise commonly known as "value date", triple witching settlement day occurs 2 business days following the third Friday of the last month of every quarter.

Tier 1

The largest residual stress-test loss of the CNS outstanding positions in Tier 1 (as defined above) is used to calculate the size of the CNS Default Fund for all days in the quarter which do not have associated Triple Witching Activity, and are re-based monthly. The largest Tier 1 residual stress-test loss of the CNS Default Fund is then allocated amongst all CNS Service participants according to their pro rata share of the cumulative CNS Participant Fund collateral requirement over the look-back period for those days, and for participants with Tier 1 CNS outstanding positions.[1]

CDS's monthly review of the size of the Default Fund will advise CNS participants of any changes to their Tier 1 CNS Default Fund collateral requirement required to ensure the CNS Default Fund remains Cover-1. Tier 1 CNS Default Fund requirements will be enforced for all CNS participants throughout the month (subject to intra-month re-sizing – see below).

Tier 2

The difference between the largest residual stress-test loss of the CNS outstanding positions contained in Tier 2, and the largest residual stress-test loss of the CNS outstanding positions in Tier 1, is allocated against those CNS participants having ~~T~~triple ~~W~~witching ~~A~~activity~~ on Triple Witching Activity days (i.e., the day Triple Witching trades are novated by CNS, and the next day (value date), when such trades are first eligible to settle)~~.

Tier 2 CNS Default Fund c~~C~~ollateral requirements will be allocated incrementally to, and in addition to, the Tier 1 allocation – and only against CNS participants identified as having ~~T~~triple ~~W~~witching ~~A~~activity – the incremental collateral will be deemed to be due on the day prior to the novation of that month's Triple Witching Activity.

The incremental Tier 2 CNS Default Fund collateral requirement is based on a participant's ~~pro-rata~~pro rata share of the cumulative CNS Participant Fund collateral requirement on ~~T~~triple ~~W~~witching ~~A~~activity days during the lookback period, and across all CNS Service participants identified as having ~~T~~triple ~~W~~witching ~~A~~activity during that period. [2]

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[1]For those participants not having ~~T~~triple ~~W~~witching ~~A~~activity, the sum of their CNS Participant Fund collateral requirements on each day in the lookback period forms the basis for determining their pro rata share. Alternatively, for those participants having ~~T~~triple ~~W~~witching ~~A~~activity, the allocation is based on the sum of their CNS Participant Fund collateral requirements for all days in the lookback period e*xcluding those 8 days deemed to be the ~~T~~triple ~~W~~witching activity days of the lookback period*.

[2]Eight days every year – for every quarter the day ~~T~~triple ~~W~~witching trades reach value date minus one (i.e., the day they are novated) and on their value date (the day they are first eligible to settle).

CDS's monthly review of the size of the CNS Default Fund will advise CNS participants of any revisions to their Tier 2 CNS Default Fund collateral requirement. Tier 2 collateral requirements will remain in effect for a period of 5 – 10 business days, subject to the affected participants' CNS Participant Fund collateral requirement returning to a level similar to that which existed prior to the novation of that month's Triple Witching Activity.

Regularly Scheduled Review of CNS Default Fund Size and Allocation Base

The size of the CNS Default Fund will be based on a look-back period of one (1) year, and will be subject to scheduled monthly reviews.

The rebasing of the allocation of the collateral requirements of the CNS Default Fund amongst participants will be also be done monthly – concurrent with the review of the size of the CNS Default Fund and will be based on a one (1) year look-back period.

Intra-month Monitoring

Daily residual stress-test profits and losses will be calculated every business day between the regularly scheduled monthly reviews of the CNS Default Fund size to ensure that the CNS Default Fund remains Cover-1 compliant intra-month.

CDS Risk Management monitors daily residual stress-test losses intra-month. In the event that an intra-month residual stress-test loss (in either the non-Triple Witching or Triple Witching days) exceeds the Tier 1 and/or Tier 2 residual stress losses used to calculate the size of the CNS Default Fund, CDS Risk Management will make an intra-month CNS Default Fund collateral call against both Tier 1 and Tier 2 participants according to the following criteria and thresholds:

1. Single CNS Participant Cover-1 breach:
   - Targeted collateral call to the CNS p~~P~~articipant responsible for the breach
2. Two CNS Participant Cover-1 breaches, with ~~&~~ both breaches being individually less than 10% of CNS Default Fund:
   - Targeted collateral call to those CNS p~~P~~articipants responsible for the breach
3. Two CNS Participant Cover-1 breaches, with ~~&~~ either of the individual breaches being greater than 10% of CNS Default Fund:
   - Allocation to all CNS p~~P~~articipants of the new Cover-1 amount
4. More than two CNS Participant~~s~~ breaches
   - Allocation to all CNS p~~P~~articipants of the new Cover-1 amount

Examples:

1. If an intra-month stress-test loss exceeding the stress-test loss used to calculate the size of Tier 1 of the CNS Default Fund, on a non-Triple Witching day, the above calls will be made when additional collateral is required for either: (a) the Tier 1 collateral requirement to remain Cover-1 - for both (1) and (2); or (b) on the new Tier 1 amount across all CNS service p~~P~~articipants – for both (3) and (4).

2. If an intra-month stress-test loss on a Triple Witching day occurs, the above calls will be made when additional collateral is required for either: (a) the Tier 2 collateral requirement to remain Cover-1 – for both (1) and (2); or (b), on the new tier 2 amount across all CNS Service participants – for both (3) and (4).

In all instances, the allocation is based on the year-to-date lookback period.

16.2 Supplemental Liquidity Fund

CDS calculates the Supplemental Liquidity Fund collateral requirement on a quarterly basis using liquidity stress scenarios. CDS monitors the value of the Supplemental Liquidity Fund on a daily basis and can adjust the size of the fund between the quarterly updates.

The Supplemental Liquidity Fund is designed to cover the liquidity shortfalls of the CNS CCP service with CNS participants' resources through a pooling-of-resources arrangement. The Supplemental Liquidity Fund is sized to have resources sufficient to cover potential liquidity stress scenarios that include, but are not be limited to, the default of a participant and its affiliates that would potentially cause the largest aggregate liquidity exposure for the CCP in extreme but plausible market conditions.

To ensure compliance with CPMI-IOSCO PFMI Principle 7, CDS has implemented a two-tiered Cover-1 Supplemental Liquidity Fund.

The Supplemental Liquidity Fund will consist of two tiers based on the activity level of the participants in the CNS service.

- Tier 1 Supplemental Liquidity Fund contributions will be based on the liquidity risk arising from the daily CNS outstanding positions of all CNS participants, *excluding* those CNS outstanding positions on the triple witching settlement day.
- Tier 2 Supplemental Liquidity Fund contributions will be based on the liquidity risk arising from a specific subset of CNS outstanding positions: the positions of those CNS participants whose activity levels have demonstrated spikes in CNS activity on certain specific business days.

The use of two tiers is consistent with the longstanding operating principle that requires participants to bear responsibility for the financial – or other – risks they pose to the operations of the clearing and settlement system.

Triple Witching Activity

The triple witching day occurs once per quarter (four (4) times per year) on the third Friday of March, June, September and December. It coincides with the quarterly exercise date of equity derivatives contracts. CDS's review revealed that a subset of CNS participants are far more active (i.e., submit more transactions for clearing and settlement) on such triple witching days.

Transactions submitted for clearing and settlement on triple witching days impact CNS outstanding position settlement volumes, and the related liquidity risk, four times per year: on the day the positions are scheduled to settle (triple witching settlement day).

In order to determine whether a CNS participant has a triple witching activity, CDS uses two volatility thresholds:

a. CDS measures the variation in the CNS participant's liquidity exposure between the triple witching settlement day and the previous business day. A participant will be deemed to have a triple witching activity when the day-over-day increase in that participant's liquidity exposure is greater than or equal to 100% of that participant's liquidity exposure.
b. CDS measures the variation in the CNS participant's liquidity exposure between one business day after the triple witching settlement day and the triple witching settlement day. A participant will be deemed to have a triple witching activity when the day-over-day decrease in that participant's liquidity exposure is less than or equal to -100% of that participant's liquidity exposure.

A CNS participant reaching either one or both of the above thresholds will be deemed to have a triple witching activity for that period of time.

Methodology

To determine the size of the liquidity shortfall used to calculate the Supplemental Liquidity Fund collateral requirement, the liquidity shortfalls of unwinding each day's CNS outstanding positions are calculated for every participant, for every day of the respective lookback periods, using the stress-test scenarios, and all available financial resources.

The Supplemental Liquidity Fund collateral requirement is then calculated so as to collateralize the largest daily liquidity shortfall over the respective lookback periods.

The daily liquidity shortfalls are calculated based on the following inputs:

1. Liquidity exposure over the close out period;
2. Qualifying financial resources (excluding the CNS Supplemental Liquidity Fund).

The Supplemental Liquidity Fund is designed to collateralize, on a mutualized basis, the risk associated with CNS participants' outstanding positions that would result in the *largest liquidity shortfall under extreme, but plausible, market conditions*.

Mutualization is achieved by allocating the Supplemental Liquidity Fund exposures on a pro rata basis taking account the cumulative CNS participant liquidity exposures over the respective lookback periods for either the Tier 1 or Tier 2 Supplemental Liquidity Fund contributions.

Tier 1

The largest liquidity shortfall over the lookback periods arising from all CNS outstanding positions of all CNS participants, excluding those CNS ouststanding position on the triple witching settlement day, are used to size the Supplemental Liquidity Fund. The first lookback period corresponds to the previous quarter and the second lookback period is equal to the previous 60 business days.

The largest Tier 1 liquidity shortfall of the Supplemental Liquidity Fund is then allocated amongst all CNS participants in accordance with their pro rata share of the cumulative CNS participant liquidity exposures across all CNS participants over the last quarter for those days and participants having Tier 1 CNS outstanding positions.

As part of CDS's quarterly review of the size of the Supplemental Liquidity Fund, CNS participants will be advised of any changes to their Tier 1 Supplemental Liquidity collateral requirement which may be required. Tier 1 Supplemental Liquidity Fund collateral requirements will be enforced for all CNS participants throughout the quarter (subject to intra-quarter re-sizing – see below).

Tier 2

The Tier 2 Supplemental Liquidity Fund collateral requirements is based on a two-step methodology.

Step 1:

Six business days before the triple witching settlement day, the estimated amount of the Tier 2 Supplemental Liquidity collateral requirement is computed. The amount is the difference between the average value of the Tier 2 Supplemental Liquidity Fund collateral requirements calculated over the last two triple witching activity periods and the Tier 1 Supplemental Liquidity Fund collateral requirement value. The allocation of the Tier 2 Supplemental Liquidity Fund collateral requirement will be *incremental* to the Tier 1 allocation and only against those CNS participants identified as having triple witching activity.

The incremental Tier 2 Supplemental Liquidity Fund collateral requirement is allocated against those participants identified as having triple witching activity, based on: (1) their pro rata share of the number of occurrences on the triple witching activity days over the four previous quarters across all occurrences of all CNS Service participants identified as having triple witching activity over the same lookback period and (2) in accordance with their pro rata share of the cumulative CNS participant liquidity exposures across all CNS participants over the previous last two quarters for those days and participants having triple witching activities.

The value calculated as part of this first step remains valid until the day prior the triple witching settlement day.

Step 2:

One business day before the triple witching settlement day, the largest liquidity shortfall derived from the CNS outstanding positions as of the triple witching settlement day is calculated. If the difference between the value calculated in the second step and the first step is greater than zero, the incremental value is added to the requirement value calculated in step 1. The incremental value accounts for the default of the Participant having the largest collateral requirement for the Tier 2 Supplemental Liquidity collateral requirement. If the difference is lower than zero, the requirement value calculated in step 1 is adjusted accordingly.

The allocation method used in the second step is the same as the one described in step 1.

As part of CDS's quarterly review of the size of the Supplemental Liquidity Fund, CNS participants will be advised of any revisions to their Tier 2 Supplemental Liquidity Fund collateral requirement. Tier 2 Supplemental Liquidity Fund collateral requirements will be effective for a period of nine business days during a quarter, subject to the affected participants' Supplemental Liquidity Fund collateral requirement returning to a level similar to that which existed prior to the novation of that quarter's triple witching transactions.

Regularly Scheduled Review of Supplemental Liquidity Fund Size and Intra-quarter Monitoring

CDS monitors the value of the Tier 1 Supplemental Liquidity Fund on a daily basis to ensure that it covers the highest shortfall observed during either: (1) the previous quarter or (2) the previous 60 business days. As such, the size of the Tier 1 Supplemental Liquidity Fund is revised, at a minimum, on a quarterly basis. However, CDS can adjust the size of the fund between the quarterly updates if a new highest shortfall is observed during the previous 60 business days. The intra-quarter collateral call is then allocated amongst all CNS participants with the same methodology as the scheduled quarterly review.

Tier 2 Supplemental Liquidity Fund contributions are required 11 days in a quarter. More specifically, six business days before the triple witching settlement day, the estimated amount of the Tier 2 Supplemental Liquidity Fund collateral requirement is computed. A revised Tier 2 Supplemental Liquidity Fund collateral requirement is determined one business day before the triple witching settlement day.

16.3 Determining diversification eligibility

For a security to be eligible for diversification, it must have at least 90 days of price history and sufficient trading volumes. IRMS uses liquidity to determine a security's holding period and whether it is eligible for diversification. The holding period is the number of days that CDS estimates it might take to execute the close-out transactions for CNS positions, both outstanding and value-dated. The maximum holding period that can be applied to a security is 10 days. The criteria used to determine the liquidity of a security is based on trading volumes and percentage of trading days as indicated in the table below.

Liquidity classification	Average daily trading volume (20 business days)	Percentage of trading days (260 business days)	Holding period	Diversification eligibility
Higher than typical	>=50,000 shares	>=80%	2 days	Yes
Typical	>=25,000 shares	>=70%	3 days	Yes
Less than typical	>=10,000 shares	>=50%	5 days	Yes
Illiquid	>=0	>=10%	10 days	No

If a security is classified as illiquid, it is not eligible for diversification and is assigned a 10-day holding period. If the security has less than 10 per cent trading days in last 260 days, it also receives a 100 per cent haircut.

16.3.1 Applying a concentration adjustment

For both diversified and non-diversified securities, IRMS applies a concentration adjustment to the holding period. The concentration adjustment is used to account for the size of a given CNS position, which is the net of both outstanding and value-dated positions, with respect to the average trading volume for the security. An increase to the holding period for the position may be required. For each CNS position, the required liquidation period is calculated as follows:

$$\text{Required liquidation period} = \frac{\text{Actual position size}}{\text{Average daily trading volume}} \text{ (round to the nearest full day)} + \text{1 day (to account for the default date)}$$

16.7 Calculating the IRMS collateral requirement

The collateral requirement for CMS is calculated using the formula below.

$$\sqrt{\text{Outstanding position component}^2 + \text{Mark-to-market component}^2}$$

For more information, see Outstanding position component on page 217 or Mark-to-market component on page 217.

16.7.1 CNS collateral requirements

CNS participants can view their collateral requirement in CMS after the CNS/BNS process (approximately 7:00 a.m. ET, 5:00 a.m. MT, 4:00 a.m. PT).

Participants use the Inquire Collateral Requirement or the Inquire Collateral Valuation function to determine their current collateral requirements, current collateral value and excess or short amounts. For more information, see Inquiring on collateral contributions on page 197 and Inquiring on collateral value pledged to CDS on page 192.

Participants must contribute sufficient collateral to the CNS central counterparty service participant fund and the Supplemental Liquidity Fund by the imposed deadlines. If the requirements are not met, participants can be fined or suspended. For more information on collateral contribution deadlines and penalties, see Collateral administration on page 184.

17.6.1 New York Link/DTC Direct Link special margin participant funds

Special margin participant fund	Collateral deadlines	Eligible collateral	Pledging collateral
CDS participant fund for DTC Direct Link	For information on collateral deadlines, see Collateral administration	For information on eligible collateral, see Acceptable collateral	Securities are pledged from the participant's CUID to CDS's restricted collateral account (DDLX) If all the requirements are satisfied, CMS automatically confirms the pledge and moves the securities in to CDS's DDL ledger For more information, see Pledging securities as collateral
CDS participant fund for New York Link			To cover the requirement, participants must deposit cash collateral at CDS. For more information, see Delivering U.S. dollar cash as collateral on page 188.~~Securities are pledged from the participant's CUID to CDS's restricted collateral account (NSCX)~~ ~~If all the requirements are satisfied, CMS automatically confirms the pledge and moves the securities in to CDS's NCS ledger~~ ~~For more information, see Pledging securities as collateral~~
NSCC participant fund for New York Link			Not applicable

Note: Information related to these special margin participant funds is available through CMS and RMS. For more information, see Collateral Management System and Using the Report Management System.

17.7 U.S. dollar receivers' collateral pool

A CAL is assigned to hold the collateral contributions of the receivers of credit for U.S. dollars. Each receiver pledges securities to the ledger and CUID indicated in the table below.

Collateral pool member	Collateral administration	
	Ledger	CUID
Receivers of credit for U.S. dollars	CAR20	CARU

Contents

Soft Cap chapter removed; Numbering updated

If a requested collateral contribution is not delivered by the specified deadline, the participant may be suspended. For more information, refer to DTCC's website (www.dtcc.com).

Making initial collateral contributions

A minimum US$10,000 initial collateral contribution is required from each participant, with subsequent fund requirements being calculated based on each participant's trading activities. Participants must send their initial cash contribution to CDS through Fedwire.

Making daily collateral contributions

DTC assesses participants' trading activities on a daily basis and informs both CDS and the participant if an additional collateral contribution is required. For more information, refer to DTCC's website (www.dtcc.com).

Withdrawing excess collateral contributions

Each quarter, DTC informs CDS and the participant if they have excess collateral contributions. Upon request, excess collateral contributions are returned as part of daily settlement. For more information, refer to DTCC's website (www.dtcc.com).

Interest on cash contributions

Every month, DTC calculates the interest earned on each participant's cash contributions. The interest is paid in the participant's net settlement amount and is itemized on their monthly bill.

7.3 CDS participant fund for New York Link (administered by CDS)

New York Link participants must also contribute to a participant fund administered by CDS.

CDS calculates the participant fund requirement monthly.

All participant fund requirements may be satisfied in the form of eligible collateral. For more information, refer to *Participating in CDS Services*.

If a requested collateral contribution is not delivered by the specified deadline, the participant may be fined or suspended.

Cash is used to satisfy a CDS participant fund for New York Link contribution.For more information, see Delivering U.S. dollar cash as collateral in *Participating in CDS Services*.

Making initial collateral contributions

There is no minimum collateral contribution required from each participant.

Making monthly collateral contributions

Participants are notified of their collateral contribution requirements on a monthly basis. Collateral contribution requirements may be satisfied by delivering a collateral contribution to CDS in the form of eligible collateral and within the collateral limits.

All collateral contribution requirements must be delivered by 10:00 a.m. ET (8:00 a.m. MT, 7:00 a.m. PT) on the day it is due. If CDS does not receive the required collateral contribution by the specified deadline, the participant is fined. If the collateral contribution is still outstanding by 11:00 a.m. ET (9:00 a.m. MT, 8:00 a.m. PT), the participant is suspended.

Participant cash contributions to the CDS participant fund for New York Link are eligible to earn interest.

7.3.1 DTC and NSCC settlements components

The CDS participant fund for New York Link is made up of the following components:

- DTC settlements component on page 33
- NSCC settlements component on page 34.

DTC settlements component

The DTC settlements component of the CDS participant fund for New York Link covers the risk of default for the New York Link participant with the largest payment obligation to DTC. In a default situation, CDS must pay DTC the amount owed by the New York Link participant by the end-of-day.

CDS updates the DTC settlements component requirements on a quarterly basis as follows:

1. Each New York Link participant is allocated DTC net debit cap by CDS. Each New York Link participant informs their CDS collateral administrator in writing if any changes are required to the amount of their CDS allocated DTC net debit cap at least 10 business days before the end of the quarter. In case of an increase in the DTC net debit cap, CDS may require the New York Link participant to provide information, such as the reasons for the increase, pre-funding incidents and a business plan.

   Note: New York Link participants can only adjust their CDS allocated DTC net debit cap on a quarterly basis.

2. In order to calculate the DTC settlements component for each New York Link participant, CDS calculates the leverage factor as follows:

$$\text{Leverage factor} = \frac{\text{Total of all New York Link particiants' allocated net debit caps}}{\text{Largest CDS allocated individual DTC net debit cap}}$$

3. CDS calculates each New York Link participant's required DTC settlement component collateral contribution as follows:

$$\begin{array}{l}\text{Individual participant's required}\\ \text{DTC settlement component}\end{array} = \frac{\text{CDS allocated net debit cap}}{\text{Leverage factor}}$$

   The maximum individual DTC net debit cap must be equal to the aggregate value of the DTC settlement component.

4. CDS informs each New York Link participant of their required DTC settlement component collateral contribution.

NSCC settlements component

The NSCC settlements component covers the liquidity shortfalls of the New York Link service with CDS participants' resources through a pooling-of-resources arrangement. The NSCC settlements component is sized to have resources sufficient to cover potential liquidity stress scenarios that include, but are not limited to, the default of a participant and its affiliates that would potentially cause the largest aggregate liquidity exposure in extreme but plausible market conditions.

CDS updates the NSCC settlements component requirements on a monthly basis and the requirements are based on the activity level of the participants in the New York Link service to reflect the risks that they pose to the operations of the clearing and settlement system.

To determine the size of the liquidity shortfalls used to calculate the NSCC settlements component, the liquidity shortfalls of unwinding New York Link outstanding positions on each day is calculated for every participant, for every day of the lookback periods, using stress-test scenarios and all available financial resources.

The daily liquidity shortfalls are calculated based on the following inputs:

1. Liquidity requirements over the close out period;

2. Qualifying financial resources.

The NSCC settlements component is then calculated so as to collateralize, the largest daily liquidity shortfalls over the lookback periods. The first lookback period corresponds to the previous month and the second lookback period is equal to the previous 20 business days.

Mutualization is achieved by allocating the NSCC settlements collateral requirements on a pro rata basis, taking account of the cumulative CDS participants for New York Link liquidity requirements over the last month.

As part of CDS's monthly review of the size of the NSCC settlements component, CDS participants for New York Link will be advised of any changes to their NSCC settlements component collateral requirement which may be required. NSCC settlement component collateral requirement will be enforced for all CDS participants for New York Link throughout the month (subject to intra-month re-sizing – see Regularly scheduled review of NCSS settlement component fund size and intra-month monitoring).

Regularly scheduled review of NCSS settlement component fund size and intra-month monitoring

CDS monitors the value of the NCSS settlement component fund on a daily basis to ensure that it covers the highest shortfall observed during either: (1) the previous month or (2) the previous 20 business days. As such, the size of the NCSS settlement component fund is revised, at a minimum, on a monthly basis. However, CDS can adjust the size of the fund between the monthly updates if a new highest shortfall is observed during the previous 20 business days. The intra-month collateral call is then allocated amongst all CDS Participants for NY Link with the same methodology as the scheduled monthly review.

Reference to new fund added

Updated capitalization for consistency

Billable activity in CDSX is reported against either of the following:

- The CUID initiating the activity
- The ledger's default CUID, when the activity is based on a ledger related activity (e.g., settlement)
- The invoice unit, for billable items reported at the company level.

Participants pay CDS on the ninth business day following the end of the month.

Note: Participants who subscribe to the Entitlements Messaging Service are billed directly by SWIFT. This requires participants to complete the appropriate SWIFT forms. Contact Customer Service to coordinate the completion of the forms.

Protesting invoices

If participants report discrepancies between the seventh and the ninth business day following the end of the month, and the investigation is finished before the payment is due, any adjustments will be included in the current month's billing amount. If the discrepancies are reported or resolved after the payment is due, any adjustments will be included on the next month's invoice.

To protest an invoice, contact CDS Customer Service.

1.5 Risk

The CDS Settlement Services Risk Model is in place to assign an appropriate collateral value against all transactions that affect a participant's Canadian funds or ledger positions and to provide for payment exchange protection in the event of a default.

The risk model's components include:

Updated cross-reference to include new fund

- System operating caps (for more information, see Caps on page 128 and Cap administration on page 138)
- Lines of credit (for more information, see Lines of credit on page 145)
- Pool and CNS service funds collateral (for more information, see Collateral administration on page 183, Collateral pools on page 218, CNS Participant Fund, CNS Default Fund and Supplemental Liquidity Fund on page 202
- Aggregate collateral value (ACV) on securities transactions and sector limits on the value of eligible securities controlled by the ACV edit (for more information, see Aggregate collateral value on page 108)
- The Large Value Transfer System (LVTS).

7.8 Continuous Net Settlement Service

The Continuous Net Settlement Service nets CNS eligible trades by value date. Value-dated CNS positions that reach value date are netted with outstanding CNS positions and are eligible for settlement. For more information, refer to *Trade and Settlement Procedures*.

Participants register for this service by selecting CNS on the Application for Participation: Schedule C (CDSX789).

Making initial collateral contributions

Before participants can begin using CNS, they must make an initial contribution of collateral to the CNS Participant Fund, CNS Default Fund and Supplemental Liquidity Fund. CDS will inform participants of the amount of their initial contributions.

7.8.1 Withdrawing from CNS

Before participants can withdraw from CNS, they must satisfy their CNS obligations. In particular, they must settle all of their CNS obligations (both outstanding and value-dated) with CDS and pay any mark-to-market amounts owing. Participants also must have paid their share of any residual loss from a default that occurred while they were a CNS participant.

To withdrawal from CNS:

1. Provide written notification to CDS of the intent to withdrawal from CNS.
2. Contact Customer Service to verbally request that CDS stop netting the trades. CDS Customer Service will provide assistance in withdrawing from CNS.
3. Pay or receive any mark-to-market payments.

Note: For the purpose of allocating any residual loss, if a participant is in the process of withdrawing from CNS, they are still considered to be a CNS participant for a period of 10 business days following the date on which they have eliminated all of their CNS net trades with CDS and paid any outstanding mark-to-market amounts. CDS will return their CNS Participant Fund, CNS Default Fund and Supplemental Liquidity Fund contributions after the 10 business day period has ended, net of their share of any residual loss that was allocated to them (if they had not subsequently reconstituted their CNS service contributions, and at the exception of the Supplemental Liquidity Fund, which cannot be used to absorb any residual loss).

Updated cross-reference to include new fund

10.5 Haircuts

Haircuts are applied against the market price to determine the value of the security for the purposes of the ACV edit as follows:

- Debt instruments, haircuts are based on the security class, an issuer rating and its term to maturity.
- Equities, CDS uses a value-at-risk (VaR) based methodology to calculate haircut rates for equity securities. For more information, see CNS Participant Fund, CNS Default Fund and Supplemental Liquidity Fund on page 202.

The haircut represents the dollar value that securities could decline by from default to liquidation. The size of the haircut depends on the level of risk associated with the securities.

CDSX debt haircuts

The table below indicates the haircut rates that CDS applies to the market value of each debt security type.

Security type	Term to maturity				
	0 to 1 year	1 to 3 years	3 to 5 years	5 to 10 years	Greater than 10 years
Government of Canada	0.5%	1.0%	1.5%	2.0%	3.0%
Federated guaranteed	1.0%	1.5%	2.5%	4.0%	4.5%
Provincial	1.5%	2.0%	3.0%	4.5%	6.0%
Provincial guaranteed	2.0%	2.5%	3.5%	5.0%	6.5%
Corporate AAA	3.0%	3.5%	4.0%	6.5%	9.0%
Corporate AA	3.0%	3.5%	4.0%	6.5%	9.0%
Corporate A	5.0%	5.5%	6.0%	8.5%	11.0%
Unrated public sector entities and government grants	15.0%	16.0%	17.0%	18.5%	20.0%
Unrated munis	20.0%	21.0%	22.0%	23.5%	25.0%
Corporate BBB	30.0%		32.0%	33.0%	35.0%
Corporate BB	100.0%				
Corporate B	100.0%				
Corporate C	100.0%				
U.S. Treasury bills, notes and bonds (interest-bearing and zero-coupon bonds)[1]	1.0%		1.5%	3.0%	4.5%

[1] The value of U.S. Treasury securities is determined using NSCC haircuts that apply to zero-coupon bonds.

Non-contributing credit rings for receivers of credit

If a receiver of credit elects not to belong to the contributing collateral pools, then they must belong to one of the following non-contributing credit rings:

- Canadian dollar
- U.S. dollar.

Members of non-contributing credit rings do not pledge collateral to CDS as part of their participation (in the non-contributing credit rings). Non-contributing credit rings are used to address certain obligations of a suspended participant that may not be covered by a line of credit, cap or a CCP service fund. For example, if a suspended participant does not have a line of credit, but owes funds to CDS due to an entitlement reversal, then this portion of the suspended participant's obligation becomes the responsibility of the non-contributing credit ring members.

14.2 Central counterparty funds

The following central counterparty participant funds and liquidity fund have been established to cover the risks generated by the use of CDS's central counterparty service:

- CNS Participant Fund
- CNS Default Fund
- Supplemental Liquidity Fund.

Participants that use the CNS central counterparty service must contribute to the central counterparty CNS Participant Fund, CNS Default Fund and Supplemental Liquidity Fund established for that service.

The central counterparty CNS Participant Fund covers only the mark-to-market payments and the future risk from the CNS positions, both outstanding and value-dated that are unique to the CNS service. In the event that a central counterparty CNS participant is suspended, the central counterparty Participant Fund is responsible for paying only these portions of the suspended participant's obligations.

The CNS Default Fund is designed to allow CDS to maintain additional financial resources for its CCP CNS service sufficient to cover a wide range of stress test scenarios in extreme but plausible market conditions. The CNS Default Fund is a prefunded default arrangement that is composed of assets contributed by CNS participants that maybe used by the CCP in certain circumstances to cover losses or liquidity pressures resulting from participant defaults.

The Supplemental Liquidity Fund is designed to cover the liquidity shortfalls of the CCP CNS service with CNS participants' resources through a pooling-of-resources arrangement. The Supplemental Liquidity Fund is sized to have resources sufficient to cover extreme but plausible liquidity stress scenarios that include, but are not limited to, the default of a participant and its affiliates that would potentially cause the largest aggregate liquidity exposure for the CCP in extreme but plausible market conditions.

14.2.1 Covering obligations

The members of CDS's central counterparty service guarantee the following obligations of the other members:

- Mark-to-market payments made as part of a central counterparty service
- Any loss generated by the close-out of an outstanding or value-dated position (i.e., an outstanding and/or value-dated to-deliver (short) position or an outstanding and/or value-dated to-receive (long) position).

The central counterparty participant funds associated with a service are responsible only for the obligations generated by that central counterparty service. For example, the CNS Participant Fund, CNS Default Fund and Supplemental Liquidity Fund are responsible for only the CNS mark-to-market payments.

Each member of the CNS Participant Fund, CNS Default Fund and the Supplemental Liquidity Fund contributes collateral based on the formulae for the respective funds or Supplemental Liquidity Fund.

14.2.2 Arranging liquidity

CDS arranges standby liquidity for the three central counterparty participant funds.

14.2.3 Credit rings

Each participant fund has a credit ring associated with it. If the processing of a suspended participant requires that the surviving members of a participant fund pay CDS more than the value of the collateral they have pledged, the survivors are required to pay this shortfall as part of their obligations as members of the credit ring.

14.6.1 Allocating positive ledger balances

If a participant defaults in their obligation to make payments to CDS with respect to a negative balance in the funds account in one ledger, and the participant has a positive balance denominated in another currency in the funds account of another ledger, then CDS does not allocate the positive balance to the suspended participant's designated banker nor shall pay the positive balance to the suspended participant.

Instead, for the purpose of determining the net obligation owed by the suspended participant, CDS may apply the positive balance in a funds account of the suspended participant against any negative balance denominated in the same currency in any other funds account of the suspended participant. If the suspended participant has more than one funds account with a negative balance, the positive balance shall be allocated to reduce the negative balances denominated in the same currency on a pro rata basis.

14.6.2 Allocating partial payments

To determine the net obligation owed by the suspended participant, CDS may apply any partial payment made directly by the suspended participant, before it was suspended against any negative balance denominated in the same currency in any funds account of the suspended participant. If the partial payment has been made by a designated banker through the book entry payment method, the partial payment is returned to the designated banker. If the partial payment has been made by a qualified banker through the book entry payment method against the suspended participant's use of a line of credit, that partial payment shall be allocated by CDS to discharge the liability of the qualified banker as surety and shall applied against the negative balance in the funds account that the line of credit was established for.

14.6.3 Allocating the shortfall

Once CDS has determined the amount of the suspended participant's obligation that must be replaced, individual portions of the shortfall are allocated to the various risk containment mechanisms. The allocation of the shortfall is done as follows:

- Amounts drawn under a cap – Survivors in the suspended participant's collateral pool and category credit ring that generated the cap
- Amounts drawn under a line of credit – Suspended participant's extender(s) of credit
- Mark-to-market payments – Survivors in the suspended participant's central counterparty service fund(s) (i.e., CNS Participant Fund and CNS Default Fund)
- Other amounts that exceed the cap or line of credit – Survivors in the suspended participant's collateral pool and category credit ring (or the non-contributing credit ring).

14.7 Collateral

There are several sources of collateral that can be obtained for use during the processing of a suspension in CDSX. Part of this collateral comes from the suspended participant and part from the suspended participant's collateral pool or CNS Participant fund, CNS Default Fund or Supplemental Liquidity Fund.

The types of collateral that may be used in a CDSX suspension are:

- Suspended participant's settlement service collateral – The collateralin the suspended participant's risk accounts (i.e., the general accounts and restricted collateral accounts). This type of collateral is also known as the ACV collateral since the purpose of the ACV edit is to ensure that this collateral is available and in place in the event of a suspension.
- Suspended participant's collateral pool contributions – The collateral pledged/deposited by the suspended participant to a collateral pool and category credit ring.
- Suspended participant's Participant Fund contributions – The collateral pledged/deposited by the suspended participant to the CNS Participant Fund.
- Suspended participant's Default Fund contributions – The collateral pledged/deposited by the suspended participant to the CNS Default Fund.
- Suspended participant's Supplemental Liquidity Fund contributions – The collateral pledged/deposited by the suspended participant to the Supplemental Liquidity Fund.
- Suspended participant's specific collateral – The collateral that have been pledged/deposited by the suspended participant to CDS as specific collateral. CDS may require a participant to pledge specific collateral if CDS determines that a participant's activities present extra risks to CDS and the other participants that may not be covered by the normal risk containment mechanisms. For example, CDS may require specific collateral from a participant with unusually large central counterparty outstanding and value-dated positions or central counterparty positions in very illiquid securities.
- Survivors' collateral pool contributions – The collateral pledged/deposited by the other members of a suspended participant's collateral pool and category credit ring.
- Survivors' central counterparty CNS Participant Fund and CNS Default Fund contributions – The collateral pledged/deposited by the other members of a suspended participant's central counterparty funds.
- Survivors' Supplemental Liquidity Fund contributions – The collateral pledged/deposited by the other members to the suspended participant's CCP participant fund.

14.7.1 Collateral sequence

The sequence in which the collateral is used is designed to ensure that there is no spillover of risk between the various services (such as CNS) and between the various risk containment mechanisms. For example, the payment obligations that are covered by a collateral pool are never transferred to an extender of credit. Each type of collateral has a primary use.

In cases where there is excess collateral available from the suspended participant, the use of this excess collateral is also specified. For example, collateral pledged to the CNS Participant Fund and the CNS Default Fund must first be used to cover any CNS mark-to-market amounts of the suspended participant and any losses generated by the close-out of the suspended participant's CNS positions, both outstanding and value-dated. After these two items have been addressed, any excess amounts of CNS collateral from the suspended participant itself would be used by CDS to mitigate other losses.

The table below indicates the sequence in which each type of collateral is used after suspending a receiver of credit.

Using collateral of a suspended receiver of credit		
Type	**Primary use**	**Sequence of secondary use**
Suspended receiver of credit's settlement service collateral	CDS (on behalf of the members of the CAD receivers of credit CCR) and Extenders of credit (if any) according to the use and allocation methodology described in Processing a receiver of credit suspension on page 178	Any remaining collateral goes next to the survivors of the collateral pools in either currency (if the suspended receiver of credit was a member of that collateral pool) Any excess is used by CDS to mitigate other losses
Suspended receiver of credit's collateral pool contributions (if any)	Survivors of the collateral pools of which the suspended receiver of credit was a member	Any remaining collateral goes next to the extenders of credit (if necessary) Any excess is used by CDS to mitigate other losses
Suspended receiver of credit's CNS Participant Fund and CNS Default Fund contributions (if any)	Extinguish defaulter's losses in the central counterparty service	Any remaining collateral goes to CDS to mitigate other losses

Using collateral of a suspended receiver of credit		
Type	**Primary use**	**Sequence of secondary use**
Suspended receiver of credit's specific collateral (if any)	Survivors of the central counterparty service or collateral pool for which the specific collateral was required	Any excess specific collateral is shared pro rata by the suspended receiver of credit's extenders (if any) and the survivors of the receivers of credit collateral pools of which the suspended receiver of credit was a member
Survivor's central counterparty CNS Participant Fund and CNS Default Fund contributions	Extinguish the defaulter's losses in the central counterparty service	This type of collateral is never used for any other purpose

The table below indicates the sequence in which each type of collateral is used after suspending a non-receiver of credit.

Using collateral of a suspended non-receiver of credit (extenders, settlement agents, federated participants)		
Type	**Primary use**	**Sequence of secondary use**
Suspended participant's settlement service collateral	Collateral pool survivors	Any remaining collateral goes next to the suspended participant's credit extenders (if any) Any excess is used by CDS to mitigate other losses
Suspended participant's collateral pool contributions (if any)	Collateral pool survivors	Any remaining collateral goes next to the suspended participant's credit extenders (if any) Any excess is used by CDS to mitigate other losses
Suspended participant's central counterparty CNS Participant Fund,and CNS Default Fund contributions (if any)	Extinguish defaulter's losses in the central counterparty service	Any remaining collateral goes to CDS to mitigate other losses
Suspended participant's specific collateral (if any)	Survivors of the central counterparty service or collateral pool for which the specific collateral was required	Any excess specific collateral is shared pro rata by the suspended participant's extenders (if any) and the suspended participant's collateral pool (if any)

Using collateral of a suspended non-receiver of credit (extenders, settlement agents, federated participants)		
Type	**Primary use**	**Sequence of secondary use**
Survivor's collateral pool contributions	Collateral pool survivors	This type of collateral is never used for any other purpose
Survivor's central counterparty CNS Participant Fund and CNS Default Fund contributions	Extinguish the defaulter's losses in the central counterparty service	This type of collateral is never used for any other purpose

14.7.2 Collateral administration ledgers

CDS maintains collateral administration ledgers for each participant and for CDS. These ledgers hold all of the collateral pledged by the participant for various purposes (i.e., collateral pool contributions, central counterparty fund contributions, Supplemental Liquidity Fund contributions and specific collateral). During the processing of a suspension, the suspended participant's settlement service collateral is first moved to CDS's collateral administration ledger and then to the collateral administration ledgers of other participants.

The extenders of credit and the survivors in the suspended participant's collateral pool are entitled to use their share of the suspended participant's own collateral to make their replacement payment to CDS to satisfy settled obligations.

In the case of the central counterparty service, CDS initially retains the collateral in its own collateral administration ledger for use in obtaining the liquidity to make the replacement payment(s). Later, CDS may use the suspended participant's central counterparty CNS Participant Fund and CNS Default Fund contributions to absorb residual losses.

In the case of the extenders, collateral is moved first to the lead extender (appointed by the other extenders) and then to the other surviving extenders.

In the case of the settlement agents, collateral is moved pro rata to the surviving settlement agents based on each survivor's replacement payment.

In the case of the federated participant, collateral is moved to the collateral administration ledger of the replacement federated participant.

In the case of the receiver's collateral pool, CDS initially retains the collateral in its own collateral administration ledger for use in obtaining the liquidity to make the replacement payment(s). Later, CDS may distribute the survivors pro rata based on their share of any replacement payment or loss.

14.8 Processing suspension

In the event that a participant fails to pay their payment obligation to CDS (or if some other failure causes CDS to invoke the suspension and default procedures) and CDS has exhausted all of the escalation procedures, the following occurs for all types of suspensions:

1. CDS immediately suspends the participant from all CDS services and functions.
2. CDS notifies all participants that the suspension procedures have been initiated against the participant.
3. CDS immediately moves all of the suspended participant's settlement service collateral from their risk accounts to CDS's collateral administration ledger.
4. CDS calculates the suspended participant's obligation to CDS. For more information, see Using book-entry payment method entries on page 171.
5. CDS determines the portion of the suspended participant's obligation that is the responsibility of each extender of credit, collateral pool, category credit ring survivor and central counterparty fund survivor.

14.8.1 Processing a receiver of credit suspension

To process a suspension of a receiver of credit:

1. CDS requests a replacement payment from each extender of credit equal to the used amount of each extender's line of credit.
2. CDS arranges for a replacement payment equal to the used amount of the suspended participant's cap (if any). To obtain the necessary liquidity to make the replacement payment, CDS uses the suspended participant's own collateral pool contributions, eligible settlement service collateral allocated to CDS and any specific collateral that the suspended participant had pledged to the collateral pool. If necessary, the contributions of the survivors in the suspended participant's collateral pool are also used by CDS to obtain liquidity.

   The suspended participant's settlement service collateral will be allocated to both CDS and the sureties according to the following ratio:

   > $X = [SOC_{utilized}$ – Defaulter's Collateral Requirement to the CCR] / $[SOC_{utilized}$ – Defaulter's Collateral Requirement to the CCR + $LOC_{utilized}]$
   >
   > Where X defines the proportion of the suspended participant's settlement service collateral allocated to CDS to collateralize the exposure associated with the CAD receiver of credit's utilization of its SOC.
   >
   > $LOC_{utilized}$ = the sum total of the line(s) of credit utilized.

The settlement service collateral not allocated to CDS is allocated to the sureties.

The allocation is done at the security level.

3. For each central counterparty service the suspended participant is a member of, CDS arranges for a replacement payment equal to the unpaid mark-to-market payment (if any) that the suspended participant made on the day of suspension. To obtain the necessary liquidity to make the replacement payment, CDS uses the suspended participant's CNS Participant Fund, the suspended participant's CNS Default Fund, the suspended participant's Supplemental Liquidity Fund and any specific collateral that the suspended participant had pledged/deposited to the central counterparty service. If necessary, the contributions of the survivors in the suspended participant's central counterparty service are also used by CDS to obtain liquidity.
4. CDS moves the suspended participant's settlement service collateral as allocated to its sureties (as described in step 2) who are required to make payments to CDS; or, if there is no such surety, then the suspended participant's settlement service collateral is transferred to the other members of its category credit rings.
5. CDS moves collateral to the collateral administration ledgers of CDS, the extenders and the survivors of the receiver's collateral pool and central counterparty service. For more information, see Collateral on page 174.

14.8.2 Processing an extender of credit suspension

To process suspension of an extender of credit:

1. CDS requests a replacement payment from each extender of credit equal to its proportionate share of the suspended participant's obligation to CDS.
2. For each central counterparty service the suspended participant is a member of, CDS arranges for a replacement payment equal to the mark-to-market payment (if any) that the suspended participant made on the day of suspension. To obtain the necessary liquidity to make the replacement payment, CDS uses the suspended participant's CNS Participant Fund, the suspended participant's CNS Default Fund, the suspended participant's Supplemental Liquidity Fund and any specific collateral that the suspended participant had pledged/deposited to the central counterparty CNS service. If necessary, the contributions of the survivors in the suspended participant's central counterparty CNS service are also used by CDS to obtain liquidity.
3. CDS moves collateral to the collateral administration ledgers of CDS, the extenders and central counterparty service. For more information, see Collateral on page 174.

14.8.3 Processing a settlement agent suspension

To process a suspension of a settlement agent:

1. CDS requests a replacement payment from each extender of credit equal to the used amount of each extender's line of credit.
2. CDS requests a replacement payment from each surviving settlement agent equal to their proportionate share of the suspended settlement agent's obligation to CDS.
3. For each central counterparty service the suspended participant is a member of, CDS arranges for a replacement payment equal to the mark-to-market payment (if any) that the suspended participant made on the day of suspension. To obtain the necessary liquidity to make the replacement payment, CDS uses the suspended participant's CNS Participant Fund, the suspended participant's CNS Default Fund the suspended participant's Supplemental Liquidity Fund and any specific collateral that the suspended participant had pledged/deposited to the central counterparty service. If necessary, the contributions of the survivors in the suspended participant's central counterparty service are also used by CDS to obtain liquidity.
4. CDS moves collateral to the collateral administration ledgers of CDS, the settlement agents and central counterparty service. For more information, see Collateral on page 174.

14.8.4 Processing a federated participant suspension

To process a suspension of a federated participant:

1. CDS requests a replacement payment from the replacement federated participant equal to the suspended federated participant's obligation to CDS.
2. For each central counterparty service the suspended participant is a member of, CDS arranges for a replacement payment equal to the mark-to-market payment (if any) that the suspended participant made on the day of default. To obtain the necessary liquidity to make the replacement payment, CDS uses the suspended participant's CNS Participant Fund, the suspended participant's CNS Default Fund the suspended participant's Supplemental Liquidity Fund and any specific collateral that the suspended participant had pledged/deposited to the central counterparty service. If necessary, the contributions of the survivors in the suspended participant's central counterparty participant service are also used by CDS to obtain liquidity.
3. CDS moves collateral to the collateral administration ledgers of CDS, the replacement federated participant and central counterparty service. For more information, see Collateral on page 174.

14.8.5 Central counterparty obligations

If a suspended participant has outstanding and/or value-dated central counterparty obligations (i.e., outstanding and/or value-dated to-deliver or to-receive positions in CNS), CDS executes close-out transactions to clear these CNS positions, both outstanding and value-dated. For example, if the suspended participant left a CNS outstanding or value-dated to-deliver position, CDS buys the securities in the market to clear the outstanding or value-dated position. Similarly, if the suspended participant left an outstanding or value-dated to-receive position, CDS sells the securities in the market to clear the outstanding or value-dated position.

Any loss that is generated by the execution of these close-out transactions is allocated against the suspended financial resources (CNS Participant Fund contributions and CNS Default Fund contributions), CDS's Dedicated Own Resources and the survivors' Default Fund contributions. If, at a later point in time, CDS is able to recover any amount from the suspended participant, such amount shall be returned to the other participant to compensate for any amount charged to them and for the financial resources levied from them as part of Default Management. This return will be in the reverse order that these resources were used to cover the losses. With the exception of the Supplemental Liquidity Fund, which is not used in the loss allocation process.

14.8.6 Credit ring obligations

Each collateral pool has a credit ring associated with it. In the event that the replacement payments owed by the collateral pool exceed the value of the collateral in the collateral pool, each member of the credit ring is responsible for paying their share of the excess obligation.

Each central counterparty service has a credit ring associated with it. In the event that the replacement payments owed by the central counterparty service exceed the value of the collateral in the central counterparty funds (E.g., CNS Participant Fund and CNS Default Fund), each member of the credit ring is responsible for paying their share of the excess obligation.

14.8.7 Processing a suspended NYL participant's payment obligation

Once CDS has determined the amount of the suspended NYL participant's payment obligation that must be replaced (i.e., the shortfall), individual portions of the shortfall are allocated to the surviving members of the NYL service. The allocation of the shortfall is done as follows:

1. Apply the defaulter's CDS Participant Fund for New York Link.
2. Use CDS's existing USD LOC.

3. Allocate against surviving NYL participants based on each CDS Participant Fund for New York Link's pro-rata share of total CDS Participant Fund for New York Link.
4. Any remaining liquidity requirement will be allocated against NYL participants as follows:
   a. Apply the defaulter's USD CDSX credits to reduce the NYL payment obligation.
   b. Allocate against surviving NYL participants as a haircut to their USD credits based on each NYL participant's pro-rata share of total credits.
   c. Allocate the defaulter's CAD credits to the surviving NYL participants.

CHAPTER 15

Collateral administration

Each participant designates a collateral administrator who is responsible for maintaining their collateral pool or participant fund.

At all times, participants are required to maintain an amount of collateral with CDS that is at least equal to their required collateral pool or participant fund contribution.

If collateral requirements that are due to be paid on a given day are not in place by the imposed deadlines, participants may be fined or suspended, as described in the table below.

Contribution	Beginning of day requirement		Action
	All services (excluding the NSCC participant fund for New York Link)	NSCC participant fund for New York Link only	
Initial	10:00 a.m. ET/ 8:00 a.m. MT/ 7:00 a.m. PT	9:00 a.m. ET 7:00 a.m. MT 6:00 a.m. PT	If CDS does not receive the required contribution by the initial deadline, the participant is fined
Final	10:30 a.m. ET 8:30 a.m. MT 7:30 a.m. PT	9:30 a.m. ET 7:30 a.m. MT 6:30 a.m. PT	If CDS does not receive the required contribution by the final deadline, the participant is suspended

CDS's role in collateral administration includes:

- Managing the collateral administration ledgers (CALs) for each of the collateral pools and participant funds
- Assisting participants with the pool and fund collateralization process
- Processing the movement of collateral, as necessary, in a default.

Participants can contact the CDS collateral administrators at the numbers listed below.

Telephone:	416-365-8494	Fax:	416-365-9185
	416-365-8439		

Page numbers will update for publication

15.1 Acceptable collateral

The table below lists the eligible collateral for each collateral pool and participant fund. For more information on the CDSX issuer ratings in this table, see CDSX issuer ratings on page 113.

Eligible collateral for collateral pools and Participant Funds

CDSX eligible collateral	Instrument type[1]	Extenders of credit	Settlement agents	Active federated participant	CAD receivers of credit	USD receivers of credit	CNS Participant Fund	CNS Default Fund	CNS Supplemental Liquidity Fund	NSCC Participant Fund for New York Link	CDS Participant Fund for New York Link	CDS Participant Fund for DTC Direct Link
Securities issued by the Government of Canada	Canada treasury bill Government of Canada bond	✔	✔	✔	✔	✔	✔					✔
Government of Canada stripped coupons and residuals	Coupon Principal Receipt Payment Package	✔	✔	✔	✔	✔	✔					✔
Securities guaranteed by the Government of Canada (including Canada mortgage bonds and NHA mortgage-backed securities)	Canada mortgage bond Mortgage-backed security	✔	✔	✔	✔	✔	✔					
Securities issued or guaranteed by a provincial government	Provincial treasury bill Provincial bond Provincial note	✔	✔[2]	✔	✔	✔	✔					

Eligible collateral for collateral pools and Participant Funds												
CDSX eligible collateral	**Instrument type**[1]	**Extenders of credit**	**Settlement agents**	**Active federated participant**	**CAD receivers of credit**	**USD receivers of credit**	**CNS Participant Fund**	**CNS Default Fund**	**CNS Supplemental Liquidity Fund**	**NSCC Participant Fund for New York Link**	**CDS Participant Fund for New York Link**	**CDS Participant Fund for DTC Direct Link**
Banker's acceptances and promissory notes[3], [4] Minimum issuer rating of A by CDS[4], [5]	Banker's acceptance Bearer deposit note Certificate of deposit Guaranteed investment certificate		✔ [6]	✔	✔	✔	✔					
Commercial paper and short-term municipal paper[3], [4] Minimum issuer rating of A by CDS[4], [5]	Municipal treasury bill Commercial paper Municipal note		✔ [6]	✔	✔	✔	✔					
Corporate bonds and municipal bonds[3], [4] Minimum issuer rating of A by CDS[4], [7]	Corporate bond Municipal bond Other market bond		✔ [6]	✔	✔	✔	✔					
U.S. Treasury securities	U.S. Treasury bill U.S. Treasury bond or note					✔						✔
Cash (U.S. dollars) in the form of a Fedwire payment	N/A					✔				✔ [8]	✔	
Cash (Canadian dollars) in the form of a LVTS payment	N/A	✔	✔	✔	✔		✔	✔	✔			

1 Instrument type. For more information, refer to Security types, subtypes and instrument types in the CDSX Procedures and User Guide.

[2] Rated R1 [low] for short-term debt by DBRS with a minimum issuer rating of A by CDS and rated AA [low] for long-term debt by DBRS with a minimum issuer rating of AA by CDS.

[3] No more than 20 per cent of the value of collateral pledged can be the obligation of private and municipal sector issuers – subject to the additional restrictions that (i) only 10 percent of the collateral value pledged can be from LVTS and related issuers; and (ii) only 5 percent of the value of collateral pledged can be the obligation of a single private and municipal sector issuer.

[4] Securities issued by members of a pool or fund, or "family" of a pool or fund member, are not eligible for collateral related to the pool or fund.

[5] Rated R-1 [low] by DBRS or A-1 [mid] by S&P or P1 by Moody's.

[6] Rated R1 [mid] by DBRS or A-1 [mid] by S&P. Minimum issuer rating of AA by CDS.

[7] Rated A [low] by DBRS or A- by S&P or A3 by Moody's.

[8] 100 per cent of the contribution must be made in U.S. cash.

15.1.1 Delivering Canadian dollar cash as collateral

To pledge Canadian dollar cash as collateral, initiate an LVTS payment to CDS's cash collateral account held at the Bank of Canada using an MT205 SWIFT message. The Bank of Canada sends a confirmation to CDS that LVTS funds were deposited to CDS's account. CDS then enters the cash value received in the Collateral Management System.

The table below indicates the information to be provided in the MT205 SWIFT message.

Field	Description
RELATED REFERENCE	Enter the collateral pool ID or participant fund ID
BANK OF CANADA TRANSIT	00006177
SWIFT ADDRESS	BCANCAW2
BENEFICIARY NAME	CDS Clearing and Depository Services Inc.
BENEFICIARY ACCOUNT	15451003 (CDS's account number held by the Bank of Canada as CDS's LVTS banker)
BENEFICIARY BIC	CDSLCATT

Canadian dollar cash deposits

When using Canadian cash deposits as collateral:

- Participants may substitute securities for collateral amounts greater than $10 million by 1 p.m. ET on the day of deposit, if securities are deemed eligible collateral in the funds
- Any residual cash balance is to be less than or equal to $10 million.

Account number	203-212-6
ABA number	071000288
FAO	CDS Clearing and Depository Services Inc. (include the Participant Fund ID)

To deposit U.S. dollar cash as collateral for the CDS participant fund for New York Link, initiate a Fedwire payment to the following CDS account.

Bank	[1]
Telegraphic ID	[1]
Account number	[1]
ABA number	[1]
FAO	CDS Clearing and Depository Services Inc. (include the Participant Fund ID)

[1] Procedures regarding the interest payment distribution will be determined and communicated before the implementation of the New York Link Participant Procedures

CDS monitors the accounts to ensure that the funds are deposited to CDS's account. CDS then enters the cash value received in the Collateral Management System.

15.1.3 Interest rebates

Participants with cash contributions in the CNS Participant Fund, CNS Default Fund and Supplemental Liquidity Fund are eligible to receive interest on these funds on a semi-annual basis.

Interest is payable within 45 calendar days from the end of each semi-annual period, ending March 31 and September 30, provided that the participants’ obligations to CDS have been fulfilled.

The interest rate is the rate earned by CDS in its current account on the first day of each month. The calculation of the interest payable is based on the participant's pro rata share of total cash on deposit, averaged over the six month period.

15.1.4 Making collateral contributions

Securities used as collateral are pledged using the Pledge to CDS Menu function from the participant’s ledgers (non-risk account) to the CAL assigned for that pool, funds or Supplemental Liquidity Fund. Pledges are confirmed only if all the required edits are satisfied. Settlement of the pledge moves the securities into the CAL and the securities are then managed by CDS in its role as the administrator.

Participants may substitute other securities into their CAL and release the original contribution back to their ledgers. A participant must maintain sufficient value of securities in their CAL at all times.

Interest is payable within 45 calendar days from the end of each semi-annual period, ending March 31 and September 30, provided that the participants’ obligations to CDS have been fulfilled.

The interest rate is the rate earned by CDS in its current account on the first day of each month. The calculation of the interest payable is based on the participant's pro rata share of total cash on deposit, averaged over the six month period.

15.1.4 Making collateral contributions

Securities used as collateral are pledged using the Pledge to CDS Menu function from the participant’s ledgers (non-risk account) to the CAL assigned for that pool, funds or Supplemental Liquidity Fund. Pledges are confirmed only if all the required edits are satisfied. Settlement of the pledge moves the securities into the CAL and the securities are then managed by CDS in its role as the administrator.

Participants may substitute other securities into their CAL and release the original contribution back to their ledgers. A participant must maintain sufficient value of securities in their CAL at all times.

The calculations required for given activities are made on an individual security basis. When collateral administrators calculate their collateral contributions, the calculation must use the current market price, a margin discount factor and an accrued interest calculation, if any, for each security contributed. The applicable value of a security that is contributed as collateral is calculated as follows:

$$\text{Applicable value} = \text{Market value} - (\text{Market value} \times \text{Margin}) + \text{Accrued interest}$$

Each collateral administrator is responsible for ensuring that the applicable value of their collateral contributions meets or exceeds their required contribution.

15.1.5 Valuation of contributions

A pledge is revalued whenever it is changed intraday or overnight as part of the IRMS process. The valuation of delivered collateral includes a market price, accrued interest (for bonds) and a haircut that is applied to each security that is pledged as margin collateral. The applicable value of a security that is contributed as margin collateral is calculated as indicated below.

$$\text{Applicable value} = \text{Market value} - (\text{Market value} \times \text{Haircut})$$

$$\text{Market value} = (\text{Par value} \times \text{Market price}) + \text{Accrued interest}$$

Note: U.S. securities pledged to a U.S. dollar pool have the FX risk subtracted using the following formula[1].

Applicable value = Market value - (Market value X (Haircut - FX risk[1]))
[1]FX risk = (Exchange rate 1 day VaR*sqrt of 2)

Canadian securities pledged to a USD pool have the FX risk added using the following formula.

Applicable value = Market value - (Market value X (Haircut + FX risk[1]))
[1]FX risk = (Exchange rate 1 day VaR*sqrt of 2)

15.1.6 Haircuts

In addition to market valuation, securities pledged as collateral will be discounted based on a haircut amount. For each security contributed as margin collateral, the haircuts listed in CDSX debt haircuts on page 111 must be applied to the market value.

The accrued interest calculation should be made on the basis that valuation prior to payable date includes interest due, and valuation on payable date does not include interest due.

For example, if a participant is required to have $1,000 in margin collateral contributed to their collateral pool or CNS Participant Fund, the participant must ensure that the securities pledged by the participant to CDS have a value, after the application of market prices, accrued interest and the haircut, of at least $1,000.

15.2 Collateral Management System

The Collateral Management System (CMS) provides participants with a valuation of the collateral pledged to CDS for various clearing and settlement services.

The Collateral Management System functions are:

- Inquire Collateral Valuation – Inquire on collateral pool and Participant Fund valuation details. For more information, see Inquiring on collateral value pledged to CDS on page 191.

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1 Haircuts for US securities include an FX risk component.

- Inquire Collateral Requirement – Inquire on the collateral requirement for a selected pool or fund. For more information, see Inquiring on collateral requirements on page 193.
- Collateral Entry – Enter collateral items in a new pledge transaction. For more information, see Pledging securities as collateral on page 194.
- Collateral Inquiry – View information about collateral contributions. For more information, see Inquiring on collateral contributions on page 197.
- Collateral Modify – Increase, decrease or substitute collateral for pledges to CDS. For more information, see Changing collateral contributions on page 200.

15.2.1 Accessing the Collateral Management Menu

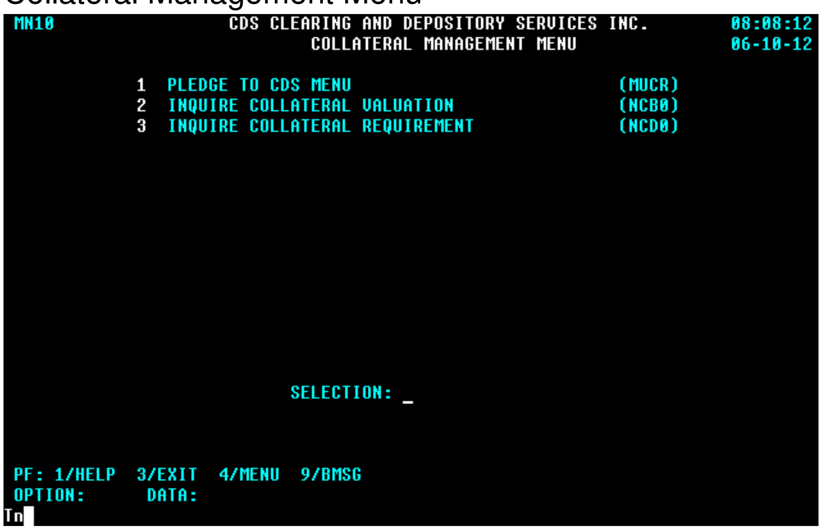
To access the Collateral Management Menu:

1. Log on to CDS systems. For more information, see Logging on to CDS systems on page 21.

2. On the CDS Clearing and Depository Services Inc. Main Menu, type the number identifying CDSX – Customer Functions in the SELECTION field and press ENTER. The CDSX – Customer Functions Menu on page 71 displays.

3. Type the number identifying Collateral Management Menu in the SELECTION field and press ENTER. The Collateral Management Menu on page 191 displays.

Collateral Management Menu



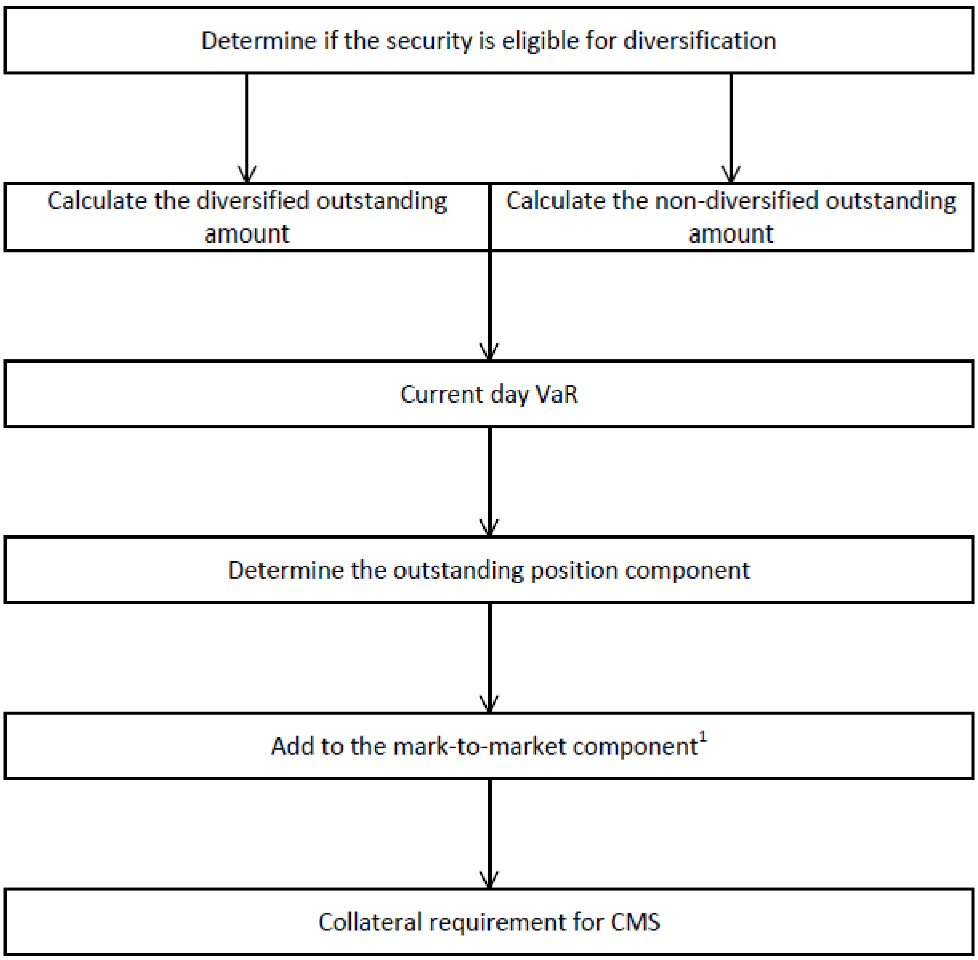
15.2.2 Inquiring on collateral value pledged to CDS

Collateral administrators use the Inquire Collateral Valuation function to inquire on their collateral value pledged to CDS. Their collateral value is also indicated on the following reports:

16.1 Collateral requirement calculation overview

16.1.1 CNS Participant Fund

The Internal Risk Management System (IRMS) calculates the collateral requirements for the CNS Participant Fund. IRMS values aggregate risk on a portfolio level of CNS positions, both outstanding (fails) and value-dated, using liquidity, concentration and diversification to calculate the collateral requirement for the Collateral Management System (CMS). The following diagram illustrates this process.



[1]The total collateral requirement recognizes the effect of all diversification between the two components. The total requirement is calculated using the following formula:

$$\sqrt{\text{Outstanding position component}^2 + \text{Mark-to-market component}^2}$$

16.1.2 CNS Default Fund

CDS calculates the CNS Default Fund collateral requirement on a monthly basis using stress testing results. CDS monitors the value of the CNS Default Fund on a daily basis and can adjust the size of the fund on an intra-month basis.

CDS's Tiered CNS Default Fund consists of two tiers, each based on the respective activity levels of the participant(s) in the Service. This tiered structure ensures that CDS remains compliant with international standards, including the requirement to account for uncovered residual risk (generally known as "Cover-1"), and ensures that participants bear responsibility for the financial – or other – risks they pose to the operations of the clearing and settlement system.

- Tier 1 CNS Default Fund is based on the daily CNS outstanding positions of all CNS participants, *excluding* CNS outstanding positions included in Tier 2.
- Tier 2 CNS Default Fund is based on the specific subset of CNS outstanding positions attributed to those CNS participants whose activity levels have demonstrated spikes in CNS activity (in other words, volatility) on certain specific business days.[1] For these CNS participants, only CNS outstanding positions from those specific business days are used to size the Tier 2 CNS Default Fund collateral requirement. CNS outstanding positions for all other business days are used to size the Tier 1 CNS Default Fund collateral requirement.

Triple Witching Days

Triple witching days occurs once per quarter (four (4) times per year) on the third Friday of March, June, September and December. It affects CNS participants whose outstanding equity positions submitted for CNS settlement increase coincident with the exercise date of index options, index futures, options on single stocks and single stock futures[2] ("triple witching days").

CNS transactions are novated on value date minus one and, as a result, the risk related to transactions sent for clearing and settlement on triple witching days impacts CNS outstanding position volumes, and the size of the CNS Default Fund, 8 days a year (triple witching activity). These 8 days include the day the positions are scheduled to settle [3] (triple witching settlement day) and the day prior to that settlement day.

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[1]For example, a subset of CNS participants have CNS activity spikes on days associated with the exercise of equity options and equity futures positions in the cash market – so-called triple witching days. The affected days are: (i) the day(s) on which CNS transactions deemed to be triple-witching-related novate (i.e., value date minus one); and, (ii) the day on which CNS outstanding positions deemed to be triple-witching related are eligible to settle (i.e., value date).

[2]Currently, CNS Participants identified as having triple witching activity are only required to post an *estimate* of the CNS Participant Fund collateral requirement prior to the date the corresponding positions are novated and guaranteed by the CNS service.

CDS uses a volatility threshold to determine whether a CNS participant had triple witching activity. CDS measures the variation in the participant's contribution to the CNS Participant Fund between the triple witching settlement date and the previous business day. A participant will be deemed to have triple witching activity when the day-over-day increase in that participant's contribution to the CNS Participant Fund is greater than or equal to (≥) 100% of that participant's contribution.

To determine the scale of the residual stress-test losses used to calculate the CNS Default Fund, the residual profit, or the residual loss, resulting from unwinding each day's CNS outstanding positions is calculated for every participant for every day of the look-back period, using all of the stress-test scenarios, and net of the market value of the CNS collateral.

The CNS Default Fund is then calculated to collateralize the largest of the daily residual stress-test losses over the lookback period.

The daily residual stress-test profits and losses are calculated based on the following inputs:

- The post stress-test profit from, or cost of unwinding, a participant's CNS outstanding positions on that day, plus CDS mark-to-market payments owing;
- The post stress-test value of the lesser of: (a) a participant's CNS Participant Fund pledged collateral, and (b) the CNS Participant Fund collateral fund requirement on that day;
- The daily sum of items #1 and #2, above, for every stress-test scenario, consisting of either the daily residual stress-test profit or the daily residual stress-test loss.

The CNS Default Fund collateralizes, on a mutualized basis, the risk associated with CNS participants' outstanding positions that would result in the *largest credit risk under extreme, but plausible, market conditions*; the CNS Default Fund allocates the collateral requirements on a pro rata basis, taking into account the cumulative CNS Participant Fund collateral requirements, over the look-back period, for those business days associated with either of Tier 1 or Tier 2 activity.

[3] Otherwise commonly known as "value date", triple witching settlement day occurs 2 business days following the third Friday of the last month of every quarter.

Tier 1

The largest residual stress-test loss of the CNS outstanding positions in Tier 1 (as defined above) is used to calculate the size of the CNS Default Fund for all days in the quarter which do not have associated Triple Witching Activity, and are re-based monthly. The largest Tier 1 residual stress-test loss of the CNS Default Fund is then allocated amongst all CNS Service participants according to their pro rata share of the cumulative CNS Participant Fund collateral requirement over the look-back period for those days, and for participants with Tier 1 CNS outstanding positions.[1]

CDS's monthly review of the size of the Default Fund will advise CNS participants of any changes to their Tier 1 CNS Default Fund collateral requirement required to ensure the CNS Default Fund remains Cover-1. Tier 1 CNS Default Fund requirements will be enforced for all CNS participants throughout the month (subject to intra-month re-sizing – see below).

Tier 2

The difference between the largest residual stress-test loss of the CNS outstanding positions contained in Tier 2, and the largest residual stress-test loss of the CNS outstanding positions in Tier 1, is allocated against those CNS participants having triple witching activity.

Tier 2 CNS Default Fund collateral requirements will be allocated incrementally to, and in addition to, the Tier 1 allocation – and only against CNS participants identified as having triple witching activity – the incremental collateral will be deemed to be due on the day prior to the novation of that month's Triple Witching Activity.

The incremental Tier 2 CNS Default Fund collateral requirement is based on a participant's pro rata share of the cumulative CNS Participant Fund collateral requirement on triple witching activity days during the lookback period, and across all CNS Service participants identified as having triple witching activity during that period. [2]

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[1]For those participants not having triple witching activity, the sum of their CNS Participant Fund collateral requirements on each day in the lookback period forms the basis for determining their pro rata share. Alternatively, for those participants having triple witching activity, the allocation is based on the sum of their CNS Participant Fund collateral requirements for all days in the lookback period e*xcluding those 8 days deemed to be the triple witching activity days of the lookback period.*

[2]Eight days every year – for every quarter the day triple witching trades reach value date minus one (i.e., the day they are novated) and on their value date (the day they are first eligible to settle).

CDS's monthly review of the size of the CNS Default Fund will advise CNS participants of any revisions to their Tier 2 CNS Default Fund collateral requirement. Tier 2 collateral requirements will remain in effect for a period of 5 – 10 business days, subject to the affected participants' CNS Participant Fund collateral requirement returning to a level similar to that which existed prior to the novation of that month's Triple Witching Activity.

Regularly Scheduled Review of CNS Default Fund Size and Allocation Base

The size of the CNS Default Fund will be based on a look-back period of one (1) year, and will be subject to scheduled monthly reviews.

The rebasing of the allocation of the collateral requirements of the CNS Default Fund amongst participants will be also be done monthly – concurrent with the review of the size of the CNS Default Fund and will be based on a one (1) year look-back period.

Intra-month Monitoring

Daily residual stress-test profits and losses will be calculated every business day between the regularly scheduled monthly reviews of the CNS Default Fund size to ensure that the CNS Default Fund remains Cover-1 compliant intra-month.

CDS Risk Management monitors daily residual stress-test losses intra-month. In the event that an intra-month residual stress-test loss (in either the non-Triple Witching or Triple Witching days) exceeds the Tier 1 and/or Tier 2 residual stress losses used to calculate the size of the CNS Default Fund, CDS Risk Management will make an intra-month CNS Default Fund collateral call against both Tier 1 and Tier 2 participants according to the following criteria and thresholds:

1. Single CNS Participant Cover-1 breach:
   - Targeted collateral call to the CNS participant responsible for the breach
2. Two CNS Participant Cover-1 breaches, with both breaches being individually less than 10% of CNS Default Fund:
   - Targeted collateral call to those CNS participants responsible for the breach
3. Two CNS Participant Cover-1 breaches, with either of the individual breaches being greater than 10% of CNS Default Fund:
   - Allocation to all CNS participants of the new Cover-1 amount
4. More than two CNS Participant breaches
   - Allocation to all CNS participants of the new Cover-1 amount

Examples:

1. If an intra-month stress-test loss exceeding the stress-test loss used to calculate the size of Tier 1 of the CNS Default Fund, on a non-Triple Witching day, the above calls will be made when additional collateral is required for either: (a) the Tier 1 collateral requirement to remain Cover-1 - for both (1) and (2); or (b) on the new Tier 1 amount across all CNS service participants – for both (3) and (4).

2. If an intra-month stress-test loss on a Triple Witching day occurs, the above calls will be made when additional collateral is required for either: (a) the Tier 2 collateral requirement to remain Cover-1 – for both (1) and (2); or (b), on the new tier 2 amount across all CNS Service participants – for both (3) and (4).

In all instances, the allocation is based on the year-to-date lookback period.

16.2 Supplemental Liquidity Fund

CDS calculates the Supplemental Liquidity Fund collateral requirement on a quarterly basis using liquidity stress scenarios. CDS monitors the value of the Supplemental Liquidity Fund on a daily basis and can adjust the size of the fund between the quarterly updates.

The Supplemental Liquidity Fund is designed to cover the liquidity shortfalls of the CNS CCP service with CNS participants' resources through a pooling-of-resources arrangement. The Supplemental Liquidity Fund is sized to have resources sufficient to cover potential liquidity stress scenarios that include, but are not be limited to, the default of a participant and its affiliates that would potentially cause the largest aggregate liquidity exposure for the CCP in extreme but plausible market conditions.

To ensure compliance with CPMI-IOSCO PFMI Principle 7, CDS has implemented a two-tiered Cover-1 Supplemental Liquidity Fund.

The Supplemental Liquidity Fund will consist of two tiers based on the activity level of the participants in the CNS service.

- Tier 1 Supplemental Liquidity Fund contributions will be based on the liquidity risk arising from the daily CNS outstanding positions of all CNS participants, *excluding* those CNS outstanding positions on the triple witching settlement day.
- Tier 2 Supplemental Liquidity Fund contributions will be based on the liquidity risk arising from a specific subset of CNS outstanding positions: the positions of those CNS participants whose activity levels have demonstrated spikes in CNS activity on certain specific business days.

The use of two tiers is consistent with the longstanding operating principle that requires participants to bear responsibility for the financial – or other – risks they pose to the operations of the clearing and settlement system.

Triple Witching Activity

The triple witching day occurs once per quarter (four (4) times per year) on the third Friday of March, June, September and December. It coincides with the quarterly exercise date of equity derivatives contracts. CDS's review revealed that a subset of CNS participants are far more active (i.e., submit more transactions for clearing and settlement) on such triple witching days.

Transactions submitted for clearing and settlement on triple witching days impact CNS outstanding position settlement volumes, and the related liquidity risk, four times per year: on the day the positions are scheduled to settle (triple witching settlement day).

In order to determine whether a CNS participant has a triple witching activity, CDS uses two volatility thresholds:

a. CDS measures the variation in the CNS participant's liquidity exposure between the triple witching settlement day and the previous business day. A participant will be deemed to have a triple witching activity when the day-over-day increase in that participant's liquidity exposure is greater than or equal to 100% of that participant's liquidity exposure.
b. CDS measures the variation in the CNS participant's liquidity exposure between one business day after the triple witching settlement day and the triple witching settlement day. A participant will be deemed to have a triple witching activity when the day-over-day decrease in that participant's liquidity exposure is less than or equal to -100% of that participant's liquidity exposure.

A CNS participant reaching either one or both of the above thresholds will be deemed to have a triple witching activity for that period of time.

Methodology

To determine the size of the liquidity shortfall used to calculate the Supplemental Liquidity Fund collateral requirement, the liquidity shortfalls of unwinding each day's CNS outstanding positions are calculated for every participant, for every day of the respective lookback periods, using the stress-test scenarios, and all available financial resources.

The Supplemental Liquidity Fund collateral requirement is then calculated so as to collateralize the largest daily liquidity shortfall over the respective lookback periods.

The daily liquidity shortfalls are calculated based on the following inputs:

1. Liquidity exposure over the close out period;
2. Qualifying financial resources (excluding the CNS Supplemental Liquidity Fund).

The Supplemental Liquidity Fund is designed to collateralize, on a mutualized basis, the risk associated with CNS participants' outstanding positions that would result in the *largest liquidity shortfall under extreme, but plausible, market conditions*.

Mutualization is achieved by allocating the Supplemental Liquidity Fund exposures on a pro rata basis taking account the cumulative CNS participant liquidity exposures over the respective lookback periods for either the Tier 1 or Tier 2 Supplemental Liquidity Fund contributions.

Tier 1

The largest liquidity shortfall over the lookback periods arising from all CNS outstanding positions of all CNS participants, excluding those CNS ouststanding position on the triple witching settlement day, are used to size the Supplemental Liquidity Fund. The first lookback period corresponds to the previous quarter and the second lookback period is equal to the previous 60 business days.

The largest Tier 1 liquidity shortfall of the Supplemental Liquidity Fund is then allocated amongst all CNS participants in accordance with their pro rata share of the cumulative CNS participant liquidity exposures across all CNS participants over the last quarter for those days and participants having Tier 1 CNS outstanding positions.

As part of CDS's quarterly review of the size of the Supplemental Liquidity Fund, CNS participants will be advised of any changes to their Tier 1 Supplemental Liquidity collateral requirement which may be required. Tier 1 Supplemental Liquidity Fund collateral requirements will be enforced for all CNS participants throughout the quarter (subject to intra-quarter re-sizing – see below).

Tier 2

The Tier 2 Supplemental Liquidity Fund collateral requirements is based on a two-step methodology.

Step 1:

Six business days before the triple witching settlement day, the estimated amount of the Tier 2 Supplemental Liquidity collateral requirement is computed. The amount is the difference between the average value of the Tier 2 Supplemental Liquidity Fund collateral requirements calculated over the last two triple witching activity periods and the Tier 1 Supplemental Liquidity Fund collateral requirement value. The allocation of the Tier 2 Supplemental Liquidity Fund collateral requirement will be *incremental* to the Tier 1 allocation and only against those CNS participants identified as having triple witching activity.

The incremental Tier 2 Supplemental Liquidity Fund collateral requirement is allocated against those participants identified as having triple witching activity, based on: (1) their pro rata share of the number of occurrences on the triple witching activity days over the four previous quarters across all occurrences of all CNS Service participants identified as having triple witching activity over the same lookback period and (2) in accordance with their pro rata share of the cumulative CNS participant liquidity exposures across all CNS participants over the previous last two quarters for those days and participants having triple witching activities.

The value calculated as part of this first step remains valid until the day prior the triple witching settlement day.

Step 2:

One business day before the triple witching settlement day, the largest liquidity shortfall derived from the CNS outstanding positions as of the triple witching settlement day is calculated. If the difference between the value calculated in the second step and the first step is greater than zero, the incremental value is added to the requirement value calculated in step 1. The incremental value accounts for the default of the Participant having the largest collateral requirement for the Tier 2 Supplemental Liquidity collateral requirement. If the difference is lower than zero, the requirement value calculated in step 1 is adjusted accordingly.

The allocation method used in the second step is the same as the one described in step 1.

As part of CDS's quarterly review of the size of the Supplemental Liquidity Fund, CNS participants will be advised of any revisions to their Tier 2 Supplemental Liquidity Fund collateral requirement. Tier 2 Supplemental Liquidity Fund collateral requirements will be effective for a period of nine business days during a quarter, subject to the affected participants' Supplemental Liquidity Fund collateral requirement returning to a level similar to that which existed prior to the novation of that quarter's triple witching transactions.

Regularly Scheduled Review of Supplemental Liquidity Fund Size and Intra-quarter Monitoring

CDS monitors the value of the Tier 1 Supplemental Liquidity Fund on a daily basis to ensure that it covers the highest shortfall observed during either: (1) the previous quarter or (2) the previous 60 business days. As such, the size of the Tier 1 Supplemental Liquidity Fund is revised, at a minimum, on a quarterly basis. However, CDS can adjust the size of the fund between the quarterly updates if a new highest shortfall is observed during the previous 60 business days. The intra-quarter collateral call is then allocated amongst all CNS participants with the same methodology as the scheduled quarterly review.

Tier 2 Supplemental Liquidity Fund contributions are required 11 days in a quarter. More specifically, six business days before the triple witching settlement day, the estimated amount of the Tier 2 Supplemental Liquidity Fund collateral requirement is computed. A revised Tier 2 Supplemental Liquidity Fund collateral requirement is determined one business day before the triple witching settlement day.

16.3 Determining diversification eligibility

For a security to be eligible for diversification, it must have at least 90 days of price history and sufficient trading volumes. IRMS uses liquidity to determine a security's holding period and whether it is eligible for diversification. The holding period is the number of days that CDS estimates it might take to execute the close-out transactions for CNS positions, both outstanding and value-dated. The maximum holding period that can be applied to a security is 10 days. The criteria used to determine the liquidity of a security is based on trading volumes and percentage of trading days as indicated in the table below.

Liquidity classification	Average daily trading volume (20 business days)	Percentage of trading days (260 business days)	Holding period	Diversification eligibility
Higher than typical	>=50,000 shares	>=80%	2 days	Yes
Typical	>=25,000 shares	>=70%	3 days	Yes
Less than typical	>=10,000 shares	>=50%	5 days	Yes
Illiquid	>=0	>=10%	10 days	No

If a security is classified as illiquid, it is not eligible for diversification and is assigned a 10-day holding period. If the security has less than 10 per cent trading days in last 260 days, it also receives a 100 per cent haircut.

16.3.1 Applying a concentration adjustment

For both diversified and non-diversified securities, IRMS applies a concentration adjustment to the holding period. The concentration adjustment is used to account for the size of a given CNS position, which is the net of both outstanding and value-dated positions, with respect to the average trading volume for the security. An increase to the holding period for the position may be required. For each CNS position, the required liquidation period is calculated as follows:

$$\text{Required liquidation period} = \frac{\text{Actual position size}}{\text{Average daily trading volume}} \text{ (round to the nearest full day)} + \text{1 day (to account for the default date)}$$

16.7 Calculating the IRMS collateral requirement

The collateral requirement for CMS is calculated using the formula below.

$$\sqrt{\text{Outstanding position component}^2 + \text{Mark-to-market component}^2}$$

For more information, see Outstanding position component on page 217 or Mark-to-market component on page 217.

16.7.1 CNS collateral requirements

CNS participants can view their collateral requirement in CMS after the CNS/BNS process (approximately 7:00 a.m. ET, 5:00 a.m. MT, 4:00 a.m. PT).

Participants use the Inquire Collateral Requirement or the Inquire Collateral Valuation function to determine their current collateral requirements, current collateral value and excess or short amounts. For more information, see Inquiring on collateral contributions on page 194 and Inquiring on collateral value pledged to CDS on page 189.

Participants must contribute sufficient collateral to the CNS central counterparty service participant fund and the Supplemental Liquidity Fund by the imposed deadlines. If the requirements are not met, participants can be fined or suspended. For more information on collateral contribution deadlines and penalties, see Collateral administration on page 181.

17.6.1 New York Link/DTC Direct Link special margin participant funds

Special margin participant fund	Collateral deadlines	Eligible collateral	Pledging collateral
CDS participant fund for DTC Direct Link	For information on collateral deadlines, see Collateral administration	For information on eligible collateral, see Acceptable collateral	Securities are pledged from the participant's CUID to CDS's restricted collateral account (DDLX) If all the requirements are satisfied, CMS automatically confirms the pledge and moves the securities in to CDS's DDL ledger For more information, see Pledging securities as collateral
CDS participant fund for New York Link			To cover the requirement, participants must deposit cash collateral at CDS. For more information, see Delivering U.S. dollar cash as collateral on page 188.
NSCC participant fund for New York Link			Not applicable

Note: Information related to these special margin participant funds is available through CMS and RMS. For more information, see Collateral Management System and Using the Report Management System.

17.7 U.S. dollar receivers' collateral pool

A CAL is assigned to hold the collateral contributions of the receivers of credit for U.S. dollars. Each receiver pledges securities to the ledger and CUID indicated in the table below.

Collateral pool member	Collateral administration	
	Ledger	CUID
Receivers of credit for U.S. dollars	CAR20	CARU

Receivers of credit for U.S. dollars calculate and update their required pool contributions as described in Updating U.S. dollar receivers' collateral contributions on page 236.