Canadian Derivatives Clearing Corporation

Principles For Financial Market Infrastructure (“PFMI”)

Disclosure

2023

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Responding institution:	Canadian Derivatives Clearing Corporation (“CDCC”)
Jurisdiction(s) in which the FMI operates:	Canada
Authority(ies) regulating, supervising or overseeing the FMI:	Bank of Canada Autorité des marchés financiers Ontario Securities Commission British Columbia Securities Commission
This disclosure can also be found at:	www.cdcc.ca
For further information, please contact:	Canadian Derivatives Clearing Corporation E-mail: cdcc-ops@tmx.com
Date of this disclosure:	December 31, 2023

I. Executive Summary

This disclosure document constitutes the summary narrative of the Canadian Derivatives Clearing Corporation's (''CDCC'' or the "Corporation'') observance of the CPMI-IOSCO *Principles for Financial Market Infrastructures* (the ''PFMI'' or the ''Principles'')[1]. This disclosure seeks to provide CDCC's Clearing Members, market participants and the public with a high-level understanding of CDCC's governance, operational and risk-management framework.

This disclosure document has been prepared in accordance with the internationally recognized *"Principles for Financial Market Infrastructures: Disclosure framework and Assessment methodology"* published in December 2012 by the Committee on Payments and Marketing Infrastructures and the International Organization of Securities Commissions ("CPMI-IOSCO").

Headquartered in Montreal, Québec, Canada, CDCC provides clearing and settlement services for all Montréal Exchange's ("MX") transactions, including futures contracts, options on equity and share futures as well OTC (over-the-counter) fixed income derivatives, including cash and repurchase agreements.

II. Summary of major changes since the last update of the disclosure

The primary changes to this disclosure since its last publication include:

Principle 1: Legal basis was updated to reflect the Ontario Securities Commission (OSC) having issued a varied and restated Recognition Order on June 15, 2023.

Principle 3: Framework for the comprehensive management of risks was updated to reflect updates to the revised enterprise risk management policy.

Principle 14: Segregation and portability was updated to reflect the launch of the Gross Client Margin (GCM) Regime regime on March 31, 2023.

Principle 17: Operational risk was updated to reflect the implementation of the CDS Operational Resiliency Program.

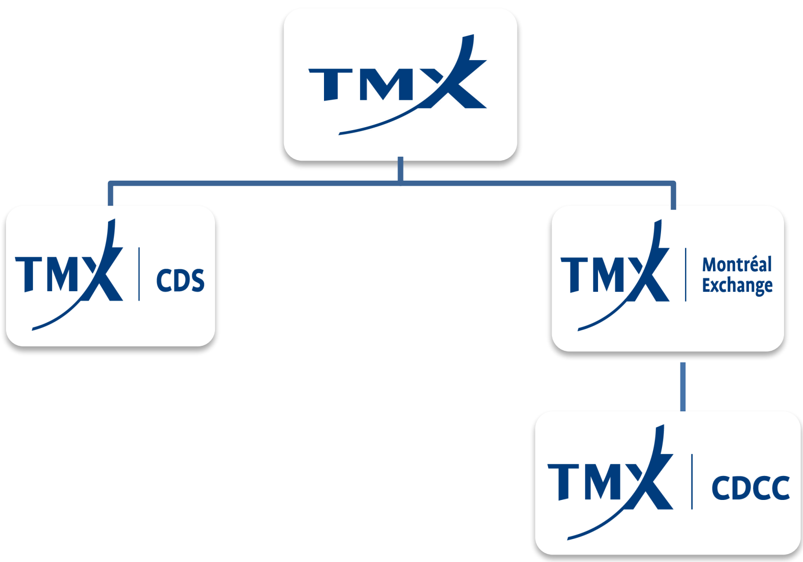
[1] Committee on Payments and Market Infrastructures and Technical Committee of the International Organization of Securities Commissions (CPMI-IOSCO), *"Principles for Financial Market Infrastructures*" (April 2012).

III. General background on the FMI

(A) General Description of CDCC and the Markets it serves

History

Originating in 1975 as clearing facilities to support the first Canadian equity options market, CDCC began clearing futures for the Toronto Futures Exchange in 1985. It became a wholly-owned subsidiary of the Montréal Exchange in 2000. In 2008, TMX Group Inc. was created through the combination of MX and TSX Group. In 2012, TMX Group Limited (“TMX Group”) (formerly the Maple Group Acquisition Corporation (“Maple”), completed the acquisition of a number of entities to form an integrated, multi-asset class exchange group. TMX Group today owns and operates both cash and derivatives markets for multiple asset classes including equities and fixed income. TMX Group’s subsidiaries also include the Canadian Depository for Securities Limited (“CDS”), which supports Canada’s equity, fixed income and money markets.



Markets

CDCC has supported rapid growth in the Canadian derivatives marketplace for decades with expert clearing systems and risk management solutions. CDCC's technology infrastructure combined with its processes form the Canadian Derivatives Clearing System (CDCS). CDCC currently supports the clearing of all MX exchange-traded products, including a wide range of equity, exchange-traded fund (“ETF”), and index derivative products. Such products include Futures, Share Futures, and Options. CDCC also offers central counterparty (“CCP”) clearing services for an expanding selection of customized equity derivatives products and fixed income (Repo) agreements to Canadian financial market participants. Since 2012, CDCC has been the only Canadian CCP to offer such CCP services for the clearing of fixed income (Repo) transactions. A list of the products available for clearing can be found on the CDCC's website.

CDCC applies rigorous risk management procedures to protect its Clearing Members. The major aspects of its risk management framework are its Membership standards, Margin Fund and Clearing Fund requirements, as well as its Default Management process. CDCC currently has 37 Clearing Members, including major Canadian financial institutions.

Key metrics (with updated values)

	2020	2021	2022	2023
Cleared Volumes - Futures	80,633,849	104,705,304	92,739,722	109,629,989
Cleared Volumes - Options	35,216,019	45,253, 869	56,349,499	62,631,248
Cleared Volumes - Converge (Options)	356,593	698,250	608, 302	647,223
Number of Transactions - Repo	118,648	128,737	185,611	216,176
Margin Fund (Deposit Value)	$ 13,666,266,772	$13,315,363,449	$16,104,435,436	$16,475,790,546
Clearing Fund (Deposit Value)	$ 2,376,392,338	$2,414,982,847	$2,528,536,267	$3,458,499,505

** Volumes and Transactions are single counted (only one side of the transaction is computed)*

General Organization of the FMI

The CDCC governance structure consists of the Board of Directors of the Corporation (the "Board of Directors"), which is assisted in its oversight responsibility by a Governance Committee and a Risk and Audit Committee. The Board of Directors can also seek or obtain advice and non-binding recommendations from the Human Resources Committee established by TMX Group, the Corporation's parent company.

In addition, the Risk Advisory Committee ("RAC") assists and advises the management of CDCC, at its request, on risk management issues. The RAC is entitled to give advice and make non-binding recommendations to the Board of Directors on the same issues. The Board of Directors and its committees have constituting policies in place that address the roles and responsibilities of its members and procedures to manage conflicts of interest.

The Board of Directors appoints the President and other officers. It is supported by CDCC's senior management team, its Risk Management, Corporate Operations and Business Development functions, as well as TMX Group Internal Audit, IT/System Services (Global Enterprise Services), Human Resources, and Legal departments. The roles and responsibilities of the senior management team — directly and through

CDCC's Risk Management Committee ("RMC") — include ensuring the appropriate design, operation, and management of the risk management program and ensuring accurate, timely, and consistent reporting.

(B) Legal and Regulatory Framework

CDCC is incorporated under the *Canada Business Corporations Act*. CDCC operates throughout Canada while primarily conducting business in the provinces of Québec and Ontario. CDCC is subject to various provincial securities legislations, and its regulatory framework is formed by the provincial securities commissions' recognition orders and the Bank of Canada Oversight Agreement.

CDCC is recognized as a clearing agency by the Autorité des marches financiers (Québec) (AMF)[2], the British Columbia Securities Commission (BCSC),[3] and the Ontario Securities Commission (OSC)[4]. In April 2012, pursuant to the *Payment and Clearing Settlement Act* (PCSA), the Bank of Canada designated CDCS, which is the clearing and settlement system operated by CDCC, to be of systemic importance. As part of this designation, and pursuant to the Amended and Restated Oversight Agreement (OA),[5] CDCC is subject to the Bank of Canada's oversight. CDCC is also recognized as a third-country CCP by the European Securities and Markets Authority (ESMA).[6]

(C) System Design and Operations

As the clearinghouse for exchange-traded and off-exchange derivative instruments as well as fixed income repurchase agreements (Repo), CDCC contributes to the integrity and stability of the Canadian market by acting as the central counterparty guarantor. CDCC guarantees the financial obligations of every contract that it clears by acting as the buyer to every seller and as the seller to every buyer. CDCC thus protects the market participants from counterparty risk (also known as default risk or credit risk).

Upon acceptance of a Futures Contracts, Options on Equity and Share Futures, OTC (Over-the-Counter) Fixed Income, including cash and repurchase agreements transaction (the "Transaction"), novation occurs,

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[2] In May 2012, the AMF, pursuant to the section 12 of the *Québec Derivatives Act* ("QDA"), issued the Decision 2012-PDG-0078 (the "AMF Recognition order") dated 2012-05-02 and as amended from time to time, recognizing CDCC as a clearing house.

[3] In April 2012, the British Columbia Securities Commission (BCSC), pursuant to section 24(d) of the *Securities Act* (British Columbia), issued its decision 2012 BCSECCOM 277 (the "BC Recognition Order"), recognizing CDCC as a clearing agency.

[4] In April 2014, the OSC, pursuant to section 21.2 of the *Ontario Securities Act*, issued an order recognizing CDCC as a clearing agency and in June 2023, the OSC, issued a varied and restated Recognition Order (the "OSC Recognition order") as amended from time to time

[5] In March 2012, the Bank of Canada and CDCC entered into the Regulatory Oversight Agreement, and on April 4, 2022 the Bank of Canada and CDCC entered into an Amended and Restated Oversight Agreement. http://www.bankofcanada.ca/core-functions/financial-system/clearing-and-settlement-systems/#corporation

[6] On January 27, 2016, pursuant to Article 25 of the *Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories* (EMIR), ESMA issued a Decision to recognize CDCC as a third-country CCP.

and the initial Transaction is replaced by two different transactions between the Corporation and each Clearing Member involved in the Transaction. Each Clearing Member looks to the Corporation for the performance of the obligations under a Transaction and not to another Clearing Member. All transactions that are submitted to CDCC are registered in the name of the Clearing Member, either in the Firm or Client Account. As a result, each client of a Clearing Member looks solely to the Clearing Member for performance of the obligations and not to the Corporation. The Corporation is obligated to the Clearing Member only.

CDCC provides support to its members in areas such as:

- Trading / assignment / exercise processing;
- Margin and collateral processing;
- Settlement and clearing; and
- IT processing.

CDCC registers, confirms, administers, and settles derivative transactions traded on the MX and through its Converge© OTC offerings within the Canadian Derivatives Clearing Service ("CDCS"). The CDCS platform includes the SOLA-C and SOLA-RN application components, which were developed by TMX Group's Information Technology teams.

The clearing, assignment and exercise of derivative contracts are conducted within its clearing application, SOLA-C. Trading transactions for CDCC's Fixed Income offering are delivered via CDS Inc.'s CDSX application. The clearing and settlement of the start and end legs of Repo transactions are also facilitated through the CDCS application system. Margin requirement calculations are performed on the margining sub-system SOLA-RN, which includes additional risk management parameterizations and which manages the margin call interface to the risk engine.

IV. Definitions of Key Terms and Abbreviations

AMF	Autorité des marchés financiers
BIA	Bankruptcy and Insolvency Act
BCM	Business Continuity Management
BCSC	British Columbia Securities Commission
CCP	Central Counterparties
CDCC	Canadian Derivatives Clearing Corporation
CDCS	Canadian Derivatives Clearing Service
CDS	Canadian Depository for Securities Limited (TMX)
CPSS	Committee on Payment and Settlement Systems
CSD	Central Securities Depository
DMC	CDCC Default Management Committee
EMIR	European Market Infrastructure Regulation
ERM	Enterprise Risk Management
ESMA	European Securities and Markets Authority
FMI	Financial Market Infrastructures
GCM	Gross Client Margin
IM	Initial Margin
IOSCO	International Organization of Securities Commissions
KER	CDCC Key Enterprise Risk
OSA	Ontario Securities Act
OSC	Ontario Securities Commission
OSFI	Office of the Superintendent of Financial Institutions
OTC	Over-the-counter
ORM	Operational Risk Management
OWG	Operations Working Group
PCSA	Payment Clearing and Settlement Act
PFMI	Principles for financial markets infrastructures
PSA	Parental Support Agreement
QDA	Québec Derivatives Act
QRC	Quantitative Risk Committee
RAS	CDCC Risk Appetite Statement
REC	Risk Evaluation Committee
RMAC	CDCC Risk Management Advisory Committee
RMC	CDCC Risk Management Committee
SSS	Securities Settlement System
VM	Variation Margin

V. Principle-by-Principle Narrative Disclosure

Principle 1: Legal Basis

Principle

An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.

Disclosure

Key consideration 1: The legal basis should provide a high degree of certainty for each material aspect of an FMI's activities in all relevant jurisdictions.

CDCC has a well-founded, clear, transparent, and enforceable legal basis, with a high degree of certainty, for each material aspect of its activities in all relevant jurisdictions (that is, the jurisdictions in which CDCC is authorized and regulated).

The material aspects of its clearing activities that CDCC considers as requiring a high degree of legal certainty include: novation, netting and the enforceability of its rights over collateral (margin and clearing fund deposits), the default management procedures, and the finality of settlements.

CDCC's Rules and Membership Agreement are governed by the laws of Québec and the laws of Canada applicable therein, including, the *Payment Clearing and Settlement Act* (Canada) ("PCSA"). CDCC is a recognized clearing house regulated by Québec's financial services regulatory authority, the *Autorité des marchés financiers* ("AMF"). CDCC is also recognized as a clearing agency in Ontario by the Ontario Securities Commission ("OSC") pursuant to the *Securities Act* (Ontario) ("OSA") and the British Columbia Securities Commission ("BCSC") pursuant to the *Securities Act* (British Columbia). CDCC is also subject to National Instrument 24-102 Clearing Agency requirements to the extent that the subject matters of each section of the instrument are not otherwise governed by the terms and conditions of a decision of the securities regulatory authorities that have recognized CDCC.

CDCC's clearing and settlement system, the CDCS, is also subject to oversight by the Bank of Canada. Pursuant to the designation by the Bank of Canada under the PCSA[7] of CDCS, CDCC's settlement rules, which include the rules "that provide the basis on which payment obligations, delivery obligations or other transfers of property or interests in, or in Québec rights to, property are made, calculated, netted or settled and includes rules for the taking of action in the event that a participant is unable or likely to become unable to meet its obligations to the clearing house, a CCP, other participants or the Bank of Canada," are valid and binding, notwithstanding anything in any statute or other law of Canada or a province.

[7] As described in the *PCSA Act*, PART I: Clearing and Settlement System Regulation, Settlement Provisions

In addition, pursuant to the PCSA, CDCC's rights or remedies, with respect to any collateral that has been granted to it as security for the performance of an obligation incurred in respect of the clearing and settlement services, are protected from interference from any law relating to bankruptcy or insolvency.

Key consideration 2: An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations.

CDCC's Rules and Operations Manual (which includes the Risk Manual and the Default Manual) address the material aspects of CDCC's clearing activity, including: novation, netting, default management procedures, and settlement finality. CDCC's Rules, Manuals, procedures and contracts are closely monitored in the relevant jurisdictions by the regulatory authorities of Québec (AMF) and Ontario (OSC), and by the Bank of Canada. The governing law of the legal framework supporting CDCC's contractual rights, Rules, Manuals and procedures is Québec law (and the laws of Canada applicable in the Province of Québec), and the legal framework supporting CDCC's security interests in the collateral is generally governed by Ontario laws and/or Québec laws, as the case may be, as well as the laws of Canada applicable in these Provinces. The provisions of the PCSA are also applicable to CDCC.

Ontario law is specified in the participant agreement between CDCC and CDS as the law governing the account agreement, including the creation of a security interest in the collateral credited to the account.

Key consideration 3: An FMI should be able to articulate the legal basis for its activities to relevant authorities, participants, and, where relevant, participants' customers, in a clear and understandable way.

CDCC articulates the legal basis for its activities to the relevant authorities, Clearing Members , and, where relevant, Clearing Members' clients, in a clear and understandable way. Under the self-certification process set forth under and pursuant to the *Derivatives Act* (Québec) ("QDA"), the proposed Rule changes are accompanied by a detailed analysis that articulates the legal basis of the relevant new or amended provisions in respect of any of CDCC's activities. Such a Rule change file is sent to the AMF, OSC and Bank of Canada for their review. AMF and OSC also publish in their bulletins CDCC Rule changes for a 30-day public comment period , which are available on their respective websites. Rule changes are also posted on CDCC's website for public consultation. Clearing Members, and other market participants, have an opportunity to question and comment on the relevant initiatives during the comment period, and such a process helps ensure that the Rules are clear and consistent. As a result, regulators, Clearing Members, and market participants are informed of any new rules and rule changes and are given the opportunity to comment before their entry into force and such a process helps ensure that the Rules are clear and consistent.

CDCC has Rules, Manual, procedures, and contracts that are clear, understandable, and consistent with the relevant laws and regulations. The CDCC Rules are readily accessible to Clearing Members and to the public in both English and French on CDCC's website..

Key consideration 4: An FMI should have rules, procedures, and contracts that are enforceable in all relevant jurisdictions. There should be a high degree of certainty that actions taken by the FMI under such rules and procedures will not be voided, reversed, or subject to stays.

There is a high degree of certainty that the most critical actions taken by CDCC under its Rules, Manuals, procedures and contracts are enforceable in the relevant jurisdictions and will not be voided, reversed, or subject to stays.

Key consideration 5: An FMI conducting business in multiple jurisdictions should identify and mitigate the risks arising from any potential conflict of laws across jurisdictions.

CDCC currently conducts business in Canadian provinces only. Every Canadian province has conflict of law rules, and there is a high level of legal certainty in this regard in all provinces. CDCC continues to keep abreast of the latest regulatory developments in this regard.

Principle 2: Governance

Principle

An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

Disclosure

Key consideration 1: An FMI should have objectives that place a high priority on the safety and efficiency of the FMI and explicitly support financial stability and other relevant public interest considerations.

CDCC is a for-profit legal entity, separate and independent from its shareholders. Maintaining the safety and efficiency of CDCC's operations is a primary objective of CDCC's Risk Management framework formed by the Rules, Operations, Risk and Default Manuals, as amended from time to time. The CDCS, operated by CDCC, has been designated by the Bank of Canada as being of systemic importance under the PCSA. CDCC is thus under the obligation, and subject to close oversight by the Bank of Canada, to operate in such a manner that risk is properly controlled and to promote efficiency and stability in the Canadian financial system. Furthermore, CDCC's public interest mandate is embedded in its recognition orders and subject to annual reporting to some of its regulators.

Key consideration 2: An FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant authorities, participants, and, at a more general level, the public.

CDCC has governance arrangements that provide clear and direct lines of responsibility in the form of its committees and their associated charters, which are disclosed to all stakeholders.

The Board of Directors is independent and carries out its mandate directly as well as through the Risk and Audit Committee and the Governance Committee. The Board of Directors can also seek or obtain advice and non-binding recommendations from the Human Resources Committee established by TMX Group, the Corporation's parent company.

Key consideration 3: The roles and responsibilities of an FMI's board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address, and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly.

The roles and responsibilities of CDCC's Board of Directors are clearly specified in its Charter and Statement of Corporate Governance, which document its functioning, including procedures to identify, address, and manage member conflicts of interest. Those documents are publicly available on CDCC's website. The Board of Directors reviews both its overall performance and the performance of individual Board members regularly.

Key consideration 4: The board should contain suitable members with the appropriate skills and incentives to fulfill its multiple roles. This typically requires the inclusion of non-executive board member(s).

As explained in the Board Charter and Statement of Corporate Governance, the CDCC Board of Directors includes suitable members, including independent board members, that have the appropriate skills and incentives to fulfill their multiple responsibilities, as defined and required under CDCC recognition orders. Currently, CDCC has thirteen elected directors, seven of which were determined to be independent by CDCC's Board. A list of the directors of CDCC is publicly available on CDCC's website.

Key consideration 5: The roles and responsibilities of management should be clearly specified. An FMI's management should have the appropriate experience, a mix of skills, and the integrity necessary to discharge their responsibilities for the operation and risk management of the FMI.

The roles and responsibilities of CDCC's management are clearly specified. CDCC's management and officers have the appropriate mix of experience and skill set and the integrity necessary to discharge their responsibilities; all Officers of the Corporation must be fit and proper under the OSC and AMF Recognition Orders. The boundaries between the Board of Directors and management responsibilities are established by the Board of Directors, which oversees the performance of management.

Key consideration 6: The board should establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.

CDCC has effective and documented governance arrangements that provide clear and direct lines of responsibility and accountability for ensuring that effective risk-management processes are in place. These clear accountabilities also promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

The composition of CDCC's Board of Directors reflects the requirement of independence as stated in the various Recognition Orders and Amended and Restated Oversight Agreement. The Board carries out its mandate directly as well as through the CDCC Risk and Audit Committee and the CDCC Governance Committee. The Board can also seek or obtain advice and non-binding recommendations from the Human Resources Committee established by the Corporation's ultimate parent company, TMX.

The Board is primarily responsible for confirming that a sound risk management program is in place to identify the principal risks to the FMIs and their business, that appropriate procedures are implemented to monitor and mitigate those risks, and that other lines of accountability are effectively managing risks.

CDCC has implemented the "Five Lines of Accountability Model," which elevates the accountability of the first line of accountability composed of Objective Owners/Sponsors and Employees, confirms the industry accepted standards for the second (Risk Management) and third (Internal Audit) lines, and highlights the role of the Board, and supporting committees, in risk oversight. Under the Five Lines of Accountability Model, every employee is responsible for managing risks that may affect the achievement of Objectives, increasing the awareness of risks and the responsibility to identify and treat risks that could impact achievement of those Objectives. Collectively, the Five Lines of Accountability are designed to safeguard that the range of risks that arise in or are borne by each FMI remain within the established risk tolerances and that any breach is monitored on an ongoing basis and appropriately escalated.

The principles embedded in the risk management policy are reflected in the Rules, Operations, Risk and Default Manuals. The CDCC Board of Directors has established a Risk and Audit Committee to take steps on its behalf as necessary to assist the Board in fulfilling its oversight responsibilities.

The CDCC Board of Directors approves, annually, the Risk Appetite Statement and the ERM Policy and oversees the adequacy and operating effectiveness of CDCC's ERM program. CDCC's senior management, either directly or through the Risk Management Committee ("RMC"), ensures the appropriate design and management of the ERM program, including appropriate and timely reporting.

Key consideration 7: The board should ensure that the FMI's design, rules, overall strategy, and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders. Major decisions should be clearly disclosed to relevant stakeholders and, where there is a broad market impact, the public.

CDCC welcomes stakeholder feedback through the Risk Advisory Committee ("RAC") and the User Groups for Derivatives and Fixed Income Clearing Members. Stakeholders' views are solicited and taken into consideration for any significant changes regarding CDCC's design, rules, or functioning. CDCC discloses major decisions made by its Board of Directors, in accordance with applicable legislation and regulations, as well as its recognition orders and the Bank of Canada Amended and Restated Oversight Agreement, by means of notices to Clearing Members, its Clearing Members and regulatory extranets, and on its website, as necessary.

Principle 3: Framework for the Comprehensive Management of Risks

Principle

An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.

Disclosure

Key consideration 1: An FMI should have risk-management policies, procedures, and systems that enable it to identify, measure, monitor, and manage the range of risks that arise in or are borne by the FMI. Risk-management frameworks should be subject to periodic review.

CDCC maintains risk-management policies, standards, procedures, guidelines and systems for comprehensively managing the range of risks that arise in or are borne by them in the course of their clearing, depository and settlement activities.

This risk-management framework (including policies, standards, procedures and systems) provides guidelines for managing key risks across the organization in a comprehensive, transparent and effective manner, thus enabling CDCC to achieve its strategic and business objectives while remaining consistent with its risk tolerances. This risk-management framework is consistent with the TMX Policy on Policies ("PoP") and Objective Risk Centric Risk Management Framework ("OCRM") with clear and documented governance arrangements to guide development, approval and ongoing review of the policies, standards, procedures and guidelines.

CDCC operates in accordance with the "Five Lines of Accountability Model," which elevates the accountability of the first line of accountability composed of Objective Owners/Sponsors and Employees, confirms the industry accepted standards for the second (Enterprise Risk Management) and third (Internal Audit) lines, and highlights the role of the Board, and supporting committees, in risk oversight. Under the Five Lines of Accountability Model, every employee is responsible for managing risks that may affect the achievement of Objectives, increasing the awareness of risks and the responsibility to identify and treat risks that could impact achievement of those Objectives.

Regular reviews of risk-management policies, procedures, and systems are important to ensure that our risk posture adapts to changes in the external environment and remains fit for purpose. As CDCC continues to adhere to a systematic and rigorous periodic review cycle of risk management governance documents based on regulatory and internal compliance requirements. TMX Internal audit, as the third line of accountability, also provides independent assurance toCDCC Risk Management Framework on the effectiveness of programs and practices.

The Board of Directors determines the appropriate level of risk tolerance and capacity - i.e., the Risk Appetite Statements, which set the tone of risk discussion. They are communicated to employees and subject to ongoing monitoring. As a wholly-owned subsidiary of the TMX Group Limited ("TMX"), CDCC must also adhere to TMX Group Limited Risk Appetite Statements ("RAS"), and the CDCC Risk Appetite Statements ("RAS") must not conflict with those of TMX Group.

While risk types are diverse, an FMI is required to identify those that could materially affect its ability to perform or provide financial market services in a highly secure, resilient and compliant manner. The Enterprise Risk Management (ERM) framework encompasses the methodologies and procedures for identifying, evaluating, monitoring, and mitigating risks at CDCC. This framework enables the clearing house to comprehend, control, and articulate the types and magnitude of risk it is willing to accept in pursuit of its strategy and objectives.

The classifications and definitions within CDCC's risk universe undergo periodic reassessment to determine their ongoing relevance and potential need for adjustment. Risks identified are categorized into risk categories as part of this periodic reassessment process.As of 2023, CDCC has identified the following key risks: market, liquidity, credit, investment, custody, settlement, model, default, operational, strategic and business, legal, regulatory and compliance, reputational, project and capital (hereafter "Key Enterprise Risk", or KER) as potential challenges that could prevent it from achieving its strategic purpose of operating a post-trade market infrastructure with high resilience and security and compliant with all applicable standards ("Objectives").

The effective management of these KERs requires a core set of principles and processes for identifying, measuring, monitoring and managing them. For that reason, risk-management policies, standards, procedures, guidelines and systems - when required -have been established consistent with the FMI's Risk Universe. They are illustrated below:

Tier 1	Enterprise Risk Management		
Tier 2	Financial Risk	Resilience Risk	Corporate Risk
Tier 3	**Market Risk -** 1. Wrong Way Risk 2. Latent Risk 3. Concentration Risk 4. Procyclicality Risk **5. Liquidity Risk** **Credit Risk -** 6. Collateral Risk 7. Counterparty Risk 8. Participation Risk **9. Custody & Investment Risk** **10. Settlement Risk**	**11. Default Management Risk** **Operational Resilience** - including: 12. Operational Risk 13. Process Risk 14. External Risk 15. HR/People Risk 16. System/IT Risk 17. Information Security Risk/Cyber Risk 18. Third Party Risk 19.Model/Non-Model Risk	**20. Strategic/Business Risk** **21. Legal Risk** **22. Regulatory and Compliance Risk** **23. Reputational Risk** **24. Project Risk** **25. Capital Risk**

CDCC regularly monitors and reports on risk levels against the Risk Appetite Statements and the risk metrics specified in the risk-specific policies and standards. Risk documents at the KER level and below clearly establish the responsibilities for standards and reporting, in addition to daily oversight practices. Key Enterprise Risk information is provided, by the responsible group, to the RMC and the Board for effective oversight and management. Any breach of risk limits is subject to a notification and reporting process to senior management and/or the Board, depending on the limit or guideline. In addition to our regular risk monitoring, other risk-specific presentations on internal and/or external events, which may impact our risk profile, are provided to, and discussed with, senior management during the quarterly RMC meetings.

Key consideration 2: An FMI should provide incentives to participants and, where relevant, their customers to manage and contain the risks they pose to the FMI.

CDCC has developed a comprehensive incentivization structure *vis-à-vis* its Clearing Members and communicated details regarding these incentives via multiple fora, including its Rules, Notices to Members, as well as through the various industry working groups that have been developed.

Incentives for participants range from credit risk introduced into the clearing system, reflected through the proportional increases in their contingent liability in the Clearing Fund, to operational risks delays and the associated fine structures for late settlements.

Key consideration 3: An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers, and service providers) as a result of interdependencies and develop appropriate risk-management tools to address these risks.

The material risks to which CDCC is exposed in the course of its clearing activities constitute its risk universe. The Risk Universe is kept up to date through regular reviews using risk assessments, benchmarking exercises, regulatory requirements and other risk identification activities. Each KER is supported by a comprehensive set of risk management practices designed to identify and address material risks. The assessment against risk tolerance is reviewed every quarter.

CDCC relies on the Canadian Depository for Securities Limited for the settlement of derivatives and fixed income transactions.

As part of its liquidity risk management approach, CDCC reviews its intraday liquidity arrangements to limit settlement congestion in the Securities Settlement System ("SSS") used for its securities settlement process and its operational risk management framework to prevent any failure of the physical settlement process due to system or process issues.

Settlement bank risk is managed primarily through a diversification strategy, supplemented by due diligence reviews, monitoring of the creditworthiness of the entities and operational efficiency.

CDCC uses three types of custodians for the purpose of the safe-keeping of the assets provided to satisfy cash and non-cash collateral. Canadian dollar cash collateral is held at the Bank of Canada, eliminating commercial banking risk. With the expansion of service hours outside of North American banking hours, the CDCC may now hold foreign currency cash collateral at commercial banks. These commercial bank deposits are subject to due diligence, rating, limit setting and monitoring in accordance with the Custody and Investment Risk Policy. Non-cash collateral is held with financial institutions regulated by OSFI under either the Bank Act or the Trust and Loans Companies Act. As non-cash collateral is in book-entry form and CDCC has a first priority security interest in these assets, any potential risk arising from the failure of the custodian is immaterial.

CDCC has established standards to systematically manage the risks arising from custody and investment services provided by interdependent parties such as custodians. These standards establish risk-based preferences for custody arrangements where the custodian cannot be a current member (or affiliate) of the business for which the assets are being managed in order to avoid concentration and wrong-way risk. Custodians will be assigned concentration limits and entity-level limits based on the internal assessment. The CDCC monitors and updates the entity-level limits to reflect the current risk profile on an ongoing basis.

Third party risk management is a key component of CDCC's operational risk management framework. CDCC conducts materiality assessments for all service providers to identify associated risks and implements the necessary measures to manage these dependencies through appropriate contractual and organizational arrangements. The performance of service providers is continuously monitored through day-to-day operations, with identified issues documented through the incident management program and escalated as appropriate. For critical service providers, the CDCC monitors their creditworthiness, operational performance and cybersecurity status on an ongoing basis and reports on these aspects at defined intervals.

Through its Business Continuity Planning, CDCC strives to proactively understand potential threats, vulnerabilities and weaknesses to its organization in times of crisis. The Business Continuity and Disaster Recovery Plan ensures that CDCC can respond quickly and efficiently to business disruptions.

Like all participants in financial markets, CDCC presents risks to its Clearing Members and key service providers. These risks mirror those faced by CDCC itself as a clearinghouse, including operational risks, credit risks, liquidity risks, etc. When changes are planned for Rules, Models, and Processes that could affect Clearing Members, CDCC communicates these changes to its members through various industry working groups, soliciting feedback. The internal change management risk evaluation process not only assesses the risks CDCC encounters but also evaluates the risks it imposes on its Clearing Members. A Risk Evaluation Committee (“REC”) ensures that before key changes are introduced or undertaken, the inherent risks are subject to adequate assessment and/or mitigation procedures.

As an active participant in the Bank of Canada's Canadian Financial Sector Resiliency Group (CFRG) committee, CDCC has the opportunity to work with other critical infrastructures to identify significant risks that could prevent the conduct of normal activities and to develop cross-sector plans.

Key consideration 4: An FMI should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. An FMI should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment. Where applicable, an FMI should also provide relevant authorities with the information needed for purposes of resolution planning.

CDCC has implemented a comprehensive and effective recovery plan that contains specific scenarios in this regard, including credit, liquidity and operational events. The plan is subject to ongoing review and enhancements spanning scenario identification and loss exposure measurements, loss absorption capacity of tools and governance arrangements. In accordance with its regulatory requirements, the recovery plan is reviewed and approved annually by its Board of Directors. The plan ensures that CDCC can continue to provide critical services and can replenish any financial resources that it may employ in implementing such a plan.

CDCC has an orderly wind-down plan, the objective of which is to demonstrate that the FMI could be severed from the TMX Group in a timely and orderly manner, with continuity of critical services provided to the Canadian financial system.

Principle 4: Credit Risk

Principle

An FMI should effectively measure, monitor, and manage its credit exposures to participants and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a CCP that is involved in activities with a more complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover 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 potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions.

Disclosure

Key consideration 1: An FMI should establish a robust framework to manage its credit exposures to its participants and the credit risks arising from its payment, clearing, and settlement processes. Credit exposure may arise from current exposures, potential future exposures, or both.

As part of its ERM program, CDCC has developed a robust and comprehensive framework to manage the credit risks that it has identified. As part of the framework, sources of credit risk are reviewed on an annual basis and the resulting credit risk appetite, principles, and risk management processes are affirmed by the Board of Directors at a similar frequency. Through the review process, the supporting policies and documentation are revised to ensure that they remain consistent and reflective of evolving industry business practices. Forming part of this ERM program is a dedicated CDCC Credit Risk Policy whose foundations are the numerous frameworks that describe the various risks and risk management processes contributing to CDCC's overall credit risk exposure. Fundamentally, the Credit Risk Policy is composed of two key elements: 1) sufficient financial resources and 2) credit exposure oversight.

Credit risk is managed as part of CDCC's ERM programme which is reviewed annually. As part of the framework, sources of credit risk are reviewed on an annual basis and the resulting credit risk appetite, principles, and risk management processes are affirmed by the Board of Directors at a similar frequency.

Key consideration 2: An FMI should identify sources of credit risk, routinely measure and monitor credit exposures, and use appropriate risk-management tools to control these risks.

CDCC identifies the sources of its credit risk at a minimum on an annual basis. Sources of credit risk fall into three broad-based categories: 1) credit risk due to direct participants, 2) credit risk inherent in the collateral used by direct participants to cover margin and/or other requirements, and 3) credit risk due to commercial banks used as settlement agents and/or liquidity providers.

1) Credit risk due to direct participants is measured and monitored, as a first step, through the periodic review of capital requirements against the minimum standards required by the CDCC through its membership standards. Credit risk due to direct participants is also monitored through a quarterly creditworthiness analysis. Furthermore, credit risk derived through transactional activity is measured on a daily basis and is secured through the use of collateral provided by the direct participants.

2) Credit risk inherent in collateral is measured and monitored against the credit standards set within the collateral framework adopted by the CDCC. On a daily basis, CDCC will measure the collateral provided by direct participants against the collateral mix policy that is designed to mitigate against credit risk, among other risks. CDCC also has processes in place to regularly review the appropriateness of haircuts and limits. Specifically, CDCC conducts monthly backtesting to evaluate their adequacy after applying stress scenarios to Clearing Members' positions and collateral values. Moreover, CDCC establishes limits at the Clearing Member level to cover minimum liquidity requirements, maximum concentration limits and wrong-way risk.

3) Credit risk due to settlement banks and/or liquidity providers is largely focused on a periodic review of financial statements against the requirements of such entities(quarterly creditworthiness analysis), which are maintained as part of a policy or Rule.

Key consideration 3: A payment system or SSS should cover its current and, where they exist, potential future exposures to each participant fully with a high degree of confidence using collateral and other equivalent financial resources (see Principle 5 on collateral). In the case of a DNS payment system or DNS SSS in which there is no settlement guarantee but where its participants face credit exposures arising from its payment, clearing, and settlement processes, such an FMI should maintain, at a minimum, sufficient resources to cover the exposures of the two participants and their affiliates that would create the largest aggregate credit exposure in the system.

Not applicable.

Key consideration 4: A CCP should cover its current and potential future exposures to each participant fully with a high degree of confidence using margin and other prefunded financial resources (see Principle 5 on collateral and Principle 6 on margin). In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover 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 potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. In all cases, a CCP should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount of total financial resources it maintains.

Current and potential future exposures are computed and covered through the collection of Variation Margin ("VM") in the first instance and Initial Margin ("IM") in the latter, on at least a daily basis. Both VM and IM are collected from Clearing Members, either in cash or via a collateralization scheme, and IM is set to achieve a coverage target of at least 99%. Both VM and IM are secured via acceptable margin deposits and are maintained at either the central bank (for cash collateral), pledged to CDCC via the CDS settlement system, or held at approved custodians in segregated accounts subject to control agreements. The Clearing Member grants to, and in favour of CDCC, a first ranking pledge and security interest on all property deposited as Margin Deposits as defined under CDCC's Rules.

As a CCP designated as systemically important in a single jurisdiction and currency, CDCC maintains additional financial resources in the form of a Clearing Fund that is sized to a Cover 1 plus Affiliates standard. The sizing of the Clearing Fund is determined by subjecting the Clearing Members accounts to extreme but plausible market scenarios so as to determine the largest credit losses beyond the IM provided that would result in an uncovered shortfall. The sufficiency of total financial resources is tested on a daily basis, and CDCC reserves the right to re-calibrate both IM and Clearing Fund components to ensure that it continues to meet its Cover 1 plus Affiliates standard.

The governance arrangements that have been adopted are embedded in the ERM framework and involve the elaboration of risk appetite statements, various frameworks for the identification, monitoring and management of risks, as well as monthly reporting to the internal risk management committee (RMC), the external industry risk committee (RMAC), and to the CDCC Board of Directors. Internal risk governance requires that CDCC evaluate the adequacy of its financial resources at the Clearing Member and CCP-level and take appropriate actions in the event that financial resources fall below defined thresholds.

CDCC maintains additional financial resources in the form of a Clearing Fund that is sized to a Cover 1 plus Affiliates standard. The sufficiency of total financial resources is tested on a daily basis, and CDCC reserves the right to re-calibrate both IM and Clearing Fund components to ensure that it continues to meet its Cover 1 plus Affiliates standard.

The governance arrangements that have been adopted are part of the ERM framework and involve risk appetite statements, various frameworks for the identification, monitoring and management of risks, as well as monthly reporting to the internal risk management committee (RMC), the external industry risk committee (RMAC), and to the CDCC Board of Directors.

Key consideration 5: A CCP should determine the amount and regularly test the sufficiency of its total financial resources available in the event of a default or multiple defaults in extreme but plausible market conditions through rigorous stress testing. A CCP should have clear procedures to report the results of its stress tests to appropriate decision makers at the CCP and to use these results to evaluate the adequacy of and adjust its total financial resources. Stress tests should be performed daily using standard and predetermined parameters and assumptions. On at least a monthly basis, a CCP should perform a comprehensive and thorough analysis of stress testing scenarios, models, and underlying parameters and assumptions used to ensure they are appropriate for determining the CCP's required level of default protection in light of current and evolving market conditions. A CCP should perform this analysis of stress testing more frequently when the products cleared or markets served display high volatility, become less liquid, or when the size or concentration of positions held by a CCP's participants

increases significantly. A full validation of a CCP's risk-management model should be performed at least annually.

CDCC performs daily stress testing, which includes Clearing Member exposures as well as the margin collateral that is provided to cover IM and Clearing Fund requirements. The stress testing program is governed by the stress testing framework, which defines the various scenarios used for testing, the daily revision against available financial resources as well as the monthly stress testing adequacy process that assesses its effectiveness and appropriateness. The stress testing results are consolidated and reported to the various committees (RMC, RMAC and the Board of Directors). CDCC regularly reviews and validates its credit risk management, including the stress testing program at least annually, or more frequently if required.

Key consideration 6: In conducting stress testing, a CCP should consider the effect of a wide range of relevant stress scenarios in terms of both defaulters' positions and possible price changes in liquidation periods. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions.

CDCC's stress testing framework includes various scenarios, including historical and hypothetical scenarios and inclusive of all Clearing Member positions, peak price changes, and volatilities. Defaults of affiliated Clearing Members are considered in the stress testing framework as CDCC meets a Cover 1 plus Affiliates standard.

Defaults of affiliated Clearing Members are also considered in the stress testing framework as CDCC meets a Cover 1 plus Affiliates standard. Stress test scenarios are the main inputs to the Clearing Fund as addressed in key consideration 4.

CDCC also performs reverse stress tests that are designed to analyze the sensitivity associated with a specific risk factor which further helps CDCC to determine the level of consumption of the pre-funded financial resources at different levels.

Key consideration 7: An FMI should establish explicit rules and procedures that address fully any credit losses it may face as a result of any individual or combined default among its participants with respect to any of their obligations to the FMI. These rules and procedures should address how potentially uncovered credit losses would be allocated, including the repayment of any funds an FMI may borrow from liquidity providers. These rules and procedures should also indicate the FMI's process to replenish any financial resources that the FMI may employ during a stress event, so that the FMI can continue to operate in a safe and sound manner.

CDCC has existing rules that address how Clearing Fund assessments are performed on surviving Clearing Members in the unlikely event that pre-funded financial resources are extinguished further to a Clearing Member default.

Clearing Fund assessment is documented in CDCC's Rule and Default Manual. CDCC has also suitable recovery tools to extinguish uncovered credit losses. Moreover, Clearing Fund assessments are performed on a pro-rata basis and are a function of each survivor's Clearing Fund contribution at the point of default. Repayment of funds follows the reverse order of the default waterfall. Moreover, the CDCC Recovery Plan and Rules provide additional tools to absorb losses beyond the Default Waterfall.

Principle 5: Collateral

Principle

An FMI that requires collateral to manage its or its participants' credit exposure should accept collateral with low credit, liquidity, and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits.

Disclosure

Key consideration 1: An FMI should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity, and market risks.

The collateral framework, as part of the ERM framework, lays down the key criteria that CDCC uses to determine the acceptability of collateral.

The collateral management at CDCC is designed to ensure that the collateral accepted by CDCC has low credit, liquidity, and market risks. Moreover, conservative haircuts and risk limits are set and enforced appropriately to control potential exposure. The limits are monitored daily and mitigate potential liquidity, concentration and wrong-way risks. Specifically, wrong-way risk is managed by explicitly prohibiting the acceptance of collateral from Clearing Members whose credit risk is highly correlated with the specific collateral.

CDCC only accepts cash collateral for the Clearing Fund to mitigate the liquidity risk associated with the closing of positions in the unlikely event of a Clearing Member default. Cash collateral is also the only type of eligible collateral for the Supplement Liquidity Fund (SLF).

CDCC's Rules also provide for the acceptance of collateral on an exceptional basis; however, these forms of collateral should not depart markedly from the criteria as established in the collateral framework and would require internal approval before being accepted.

Finally, CDCC regularly reviews and validates its collateral arrangements at least annually, or more frequently if required.

Key consideration 2: An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.

Collateral that is pledged to CDCC is re-valued intra-day (every time margin requirements are calculated) and haircuts are tested on a monthly basis for their adequacy.

CDCC may also, at its sole discretion, determine its own value for collateral where market prices are deemed inadequate under market conditions.

Moreover, CDCC uses as benchmark and in some cases adopts the haircuts published by the Bank of Canada for assets eligible as collateral under its Standing Liquidity Facility.

Key consideration 3: In order to reduce the need for procyclical adjustments, an FMI should establish stable and conservative haircuts that are calibrated to include periods of stressed market conditions, to the extent practicable and prudent.

CDCC has adopted procyclicality adjustments as a means of establishing stable haircuts. These adjustments include two fundamental components: 1) an exponentially weighted moving average model and 2) a floor calibrated to stressed historical conditions. The resulting haircuts are then compared to the haircuts included in its liquidity arrangements to limit any potential for a liquidity drain when accessing such arrangements.

CDCC develops haircuts that are regularly tested taking into account stressed market conditions in order to have adequate assurance of collateral value in the event of liquidation. CDCC has in place a robust haircut model to generate haircuts benchmarked and adjusted against those of chosen benchmarks such as BoC and other major CCPs. Through monthly and quarterly haircut monitoring activities, backtesting results have consistently revealed that CDCC maintains a sufficient collateral coverage level. Haircuts are tested for adequacy on a frequent basis and are revised at least semi-annually.

Key consideration 4: An FMI should avoid concentrated holdings of certain assets where this would significantly impair the ability to liquidate such assets quickly without significant adverse price effects.

CDCC's collateral framework includes consideration for multiple risk factors that may affect the value of collateral in the event of a Clearing Member default. One of the key factors includes liquidity risk and sets minimum standards for collateral acceptability in stock outstanding and trading liquidity. The collateral framework also includes limits on the size of any specific collateral that may be accepted from a Clearing Member.

The collateral framework, including the associated limits, is reviewed at least annually for its appropriateness and adequacy. The adequacy of each Clearing Member's collateral composition is reviewed on a daily basis, and any breach is reported to the CDCC Risk Management Committee.

Key consideration 5: An FMI that accepts cross-border collateral should mitigate the risks associated with its use and ensure that the collateral can be used in a timely manner.

In addition to other forms of acceptable collateral, CDCC accepts USD bonds and a selection of non-CAD currencies as collateral to meet the VM and IM requirements. Haircuts on USD collateral are adjusted to reflect the foreign exchange risk that would be incurred upon liquidation and conversion into CAD to meet CAD-denominated losses. Haircuts on non-CAD currencies are assessed based on historical returns of foreign exchange rates and using an exponentially weighted moving average ("EWMA") to capture the corresponding volatility.

As is the case for CAD collateral, USD collateral is pledged to CDCC at acceptable depositories in Canada, thereby minimizing any legal risks inherent in cross-border transactions. Non-CAD currencies are deposited with commercial banks that are within CDCC's counterparty credit and operational risk appetite. Finally, CDCC's liquidity arrangements include support for USD and non-CAD currencies collateral, thereby ensuring timely liquidity if necessary.

Key consideration 6: An FMI should use a collateral management system that is well-designed and operationally flexible.

CDCC's collateral management system is linked to its clearing system on a near real-time basis and is capable of managing Clearing Member limits on a similar frequency.

As the collateral framework includes consideration for operational risk, any changes to the collateral management system are assessed through the annual revision of the framework to ensure that the system is capable of accommodating such changes. Finally, as part of the annual default simulation exercises, the capacity to manage collateral during times of market stress is validated.

Principle 6: Margin

Principle

A CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed.

Disclosure

Key consideration 1: A CCP should have a margin system that establishes margin levels commensurate with the risks and particular attributes of each product, portfolio, and market it serves.

The Market and Model Risk Management Policy, which is a key component of CDCC's overall ERM program, defines the key sources of market risk, the measurement approaches used to quantify these risks and the associated mitigation measures taken to ensure that CDCC remains in line with corporate policies and risk appetite.

CDCC provides CCP services to two distinct markets: 1) the Canadian exchange-traded derivatives market and 2) the over-the-counter market, which includes equity derivatives and fixed income products. For each service, CDCC determines and evaluates the source of the credit risk exposures which is typically driven by the type of products, the main source of risk (e.g. equity, interest rates, volatility) and the interaction across different products.

At the product level, the risk is calibrated to meet at least 99% of potential market fluctuations. The models are also adjusted to take into consideration procyclicality effects which may have negative consequences on the market participants if models tend to react too quickly to a change in market volatility for instance. At a higher level, CDCC also applies strict netting rules that are aligned with the default management practices. Netting rules exist at the Base IM level and also when shortfall results are computed for measuring the size of the Clearing Fund.

In line with Principle 14 on Segregation and Portability, CDCC applied the Gross Client Margining (GCM) Regime for the Futures Market. Under the GCM Regime, client positions are maintained in a separate GCM/Non-GCM structure and the Margin is calculated at the new account level which reflects the GCM architecture

CDCC has an Initial Margin process that establishes levels commensurate with the risks and particular attributes of each product, portfolio and market it serves. The design, theory and logic underlying the Base IM and additional margins (add-ons) are generally supported by sound mathematical or statistical methods and robust numerical techniques and approximations. CDCC has adopted the Delta-Hedge margining model for derivatives and the Expected Shortfall (ES) model for fixed-income transactions such as repurchase agreements and cash trades.

Moreover, CDCC has procedures and systems in place to identify, measure, monitor and manage the range of risks that arise due to the use of Models and other components (Non-Models and Tools) of the margin system (i.e. Model and Non-Model risks).

CDCC is well-equipped with an effective architecture that enables accurate computation and coverage of current exposures. This is achieved through the collection of Initial Margin (IM) and Variation Margin (VM), either in cash or via a collateralization scheme. The architecture includes well-defined processes, add-ons, and governance arrangements that ensure margin is collected on a proper and timely basis. For VM, CDCC runs on a daily basis a settlement cycle. As is the case for other types of obligations, the Rules describe the timelines to meet the VM obligations. Timelines are then enforced by the Operation group to ensure that Clearing Members receive in a timely manner the reports and also satisfy their margin obligations including the payment of the daily settlement process. In the case where a Clearing Member would not be able to meet a collateral deadline, CDCC will escalate the issue and take appropriate measures that could result in the suspension of the Clearing Member. CDCC's risk management processes enable it to accurately collect margin as it deems necessary throughout regular and extended trading hours to mitigate the build-up of risk and ensure the stability of the markets it serves. Moreover, governance arrangements provide a high degree of certainty for each material aspect related to Intraday and Overnight margin calls.

CDCC has in place processes to adequately analyze and monitor its model performance and overall margin coverage using backtesting and sensitivity analysis in compliance with regulatory requirements. Leveraging on-going periodic Risk reviews, CDCC continues to enhance the overall compliance and alignment with best practices, particularly related to backtesting, sensitivity analysis as well as adequate performance monitoring of margin in terms of procyclicality.

From a governance aspect, CDCC has a robust framework in place to ensure that the development, validation, documentation and ongoing review of the components of the margin system identified are aligned with regulatory requirements and best practices in the industry.

CDCC has in place an overarching and effective infrastructure which effectively manages and monitors operational risks tied to the margin system, thereby contributing to seamless operational performance and successful achievement of corporate strategic objectives.

Moreover, CDCC regularly reviews and validates its margin system by a qualified and independent party at least annually, or more frequently if there are material market developments. The key conclusions of the review are communicated to the Clearing Members. Despite that other types of reports are in place, the margin system reviews provide a holistic view of the various key risk components from an independent party.

Finally, CDCC makes available information on its website regarding risk parameters, historical data (quantitative disclosures), as well as the methodologies used regarding the main components of the margin system. CDCC Rules and risk manuals are also publicly disclosed.

Key consideration 2: A CCP should have a reliable source of timely price data for its margin system. A CCP should also have procedures and sound valuation models for addressing circumstances in which pricing data are not readily available or reliable.

The sources of data that are considered part of its risk management processes include readily available market data that emanate from the markets it serves. This includes the exchange-traded market for its derivatives services and data that originates from relevant Alternative Trading Systems ("ATS"), which are considered representative of market values for the OTC markets. In addition to the prices, CDCC receives derived data that could be used to establish market prices that rely on well-established theoretical factors such as interest rates for different issuers which are then used as inputs in the determination of Fixed Income prices. Furthermore, for data that is not readily available, or not observable, proxies or theoretical calculations are derived from related market data through well-established theoretical financial principles and subject to independent review. Data used to establish IM is derived from price changes in the relevant markets, such that volatility estimates are representative of underlying price data.

Moreover, CDCC has put in place a process to ensure that the prices used for analysis purposes and those used in production are adequate and reliable. As a consequence, CDCC may adjust prices received from third party vendors to reflect proper market valuation if the prices are not reflecting adequate market validation. This process is run at every batch in order to reflect the most recent prices available in the market. This process contributes in refreshing the margin requirements on daily and intraday basis including any changes in the mark to market.

Key consideration 3: A CCP should adopt initial margin models and parameters that are risk-based and generate margin requirements sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default. Initial margin should meet an established single-tailed confidence level of at least 99 percent with respect to the estimated distribution of future exposure. For a CCP that calculates margin at the portfolio level, this requirement applies to each portfolio's distribution of future exposure. For a CCP that calculates margin at more-granular levels, such as at the sub-portfolio level or by product, the requirement must be met for the corresponding distributions of future exposure. The model should (a) use a conservative estimate of the time horizons for the effective hedging or close out of the particular types of products cleared by the CCP (including in stressed market conditions), (b) have an appropriate method for measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products, and (c) to the extent practicable and prudent, limit the need for destabilizing, procyclical changes.

The Base IM models adopted by CDCC set potential future exposure at the individual product level and across different products. CDCC has a model for derivatives including OTC Equity Options and another model for Fixed Income Transactions. The Base IM model is designed to achieve a minimum 99% coverage target at the Clearing Member level, after accounting for the aggregation rules. The models also set rules regarding aggregation of Base IM across sub-accounts, accounts, and product types to determine the total Base IM requirement at the Clearing Member level:

- Derivatives: the key assumption embedded in the derivatives Base IM model is that price changes follow a normal distribution for the majority of the products cleared by CDCC. In the case of the short-term interest rate (STIR) futures contracts as well as Dividend Futures contracts, the Base IM model assumes that price changes follow a Student's t-distribution, which allows for a better representation of the returns distribution profile of those products.
- Fixed Income: the Base IM model is a value-at-risk model with a coverage target of at least 99%. The Base IM model is based on shocks on the underlying risk factors, which are Canadian federal zero-coupon rates, provincial zero-coupon rates, and inflation rates.

For both models, the closeout horizon is a key parameter in the Base IM level. For all of its contracts, CDCC sets this amount to a two-day horizon. CDCC incorporates the liquidity risk (risk of longer liquidation time due to market liquidity) in its Market Liquidity Risk ("MLR") add-on. It is worth noting that OTC Equity Options are subject to a different closeout horizon (i.e. 5 days) to adequately reflect the nature and dynamic of the product. The closeout horizons are also integrated in other processes such as default management where CDCC can further validate if the assumptions are coherent with concrete market dynamics and default management processes.

CDCC has adopted a procyclicality adjustment to its Base IM models that materializes through a floor. This adjustment ensures that IM cannot decrease below a set threshold and cannot spike overtly in times of market stress. The floor component is calibrated to a 10-year historical window. The objective of calibrating the margin requirement appropriately ensures that the model sufficiently integrates recent market observations but it should be also mitigated with sufficient reactivity and good coverage of a recent cycle.

For derivatives Base IM, CDCC also applies a smoothing parameter calibrated to a one-year historical window. For most of the cleared products, the IM component is supplemented by an SVaR component, which enhances the anti-procyclicality features of the model and ensures that the IM model reflects both historically stressed market conditions and short-term historical volatility.

For fixed-income transactions, the recently established Base IM model was developed and put in place. In light of recent market dynamics including the aftermath of the Covid-19, new models along with other models already in place can better handle different sets of market scenarios such as low or negative rates environments, and stable and coherent Base IM requirements. The model also produces a more stable margin dynamic with other interest rate products cleared by CDCC. Moreover, it uses absolute returns and incorporates a component that helps reduce procyclicality. Procyclicality measures are also evaluated by taking into consideration both the cost, the performance and the reactivity of the models.

Base IM models are supplemented by add-ons designed to capture more specific risks across the range of products that CDCC clears, such as liquidity risk, wrong-way risk and other relevant risks not calibrated in the Base IM models. More specifically, the Wrong-Way risk applies to equity Options and Share Futures. In short, the securities identified as Wrong Risk positions are excluded from the margin calculation as a factor of 100% is applied to those positions. As portfolio may also include right wrong way risk, netting is only possible with the same type of products. The Wrong way risk is calculated and capped at the product level (e.g. options, shares futures, equity) and then summed at the Clearing Member level as a single add-on

For all the major assumptions and parameters, the models are complemented by backtesting results and sensitivity analysis which also help to assess if changes are warranted or if the model continues to perform adequately. Similarly, the set of tools is also leveraged when products with lack of historical prices are cleared.

Key consideration 4: A CCP should mark participant positions to market and collect variation margin at least daily to limit the build-up of current exposures. A CCP should have the authority and operational capacity to make intraday margin calls and payments, both scheduled and unscheduled, to participants.

During the regular clearing cycle, CDCC currently performs three margin calls per day related to IM and VM. Insofar as VM calls are concerned, the end-of-day call is automatic and is applicable to all Clearing Members, whereas the intraday VM call is triggered only for Clearing Members that breach defined thresholds. These thresholds are defined with CDCC policies and reflect the risk appetite for unsecured intraday (overnight) exposure.

Moreover, with the recent introduction of the overnight clearing cycle, aimed at supporting MX extended trading hours, CDCC performs hourly monitoring from 9:00 pm (t-1) to 6:00 am based on real-time positions and prices that could trigger a margin call should a Clearing Member's exposure increase beyond pre-defined risk thresholds.

CDCC's Rules grant CDCC the right to effect as many intraday calls as it deems necessary, including unscheduled calls, to mitigate the build-up of risk and to ensure the stability of the markets it serves. Rules also detail the timelines for the Clearing Members to meet the different margin obligations that are in force during the day. Timelines also specify the collection process for other funds such as the Clearing Fund and the Supplement Liquidity Fund.

Key consideration 5: In calculating margin requirements, a CCP may allow offsets or reductions in required margin across products that it clears or between products that it and another CCP clear, if the risk of one product is significantly and reliably correlated with the risk of the other product. Where two or more CCPs are authorised to offer cross-margining, they must have appropriate safeguards and harmonised overall risk-management systems.

CDCC does permit offsets between products that are affected by the same market risk factors which must be also confirmed by the demonstration of a high level of correlation and over a representative horizon period, correlation must also be supported by economic reasons. The level of offset follows the same rigorous process and it is documented in the margin models. Knowing that the level of correlation may fluctuate over time, the offset is determined by conducting risk analysis over historical periods and in the case of new products, the robustness is subject to statistical tests.

Offsets are applied to a selection of Futures and Options on Futures contracts and are consistent with the default management procedures. CDCC also confirms the adequacy of the relief on a frequent basis by validating the backtesting results. The margin reliefs (if any are offered) are also made available to the CDCC website and Clearing Members and their respective clients may also now benefit from such margin as a result of the recent changes implemented by the launch of the GCM. Prior to the GCM project, margin savings were limited to the Clearing Members but the portability and segregation of the positions now allow to extend the relief to clients of Clearing Members who may be interested in leveraging the same risk parameters.

For interest rate products, the level of offset is performed at the group level and the offset is the net result of the Var calculation. In regards to the derivatives where the margin is based on the delta hedge model, the offset is set by determining the right delta values (i.e. the number of contracts that can offset another type of contract, the side of the offset (e.g. long versus short positions), and the amount of relief). For this case, any residual positions that are excluded from the offsets because the number of contracts is not sufficient are then margined using the outright initial margin. Lastly, for contracts belonging to the same group (i.e. combined commodity), CDCC gives priority to these contracts by determining intra-commodity charges. As is the case for other products, the risk parameters are published on CDCC's website.

CDCC does not currently engage in any cross-margining arrangements with other CCPs.

Key consideration 6: A CCP should analyze and monitor its model performance and overall margin coverage by conducting rigorous daily backtesting – and at least monthly, and more-frequent where appropriate, sensitivity analysis. A CCP should regularly conduct an assessment of the theoretical and empirical properties of its margin model for all products it clears. In conducting sensitivity analysis of the model's coverage, a CCP should take into account a wide range of parameters and assumptions that reflect possible market conditions, including the most-volatile periods that have been experienced by the markets it serves and extreme changes in the correlations between prices.

CDCC's backtesting framework is a key component of its overall validation process for existing products and new products. Backtesting is performed daily for two primary reasons: 1) at the Clearing Member level to assess the historical coverage requirement and 2) at the product level and theoretical level to assess the statistical performance of the margin models.

Backtesting is used to assess if models are performing as expected by meeting at least the minimum required coverage target standard of 99%. Irregularities or sub-performance of a model require immediate mitigation measures or enhancements, which are designed internally and presented at the QRC. CDCC governance includes a model performance component that is akin to a traffic light approach for identifying model breaches.

In addition, sensitivity analysis is performed on a monthly basis, whereby key model parameters are stressed to ascertain and document potential limitations in the existing IM models.

The model performance measures are reported to the RMC as well as to its industry Risk Management Advisory Committee ("RMAC") on a frequent basis and in the quarterly quantitative disclosures

Further improvements have also been identified, and new Standards and Procedures for Backtesting and Sensitivity Analysis are being developed to enhance the overall compliance and alignment with best practices. Some of the enhancements related to backtesting include discussions related to excess severity levels and sufficiency testing in case of a breach, and a review of the Initial Margin (IM) model calibration in case of frequent breaches.

For sensitivity analysis, enhancements include combining multiple metrics in assessing the adequacy and performance of margin models, and a discussion on conducting more frequent analysis when the market is illiquid or volatile.

Key consideration 7: A CCP should regularly review and validate its margin system.

The Models, Non-Models and Tools Development and Validation Framework sets the expectations in terms of ongoing validation and independent vetting.

This Framework ensures that the development, validation, documentation and ongoing review of the components of the risk management system, including the margin system-related components are aligned with regulatory requirements and best practices in the industry. Moreover, this Framework outlines the vetting requirements and enhances the approval process to implement a new Model, Non-Model or Tool or implement changes to existing Models, Non-Models or Tools.

CDCC performs regular reviews, which include both an empirical and a theoretical review. The periodic review, documentation, and model vetting are being extended to include margin add-ons and other non-model components in order to cover all margin components. Moreover, CDCC regularly reviews and validates its margin system by a qualified and independent party (Risk Oversight and Compliance) at least annually, or more frequently if there are material market developments.

Internal risk management governance requires that the results of these reviews be presented to the RMC and the RMAC and, depending on the results and circumstances, this may result in a material review of the models and/or parameters in question.

Internal Audit examines CDS's margin system as the third line of accountability to ensure it is conceptually sound, consistent with the intended application, and executed in a substantially error-free manner. The independent vetting reports produced by Internal Audit are provided to the Risk & Audit Committee of the Board of Directors. Independent vetting reports also include (if any) the management responses for any identified gaps or observations.

Changes to the Model or Non-Model documentation are made by the First Line of accountability and it is then further reviewed by Second Line and approved by the QRC and RMC, as well as vetted independently by Internal Audit. For projects or initiatives requiring changes to the rules, amendments are also being presented to the RAC Industry meetings and the Risk & Audit Committee of the Board of Directors before being submitted to the regulators.

Principle 7: Liquidity Risk

Principle

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.

Disclosure

Key consideration 1: An FMI should have a robust framework to manage its liquidity risks from its participants, settlement banks, nostro agents, custodian banks, liquidity providers, and other entities.

As part of its ERM program, CDCC has developed a robust and comprehensive framework to manage the liquidity risks that it has identified. As part of the framework, sources of liquidity risk are reviewed on an annual basis, and the resulting liquidity risk appetite, principles, and risk management processes are affirmed by the Board of Directors at a similar frequency. As part of the review process, the supporting policies and documentation are revised so as to ensure that they remain consistent and reflective of the evolving business practices. Forming part of this ERM program is a dedicated Liquidity Risk Management Policy whose foundation is the framework that describes the various risks and risk management processes that help mitigate CDCC's overall liquidity risk exposure. Fundamentally, liquidity risk management is composed of two key elements: 1) a sufficiency of liquid resources assessment and 2) liquidity risk oversight.

Liquidity risk at CDCC arises from the daily settlement of cash flows and the funding pressures inherent in the securities settlement process. The latter will occur on a daily basis, but will also peak on quarterly cycles when exchange-traded derivatives are due for final settlement. For liquidity risk management purposes, CDCC will measure its liquidity exposures to include its largest Clearing Member exposure including any and all affiliates that are also Clearing Members.

CDCC regularly reviews and validates its liquidity risk management model.

Key consideration 2: An FMI should have effective operational and analytical tools to identify, measure, and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity.

All of CDCC's potential sources of liquidity risk are documented within the Liquidity Risk Policy along with the associated processes for measurement, monitoring, and reporting. CDCC has developed a suite of analytical tools that help measure CDCC's risk exposure on a timely basis. These tools include the measurement of intraday liquidity exposures that are incurred as part of the securities settlement process and the daily measurement of cash flows due to, and from, the CDCC as part of the daily settlement process for the exchange-traded derivatives service. Finally, CDCC also measures, when circumstances warrant, the daily funding needs that arise due to settlement delivery failures in the fixed income services.

These tools are instrumental in the liquidity risk management process, as they are relied upon to measure exposures relative to qualifying liquid resources and CDDC's Liquidity Risk Appetite. Any breaches to internal policy limits trigger adjustments to liquidity risk mitigation strategies, such as the size of commercial bank liquidity facilities.

Key consideration 3: A payment system or SSS, including one employing a DNS mechanism, should maintain sufficient liquid resources in all relevant currencies to effect same-day settlement, and where appropriate intraday or multiday 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 payment obligation in extreme but plausible market conditions.

Not applicable

Key consideration 4: A CCP should maintain sufficient liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments, and meet other payment obligations on time 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 payment obligation to the CCP in extreme but plausible market conditions. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should consider maintaining additional liquidity resources sufficient to cover a wider range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions.

One of the key objectives of CDCC's central counterparty services is to ensure that it maintains sufficient liquid resources to cover the default of one Clearing Member and its affiliates that would potentially cause CDCC to incur the largest aggregate liquidity exposure in extreme but plausible market conditions. More specifically, CDCC shall maintain sufficient liquid resources to effect multi-day settlement of payment obligations. Under normal conditions, sufficient qualifying liquid resources should cover liquidity exposure with a high level of confidence over a period of one year. Under stressed conditions, total liquid resources should cover liquidity exposure at all times. CDCC's primary source of potential liquidity exposure arises from the payment obligations of a defaulting Clearing Member. Most of the exposure originates principally from fixed income securities and equities settlements in addition to futures mark-to-market in stressed conditions. There are other marginal sources of liquidity risk, namely cash payments arising from: repo rate mark-to-market, the exercise of cash settled options, and the payment of the option premium. CDCC predominantly conducts its money settlements in Canadian dollars. Payments in U.S. dollars are restricted to cases of corporate actions that impact the deliverable of an option contract.

As a CCP that is designated as systemically important in a single jurisdiction and currency, CDCC is not currently involved in activities with a more-complex risk profile or systemically important in multiple jurisdictions. Hence, CDCC only maintains additional liquidity resources sufficient to a Cover 1 plus affiliate standard.

Key consideration 5: For the purpose of meeting its minimum liquid resource requirement, an FMI's qualifying liquid resources in each currency include cash at the central bank of issue and at creditworthy commercial banks, committed lines of credit, committed foreign exchange swaps, and committed repos, as well as highly marketable collateral held in custody and investments that are readily available and convertible into cash with prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. If an FMI has access to routine credit at the central bank of issue, the FMI may count such access as part of the minimum requirement to the extent it has collateral that is eligible for pledging to (or for conducting other appropriate forms of transactions with) the relevant central bank. All such resources should be available when needed.

Qualifying liquid resources should be highly reliable and have same-day availability. The Bank of Canada Policy Guidance on liquidity risk identifies the assets that are considered qualifying liquid resources and defines standards for arrangements with liquidity providers to be considered as qualifying liquid resources. For the purpose of meeting its minimum liquid resource requirement under normal market conditions, CDCC's qualifying liquid resources are composed of:

I. Cash; and
II. Committed and uncommitted liquidity facilities eligible under the Bank of Canada Policy Guidance on liquidity risk.

Under stressed market conditions, CDCC may supplement its qualifying liquid resources with other forms of liquid resources to meet the requirements.

As such, the size and composition of the qualifying liquid resources is variable, as it is dependent on pre-funded collateral as well as on the size of CDCC's pre-arranged funding sources. It should be noted that CDCC's pre-arranged funding arrangements are structured so as to provide for resizing on a quarterly basis, thereby ensuring that CDCC meets its Cover 1 plus Affiliates standards at any point in time.

As of March 2020, the only type of collateral eligible for CDCC's Clearing Fund is Cash. This cash collateral requirement has been implemented to ensure that CDCC has Qualified Liquidity Resources "QLRs" sufficient to meet the PFMI Cover 1 Liquidity standard.

Key consideration 6: An FMI may supplement its qualifying liquid resources with other forms of liquid resources. If the FMI does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps, or repos on an ad hoc basis following a default, even if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if an FMI does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such assets may be more likely to be liquid in

stressed circumstances. An FMI should not assume the availability of emergency central bank credit as a part of its liquidity plan.

CDCC has implemented its liquidity risk planning to be consistent with the policy guidance received from the Bank of Canada as it pertains to Principle 7. Liquid resources are therefore defined as follows:

I. Cash in the possession, custody or control of an FMI are qualifying liquid resources for liquidity exposures denominated in the same currency.

II. Committed liquidity facilities are qualifying liquid resources for liquidity exposures denominated in the same currency if the following criteria are met:
   A] Facilities are pre-arranged and fully collateralized;
   B] There is a minimum of three independent liquidity providers; and
   C] The FMI conducts a level of due diligence that is as stringent as the risk assessment completed for FMI participants.

III. Uncommitted liquidity facilities are considered qualifying liquid resources for liquidity exposures in Canadian dollars if they meet the following additional criteria:
   A] The facilities are pre-arranged and fully collateralized:
   B] There is a minimum of three independent liquidity providers;
   C] The FMI conducts a level of due diligence that is as stringent as the risk assessment completed for FMI participants;
   D] The liquidity provider has access to the Bank of Canada's Standing Liquidity Facility [SLF];
   E] The facility is fully collateralized with SLF-eligible collateral; and
   F] The facility is denominated in Canadian dollars.

Key consideration 7: An FMI should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum required qualifying liquid resources, whether a participant of the FMI or an external party, has sufficient information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its commitment. Where relevant to assessing a liquidity provider's performance reliability with respect to a particular currency, a liquidity provider's potential access to credit from the central bank of issue may be taken into account. An FMI should regularly test its procedures for accessing its liquid resources at a liquidity provider.

All of CDCC's pre-arranged funding arrangements that are deemed QLRs involve a consortium of Canadian commercial banks. Each of the pre-arranged funding arrangements involved a detailed due diligence of CDCC's operations as well as the potential risks that may arise when providing CDCC with liquidity in times of stress.

Included as part of its Liquidity Risk Policy is a component of liquidity risk oversight that requires CDCC to monitor the risks associated with each of its liquidity providers. Furthermore, the main pre-arranged funding arrangement was structured to ensure that individual liquidity providers had the option of turning towards the Bank of Canada for funding in the event of a CDCC drawdown. Finally, as part of either daily operations or through the default management simulations, CDCC periodically tests its access to its pre-arranged funding arrangements.

Key consideration 8: An FMI with access to central bank accounts, payment services, or securities services should use these services, where practical, to enhance its management of liquidity risk.

CDCC maintains a bank account with the Bank of Canada for the purposes of holding cash collateral as well as for the purposes of its daily money settlement activities. At present, there are no other services offered by the Bank of Canada that CDCC qualifies for directly.

Key consideration 9: An FMI should determine the amount and regularly test the sufficiency of its liquid resources through rigorous stress testing. An FMI should have clear procedures to report the results of its stress tests to appropriate decision makers at the FMI and to use these results to evaluate the adequacy of and adjust its liquidity risk-management framework. In conducting stress testing, an FMI should consider a wide range of relevant scenarios. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. Scenarios should also take into account the design and operation of the FMI, include all entities that might pose material liquidity risks to the FMI (such as settlement banks, nostro agents, custodian banks, liquidity providers, and linked FMIs), and where appropriate, cover a multi-day period. In all cases, an FMI should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount and form of total liquid resources it maintains.

The sufficiency assessment considers liquidity exposures and available liquid resources on a daily basis over a time horizon of one year. The purpose is to measure whether liquidity shortfalls would have occurred under normal and stressed market conditions after considering all resources available to CDCC to manage such an event. Liquidity shortfalls are measured at the Clearing Member and affiliates level.

Under normal market conditions, liquidity exposures are compared to the amount of qualifying liquid resources available to CDCC, given the observed market value of the assets used to generate liquidity flows. Under stressed market conditions, total liquid resources should be adjusted to reflect the new cash flow requirement that would be obtained after the simulated price shock. CDCC's stress testing program takes into account historical settlement flows and sets its liquidity exposures to reflect the value of the purchases that it expects to make to complete settlement. This is consistent with a real time gross settlement ("RTGS") model and the market convention that permits delivery failures in securities settlement. To ensure compliance with CPMI-IOSCO PFMI Principle 7, CDCC has implemented a two-tiered Cover-1 Supplemental Liquidity Fund (See Rule A-6A and Section 8A-1 of the CDCC Operations Manual).

Stress testing is performed on a daily basis with reporting to the CDCC RMC on a monthly basis. In the event that a liquidity shortfall is uncovered, RMC would report the shortfall to the Board of Directors and execute its liquidity risk mitigation strategies, one of which is a re-sizing of its pre-arranged funding arrangements.

Finally, stress testing assumptions and parameters are reviewed on a monthly basis through a model validation process, and models are subject to an independent validation.

Key consideration 10: An FMI should establish explicit rules and procedures that enable the FMI to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default among its participants. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the FMI's process to replenish any liquidity resources it may employ during a stress event, so that it can continue to operate in a safe and sound manner.

The CDCC liquidity risk management program is structured to meet the Cover 1 plus Affiliates standard and, therefore, qualifying liquid resources are sized to ensure that CDCC can continue to meet its payment obligations on the day of default. The Rules and, more specifically, the Default Manual explicitly clarify how pre-arranged funding arrangements are accessed and clarify at what point in the process CDCC has any discretion. The legal agreements supporting the pre-arranged funding arrangements articulate how funds are replenished during a stress event.

Principle 8: Settlement Finality

Principle

An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.

Disclosure

Key consideration 1: An FMI's rules and procedures should clearly define the point at which settlement is final.

CDCC's Rules and Operations Manual clearly define the point at which settlement is final and irrevocable. Specifically, the Operations Manual, which is publicly disclosed, articulates the daily timelines associated with the settlement process. Settlement finality is achieved in two distinct ways: 1) through the use of Lynx for money settlements, and/or 2) through the use of a Delivery versus Payment ("DvP") mechanism for securities settlements. In both cases, settlement is final and irrevocable once executed and where this feature is clearly articulated in the Rules. As a designated system under the *PCSA*, CDCC's settlement rules are valid and binding on its participants. Any action taken pursuant to such rules (including any payment, delivery or rights or remedy with respect to the collateral granted) cannot be reversed, stayed, or set aside notwithstanding anything contrary in any statute or laws of Canada or a province and therefore provide a high degree of legal certainty as to their applicability in the event of a challenge.

Key consideration 2: An FMI should complete final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk. An LVPS or SSS should consider adopting RTGS or multiple-batch processing during the settlement day.

CDCC's CCP services include money settlements and securities settlements, covering both the derivatives and fixed income marketplace.

In the latter, CDCC has adopted a RTGS framework coupled with a DvP mechanism to reduce settlement risk; for the exchange-traded markets, CDCC operates in a Deferred Net Settlement ("DNS") mode. When in DNS mode, CDCC executes three intraday batches per day and Clearing Members remain accountable for settlement in accordance with the timelines provided in the Operations Manual.

In both RTGS and DNS cases, settlement occurs prior to the end of value date, with non-settlement being one potential trigger for default. Clearing Members are notified of the settlement process through real-time messaging and/or reporting throughout the settlement day.

Key consideration 3: An FMI should clearly define the point after which unsettled payments, transfer instructions, or other obligations may not be revoked by a participant.

As part of the settlement process, pursuant to the settlement account agreement between CDCC and each of its Clearing Members, CDCC acts as agent to its Clearing Members' accounts and therefore is fully accountable to submit, transfer, and settle instructions. Therefore, when coupled with the DvP and Lynx mechanisms for securities and money settlements, revocability by CDCC Clearing Members is not possible.

Principle 9: Money Settlements

Principle

An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimize and strictly control the credit and liquidity risk arising from the use of commercial bank money.

Disclosure

Key consideration 1: An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.

CDCC conducts all of its money settlements vis-à-vis its Bank Clearing Members in central bank money. Settlement flows from transactional activity, as well as cash margin pledged to mitigate Clearing Member credit risk, reside in a CDCC bank account held at the Bank of Canada and is therefore a claim on the Government of Canada. For Clearing Members that do not have direct Lynx access, CDCC requires that such entities perform their money settlements through select acceptable financial institutions for Settlement Accounts that are subject to CDCC risk management controls, thereby minimizing credit and liquidity risks. All money settlements, for both Bank and non-Bank Clearing Members, are ultimately settled through Lynx to ensure finality of payment.

Although foreign currency (USD, EUR, GBP, HKD) settlements are supported for extended hours, they are substituted for CAD collateral through the course of the day, thus minimizing any potential commercial bank risk.

Key consideration 2: If central bank money is not used, an FMI should conduct its money settlements using a settlement asset with little or no credit or liquidity risk.

For non-Bank Clearing Members, CDCC employs a diversified sample of acceptable financial institutions for Settlement Accounts for money settlements through Lynx. These acceptable financial institutions for Settlement Accounts are subject to strict risk management criteria (including capital and liquidity concerns, as a means of limiting the potential for credit and liquidity risk.

Key consideration 3: If an FMI settles in commercial bank money, it should monitor, manage, and limit its credit and liquidity risks arising from the commercial settlement banks. In particular, an FMI should establish and monitor adherence to strict criteria for its settlement banks that take account of, among other things, their regulation and supervision, creditworthiness, capitalisation, access to liquidity, and operational reliability. An FMI should also monitor and manage the concentration of credit and liquidity exposures to its commercial settlement banks.

As part of its Credit Risk Policy, CDCC has adopted a risk management oversight process for the Settlement Banks that it relies upon for settlements against non-Bank Clearing Members. This oversight process builds on metrics such as capital, credit, and operational risks. The oversight process is subject to the RMC and

Board of Directors reporting to ensure that all acceptable financial institutions for Settlement Accounts continue to meet the standards required by CDCC. Finally, all in-bound money settlements at CDCC need to be received prior to CDCC providing outbound payments, and all are subject to a set settlement schedule in Eastern Time (ET). This operational requirement, which is part of the settlement process, contributes to greatly minimizing CDCC's credit and liquidity risks.

Key consideration 4: If an FMI conducts money settlements on its own books, it should minimize and strictly control its credit and liquidity risks.

Not applicable.

Key consideration 5: An FMI's legal agreements with any settlement banks should state clearly when transfers on the books of individual settlement banks are expected to occur, that transfers are to be final when effected, and that funds received should be transferable as soon as possible, at a minimum by the end of the day and ideally intraday, in order to enable the FMI and its participants to manage credit and liquidity risks.

As CDCC acts as an agent to all Clearing Member accounts, the CDCC settlement timetable defines the point in time when transfers occur between itself and its Clearing Members. As such, for Clearing Members that do not have direct Lynx access, CDCC does not rely on its acceptable financial institutions for Settlement Accounts to perform any transfers with regard to payments. Instead, given that CDCC is entitled to act as an agent in the Clearing Member account, acceptable financial institutions for Settlement Accounts provide CDCC with access to non-Lynx Clearing Member bank accounts for money settlement purposes.

Principle 10: Physical Deliveries

This principle is not applicable to CDCC.

Principle 11: Central Securities Depositories

This principle is not applicable to CDCC.

Principle 12: Exchange-of-value Settlement Systems

Principle

If an FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

Disclosure

Key consideration 1: An FMI that is an exchange-of-value settlement system should eliminate principal risk by ensuring that the final settlement of one obligation occurs if and only if the final settlement of the linked obligation also occurs, regardless of whether the FMI settles on a gross or net basis and when finality occurs.

As a CCP for both exchange-traded derivatives and fixed income markets in Canada, CDCC settlement processes rely on a final exchange of cash against securities to satisfy ultimate settlement in many of the products that it clears. In order to manage the principal risk associated with linked settlement obligations, CDCC has acquired full participant status with the CDS, which acts as Canada's Securities Settlement System ("SSS"). As part of its CCP services, CDCC is responsible for submitting settlement instructions on behalf of its participants to CDS, thus leveraging the DvP mechanism that is inherent to the SSS operated by CDS.

All novated transactions at CDCC involving DvP settlement at CDS are settled on a gross basis outside of pre-defined netting cycles, which are performed five times per day on the books of CDCC. This DvP settlement is simultaneous between CDCC and its Clearing Members and is final and irrevocable once achieved. Therefore, there is an inherent reliance, on CDCC's part, vis-à-vis the SSS services offered by CDS, and this reliance is governed by the participant agreement executed between CDCC and CDS.

Principle 13: Participant Default Rules and Procedures

Principle

An FMI should have effective and clearly defined rules and procedures to manage a participant's default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

Disclosure

Key consideration 1: An FMI should have default rules and procedures that enable the FMI to continue to meet its obligations in the event of a participant default and that address the replenishment of resources following a default.

The CDCC Rules and Default Manual clearly articulates its default management process. As a designated clearing and settlement system under the PCSA, CDCC rights and actions taken pursuant to a participant default cannot be stayed or reversed, notwithstanding any act or statute in Canada or a legislative province. Furthermore, under PCSA, nothing in any law relating to bankruptcy or insolvency nor any order (including foreign laws or orders) may prevent CDCC from terminating, netting, or settling the payment and delivery obligation, nor shall it interfere with CDCC's rights and remedies with respect to collateral granted to it.

CDCC's default management process is described in its Rules and Default Manual. The notion of default within the CDCC Rules is set out in two distinct modes: 1) non-conforming status and 2) suspended status. The Rules clearly define the potential triggers that may lead to a Clearing Member being declared non-conforming or suspended and the powers of the CDCC to act upon it. A Clearing Member may be placed into non-conforming status at CDCC management's discretion, but only the CDCC Board of Directors may declare a Clearing Member suspended.

The triggering events for non-conforming status range from payment default at the CDCC to the commencement of insolvency proceedings against either the Clearing Member or one of its affiliates. A declaration of non-conforming status typically requires CDCC management to enter into discussions with the specific Clearing Member to ascertain the nature of the issue and the potential for resolution.

Given the nature of a non-conforming status, discretion is used throughout this process, both in the allocation of the status as well as in the potential measures taken by management to mitigate the risks associated with a Clearing Member. Potential actions that are subject to management discretion include, but are not limited to, the imposition of additional margin requirements, limiting CCP access, and/or requiring a reduction in the Clearing Member's risk profile through the liquidation or porting of the clients' positions.

In the event that management deems that the issue that caused the default trigger to be enacted is not transitory or not resolvable, management may recommend to the CDCC Board of Directors that such Clearing Member be placed in suspended status. A suspended status would then automatically require CDCC to begin executing against the governance practices, risk processes, and operational procedures embedded within its Default Manual. Actions to be taken to contain the potential risks that may arise throughout the default management process are overseen and governed by the internal Default Management Committee ("DMC", which is responsible for coordination across the various stakeholders while remaining accountable to the CDCC Board of Directors. The DMC is required to coordinate communications with key stakeholders, including regulators and non-defaulting Clearing Members, and the effective porting of client accounts to alternate Clearing Members. Furthermore, the DMC is responsible for coordinating the CDCC mechanisms regarding the liquidation of the suspended Clearing Member accounts, either by way of closed auction with non-defaulting Clearing Members, which is a voluntary process or through open market operations via its brokerage arrangements. The DMC would also be responsible for ascertaining the most effective hedging mechanism to be implemented in the event that accounts are not easily liquidated and/or if it judges that containing the market risk associated with an account would facilitate the auction. Finally, the DMC would oversee the effective porting of client accounts as well as the transfer of open positions to the prevailing bidder in the auction process.

Any losses incurred in the liquidation and/or liquidity management process are meant to be extinguished by the use of collateral provided as margin cover. CDCC Rules provide for full rights over variation and initial margin provided by the suspended Clearing Member as well as full right of use and re-hypothecation for the entirety of the Clearing Fund (suspended and non-defaulting Clearing Members alike). The default management waterfall and the order of application of the financial resources are clearly laid out in the Rules and Default Manual, which includes a layer of CDCC default risk capital that is reserved for this purpose. Finally, the Clearing Fund Rules also describe the process by which any collateral used in the extinguishment of credit losses are replenished and re-paid to non-defaulting Clearing Members.

Key consideration 2: An FMI should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules.

Beginning with the Default Manual, CDCC has plans and procedures addressing default management that are maintained, documented, and regularly revised and tested.

The plans include, among other things, the oversight process and governance arrangements for decision making in a default, the auction procedure, the liquidation procedure, the GCM client account porting process, and the process to arrange for the Liquidating Settlement Account. CDCC has developed a detailed communication plan with all of its stakeholders, including non-defaulting Clearing Members (through the Risk Management Advisory Committee) and all of its regulators. These plans have been developed to ensure timely and appropriate communication throughout the default management process, beginning with any determination of a non-conforming status through the end of the entire process whereby CDCC would be required to replenish its financial resources. The default management process is reviewed and tested on an annual basis with a particular emphasis and focus on specific components of the broader process. Reviews and testing results are reported and approved by RMC.

An appropriate level of flexibility is provided under the Rules and Default Manual to ensure that, in managing a default, CDCC has the authority and sufficient discretion to act, both in terms of the decision-making process to initiate the process and the measures to be used to mitigate risk, taking into consideration the very specific nature of each default.

Key consideration 3: An FMI should publicly disclose key aspects of its default rules and procedures.

The Rules and Default Manual are publicly available through the CDCC website. These documents detail the specific actions that may lead to either a non-conforming status and/or a suspended status as well as the actions taken by CDCC management and the Board of Directors in the default management process.

The Default Manual describes the breadth of actions that may be taken with regards to both proprietary and customer positions as well as the actions that management may take regarding the use and disposal of the assets used to extinguish credit losses or the management of temporary liquidity needs.

Key consideration 4: An FMI should involve its participants and other stakeholders in the testing and review of the FMI's default procedures, including any close-out procedures. Such testing and review should be conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective.

CDCC has a strong default management testing framework and a rolling multi-year plan that incorporates increasing complexity, realism and scope of the services and products covered. Testing of the CDCC default management process is performed at least annually and includes a broad range of stakeholders, including its Clearing Members, regulators, and other related FMIs. Generally, testing the default management process involves the development of a test script and the participation of Clearing Members that are active actors in the default management simulation. These actors are required to follow industry procedures for activities such as the auction process, the porting process, and the liquidity provisioning process, among other key components of the default management exercise.

Test results and the resulting post-mortem are presented to the Board of Directors along with any recommended improvements that are an outgrowth of any lessons learned.

Principle 14: Segregation and Portability

Principle

A CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions.

Disclosure

Key consideration 1: A CCP should, at a minimum, have segregation and portability arrangements that effectively protect a participant's customers' positions and related collateral from the default or insolvency of that participant. If the CCP additionally offers protection of such customer positions and collateral against the concurrent default of the participant and a fellow customer, the CCP should take steps to ensure that such protection is effective.

CDCC has Rules and procedures that enable the segregation and portability of positions of a Clearing Member's clients and the collateral provided to CDCC with respect to those positions under CDCC GCM regime. The GCM regime is applicable for all Futures and Options on Futures positions, with the exception of hedge positions that fall under the Non-GCM regime. This arrangement aims to offer customers protection from the default or insolvency of the Clearing Member.

The CDCC Rules and Default Manual clearly articulate its portability arrangements. CDCC will use its best efforts, if it deems appropriate under the circumstances, following the request of a client, to transfer the client's Open Positions and the Porting Base Initial Margin Collateral held by CDCC in respect of such individual client Risk Account. This is subject to 1) consent of the Receiving Clearing Member and CDCC, 2) the completion of any additional documentation required to proceed with a transfer by way of Porting.

Key consideration 2: A CCP should employ an account structure that enables it readily to identify positions of a participant's customers and to segregate related collateral. A CCP should maintain customer positions and collateral in individual customer accounts or in omnibus customer accounts.

CDCC's current account structure and margin methodology, as it relates to Futures markets, provides for both a client omnibus account and an individual client account to hold a participant's clients' positions. Under the GCM regime, CDCC calculates the margin requirement daily, separately for each client on a gross basis. Clearing members are required to disclose each client's positions held in the CDCC client omnibus account to the CCP daily. CDCC books and records allow for identification of a Clearing Member's customers' positions, while the margin requirements allow CDCC to calculate the associated collateral. CDCC's system allows the Clearing Member to identify positions down to the client level using CDCC's account / sub-account structure. Information related to customer's identity will only be shared to CDCC by a suspended Clearing Member in the event of a default. Enhancements have been developed to enable reports that reflect the client-level positions and collateral, and implement Gross Client Margin for client omnibus accounts.

CDCC's current account structure and margin methodology, as it relates to Options markets, provides for both a client omnibus account (*Client Account*) and an individual client account (*Netted Client Account*) to hold a participant's customers' positions. In the former case, a gross margin methodology is applied, whereas in the latter case, a net margin methodology is applied by CDCC. CDCC books and records allow for the identification of a Clearing Member's customers' positions, while the margin requirements allow CDCC to calculate the associated collateral. CDCC's system allows the Clearing Member to identify positions down to the client level using CDCC's account / sub-account structure.

Key consideration 3: A CCP should structure its portability arrangements in a way that makes it highly likely that the positions and collateral of a defaulting participant's customers will be transferred to one or more other participants.

The porting of client positions is permitted and possible under CDCC's Rules. CDCC may reach out to other entities, including the insolvent Clearing Member and its clients, in order to fully ascertain the contents of a client omnibus account. CDCC has introduced the GCM regime to enhance its portability arrangement. The CDCC Rules and Default Manual clearly articulates its portability arrangements. In the event of a default, clients wishing to be transferred by the way of Porting are required to provide transfer instruction to CDCC no later than noon on the next Business Day following the initiation of the Porting process.

Key consideration 4: A CCP should disclose its rules, policies, and procedures relating to the segregation and portability of a participant's customers' positions and related collateral. In particular, the CCP should disclose whether customer collateral is protected on an individual or omnibus basis. In addition, a CCP should disclose any constraints, such as legal or operational constraints, that may impair its ability to segregate or port a participant's customers' positions and related collateral.

CDCC Rules and procedures relating to segregation and portability are made available through CDCC's website. In its Rules, policies, and procedures, CDCC discloses the measures related to clients' positions, collateral protection and potential constraints. CDCC, has a segregation and portability regime that effectively protects a Clearing Member's clients' positions and related collateral from the default or insolvency of that Clearing Member.

Principle 15: General Business Risk

Principle

An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialise. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

Disclosure

Key consideration 1: An FMI should have robust management and control systems to identify, monitor, and manage general business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses.

Tier 1 Post-Trade ERM Policy is reviewed and approved by the Board of directors and is designed to identify, monitor, and manage general business risks.

CDCC has clear and measurable strategic and operational objectives that articulate the outcomes expected to achieve and operationalize the strategy approved by its Board of Directors. CDCC Senior Management periodically reviews the strategic and operational objectives and identifies the risks and mitigations to ensure the objectives are met.

A Risk Evaluation Committee ("REC") ensures that before key changes (including new business initiatives or other significant changes) are introduced or undertaken, the inherent business and operational risks are subject to adequate assessment and/or mitigation procedures. For the new business initiatives that are managed by a Project Manager who ensures all required activities are appropriately executed and completed before going live to reduce post implementation risks.

Any existing and emerging business risks are systematically reviewed and re-assessed during the annual risk assessment exercise and monitored throughout the year.

CDCC has in place a robust methodology related to Non-Default Losses (NDL) which combines a structured way to define scenarios using effective challenge and qualitative aspects (Structural Scenario Analysis) and a statistical approach for losses estimation through simulation (Loss Distribution Approach) to capture potential losses which the CDCC can face due to Business Risks. This methodology establishes a direct connection to inform the capital requirement related to Business Risks.

Key consideration 2: An FMI should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity an FMI should hold should be determined by its general business risk profile and the length of time required to achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.

CDCC holds liquid net assets funded by equity in an amount that is equivalent to the greater of twelve months working capital or CDCC Non Default Loss Capital, as per the CDCC Recovery Plan in the event that it experiences general business losses or has to support a wind-down process.

Key consideration 3: An FMI should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, an FMI should hold liquid net assets funded by equity equal to at least six months of current operating expenses. These assets are in addition to resources held to cover participant defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.

In accordance with its regulatory requirements, CDCC has established a comprehensive and effective Recovery Plan that is subject to continuous improvement, reviewed and approved annually by its Board of Directors. The Recovery plan focuses on potential losses suffered by CDCC as a result of a participant default, along with those resulting from Non-Default events (operational, investment, custody legal, cyber and general business risk), supplemented by details related to general recovery triggers and overall governance. The plan ensures that CDCC can continue to provide critical services and can replenish any financial resources that it may employ in implementing such a plan. CDCC's Recovery Plan provides for tools such as a Parental Support Agreement ("PSA") with TMX Group to replenish CDCC's Operational Risk Capital. The efficacy of the Recovery Plan is tested through an annual Simulation, which follows a five year Plan to test different facets of the process.

CDCC holds liquid net assets funded by equity in an amount that is equivalent to the greater of twelve months working capital or CDCC Non Default Loss Capital (10% of the annual overall estimated Non Default Loss) as per the CDCC Recovery Plan. CDCC on an annual basis assesses and updates the ORC calculation to ensure CDCC holds sufficient liquid net assets to recover and meet regulatory requirements.

CDCC has established an orderly wind-down plan which is approved by its Board and submitted to the Bank of Canada annually,the objective of which is to ensure the continuity of critical services and maintain the stability of the Canadian financial markets while minimizing the impact on Clearing Members.

Key consideration 4: Assets held to cover general business risk should be of high quality and sufficiently liquid in order to allow the FMI to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions.

Assets held to cover general business risk are of high quality and sufficiently liquid in order to allow CDCC to meet its current and projected operating expenses under a range of scenarios, including adverse market conditions. CDCC's capital is invested in accordance with the principles embedded in its investment policy. CDCC's investment policy is reviewed on a recurring basis by the CDCC Risk and Audit Committee to ensure that it continues to meet the stated goals and objectives. The CDCC Corporate Asset Investment Policy includes a description of CDCC capital that clearly establishes the amounts set aside for default management and to support general business losses.   CDCC ensures that these corporate assets are managed, and held, separately from participant assets.

Moreover, CDCC has implemented a methodology to identify scenarios that may prevent it from being able to provide its critical services as a going concern, placing CDCC into recovery. Non-Default scenarios are focused on the risks CDCC faces from its business and that can cause financial stress in excess of the capacity of its existing pre-recovery risk controls. These scenarios are included in the Recovery Plan.

Key consideration 5: An FMI should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly.

CDCC’s Recovery Plan provides tools such as the PSA with TMX Group to replenish CDCC's Operational Risk Capital.

Principle 16: Custody and Investment Risks

Principle

An FMI should safeguard its own and its participants' assets and minimize the risk of loss on and delay in access to these assets. An FMI's investments should be in instruments with minimal credit, market, and liquidity risks.

Disclosure

Key consideration 1: An FMI should hold its own and its participants' assets at supervised and regulated entities that have robust accounting practices, safekeeping procedures, and internal controls that fully protect these assets.

CDCC uses a number of custodians in its business operations. Clearing Member assets that qualify as book-entry securities are held at either CDS or at entities that are either regulated banks or trust and loan companies. In the former case, CDS is a designated CSD in Canada subject to the oversight of the Bank of Canada and various provincial securities regulators. In the latter case, entities that are subject to the *Bank Act* or the *Trust and Loans Companies Act* are under the direct oversight of the Office of the Superintendent of Financial Institutions ("OSFI") of Canada.

Furthermore, CDCC's Rules set financial guidelines for the custodians that are considered acceptable and allow for the monitoring of custodians' financial soundness on an annual basis. CDCC relies on the regulatory oversight of these acceptable depositories for the purposes of evaluating their accounting, safekeeping, and internal control structure.

Key consideration 2: An FMI should have prompt access to its assets and the assets provided by participants, when required.

CDCC's custodians consist of both Canadian and foreign legal entities, and CDCC's legal arrangements involve a perfected first priority security interest in the relevant assets. As such, CDCC exercises its rights on these assets through control.

Key consideration 3: An FMI should evaluate and understand its exposures to its custodian banks, taking into account the full scope of its relationships with each.

CDCC uses three types of custodians for the purpose of the safe-keeping of the assets provided to satisfy cash and non-cash collateral. Canadian-dollar cash collateral is maintained at the Bank of Canada, thereby eliminating commercial bank risk. With the expansion of service hours outside of North American banking hours, CDCC may now hold foreign currency cash collateral at commercial banks. These commercial bank deposits are subject to due diligence, rating, limit setting and oversight consistent with the Custody and Investment Risk Policy. Non-cash collateral is held at financial institutions that are subject to OSFI oversight under either the *Bank Act* or the *Trust and Loans Companies Act*. As non-cash collateral is in book-entry form and CDCC has a first priority security interest in these assets, any potential risk arising from the failure of the custodian bank is immaterial. CDCC has established standards to systematically manage the risks raised from custody and investment services provided by interdependencies such as custodians. These standards establish the risk-based preferences for custodial arrangements where the custodian cannot be a current Member (or affiliate) of the business activity for which the assets are being managed, to avoid concentration risk and wrong-way risk. Custodians are assigned concentration limits and entity-level limits based on the internal assessment. CDCC monitors and updates the entity limits to reflect the most up-to-date risk profile. All this information is subject to reporting to the RMC on a quarterly basis. CDCC also manages the potential risks raised by custodian banks via the Third Party Risk Management program.

Key consideration 4: An FMI's investment strategy should be consistent with its overall risk-management strategy and fully disclosed to its participants, and investments should be secured by, or be claims on, high-quality obligors. These investments should allow for quick liquidation with little, if any, adverse price effect.

CDCC holds Canadian-dollar cash collateral on behalf of Members at the Bank of Canada, ensuring ready availability and low risk. Foreign-currency cash collateral held on behalf of Members is held in bank accounts at highly rated commercial banks.

CDCC's own assets, which form part of firm capital, are subject to a stringent investment policy that includes a variety of limits to manage investment risk. These include, but are not limited to: limits on obligors (credit and wrong-way risks); limits on investment term; limits on credit exposure; and market risk limits that are structured relative to certain benchmark indices. All of CDCC's corporate asset investments are subject to liquidity requirements so that assets can be converted into cash as necessary, either via market operations or through the use of a pre-arranged liquidity line.

Principle 17: Operational Risk

Principle

An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. BCM should aim for timely recovery of operations and fulfillment of the FMI's obligations, including in the event of a wide-scale or major disruption.

Disclosure

Key consideration 1: An FMI should establish a robust operational risk-management framework with appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks.

CDCC ensures that Operational Risk Management ("ORM") is fully integrated into CDCC's overall risk management program through a robust documented policy and supporting sub-policies and procedures. This ensures that both internal and external sources of risk arising from its operational activities, strategic objectives and management decisions are identified, assessed, managed, monitored, and reported.

CDCC's operational risk-management framework provides a definition of operational risk and lays down principles governing how business processes (including project risk and change management), people (including succession planning sufficient and well-trained resources, conduct) ,, system/information technology(including cybersecurity, data security, and system capacity/resilience) and external risks (including third-party risk management and physical security)are to be identified, assessed, managed, monitored, and reported in a way that is consistent with CDCC's risk appetite statement. The Operations Working Group ("OWG"), which meets at least bi-monthly, supports the consistent roll-out of the program and its daily management across business units by acting as a dynamic and coordinating force between business units, the ERM team, and the senior leadership Risk Management Committee(" RMC").

This framework also sets forth guidelines in the identification and assessment of operational risk. The CDCC risk universe delimits the scope of the ORM framework and is built on internal analysis through a Risk and Control Self-Assessment program and external benchmarking.. An annual risk assessment exercise is conducted to update the risk profile and adjust CDCC's mitigating strategies. A Risk Evaluation Committee ("REC") ensures that before key changes (including a new business initiative or other changes) are introduced or undertaken, the inherent operational risk is subject to adequate assessment and/or mitigation procedures.

The framework also includes a set of procedures which establish core ORM processes. Amongst them, CDCC relies on incident management and business continuity/disaster recovery management processes to manage risk events arising from its day-to-day operations.

Different processes are implemented to monitor the operational risk profile and keep track of exposure to losses (e.g., monthly risk event reports, quarterly ORM dashboards, and monthly operations statistics reports). In addition, CDCC performs the external risk event analysis of its peers and other interdependent entities. The objective of the review is to assess the impact and risk exposure to the CDCC. CDCC regularly monitors and reports on operational risks against the Risk Appetite Statements and the risk metrics specified in the operational risk-specific policies and procedures. Risk documents at the KER level and below clearly establish the responsibilities for standards and reporting, in addition to daily oversight practices. Operational Risk information is reported at individual and aggregate levels, to the RMC and the Board for effective oversight and management. Any breach of risk limits is subject to a notification and reporting process to senior management and/or the Board, depending on the limit or guideline. In addition to our regular risk monitoring, other risk-specific presentations on internal and/or external events, which may impact our risk profile, are provided to, and discussed with, senior management during the quarterly RMC meetings.

CDCC ensures that the implementation of the approved ORM framework is deployed appropriately, subjecting the latter to an effective and comprehensive internal audit. Internal audits are performed periodically, or when there are any significant changes in the ORM program, by the TMX Internal Audit function.

Key consideration 2: An FMI's board of directors should clearly define the roles and responsibilities for addressing operational risk and should endorse the FMI's operational risk-management framework. Systems, operational policies, procedures, and controls should be reviewed, audited, and tested periodically and after significant changes.

The CDCC Board of Directors endorses, at least biennially , the ORM policy and requires that the Chief Risk Officer ("CRO") ensures that all risks are managed in line with the organization's policies and RAS. The ORM policy is structured along the lines of the five-lines-of-accountability approach , which elevates the accountability of the first line day-to-day risk management directly with the front-line managers, confirms the industry accepted standards for the second (Risk Management) and third (Internal Audit) lines, and highlights the role of the fifth (Board), and fourth (supporting committees), in risk oversight, ensuring a cultural awareness of risk issues across the organization. Finally, the Board of Directors receives, from the CRO, a quarterly enterprise risk/incident report on all enterprise-level risks, including the identified operational risks.

Audit reviews are conducted annually on various operational risks, including business process risks, IT risks, business continuity, and disaster recovery. Internal Audit plays a role in the CDCC Operational Risk framework at different levels. This includes conducting audits during the Risk Evaluation process for significant changes, exercising their audit rights to assess identified risks and controls. They also participate in the Incident Management process as members of the OWG.

Key consideration 3: An FMI should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives.

The operational reliability objectives, both qualitative and quantitative, of systems used by CDCC are defined and reviewed, at least annually, in the following documents: TMX Global Technology Services (GTS) - CDCC Service Level Objectives; TMX-GTS's CDCC Availability Plan; and TMX-GTS's Capacity Plan. These objectives aim to ensure a high degree of security and operational reliability, as they constitute the main metrics to be monitored and observed on a periodic basis and to be acted upon if they fail to meet the documented corporate objectives.

In addition, CDCC has clear and measurable operational objectives that articulate the outcomes expected in order to achieve and operationalize the objectives approved by its Board of Directors. CDCC Senior Management periodically reviews the operational objectives and identifies the risks and the mitigation required to ensure that the objectives are met.

Key consideration 4: An FMI should ensure that it has scalable capacity adequate to handle increasing stress volumes and to achieve its service-level objectives.

On an annual basis, CDCC performs a capacity planning exercise to ensure that its systems have scalable capacity to handle volumes that are in line with business planning. Periodically, the capacity planning exercise is expanded to include a wider range of scenarios, including the potential for peak volumes. During the year any projects large enough to potentially impact the current system excess capacity will be subject to a performance and capacity test to ensure service levels objectives are met. Any potential capacity shortfalls are reviewed along with possible mitigating actions.

Capacity risks are formally monitored at the RMC on a quarterly basis in the form of Key Enterprise Risks and related Key Risk Indicators to ensure that these risks are fully understood and appropriately mitigated.
Critical system performance is assessed through Monthly Service Level Reports (SLR), shared with CDCC management and presented at RMC. Incidents impacting availability undergo an incident management process, with severe cases leading to communicated incident reports to RMC and/or regulators. Monthly statistics, including incidents, are integrated into the ORM quarterly dashboard and presented to RMC and the Board. An annual Disaster Recovery (DR) exercise is conducted, with post-exercise reports potentially triggering corrective initiatives for identified problems. Capacity planning, based on historical peaks, involves adjustments where needed after the test. Business leads are actively involved in planning to understand risks and develop mitigation actions in both scenarios.

Key consideration 5: An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats.

CDCC leverages the TMX Group Limited Employee Code of Conduct and Safe and Resilient Workplace Policy to manage potential physical security vulnerabilities and threats. These policies apply to every employee of CDCC including permanent, contract, secondment, and temporary agency employees who are on long-term assignments, as well as individual consultants. The policies define the key principles to ensure that CDCC provides a safe, secure, and healthy workplace for all employees, as well as visitors to TMX premises. Each employee is required to complete annual training on identifying, responding to, and reporting physical and cyber security threats. CDCC relies on support and expertise from the corporate Physical Security team in this regard.

CDCC, as part of the TMX Group, has an Information Security Risk Management Policy which establishes security risk management objectives, as well as roles and responsibilities across the organization for managing security risks. This Policy is part of a larger Objective Centric Risk Management framework, intended to build strong business practices, including cyber security resilience, consistent with national and global requirements for Financial Markets Infrastructures.

TMX information security program is broadly aligned with ISO27001, NIST and industry common practices, and has on-going oversight by several Canadian and other regulatory bodies. The security program maturity level is assessed on a periodic basis by an independent external party.

Information security risks are identified on an ongoing basis, from a multitude of sources such as threat intelligence, Threat Risk Assessments (TRA), vulnerability management, incidents analysis, Table-Top Exercises, external reviews, etc. TMX Information Security Office ("ISO") conducts a periodic Threat and Risk Assessment (TRA) for all business units, including CDCC, and makes recommendations for further risk treatment options.

CDCC ERM consistently conducts effective challenges of physical and information security risks. These risks, encompassing cybersecurity risks as well, undergo formal monitoring at the RMC quarterly through Key Enterprise Risks and associated Key Risk Indicators. This process ensures a comprehensive understanding and proper mitigation of these risks.

Key consideration 6: An FMI should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a wide-scale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical information technology (IT) systems can resume operations within two hours following disruptive events. The plan should be designed to enable the FMI to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. The FMI should regularly test these arrangements.

CDCC has a strong business continuity management program in place that ensures its ability for timely recovery of operations and fulfillment of FMI's obligations, including in the event of a wide-scale or major disruption.

The recovery and resumption objectives are defined in its ORM policy, with the overall system design targeting a 2-hour recovery time with no data loss. This is achieved via a fully mirrored computer backup site to help ensure continued operations in the event that CDCC's primary site becomes unavailable. The business continuity requirements are reviewed on an annual basis by all CDCC business units and documented in the business impact analysis ("BIA"). Business Continuity Plans (BCPs) are updated at least annually to reflect any changes in the business requirements documented in the BIA. The information is complemented by an annual Threat Risk Assessment conducted by TMX Information Security Office.

In addition, a documented collection of procedures and information is maintained to enable CDCC to continue to deliver its critical services at an acceptable predefined level.

Finally, plans are rigorously tested no less than once yearly (e.g., quarterly remote connectivity access, table-top exercise, chain of command test, annual default simulation test, DR (disaster recovery) testing with Clearing Members, an Industry-wide DR test and a BCP test (business continuity plan) . This includes the documentation of lessons learned and a post-mortem review. With the increased focus on cyber security risk, particular attention is being given to expanding the planning and testing of CDCC's cyber response and recovery capabilities, together with key stakeholders, across a range of increasingly challenging scenarios.

Key consideration 7: An FMI should identify, monitor, and manage the risks that key participants, other FMIs, and service and utility providers might pose to its operations. In addition, an FMI should identify, monitor, and manage the risks its operations might pose to other FMIs.

The risks associated with CDCC's key participants, other FMIs, and service and utility providers include, but not limited, to operational, financial (credit, market), legal and cybersecurity risks.

CDCC adheres to a comprehensive set of operational risk management practices to identify, monitor and manage risks in its operations arising from its key participants, other FMIs, and service and utility providers or the risks CDCC's operations might pose to other FMIs.

The organization proactively manages both internal and external incidents, employing incident management to analyze and resolve issues promptly.

The BIA (Business Impact analysis), as part the Business Continuity Management (BCM), serves not only identifying and mapping interdependencies among various departments, but as well as external connections with service providers at process level. In addition, various tests such as Business Continuity Planning (BCP), Disaster Recovery (DR) testing, Cyber Table Exercises and Crisis Management Exercises are organized regularly to enhance organizational resilience by effectively managing risks associated with internal and external dependencies in operational landscapes.

CDCC has developed a comprehensive approach to address potential losses that are unrelated to a clearing member default. The Non-Default Loss (NDL) is impacted by diverse factors such as general business, legal considerations, custody, investment, and operational elements including risk driven by its interdependence. This approach integrates scenario analysis and the quantification of non-default losses to ensure the continuous solvency of the organization.

As part of the Third Party Risk Management program, CDCC performs materiality assessments and cyber assessment for all service providers to identify the risks and takes appropriate action to manage these dependencies through appropriate contractual and organizational arrangements. For new critical service providers, CDCC performs the due diligence at the onboarding stage and refreshes the due diligence on a biennial basis. The performance of the service providers will be monitored via day-to-day operations, and any issues identified will be captured via the incident management program and escalated to senior management and regulators as needed. For critical services providers, CDCC performs ongoing monitoring of their creditworthiness, and operational performance, and cybersecurity health, and reports on them at a set frequency.

As an active participant of the Bank of Canada's Canadian Financial Sector Resiliency Group (CFRG) committee, together with other members, CDCC have identified interdependencies between financial sector critical infrastructure and critical infrastructure in other sectors, most notably energy and utilities, communications and IT, and transportation. The CFRG committee, chaired by the Bank of Canada, has identified critical time periods and dependencies which could prevent same-day settlement, or which could prevent those systems from being in a state of readiness at the start of the next business day.

Principle 18: Access and Participation Requirements

Principle

An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.

Disclosure

Key consideration 1: An FMI should allow for fair and open access to its services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk-related participation requirements.

CDCC's Rules provide the basis for Clearing Member eligibility with all of the requirements for membership made publicly available via its website. Requirements for membership are broadly categorized within legal, financial, and operational categories. CDCC Clearing Members are required to be Canadian legal entities that are either regulated broker-dealers under the Canadian Investment Regulatory Organization (CIRO) regime, banks subject to the *Bank Act* (Canada), financial services cooperatives regulated pursuant to an *Act respecting Financial Services Cooperatives,* or a credit union central or a central cooperative credit society that is incorporated and regulated under the laws of Canada or under the legislature of a province and whose principal purpose is to provide liquidity support to local credit unions or financial services cooperatives. In addition, certain public sector buy-side firms, such as pension funds or crown corporations that qualify as Limited Clearing Members under CDCC's Rules, can also get direct access to CDCC's Fixed Income (Repo and Cash Buy/Sell back) market. Furthermore, all Clearing Members are required to satisfy certain financial requirements, such as minimum capital standards or credit ratings, on an on-going basis and remain in good standing with their relevant regulators. Finally, CDCC also requires that certain operational standards be satisfied prior to granting Clearing Member status, ranging from staffing levels during operating times to certification testing prior to membership being activated, and is currently developing cyber-security requirements, aimed at protecting CDCC and its members from contamination from a cyber-event affecting one of these members. These criteria are applied to all Clearing Members and are meant to ensure fair and equitable access to CDCC. In fact, the focus on these minimum standards ensures that CDCC's services are available to potential participants without introducing undue risk to the system. Furthermore, it should be noted that the CDCC Board of Directors is responsible for approving any application of a new Clearing Member and confirming that it meets the CDCC application criteria. Any excess risk that is introduced by any one particular Clearing Member such that these minimum thresholds are no longer respected is dealt with via other bilateral mechanisms that have been developed to manage the risk of one Clearing Member without penalizing the market as a whole.

Key consideration 2: An FMI's participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI's specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavour to set requirements that have the least-restrictive impact on access that circumstances permit.

As the main eligibility requirements are focused on legal, financial, and operational metrics, they act as the first line of accountability against systemic risk and are therefore risk-based measures, with no requirements imposed by law or regulation. The financial requirements, while different for exchange-traded and fixed income participants, are calibrated to ensure that individual Clearing Members can meet the collateral and liquidity requirements required by the individual markets. Finally, the operational requirements target those firms that are not in a position to meet the strict operational guidelines of CDCC and therefore avoid any downstream consequences that may be realized due to an operational outage at any one Clearing Member.

All prospective Clearing Members are reviewed against the various eligibility requirements currently in force. In the event that a trend is discovered such that any or all of the requirements are overly restrictive, CDCC management would recommend to the Board of Directors that a Rule change be effected to correct the issue within the confines of CDCC risk tolerances.

Key consideration 3: An FMI should monitor compliance with its participation requirements on an ongoing basis and have clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a participant that breaches, or no longer meets, the participation requirements.

Ongoing compliance with the legal requirements is achieved in a variety of ways, including the use of an information sharing arrangement with the primary regulator of the Clearing Member and requiring Clearing Members, by Rule, to disclose to the CDCC any material changes in their legal and regulatory status. CDCC may perform audits on any of its Clearing Members and specific annual due diligence of its Limited Clearing Members. Financial requirements are monitored on a monthly basis based on information provided by the Clearing Members' primary regulator under the terms of the information sharing agreement and through publicly available information. Operational requirements and any potential incidents that occur are tracked through the CDCC risk event management process and reported first to the OWG and then to the RMC and to regulatory agencies, if required. CDCC is developing additional participation requirements to manage potential incidents that may be the result of external risks introduced by Clearing Members.

The suspension or the orderly exit by a Clearing Member that is demonstrating a deteriorating risk profile or who no longer meets the minimum eligibility requirements is governed under CDCC Rules. CDCC may, at its discretion through the authority of its Board of Directors, suspend such Clearing Member and facilitate an orderly wind-down that would be in the best interest of the market.

Principle 19: Tiered Participation Arrangements

Principle

An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.

Disclosure

Key consideration 1: An FMI should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the FMI arising from such tiered participation arrangements.

As part of its services to the exchange-traded derivatives market, CDCC offers Clearing Members the capacity to provide agency clearing services to non-Clearing Members. As such, CDCC has a tiered CCP service that provides central counterparty clearing to Clearing Members and non-Clearing Members. Although CDCC does not gather information on non-Clearing Members on a day-to-day basis, CDCC has access to certain information through an information sharing agreement with the Montréal Exchange. Moreover, the Rules do provide CDCC with the authority and capacity to audit the books and records of all Clearing Members if the particular circumstances require it.

Key consideration 2: An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.

As the clearing model adopted by the CDCC is a principal model, non-Clearing Members introduce additional operational, credit, and liquidity risks to the Clearing Members that provide them with agency services. In addition, non-bank Clearing Members introduce liquidity risks to the bank Clearing Members that provide them with money settlement services.

CDCC has implemented a monthly Tiered Participation Monitoring Program that first identifies the source of potential tiered arrangement risks and then assesses the relative level of credit, liquidity, and operational risks it could represent for CDCC.

Key consideration 3: An FMI should identify indirect participants responsible for a significant proportion of transactions processed by the FMI and indirect participants whose transaction volumes or values are large relative to the capacity of the direct participants through which they access the FMI in order to manage the risks arising from these transactions.

CDCC's audit rights provide it with a mechanism to identify indirect participants that clear through Clearing Members.

Additionally, CDCC has developed a monthly Tiered Participation Monitoring Program that allows it to identify the size of all participants' positions in relation to the size of their clearing member(s).

Key consideration 4: An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.

CDCC does have mitigations in place to guard against the additional operational, credit, and liquidity risks that arise through tiered participation arrangements. CDCC has adopted a monthly Tiered Participation Monitoring program that is subject to the CDCC Risk Management Committee oversight and review. Any breach of the preset threshold is subject to a review by the risk team and reporting to the RMC.

Principle 20: FMI Links

Principle

An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.

Disclosure

Key consideration 1: **Before entering into a link arrangement and on an ongoing basis once the link is established, an FMI should identify, monitor, and manage all potential sources of risk arising from the link arrangement. Link arrangements should be designed such that each FMI is able to observe the other principles in this report.**

As stated under Principle 20, a CCP for securities markets must establish and use a link to a CSD to receive and deliver securities. CDS is both a CSD and a SSS and which enables it to receive and deliver securities from and to its Clearing Members.

CDS is the clearing house that operates CDSX®, a clearing and settlement system that has been designated under the *PCSA* to be of systemic importance.

CDS has also been designated by the Bank of Canada and certain provincial commissions' securities regulators as a Qualifying Central Counterparty ("QCCP") pursuant to the standards developed by the Basel Committee on Banking Supervision and adopted by the OSFI. This QCCP status reflects on the fact that CDS's CCP service is "based and prudentially supervised in a jurisdiction where the relevant regulator/overseer has established, and publicly indicated that it applies to the CCP on an ongoing basis, domestic rules and regulations that are consistent with the PFMIs."

CDCC, as a participant to CDS, relies on the regulating entities to ensure that potential risks arising from the link between CDCC and CDS are appropriately identified, monitored, and managed.

Key consideration 2: **A link should have a well-founded legal basis, in all relevant jurisdictions, that supports its design and provides adequate protection to the FMIs involved in the link.**

As a systemically important FMI, CDS's participants' rules have a well-founded, clear, transparent, and enforceable legal basis, with a high degree of certainty, in all relevant jurisdictions (that is, the jurisdictions in which CDCC is authorized and regulated).

Key consideration **3: Linked CSDs should measure, monitor, and manage the credit and liquidity risks arising from each other. Any credit extensions between CSDs should be covered fully with high-quality collateral and be subject to limits.**

Not applicable.

Key consideration 4: **Provisional transfers of securities between linked CSDs should be prohibited or, at a minimum, the retransfer of provisionally transferred securities should be prohibited prior to the transfer becoming final.**

Not applicable.

***Key consideration* 5: An investor CSD should only establish a link with an issuer CSD if the arrangement provides a high level of protection for the rights of the investor CSD's participants.**

Not applicable.

***Key consideration* 6: An investor CSD that uses an intermediary to operate a link with an issuer CSD should measure, monitor, and manage the additional risks (including custody, credit, legal, and operational risks) arising from the use of the intermediary.**

Not applicable.

***Key consideration* 7: Before entering into a link with another CCP, a CCP should identify and manage the potential spill-over effects from the default of the linked CCP. If a link has three or more CCPs, each CCP should identify, assess, and manage the risks of the collective link arrangement.**

Not applicable.

***Key consideration* 8: Each CCP in a CCP link arrangement should be able to cover, at least on a daily basis, its current and potential future exposures to the linked CCP and its participants, if any, fully with a high degree of confidence without reducing the CCP's ability to fulfill its obligations to its own participants at any time.**

Not applicable.

***Key consideration* 9: A TR should carefully assess the additional operational risks related to its links to ensure the scalability and reliability of IT and related resources.**

Not applicable.

Principle 21: Efficiency and Effectiveness

Principle

An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.

Disclosure

Key consideration 1: An FMI should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures.

CDCC has developed and continues to maintain numerous fora to ensure that its design meets the needs of CDCC's Clearing Members and the markets it serves. These external fora include its User Groups ("UG"s) and its RMAC, where individual services and products, product development, and the impacts on risk management and operational processes are regularly discussed. CDCC also participates in numerous industry working groups, such as the Investment Industry Association of Canada, in support of industry-wide initiatives and maintains an active communication protocol with market participants through the publication of Notices to Members. In addition, when new initiatives are launched by the Montréal Exchange, CDCC consults with its clearing members to ensure ease of adoption of any clearing impacts. Finally, CDCC has published and maintains services standards in its operations manual, which is made available to all Clearing Members. In all cases, CDCC proactively seeks and responds to comments about its services from Clearing Members and non-Clearing Members via its relationship management function (CDCC Client services).

Key consideration 2: An FMI should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.

CDCC's operating model is made available to Clearing Members on CDCC's website.

In addition, CDCC has adopted a risk management framework that is consistent with the PFMIs.
CDCC measures its efficiency and effectiveness relative to its operations and risk management against these benchmarks and receives important feedback on its performance from both its User Groups and its RMAC.

Key consideration 3: An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.

Summary reporting from User Groups and RMAC meetings is reviewed by CDCC management as well as the CDCC Board of Directors at least annually and forms part of its process for continued improvement.

Principle 22: Communication Procedures and Standards

Principle

An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.

Disclosure

Key consideration 1: An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.

CDCC uses an array of internationally accepted communication procedures to facilitate the dissemination of information to its Clearing Members and the public. Examples include: email broadcasts; Secure File Transfer Protocol (SFTP); web technology to broadcast Notices, Operational notices, and Rules/procedures to members; and video-conferencing and teleconferencing technology to conduct User Groups.

CDCC uses a series of internationally accepted communication standards for message format and reference data, such as:

- MQ Series
- FiXML for Exchange-traded derivatives
- EBCDIC and ASCII files for End of Day (EoD) Data Service Files (DSFs)
- ASCII Tag Log Files (TLGs)
- SPAN (Standard Portfolio Analysis of Risk) Risk Arrays for Margining methodology
- TCP/IP (Transmission Control Protocol/Internet Protocol) for web communications and SFTP server file uploads
- SMTP (Simple Mail Transfer Protocol) for inbound email messaging
- POP3 (Post Office Protocol 3) for outbound email messaging
- Lynx for Settlement Account processing
- SWIFT (Society for Worldwide Interbank Financial Telecommunication) Access into Lynx for Payments
- Subset of TCP/IP protocols (e.g.: SecureFTP, Telnet)

Principle 23: Disclosure of Rules, Key Procedures and Market Data

Principle

An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.

Disclosure

Key consideration 1: An FMI should adopt clear and comprehensive rules and procedures that are fully disclosed to participants. Relevant rules and key procedures should also be publicly disclosed.

CDCC's Rules, Operations, and Risk and Default Manuals, collectively forming the CDCC's Rules, comprise the rules and procedures under which the clearing system operates and are binding on Clearing Members. These documents are publicly available on CDCC's website. Upon request, CDCC will provide CDCC Clearing Member Applications, Clearing Agreements & Agency Agreements. These documents form and define the legal obligations of both CDCC and its Clearing Members throughout the clearing and settlement process.

As CDCC is regulated by the Bank of Canada, the AMF in Québec, the OSC in Ontario, and the BCSC in British Columbia, one of the primary regulatory obligations is a public review process regarding all proposed changes to its Rules. All proposed changes are made public via the CDCC website as well as in the web sites of the relevant provincial regulators. Please refer to CDCC's comments under Principle 1: Legal Basis.

Key consideration 2: An FMI should disclose clear descriptions of the system's design and operations, as well as the FMI's and participants' rights and obligations, so that participants can assess the risks they would incur by participating in the FMI.

Information about the design of CDCC's clearing system and its operating procedures is found within CDCC's Rules, and information about CDCC's clearing operations is included throughout the Rules and procedures. This information is available on CDCC's website.
Training material for new Clearing Member employees is available on CDCC's extranet.

CDCC's discretionary authority in the clearing and settlement process is clearly articulated in CDCC's Rules, where it relates to: 1) the declaration of a non-conforming status, 2) imposition of additional margin surcharges, and 3) attributing market value to a particular position where no reliable value is readily available.

Key consideration 3: An FMI should provide all necessary and appropriate documentation and training to facilitate participants' understanding of the FMI's rules and procedures and the risks they face from participating in the FMI.

CDCC facilitates its Clearing Members' understanding of its Rules and risks of participation through encouraging their participation in its RMAC and its User Group meetings. These provide Clearing Members the opportunity to discuss any relevant risk and/or operational issues or to raise any concerns regarding changes to procedures or rules proposed by CDCC. These fora often involve a detailed discussion of key operational processes and risk management practices, active industry involvement and debate. Such discussions provide the evidence necessary so that Clearing Members understand the nature of the Rules, procedures and risks they face through their participation.

In addition, CDCC's Client Services team encourages any questions or issues to be sent to the Client Services inbox. CDCC Client Services then delegates the Clearing Member's questions to the appropriate internal contact. Client Services' team work to ensure Clearing Members' readiness for any changes to CDCC's rules and procedures

Key consideration 4: An FMI should publicly disclose its fees at the level of individual services it offers as well as its policies on any available discounts. The FMI should provide clear descriptions of priced services for comparability purposes.

All information related to fees is publicly disclosed on CDCC's website. Fee modifications are announced via a Notice to Members with reasonable notification prior to implementation.

Key consideration 5: An FMI should complete regularly and disclose publicly responses to the CPSS-IOSCO disclosure framework for financial market infrastructures. An FMI also should, at a minimum, disclose basic data on transaction volumes and values.

CDCC updates its Qualitative Self-Assessment each year, or when material changes occur, consistent with the Disclosure Framework required under the PFMI requirements. Quantitative disclosures are made, consistent with the quantitative disclosure framework as required under the PFMIs, on a quarterly basis.

Principle 24: Disclosure of Market Data by Trade Repositories

This principle is not applicable to CDCC.

VI. List of Publicly Available Resources

CDCC Rules

CDCC Rules: https://rules.cdcc.ca/w/cdcc/cdcc-en
CDCC Operations Manual: http://www.cdcc.ca/f_rules_en/cdcc_operations_manual_en.pdf
CDCC Default Manual: http://www.cdcc.ca/f_rules_en/cdcc_operations_manual_en.pdf

CDCC Governance

CDCC Board Charter, CDCC Board Code of Conduct, CDCC Governance Committee Charter, CDCC Statement of Corporate Governance and CDCC Risk and Audit Committee Charter:
https://www.cdcc.ca/en/files-and-publications/publications/governance

Legal Entity Identifier (LEI): http://www.cdcc.ca/f_en/2014-M61_en.pdf

Member Information

Member Notices: http://www.cdcc.ca/publications_notices_en
Membership List: http://www.cdcc.ca/members_en

Services and Product Information

Service Standards & Information for Industry Clearing Members document on Exchange Traded & OTC Derivatives Products: http://www.cdcc.ca/f_en/standards_et-otc_products_en.pdf
Service Standards & Information for Industry Clearing Members document on Fixed Income CCP:
http://www.cdcc.ca/f_en/standards_fixed_income_ccp_en.pdf