THE DEPOSITORY TRUST COMPANY

Disclosure Framework for Covered Clearing Agencies and Financial Market Infrastructures

December 2018

Securing Today. Shaping Tomorrow.®

Responding Institution:	**The Depository Trust Company ("DTC")**
Jurisdiction:	**State of New York, United States of America**
Authorities:	**U.S. Securities and Exchange Commission; Federal Reserve Bank of New York; New York State Department of Financial Services**

Except as noted in Section II, the information provided in this Disclosure Framework is accurate as of December 31, 2018; financial information and certain other data are provided as of the dates specified.

This Disclosure Framework can also be found at www.dtcc.com.

For further information, please contact DisclosureFrameworks@dtcc.com.

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I. Executive Summary

The Committee on Payments and Market Infrastructures and the Technical Committee of the International Organization of Securities Commissions (collectively, "CPMI-IOSCO") recognize that financial market infrastructures ("FMIs"), which include central securities depositories ("CSDs"), securities settlement systems, central counterparties ("CCPs"), payment systems and trade repositories, each play a critical role in the financial system and the broader economy. FMIs facilitate clearing, settling, and recording of monetary and other financial transactions.

A CSD, such as The Depository Trust Company ("DTC"), provides a central location in which securities may be immobilized, or through which securities may be dematerialized, and interests in those securities reflected in accounts maintained for members. DTC also provides for the settlement of book-entry transfer and pledge of interests in eligible deposited securities and net funds settlement. A financially strong and well-managed, well-designed CSD, with appropriate risk management arrangements, can reduce the risk faced by participants, contributing to the goal of systemic financial stability. CPMI-IOSCO has recognized that, while properly managed FMIs contribute to maintaining and promoting financial stability and economic growth, they also have the potential to concentrate risk. Therefore, it is important that FMIs, such as DTC, have effective risk controls and adequate financial resources.

CPMI-IOSCO's 2012 report on the Principles for financial market infrastructures (the "FMI Principles") contains 24 FMI Principles covering the major types of risks faced by FMIs. One key objective of the FMI Principles is to encourage clear and comprehensive disclosure by FMIs, through a public "Disclosure Framework" that explains how their businesses and operations reflect each of the applicable FMI Principles. The U.S. Securities and Exchange Commission ("SEC"), in Rule 17Ad-22(e) (23), has adopted a similar approach to disclosure by covered clearing agencies.[1]

This Disclosure Framework covers DTC, a wholly-owned subsidiary of The Depository Trust & Clearing Corporation ("DTCC" or the "Company"), which provides CSD services with respect to securities transactions in the U.S. in types of eligible securities including, among others, equities, warrants, rights, corporate debt and notes, municipal bonds, government securities, asset-backed securities, depositary receipts and money market instruments ("MMIs"). DTC is a limited purpose trust company, formed under the Banking Law of New York State and supervised by the New York State Department of Financial Services ("NYSDFS"), a State member bank of the Federal Reserve System ("FRS") subject to examination by the Federal Reserve Bank of New York ("FRBNY") under delegated authority from the Board of Governors (the "FRB") of the FRS, and a clearing agency registered with, and under the supervision of, the SEC. In July 2012, DTC was designated as a systemically important financial market utility (a "SIFMU") under Title VIII of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 ("Dodd-Frank"); and it is a "covered clearing agency" under the SEC's Standards for Covered Clearing Agencies.[2]

This Disclosure Framework is intended to provide relevant disclosure to DTC's stakeholders, including its participants and indirect users, on DTC's key services and the methods it uses to manage the risks to itself and others of providing these services. In addition, this document facilitates DTC's compliance with CCA Rule 17Ad-22(e)(23).

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[1] 17CFR 240.17Ad-22(e)(23).

[2] *See*, Standards for Covered Clearing Agencies, Exchange Act Release No. 34-78961, 81 Fed. Reg. 70786 (Oct. 13, 2016); referred to hereafter, collectively, as the "Covered Clearing Agency Rules" or "CCAS", and when referring to a specific rule, as "CCA Rule 17Ad-22(e)__."

II. Summary of Major Changes since the Last Update of the Disclosure

This Disclosure Framework represents a comprehensive update from the last comprehensive update published in December, 2016. The primary changes to this disclosure since 2016 are updates throughout to reflect the SEC's adoption of the Covered Clearing Agency Rules, as well as updates reflecting the implementation of initiatives addressed in rule filings approved by the SEC in the intervening period. The information provided in this Disclosure Framework is accurate as of December 31, 2018; financial information and certain other data are provided as of the dates specified.

III. General Background of DTC and Key Metrics

A. General Description of DTC and Organization

DTC was organized in 1973 in response to the "paperwork crisis" of the late 1960s and early 1970s in the U.S. securities industry, in which large value securities certificates were being physically delivered so frequently and in such volumes that financial institutions and investors were at high risk for fraud, theft and loss. To solve this problem, DTC was created as a central securities depository for the immobilization of securities, so that interests in the securities might be transferred by book-entry to accounts maintained at DTC for member financial institutions.[3]

DTC provides depository and book-entry services pursuant to its rules, procedures, service guides and operational arrangements (the "DTC Rules" or "Rules") available at the DTCC website, www.dtcc.com. DTC services include custody of securities certificates and other instruments, and settlement and asset services for types of eligible securities including, among others, equities, warrants, rights, corporate debt and notes, municipal bonds, government securities, asset-backed securities, depositary receipts and MMIs. Eligibility of any particular issue of securities will be determined by DTC under its Rules and in accordance with applicable law, including the Securities Act of 1933, as amended (the "Securities Act") and the rules and regulations thereunder.[4]

Regulatory, Supervisory, and Oversight Framework

During the same period in which DTC was formed, the Securities Exchange Act of 1934, as amended (the "Exchange Act") was amended to add Section 17A and the rules and regulations thereunder, to provide for the establishment and maintenance of a U.S. national system for the prompt and accurate clearance and settlement of securities transactions. This is the regime under which DTC has operated, and continues to operate, as a registered clearing agency under the supervision of the SEC pursuant to the provisions of Section 17A.

To protect the custody of securities held through and immobilized at DTC, DTC was formed as a limited purpose trust company under the Banking Law of New York State and is a State member bank of the FRS, able to conduct funds settlement in central bank money through its account with the FRBNY. DTC is supervised by the New York State Department of Financial Services, and examined by the FRBNY under delegated authority from the FRB. DTC is also a clearing organization, as defined in the Federal Deposit Insurance Corporation Improvement Act of 1991, as amended ("FDICIA"), and a clearing corporation, as defined in the Uniform Commercial Code ("UCC"), enacted by each State of the U.S.

As a registered clearing agency, DTC is subject to the requirements that are contained in the Exchange Act and in the SEC's regulations and rules thereunder. These requirements include Exchange Act Rule 17Ad-22 (the "Clearing Agency Standards") which was adopted by the SEC in 2012 in accordance with Dodd-

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[3] Dematerialization was also recognized as a solution to the problem, but legal support for this approach was not as widely established at the time. DTC is at the forefront of current initiatives for dematerialization, as further discussed below (*see* Principle 11 (Central securities depositories)).

[4] Generally, eligible securities must have been issued in a transaction: (i) registered with the SEC pursuant to the Securities Act; (ii) exempt from registration pursuant to a Securities Act exemption without transfer or ownership restrictions; or (iii) pursuant to Rule 144A or Regulations S. *See* DTC Operational Arrangements (Necessary for Securities to Become and Remain Eligible for DTC Services) (January 2012), *available at* http://www.dtcc.com/~/media/Files/Downloads/legal/issue-eligibility/eligibility/operational-arrangements.pdf.

Frank, and became effective on January 1, 2013, and has recently been amended to provide enhanced standards for entities that meet the definition of "covered clearing agency."[5] The Clearing Agency Standards establish minimum requirements regarding how registered clearing agencies must maintain effective risk management procedures and controls as well as meet the statutory requirements under the Exchange Act on an ongoing basis. It is designed to enhance the regulatory framework for the supervision of clearing agencies.

In accordance with Dodd-Frank, DTC's designation as a SIFMU requires that it meet prescribed risk management standards and heightened oversight by its regulators in order to promote robust risk management and safety and soundness, reduce systemic risk, and support the stability of the broader financial system.

DTC is also a "clearing corporation" within the meaning of Article 8 of the New York Uniform Commercial Code.

These laws, regulations and rules are readily accessible to DTC's participants and the general public via the Internet and through other public sources. (*Also see* response to Principle 1 (Legal basis).)

Organization

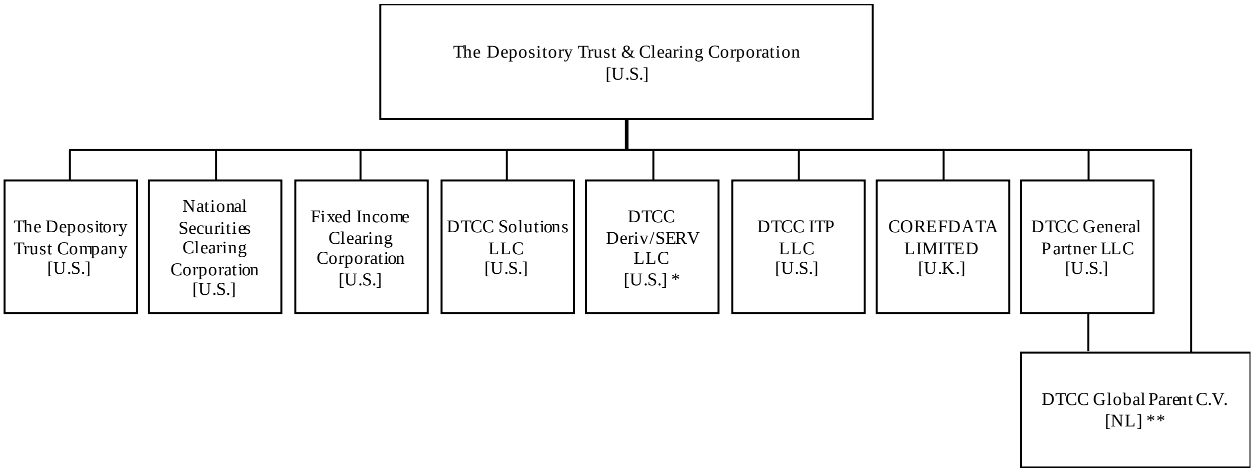
DTCC is the parent company of DTC. DTCC is a non-public holding company that owns a number of FMIs, including three SIFMUs and related businesses. In addition to DTC, DTCC also owns National Securities Clearing Corporation ("NSCC"), a registered clearing agency and central counterparty that provides clearing, netting, settlement, risk management and central counterparty services for broker-to-broker trades involving equities, corporate and municipal debt, exchange-traded funds and unit investment trusts in the U.S., and Fixed Income Clearing Corporation ("FICC"), a registered clearing agency and central counterparty that operates two divisions. FICC's Government Securities Division provides clearing, netting, settlement and central counterparty services to the U.S. government securities market. The Mortgage-Backed Securities Division provides such services to the U.S. mortgage-backed securities market. NSCC and FICC are also SIFMUs.

DTCC, through its other subsidiaries and joint ventures, provides critical information, post-trade processing and transactional services, including through global trade repositories, to financial market participants in the U.S. and globally.

DTCC's common stock is owned by the financial institutions that are participants of its registered clearing agency/SIFMU subsidiaries. DTCC's governance arrangements—and those of its SIFMU subsidiaries—are designed to promote the safety and efficiency of its clearing agency subsidiaries, support the stability of the broader financial system, and promote the objectives of participants. These governance arrangements are more fully described in response to Principle 2 (Governance) below.

[5] *See supra* Note 2. As a SIFMU, DTC is subject to the enhanced standards as a covered clearing agency under the amended rule.

DTCC's active direct subsidiaries are shown in the following chart:



* This entity holds DTCC's interest in the U.S. data repository and the credit default swap warehouse.
** This entity indirectly holds DTCC's interest in non-U.S. data repositories and other non-U.S. businesses.

A description of the activities of DTCC's principal subsidiaries is available at www.dtcc.com.

B. *Key Services: System Design and Operation*

The following is a brief description of the core services and functions performed by DTC.

DTC is the world's largest securities depository and a clearing agency for the settlement of securities trading activity. DTC maintains securities accounts and settlement accounts for its members, generally banks, broker-dealers and other financial institutions, including linked FMIs. (*See* Principle 18 (Access and participation requirements), Principle 20 (FMI links).)[6]

Immobilization and book-entry transfer services

DTC holds eligible securities on behalf of Participants and reflects the transfer of interests in those securities among Participants by computerized book-entry. Eligible securities deposited with DTC for book-entry transfer services are registered in the name of its nominee, Cede & Co. ("Cede"), a New York partnership. When the certificates are registered in the name of Cede & Co., DTC acquires legal title to the securities and, when DTC credits interests in these securities to the securities accounts of Participants, those Participants acquire a beneficial interest in the securities. A Participant does not have a right to any particular security; each Participant has a proportionate interest in the fungible total inventory of the issue held by DTC.

As the holder of immobilized securities through Cede, under DTC Rules and applicable law, DTC provides asset services that facilitate centralization, simplification and automation in the processing of principal and income payments and corporate actions. These include Deposit, Custody, Direct Registration,

[6] As described in Principle 18 (Access and participation requirements), under the DTC Rules, there are three classes of membership: Participants, Limited Participants and Pledgees. In this Disclosure Framework, the term "Participants" generally includes all three, unless the context indicates otherwise.

Distributions, Reorganization and Proxy Services, further described in applicable service guides at the DTCC website.[7]

There are two fundamental types of book-entry transfer under the DTC Rules: delivery and pledge. A Participant may instruct DTC to deliver securities from its account to the account of another Participant, in which case ownership of the securities is transferred. Alternatively, a Participant (the "Pledgor") may instruct DTC to pledge securities from its account to the pledgee account of a counterparty (the "Pledgee"), in which case a collateral interest is transferred. The Pledgor continues to own the securities, subject to the pledge, and the Pledgee may release the pledged securities back to the Pledgor in the ordinary course. However, DTC Rules also allow the Pledgee to exercise control of the collateral securities by transfer to its own account or to other Participants, without the further consent of the Pledgor.[8]

A DTC book-entry transfer may be a delivery free of payment or a delivery versus payment ("DVP"), for settlement through DTC end-of-day net funds settlement, as further described in responses to Principle 8 (Settlement finality) and Principle 9 (Money settlements).[9] Risk management controls apply intraday to protect DTC and its Participants against the failure of a Participant to settle.

Under the DTC Rules, DTC offers a variety of core services based on these fundamental book-entry mechanics.

The Underwriting Service, for instance, is the process by which securities may be credited to the account of an underwriting Participant at issuance and distributed to investing Participants by DVP for settlement at DTC. DTC also processes book-entry transfers for institutional trades of its Participants, affirmed and matched by an applicable settlement matching service, including its affiliate, DTCC ITP Matching (US) LLC.

Another important use of DTC book-entry transfer is the interface of DTC with its affiliate NSCC for the processing of trades that are cleared and settled in the NSCC Continuous Net Settlement ("CNS") system. As more fully described in the response to Principle 20 (FMI links), securities cleared through CNS are settled by book-entry delivery, free of payment, to and from DTC accounts of NSCC members that are also DTC Participants ("Common Members").

A key industry service provided through the DTC delivery system is the issuance and maturity presentment of MMIs.[10] Approximately 99 percent of all U.S. commercial paper is distributed and settled through DTC. DTC provides Participants and Issuing/Paying Agents ("IPAs") with an automated book-entry system for settling issuances and maturity presentments of MMIs. The Issuing Agent (which must be a Participant)

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[7] DTC also provides Global Tax Services to facilitate Participant compliance with tax obligations, including international tax regulations, tax treaty provisions and withholding tax reporting requirements, including Domestic Tax Reporting, U.S. Tax Withholding, Tax Relief and Tax Info Services.

[8] The characterization of any collateral transaction depends on agreements made outside of DTC among the parties to the collateral transaction. DTC does not inquire into the terms and conditions of these agreements but affords its Participants the means to deliver a collateral interest in securities on DTC books and records, and to perfect a security interest thereby, subject to the DTC Rules and applicable law. A variant for repurchase transactions is also available under the Rules, subject to the outside agreement(s) of the parties.

[9] Pledges may also be made free of payment or versus payment.

[10] Securities eligible for DTC's MMI services include: municipal notes with a maturity of one year or less; municipal bonds issued with demand options; zero coupon bonds backed by U.S. Government securities; collateralized mortgage obligations and other asset-backed securities; auction-rate and tender-rate preferred stocks and notes; medium term notes; commercial paper; institutional certificates of deposit; and bankers acceptances.

sends issuance instructions to DTC electronically to deposit, upon issue, the specified MMI securities to its account. The newly issued MMI securities are then distributed from the Issuing Agent's account, by DVP transfer to the accounts of purchasing Participants. Maturity presentments are also made by book-entry transfer; on the maturity date of an issue, securities held by Participants are automatically transferred DVP to the IPA's account, for payment through net settlement.

Supporting cross-border immobilization and book-entry transfer, DTC has a two-way link with CDS Clearing and Depository Services, Inc. ("CDS"). CDS, as a Participant at DTC, holds securities at DTC, which may be transferred on the books of DTC on behalf of CDS participants. Conversely, DTC holds securities in its account at CDS and participates in CDS settlement, in Canadian dollars, on behalf of DTC Participants. DTC also maintains links with other CSDs, as further described in response to Principle 20 (FMI links).

DTC has also established a new link with Euroclear Bank to support the positioning of DTC-eligible securities in a Euroclear securities account so that Euroclear may effect collateral management services on its books and records. (*See* Principle 20 (FMI links)).

Risk Management Controls

DVP transfers at DTC are structured so that the completion of delivery to a Participant is contingent on the receiving Participant satisfying its end-of-day net settlement obligation, if any. Intraday, the risk of default is managed through controls, structured so that DTC may complete settlement despite the failure to settle of the Participant, or affiliated family of Participants, with the largest settlement obligation. The two principal controls are the Net Debit Cap and Collateral Monitor, discussed in response to Principle 4 (Credit risk), Principle 5 (Collateral) and Principle 7 (Liquidity risk). The largest settlement obligation of a Participant or affiliated family of Participants cannot exceed DTC liquidity resources, based on the Net Debit Cap, and must be fully collateralized, based on the Collateral Monitor. This structure is designed so that DTC may pledge or liquidate collateral of the defaulting Participant in order to complete settlement. Liquidity resources, including the Participants Fund and a committed line of credit with a consortium of lenders, are available to complete settlement if there is a Participant default.

Money Settlement at DTC

In addition to a securities account at DTC, each Participant has a settlement account to record any net funds obligation for end-of-day settlement, whether payment will be due to or from the Participant. DTC's delivery and settlement system is a DVP Model 2, deferred net settlement ("DNS") system.[11]

During the day, debits and credits are entered into the Participant's settlement account. The debits and credits arise from DVP transfers and from other funds events or transactions, such as principal and interest payments distributed to a Participant or intraday settlement progress payments by a Participant to DTC. Debits and credits in the Participant's settlement account are netted intraday to calculate, at any time, a net debit balance or net credit balance, resulting in an end-of-day settlement obligation or right to receive payment. DTC nets debit and credit balances for Common Members with NSCC, to reduce funds transfers for settlement, and acts as settlement agent for NSCC in this process. Further netting occurs through the use of Settling Banks for all Participants. Settlement payments to and from DTC and these Settling Banks are made through the National Settlement Service of the FRS ("NSS"), as further described in response to Principle 1 (Legal basis) and Principle 9 (Money settlements).

[11] *See* Annex D of the FMI Principles, where the various types of settlement systems are described.

Liquidity Resources for Settlement

DTC maintains a cash Participants Fund, with an approximate value of $1.7 BN as of June 30, 2018, including $1.15 BN, the aggregate amount of required deposits, and excess deposits of $0.6 BN. The required deposit for any Participant (a "Required Deposit") is based on the liquidity risk it poses to DTC, measured by its average net debit peak over a rolling 60 business day period. The aggregate amount of the Participants Fund is determined based on the amount that would be needed to complete net settlement if a Participant failed to settle. If a Participant defaults, its deposit to the Participants Fund is available to DTC to complete system-wide settlement.

DTC additionally maintains a committed line of credit with a consortium of lenders, for $1.9 BN. Any borrowing under the line must be secured by collateral of the defaulting Participant. (*See* response to Principle 5 (Collateral)).

The committed line of credit and the aggregate Participants Fund, together, provide liquidity resources sufficient to complete settlement among non-defaulting Participants, if the Participant or affiliated family of Participants with the largest settlement obligation defaults. These liquidity resources are further discussed in response to Principle 7 (Liquidity risk).

The Participants Fund is also a resource for losses arising out of a Participant default. Such a loss could be charged to the Participants Fund deposits of non-defaulting Participants ratably in accordance with their Required Deposits. (*See* response to Principle 13 (Participant-default rules and procedures)).

C. Key Metrics for DTC

Transaction Volumes and Values – split by MMI/non-MMI activity for the 12-month period ending June 30, 2018		
	Number of Transactions	**Dollar Value**
Total MMI volume	7.4 million	$84.5 trillion
Total non-MMI volume	278.1 million	$80.7 trillion
Average daily MMI volume	27 thousand	$308.5 billion
Average daily non-MMI volume	1.0 million	$294.5 billion
Peak daily MMI volume	64 thousand (on January 16, 2018)	$412.3 billion (on October 10, 2017)
Peak daily non-MMI volume	1.6 million (on June 26, 2018)	$494.4 billion (on December 19, 2017)

Net Debit Cap as of June 30, 2018
As of June 30, 2018, the maximum Net Debit Cap is $1.8 billion for an individual Participant and $2.85 billion for an affiliated family.

Participants Fund deposits as of June 30, 2018	(in thousands)
Participants Fund cash deposits*	$1,748,640
*Held at the Federal Reserve Bank of New York.	

Operational Systems Reliability:

When assessing Operational Systems Reliability, DTCC looks at the overall business service levels encompassing both mainframe and distributed systems. DTCC utilizes the IT Service Level Index to measure and track performance against Service Level Agreements (SLAs) across DTCC product areas. The Core IT Service Level Index reflects both service performance and service availability, and excludes SLAs that are not related to DTCC's SIFMUs (Strategically Important Financial Market Utilities). The aggregate performance against this Core IT SLA Index for the six-month period ending June 30, 2018 is 99.78 percent.

IV. Principle-by-Principle and Standard-by-Standard Summary Narrative Disclosure

Principle 1: Legal basis; CCAS 17Ad-22(e)(1)

Principle 1: Legal Basis	**CCAS 17Ad-22(e)(1)**
An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions. ***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. ***Key consideration 2***: An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations. ***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. ***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. ***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.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (1) Provide for a well-founded, clear, transparent, and enforceable legal basis for each aspect of its activities in all relevant jurisdictions.

Legal basis for material aspects of DTC's activities in all relevant jurisdictions

DTC has a well-founded, clear, transparent and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.

The material aspects of DTC's activities include:

(1) holding securities in physical form (but immobilized) or holding securities in dematerialized form;

(2) maintaining securities accounts for Participants;

(3) providing Participants with central safekeeping services and asset services, including the administration of corporate actions and redemptions;

(4) transfers and pledges of securities, and the settlement of transactions for Participants by book-entry as either a free delivery or DVP;

(5) netting;

(6) settlement finality;

(7) risk management;

(8) default management; and

(9) links with other CSDs and CCPs.

The relevant jurisdictions for all material aspects of DTC's activities are the United States and New York.

DTC is: (1) a New York limited purpose trust company, subject to regulation by the NYSDFS; (2) a clearing agency registered under the Exchange Act and a self-regulatory organization ("SRO"), subject to regulation by the SEC; (3) a state member bank of the FRS, subject to regulation by the FRB and supervised by the FRBNY under delegated authority from the FRB; and (4) a SIFMU under Title VIII of Dodd-Frank, subject to enhanced supervision by the SEC and the FRB.[12]

Participants enter into Participant's Agreements, Pledgees enter into Pledgee Agreements, and Limited Participants enter into applicable agreements with DTC (such Participant's Agreements, Pledgee Agreements and agreements of Limited Participants, collectively, "Participant's Agreements" in this context). Pursuant to these Participant's Agreements, Participants agree, *inter alia*, that the DTC Rules and By-Laws shall be a part of the terms and conditions of every contract or transaction that the Participant may make or have with DTC, and that the law of New York shall be the governing law of the Participant's Agreements. All bank Participants that settle for themselves and/or other Participants ("Settling Banks") enter into Settling Bank Agreements with DTC pursuant to which such Settling Banks agree, *inter alia*, that the law of New York shall be the governing law of the Settling Bank Agreement.

The DTC Rules provide that they shall be governed by, and construed in accordance with, the law of New York. The DTC Rules are public, and can be found on the DTCC website, www.dtcc.com.

Federal law, principally the Exchange Act, Title VIII of Dodd-Frank, and the Securities Act, governs the activities of DTC as a registered clearing agency, SRO and SIFMU, and the eligibility of securities for deposit and book-entry processing.

DTC ensures that its legal basis provides a high degree of legal certainty for each material aspect of its activities in all relevant jurisdictions:

1. By structuring its activities and Rules in accordance with the laws of the relevant jurisdictions.

DTC's activities and its Rules are structured in accordance with the laws of New York and the United States. The principal laws comprising the legal framework under which DTC operates include: (1) the New York Banking Law; (2) the New York Uniform Commercial Code (the "New York UCC"), particularly Articles 8 and 9; (3) general New York contract law; (4) the Exchange Act, particularly Sections 17A and 19; (5) the Securities Act; (6) the Federal Deposit Insurance Act, as amended ("FDIA"); (7) FDICIA; (8) the U.S. Bankruptcy Code (the "Bankruptcy Code"); (9) the Securities Investor Protection

[12] DTC maintains a trust office in New Jersey and is also qualified to do business in Florida, where it maintains certain operations.

Act of 1970, as amended ("SIPA"); and (10) Dodd-Frank, particularly Title II, regarding orderly liquidation authority ("OLA"), and Title VIII, regarding payment, clearing, and settlement supervision.

The ability of registered clearing agencies to enforce their rules to accomplish their core clearance and settlement and risk management functions has been confirmed by courts in the United States.[13] These courts have, in addition, held that state-law challenges to the existence or operation of SEC-approved programs of registered clearing agencies are preempted by federal law because they conflict with congressional directives as set forth in Section 17A of the Exchange Act.[14]

2. Through the Proposed Rule Change and Advance Notice Processes.

All DTC Rules are filed with and reviewed by the SEC.[15] As a clearing agency registered under Section 17A of the Exchange Act, an SRO subject to Section 19 of the Exchange Act, and a SIFMU under Title VIII of Dodd-Frank, DTC is required to follow: (1) a specified process[16] whenever it proposes a new rule or a change or amendment to its Rules (a "Proposed Rule Change," and the process, the "Proposed Rule Change Process"); and (2) a specified process[17] whenever it proposes to make a change to its rules, procedures or operations that could materially affect the nature or level of risks presented by DTC (a "Material Change," and the process, the "Advance Notice Process").

Under the Proposed Rule Change Process, generally, before a Proposed Rule Change may take effect: (1) the change and an explanatory statement must be filed with the SEC and posted by DTC on the DTCC website; (2) notice of the filing and the substantive terms or description of the change must be published by the SEC in the *Federal Register* for public review and comment; and (3) the SEC must approve the change (or the change must otherwise be permitted to take effect[18]). The SEC is required to disapprove a Proposed Rule Change if: (x) it does not find that the change is consistent with the requirements of the Exchange Act and the rules and regulations thereunder that are applicable to DTC; or (y) the FRB

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[13] *See generally* Pet Quarters, Inc. et al. v. Depository Trust and Clearing Corporation et al., 559 F.3d 772 (8th Cir. 2009); Whistler Investments, Inc. et al. v. The Depository Trust and Clearing Corporation et al., 539 F.3d 1159 (9th Cir. 2008); Nanopierce Technologies, Inc. et al. v. The Depository Trust and Clearing Corporation et al., 168 P.3d 73 (Nev. 2007).

[14] *See* Whistler Investments, 539 F.3d at 1167-68 (affirming the district court's dismissal of all claims on the grounds of preemption by Section 17A of the Exchange Act); Pet Quarters, 559 F.3d at 780-82; Nanopierce Technologies, 168 P.3d at 76 (concluding that "because the state law on which [plaintiffs] base their claims poses an obstacle to [DTCC, DTC and NSCC's] accomplishment of congressional objectives as explicitly stated in and gleaned from the [Exchange Act's] framework, and because [DTCC, DTC and NSCC's] compliance with both state and federal requirements concerning the securities transactions at issue in this case is impossible, section 17A of the [Exchange Act] preempts [plaintiffs'] claims.").

[15] The DTC Rules, as originally in effect at the time of DTC's registration as a clearing agency, were filed with and reviewed by the SEC as part of the registration process. Subsequent changes in the DTC Rules have been similarly filed with and reviewed by the SEC.

[16] This process is set forth in Section 19(b) of the Exchange Act and Exchange Act Rule 19b-4.

[17] This process is set forth in Section 806(e) of Dodd-Frank and Exchange Act Rule 19b-4.

[18] In certain limited circumstances, including fee changes, Proposed Rule Changes may become effective upon filing. Proposed Rule Changes may also become effective summarily if it appears to the SEC that such action is necessary for the protection of investors, the maintenance of fair and orderly markets or the safeguarding of securities or funds. However, any Proposed Rule Change that becomes effective upon filing or summarily is subject to SEC review and the right of the SEC to take action thereafter.

determines, prior to approval of the change by the SEC, that the change is inconsistent with the safeguarding of securities and funds in the custody or control of DTC or for which it is responsible.

Similar submission, disclosure and publication requirements apply to the Advance Notice Process, where, generally, DTC must provide 60 days advance notice to the SEC before a Material Change may take effect, describing the nature of the change, its expected effects on risks to DTC, its Participants or the market, and how DTC plans to manage any identified risks. A copy of the notice must also be: (1) provided by DTC to the FRB; (2) posted by DTC on the DTCC website; and (3) published by the SEC in the *Federal Register* for public review and comment. The SEC must consult with the FRB in regard to a Material Change, and may object to the change if it determines that the change would be inconsistent with the objectives and principles for risk management standards described in Section 805(b) of Dodd-Frank or the rules and regulations thereunder that are applicable to DTC.

3. By requiring or otherwise obtaining legal opinions, analyses or advice.

DTC requires applicants for membership to provide a legal opinion to the effect that the Participant's Agreement – which provides that the DTC Rules and By-Laws shall be a part of the terms and conditions of every contract or transaction that the Participant may make or have with DTC – will be binding and enforceable on the applicant when it becomes a Participant. To the extent that the applicant is organized under the laws of a jurisdiction outside of the United States, DTC relies on a legal opinion with respect to the laws of the non-U.S. jurisdiction that specifically addresses issues such as DTC's ability to enforce its Rules (including its netting and default management rules) under the applicable insolvency regime of the jurisdiction, and the enforceability of the choice of New York law to govern the Participant's Agreement and Rules. DTC likewise may, before it accepts a security for deposit, require an opinion that the security meets the eligibility requirements set forth in the Rules. DTC also obtains legal analyses or advice as it deems appropriate in connection with new services, changes in law, and other matters.

DTC's Role as a CSD

Pursuant to its Rules, DTC acts as a CSD and operates a securities settlement system. In this connection, its activities include: (1) holding securities in physical form (but immobilized) or holding securities in dematerialized form; (2) maintaining securities accounts for Participants; (3) providing Participants with central safekeeping services and asset services, including the administration of corporate actions and redemptions; and (4) transfers and pledges of securities, and the settlement of transactions for Participants by book-entry, free of payment or DVP.

The legal basis for these activities may be found in: (1) the New York Banking Law, pursuant to which DTC has the authority to hold securities and other financial assets in custody, and provide related services; (2) the New York UCC, which contains a comprehensive regime for the operation of clearing corporations (including registered clearing agencies such as DTC) in the indirect holding system, and which also governs the transfer and pledge of interests in securities on the books of DTC; (3) general New York contract law, which supports the enforceability of the arrangements contained in the DTC Rules (which form a contract between DTC and its Participants); (4) the Exchange Act, which provides for the registration and regulation of clearing agencies, and also prescribes standards for their operation and governance; (5) Title VIII of Dodd-Frank, which provides for the supervision of SIFMUs, and also prescribes standards for their operation and governance; and (6) the Securities Act, with reference to which DTC determines the eligibility of securities for deposit and book-entry processing. Additional authority for various aspects of the activities of DTC may be found in FDIA, FDICIA, the Bankruptcy Code and SIPA.

Netting Arrangements

DTC's netting arrangements are supported by law.

As a general matter, U.S. law recognizes the critical importance of netting arrangements relating to securities transactions. The definition of "clearing agency" in the Exchange Act expressly indicates that one of the roles of a clearing agency is to "reduce the number of settlements of securities transactions." FDICIA supports "netting contracts" (which include the rules of a clearing organization), providing for the netting of payment obligations and payment entitlements between and among clearing organizations (including registered clearing agencies such as DTC) and their members. "Payment" includes both cash payments and noncash deliveries. The DTC Rules, as well as the netting and limited cross guaranty agreements that DTC has with other registered clearing agencies,[19] are "netting contracts" within the meaning of FDICIA.

FDICIA provides that: (1) provisions of any security agreement or arrangement or other credit enhancement related to one or more netting contracts between any two members of a clearing organization (including the clearing organization itself) shall be enforceable in accordance with their terms (with a limited exception not applicable to DTC); (2) notwithstanding any other provisions of state or federal law (with limited exceptions), the payment entitlements and obligations of members of a clearing organization (including the clearing organization itself) shall be terminated, liquidated, accelerated and netted in accordance with and subject to the conditions of any applicable netting contract; and (3) no stay, injunction, avoidance, moratorium or similar proceeding or order, whether issued or granted by a court, administrative agency or otherwise, shall limit or delay application of otherwise enforceable netting contracts.

The provisions of FDICIA applicable to clearing organization netting therefore override any conflicting provisions of state or federal law, including the Bankruptcy Code, SIPA and FDIA (except to the extent otherwise expressly provided). The netting provisions of FDICIA were designed to reduce systemic risk to the financial markets. In addition, amendments to FDIA, FDICIA, the Bankruptcy Code and SIPA in 2005 and 2006 included provisions that validate master netting agreements in respect of securities, commodities, forward, swap and repurchase transactions.

DTC's legal basis supports the finality of transfers of financial instruments and funds, and the effectiveness of its risk management and default management rules and procedures.

As a general matter, U.S. law, including general New York contract law, the New York UCC, New York Banking Law, the Exchange Act, FDIA, FDICIA, the Bankruptcy Code, SIPA and Title II of Dodd-Frank, supports the settlement of securities transactions in accordance with the DTC Rules and the ability of DTC to effectuate its risk management and default management rules and procedures.

Settlement Finality

The DTC Rules, which have been approved by the SEC and which form a part of the terms and conditions of every contract or transaction that a Participant may make or have with DTC, specify with particularity when transactions processed in the DTC system become final and irrevocable. Free and valued deliveries of securities become final and irrevocable as to the deliverer when DTC debits the securities from the securities account of the deliverer. Free deliveries of securities become final and binding as to the receiver when DTC credits the securities to the securities account of the receiver. Valued deliveries of securities become final and binding as to the receiver: (1) when, intra-day, the securities are re-transferred in the

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[19] These arrangements are described in responses to Principle 9 (Money settlements), Principle 13 (Participant-default rules and procedures) and Principle 20 (FMI links).

DTC system (which a receiver may only do if the transaction satisfies applicable risk management controls); or (2) at end-of-day when the receiver pays its net settlement debit or DTC determines that the receiver does not have a net settlement debit. These provisions with respect to the finality of transactions processed through the DTC system are enforceable under general New York contract law, the New York UCC and the Exchange Act, and are protected in the event of the insolvency of a Participant (with limited exceptions) by relevant provisions of FDIA, FDICIA, the Bankruptcy Code, SIPA and Title II of Dodd-Frank.

DTC utilizes the NSS, a payment system operated by the FRS, to effect end-of-day net money settlement.[20] As noted in the General Background (Key Services: System Design and Operation) above, money settlement occurs at the end of the day. As part of this process, and to further reduce the number of funds transfers required to be made, each Participant's final net debit balance or credit balance at DTC is netted with its net debit or credit at NSCC. Following an acknowledgement process, Settling Banks, which may settle on behalf of multiple DTC Participants and NSCC Members, have the consolidated net balances of their respective customers further netted to produce a single Settling Bank consolidated net-net debit or net-net credit. On each settlement day, DTC, on its own behalf and as NSCC's settlement agent, collects net-net debits from, and distributes net-net credits to, Settling Banks through the NSS.[21] Funds transfers become final at the time that funds are moved through NSS.

Other types of payments made to and from DTC are paid by wire transfer through the Fedwire® Funds Service ("Fedwire®"), a payment system operated by the FRS.[22] Payment to the receiving party through Fedwire® is final and irrevocable upon the crediting of the receiving party's account, or when the payment order is sent to the receiving party, whichever is earlier. Payment orders generally are processed immediately following the applicable Federal Reserve Bank's receipt of a transfer message.[23]

Risk Management

The DTC Rules contain a number of risk management tools and controls designed to identify, measure and monitor the credit and liquidity risks associated with the end-of-day net funds settlement of securities transactions. These include: (1) required deposits to the Participants Fund, calculated on the basis of a Participant's historical net debits; (2) Net Debit Caps, also calculated on the basis of a Participant's historical net debits, which limit the size of the Participant's permissible intraday net debit balance; (3) the collateralization of DVP transactions, tested and controlled by a Collateral Monitor designed to ensure that DTC has sufficient collateral to pledge or liquidate to satisfy the net debit obligation of a Participant, or affiliated family of Participants, that fails to settle; and (4) a committed line of credit, currently $1.9 billion, which DTC may use to complete end-of-day settlement notwithstanding the failure to settle of the Participant or affiliated family of Participants with the largest settlement obligation. *See* responses to Principle 4 (Credit risk), Principle 5 (Collateral) and Principle 7 (Liquidity risk).

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[20] NSS is governed by Federal Reserve Bank Operating Circular 12 "Multilateral Settlement."

[21] Each Settling Bank is required to have an account at a Federal Reserve Bank to be debited or credited in this process.

[22] Funds transfers through Fedwire® are governed by Subpart B of Regulation J, which incorporates the provisions of Article 4A of the UCC, and Federal Reserve Bank Operating Circular 6 "Funds Transfers Through the Fedwire® Funds Service."

[23] *See* FRB, The Fedwire® Funds Service Assessment of Compliance with the Core Principles for Systemically Important Payment Systems, July 2014, at 23, *available at* http://www.federalreserve.gov/paymentsystems/files/fedfunds_coreprinciples.pdf.

The risk management tools and controls contained in the DTC Rules (which form a contract between DTC and its Participants) are enforceable under general New York contract law, the New York UCC and the Exchange Act, and are protected in the event of the insolvency of a Participant (with limited exceptions) by relevant provisions of FDIA, FDICIA, the Bankruptcy Code, SIPA and Title II of Dodd-Frank.

Default Management

The DTC Rules contain a number of default management provisions that are implemented in the event of the failure of a Participant to settle its end-of-day net debit obligation. In order to complete settlement in this circumstance, DTC may charge or apply to the obligation the Participants Fund and/or DTC may borrow under its committed line of credit, secured by collateral of the defaulting Participant.[24] The DTC Rules also provide for conditions under which DTC may determine to cease to act for, or limit services to, a Participant, including in the event of insolvency of the Participant. The default management provisions contained in the DTC Rules (which form a contract between DTC and its Participants) are enforceable under general New York contract law, the New York UCC and the Exchange Act, and are protected in the event of the insolvency of a Participant (with limited exceptions) by relevant provisions of FDIA, FDICIA, the Bankruptcy Code, SIPA and Title II of Dodd-Frank.

(a) FDICIA

As noted above, FDICIA supports the effectiveness of "netting contracts", which include the rules of a clearing organization, providing for the netting of payment obligations and payment entitlements between and among clearing organizations and their members. "Payment" includes both cash payments and noncash deliveries. The DTC Rules are a "netting contract" within the meaning of FDICIA.

Further, Section 404(h) of FDICIA provides that the provisions of any security agreement or arrangement or other credit enhancement related to one or more netting contracts between any two members of a clearing organization (including the clearing organization itself) shall be enforceable in accordance with their terms (with a limited exception not applicable to DTC), and shall not be stayed, avoided or otherwise limited by any state or federal law (except to the extent expressly stated to be applicable). FDICIA also provides that: (1) Section 404 of FDICIA shall be given effect notwithstanding that a member is a failed member; and (2) no stay, injunction, avoidance, moratorium or similar proceeding or order, whether issued or granted by a court, administrative agency, or otherwise, shall limit or delay application of otherwise enforceable netting contracts in accordance with Section 404 of FDICIA.

(b) The Bankruptcy Code, SIPA, FDIA and Title II of Dodd-Frank

The insolvency regime applicable to a Participant is determined by the jurisdiction in which the Participant is organized and, in the U.S., by the form of organization of the Participant and its regulatory oversight; these regimes in the U.S. include Chapter 11 of the Bankruptcy Code (reorganization), Chapter 7 of the Bankruptcy Code (liquidation), SIPA (with respect to members of the Securities Investor Protection Corporation ("SIPC")), FDIA (with respect to insured depository institutions) and Title II of Dodd-Frank regarding OLA (with respect to covered financial companies).[25]

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[24] The DTC Rules also provide that DTC may borrow funds needed to complete settlement from Participants by credit reductions to their settlement accounts, secured by collateral of the defaulting Participant. This is a provision that DTC treats as a tool reserved for extreme circumstances.

[25] As discussed below, legal risk relating to the insolvency regime applicable to a non-U.S. Participant is identified, analyzed and mitigated through the use of legal opinions, analyses and/or advice.

The insolvency of a U.S. Participant that is not a member of SIPC, insured depository institution or covered financial company is typically handled under Chapter 11 or 7 of the Bankruptcy Code. Although the automatic stay, prohibitions on ipso facto provisions and avoidance powers of the bankruptcy trustee are generally applied with respect to cases conducted under Chapters 11 and 7 of the Bankruptcy Code, the Bankruptcy Code contains various exceptions and safe harbors to those provisions that support the finality of securities transactions processed through securities clearing agencies and the clearing agency's closeout of insolvent members.[26] The Bankruptcy Code also provides similar exceptions and safe harbors that apply to master netting agreements.

The insolvency of a Participant that is a member of SIPC, and whose customers would be entitled to advances from the SIPC fund created under SIPA to protect customers, is handled under SIPA. Although SIPC proceedings generally involve (i) a protective decree of a federal district court that, among other things, freezes a member's assets, and (ii) the application of the Bankruptcy Code's automatic stay and avoidance powers, there are exceptions and safe harbors in SIPA, as well as provisions typically included in such protective decrees, that support the finality of securities transactions processed through securities clearing agencies and the closeout of insolvent members.[27]

The insolvency and receivership of a Participant that is an insured depository institution is handled under FDIA. Although stays, prohibitions on walkaway provisions, avoidance powers of the Federal Deposit Insurance Corporation ("FDIC"), and powers of the FDIC to disaffirm or repudiate certain contracts and leases are generally applied in cases under FDIA, there are exceptions and safe harbors in FDIA that support the finality of securities transactions processed through securities clearing agencies.[28]

FDIA does provide for up to a one-business-day stay of closeout actions while the FDIC determines whether to transfer all the insured depository institution's positions to a successor institution. In the event

[26] Examples of such exceptions and safe harbors include: Sec. 362(b)(6) (exceptions from the automatic stay); Sec. 546(e) (limitations on avoidance powers); Sec. 555 (contractual right to liquidate, terminate, or accelerate a securities contract); Sec. 561 (contractual right to terminate, liquidate, accelerate, or offset under a master netting agreement and across contracts; proceedings under chapter 15).

[27] Examples of these exceptions and safe harbors include 15 U.S.C. §78eee(b)(2)(C), which provides that the automatic stay shall not apply to "any contractual rights [including rights set forth in a rule or bylaw of a securities clearing agency] of a creditor to liquidate, terminate, or accelerate a securities contract, commodity contract, forward contract, repurchase agreement, swap agreement, or master netting agreement, as those terms are defined in [the Bankruptcy Code], to offset or net termination values, payment amounts, or other transfer obligations arising under or in connection with one or more of such contracts or agreements, or to foreclose on any cash collateral pledged by the debtor, whether or not with respect to one or more of such contracts or agreements." Moreover, protective decrees often recite many of the stay exceptions and safe harbors found in the Bankruptcy Code and SIPA and also contain additional stay exceptions and safe harbors not contained in the Bankruptcy Code and SIPA, including those designed to enable clearing agencies to timely effectuate a closeout.

[28] Examples of these exceptions and safe harbors include 12 U.S.C. § 1821(e)(8)(C), which provides that, notwithstanding any federal or state law relating to the avoidance of preferential or fraudulent transfers, the FDIC, whether acting as such or as conservator or receiver of an insured depository institution, "may not avoid any transfer of money or other property in connection with any qualified financial contract [including a securities contract] with an insured depository institution" (except in cases involving an intent to hinder, delay or defraud). FDIA also provides for: (1) the right to exercise any right to liquidate a qualified financial contract ("QFC") with an insured depository institution which arises upon the appointment of the FDIC as receiver at any time after such appointment; (2) the right to exercise any right under a security agreement or other credit enhancement that relates to one or more such QFCs; and (3) the right to exercise any right to offset or do closeout netting in connection with one or more such QFCs, including under any master agreement for such QFCs (such as the DTC Rules).

that the FDIC is appointed as receiver for a Participant, DTC expects to be in discussions with the FDIC regarding DTC's acceptance of such a successor institution as a substitute Participant.

The provisions of Title II of Dodd-Frank regarding OLA provide for the appointment of the FDIC as receiver for certain systemically important entities (defined in Title II of Dodd-Frank as "covered financial companies"). As under FDIA, stays, prohibitions on walkaway provisions, avoidance powers of the FDIC, and powers of the FDIC to disaffirm or repudiate certain contracts and leases are generally applied in cases under OLA. There are also exceptions and safe harbors under OLA which are similar to those under FDIA that support the finality of securities transactions processed through securities clearing agencies. As under FDIA, OLA provides for up to a one-business-day stay of closeout actions while the FDIC determines whether to transfer all the covered financial company's positions to a successor institution. In the event that the FDIC is appointed as receiver for a Participant under OLA, DTC expects to be in discussions with the FDIC regarding DTC's acceptance of such a successor institution as a substitute Participant.

The exceptions and safe harbors contained in FDICIA, the Bankruptcy Code, SIPA, FDIA and Title II of Dodd-Frank that support the finality of securities transactions and the closeout of insolvent Participants provide DTC with a high degree of certainty as to the effectiveness of its risk management and default management rules and procedures.

Transparency of the DTC Rules

The laws and regulations governing the DTC Rules and DTC's material contracts are clearly stated, internally coherent and readily accessible to Participants and the public.

DTC makes the following resources, among others, available to the public on the DTCC website (www.dtcc.com): (1) the DTC Rules; (2) filings of Proposed Rule Changes and advance notices of Material Changes; (3) white papers and other reports addressing initiatives under consideration or in process, or other issues of import to stakeholders, including the membership; (4) Important Notices that address issues of import to Participants (including notice of when DTC ceases to act for a Participant, and information as to how it will handle pending transactions of that Participant); and (5) this Disclosure Framework.

The Proposed Rule Change Process and Advance Notice Process, as described above, provide for proposed changes to be made publicly available – both by the SEC, by publication in the *Federal Register*,[29] and by DTC by posting on the DTCC website. Interested parties are provided an opportunity to comment publicly on such proposals, including the ability to raise any applicable concerns. Any such concerns would be addressed or responded to as part of the SEC's review and approval/non-objection process.

The SEC is required to disapprove a Proposed Rule Change: (1) if it does not find that the change is consistent with the requirements of the Exchange Act and the rules and regulations thereunder that are applicable to DTC; or (2) the FRB determines, prior to approval of the change by the SEC, that the change is inconsistent with the safeguarding of securities and funds in the custody or control of DTC or for which it is responsible. Similarly, the SEC may object to a Material Change if it determines that the change is inconsistent with the objectives and principles for risk management standards described in Section 805(b) of Dodd-Frank or the rules and regulations thereunder that are applicable to DTC.

[29] The SEC also makes proposed changes publicly available by posting them on its website.

Degree of certainty for rules and procedures; conflict of laws issues

DTC achieves a high level of confidence that its Rules and material contracts are enforceable in all relevant jurisdictions:

1. By obtaining legal opinions, analyses and advice and other legal comfort.

The DTC Rules and DTC's material contracts are governed by the law of New York and are adjudicable in state and federal courts located in New York. As described above, U.S. and New York law provide a clear and comprehensive framework for the enforceability of the DTC Rules and DTC's material contracts.

DTC identifies, analyzes and mitigates legal risks arising from potential conflict of law issues in a variety of ways. DTC's operations are based in the United States, and Participants are predominantly U.S.-domiciled entities.

Prior to accepting a non-U.S. Participant, DTC identifies, analyzes and mitigates legal risks arising from potential conflicts of laws. DTC obtains a legal opinion from counsel in the applicant's home jurisdiction as to (1) DTC's ability to enforce its Rules (including its netting and default management rules) under the applicable insolvency regime of the jurisdiction and (2) the enforceability of (i) the choice of New York law to govern the Participant's Agreement and Rules, (ii) an applicant's agreement to irrevocably (a) waive all immunity from DTC's attachment of the applicant's own assets in the United States, (b) submit to the jurisdiction of a court in the United States, and (c) waive any objection to the laying of venue in a court in the United States; and (iii) an applicant's further agreement (a) that any judgment obtained against the applicant by DTC may be enforced in the courts of any jurisdiction where the applicant or its property may be located, and (b) that the applicant will irrevocably submit to the jurisdiction of such courts.

These opinions facilitate analysis of any legal risk that may arise as a result of an applicant's participation in DTC. DTC can mitigate conflicts of laws risks or other legal risks that may be identified as a result of such opinions and analysis by, among other things, imposing conditions on membership or additional requirements and/or requiring special representations from an applicant.[30]

DTC also obtains legal opinions, analyses and/or advice, as it deems necessary or appropriate, to confirm, among other things, that its Rules and material contracts are consistent with relevant laws and regulations prior to becoming effective. DTC will also obtain legal opinions, analyses and/or advice in the future, as it deems necessary or appropriate, to address new services, changes in law or other matters.

2. Through the Proposed Rule Change and Advance Notice Processes.

As noted above, generally before a Proposed Rule Change may take effect, the SEC must approve the change. In order to do so, it must determine that the change is consistent with the requirements of the Exchange Act and the rules and regulations thereunder that are applicable to DTC. Similarly, generally before a Material Change takes effect, the SEC may object to the change if it determines that the change is inconsistent with the objectives and principles for risk management standards described in Section 805(b) of Dodd-Frank or the rules and regulations thereunder that are applicable to DTC. These processes, together with the opportunity for public review and comment provided thereby, provide a clear record and statutory basis for the enforceability of the DTC Rules.

[30] For example, DTC reserves the right to require a non-U.S. Participant to deposit additional amounts to the Participants Fund and to post a letter of credit in an instance where DTC, in its sole discretion, believes the entity presents legal risk.

Principle 2: Governance; CCAS 17Ad-22(e)(2)

Principle 2: Governance	CCAS 17Ad-22(e)(2)
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. ***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. ***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. ***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. ***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). ***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. ***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	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (2) Provide for governance arrangements that: (i) Are clear and transparent; (ii) Clearly prioritize the safety and efficiency of the covered clearing agency; (iii) Support the public interest requirements in Section 17A of the Act (15 U.S.C. 78q-1) applicable to clearing agencies, and the objectives of owners and participants; (iv) Establish that the board of directors and senior management have appropriate experience and skills to discharge their duties and responsibilities; (v) Specify clear and direct lines of responsibility; and (vi) Consider the interests of participants' customers, securities issuers and holders, and other relevant stakeholders of the covered clearing agency.

should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board. ***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.	

Ownership and Board structure

DTC is a wholly-owned subsidiary of DTCC. DTCC is user owned and governed pursuant to a Shareholders Agreement.[31] The DTCC common shareholders include approximately 285 banks, broker-dealers, and other companies in the financial services industry that are participants of one or more of DTCC's clearing agency subsidiaries, including DTC. DTCC common shares are allocated to participants in accordance with a formula based on their relative usage of the services of the three clearing agencies.

Individuals elected to the DTCC Board of Directors are also elected to the Boards of Directors of DTC and of its affiliates, NSCC and FICC, and these boards generally operate together with the DTCC Board (collectively, the "Board"). DTCC is a New York business corporation. As such, DTCC's business is subject to the oversight of the Board, and managed on a day-to-day basis by DTCC's senior management. DTC is a limited purpose trust company organized under the New York Banking Law and its governance is, accordingly, subject to that law as well as applicable NY corporate law.

The Board is currently composed of 19 directors. Twelve of the directors represent clearing agency participants, including broker/dealers, custodian and clearing banks and investment institutions ("participant directors"); three are non-participant directors; two directors are designated by DTCC's Series A and Series B preferred shareholders (ICE and the Financial Industry Regulatory Authority, respectively); one director is DTCC's Non-Executive Chairman; and one director is from DTCC senior executive management (the President and Chief Executive Officer).[32] The non-participant directors are not employed by any user of DTCC's services. Non-participant directors bring additional skills and expertise to the Board, mitigate potential conflicts of interest among participant directors and introduce different perspectives. Collectively, the participant directors, non-participant directors, the Non-Executive Chairman, the management director and representatives of the Series A and B preferred shareholders provide a diverse representation of DTCC's stakeholders and ensure that the broad interest of the public is

[31] The Fourth Amended and Restated Shareholders Agreement, dated January 27, 2015 (the "Shareholders Agreement"), among DTCC, DTC, NSCC, FICC, and the common shareholders, Series A preferred shareholders and Series B preferred shareholders of DTCC.

[32] As part of its capital raising plan, in 2015 DTCC issued an additional series of preferred stock via a private 144A offering to qualified institutional investors. These shares, 1,600 shares of Series C Fixed-to-Floating Rate Non-Cumulative Perpetual Preferred Stock, have a liquidation preference of $250,000 per share (the "Series C Preferred Stock"). The Series C Preferred Stock does not have any voting rights, except in specified circumstances (including with respect to fundamental changes in the terms of the Series C Preferred Stock and the right to appoint two directors in the event of certain dividend arrearages) and except as specifically required by New York law.

represented. All directors, except those designated by the Series A and B preferred shareholders are elected annually to one-year terms.

As noted in the Board of Directors Mission Statement and Charter (available on the DTCC website), the Board is responsible for providing direction to and overseeing the conduct of the affairs of the Corporation in the interests of the Corporation, its shareholders and other stakeholders including investors, issuers and participants in the financial markets which DTCC serves. The Board plays a key role in policy development, establishment of corporate objectives, financial management, and operational planning.

The names and backgrounds of the members of the Board and DTCC senior management are available on the DTCC website.

Mission and objectives

DTC's objectives are aligned with those of its parent company, DTCC, as targeted to the services of DTC and its membership base. DTCC's long term objective is to safeguard the stability and integrity of global financial markets, and to drive positive change. As expressed on the DTCC website:

> Risk management is the primary function of DTCC and has been since the organization's inception more than 40 years ago. The company's risk management role entails effective and efficient identification, measurement, monitoring and control of credit, market, liquidity, systemic, operational and other risks for the DTCC enterprise, its users and the marketplace.

In applying these objectives to the Board's oversight role, the Mission Statement provides that:

> The Board will discharge its oversight responsibilities and exercise its authority in a manner, consistent with applicable legal and regulatory provisions and with regulatory expectations of a systemically important financial market infrastructure, that:
>
> - Promotes the safe, sound and efficient operation of DTCC and its subsidiaries, including the clearance and settlement activities conducted by its registered clearing agency subsidiaries;
>
> - Fosters the safe, sound and efficient operation of services provided by DTCC and its subsidiaries supporting the global system for processing transactions in financial instruments and related activities;
>
> - Seeks to develop the services and businesses of DTCC and its subsidiaries in a manner promoting further safety, soundness and efficiency broadly in the global system for processing transactions in financial instruments and related activities; and
>
> - Leverages DTCC's role as a leader in financial services with respect to risk management and systemic risk management, promoting sound practices in governance and in transparency to its membership and user community and in its role as a systemic component of the financial market infrastructure supporting the operation of orderly and efficient markets in the interest of the investing public.

Collectively, these objectives are designed, particularly with respect to the activities of DTC, FICC and NSCC, to promote the prompt and accurate clearance and settlement of securities transactions and the safeguarding of securities and funds in the custody or control of DTC, FICC and NSCC or for which they are responsible.

DTCC's performance management framework consists of two major components: annual corporate goals ("Corporate Goals") and a "Balanced Business Scorecard" ("BBS"). Together they provide the basis for assessing DTCC's overall performance in support of the industry and financial markets throughout the year. The Corporate Goals are strategic in nature, focusing on the key projects or improvements that DTCC plans to deliver during the year. The BBS focuses more on actual performance, assessing it against a series of measures organized into four quadrants (Stakeholder/Financial, Client Experience, Operational Execution, and Human Capital). In designing these metrics and setting targets for them, the BBS deliberately recognizes that various corporate priorities must be "balanced" to achieve the optimum level of organizational achievement.

In furtherance of its Mission Statement, relevant public interest considerations are identified and reflected in DTCC's objectives through the Corporate Goals. The Corporate Goals are developed based on consultation with individual participants, members of the Board, standing advisory councils, industry associations, regulators and others. Individual product managers are actively engaged with relevant industry groups and associations in partnering to identify ways that the DTCC can continue to develop operational, technological and risk mitigation solutions for the financial services industry.

DTCC management prioritizes safety and efficiency through review of businesses and initiatives by enterprise-wide management committees organized to focus on such issues, including the Management Committee, the Management Risk Committee ("MRC"), the Investment and Operating Committee and the IT Governance Committee. Initiatives are also reviewed at the Board level by the relevant Board committee, as appropriate. For example, risk initiatives are reviewed by the MRC, and escalated as appropriate to the Board Risk Committee. The Compensation and Human Resources Committee, in consultation with the Board Risk Committee, seeks to ensure that compensation policies do not encourage excessive risk-taking and meet evolving standards on compensation practices.

DTCC works to foster a culture of openness and dialogue at the management and Board levels with its regulators (sometimes referred to as the "supervisors").

Governance structure and arrangements

The governance arrangements, which also identify the roles and lines of responsibility and accountability within DTCC, are described in by-laws, the Board of Directors Mission Statement and Charter, the Procedures for the Annual Nomination and Election of the Board, and each of the Board Committee Charters, all of which are publicly available on the DTCC website. The Board Charter includes provisions relating to board composition, meetings, election of directors, board committees, duties and responsibilities of directors, and director qualification standards. With respect to management, the roles and responsibilities of management, including reporting lines, are provided in job descriptions.

The Board currently has designated six (6) standing Committees, and each director serves on at least one Board committee. The committees are briefly described below:

Audit Committee: The Board has established an Audit Committee to assist the Board in overseeing: (1) the integrity of DTCC's financial statements and financial reporting; (2) the overall effectiveness of DTCC's internal control environment; (3) the effectiveness of DTCC's process for monitoring compliance with applicable laws, regulations and the Code of Conduct; (4) the performance and coverage of the internal audit function; (5) the external auditor's independence, performance and coverage; (6) functional areas within the Committee's jurisdiction to ensure proper communication of any issues or risks material to the clearing agencies; and (7) legal, compliance and regulatory risks as they relate to DTCC or its subsidiaries or any clearing agency's provision of clearance and settlement services as an industry utility. The roles and responsibilities of the Audit Committee are outlined in the DTCC Audit Committee Charter.

Businesses, Technology & Operations Committee: The Board has established a Businesses, Technology & Operations Committee (the "BTOC") to facilitate the oversight of DTCC's business strategy and assess performance against that strategy, as well as oversight of the operational and technology capabilities that support DTCC's business lines that are responsible for implementing that strategy. Consistent with this purpose, the BTOC oversees the performance of DTCC's existing businesses, including the review and approval of plans and fees of such businesses and extensions to such businesses. The BTOC reviews and recommends for Board approval material proposed DTCC businesses or services, with particular regard to (i) any significant risks created by the proposed businesses or services, for DTCC, its subsidiaries and the financial system more generally, as well as the measures to control and mitigate or eliminate such risks, and (ii) whether there is an acceptable business case for the proposed activity. The BTOC also oversees management's operation and development of the infrastructure capabilities, technology resources, processes and controls necessary to fulfill DTCC's service delivery requirements, and monitor key operational and technology metrics associated with the delivery of DTCC's services. The roles and responsibilities of the BTOC are outlined in the Businesses, Technology & Operations Committee Charter.

Compensation and Human Resources Committee: The Board has established a Compensation and Human Resources Committee to assist it in overseeing DTCC's human capital management programs to ensure that they are aligned with DTCC's strategic goals and objectives and to continually improve business performance. Programs included in the scope of the Compensation and Human Resource Committee's responsibilities include those related to talent acquisition, retention, executive leadership development, performance management, succession planning, total rewards, diversity and the fostering of a high performance corporate culture. The Compensation and Human Resources Committee further advises on the extent to which human capital management programs are periodically reviewed and revised so as to be in alignment with industry and regulatory best practices. The roles and responsibilities of the Compensation and Human Resources Committee are outlined in the Compensation and Human Resources Committee Charter.

Executive Committee: The Board has established an Executive Committee to exercise powers of the Board in the event that an emergency or other time-sensitive matter arises and it is not practicable to assemble the entire Board. The roles and responsibilities of the Executive Committee are outlined in the Executive Committee Charter.

Governance Committee: The Board has established a Governance Committee to assist the Board in: (1) identifying, screening and reviewing individuals qualified to serve as directors and recommending to the Board candidates for nomination for election at the annual meeting of shareholders or to fill Board vacancies; (2) developing, recommending to the Board and overseeing implementation of DTCC's corporate governance policies and procedures and the Board Code of Ethics; and (3) reviewing on a regular basis the overall corporate governance framework of DTCC and recommending enhancements and/or changes when necessary. The roles and responsibilities of the Governance Committee are outlined in the Governance Committee Charter.

Risk Committee: The Board has established a Risk Committee (the "Board Risk Committee" or "BRC") to assist the Board in fulfilling its responsibilities for oversight of DTCC's risk management activities focusing on the following critical aspects: (1) oversight of risk management systems and processes designed to identify and manage credit, market, liquidity and operational risks to DTCC and its subsidiaries; and (2) due to the Company's unique capabilities and position, oversight of the Company's efforts to mitigate certain "systemic risks" that may undermine the stable operation of the financial system. To provide additional dedicated focus and align oversight of specialized risk categories with the domain expertise of other committees that have been established, or may be established from time to time, by the Board, certain risks will be overseen by other Board committees. While these risks will not be directly overseen by the BRC, the BRC will, nonetheless, coordinate risk oversight with these Board committees as appropriate to achieve a comprehensive and holistic oversight of the organization's risk-related matters. The Board retains the authority to review matters brought to the BRC and request immediate escalation to the full Board should the Board deem appropriate. The roles and responsibilities of the BRC and its governance arrangements, which have been designed to prioritize the clearing agencies' safety and efficiency in support of the public interest and the prompt and accurate clearance and settlement of securities transactions, as well as the objectives of clearing agency members and participants, as required under the Exchange Act, are outlined in the Risk Committee Charter.

Review of Board Performance and Conflicts of Interest

The Governance Committee of the Board reviews and addresses director conflicts of interest. Directors are subject to the DTCC Board Code of Ethics. The Board Code of Ethics, which is available on the DTCC website, describes how conflicts of interest are identified and how they are to be addressed. The Board Code of Ethics is reviewed by the Governance Committee.

The Board conducts an annual self-evaluation of its performance and the performance of its Committees. The Governance Committee is responsible for coordinating and providing oversight of the annual self-evaluation, including determining the methodology for the evaluation, and overseeing its execution. The results of the self-assessments are reviewed by the respective committee, the Governance Committee and the Board.

Director Nomination Process

As a registered clearing agency, DTC is subject to Section 17(A) of the Exchange Act which provides that the rules of a clearing agency must assure a "fair representation of its shareholders (or members) and participants in the selection of its directors and administration of its affairs…." DTCC's shareholders are the participants and members of its three clearing agency subsidiaries, including DTC Participants. This "fair representation" requirement is currently satisfied by allocating shares, pursuant to the Shareholders Agreement, with attendant voting rights to elect directors, in accordance with a formula based on usage of the services of the three clearing agencies.

Each year, typically in December, a nominations solicitation letter along with a copy of the Procedures for the Annual Nomination and Election of the Board of Directors ("Board Election Procedures") is sent to the participants of DTC, NSCC and FICC, and is also provided via Important Notice on DTCC's website. This begins the process by which participants of the clearing agency subsidiaries may nominate individuals for election as participant directors. Using cumulative voting, DTCC's common shareholders vote on director nominees at the annual shareholders' meeting.

The Board Election Procedures set forth the skill sets that are necessary for Board members. The skill sets are reviewed annually by the Governance Committee and changes, if any, are recommended to the Board for approval.

Each director is required to complete a skills and experience questionnaire. In accordance with its Committee Charter, on a yearly basis, the Governance Committee reviews the skills and experience of the current directors and determines, among other things, whether there are any gaps in skills or experiences that would be desirable to have filled by a new director nominee. Each Board Committee Charter contains a list of skill sets that the committee members should have.

Individuals are nominated for election as directors based on their ability to represent DTCC's diverse base of participants, and DTCC's governance is specifically structured to help achieve this objective. The non-participant Board members are individuals with specialized knowledge of financial services, but who bring an independent perspective since they are not employed by firms that use clearing agency services. Collectively, the Board composition reflects an appropriate balance of participant and non-participant directors. Board members serve on a variety of Board committees with responsibility to oversee aspects of DTCC and its clearing agency subsidiaries' operations.

The Board plays an integral role in the oversight of the firm, ensuring DTCC services (including those provided by DTC) continue to meet the evolving needs of participants.

Management experience, skills, integrity and performance

DTCC has talent management programs and succession planning programs that are reviewed, updated and presented to the Compensation and Human Resources Committee annually. As needed, and generally on an annual basis, the full Board receives updates on the succession planning process and on the status of development plans for key individuals. For very senior level positions, multiple members of the Management Committee and selected Board Members may be involved in the interview and selection process. For the most senior levels of the organization (e.g., CEO, Chairman, etc.) a search committee of the Board may be formed to conduct the process.

Performance appraisals are prepared on an annual basis for employees, including Managing Directors.

On an annual basis, the CEO reviews the performance of the Management Committee members and discusses the performance with the members of the Compensation and Human Resources Committee.

The performance and compensation of the CEO and Non-Executive Chairman are reviewed by the Compensation and Human Resources Committee and presented to the full Board for approval.

A Risk Assessment of the Management Committee (and selected additional Managing Directors) is conducted on an annual basis by the Group Chief Risk Officer, the Chief Compliance Officer and the General Auditor and reviewed with the Compensation and Human Resources Committee and the Chairs of the Risk and Audit Committees.

The Board of Directors measures management's performance against the Corporate Goals periodically throughout each year through (i) the review of status reports prepared by management, and (ii) the Board Committees that have oversight responsibilities for particular activities. In addition, the Board's Compensation and Human Resources Committee receives periodic updates throughout the year on the achievement of the Corporate Goals and BBS metrics. As provided in its Committee Charter, the Compensation and Human Resources Committee is also responsible for the following:

- In consultation with the Board Risk Committee Chair, assuring that corporate goals and objectives are aligned with the interests of DTCC's stakeholders and do not encourage executive officers to take undue risks;

- Reviewing and assessing, in consultation with the Risk Committee Chair, whether the compensation program:

    - Promotes appropriate risk identification and management approaches,

    - Discourages executive officers from taking unnecessary or excessive risks,

    - Includes a regular assessment of key performance indicators to measure and compensate executive officers, and

- Maintains a high level of responsiveness to concerns and recommendations raised by officers;

– Obtaining input from the Group Chief Risk Officer, General Auditor and Chief Compliance Officer regarding executives' performance in relation to risk management/behaviors and considering that input when determining compensation; and

– Ensuring that critical matters and material systemic risk concerns are escalated to the full Board.

Employee integrity is a core DTCC value. DTCC maintains a Code of Ethics that sets forth the foundational principles that govern DTCC's business. All employees and consultants must comply with the Code of Ethics and are expected to have a clear understanding of and commitment to the high ethical standards outlined in the Code.

Risk management framework

DTCC has established a Corporate Risk Framework, pursuant to which its risk tolerances are established, communicated, and monitored. The goal of the Corporate Risk Framework is to define DTCC's risk management program and provide guidelines to manage key risks across the organization in a comprehensive, consistent and effective manner, enabling DTCC to achieve its strategic business objectives while remaining consistent with its risk tolerances. While risk types are diverse, their effective management requires a core set of common principles and common processes for identifying, assessing, measuring, monitoring, mitigating and reporting risk. The Board has ultimate responsibility for the effectiveness of the Corporate Risk Framework's implementation. In carrying out this responsibility, applicable guidelines make clear that the Board is not expected to itself implement the Corporate Risk Framework or to carry out the day-to-day management of risks. Rather, the Board, in discharging its ultimate responsibilities over risk management matters works closely with management and may assign tasks to board committees. DTCC's Corporate Risk Framework is documented through the DTCC Corporate Risk Framework Policy, which includes several Risk Tolerance Statements. Each Risk Tolerance Statement pertains to a specified risk within the "risk family framework" established to guide DTCC's discussion of risk. The DTCC Corporate Risk Framework Policy is reviewed, updated (as appropriate), and approved by the MRC, at least annually, and is reviewed and approved by the Board Risk Committee annually.

The DTCC Corporate Risk Framework Policy is the overarching policy from which all risk management policies and procedures within the primary purview of the Group Chief Risk Office, among other areas, derive. The Group Chief Risk Office consists of the following areas: (i) Financial and Operational Risk Management ("FORM"), (ii) the Chief Security Office ("CSO"), and (iii) Enterprise Data Management ("EDM").

Each area within the Group Chief Risk Office has its own risk management policies designed to address that area's specific domain of expertise. These policies are reviewed and updated (as appropriate) at least annually.

Oversight of the Group Chief Risk Office is the responsibility of the Board Risk Committee. The Group Chief Risk Officer has a direct reporting line to the Chair of the Board Risk Committee and reports, administratively, to the DTCC President and Chief Executive Officer. The Board Risk Committee has responsibility to review and approve the compensation recommendation of the Group Chief Risk Officer. This specialized Board oversight over the Group Chief Risk Office is designed to provide the Group Chief Risk Office with independence from the operating business areas of DTCC.

The Corporate Risk Framework is more fully described under Principle 3 (Framework for the comprehensive management of risks).

Internal Audit

The mission of the Internal Audit Department ("IAD") is to provide independent and objective assurance services to assist the enterprise in maintaining effective risk management and control practices. IAD supports the Board in its oversight of the governance, risk and control framework and seeks to achieve and maintain the highest level of professional standards, while helping DTCC and its subsidiaries to achieve their business and regulatory objectives. The Audit Committee is responsible for overseeing the internal audit function. IAD is governed by policies reviewed and approved by the Audit Committee and the Board.

IAD's assurance services include evaluating operations and internal controls to validate that the enterprise's assets and member assets held by DTCC and its subsidiaries (including DTC) are safeguarded, and that policies, standards, and procedures are being followed. Additionally, IAD helps management proactively identify risks that require controls or risk mitigation strategies for new businesses, products, and services, and to properly maintain controls in expanding businesses.

The scope of IAD's activities is subject to the Audit Committee's review and approval, but is not otherwise restricted. The General Auditor directs all internal audit activities in support of its mission to support the Board and to enhance the control environment.

IAD is expected to be independent in the execution of its activities. As noted above, independence is achieved through organizational placement and reporting lines. To help maintain independence, staff assignments are rotated periodically as is practicable. In addition, the General Auditor, among others, periodically meets privately with the Audit Committee, without members of management or the external accounting firm present. The Audit Committee Chair conducts the General Auditor's annual performance assessment and the Audit Committee reviews and approves the compensation recommendation for the General Auditor.

Disclosure

Major decisions of the Board that are not confidential are disclosed to relevant stakeholders, as appropriate. To the extent any decision is reflected in a change to the Rules of DTC or constitutes a material change to the operations of DTC, disclosure is made though public regulatory filings with the supervisors, as applicable, as well as the issuance of Important Notices, which are published on the DTCC website. Decisions and information with a broader impact or of more general interest are disclosed through press releases, articles, white papers and other materials posted to the DTCC website, including DTCC's Annual Reports and the annual reports of the clearing agency subsidiaries. Section VI of this Disclosure Framework provides a list of information and documents that are publicly available on the DTCC website.

Principle 3: Framework for the comprehensive management of risks; CCAS 17Ad-22(e)(3)

Principle 3: Framework for the comprehensive management of risks	CCAS 17Ad-22(e)(3)
An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks. ***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. ***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. ***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. ***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.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (3) Maintain a sound risk management framework for comprehensively managing legal, credit, liquidity, operational, general business, investment, custody, and other risks that arise in or are borne by the covered clearing agency, which: (i) Includes risk management policies, procedures, and systems designed to identify, measure, monitor, and manage the range of risks that arise in or are borne by the covered clearing agency, that are subject to review on a specified periodic basis and approved by the board of directors annually; (ii) Includes plans for the recovery and orderly wind-down of the covered clearing agency necessitated by credit losses, liquidity shortfalls, losses from general business risk, or any other losses; (iii) Provides risk management and internal audit personnel with sufficient authority, resources, independence from management, and access to the board of directors; (iv) Provides risk management and internal audit personnel with a direct reporting line to, and oversight by, a risk management committee and an independent audit committee of the board of directors, respectively; and (v) Provides for an independent audit committee.

Risk management framework

The Company maintains a sound risk management framework for comprehensively managing legal, credit, liquidity, operational, general business, investment, custody, and other risks that arise in or are borne by DTC. This risk management framework includes risk management policies, procedures, and systems that are designed to identify, measure, monitor, and manage such risks to DTC. The overarching document outlining the Company's risk management framework is the Company's Corporate Risk Framework Policy ("Corporate Risk Framework Policy"), attached to which are a set of Risk Tolerance Statements described below. In addition, DTC has filed the following risk management documents with the SEC, which have been approved: (i) the Clearing Agency Risk Management Framework, (ii) the Clearing Agency Stress Testing Framework (Market Risk); (iii) the Clearing Agency Model Risk Management Framework; (iv) the

Clearing Agency Securities Valuation Framework; (iv) the Clearing Agency Liquidity Risk Management Framework; (v) the Clearing Agency Operational Risk Management Framework; (vi) the Clearing Agency Investment Policy; and (vii) the Clearing Agency Policy on Capital Requirements (collectively, the "Clearing Agency Risk Frameworks").

The Corporate Risk Framework Policy, the Risk Tolerance Statements, and the Clearing Agency Risk Frameworks that address DTC's management of credit, liquidity, and operational risks, among other risks, as well as the various supporting policies and procedures thereunder, are reviewed annually by their respective owners and are escalated to the MRC for approval at least annually; they are also reviewed and approved by the BRC annually.

The Company believes that while the risks affecting DTC are diverse, their effective management requires a core set of common principles and common processes for identifying, assessing, measuring, monitoring, mitigating, and reporting risk. The Corporate Risk Framework Policy and the Risk Tolerance Statements outline the overall approach through which risk tolerances are established, communicated, and monitored. These documents, in combination with the Clearing Agency Risk Frameworks, have been designed to provide guidelines for managing risk in a comprehensive, consistent, and effective manner. Adherence to the Corporate Risk Framework Policy, the Risk Tolerance Statements, and the Clearing Agency Risk Frameworks strikes the balance for DTC to achieve its strategic business objectives while remaining within established risk tolerance thresholds.

As of December 31, 2018, the Company has identified the set of risks listed below ("Key Risks") for purposes of managing legal, credit, liquidity, operational, general business, investment, custody, and other risks that arise in or are borne by DTC. Any of these Key Risks, if realized, could result in one or more negative impacts to DTC, including business disruption, financial loss, customer dissatisfaction, regulatory censure, and reputational harm. These Key Risks, whether alone or in combination, could also have or cause systemic impacts to the broader market place. The Key Risks are as follows:

- Market Risk
- Credit Risk
- Liquidity Risk
- Operational Risk, includes the following sub-types:
  - Financial Risk[33]
  - Model Risk
  - Legal & Regulatory Compliance Risk
  - Processing & Operations Risk
  - Information Technology Risk
  - Cybersecurity & Information Protection Risk
  - Human Capital/People Risk
  - Business Continuity Risk

[33] The Company defines this Key Risk to include those risks addressed by Principle 15 (General Business Risk) and Principle 16 (Custody and Investment Risk) below.

- Strategic Risk, includes the following sub-types:
    - General Business Risk[34]
    - New Initiatives Risk

To protect against these Key Risks, the Company maintains a framework of corporate level controls to guide its activities, including within DTC's business lines and functional units. These corporate level controls begin with adherence to the three lines of defense approach to risk management. The corporate level controls also include risk management policies, procedures and systems designed to support execution of the Corporate Risk Framework Policy and the Clearing Agency Risk Frameworks.

The Three Lines of Defense

Under the three lines of defense approach to risk management, everyone supporting DTC's business lines and functional units is a risk manager. Collectively, the three lines of defense described below are designed to safeguard that Key Risks remain within their established risk tolerances and that any deviation outside a defined risk tolerance threshold is monitored on an ongoing basis and escalated in accordance with the Risk Tolerance Statement applicable to it.

- <u>The First Line of Defense</u>: The first line of defense is comprised of the various DTC's business lines and supporting functional units including Product Management, Operations Management, Information Technology, and other areas critical to DTC's daily operations and functioning. Their mandate is to manage risk proactively on a day-to-day basis.

- <u>The Second Line of Defense</u>: The second line of defense is comprised of the Company's control functions, including the General Counsel's Office, the Privacy Office, Compliance, and those areas that fall within the Group Chief Risk Office, as outlined below. Their mandate is to provide advice and guidance to the first line of defense in adhering to established risk standards and to monitor compliance with those standards.

- <u>The Third Line of Defense</u>: The third line of defense is the Internal Audit Department ("IAD"). IAD's mission is to assess the Company's overall control environment, risk management, and control framework and, in doing so, to raise awareness of control risk and promote changes (and identify opportunities) for improving governance processes. IAD provides independent and objective assurance to assist in the Company's maintenance of effective risk management and control practices. The head of IAD is the General Auditor. The General Auditor has a direct reporting line to the Chairman of the Audit Committee.

Policies, procedures and systems

The Company maintains a comprehensive set of policies, procedures, and systems designed to identify, measure, monitor, and manage DTC's Key Risks. The set of policies and procedures include the Corporate Risk Framework Policy, the Clearing Agency Risk Frameworks, and the underlying policies and procedures that support their execution. Through a single set of defined standards ("Document Standards"), all such policies, procedures, and similar documents are designed holistically and consistently. Documents covered

[34] With regard to this Key Risk, the Company defines "General Business Risk" as the risk of adverse changes in business volume/margins resulting from market changes, changes in the competitive situation, customer shift and/or excessive operating expenses.

by the Document Standards undergo regular, periodic reviews and approval. The Document Standards provide guidance for the regular, periodic review of documents by their owners. Through these reviews, document owners are able to confirm that such documents continue to effectively mitigate the risks they were designed to address. The Document Standards provide a central location where all covered documents are maintained, which includes a system for the automated workflow for their review, approval and dissemination.

The system of Risk Tolerance Statements is designed to reinforce the Company's commitment to maintaining an effective risk management framework for comprehensively managing DTC's Key Risks. The set of Risk Tolerance Statements documents the overall risk reduction or mitigation objectives with respect to the identified Key Risks, as well as the risk controls and other measures used to manage the Key Risks, including escalation requirements in the event of risk metric breaches. Each Risk Tolerance Statement, among other things: (i) identifies the Key Risk to which it applies; (ii) identifies the key indicators (or metrics) that categorize the tolerance thresholds (from no impact to severe impact); and (iii) identifies the governance and escalation process applicable to any risk metric breach that would result in DTC falling outside of the accepted tolerance level. Each Risk Tolerance Statement is reviewed, revised, updated, and/or created by the Operational Risk Management group ("ORM") within the Group Chief Risk Office and approved by the MRC at least annually, and reviewed and approved by the BRC annually.

Key Risks for the DTC business lines and supporting functional units are monitored through a process of assessing inherent risk (that is, risk in the absence of any mitigating controls) and then evaluating such inherent risk against the strength of the then-existing controls (and, as appropriate, new and additional controls). At the end of the process, residual risks may be identified for further management (such as mitigation) or "acceptance" (which follows a defined escalation and approval process) by the applicable DTC business line or functional unit. Assessments are conducted and documented by ORM through the use of tailored risk profiles, which consolidate pertinent operational risk and control data to support an overall assessment of the applicable business line's or functional unit's inherent risk and residual risk ("Risk Profiles").

Risk Profiles are prepared by ORM at least annually (depending on the level of risk assigned to the business line or functional unit being evaluated). The data collected by ORM in the Risk Profiles supports planning and helps guide decision-making, which may, for example, lead to additional DTC investments to further reduce risk or to readjustment of Risk Tolerance Statement thresholds.

DTC monitors and manages credit and market risk, addressed more fully under Principle 4 (Credit Risk). Under its Rules, implemented through policies, procedures and systems, DTC imposes strict membership admission criteria and review. It conducts ongoing monitoring and review of Participants (as outlined in Rules 2 and 3), daily recalculation and collection, as needed, of required Participants Fund deposits (Rule 4), intraday monitoring of net debits and collateralization of a Participant's obligations. DTC also has tools that enable it to obtain adequate assurances that Participants are capable of meeting their membership obligations (Rules 9(A), 9(B)). Management's efforts are supported by a number of systems, including the systems that (i) capture and evaluate Participants' financial metrics from reports they submit to their respective regulators (the Credit Risk Rating Matrix system[35]), (ii) calculate Participants Fund requirements, (iii) monitor Participant compliance with Participants Fund requirements, (iv) monitor the net debits of each Participant, and (v) track pricing and collateral value of securities.

[35] The Credit Risk Rating Matrix (CRRM) relies on both quantitative and qualitative factors to rate the risks presented by both domestic and foreign bank Participants and domestic broker/dealer Participants.

DTC's risk management systems are designed to mitigate credit and market risk by monitoring, in real time, the projected settlement activity of Participants, including intraday application of the Collateral Monitor and Net Debit Cap.

DTC uses the Clearing Fund Management system to monitor compliance with Participants Fund deposit requirements. This system helps mitigate credit risk.

DTC mitigates collateral risk, addressed more fully under Principle 4 (Credit Risk) and Principle 5 (Collateral), through its Collateral Monitor control for each Participant and the valuation of eligible securities.

DTC manages its liquidity risk through the establishment of Net Debit Caps for each Participant, addressed more fully under Principle 7 (Liquidity risk). Net Debit Caps limit the potential settlement obligation of any Participant to an amount for which DTC has sufficient liquid resources to cover this risk. Liquidity resources include the Participants Fund and a committed credit facility with a consortium of lenders. At December 31, 2018 the amount of DTC's committed facility was $1.9 billion.

DTC manages custody and investment risks, including those related to investment of Participants Fund cash, through the Clearing Agency Investment Policy ("Investment Policy"), filed with and approved by the SEC. Such risks are discussed in more detail in Principle 16 (Custody and Investment Risk) below.

ORM utilizes several tools to identify, assess and manage operational risks, including the Risk Tolerance Statements and Risk Profiles described above, internal incident data collection, external loss data collection, scenario analysis, testing by internal and external parties, metrics and key risk indicators, issue tracking, and issue reporting. Operational risk, including business continuity and technology system arrangements, are discussed more fully in Principle 17 (Operational Risk) below.

As related to proposed new initiatives that DTC may seek to undertake, the Company employs a structured approach for the implementation of new initiatives, which includes defining the process being proposed, evaluating and approving all initiatives and, among other things, conducting a comprehensive risk assessment of new initiatives that are in scope of this approach. Such new initiatives are subject to necessary governance and oversight to enable DTC to bring initiatives to market in a timely and efficient manner, while helping ensure, where relevant, that these initiatives are designed in a way that appropriately mitigates risk to DTC, its Participants and the financial markets. This review and risk assessment of new initiatives addresses compliance with applicable laws, regulations and standards.

The Group Chief Risk Office and IAD

The Group Chief Risk Office. The Group Chief Risk Office is the dedicated, independent control function specifically charged with monitoring and managing the Key Risks affecting DTC. The Group Chief Risk Office's responsibilities include: (i) day-to-day management of DTC's credit, market, liquidity, and operational risks; (ii) through ORM, establishing the processes by which DTC's business lines and other functional units report on risk, actively monitoring the Risk Tolerance Statements and Risk Profiles described above, and regularly reporting to the BRC on its findings; and (iii) promptly escalating identified breaches to risk tolerance thresholds and/or material risk exposures in accordance with the Risk Tolerance Statements.

The Group Chief Risk Office consists of the following areas: The CSO, FORM, and EDM.

The CSO is subdivided into three areas:

- Global Security Management
- Technology Risk Management
- Business Continuity Management

FORM is subdivided into three areas:

- Operational Risk Management ("ORM")
- Financial Risk Management ("FRM")
- the Systemic Risk Office

EDM is subdivided into two areas:

- Data Governance & Stewardship
- Data Quality, Metadata and Metrics

The head of the Group Chief Risk Office is the Group Chief Risk Officer. The Group Chief Risk Officer has a direct reporting line to the Chair of the BRC and is responsible for assisting the BRC, as needed, in the performance of its duties. The BRC is responsible for setting the Group Chief Risk Office's annual budget and for monitoring the Group Chief Risk Office's performance. Senior management of the CSO and FORM are invited to attend all BRC meetings.

<u>The Internal Audit Department</u>. As the third line of defense, IAD is functionally independent from all other DTC business lines, support areas, and control functions. IAD evaluates DTC's operations and internal controls to validate that it is providing services in a safe and sound manner, consistent with applicable regulatory requirements and guidance. IAD also evaluates DTC's operations and internal controls to validate that its and its Participants' assets are safeguarded, and that policies, standards, and procedures are being followed. IAD helps management proactively identify risks that require controls or risk mitigation strategies for new businesses, products, and services, and to properly maintain controls in existing and expanding businesses. As noted above, the head of IAD is the General Auditor. The General Auditor reports directly to the Chair of the Audit Committee and is responsible for assisting the Audit Committee, as needed, in the performance of its duties. The Audit Committee is responsible for reviewing and approving IAD's annual budget, as well as for annually reviewing and approving IAD's structure, staffing, and resources.

Management and Board Committees and Board oversight

Management oversight. While responsibility for proactive, day-to-day management of risk lies with business line and functional unit managers and their staff, senior management oversight is achieved through the following senior management committees:

- <u>The Management Committee</u>: The Management Committee provides overall direction for all aspects of the Company's (including DTC's) businesses, technology and operations, and the functional areas that support them. Among its responsibilities, the Management Committee periodically reviews (at least quarterly) and assesses overall performance, including but not limited to, goals, metrics, targets, and budget, and approves recommendations for change as necessary. The Management Committee provides oversight and governance for the management committees set forth below.

- The Management Risk Committee: The MRC is primarily responsible for implementing the Company's risk management framework by overseeing the management of credit, market, liquidity, operational, and systemic risks in accordance with the Corporate Risk Framework Policy and the Risk Tolerance Statements. Among its responsibilities, the MRC: (i) reviews and approves at least annually those risk management policies and procedures directly aligned to the management of credit, market, liquidity and operational risks; (ii) where applicable, approves applicants for DTC membership, and oversees other DTC Rule and participation matters: (iii) establishes and reviews reporting of Key Risks and related risk tolerance thresholds for DTC, and escalates, as appropriate, those matters requiring Board level consideration to the BRC or other Board committees.

- Investment and Operating Committee: The IOC oversees and monitors the Company's portfolio of investments and initiatives and the Company's overall health. The committee's investment oversight responsibilities include reviewing and evaluating the overall investment portfolio for adherence to the Company's budget and recommending to the Management Committee prioritization of ongoing and new initiatives that may be outside the original budget. The committee's initiatives oversight responsibilities include approving material new initiatives for DTC by evaluating business cases, risk assessments, and feasibility studies, and reviewing reports that summarize new initiative approvals, exceptions, cancellations and variances. The committee's oversight also includes monitoring corporate goals, financial results, and other indicators of overall health.

- IT Governance Committee ("ITGC"): The ITGC provides holistic and comprehensive governance for the Company's IT organization, to facilitate the oversight of the organization's IT strategy, and to assess performance and progress against that strategy, as well as to provide oversight of the technology capabilities that support the Company's technology. Consistent with this purpose, the ITGC oversees the plan and performance of IT's existing and new services, reviews and approves material, proposed IT programs or services, with emphasis on any significant risks and committed business value. The ITGC also oversees the development of the infrastructure capabilities, technology resources, processes and controls necessary to fulfill the IT's service delivery requirements, and monitors key technology metrics associated with the delivery of IT's services.

Board oversight. The Board is responsible for providing direction to and overseeing the conduct of the affairs of the Company in the interests of the Company, its shareholders, and other stakeholders, including investors, issuers, and participants in the financial markets to which the Company and DTC serve. The Board discharges its oversight responsibilities and exercises its authority in a manner that, among other things, is designed to promote the safe, sound and efficient operation of DTC and the services it provides, and that promotes safety, soundness and efficiency broadly in the global system for processing financial transactions. The Board fulfills its role either directly or by delegation of certain responsibilities to committees of the Board. The Board Committees and their responsibilities are described in Principle 2 (Governance) above.

Information and incentives for Participant management of risk

Participants are provided with a significant amount of information, and incentives, to enable them to monitor and manage the risks they pose to DTC, as further described under Principle 23 (Disclosure of Rules, Key Procedures, and Market Data). First, the Rules, which are publicly available, establish the obligations of Participants to DTC, including their daily responsibilities to meet Participants Fund requirements and to complete settlement. Changes to the Rules are subject to the proposed rule change and advance notice filing requirements of Section 19(b)(1) of the Act, and the rules thereunder, and the advance notice filing requirements pursuant to Section 806(e)(1) of Dodd-Frank, and the rules thereunder (collectively, “Filing Requirements”). Pursuant to the Filing Requirements, proposed changes to the Rules are published in the Federal Register and subject to public review and comment.

Participants are also required to reconcile their DTC positions on a daily and month-end basis. DTC provides reports to Participants showing their activity in all phases of the settlement cycle; this includes activity, risk control monitoring and settlement reports.

To assist Participants in understanding DTC products and services, and their use, DTC provides a number of tools, including user guides, as well as training courses through DTCC Learning. Topics covered include not only functional and operational aspects of settlement and other services at DTC, but also risk management practices and methodologies.

Participants Fund management is another tool by which each Participant is encouraged to manage its liquidity and settlement activities through DTC. A Participant’s Required Deposit is in direct relation to the liquidity requirements generated by the Participant and its affiliated family.

DTC also has the ability to require additional Participants Fund deposits or other adequate assurances of financial or operational capacity, as a risk mitigant. Such additional requirements should provide appropriate incentives to affected Participant(s) to address the underlying condition or activity.

Further, DTC has a number of disciplinary tools at its disposal under its Rules. These include fines, reporting certain incidents to regulators of affected Participants, the potential to limit access to one or more services, and termination of membership should a Participant fail to meet its obligations to DTC.

Material interdependency risks

Given its central role in the U.S. securities markets, DTC potentially poses a number of risks to other entities, while it is also exposed to risks that may originate from other entities.

As regards risk that may be posed by Participants, DTC has established clear and objective membership requirements for each category of membership, which provide fair and open access for firms seeking membership, while maintaining prudent risk management standards that enable DTC to manage the material risks resulting from Participant activities. As described more fully in Principle 4 (Credit Risk), DTC monitors Participants on an ongoing basis and assesses credit risk through the use of the Credit Risk Rating Matrix, which is designed to focus the level of scrutiny and ongoing monitoring in a manner consistent with a Participant’s internal risk rating.

DTC settlement netting depends on the performance of its Settling Banks, for which DTC has established credit standards. A Settling Bank must be a Participant and have access to an account at a Federal Reserve Bank, to which NSS charges may be debited and payments credited. Settling Banks are selected by, and act on behalf of, Participants but are held to strict operational standards established by DTC. Failures to perform are subject to fines and other disciplinary measures under the Rules. (Please refer to Principle 9 (Money settlements) for a more detailed discussion of the role of Settling Banks at DTC.)

As discussed above, default liquidity risk is managed by DTC’s maintenance of (i) its Participants Fund and (ii) a committed credit facility with a consortium of lenders, to be able to complete system-wide settlement in the event of a Participant’s failure to settle. Liquidity risk mitigants are discussed in Principle 7 (Liquidity Risk).

DTC material service providers are subject to a comprehensive third party review and vetting process. DTC assesses its material service provider risks periodically, throughout the lifecycle of a third party service provider relationship. This includes protocols for reporting, escalation and remediation of third party risk and potential exposures. Mitigants may take the form of contractual protections, or additional or backup providers where deemed appropriate and feasible. For example, DTC utilizes price feeds from multiple third parties as an additional risk mitigant, and further employs price review and data scrubbing procedures to minimize the risk of using inaccurate prices. DTC's third party risk management processes are also discussed under Principle 17 (Operational risk) below.

As described in Principle 20 (Links) and Principle 13 (Participant-Default Rules and Procedures), DTC maintains an interface with NSCC for the book-entry movement of securities to settle CNS transactions. As part of the interface, DTC and NSCC have established certain limited cross-guarantees and arrangements to permit transactions to flow smoothly between DTC and NSCC in a collateralized environment. The operational risks of the interface are monitored on an ongoing basis through DTCC Operations and Settlement areas, and are subject to the Clearing Agency Operational Risk Management Framework, filed with and approved by the SEC. The cross-guaranty arrangements are monitored and managed through DTC's automated Collateral Monitor risk control and Failure-to-Settle system, which are reviewed and tested on a regular basis.

Given the interdependent nature of financial markets and DTC's role as a SIFMU, Key Risks of the various types identified above may occur at a magnitude or in combinations with the potential of creating "systemic" impact. Such systemic-type risks and potential mitigants are evaluated by the Systemic Risk Office and discussed with management, the Board, and, through outreach, with DTC's Participants.

Scenarios that may prevent an FMI from providing critical operations and services

DTC identifies scenarios that may potentially prevent it from providing its critical operations and services, including through the development of recovery and orderly wind-down plans. In addition, DTC maintains the Participants Fund as a financial resource to cover potential losses resulting from Participant default, so that it can continue to operate for remaining Participants. A portion of DTC's own financial resources would also be applied to such a loss. Risk evaluations show that such resources are sufficient to handle the default of several Participants. DTC's loss waterfall is discussed in Principle 13 (Participant-default rules and procedures) below.

In addition, Business Continuity Management maintains plans that address the loss of people, premises and/or technology as an additional element to ensure the continuing operation of critical services. This is discussed in Principle 17 (Operational risk).

Recovery or orderly wind-down plans

DTC maintains a Recovery and Wind-down (R&W) Plan to be used by the Board and management in the event DTC encounters scenarios that could potentially prevent it from being able to provide its critical services as a going concern. The R&W Plan identifies (i) the recovery tools available to address the risks of (a) uncovered losses or liquidity shortfalls resulting from the default of one or more Participants, and (b) losses arising from non-default events such as, for example, damage to its physical assets, a cyber-attack, or custody or investment losses, and (ii) the strategy for implementation of such tools. The R&W Plan also establishes the strategy and framework for the orderly wind-down of DTC and the transfer of its business in the remote event the implementation of the available recovery tools does not successfully return DTC to financial viability.

The R&W Plan is structured as a roadmap, and identifies the tools that DTC may use to effect a recovery from such events. It provides, among other matters, (i) a description of DTC's services, and the criteria used to determine which services are considered critical; (ii) a description of the governance around the overall recovery and wind-down program; (iii) a discussion of tools available to DTC to mitigate credit/market and liquidity risks, including recovery indicators and triggers, and the governance around management of a stress event along a "Crisis Continuum" timeline; (iv) a discussion of potential non-default losses and the resources available to address such losses, including recovery triggers and tools to mitigate such losses; and (v) the framework and approach for the orderly wind-down and transfer of DTC's business in a manner designed to provide continuity of access to DTC's critical services.

Key factors considered in developing the R&W Plan and the types of tools available to DTC were its governance structure and the nature of the markets within which DTC operates. As a result, many of the tools available to DTC are DTC's existing, business-as-usual risk management and default management tools, which would continue to be applied in scenarios of increasing stress. In addition to business-as-usual tools, the R&W Plan describes DTC's other principal recovery tools, which include (i) identifying, monitoring and managing general business risk and holding sufficient liquid net assets funded by equity ("LNA") to cover potential general business losses pursuant to the Clearing Agency Policy on Capital Requirements, filed with and approved by the SEC ("Capital Policy"), (ii) maintaining the Clearing Agency Capital Replenishment Plan ("Replenishment Plan") as a viable plan for the replenishment of capital should DTC's equity fall close to or below the amount being held pursuant to the Capital Policy, and (iii) the process for the allocation of losses among the Corporation and the membership, as provided in Rule 4.

In support of the R&W Plan, DTC adopted a special wind-down Rule addressing the wind-down of DTC, and enhanced other rules (including adoption of a market disruption rule).[36] The Rules facilitate the implementation of the R&W Plan, particularly DTC's strategy for winding down and transferring its business, and provide Participants with transparency and certainty with respect to these matters.

The development of the R&W Plan is facilitated by the Office of Recovery & Resolution Planning ("R&R Team"). The R&R Team reports to the Management Committee and is responsible for the development and ongoing maintenance of both the plans and the overall recovery and wind-down planning process. The Board, or such committees as may be delegated authority by the Board from time to time pursuant to its charter, reviews and approves the R&W Plan biennially.

[36] Rule 32(A) (Wind-down of the Corporation). *See also*, Rule 38 (Market Disruption and Force Majeure) and Rule 4 (Participants Fund and Participants Investment). The loss waterfall provisions of Rule 4 are discussed under Principle 13 (Participant-default rules and procedures).

Principle 4: Credit risk; CCAS 17Ad-22(e)(4)

Principle 4: Credit risk	**CCAS 17Ad-22(e)(4)**
An FMI should effectively measure, monitor, and manage its credit exposure 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 largest participants and their affiliates that would potentially cause the largest aggregate credit exposures to the CCP in extreme but plausible market conditions. All other CCPs should maintain, at a minimum, total financial resources sufficient to cover the default of the one participant and its affiliates that would potentially cause the largest aggregate credit exposures to the CCP in extreme but plausible market conditions. ***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. ***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. ***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	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (4) Effectively identify, measure, monitor, and manage its credit exposures to participants and those arising from its payment, clearing, and settlement processes, including by: (i) Maintaining sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence; (ii) To the extent not already maintained pursuant to paragraph (e)(4)(i) of this section, for a covered clearing agency providing central counterparty services that is either systemically important in multiple jurisdictions or a clearing agency involved in activities with a more complex risk profile, maintaining additional financial resources at the minimum to enable it to cover a wide range of foreseeable stress scenarios that include, but are not limited to, the default of the two participant families that would potentially cause the largest aggregate credit exposure for the covered clearing agency in extreme but plausible market conditions; (iii) To the extent not already maintained pursuant to paragraph (e)(4)(i) of this section, for a covered clearing agency not subject to paragraph (e)(4)(ii) of this section, maintaining additional financial resources at the minimum to enable it to cover a wide range of foreseeable stress scenarios that include, but are not limited to, the default of the participant family that would potentially cause the largest aggregate credit exposure for the covered clearing agency in extreme but plausible market conditions; (iv) Including prefunded financial resources, exclusive of assessments for additional guaranty fund contributions or other resources that are not prefunded, when calculating the financial resources available to meet the standards under paragraphs (e)(4)(i) through (iii) of this section, as applicable;

their affiliates that would create the largest aggregate credit exposure in the system. ***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. [DTC is not a CCP. Accordingly, key consideration 4 does not apply.] ***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	(v) Maintaining the financial resources required under paragraphs (e)(4)(ii) and (iii) of this section, as applicable, in combined or separately maintained clearing or guaranty funds; (vi) Testing the sufficiency of its total financial resources available to meet the minimum financial resource requirements under paragraphs (e)(4)(i) through (iii) of this section, as applicable, by: (A) Conducting stress testing of its total financial resources once each day using standard predetermined parameters and assumptions; (B) Conducting a comprehensive analysis on at least a monthly basis of the existing stress testing scenarios, models, and underlying parameters and assumptions, and considering modifications to ensure they are appropriate for determining the covered clearing agency's required level of default protection in light of current and evolving market conditions; (C) Conducting a comprehensive analysis of stress testing scenarios, models, and underlying parameters and assumptions more frequently than monthly when the products cleared or markets served display high volatility or become less liquid, or when the size or concentration of positions held by the covered clearing agency's participants increases significantly; and (D) Reporting the results of its analyses under paragraphs (e)(4)(vi)(B) and (C) of this section to appropriate decision makers at the covered clearing agency, including but not limited to, its risk management committee or board of directors, and using these results to evaluate the adequacy of and adjust its margin methodology, model parameters, models used to generate clearing or guaranty fund requirements, and any other relevant aspects of its credit risk management framework, in supporting compliance with the minimum financial resources requirements set forth in paragraphs (e)(4)(i) through (iii) of this section; (vii) Performing a model validation for its credit risk models not less than annually or more frequently as may be contemplated by the covered clearing agency's risk management framework

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. [DTC is not a CCP. Accordingly, key consideration 5 does not apply.] ***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. [DTC is not a CCP. Accordingly, key consideration 6 does not apply.] ***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.	established pursuant to paragraph (e)(3) of this section; (viii) Addressing allocation of credit losses the covered clearing agency may face if its collateral and other resources are insufficient to fully cover its credit exposures, including the repayment of any funds the covered clearing agency may borrow from liquidity providers; and (ix) Describing the covered clearing agency's process to replenish any financial resources it may use following a default or other event in which use of such resources is contemplated.

DTC Monitors and Manages Credit Risk of its Participants

DTC effectively measures, monitors and manages any credit exposures to it and to its Participants arising from its payment, clearance and settlement processes. DTC maintains sufficient financial resources to cover credit exposures to its system from its Participants fully with a high degree of confidence, because it operates a closed settlement system in which all settlement obligations (*i.e.*, potential credit exposures) are fully collateralized and, as further set forth in response to Principle 7 (Liquidity risks), all settlement obligations are limited to an amount that may not exceed DTC liquidity resources.

DTC Rules expressly address the resolution of credit losses due to any individual or combined default among its Participants, as described below and in response to Principle 13 (Participant-default rules and procedures). DTC has built-in mechanisms to limit exposure and replenish financial resources used in a stress event, in order to continue to operate in a safe and sound manner.

Framework for Management of Credit Risk

The measurement, monitoring and management of credit risk are part of the overall risk management framework described under Principle 3 (Framework for the comprehensive management of risks). As noted in that section, DTC manages its credit and liquidity exposure to Participants through its application of automated risk management controls, as well as strict membership admission criteria, ongoing surveillance of the financial condition of its Participants and the monitoring of Participant activity. In addition, FRM obtains information from other internal DTC departments regarding settlement or operational problems experienced with any Participant.

Membership requirements. DTC has established participation criteria and requirements relating to financial resources, creditworthiness, and operational capability. DTC Rule 2 (Participants and Pledgees) and Rule 3 (Participants Qualifications) set forth requirements for membership. Participants must also meet minimum financial standards and satisfy other criteria for membership, including minimum capital requirements. All applicants for membership must provide DTC with certain information, which is reviewed by FRM to confirm, among other matters, that the applicant has (1) sufficient financial ability to meet obligations to DTC, including settlement payments and Participants Fund deposits; (2) either an established business history, or personnel with sufficient operational background and experience to ensure the ability of the applicant to conduct the business; and (3) appropriate Settling Bank arrangements. DTC employs a robust membership process that entails a thorough review prior to approval by the Board Risk Committee or through its delegated authority to the Management Risk Committee and the Counterparty Credit Risk Team. Details regarding the application process are set forth in response to Principle 18 (Access and participation requirements).

Ongoing monitoring and surveillance. DTC monitors its credit exposures with respect to the risk that a Participant defaults through the ongoing surveillance of its Participants' financial strength and default risk. On an ongoing basis, Participants are required to provide financial and other information to DTC, as outlined in Rule 2, to demonstrate that they meet the membership standards on an ongoing basis. In addition, FRM reviews publicly available information such as earnings releases, equity prices, market data, and news as part of its Participant surveillance. DTCC utilizes a credit risk rating model to evaluate and rate the credit risk of DTC's U.S. bank, foreign bank, and broker-dealer Participants, and rate Participants based upon their relevant financial information (including information contained in regulatory reports).[37] These ratings are used to set surveillance levels. All Participants are subject to a credit review at least every 12 to 24 months.

Measurement, Monitoring and Management of Credit Risk

DTC Participants are monitored on a daily, monthly/quarterly, and periodic basis. DTC monitors each Participant's credit risk through review and analysis of financial and operational information and through regular market, news, and regulatory monitoring. Participants are required under the Rules to (i) provide

[37] Such regulatory reports include, for example, the Consolidated Report of Condition and Income (generally referred to as the "call" report) or the Financial and Operational Combined Uniform Single ("FOCUS") report. An enhanced CRRM model, approved May 19, 2017, rates foreign Participants that are banks or trust companies in addition to domestic bank and broker/dealer Participants. The enhanced model also relies on both quantitative and qualitative factors.

DTC with regulatory reports and data relating to their financial condition on a monthly, quarterly, semi-annual, or annual basis (depending on the reporting frequency of the entity), (ii) provide DTC with audited financial statements on an annual basis, and (iii) promptly notify DTC of material events or changes in their business or financial condition. The Participant's ongoing reporting and information requirements are set forth in Rule 2.

The CRRM is produced systemically from financial metrics contained in regulatory filings such as call and FOCUS reports of rated Participants. CRRM uses a rating scale of 1 to 7, with 1 being the strongest and 7 being the weakest. The model incorporates both quantitative factors, such as capital, assets, earnings, and liquidity, and qualitative factors, such as management quality, market position/environment, and capital and liquidity risk management. Once this rating is generated, it is reviewed by an assigned analyst within the Counterparty Credit Risk ("CCR") group of FRM. The analyst considers whether additional qualitative factors (e.g. regulatory history, type of audit opinion issued, and material management changes) warrant a manual override of the model-generated rating. The resulting rating determines the level of financial review that will be performed on that Participant. Participants with a weaker credit rating (rated a 5, 6, or 7 on the credit risk rating matrix) are automatically placed on the Watch List. Participants on the Watch List may be subject to additional surveillance and monitored more closely than Participants with a stronger credit rating.

CCR also maintains an enhanced surveillance list, which consists of Participants for which CCR conducts additional surveillance or requires additional information in order to more closely monitor their risk profile. Participants can be added to enhanced surveillance for a variety of reasons, including concerns about regulatory issues, changes to senior management at the Participant firm, etc. A Participant can be added to enhanced surveillance regardless of the rating generated for the firm by the CRRM.

Risk management controls are designed to protect against credit and liquidity risk

Collateral valuation, in conjunction with other risk management controls, effectively mitigates settlement system risk at DTC under normal market conditions. Through DTC settlement, Participants do not face credit risk of the type contemplated by Key Consideration 3 or the accompanying explanatory notes to the PFMI Report. Non-defaulting Participants do not risk counterparty failure and reversals of deliveries; DTC will complete settlement among non-defaulting Participants with its available liquidity resources. As footnotes 47 and 50 to the PFMI Report acknowledge, the financial exposure faced by DTC as a DNS payment and settlement system is liquidity exposure. As further discussed in Principle 7 (Liquidity risk), DTC maintains liquid resources for settlement in an amount sufficient to complete settlement among non-defaulting Participants in the event of the failure to settle of the Participant or affiliated family of Participants with the largest settlement obligation.

In managing its credit risk, DTC uses the Collateral Monitor (*see* response to Principle 5 (Collateral)) and Net Debit Cap (*see* response to Principle 7 (Liquidity risk)). These two controls work together to protect the DTC settlement system in the event of Participant default. The Collateral Monitor requires net debit settlement obligations, as they accrue intraday, to be fully collateralized; the Net Debit Cap limits the amount of any Participant's net debit settlement obligation to an amount that can be satisfied with DTC liquidity resources (the Participants Fund and the committed line of credit from a consortium of lenders).

As a further mitigant of credit risk, under DTC Rule 2 (Participants and Pledgees) and Rule 9(A) (Transactions in Securities and Money Payments), DTC may seek additional assurances of financial responsibility (as well as operational capability) from a Participants it deems necessary or advisable. This may include increased Participants Fund deposits and may also result in the reduction of a Participant's Net Debit Cap, limiting the settlement obligation it may incur.

Stress-testing

As described above, DTC employs stress-testing to evaluate whether it will have adequate financial resources to cover potential losses during extreme, but plausible, market conditions. DTC maintains policies and procedures, in accordance with the CCAS, that address the process for conducting these tests and calculating the resulting metrics.

For example, DTC, and its affiliates, NSCC and FICC, have adopted the Clearing Agency Stress Testing Framework (Market Risk) ("Stress Testing Framework"), which sets forth the manner in which DTC tests the sufficiency of its prefunded financial resources in accordance with applicable legal requirements, including CCA Rule 17Ad-22(e)(4)(i), and (iii) through (vii), and addresses related matters. The Stress Testing Framework has been filed with and approved by the SEC,[38] and is reviewed and approved by the Board on an annual basis.

DTC employs stress-testing to determine whether it will have sufficient prefunded financial resources to cover potential losses in a wide range of scenarios including, at a minimum, on a Cover 1 standard, during extreme, but plausible, market conditions. The scenarios used to conduct these stress tests fall into two broad categories: historical scenarios and hypothetical scenarios. The historical scenario set includes 50+ stress scenarios selected from a rolling look-back period of 10 years. In addition, DTC supplements the scenarios with historical stresses outside the 10-year period, such as the volatile market situation in the fall of 1987. The hypothetical scenarios are constructed according to potential market conditions. Current positions in a portfolio are used in the stress tests. The appropriateness of both the historical and hypothetical scenarios are reviewed periodically by the Enterprise Stress Test Council (ESTC), a group comprised primarily of risk management, business and control function senior management, and escalated for review by the Management Risk Committee on a quarterly basis.

The ESTC has responsibility for the review, oversight, escalation, and governance of credit stress-testing related activities at DTC. This council meets at least monthly and its responsibilities include (but are not limited to): reviewing stress-testing policies, procedures, methodology, and test results; approving stress scenarios; and ensuring stress-testing activities meet the risk tolerance requirements applicable to DTC.

DTC maintains written policies and procedures that describe its process related to the calculation and monitoring of the following stress test metrics: (i) maximum Participant-level daily historical and hypothetical stress test results run daily and reported on a monthly basis; (ii) maximum family-level daily historical and hypothetical stress test results run daily and reported on a monthly basis; and (iii) as a record of the financial resources necessary to meet a Cover 1 standard in accordance with CCA 17Ad-22(e)(4)(i) and (iii), the maximum observed family-level historical stress deficiency / to total aggregate Participants Fund.

Stress-tests are conducted daily. Exceptions identified and substantial changes in stress-test results are reviewed by FRM management in order to identify the causes and formulate responses, as needed. The results of this review and related metrics are reported and discussed monthly with the MRC, and shared monthly with the Board Risk Committee and DTC's regulators.

DTC and its affiliates NSCC and FICC have adopted the Clearing Agency Model Risk Management Framework ("Model Risk Framework"),[39] which provides that models utilized for the Participants Fund

[38] Exchange Act Release No. 82368 (December 19, 2017), 82 FR 61082 (December 26, 2017) (SR-DTC-2017-005; SR-FICC-2017-009; SR-NSCC-2017-006).

[39] Exchange Act Release No. 81485 (August 25, 2017), 82 FR 41433 (August 31, 2017) (SR-DTC-2017-008; SR-FICC-2017-014; SR-NSCC2017-008).

formula, as well as stress testing models, be validated prior to their implementation and not less often than annually thereafter. In conducting a model validation, DTC would verify that the model is performing (or continuing to perform) as expected in accordance with its design objectives and business purpose, and identify any deficiencies that would call into question the continuing validity of any such model.

Model validation

An internal Model Risk Governance Committee ("MRGC"), comprised primarily of FRM management, is responsible for oversight of all risk models. This committee meets at least monthly to review DTC models' performance including sensitivity analyses against defined parameters. The MRGC also discusses any identified issues that might impact model efficacy. In accordance with the Model Risk Framework, all new models (including material changes to existing models) are subject to independent validation and approval by the MRGC and the MRC prior to their use in production. All DTC risk models are also reviewed at least annually by the Model Validation and Control Group ("MVC"). The results of these reviews are provided to the Management Risk Committee, the Board Risk Committee and DTC's supervisors. If a model issue is detected, deficiencies would be escalated through the MVC and additional mitigation strategies would be discussed with the MRC and BRC.

Allocation of credit losses and replenishment of resources

DTC maintains sufficient financial resources to cover credit exposures to its system from its Participants with a high degree of confidence, because it operates a closed settlement system in which all settlement obligations (*i.e.*, potential credit exposures) are fully collateralized and, as further set forth in response to Principle 7 (Liquidity risk), the amount of each Participant's settlement obligation is limited to DTC liquidity resources. However, in the unlikely event that DTC exhausts its available liquidity resources and a Participant default or non-default event gives rise to any loss, DTC Rules address loss allocation, including the repayment of any funds borrowed for liquidity to complete settlement. DTC Rules also include a process to replenish financial resources that may be exhausted during a stress event, so that DTC may continue to operate in a safe and sound manner.

As noted throughout this Disclosure Framework, DTC's primary objective is to complete settlement on each business day. To the extent Participant distress is apparent intraday, DTC may take action prior to settlement to require additional deposits to the Participants Fund and/or reduce the Participant's Net Debit Cap. These protections allow DTC to mitigate the potential drain on liquidity resources due to default of the distressed Participant. Because DTC operates a closed system, on the day of default, it will be fully collateralized for any unpaid obligations of Participants. Participants Fund deposits of defaulting Participants will be applied to satisfy their settlement obligations and, should those deposits alone be insufficient, the balance of the Participants Fund is also available as a liquidity resource. Collateral of defaulting Participants may be pledged to secure a borrowing under the committed line of credit.[40]

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[40] The DTC Rules also provide that DTC may borrow funds needed to complete settlement from Participants by credit reductions to their settlement accounts, secured by collateral of the defaulting Participant. This is a provision that DTC treats as a tool reserved for extreme circumstances. Liquidity and loss resources may also be available to DTC from NSCC pursuant to the limited cross guaranty, for failures of Common Members (*see* response to Principle 13 (Participant-default rules and procedures)). Losses may also be satisfied, in part, out of any excess resources available under the Netting Contract and Limited Cross-Guaranty Agreement between DTC, NSCC, FICC and OCC, dated as of January 1, 2003, as amended (the "Multilateral Agreement), which provides for the sharing of a defaulting member's assets. In substance and effect, the Multilateral Agreement provides a mechanism for credit risk reduction by using the assets of a member of one clearing agency to support the obligations and liabilities of the member, first, to that clearing agency and, second, to the other clearing agencies, to the extent of any excess assets.

Once settlement has been achieved, operations will continue on successive days and will be managed in accordance with DTC Rules, the terms and conditions of the credit agreement (if funds were borrowed for settlement), the DTC/NSCC Netting and Limited Cross Guaranty Agreement, the Multilateral Netting and Cross Guaranty between DTC, NSCC, FICC and OCC and applicable law. DTC will liquidate collateral of the defaulting Participant and apply the proceeds to repay any borrowing and restore the Participants Fund. To the extent the market has declined materially, those proceeds may be insufficient, resulting in a loss to be allocated in accordance with DTC Rules. In any case, the liquidation of collateral will occur over a period following the settlement day on which default occurred and DTC will need to address continued operations in the days following default.

In the case of multiple Participant failures that exhaust DTC's available liquidity resources, a likely approach in following days would be to set all Net Debit Caps at one dollar until liquidity resources may be re-established by repayment of loans and reconstitution of the Participants Fund. This approach would effectively require settlement progress payments for all valued transactions. To the extent the Participants Fund has been utilized for liquidity, any Participant whose Required Deposit is below the required amount would be required to pay the deficit to assist in restoration of the Participants Fund. While these tools allow DTC to continue operations, there would be non-routine liquidity demands on Participants, in order to support continuing operations.

Recognizing that the liquidation of collateral may, in a stressed and declining market, not provide sufficient proceeds and result in a loss, DTC has a loss allocation waterfall provided in Rule 4 (Participants Fund and Participants Investment). This Rule provides for the proportionate sharing of the loss by Participants and further provides that Participants may limit, but not extinguish, their liability by withdrawing from DTC within the timeframe specified. Rule 4 also provides that Participants may limit (but not extinguish) their liability by withdrawing from DTC within the time frame specified in the Rule. The loss allocation waterfall and process are more fully described in the response to Principle 13 (Participant-default rules and procedures).

Principle 5: Collateral; CCAS 17Ad-22(e)(5)

Principle 5: Collateral	**CCAS 17Ad-22(e)(5)**
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. ***Key consideration 1***: An FMI should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity, and market risks. ***Key consideration 2***: An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions. ***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. ***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. ***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. ***Key consideration 6***: An FMI should use a collateral management system that is well-designed and operationally flexible.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (5) Limit the assets it accepts as collateral to those with low credit, liquidity, and market risks, and set and enforce appropriately conservative haircuts and concentration limits if the covered clearing agency requires collateral to manage its or its participants' credit exposure; and require a review of the sufficiency of its collateral haircuts and concentration limits to be performed not less than annually.

DTC monitors collateral to support settlement

DTC requires collateral to manage credit exposure for its settlement system, which is designed to allow settlement to be completed among non-defaulting Participants, despite the failure to settle of the Participant or affiliated family of Participants with the largest settlement obligation on any business day. To achieve this objective, DTC relies on two key risk management controls, the Net Debit Cap (as described in response to Principle 7 (Liquidity risk)) and the Collateral Monitor described below. These two controls together create a closed settlement system in which, at any time, the settlement obligation of any Participant will be fully collateralized and the amount due in settlement cannot exceed DTC liquidity resources.

The Collateral Monitor tracks the value of collateral supporting the settlement obligation of each Participant; the collateral value of a security is the product of market price and the haircut determined by

DTC. DTC sets and enforces appropriately conservative haircuts for its securities collateral and has the flexibility to modify haircuts intraday as prudent to protect DTC and its Participants.

DTC, and its affiliates, NSCC and FICC, have adopted the Clearing Agency Securities Valuation Framework ("SV Framework"), which sets forth the manner in which DTC identifies, measures, monitors, and manages the risks related to the pricing of securities processed or otherwise held by the Clearing Agencies in accordance with applicable legal requirements, including CCAS 17Ad-22(e)(4)(i) and 17Ad-22(e)(6)(iv), and addresses related matters. The SV Framework has been filed with and approved by the SEC,[41] and is reviewed and approved by the Board on an annual basis.

Collateral eligibility and haircuts

DTC collateral includes cash and securities. Cash is, of course, the most liquid type of collateral and represents 100 percent value for liquidity purposes. The Participants Fund is a cash fund, to which each Participant is required to make a deposit in an amount related to the liquidity risk it creates for DTC and other Participants.[42]

Securities collateral comprises eligible securities on deposit at DTC, including (i) securities credited to a Participant's account and designated by the Participant as collateral, and (ii) securities that are transferred DVP, until completion of system-wide settlement.[43]

Due to the nature of DTC's business as the U.S. central securities depository, DTC has limited discretion in the selection of securities collateral, other than to determine eligibility prior to deposit and by setting appropriate haircuts.[44] Hence, DTC must rely on the valuation of securities collateral through reliable securities prices from appropriate vendors and conservative haircuts, as key protections.

Eligible securities on deposit are re-priced at least daily at market value, based on reliable pricing sources. FRM is responsible for monitoring vendor prices and vendor ratings, including by:

- Monitoring vendor data quality;
- Identifying variances to vendors and data providers and applying adjustments/overrides, as necessary;

[41] Exchange Act Release No. 82006 (November 2, 2017), 82 FR 51892 (November 8, 2017) (SR-DTC-2017-016; SR-NSCC-2017-016; SR-FICC-2017-020).

[42] Each Participant is also required to invest in DTC Series A Preferred Stock, ratably on a basis calculated in substantially the same manner as the Required Deposit. This Preferred Stock may be sold to other Participants, in the event of a Participant default.

[43] The securities referred to in clause (ii) are intended for delivery to the receiving Participant but will not be delivered to the Participant if it fails to satisfy its net settlement obligation. Under the DTC Rules, these securities are collateral for the Participant's settlement obligation, available to DTC to secure a borrowing to fund the amount of the unpaid settlement obligation. This enables DTC to complete system-wide settlement among non-defaulting Participants.

[44] Securities eligible to be held at DTC for book-entry services must be freely tradable in U.S. securities markets, in accordance with U.S. federal securities law (*see* Footnote 3) and held in a fungible manner. To the extent securities of foreign issuers are deposited at DTC and may constitute collateral, DTC requires issuer's foreign counsel to provide a legal opinion that confirms that the securities may be held at DTC, subject to its Rules, in accordance with New York governing law.

- Monitoring the performance of pricing vendors at least monthly; and

- Performing a pricing vendor performance review on at least a quarterly basis.

DTC haircuts are set to be at least as conservative as the haircuts established under its committed line of credit so that collateral will be sufficient to secure a borrowing under the credit facility.

Collateral Monitor

DTC uses the Collateral Monitor risk management control to track collateral value for each Participant's account. The Collateral Monitor tracks whether DTC has available sufficient collateral value to secure a borrowing to fund the amount of the Participant's net settlement obligation, in the event that the Participant fails to settle.

At the opening of each business day, the Participant's Collateral Monitor is set to zero and built up over the day to secure any settlement obligation that may arise. DTC will credit the CM with the Participant's Actual Participants Fund Deposit. To the extent the Participant designates as collateral any securities credited to its account, their collateral value is added. This collateral value is based on the prior business day's closing market price less the applicable haircut. As securities are transferred intraday for delivery at settlement to the Participant, the collateral value of these securities is also added, offset by the associated debit to the Participant's settlement account. A Participant is restricted from using securities issued by it, or any of its affiliates, as collateral.

Throughout the day, debits and credits to the Participant's securities and settlement accounts will result in corresponding changes in its Collateral Monitor. Conceptually, every DVP transaction translates into a collateral flow and a cash flow, one a credit and the other a debit. The net value of these two flows is used to update the Collateral Monitor. Since the value of securities as collateral is subject to a haircut on the market value, the cash component of each transaction is generally greater in value than its securities component. Thus, the processing of a DVP transfer generally results in an increase in the deliverer's Collateral Monitor and a decrease in the receiver's Collateral Monitor, based on the difference between the collateral value of the securities and the settlement value of the transaction. When processing a transaction, DTC verifies that the deliverer's and receiver's Collateral Monitor will not become negative when the transaction is processed. If the transaction would cause either party to be under-collateralized, the transaction will pend until the deficient account has sufficient collateral to allow for processing.

Conservative and stable but flexible haircuts

DTC monitors the value of Participant collateral through its Collateral Valuation System. The system is driven by the daily receipt of pricing and rating data from independent and internal sources. Securities collateral is valued based on the prior business day's closing market price, less the applicable haircut. Haircuts, which are based primarily upon the availability of prices, ratings, and the price volatility of the particular issue, are employed to protect against intraday price fluctuations. DTC's haircut structure takes into consideration haircuts imposed under its committed line of credit with a consortium of lenders. Securities that are not given collateral value under the line of credit do not receive any collateral value in DTC's system (*i.e.*, a 100 percent haircut is applied).

DTC formally reviews haircuts for eligible securities at least annually, with renewal of the line of credit. DTC programs its acceptable security matrix into its system using applicable market data (*i.e.*, ratings) and internal data (*e.g.*, security type).

DTC haircuts are also reviewed on a daily and monthly basis through back tests, in order to establish adequate coverage levels. FRM performs stress testing against DTC haircuts on a monthly basis and reports results through the stress test governance framework. The back test and stress test results show very high (99.9 percent or better) coverage statistics for existing haircuts under stressed conditions.

FRM may, in its discretion, reprice securities as necessary subject to internal controls and coordination with the Securities Valuation team, or adjust collateral value (*i.e.*, the haircut applicable to one or more securities) when it determines that the value is off-the-market or the security presents additional levels of market risk. These updates may be performed instantaneously with immediate effect on calculations of the Collateral Monitor for affected Participants. FRM reviews securities with intraday price decreases (measured in percentages) that exceed the existing haircut throughout the day. FRM generates exception reports for securities that demonstrate such movement. The reports are reviewed in order to identify Participants with a concentration of these securities in their collateral. As a result, FRM may reduce the collateral value of those securities in the Participant's Collateral Monitor, in accordance with internal procedures. DTC measures the impact of haircut changes on affected Participants when making adjustments and is sensitive to the effect these changes might have on transaction processing for Participants. In order to address concentration limits, intraday DTC monitors collateral portfolios to identify either concentration or concentrated positions. Based on the concentration level and other circumstances, DTC may take additional action as necessary.

FRM also monitors the performance of major U.S. stock exchanges and movements in major market indices and other key market data, together with review of top news stories, to determine if there may be developments that would significantly affect DTC, its eligible securities or its Participants. DTC's policies and procedures regarding concentration of collateral are maintained by FRM and are reviewed and evaluated at least annually. This review is conducted initially by FRM senior management and any recommendations are provided to the Management Risk Committee.

Principle 6: Margin; CCAS 17Ad-22(e)(6)

Principle 6: Margin	**CCAS 17Ad-22(e)(6)**
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. ***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. ***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. ***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 subportfolio 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 destabilising, procyclical changes. ***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	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (6) Cover, if the covered clearing agency provides central counterparty services, its credit exposures to its participants by establishing a risk-based margin system that, at a minimum: (i) Considers, and produces margin levels commensurate with, the risks and particular attributes of each relevant product, portfolio, and market; (ii) Marks participant positions to market and collects margin, including variation margin or equivalent charges if relevant, at least daily and includes the authority and operational capacity to make intraday margin calls in defined circumstances; (iii) Calculates margin 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; (iv) Uses reliable sources of timely price data and uses procedures and sound valuation models for addressing circumstances in which pricing data are not readily available or reliable; (v) Uses an appropriate method for measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products; (vi) Is monitored by management on an ongoing basis and is regularly reviewed, tested, and verified by: (A) Conducting backtests of its margin model at least once each day using standard predetermined parameters and assumptions; (B) Conducting a sensitivity analysis of its margin model and a review of its parameters and assumptions for backtesting on at least a monthly basis, and considering modifications to ensure the backtesting practices are appropriate for

operational capacity to make intraday margin calls and payments, both scheduled and unscheduled, to participants. ***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. ***Key consideration 6***: A CCP should analyse 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. ***Key consideration 7***: A CCP should regularly review and validate its margin system.	determining the adequacy of the covered clearing agency's margin resources; (C) Conducting a sensitivity analysis of its margin model and a review of its parameters and assumptions for backtesting more frequently than monthly during periods of time when the products cleared or markets served display high volatility or become less liquid, or when the size or concentration of positions held by the covered clearing agency's participants increases or decreases significantly; and (D) Reporting the results of its analyses under paragraphs (e)(6)(vi)(B) and (C) of this section to appropriate decision makers at the covered clearing agency, including but not limited to, its risk management committee or board of directors, and using these results to evaluate the adequacy of and adjust its margin methodology, model parameters, and any other relevant aspects of its credit risk management framework; and (vii) Requires a model validation for the covered clearing agency's margin system and related models to be performed not less than annually, or more frequently as may be contemplated by the covered clearing agency's risk management framework established pursuant to paragraph (e)(3) of this section.

DTC is not a CCP and does not provide Central Counterparty Services. Accordingly, Principle 6 and CCAS 17Ad-22(e)(6) do not apply to DTC.

Principle 7: Liquidity risk; CCAS 17Ad-22(e)(7)

Principle 7: Liquidity risk	**CCAS 17Ad-22(e)(7)**
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 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 liquidity obligation for the FMI in extreme but plausible market conditions. ***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. ***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. ***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. ***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	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (7) Effectively measure, monitor, and manage the liquidity risk that arises in or is borne by the covered clearing agency, including measuring, monitoring, and managing its settlement and funding flows on an ongoing and timely basis, and its use of intraday liquidity by, at a minimum, doing the following: (i) Maintaining sufficient liquid resources at the minimum in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of foreseeable stress scenarios that includes, but is not limited to, the default of the participant family that would generate the largest aggregate payment obligation for the covered clearing agency in extreme but plausible market conditions; (ii) Holding qualifying liquid resources sufficient to meet the minimum liquidity resource requirement under paragraph (e)(7)(i) of this section in each relevant currency for which the covered clearing agency has payment obligations owed to clearing members; (iii) Using the access to accounts and services at a Federal Reserve Bank, pursuant to Section 806(a) of the Payment, Clearing, and Settlement Supervision Act of 2010 (12 U.S.C. 5465(a)), or other relevant central bank, when available and where determined to be practical by the board of directors of the covered clearing agency, to enhance its management of liquidity risk; (iv) Undertaking due diligence to confirm that it has a reasonable basis to believe each of its liquidity providers, whether or not such liquidity provider is a clearing member, has: (A) Sufficient information to understand and manage the liquidity provider's liquidity risks; and

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. [DTC is not a CCP. Accordingly, key consideration 4 does not apply.] ***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. ***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. ***Key consideration 7***: An FMI should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum	(B) The capacity to perform as required under its commitments to provide liquidity to the covered clearing agency; (v) Maintaining and testing with each liquidity provider, to the extent practicable, the covered clearing agency's procedures and operational capacity for accessing each type of relevant liquidity resource under paragraph (e)(7)(i) of this section at least annually; (vi) Determining the amount and regularly testing the sufficiency of the liquid resources held for purposes of meeting the minimum liquid resource requirement under paragraph (e)(7)(i) of this section by, at a minimum: (A) Conducting stress testing of its liquidity resources at least once each day using standard and predetermined parameters and assumptions; (B) Conducting a comprehensive analysis on at least a monthly basis of the existing stress testing scenarios, models, and underlying parameters and assumptions used in evaluating liquidity needs and resources, and considering modifications to ensure they are appropriate for determining the clearing agency's identified liquidity needs and resources in light of current and evolving market conditions; (C) Conducting a comprehensive analysis of the scenarios, models, and underlying parameters and assumptions used in evaluating liquidity needs and resources more frequently than monthly when the products cleared or markets served display high volatility or become less liquid, when the size or concentration of positions held by the clearing agency's participants increases significantly, or in other appropriate circumstances described in such policies and procedures; and (D) Reporting the results of its analyses under paragraphs (e)(7)(vi)(B) and (C) of this section to appropriate decision makers at the covered clearing agency, including but not limited to, its risk management committee or board of directors, and using these results to evaluate the adequacy of and adjust its liquidity risk management methodology, model parameters, and

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. ***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. ***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 multiday 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. ***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	any other relevant aspects of its liquidity risk management framework; (vii) Performing a model validation of its liquidity risk models not less than annually or more frequently as may be contemplated by the covered clearing agency's risk management framework established pursuant to paragraph (e)(3) of this section; (viii) Addressing foreseeable liquidity shortfalls that would not be covered by the covered clearing agency's liquid resources and seek to avoid unwinding, revoking, or delaying the sameday settlement of payment obligations; (ix) Describing the covered clearing agency's process to replenish any liquid resources that the clearing agency may employ during a stress event; and (x) Undertaking an analysis at least once a year that evaluates the feasibility of maintaining sufficient liquid resources at a minimum in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of foreseeable stress scenarios that includes, but is not limited to, the default of the two participant families that would potentially cause the largest aggregate payment obligation for the covered clearing agency in extreme but plausible market conditions if the covered clearing agency provides central counterparty services and is either systemically important in multiple jurisdictions or a clearing agency involved in activities with a more complex risk profile.

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.	

Liquidity Risk Management Framework

DTC, and its affiliates, NSCC and FICC, have adopted a Clearing Agency Liquidity Risk Management Framework ("Liquidity Risk Framework") which sets forth the manner in which DTC measures, monitors and manages the liquidity risks that arise in or are borne by it, including (i) the manner in which DTC deploys its liquidity tools to meet its settlement obligations on an ongoing and timely basis and (ii) DTC's use of intraday liquidity, in accordance with applicable legal requirements, including CCAS 17Ad-22(e)(7), and addresses related matters. The Liquidity Risk Framework has been filed with and approved by the SEC,[45] and is reviewed and approved by the Board Risk Committee on an annual basis. Liquidity risk is managed by the Liquidity Product Risk Unit within FRM, and is governed by, and subject to oversight of, the MRC and the BRC.

DTC's liquidity management strategy and controls are designed to maintain available sufficient liquid resources to complete system-wide settlement on each business day, with a high degree of confidence and notwithstanding the failure to settle of the Participant, or affiliated family of Participants, with the largest settlement obligation. The amount of that settlement obligation cannot exceed the amount of liquidity resources because of the Net Debit Cap risk management control described below.

DTC's delivery and settlement system is a DVP Model 2 DNS system,[46] as further described in Principle 8 (Settlement finality). The structure is a closed, collateralized system in which liquidity resources are matched against risk controls on activity, so, at any time, the potential net settlement obligation of any Participant or affiliated family of Participants cannot exceed those liquidity resources.

Liquidity resources

DTC maintains two key liquidity resources that are considered "qualifying liquid resources," as defined in Rule 17Ad-22(a)(14): the Participants Fund of at least $1.15 BN, and the committed line of credit for $1.9 BN.

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[45] Exchange Act Release No. 82377 (December 21, 2017), 82 FR 61617 (December 28, 2017) (SR-DTC-2017-004; SR-NSCC-2017-005; SR-FICC-2017-008).

[46] *See* Annex D of the FMI Principles, where the various types of settlement systems are described.

Participants Fund

DTC maintains a cash Participants Fund, with an aggregate deposit value of approximately $1.75 BN as of June 30, 2018.[47] The minimum Required Deposit for each Participant is $7,500. The actual Required Deposit for each Participant is calculated based on a 60 business-day rolling average of the Participant's six highest intraday net debit peaks, to allocate ratably the first $450 MM of the aggregate Participants Fund. An additional algorithm proportionally allocates an additional $700 MM among Participants whose Affiliated Family's Net Debit Caps exceed $2.15 BN. A description of the Participants Fund calculation, including the methodology for determining Required Deposits, is set forth in the Settlement Service Guide.[48]

Intraday, DTC monitors the levels of a Participant's net debit balances and records the highest net debit, to compute the Required Deposit. The Required Deposit for each Participant is recalculated daily. Typically if, in the daily calculation, the amount of the difference between the latest calculation and the current Required Deposit equals or exceeds preset thresholds, DTC will require the Participant to make up the difference on the same day the deficiency was determined. If a Participant is required to increase its deposit, due to the daily recalculation or otherwise, DTC will notify the Participant, and the amount will be automatically charged to its settlement account as a Required Deposit. If a Participant's requirement decreases, the Participant will be notified at least quarterly. Participants may inquire and withdraw excess amounts monthly, subject to conditions set forth in the DTC Rules. If DTC becomes concerned with a Participant's operational or financial soundness, DTC may require an additional deposit to the Participants Fund.

Committed Line of Credit

DTC maintains a $1.9 BN 364-day revolving line of credit with a syndicate of commercial lenders. The amount of any borrowing must be secured by collateral of sufficient collateral value as determined by haircuts provided for in the facility agreements and incorporated by DTC in its Collateral Monitor calculations. (*See* Principle 5 (Collateral)). The credit agreement requires lenders to meet their lending obligations to DTC no later than the end of the day on which a borrowing is made, so long as sufficient collateral is available to be pledged.

Net Debit Caps limit net settlement obligations to liquidity resources

DTC's primary liquidity control is the Net Debit Cap of each Participant (and affiliated family of Participants[49]), set to an amount at or below the value of liquidity resources. The maximum Net Debit Cap for a Participant is $1.8 BN and for an affiliated family of Participants, $2.85 BN.

To determine a Participant's Net Debit Cap, DTC records the Participant's three highest intraday net debit peaks over a rolling 70 business day period. The Participant's average of these net debit peaks is calculated

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[47] The aggregate of Required Deposits must equal $1.15 BN; however, Participants may voluntarily deposit more, to support their activity. If a Participant defaults, its entire Participants Fund deposit (the required amount plus any excess) may be applied to satisfy any liability or loss due to its default, including liquidity to complete settlement.

[48] DTC Settlement Service Guide, *available at* http://www.dtcc.com/~/media/Files/Downloads/legal/service-guides/Settlement.pdf.

[49] Affiliated family means each Participant that controls or is controlled by another Participant and each Participant that is under the common control of any Person. For purposes of this definition, "control" means the direct or indirect ownership of more than 50 percent of the voting securities or other voting interests of any Person.

and multiplied by a factor to determine the Participant's Net Debit Cap. A description of this calculation is available in the Settlement Service Guide.[50]

The Net Debit Cap controls the amount of the settlement obligation that any Participant or family may incur. Any transaction that would cause the net debit balance of a Participant or of affiliated family of Participants, to exceed its Net Debit Cap will not be processed. It pends until the net debit balance is reduced sufficiently to allow processing. The net debit balance may be reduced intraday by DVP transactions which generate credits to the Participant's settlement account or by intraday settlement progress payments.

The settlement account of each Participant may be in a net credit or net debit position intraday as transactions versus payment are processed, and other amounts (such as principal and interest or settlement progress payments) are credited. At the end of settlement day, each Participant will either owe a net debit balance or be owed a net credit balance, or be flat. Because the Net Debit Cap limits the net debit balance to an amount within the liquidity resources of DTC, DTC will have sufficient liquidity resources to complete settlement among non-defaulting Participants if the largest Participant and its affiliates default.

Measurement and monitoring of liquidity risk and needs

DTC's liquidity needs for settlement are driven by protecting DTC against the possibility that a Participant may fail to pay its settlement obligations on a business day. The tools available to DTC under its Rules (e.g., Collateral Monitor and Net Debit Cap) allow it to regularly test the sufficiency of liquid resources on an intraday and end-of-day basis and adjust to stressed circumstances during a settlement day to protect itself and Participants against liquidity exposure under normal and stressed market conditions.

DTC calculates its liquidity needs per Participant (at a legal entity level) and further aggregates these amounts at a family level (that is, including all affiliated Participants, based on the assumption that all such affiliates may fail simultaneously). In this regard, DTC's Settlement Operations group monitors settlement flows and net debit obligations on a daily basis. In addition, FRM determines the appropriateness of each Participant's Net Debit Cap and also monitors net settlement activity.

Current available liquidity resources are sufficient to satisfy the single-largest family default under stressed but plausible conditions (a "Cover 1 Standard").[51] For DTC, structural features, including the Collateral Monitor, the Net Debit Cap and Participants Fund, work together to limit potential liquidity requirements in default scenarios both on an intra-day and end-of-day basis. Stress testing of the collateral that supports DTC's risk controls is discussed in Principle 4 above.

Reliability of liquidity providers

As described below, DTC undertakes due diligence with respect to its liquidity providers and conducts testing with those providers annually. DTC reviews the limits of outstanding investments and collateral held (when applicable) of its investment counterparties and conducts formal reviews of the reliability of its qualified liquid resources providers in extreme but plausible market conditions.

[50] DTC Settlement Service Guide, *available at* http://www.dtcc.com/~/media/Files/Downloads/legal/service-guides/Settlement.pdf.

[51] The DTC Rules also provide that DTC may borrow funds needed to complete settlement from Participants by credit reductions to their settlement accounts, secured by collateral of the defaulting Participant. This is a provision that DTC treats as a tool reserved for extreme circumstances.

DTC's committed line of credit is maintained with a diversified consortium of commercial lenders, which are regulated financial institutions in the business of extending credit on a committed basis as provided in the credit agreement governing the facility. The line of credit is renewed annually. During the renewal period DTC, in coordination with the lead arranger, provides potential lenders with information to enable them to understand the obligations and risks they may face as potential lenders under the facility, which includes the need to be able to provide funding within a short time-window on a same-day basis. The lead arranger also conducts standard due diligence on all potential lenders to determine their suitability, and DTC conducts its own credit analysis of potential lenders. These reviews, together with discussions and meetings conducted in connection with the annual renewal, are designed to provide DTC with confidence that the lenders have sufficient information and the capacity to perform their obligations should DTC need to draw on the facility.

Test drawdowns for the line of credit are performed periodically (semi-annually) to demonstrate that the agents and the lenders are operationally capable to perform their obligations under the facility and are familiar with the drawdown process.

DTC also seeks to manage its liquidity and operational risks arising from Settling Banks and investment counterparties. With respect to Settling Banks, minimum requirements are effectuated through the membership application and ongoing review process and, with respect to investment counterparties, the DTC Rules and the Investment Policy include counterparty credit and concentration standards. DTC has established strict eligibility requirements for entities seeking to act as Settling Banks, which include minimum financial, credit and operational standards. In evaluating its exposure to a Settling Bank, DTC takes into account, among other factors, the regulation and supervision of the bank, its operational reliability (which is monitored daily), its suitability for the Settling Bank services it performs, along with other services it may provide to DTC, its creditworthiness, and its capitalization and access to liquidity (including access to central bank liquidity).

DTC Market Risk has the ability to set Net Debit Caps individually by Participant, or generally, to as low as $1, so that the affected Participant(s) must make settlement progress payments intraday in order for transactions to be processed. This allows DTC to protect itself against end-of-day net settlement liquidity risk because transactions have been, effectively, prefunded. Otherwise, transactions that would cause a Participant's net debit balance to exceed its Net Debit Cap will not be processed. These transactions will pend in the system until the transaction can be processed without exceeding the Net Debit Cap limit, or until the designated cutoff time for processing valued transactions in DTC's system is reached, at which time the pending transaction will be dropped from the system.

These tools allow DTC to adjust to stressed circumstances during a settlement day, to protect itself and Participants against liquidity exposure. (See discussion of stress testing in Principle 4 above.)

Replenishment of liquidity resources; uncovered liquidity shortfalls

DTC settles on a daily basis. If, due to extreme circumstances, all liquidity resources were exhausted on one settlement day (including application of the entire Participants Fund and borrowing under the line of credit), DTC would need to restore those resources and/or require Participants to prefund DVP transactions, in order to conduct business on the next settlement day. Participants would be required to make up their Participants Fund deposits in the requisite amount, and DTC would likely reduce the maximum Net Debit Cap for all Participants and affiliated families to $1, as described above. The line of credit would not be restored until DTC could repay borrowings by liquidating collateral of the defaulting Participant, which would take some number of days to complete. As the liquidation of a defaulting Participant's securities collateral is completed, the proceeds would be used to repay any borrowings, replenishing DTC liquidity resources.

Should closeout proceeds be insufficient to repay a borrowing, resulting in a loss, DTC would have recourse to its loss waterfall, described in response to Principle 13 (Participant-default rules and procedures).

Principle 8: Settlement finality; CCAS 17Ad-22(e)(8)

Principle 8: Settlement finality	**CCAS 17Ad-22(e)(8)**
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. ***Key consideration 1***: An FMI's rules and procedures should clearly define the point at which settlement is final. ***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. ***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.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (8) Define the point at which settlement is final to be no later than the end of the day on which the payment or obligation is due and, where necessary or appropriate, intraday or in real time.

DTC provides final settlement by the end of the value date

DTC provides clear and certain final settlement at the end-of-day on the value date of transactions settled. As noted above, DTC offers a DVP Model 2 DNS system, in which securities deliveries settle gross and related funds obligations settle net, through end-of-day settlement.[52] At settlement, securities transfers versus payment on the books of DTC and funds transfers in central bank money are final, as DTC Rules clearly provide.

DTC is an end-of-day net settlement system by design. The DTC same-day-funds settlement system was developed to accommodate the needs of Participants and investors in the high volume, high value U.S. securities markets. It provides a critical risk mitigant by reducing the number and value of funds transfers for securities settlement in the U.S. market, while conditioning the delivery of securities on satisfaction of related payment obligations.

[52] DTC is considering the introduction of a morning funds settlement in addition to its end-of-day net funds settlement. Subject to regulatory approval, the proposed morning settlement would include transactions processed by DTC prior to the morning cutoff time that would be specified by DTC's Rules and Procedures. This proposed enhancement, which is part of DTC's larger Settlement Optimization initiative, is designed to further promote settlement finality at DTC by facilitating the completion of net funds settlement at an earlier time on settlement date for transactions processed prior to the morning cutoff. For more information regarding DTC's proposal in this regard, please see DTC's settlement optimization website (https://www.dtcclearning.com/products-and-services/settlement/settlement-optimization.html).

DTC Rules clearly define the point at which settlement is final

Under the DTC Rules, including Rule 9(B) (Transactions in Eligible Securities), a transfer free of payment is effective when the transferred securities have been debited from the account of the delivering Participant and credited to the account of the receiving Participant. Free transfers may occur at any time during the settlement day and, accordingly, may settle intraday.[53]

For DVP transactions, DTC Rules clearly provide that settlement of a delivery or pledge versus payment is final, at the latest, when end-of-day system-wide net settlement has occurred (Rule 9(B)). No reversals of transfers or payments are permitted after the end-of-day completion of settlement.

Under DTC's rules, a DVP transaction is irrevocable as to the delivering party once the securities are debited from the delivering Participant's securities account. The delivering Participant (provided it is not in default at settlement) will be paid through net settlement, regardless of any failure to settle of the receiving Participant. A DVP transaction is irrevocable as to the receiving party at the earliest of the following events: (i) when DTC makes a final determination on settlement date that the balance in the settlement account of the receiving Participant is not negative; (ii) when the receiving party pays the amount of any negative balance in its settlement account, as determined by DTC for that settlement day; or (iii) during the settlement day, when (so long as DTC's risk management controls are satisfied) the receiving Participant instructs DTC to effect a delivery, pledge, or withdrawal of the securities.

No DVP may be processed unless the deliverer and the receiver will satisfy Net Debit Cap and Collateral Monitor requirements after giving effect to the transaction. That is, the money debit to the receiver cannot cause its net debit balance to exceed its Net Debit Cap and its Collateral Monitor must be sufficient to secure the net debit balance after giving effect to the related funds debit. From the delivery side, the delivery will not be permitted if it would cause the deliverer to have inadequate collateral to secure its net debit balance, if any. If controls are never satisfied, the transaction will not be processed for settlement on that day but may be resubmitted on the following day.[54]

By virtue of the Net Debit Cap and Collateral Monitor controls, the deliverer may rely on payment through the net settlement process, even if the receiver defaults, because DTC will have liquidity resources to cover the amount of the failed net settlement payment. A Participant that fails to settle will not receive securities delivered or pledged to it versus payment, as it will not have paid for them.[55] Under Rule 9(B), those securities are collateral that DTC may liquidate or pledge to secure a borrowing, to fund settlement among

[53] This is the general rule for free deliveries at DTC. As noted in the General Background and further described in Principle 20 (FMI links), CNS deliveries are settled free of payment at DTC. However, deliveries from NSCC to a receiving Common Member are not final until the Effective Time, under the NSCC rules and procedures, as provided in DTC Rule 6 (Services).

[54] Under DTC Rules, all securities deliveries and payment orders are also subject to DTC's Receiver Authorized Delivery (RAD) control. RAD allows a receiver of a securities delivery and/or payment order to review and accept or reject the transaction, before DTC processes it further.

[55] DTC Rule 9(B) provides that securities that are delivered versus payment are owned intraday by DTC, pending end-of-day settlement, at which time the securities are delivered to receiving Participants that satisfy their net settlement obligations, or have a zero balance or net credit balance.

the non-defaulting Participants. Through the net settlement process, the deliverer will, nevertheless, have been paid on the value date of the delivery.[56]

DTC currently processes transactions in real-time from approximately 8:30 PM on the night before settlement day until 3:30 PM on settlement day for valued transactions and until 6:35 PM for free transactions.[57] Transactions that cannot satisfy DTC's controls at the time they are introduced to DTC will recycle throughout the day and be continuously reattempted until approximately 3:10 PM for valued transactions and until 6:35 PM for free transactions. Transactions that satisfy DTC's controls are processed immediately as described above. The end-of-day settlement process typically concludes between approximately 4 PM and 4:30 PM.

As more fully described in Principle 9 (Money settlements), net funds settlement for DTC occurs in central bank money through the FRS. Each Participant designates a Settling Bank to effect settlement on its behalf; however, each Participant remains liable as principal for its own settlement obligation and, if its Settling Bank does not settle for it, must wire funds to DTC through another financial institution. Each Settling Bank must have an account at a Federal Reserve Bank capable of processing NSS payments.

Finality of the exchange of funds associated with DTC transactions occurs upon completion of DTC instructed NSS fund transfers between its account at the FRBNY and the Federal Reserve Bank accounts of the Settling Banks. As applicable law and regulations provide, NSS settlement is final when the relevant Federal Reserve Bank accounts are credited/debited.

Settlement extensions are occasionally necessary, often to accommodate operational issues of Participants. These types of extensions are notified to Participants through regular communications systems (*see* Principle 22 (Communication procedures and standards)). Significant extensions that may affect NSS and Fedwire® activities will be notified promptly to the FRBNY, and other DTC regulators as appropriate. These extensions would not present DTC or any Participant with an opportunity to reverse or revoke the completion of transactions that day. DTC has never deferred final settlement to the next business day.

Once securities and funds settlement have been completed, settlement is final under the DTC Rules, and no reversals or revocations are possible.

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[56] Settlement accounts reflect running debits and credits intraday, as a Participant may be a delivering Participant in one DVP and a receiving Participant in another. At the end of the day, any Participant may have a net debit, net credit or zero balance for settlement. When a Participant with a net debit balance pays its settlement obligation and DTC completes system-wide settlement, all securities processed for delivery to that Participant will be credited to its account and it will have paid for those deliveries. As to payments due to the Participant for its deliveries, the Participant will have been paid as well, because credits for those deliveries intraday have offset and reduced its other debit obligations, even though, on balance, it finished the day with a settlement obligation.

[57] As part of the aforementioned settlement optimization initiative, DTC is proposing to move the beginning of settlement processing from 8:30 PM on the night before settlement (S-1) to 3:00 AM on the morning of settlement (S).

Principle 9: Money settlements; CCAS 17Ad-22(e)(9)

Principle 9: Money settlements	CCAS 17Ad-22(e)(9)
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 minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money. ***Key consideration 1***: An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks. ***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. ***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. ***Key consideration 4***: If an FMI conducts money settlements on its own books, it should minimise and strictly control its credit and liquidity risks. ***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.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (9) Conduct its money settlements in central bank money, where available and determined to be practical by the board of directors of the covered clearing agency, and minimize and manage credit and liquidity risk arising from conducting its money settlements in commercial bank money if central bank money is not used by the covered clearing agency.

DTC settles in central bank money

DTC operates a Model 2 DVP deferred net settlement ("DNS") system in which funds settlement occurs at the end of the business day. Money settlement is conducted in U.S. central bank funds through a tiered structure and netting process designed to minimize and strictly control credit and liquidity risks. Funds transfers are settled through NSS[58] and are final when effected on the books of the FRBNY (or any other Federal Reserve Bank at which a Settling Bank maintains its account). Commercial banks, acting as Settling Banks for DTC Participants, must have Federal Reserve Bank accounts and satisfy criteria including regulatory status, creditworthiness, capitalization, access to liquidity and operational reliability.

Tiered and Netted Settlement Arrangements

Each Participant is required to have a commercial bank that acts as its Settling Bank to fund or receive payments on its behalf. A Settling Bank must be a full service Participant, and have an account at a Federal Reserve Bank through which funds settlement may be processed. A Participant that is a bank may act as its own Settling Bank, provided it meets the requisite operational criteria. Settling Banks must enter into appropriate agreements for the conduct of this service. Each Participant may select its own Settling Bank and DTC does not intervene in that relationship. (Settling Bank standards and monitoring are described below.) The Settling Bank may or may not have a credit relationship with the Participant – it is not expected or required to guarantee the obligations of the Participant or to advance funds on behalf of the Participant.[59] If a Settling Bank fails to settle on behalf of one or more Participants for which it has agreed to act, each of those Participants remain obligated to pay its net settlement obligation in central bank money through alternative funding arrangements (*i.e.*, by Fedwire® payment of its net debit balance within specified settlement timeframes). A Settling bank may not refuse to settle for itself.

Each day, the DTC settlement system records money debits and credits to Participant settlement accounts throughout the processing day. Credits arise from deliveries versus payment, receipt of payment orders, principal and interest distributions in respect of securities held, intraday settlement progress payments and any other items or transactions that give rise to a credit. Debits are primarily due to receives versus payment, as well as other types of charges to the account permitted under the Rules of DTC. As these debits and credits are recorded intraday, the Participant's settlement account will be in a net debit balance or net credit balance from time to time and, finally, at the end of the day, a net debit, net credit or zero balance is determined. This final net debit or net credit balance determines whether the Participant has an obligation to pay or to be paid in the process of DTC completing end-of-day settlement among all non-defaulting Participants. A Participant with an end-of-day net debit balance has an obligation to pay DTC that amount; a Participant with an end-of-day net credit balance is entitled to receive a payment from DTC. The intraday monitoring of Participant net debit balances against collateral and liquidity resources is also structured so that, if the Participant or affiliated family of Participants with the largest settlement obligation fails to pay, DTC will nevertheless be able to complete settlement among non-defaulting Participants so that Participants having net credit balances that day will be paid (*see* response to Principle 7 (Liquidity risk)).

To protect DTC and its Participants and minimize systemic risk, money settlement amounts are subject to netting to reduce funding transfers due through the commercial banking and central bank systems. From an operational perspective, DTC end-of-day money settlement is centralized with NSCC's end-of-day settlement, so as to provide Common Members with consolidated reporting and a single point of access for all settlement information, as well as the benefit of netting money settlements. Under this process,

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[58] NSS is a multilateral settlement service owned and operated by the Federal Reserve Banks. The service is offered to depository institutions that settle for participants in clearinghouses, financial exchanges and other clearing and settlement groups. Settlement agents, acting on behalf of those depository institutions in a settlement arrangement, electronically submit settlement files to the applicable Federal Reserve Bank(s). Files are processed on receipt, and entries are automatically posted to the Federal Reserve Bank accounts of the depository institutions. DTC maintains an account at the FRBNY and also acts as settlement agent for NSCC.

[59] DTC Rules include protections such as allowing the Settling Bank to refuse to settle for a Participant or, intraday, to cause DTC to lower the Net Debit Cap of an affected Participant.

following the determination of final net numbers for each DTC Participant and for each NSCC Member, these amounts are further netted or combined to produce a consolidated net money settlement obligation for Common Members. For example, a Common Member with a settlement debit at NSCC and a settlement credit at DTC, will have that debit netted against the DTC credit.

Settling Banks may settle on behalf of multiple DTC Participants and/or NSCC Members. Following determination of the consolidated net money settlement obligations of Common Members, the net-net debit or credit amounts for each Participant on whose behalf the Settling Bank settles is further netted to produce a single net-net debit or credit balance for each Settling Bank. At this stage, each Settling Bank must acknowledge the net amount due to it or from it, in order for settlement to proceed (or, a Settling Bank may refuse to settle for one or more identified Participants).[60] Settlement of these net-net balances occurs through use of the NSS, whereby DTC, for itself and as NSCC's settlement agent, submits instructions to have the Federal Reserve Bank accounts of the Settling Banks charged for their net-net debit balances and credited with their net-net credit balances, with offsetting entries to the DTC account at FRBNY. NSS funds transfers are final immediately when effected, in accordance with the FRS rules and procedures governing NSS.[61] DTC confirms that funds transfers have been effected (once the NSS process has completed) on each business day. Under DTC Rule 9(B), this has the legal effect of completing the settlement of all DVP transactions processed on that business day, i.e., this is the time at which settlement is final pursuant to the DTC Rules and Procedures.

The timeframes for the DTC Settlement process which Participants and Settling Banks must follow are set forth in the DTC Settlement Service Guide.[62]

DTC Acts as Settlement Agent for NSCC

As described in Principle 20 (FMI Links), DTC has a settlement netting interface with its affiliate, NSCC that is integral to the settlement of each clearing agency. DTC acts as Settlement Agent for NSCC. In submitting the end-of-day NSS file, DTC, on its own behalf and as NSCC's settlement agent, submits instructions to cause the Federal Reserve Bank accounts of the Settling Banks to be charged for their net-net debit balances and credited with their net-net credit balances. This cross-clearing agency netting and settlement arrangement is reflected both in the Rules of each of DTC and NSCC, as well as in a netting agreement between them (*see* response to Principle 13 (Participant- default rules and procedures)). When NSS processing and DTC system-wide settlement is completed, NSCC settlement for the business day is likewise completed.

[60] Pursuant to its Rules, DTC, which settles with Settling Banks on behalf of itself and NSCC, will treat any Settling Bank that fails to timely provide its affirmative acknowledgement of its end-of-day net-net settlement balance or notify DTC of its refusal to settle for one or more Participants for which it is the designated Settling Bank, as having been deemed to acknowledge its end-of-day net-net settlement balance. The Settling Bank's net-net settlement balance would then, in the ordinary course of settlement processing, be debited from or credited to its Federal Reserve Bank account through the NSS process. Any Settling Bank, that is unable to timely provide an affirmative acknowledgment or timely provide a refusal with respect to its net-net settlement balance, or is unable to immediately provide an affirmative acknowledgment of an adjusted balance made available to the Settling Bank after it has refused to settle for a Participant, must speak to staff of the DTC Settlement Operations group via phone after final figures have been released and provide notification in this regard in order to avoid being charged a late fee.

[61] Federal Reserve Circular OC 12.

[62] DTC Settlement Service Guide, *available at* http://www.dtcc.com/~/media/Files/Downloads/legal/service-guides/Settlement.pdf.

Settling Bank Requirements and Monitoring

Under DTC Rules, a Settling Bank is required to be a Participant (as defined in the Rules), maintain an account at a Federal Reserve Bank, and meet minimum financial and operational criteria, including minimum capital requirements and a minimum Tier 1 Risk-Based Capital Ratio for regulatory purposes. Settling Banks are subject to supervision and regulation by their Federal and State regulators, depending on their form of organization.

FRM monitors the Settling Banks for their compliance with DTC Rules. In this regard, FRM obtains information from Settlement Operations regarding settlement exposures, and any operational problems experienced by these banks (as well as other Participants). Settling Bank operational issues are monitored on an ongoing basis; Settling Banks may be subject to fines for failure to timely acknowledge settlement balances.

Quarterly, FRM reviews the capital adequacy of Settling Banks and the SRO monitors DTC Settling Bank exposure and concentration. For settling banks that are also Full Service Members, financial statements filed with regulatory agencies (CALL reports), and information gathered from various financial publications are analyzed to confirm that each Participant, including Settling Banks, continues to be financially stable.

Canadian Dollar Settlement

DTC also maintains a link with the CDS to support valued transactions settled in Canadian Dollars. Participants settle their Canadian Dollar obligations with DTC's Canadian Dollar concentration bank (Royal Bank of Canada). At the end of each business day, DTC performs a single net Canadian Dollar settlement with CDS. DTC utilizes the services of Royal Bank of Canada for Canadian Dollar settlement because DTC does not have direct access to The Bank of Canada. Canadian Dollar settlement accounts for less than 0.20percent of DTC's average daily valued settlement volume.

Please see Principle 20 (FMI links) for additional information regarding this link with CDS.

Principle 10: Physical deliveries; CCAS 17Ad-22(e)(10)

<u>Principle 10: Physical deliveries</u>	**<u>CCAS 17Ad-22(e)(10)</u>**
An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries. ***Key consideration 1***: An FMI's rules should clearly state its obligations with respect to the delivery of physical instruments or commodities. ***Key consideration 2***: An FMI should identify, monitor, and manage the risks and costs associated with the storage and delivery of physical instruments or commodities.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (10) Establish and maintain transparent written standards that state its obligations with respect to the delivery of physical instruments, and establish and maintain operational practices that identify, monitor, and manage the risks associated with such physical deliveries.

DTC does not settle deliveries of physical instruments

DTC does not settle transactions using physical delivery, *i.e.*, the delivery of a physical certificate or instrument representing securities or other financial assets. DTC therefore does not have rules relating to obligations with respect to the physical delivery of physical certificates or instruments.

Physical deposits are necessary for the immobilization of securities at DTC. DTC accepts for deposit physical certificates or instruments representing securities and other financial assets for purposes of client safekeeping and to effect book-entry transfers of interests in the underlying securities or other financial assets. DTC has clear rules and procedures for such deposits and, as appropriate, withdrawals, of physical certificates or instruments, as well as eligibility standards for the types of underlying securities or other financial assets for which physical certificates or instruments may be deposited. Deposited assets may be stored physically within DTC's securities vault, recorded electronically on the books of the issuer's agent or held through another depository.

As an ancillary service, DTC also operates a Custody Service that allows Participants to place physical securities certificates that are not held for book-entry services of the Depository into the custody of DTC for storage in the vault. These securities are held for physical custody only. If they are required by Participants for physical delivery for any purpose, DTC will comply with appropriate instructions of Participants for withdrawal or physical delivery in accordance with those instructions.

With regard to custody of physical securities, DTC identifies monitors and manages the risks and costs associated with the storage and recordkeeping for such physical certificates or instruments. DTC evaluates and takes measures to reduce the risk of loss and provide safe storage of physical securities certificates and other instruments in its custody. Some of these include the following:

- DTC has established a comprehensive security program, as required by Regulation H of the Federal Reserve Act, and has a designated Security Officer that is approved by the Board.

- There is a separation of duties in place between the staff responsible for balancing accuracy of DTC's inventory versus the Participants' ledgers and the staff responsible for securities processing and vault operations.

Access to DTC's vault is highly secured and operates in accordance with industry best practices. Such controls include:

- Vault areas are monitored by the internal Global Security Management department, and access is restricted to select employees via badge and biometric readers.

- Periodically, sampling and full vault counts are performed to identify, missing and inventory discrepancies. All incoming and outgoing certificates are imaged and DTC utilizes automated systems to monitor certificate retention and control.

- To protect against the risk of loss or misuse of certificates that may be incurred as a result of the physical processing, DTCC maintains insurance coverage related to theft, loss or misuse of securities. Subject to the terms and conditions of the actual policies, DTC maintains insurance coverage of $800 million aggregate on-premises and/or in-transit coverage under blanket bond/all-risk policies.

- DTC maintains a robust, automated certificate inventory record, the Automated Inventory Management (AIM) system, detailed at the individual certificate level, on each and every physical certificate that is held in DTC's vault.

Principle 11: Central securities depositories; CCAS 17Ad-22(e)(11)

Principle 11: Central securities depositories	**CCAS 17Ad-22(e)(11)**
A CSD should have appropriate rules and procedures to help ensure the integrity of securities issues and minimise and manage the risks associated with the safekeeping and transfer of securities. A CSD should maintain securities in an immobilised or dematerialised form for their transfer by book entry. ***Key consideration 1***: A CSD should have appropriate rules, procedures, and controls, including robust accounting practices, to safeguard the rights of securities issuers and holders, prevent the unauthorised creation or deletion of securities, and conduct periodic and at least daily reconciliation of securities issues it maintains. ***Key consideration 2***: A CSD should prohibit overdrafts and debit balances in securities accounts. ***Key consideration 3***: A CSD should maintain securities in an immobilised or dematerialised form for their transfer by book entry. Where appropriate, a CSD should provide incentives to immobilise or dematerialise securities. ***Key consideration 4***: A CSD should protect assets against custody risk through appropriate rules and procedures consistent with its legal framework. ***Key consideration 5***: A CSD should employ a robust system that ensures segregation between the CSD's own assets and the securities of its participants and segregation among the securities of participants. Where supported by the legal framework, the CSD should also support operationally the segregation of securities belonging to a participant's customers on the participant's books and facilitate the transfer of customer holdings. ***Key consideration 6***: A CSD should identify, measure, monitor, and manage its risks from other activities that it may perform; additional tools may be necessary in order to address these risks.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (11) When the covered clearing agency provides central securities depository services: (i) Maintain securities in an immobilized or dematerialized form for their transfer by book entry, ensure the integrity of securities issues, and minimize and manage the risks associated with the safekeeping and transfer of securities; (ii) Implement internal auditing and other controls to safeguard the rights of securities issuers and holders and prevent the unauthorized creation or deletion of securities, and conduct periodic and at least daily reconciliation of securities issues it maintains; and (iii) Protect assets against custody risk through appropriate rules and procedures consistent with relevant laws, rules, and regulations in jurisdictions where it operates.

DTC Protects the Integrity of Deposited Securities

DTC is the central securities depository in the U.S., holding eligible securities deposited with it in either immobilized or dematerialized form and maintaining securities accounts for its Participants, to which accounts it credits and debits interests in the securities held on deposit. Interests in those securities may be transferred between Participants by book-entry deliveries. The DTC Rules provide for the determination of which securities are eligible for deposit and for the types of interests in the securities that may be reflected in DTC book-entries, including deliveries (free or versus payment) and pledges. These Rules reflect the agreement of DTC with each of its Participants for the operations and services provided, in every case, subject to applicable law (as further set forth in response to Principle 1 (Legal basis)).

The Indirect Holding System

The DTC holding structure for interests in securities exemplifies the indirect holding system that has developed in the U.S. over the forty-plus years since DTC was created reflected in UCC, Article 8. DTC, through its nominee, Cede, is the registered holder of securities on the books of the issuer or its transfer agent; that is, DTC is the direct holder of legal title to the securities on the books of the issuer.[63] DTC holds securities collectively for the book-entry credit of interests to its Participants, not for its own, proprietary, investment purposes.

DTC maintains securities accounts for Participants (generally, banks, broker-dealers and other CSDs). Interests in the securities held by DTC are credited to these accounts in favor of these Participants, which then have a securities entitlement to the securities credited to their accounts. Participants are generally also part of the indirect holding system, maintaining accounts for their customers to which interests in these securities are credited. Those customers or, where Participants hold securities in a proprietary capacity, the Participants, are beneficial owners of the securities.

In this structure, the depository holds securities in "fungible bulk" – no unit of the security is different than any other unit and no Participant has a right to a particular unit of the security, but, rather, a proportional interest in the aggregate amount of the securities held by DTC. This type of holding requires that, to be eligible at DTC, securities must be able to be held in this manner, so that any holder of the security has the same rights and interests as any other and interests in the security must be freely transferable among Participants. This eligibility requirement derives from the Exchange Act and the Securities Act, and is reflected in the DTC Operational Arrangements.[64] Generally, eligible securities must have been issued in a transaction: (i) registered with the SEC pursuant to the Securities Act; (ii) exempt from registration pursuant to a Securities Act exemption without transfer or ownership restrictions; or (iii) pursuant to Rule 144A or Regulations S.

By careful observance of this legal and regulatory framework, and operational controls, DTC helps to ensure the integrity of the fungible bulk of securities held on deposit for the benefit of its Participants and their customers, the investing public. Issuers are also protected by these stringent requirements and controls.

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[63] DTC also holds securities indirectly, in securities accounts with other clearing corporations, such as CDS or other foreign CSDs (*see* Principle 20 (FMI links)) and through the FRB with respect to Fed book-entry securities such as U.S. Treasury bills, bonds and notes, as well as agency securities.

[64] *Available at* http://www.dtcc.com/~/media/Files/Downloads/legal/issue-eligibility/eligibility/operational-arrangements.pdf.

Immobilization; Dematerialization

DTC was designed to immobilize securities held by it in one or several locations, so that interests may be transferred by appropriate book-entry notations. Over the years, DTC has also been a leading sponsor of dematerialization efforts.

It is estimated that in excess of 90percent of corporate and municipal securities, including equity and debt securities, issued to the public in the U.S. are held at and distributed through DTC and are represented by one or more physical certificates that are immobilized at the depository. As of December 31, 2015, more than 99 percent of municipal and corporate debt, by par value, distributed through DTC was maintained for book-entry only ("BEO"). For these issues, there is typically a global certificate, *i.e.*, a single certificate representing the entire outstanding quantity of securities in the issue or a specific part of the issue, such as a particular maturity of a debt issue. The issuer does not generally make securities certificates available to Participants or their customers. All transfers of interests in these securities between DTC Participants are effected by DTC book-entry.

For non-BEO issues, a Participant with securities on deposit in its DTC account can withdraw securities physically and have them reregistered in the name of the Participant, its customer, or another party. On the instructions of the withdrawing Participant, DTC debits the securities from the Participant's account and instructs the transfer agent to register the transfer of the securities into the name designated by the Participant. The reregistered securities are then sent to the Participant or its customer. The number of such withdrawals has declined significantly in recent years, due in part to disincentive fees charged by DTC to its Participants.

DTC maintains a significant percentage of securities in a dematerialized form: approximately 81 percent of 1.3 million issues and 98 percent of the $45 trillion in value held. A majority of dematerialized issues are held in the Fast Automated Securities Transfer (FAST) program. DTC's MMI program consists solely of dematerialized issues.

Under the FAST program, the transfer agent holds the securities registered in the name of DTC's nominee, Cede, in the form of a balance certificate. As additional securities are deposited or withdrawn from DTC, the transfer agent adjusts the denomination of the certificate as appropriate, and electronically confirms these changes with DTC. As such, FAST reduces the movement of certificates between DTC and the transfer agents and therefore reduces the costs and risks associated with the creation, movement and storage of certificates.

An additional DTC service facilitating dematerialization is the Direct Registration Service ("DRS"). DRS provides for the processing of transactions in securities registered directly in the beneficial owner's name on the books of the transfer agent. Through DRS, purchase and sales of securities can be accommodated by book-entry deliveries between the DTC account of the beneficial owner's broker-dealer and the DTC account of the transfer agent. This type of statement representation of interests in securities originated in 1996 and will further support dematerialization efforts looking forward.

DTC's billing structure differentiates (usually in the form of a surcharge) securities that are required to be held in physical form. For example, new security issuances that are physical in nature and underwritten through a Participant's account at DTC, physical withdrawals from DTC's vaults, and the monthly long position (safekeeping) fees for non-book entry only securities are all levied a fee surcharge. DTC will continue to price its services in ways that encourage dematerialization and immobilization of security assets.

Deposit and Underwriting Processes

DTC provides Underwriting Services that support processes for the initial crediting of securities to Participant accounts. The Rules for Underwriting Services and related processes are designed to prevent the unauthorized creation or deletion of securities. However, it should be clearly understood that DTC neither "creates" nor "deletes" securities; it may credit and debit securities to accounts of Participants but only upon the instruction of its Participants or issuers and their transfer agents. Securities, when issued by issuers and underwritten in accordance with applicable law, may be credited to the accounts of underwriters that are Participants or correspondents of Participants working through Participant accounts and distributed to the market by delivery to other Participants, all in accordance with applicable law.

Most eligible securities are introduced into the DTC system through DTC's Underwriting Department. New issues are added through the new issuances process, although there is a separate process for older issues, i.e., those already available in the market but not previously made DTC eligible for deposit at DTC. Older issue eligibility requests come from DTC Participants and are subject to additional due diligence before they are approved.

Other issues of securities may be added through corporate actions with respect to existing securities, including events such as name changes, mergers and spinoffs.

DTC maintains a robust system for monitoring its compliance with governing law including, without limitation, the AML requirements of the BSA, and OFAC sanctions.[65]

Following an eligibility determination, the technological addition of an issue of securities to DTC's masterfile may only be made by a limited group of duly authorized employees, minimizing the staff with the capability to make such updates. This access requires approval of an Executive Director or above.

DTC's accounting system does not allow for short positions in securities through Participant transfers; securities may only be transferred from one Participant to another if the first Participant has position available to transfer. There are, however, limited conditions that can result in short positions. These include deposit adjustments that occur when a transfer agent rejects securities presented after the Participant delivered the securities, thus driving them short. Another condition that causes shorts is late announcements with respect to redemptions and calls where the publication date has passed and Participants that had position on such date do not at the time of processing. Short positions are fully collateralized where DTC charges Participants for the full market value of the short as well as a 30 percent penalty.

Controls to Safeguard Securities

Under the UCC, securities intermediaries, such as DTC, are required to maintain a sufficient quantity of a financial asset or issue of a security to satisfy all of their Participant's claims, that is, the aggregate amount of all of the issue credited to any of DTC's Participants. DTC has procedures and controls in place to support this obligation.

The Rules of DTC require Participants to reconcile both their activity and positions with DTC upon receipt of applicable activity statements at the end of each day and to immediately report any discrepancies. Participants must also provide a month-end confirmation of their activity.

[65] *See* 31 U.S.C. 5318 (authorizing Secretary of the Treasury to require financial institutions to establish AML procedures); 31 C.F.R. § 1020.210 (AML standards for certain financial institutions); 31 C.F.R. 500.202 (prohibiting, *inter alia,* dealing in a security registered in the name of a person subject to OFAC sanctions).

Pursuant to its procedures, DTC also takes steps to reconcile securities balances in the FAST program. Daily reconciliation occurs with issues held in FAST. This reconciliation includes both the number of securities held as well as their totals. For issues held physically, high value certificates (greater than $7 million) are fully audited twice per year to ensure inventory is in balance with the amounts recorded on the books and records. Pursuant to the FAST Balance Certificate Agreement and the Operational Criteria for FAST Transfer Agent Processing, the FAST transfer agent is obligated to confirm daily with DTC the balances of securities they hold in the name of Cede. Since the securities are not under DTC's direct control, DTC also receives reports on the internal controls of the transfer agent from their independent accountants annually.

A similar reconciliation process is in place with MMIs. Inventory is also held with foreign CSDs: CDS, the Swiss Depository (SIX Securities) and the German depository (Clearstream). Balancing routines are in place with each entity. Fed securities are held at the FRB. As with other entities with which DTC maintains inventory, a balancing routine is in place to reconcile securities held.

DTCC's Internal Audit Department conducts reviews at predetermined cycles based upon the criticality of the function. In addition to Internal Audit's review, DTC's Compliance Department conducts compliance testing to ascertain compliance with SEC and Federal Banking Regulations. The schedule for compliance testing is based upon risk assessments of these laws and regulations as well as several other factors, such as coverage by other control groups; the results of prior testing, audits, and regulatory examinations; upcoming regulatory examinations; and changes in regulation or the business area. Cycles are used as a general guideline in developing the compliance testing schedule, with higher risk laws and regulations being reviewed every 12 months, moderate risk laws and regulations being reviewed every 24 months, and lower risk laws and regulations being reviewed every 36 months. Each year, an audit of internal controls is conducted by an outside audit firm.

DTC Rule 14 (Insurance) requires DTC to maintain insurance. In order to protect against loss associated with theft, loss, misuse, etc., DTC maintains insurance coverage of $750 million aggregate on-premises and/or in-transit coverage under an all-risk policy. In addition, DTC has mail insurance. Its objective is to indemnify and hold harmless DTC against loss in respect of shipments of securities from the offices of DTC

Options for Segregation of Securities, Including Customer Fully Paid Securities

DTC Rules afford Participants the option of book-entry segregation of securities for any purpose the Participant may require, including to segregate fully paid-for customer securities. Segregated securities at DTC are not subject to any security interest, lien or other claim of DTC. However, DTC will continue to treat the Participant to whose account the securities are credited as the owner of those securities; it is up to the Participant to maintain appropriate records on its own books to identify customer securities separately. DTC does not record interests in securities at the ultimate beneficial owner level and does not maintain separate "customer accounts" for its Participants.

Participants also have the ability to transfer their customer accounts and holdings to other Participants via NSCC's Automated Customer Account Transfer Service, an NSCC service that results in the transfer of securities (free of payment) on the books of DTC.

Asset Services

As the holder of securities *vis a vis* issuers, DTC receives distributions, dividends, corporate actions and is responsible for other matters relating to the securities held including voting rights. DTC's Rules also provide a process by which security holders, through the relevant Participants, may make shareholder or bondholder demands as well as exercise other rights in respect to the relevant issue. In addition to central safekeeping and settlement services, DTC provides the following supplemental services: Underwriting; Corporate Actions; Distributions; US Tax and Foreign Tax Relief; Principal and Income distribution among others.

Principle 12: Exchange-of-value settlement systems; CCAS 17Ad-22(e)(12)

Principle 12: Exchange-of-value settlement systems	**CCAS 17Ad-22(e)(12)**
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. ***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.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (12) Eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other, regardless of whether the covered clearing agency settles on a gross or net basis and when finality occurs if the covered clearing agency settles transactions that involve the settlement of two linked obligations.

End of Day Final Settlement

DTC operates an exchange of value settlement system, for settlement of securities on a gross basis and settlement of funds on a net basis. The DTC system is a DVP Model 2 DNS system, as set forth in Annex D of the FMI Principles. DTC mitigates principal risk to its Participants by conditioning the final settlement of securities delivered versus payment on the completion of final net funds settlement, which occurs at the end of the settlement day. The terms and conditions of DVP processing and net funds settlement are described in the DTC Rules which are binding on Participants in accordance with their terms, as set forth in the response to Principle 1 (Legal Basis).

The system and controls to complete settlement are described in responses to preceding Principles. These are designed so that the final settlement of book-entry deliveries versus payment at DTC limits principal risk to the deliverer. Under DTC Rule 9(B) (Transactions in Eligible Securities), a delivery versus payment must satisfy the Net Debit Cap and Collateral Monitor of the intended receiving Participant for the transaction to be processed intraday. The processing of the delivery results in a credit for the value of the delivery to the settlement account of the delivering Participant which, once made, is irreversible. When DTC completes system-wide settlement, the deliverer will be paid through net settlement, even if its counterparty defaults.

If the receiver of a DVP transaction has a net debit balance for settlement at the end of the day, and satisfies its settlement obligation, the delivered securities will be finally credited to its account simultaneously with net funds settlement. If the receiver has a zero balance or credit balance at settlement, it has no payment obligation but has effectively paid for the securities through the intraday netting of credits and debits to its settlement account; accordingly, the securities will be finally credited to its account, simultaneously with net funds settlement.

If, however, the receiver has a net debit balance due in settlement and it fails to satisfy this settlement obligation, the receiver will not be credited with the securities, because it has not paid for them. The delivering Participant will nevertheless be paid through net funds settlement, so it does not suffer principal risk *vis a vis* its counterparty.[66]

[66] Under DTC Rule 9(B), securities that are delivered versus payment are owned by DTC intraday and constitute collateral that may be pledged or liquidated to fund the Participant's settlement obligation. Using the Participants Fund deposit of the defaulting Participant and/or borrowing under the line of credit, DTC will complete net system-wide settlement, through which the deliverer will be paid for its delivery.

Principle 13: Participant-default rules and procedures; CCAS 17Ad-22(e)(13)

Principle 13: Participant-default rules and procedures	CCAS 17Ad-22(e)(13)
An FMI should have effective and clearly defined rules and procedures to manage a participant 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. ***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. ***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. ***Key consideration 3***: An FMI should publicly disclose key aspects of its default rules and procedures. ***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.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (13) Ensure the covered clearing agency has the authority and operational capacity to take timely action to contain losses and liquidity demands and continue to meet its obligations by, at a minimum, requiring the covered clearing agency's participants and, when practicable, other stakeholders to participate in the testing and review of its default procedures, including any close-out procedures, at least annually and following material changes thereto.

Rules to Manage Participant Default

DTC has effective and clearly defined rules and procedures to manage a Participant default. The DTC Rules (with implementing internal procedures) are designed to ensure that DTC has the authority to take timely action to contain losses and liquidity pressures and demands and continue to meet its obligations in the event of a Participant default.

DTC has publicly disclosed key aspects of its default rules and procedures. DTC Rules clearly state what constitutes Participant default and the consequences of default. The Rules set forth a legal framework for continued operations and settlement in a Participant default situation. However, they are also designed to retain sufficient flexibility so that DTC may exercise appropriate discretion in their implementation under specific circumstances, to protect the interests of DTC, its Participants and other relevant stakeholders.

Under DTC Rules,[67] a Participant will be in default if it fails to pay any amount due to DTC within specified timeframes, including the failure to fund a settlement obligation, to pay required deposits to the Participants Fund or to pay adequate assurances to DTC upon request. Insolvency of the Participant likewise creates a default. A Participant may be determined to be insolvent if, among other circumstances, (i) the Participant has notified DTC that it is unable to perform its contracts or obligation; (ii) the Participant is subject to a SIPA proceeding; (iii) the Participant has filed, or had filed against it, a petition for bankruptcy or other insolvency proceeding; or (iv) the Participant admits in writing its inability to pay its debts generally as they become due. Short of insolvency or nonpayment, DTC may find that a Participant is in such financial or operating condition that its continuation as a Participant would jeopardize the interests of DTC or other Participants. Additional types of default include a Participant's failure to satisfy the qualifications for being a Participant, conviction of certain crimes, felonies or misdemeanors (involving securities transactions or a breach of fiduciary duty), expulsion or suspension from a national securities association or exchange, and statutory disqualification under the Exchange Act.

When a Participant default occurs, DTC must determine whether to cease to act for, or, in some cases, limit services to, the defaulting Participant under Rule 10 (Discretionary Termination), Rule 11 (Mandatory Termination) and Rule 12 (Insolvency). These determinations are, under appropriate internal governance, generally delegated by the Board to the BRC. In making this determination, the BRC or the Board will consider the particular facts and circumstances involved, and condition of the defaulting Participant. To ensure that action may be taken timely, the BRC Charter also provides for delegated authority to the Chair of the BRC, if it is impractical to convene the BRC. Action taken would then be ratified by the BRC at a subsequent meeting.[68]

When DTC determines to cease to act for, or limit services to, a defaulting Participant, DTC will notify the defaulting Participant and the Participant's regulator(s) promptly after the decision is made. DTC will also promptly notify its own regulators. DTC will issue an Important Notice to all Participants and Pledgees informing them that it has ceased to act for the identified Participant (or affiliated family of Participants) and indicate how pending matters may be resolved. Finally, for a defaulting Participant that is also a member of other clearing agencies with which DTC has cross-guarantee arrangements, DTC will also notify those clearing agencies.

Under DTC Rule 22 (Right to Contest Decisions), a Participant for which DTC ceases to act under Rule 10, Rule 11 or Rule 12, has the opportunity to object and be heard. In an insolvency where a trustee or receiver (an "administrator") has been appointed for the Participant, DTC will coordinate with the administrator.

Completing Settlement in the Event of Participant Default

DTC Rules expressly provide the means for DTC to take timely action to contain liquidity pressures and demands, and any losses due to a Participant default, and to continue providing services to other Participants. DTC's first objective on the day of a Participant default will be to complete settlement for the other Participants, as described throughout this Disclosure Framework. DTC may also adjust risk management controls (Collateral Monitor and Net Debit Cap) intraday to manage credit risk and to mitigate default risk.

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[67] Including Rule 4 (Participants Fund; Participants Investment), Rule 9(A) (Transactions in Securities and Money Payments), Rule 9(B) (Transactions in Eligible Securities), Rule 10 (Discretionary Termination), Rule 11 (Mandatory Termination) and Rule 12 (Insolvency).

[68] In addition, DTC Rule 28 (Delegation) also permits action to be taken by senior corporate officers, if so designated.

When a Participant defaults, DTC may apply the Participant's deposit to the Participants Fund in satisfaction of the Participant's unpaid obligations to DTC. If that amount of the Participant's deposit to the Participants Fund is insufficient to complete settlement among non-defaulting Participants, DTC may apply some or all of the balance of the Participants Fund, charged ratably among non-defaulting Participants in accordance with required deposits on the day of the Participant default. If the Participants Fund is applied to complete settlement, DTC must promptly notify each Participant and the SEC of the amount charged.

If, as a result of applying any portion of the Participants Fund, a Participant's actual deposit is less than its required deposit, the Participant must, on demand, pay DTC the amount necessary to eliminate the deficiency in its required deposit. A failure to make this payment may result in disciplinary action by DTC against the Participant, under the DTC Rules.

After DTC has charged the Participants Fund, a non-defaulting Participant is able to limit its liability for settlement charges, up to a cap specified under Rule 4, by withdrawing from participation within a specified timeframe.

DTC may also borrow from its committed line of credit secured by collateral of the defaulting Participant. Under DTC Rule 9(B), this collateral would include securities in process for delivery to the defaulting Participant on the day of default, and securities that the Participant designated as collateral.[69]

Application of the Remaining Resources of the Defaulting Participant

If a defaulting Participant has any outstanding obligations to DTC arising from its default, DTC would apply any remaining resources of such Participant (additional collateral, Participants Fund deposit) first, and any amounts available to it under Clearing Agency Cross Guaranty Agreements (agreements with other registered clearing agencies that relate to the guaranty of certain obligations of a common defaulting member, by one or more clearing agencies to the others). This would include any amounts available to DTC from NSCC under the terms and conditions of the DTC/NSCC Cross Guaranty.[70] DTC has also entered into a multilateral netting contract and limited cross-guaranty agreement with NSCC, FICC and Options Clearing Corporation, under which these clearing agencies have agreed to make payments to each other for unsatisfied obligations of a common defaulting participant, to the extent they have excess resources of the defaulting Participant. Under this arrangement, no party ever needs to pay "out of pocket" and no party can receive more than its loss.

Close-out process

DTC will conduct a close-out process to satisfy outstanding obligations of the defaulting Participant, including the restoration or replenishment of DTC liquidity resources. Close-out will include liquidation of the collateral of the Participant and the application of the proceeds of liquidation to repay any borrowings due to the default. The close-out will be conducted in accordance with internal policies and procedures.

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[69] The DTC Rules also provide that DTC may borrow funds needed to complete settlement from Participants by credit reductions to their settlement accounts, secured by collateral of the defaulting Participant. This is a provision that DTC treats as a tool reserved for extreme circumstances. Please refer to Principle 5 (Collateral) and Principle 7 (Liquidity Risk) with respect to the sources and uses of collateral and liquidity pursuant to the DTC Rules and Procedures.

[70] DTC and NSCC have entered into a limited cross-guaranty agreement (the Second Amended and Restated Netting Contract and Limited Cross-Guaranty Agreement, dated as of October 1, 2002, between NSCC and DTC) that contains arrangements designed to permit transactions to flow smoothly between the DTC system and the CNS system of NSCC, in a collateralized environment. *See* discussion in response to Principle 20 (FMI links).

DTC has a well-established close-out process for the liquidation of collateral of the insolvent Participant. DTC utilizes the services of investment advisors and executing brokers to facilitate liquidating transactions promptly following its determination to cease to act. DTC may engage in hedging transactions or otherwise take action to minimize market disruption as a result of such sales.

Following close-out, DTC will ascertain whether liquidation proceeds satisfy the defaulting Participant's outstanding obligations, including repayment of any borrowing and restoration of the Participants Fund deposits of non-defaulting Participants. If the liquidation proceeds are not sufficient, there will be a loss.

Loss Allocation Waterfall

If there is a loss or liability due to a Participant default, (i) as a result of an obligation of a defaulting Participant to DTC that was not fully satisfied by the application of its resources or the proceeds from the liquidation of its collateral, and DTC has ceased to act for the Participant, or (ii) due to an event other than a Participant default as specified under Rule 4 ("non-default loss"), DTC has recourse to the loss allocation waterfall provided in Rule 4.

For purposes of loss allocation, triggering events, which may include both Participant defaults and non-default events, would be grouped together chronologically into discrete periods of ten business days. Losses arising from a group of events that occurred within the same period, whether a default loss or non-default loss, would be allocated as follows:

1. Before the allocation of losses to Participants, DTC would apply 50% of its General Business Risk Capital Requirement as of the end of the calendar quarter immediate preceding the Event Period (or such greater amount as the Board of Directors may determine) to the losses. DTC's contributions to any losses arising from events that occurred in subsequent periods during the next 250 days would be reduced to the remaining unused portion of contribution, if any.

2. If a loss remains after DTC's corporate contribution, DTC will allocate the remaining amount among Participants that were Participants on the first day of the applicable period, ratably in accordance with their required deposit to the Participants Fund on the first day of the period. Each Participant must pay its allocation amount within two business days of receiving notice of the amount. DTC has the right to debit the allocated amount to a Participant's Settlement Account. Losses relating to the events within the same period may be allocated iteratively.

A Participant is able to limit its liability for loss allocation, up to a loss allocation cap specified under Rule 4, by withdrawing from participation within the specified timeframe. However, it will remain obligated for any prior loss allocations for which a withdrawal election was not timely made, and, subject to the specified cap, would be obligated for subsequent loss allocations to which it is otherwise subject.

Historically, DTC never implemented its loss allocation waterfall.

Implementation of Participant Default Rules and Procedures

DTC is well prepared to implement its Participant default Rules, including any discretionary processes. DTC's internal plans regarding the roles and responsibilities for addressing a default consist of internal procedures of the involved departments (such as, for example, Settlement Operations, FRM and the General Counsel's Office) that outline the actions that may be taken in the event of a Participant default, and the various roles and responsibilities associated with these actions. Each instance where DTC might determine to cease to act is unique, and the internal procedures take this into consideration.

As noted above, DTC also maintains arrangements with one or more investment advisors and executing brokers to facilitate an actual close-out and liquidation. If a trustee, receiver or custodian has been appointed for the defaulting Participant, DTC will communicate with this representative in accordance with applicable law.

The DTC close-out procedures are subject to ongoing review and development, including incorporating knowledge gained from actual close outs and internal tests, which occur at least once per year. Any material changes to internal plans are presented to the MRC and the BRC for approval.

DTC Rules are Publicly Available

The key aspects of participant-default rules and procedures are provided in the DTC Rules, which are publicly available at www.dtcc.com. DTC's Rules state clearly what constitutes a default, as described above.

Testing and Engagement with Participants and Other Stakeholders

DTC conducts a simulated close-out at least annually, where members of the Board, DTC's supervisors and certain other stakeholders (such as representatives from SIPC and the FDIC) are invited to attend. The close-out simulations cover a wide-range of hypothetical fact patterns that may represent extreme, but plausible, situations, and include testing arrangements with DTC's investment advisor(s). In addition, FRM conducts internal table-top close-out exercises to enable relevant staff across the DTCC enterprise to become familiar with processes and procedures that would be utilized in the event of an actual cease to act. Both the simulation results and the tabletop reviews are used to review and, where appropriate, improve, default management processes and procedures. Results are shared with the Board of Directors, the BRC, DTC's supervisors and, as appropriate, other relevant stakeholders.

DTC periodically tests the mechanics for borrowing under its line of credit facility with the agents and lenders under that facility, which may include Participants, so that DTC staff and lenders may be prepared for an actual borrowing under stress conditions.

Principle 14: Segregation and portability; CCAS 17Ad-22(e)(14)

Principle 14: Segregation and portability	**CCAS 17Ad-22(e)(14)**
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. ***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. ***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. ***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. ***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.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (14) Enable, when the covered clearing agency provides central counterparty services for security-based swaps or engages in activities that the Commission has determined to have a more complex risk profile, the segregation and portability of positions of a participant's customers and the collateral provided to the covered clearing agency with respect to those positions and effectively protect such positions and related collateral from the default or insolvency of that participant.

DTC is not a CCP and does not provide Central Counterparty Services. Accordingly, Principle 14 and CCAS 17Ad-22(e)(14) do not apply to DTC.

Principle 15: General business risk; CCAS 17Ad-22(e)(15)

Principle 15: General business risk	CCAS 17Ad-22(e)(15)
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. ***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. ***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. ***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. ***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.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (15) Identify, monitor, and manage the covered clearing agency's general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that the covered clearing agency can continue operations and services as a going concern if those losses materialize, including by: (i) Determining the amount of liquid net assets funded by equity based upon 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; (ii) Holding liquid net assets funded by equity equal to the greater of either (x) six months of the covered clearing agency's current operating expenses, or (y) the amount determined by the board of directors to be sufficient to ensure a recovery or orderly wind-down of critical operations and services of the covered clearing agency, as contemplated by the plans established under paragraph (e)(3)(ii) of this section, and which: (A) Shall be in addition to resources held to cover participant defaults or other risks covered under the credit risk standard in paragraph (b)(3) or paragraphs (e)(4)(i) through (iii) of this section, as applicable, and the liquidity risk standard in paragraphs (e)(7)(i) and (ii) of this section; and (B) Shall be of high quality and sufficiently liquid to allow the covered clearing agency to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions; and (iii) Maintaining a viable plan, approved by the board of directors and updated at least annually, for raising additional equity should its

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.	equity fall close to or below the amount required under paragraph (e)(15)(ii) of this section.

General business risk and capital planning overview

The capital management strategy of DTC's parent company, DTCC, as well as its approach to financial planning and management, allow DTCC to effectively identify, monitor, and manage the general business risks for each of its subsidiaries, including DTC, as well as for the DTCC group as a whole.

DTCC considers those general business risks, as applicable to DTC, to include potential impairment to DTC's financial position that could result in a loss that consequently is charged against capital. The potential for financial impairment could be affected by a variety of factors, including, but not limited to, an unexpected downturn in business volumes or in the economic cycle; external market events with adverse systemic consequences; competitive forces, such as new market participants in the clearance and settlement space; changes in regulatory requirements that may adversely impact DTC and/or DTC's participants; unexpectedly large operating expenses; and operational or cyber risk events.

In order to identify, monitor, and manage these risks, the capital management strategy for DTC focuses on the following key objectives:

- Provide financial resources that are sufficient to support DTC's business, in terms of both current and forecasted needs;

- Allow DTC to maintain adequate capital to protect against risks that may arise under adverse scenarios;

- Satisfy regulatory capital requirements in light of strengthened global risk management standards for financial market utilities in markets in which DTC operates;

- Support a strong credit rating for DTC; and

- Maintain a viable plan to replenish financial resources, including equity, should those resources fall close to or below the amount being held in compliance with regulatory requirements.

DTCC maintains a disciplined approach to financial planning and management, which is a critical element to ensuring sustainability of the operations of DTC and its other subsidiaries.

Key aspects of this approach include the annual budget process, through which comprehensive and detailed operating plans are developed for each business line and functional area. These business plans, which are updated periodically throughout the year, include an assessment of the relevant market/operating environment. Additionally, business performance reviews are conducted regularly, tracking month-to-month volume data, trends and financial performance, thereby facilitating ongoing assessment and monitoring of business risk. DTCC's financial planning approach also includes development of a three-year long-range financial plan for the overall enterprise and each operating subsidiary, including DTC; monthly cash flow projections based on earnings estimates and financial forecasting; and regular review of estimated capital requirements at the individual subsidiary level, as well as for DTCC in the aggregate.

The detailed and comprehensive nature of the annual budget process and related business plans, coupled with the monthly frequency of the ongoing business reviews and other tools as mentioned above, allow DTC to quickly identify relevant events and emerging trends, and to assess their potential financial impact. Based on this information, management can take appropriate tactical and strategic measures in order to minimize business risk. These measures may include, among other actions, making changes to existing products and services; introducing new products or services; reprioritizing planned or ongoing projects and reallocating resources accordingly; taking cost-reduction measures; modifying fee structures; and adjusting the level of capital and liquid net assets that DTCC maintains at DTC. These elements are brought together to create a comprehensive financial plan that projects DTC's ability to generate the required level of earnings and cash flows to manage and protect against business risks and to support overall business strategies.

This robust framework for assessing capital needs occurs under the oversight of the Board of Directors. DTC's capital management strategy and financial plan are reviewed and updated on an ongoing basis by DTCC's Finance group, and are provided to the Board regularly.

Liquid net assets funded by equity

The Clearing Agency Policy on Capital Requirements ("Capital Policy") and the Clearing Agency Capital Replenishment Plan ("Replenishment Plan") are maintained by DTCC Treasury group and have been approved by the SEC.[71] The Capital Policy sets forth the manner in which DTC identifies, monitors, and manages its general business risk with respect to the requirement to hold sufficient liquid net assets ("LNA") funded by equity to cover potential general business losses so DTC can continue operations and services as a going concern if such losses materialize. The Replenishment Plan provides for a viable plan for the replenishment of capital by DTC should its equity fall close to or below the amount being held as its "Total Capital Requirement" pursuant to the Capital Policy.

DTC determines its Total Capital Requirement, or the amount of liquid net assets funded by equity that it maintains, as the sum of three components:

(i) The general business risk capital requirement which is the greatest of three separate calculations (each of which is calculated on at least an annual basis):

> a) An amount based on DTC's general business risk profile ("Risk-Based Capital Requirement"), where DTC's general business risk profile consists of the specific business risks of potential financial impairment of DTC's financial position that it may face (including, for example, business and profit/loss risks, operational risks and investment risks), and that would be sufficient to cover losses so DTC can continue operations and services if those losses materialize.
>
> b) An amount based on the time estimated to execute a recovery or orderly wind-down of the critical operations of DTC ("Recovery/Wind-Down Capital Requirement"), which is determined annually by the Board by estimating the time needed to execute a recovery or orderly wind-down of DTC's critical operations as the greatest of (i) the estimated amount sufficient to ensure a recovery of critical operations and services of DTC; and (ii) the estimated amount sufficient to facilitate an orderly wind-down of DTC's critical operations.
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> c) An amount based on an analysis of DTC's estimated operating expenses ("Operating Expense Capital Requirement"), which is determined as the greater of (a) a retrospective estimate of

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[71] *See* Exchange Act Release No. 81105 (July 7, 2017), 82 FR 32399 (July 13, 2017) (SR-DTC-2017-003, SR-FICC-2017-007, SR-NSCC-2017-004).

operating expenses based on six (6) times the average monthly operating expense over the prior twelve (12) month period; and (ii) a prospective estimate of operating expenses based on forecasted expense data.

(ii) A “Corporate Contribution,” which is an amount defined in and may be applied pursuant to DTC Rule 4, and is generally equal to 50% of DTC’s general business risk capital requirement. Pursuant to DTC Rule 4, DTC may voluntarily apply an amount greater than 50% of DTC’s general business risk capital requirement to an unsatisfied loss or liability if the Board believes it appropriate to do so. The use and application of the Corporate Contribution, as part of DTC’s loss waterfall to address unsatisfied losses, is discussed under Principle 13 (Participant-default rules and procedures) above. These resources are held in addition to the LNA funded by equity held by DTC as its General Business Risk Capital Requirement.

(iii) A buffer amount of capital held to protect resources available to address general business risks. The amount of buffer that DTC holds is periodically reassessed, and is generally equal to approximately four to six months of operating expenses based on various factors, including the volatility of DTC’s net income and liquid cash resources or liquid net assets and estimates of potential losses from general business risk.

In addition to the calculation of the Total Capital Requirement, described above, DTCC has developed its own internal economic capital framework, which estimates capital requirements for each major business including DTC and on a consolidated basis across core risk categories, specifically, business risk, market risk, investment risk, credit risk, and operational risk. Management believes that an economic risk-based capital view of DTCC’s total business portfolio is an important assessment tool to complement regulatory mandates. This methodology enables DTCC to more fully assess its risk-based capital needs, and the capital needs of DTC, in terms of economic realities during potential periods of market downturns and contraction.

DTC’s liquid net assets are conservatively invested pursuant to the Investment Policy to maximize liquidity and mitigate investment risk, credit and market risks. The Investment Policy is described in more detail under Principle 16 (Custody and Investment Risks) below. The Investment Policy is reviewed by the DTC Board annually.

Plans to raise additional capital

DTC’s comprehensive financial plan, as described above, is designed, in part, to project DTC’s ability to generate and maintain the required level of capital to manage and protect against business risks. DTC has developed a viable plan to replenish its financial resources through various replenishment tools, as set forth in that plan.

The circumstances that trigger the replenishment plan include (i) when equity being held by DTC is at or below an amount equal to its Total Capital Requirement (as described above), plus the equivalent of one (1) month of operating expenses of DTC; and (ii) the DTC Board determines that the replenishment plan should be implemented.

Replenishment tools serve as either (1) bridge financing, which would provide immediate financing, and would be considered an initial step in implementation of the replenishment plan; or (2) capital replenishment, which would provide DTC with the required additional equity on a longer term basis. The replenishment tools would include either actions taken by DTCC, to raise capital, which would then be contributed to DTC, or actions taken by DTC to increase capital.

Actions that may be taken by DTCC could include contributing resources from existing cash, borrowing under an existing line of credit, or by making a claim for insurance proceeds, if applicable. DTCC could also seek to fund a capital contribution to DTC by authorizing, issuing and selling shares of common stock of DTCC to its participant shareholders or via a capital markets transaction, such as the issuance or sale of preferred stock by DTCC, or through strategic actions, such as the sale or divesture of assets or businesses. Actions DTC could take to increase capital include increasing fees for services, or when appropriate, cutting expenses.

Principle 16: Custody and investment risks; CCAS 17Ad-22(e)(16)

Principle 16: Custody and investment risks	CCAS 17Ad-22(e)(16)
An FMI should safeguard its own and its participants' assets and minimise 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. ***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. ***Key consideration 2***: An FMI should have prompt access to its assets and the assets provided by participants, when required. ***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. ***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.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (16) Safeguard the covered clearing agency's own and its participants' assets, minimize the risk of loss and delay in access to these assets, and invest such assets in instruments with minimal credit, market, and liquidity risks.

DTC safeguards assets and investments

DTC safeguards its own assets (cash, cash equivalents and marketable investment securities) and securities and other financial assets that it holds beneficially for its Participants in a well-established structure designed to minimize the risk of loss on and delay in access to these assets. DTC investments are subject to the Investment Policy (which has been filed and approved by the SEC)[72], as it applies to DTC. Under these requirements, DTC may only invest in instruments with minimal credit, market and liquidity risks, as further described below. Securities assets held for Participants (and their customers) and proprietary assets, are maintained and accounted for separately so there is no commingling.

DTC safeguards securities held for the benefit of Participants

Assets held by DTC include securities and other financial assets held for the benefit of its Participants and their customers, generally held through the indirect holding system, as described in Principle 11 (Central securities depositories), and securities certificates or other instruments that remain in the name of the

[72] The Investment Policy addresses the investment of funds of DTCC's clearing agency subsidiaries, including NSCC, FICC and DTC. *See* Exchange Act Release No. 79528 (December 12, 2016), 81 FR 91232 (December 16, 2016) (SR-DTC-2016-007; SR-FICC-2016-005; SR-NSCC-2016-003).

Participant (or its customer) and are held in physical custody as described in Principle 10 (Physical deliveries). The holding of these assets, protections and access, are described in Principles 10 and 11.

DTC invests cash safely under the Investment Policy

To the extent DTC invests for proprietary purposes, those investments must be in accordance with the Investment Policy as applicable to DTC, in liquid investments that are readily available, as further described below. DTC does not hold cash for its Participants or maintain deposit accounts. DTC holds proprietary general operating funds cash (which includes LNA funded by equity) as well as cash in its Participants Fund. Participants Fund cash is maintained as a liquidity resource to complete settlement in the event of a Participant default and to cover losses, which may be due to such an event. Cash also moves through DTC in the form of distributions with respect to securities held by Participants, such as principal and interest payments or dividends, which may be received by DTC but, once cleared and identified, are allocated to Participants holding the associated securities, for payment through end-of-day net settlement (unless released intraday as DTC Rules permit).

As a key liquidity resource, Participants Fund cash must be available to complete daily settlement as needed, but it may be invested in readily available liquid investments in accordance with the Investment Policy as described below. Deposits with commercial financial institutions are subject to their agreement that any funds so received and assets in which such funds are invested shall not be subject to set-off or lien of these financial institutions.

Cash paid to DTC as principal and interest, dividends and in other distributions on securities

Another source of cash at DTC is amounts received from securities issuers and their agents as principal and interest, dividends or other distributions on securities held for Participants. To the extent funds and identifying information are received in time, these funds pass through DTC and are credited to the accounts of Participants on the same day that the funds are paid to DTC. To the extent received by DTC late in the day, or without full instructions, or if there is any question as to which Participants may be entitled to these distributions, funds will be held overnight by DTC for allocation the following business day. Unallocated funds are held in deposit accounts or otherwise overnight by DTC at one or more creditworthy financial institutions, and then transferred to DTC's FRBNY account, for disbursement to Participants following allocation.

Investment criteria and monitoring

The Investment Policy outlines the parameters for DTC's investments including, among other things, permitted investments and limitations on investments. The Investment Policy is reviewed and approved annually by the DTC Board of Directors. DTCC's Treasury group is responsible for the investment of available firm-wide funds, including DTC funds.

Pursuant to the Investment Policy, Participants Fund cash and DTC proprietary funds are invested conservatively in order to maximize liquidity and mitigate both credit and market risk. Under the Investment Policy, assets are held by regulated creditworthy financial institutions and may be invested in the following types of financial instruments:

- Reverse repurchase agreements;
- Money market mutual funds;
- Commercial bank deposits;

- DTC's FRBNY Master Account; and
- Direct obligations of the U.S. Government

Investments in reverse repurchase agreements are generally secured by debt obligations of the U.S. Government or those U.S. Government Agencies guaranteed by the U.S. Government, and collateral must have a market value greater than or equal to 102 percent of the cash invested. Money Market mutual funds must be regulated by SEC Rule 2a-7 of the Investment Company Act of 1940, have stable Net Asset Value, and a credit rating of AAA/Aaa from recognized rating agencies. All of DTC's investments are short term and can be readily accessed for liquidity, should the need arise; as such, market risk is minimal.

As part of its risk management process, evaluations are performed at least quarterly on the relative credit standing of the financial institutions with which DTC places funds. Investments are generally placed with financial institutions having a credit rating of BBB+Baa1 or better from recognized rating agencies, as set forth in the Investment Policy. In addition, approved custodial banks, including custodial banks named in tri-party reverse repurchase agreements, must be members of the FRS, subject to oversight of the FRB.

Approved financial institutions are monitored by Counterparty Credit Risk within DTCC's Group Chief Risk Office on a quarterly basis for review of their financial condition, and approved counterparties and counterparty credit limits may be revised based on these periodic reviews. Additionally, and based on its ongoing monitoring process, to the extent that CCR determines that a change in a counterparty's financial condition warrants a change in DTC's investment limits with the counterparty, CCR would promptly notify Treasury of any change, so that Treasury can implement any required adjustment to investment strategy.

An element of CCR's ongoing custody/investment counterparty monitoring process includes the identification of credit risk, a general analysis of the counterparty which includes the review of the audited financial statements (includes available audit opinions) and/or FFEIC call report (assess liquidity resources, earnings trends, capital levels and the other relevant information), and review of the counterparty's external credit ratings (if applicable). Beyond the scope of its internal review practices, DTC takes additional comfort from the regulatory framework that governs its investment counterparties (which includes oversight and examination by U.S. banking regulators and the SEC), in evaluating the safety and accessibility of its investments. This includes regulation regarding the protection of customer securities from theft, loss, or misuse, and in the event of insolvency.

Exposure and concentration risk

The acceptable levels of exposure to financial institution counterparties are governed by the Investment Policy, which establishes the overall framework for the investment of funds, as well as CCR's criteria for determining credit limits to appropriately facilitate diversification and mitigate concentration across counterparties. On a daily basis, DTCC's Treasury group adheres to the policy guidelines and reports investment activity compared to established credit limits for each of the respective counterparties. This reporting is distributed to management, CCR and Finance.

Principle 17: Operational risk; CCAS 17Ad-22(e)(17)

Principle 17: Operational risk	CCAS 17Ad-22(e)(17)
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. Business continuity management should aim for timely recovery of operations and fulfilment of the FMI's obligations, including in the event of a wide-scale or major disruption. ***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. ***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. ***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. ***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. ***Key consideration 5***: An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats. ***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	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (17) Manage the covered clearing agency's operational risks by: (i) Identifying the plausible sources of operational risk, both internal and external, and mitigating their impact through the use of appropriate systems, policies, procedures, and controls; (ii) Ensuring that systems have a high degree of security, resiliency, operational reliability, and adequate, scalable capacity; and (iii) Establishing and maintaining a business continuity plan that addresses events posing a significant risk of disrupting operations.

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. ***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.	

Operational risk management framework and identification of risks

The Operational Risk Management Policy and DTCC Corporate Risk Framework Policy describe the framework employed by ORM to identify, analyze, mitigate, report and escalate operational risks. This is done through internal incident data collection, operational risk profile risk assessments, scenario analysis, testing by internal and external parties, metrics and key risk indicators, issue tracking and reporting.

ORM is responsible for the aggregation, analysis, escalation, and reporting of operational risk to the management of business units, senior management and Board of Directors. ORM maintains an operational risk management program that enables the identification, assessment, management, monitoring and reporting of the risks encountered in the day-to-day business of DTCC's Clearing Agency subsidiaries, including DTC. The program establishes DTCC's overall strategy for identifying internal and external sources of risks, assessing the implications, prioritizing and developing plans to address such risks so that they can be remediated to the extent practicable.

ORM policies and procedures serve as the guiding principles to support the business units to monitor operational control effectiveness through: (1) identification and assessment of operational risks, (2) management and mitigation of operational risks, (3) monitoring of operational risk, and (4) reporting and escalation of operational risk.

Each business unit implements an operational risk management program and related elements in accordance with the standards established by the ORM as set forth in the ORM Policy and the related supporting internal procedures. At least annually, the policies and procedures are reviewed by ORM management and updated as needed; the updated policies and procedures are then reviewed and approved by the MRC and the BRC.

The operational risks that DTCC has identified in its Corporate Risk Framework are:

- *Human Capital/People Risk*
- *Processing and Operations Risk*
- *Cybersecurity and Information Protection Risk*
- *Information Technology Risk*
- *Financial Risk*
- *Legal & Regulatory Compliance Risk*
- *Business Continuity Risk*
- *Model Risk*

To determine how to address these risks, ORM regularly conducts operational risk profile assessments, which includes a thorough analysis of DTC's business functions and how each of these risk categories may be implicated in the business operations. The data collected informs the organization's business planning and helps guide decision-making with respect to the need for additional investments that may further reduce risk or the readjustment of risk tolerance. Furthermore, to enhance the current risk framework, ORM has developed a scenario analysis program as a forward-looking risk management tool to enable the enterprise to identify and consider scenarios that may materially impact a business to an extent that threatens everyday viability of the business/organization. This framework allows the organization to identify possible vulnerabilities in critical functions and critical external dependencies across the enterprise, and understand more fully the risks and the potential impact of stressful events and circumstances on DTC's financial condition.

Management of operational risk

DTCC has several ways in which it identifies and manages its operational risks, each underscored by the "three lines of defense" strategy:

- The first line of defense is the businesses and functional units, including Product Management, Operations Management, Information Technology, and other areas critical to daily operation and functioning. Their mandate is to proactively manage risk.

- The second line of defense is comprised of DTCC's control functions. This includes those areas that fall under the Group Chief Risk Officer's purview, Legal, Privacy and Compliance. Their mandate is to provide advice and guidance to the first line of defense in adhering to established risk standards and to monitor compliance with those standards.

- The third line of defense is Internal Audit. Internal Audit's mission is to provide independent, objective assurance and advisory services to assist the organization in maintaining effective risk management and control practices.

ORM is an independent risk management function that operates as part of the "second line of defense." It is primarily responsible for:

- the company-wide establishment and implementation of the operational risk framework;
- ongoing monitoring of company-wide adherence to the operational risk framework by the business units;
- analysis and reporting to senior management and the Board of Directors, on a company-wide basis, the operational risk exposures, including the timely escalation of risk exposures identified under the framework; and
- supporting the business units with respect to the ongoing roll-out and application of the framework.

Policies, processes and controls

DTCC's operational risk framework is, in part, designed in accordance with industry standards and best practices, including the operational risk measurement rules under Basel II,[73] and has evolved based on the changing needs of DTCC's businesses and regulatory guidance. These standards are incorporated into the methodology and tools used by ORM to identify, assess, manage and report on operational risks. ORM's

[73] http://www.bis.org/publ/bcbs195.htm

systems, policies, procedures and controls are reflected within the ORM policies and procedures, including those relating to risk incident collection and reporting.

DTC also complies with the requirements of Regulation Systems Compliance and Integrity ("Reg SCI"), adopted by the SEC under the Exchange Act. These requirements include establishing, maintaining and enforcing written policies and procedures reasonably designed to ensure that DTC's critical systems have levels of capacity, integrity, resiliency, availability, and security adequate to maintain the entity's operational capability and promote the maintenance of fair and orderly markets.

With respect to human capital and people risk, DTCC defines job responsibilities in order to recruit qualified talent, and compensates them competitively based on market data and internal equity. Employees have access to a range of in-house, online and external learning offerings and programs to support risk management capabilities, professional/leadership development and business/functional knowledge. DTCC regularly tracks voluntary attrition, conducts exit interviews, and takes appropriate action to mitigate the impact of turnover. Succession and replacement plans are in place to address key-person risk for Managing Directors and other key jobs.

Additionally, DTCC's Employee Code of Conduct sets the parameters of acceptable employee conduct which includes, but is not limited to, fraud prevention.

The New Initiative Approval Policy and the related Framework provide the basis on which management proposes, evaluates and approves initiatives; criteria for involving DTC's supervisors and other stakeholders in the review of initiatives; and escalation and other standards for review and approval of initiatives by the Board of Directors or Board committees. The policy and related framework also provide the necessary governance and oversight structure to enable DTC to bring initiatives to market in a timely and efficient manner, while helping to ensure, where relevant, that these initiatives are designed in a way that appropriately mitigates risk to DTC, its membership and the financial markets.

The New Initiatives Office oversees adherence to the New Initiatives Approval Process, which is the process for proposing, evaluating and approving initiatives. This process is DTCC's product development and enhancement methodology, based on the Stage-Gate®[74] process and product development best practices.[75] It provides a framework to manage initiatives including defined stages, milestones, approval criteria and governance process. The New Initiatives Approval Process is used for all initiatives, including those without technology development. The methodology is designed to integrate with DTCC's IT development processes as well as external software development providers and alternative software implementation methodologies.

The Investment and Operating Committee, as an internal management committee comprised of officer-level SMEs, has responsibility for reviewing and approving initiatives that meet designated risk and materiality thresholds. These reviews occur from initial identification and concept development through product launch and post-implementation. Given that initiatives can vary significantly in complexity, risk profile, and internal and external impact, initiatives are categorized in three ways: (1) materiality, (2) business driver and (3) risk rating. These categories determine the level of governance, including documentation, required for an initiative.

[74] Created by Stage-Gate® International.

[75] Robert G. Cooper, *Winning at New Products – Accelerating the Process from Idea to Launch*; Paige Leavitt, Marisa Brown, Steve Wright, *New Product Development: A Guide for Your Journey to Best-Practice Processes.*

The New Initiatives Office tracks initiative exceptions and reports them to the Investment and Operating Committee monthly. Policy conformance for material initiatives is also reflected on the Quarterly Risk Tolerance Dashboard for New Initiatives Risk, a strategic risk that is a component of the Corporate Risk Framework.

Roles, responsibilities and framework; review and audit

As described under Principle 3 (Framework for the comprehensive management of risks), the Board has delegated to management the responsibility for the day-to-day management of risk, as articulated through individual risk tolerance statements. The risk tolerance statements are provided to the Board Risk Committee for its approval at least annually. The Board requires management to distribute regular risk tolerance reporting to the Board to provide assurance of management's effective oversight of such risks.

To fulfill the Board and management's risk oversight responsibilities, the Corporate Risk Framework has been designed to provide information on DTCC's key risks (including those applicable to DTC) and the processes used to identify, assess, measure, monitor, mitigate and report those risks. The Corporate Risk Framework utilizes two primary risk management processes to consolidate reporting: (1) operational risk profiles created for each business and functional area, and (2) the risk tolerance reporting for each risk family. In addition, ORM periodically reports on the status of operational risk across the enterprise, providing an overview of the key risks and associated mitigation plans, if applicable.

Internal Audit performs independent testing and reviews the effective implementation of the operational risk framework by both ORM and the business units. The audit frequencies range from 12 to 48 months, based on periodic assessments of inherent risk and control environments. In addition, as a limited purpose trust company, State member bank of the Federal Reserve System and registered clearing agency, as well as a designated SIFMU, DTC is subject to continuous monitoring by its regulators, which includes review and monitoring of the safety, soundness and effectiveness of DTC's operational risk management policies and procedures.

Operational reliability

DTC monitors operational reliability through multiple processes, including an annual risk assessment, periodic risk and controls assessment, incident reporting, monitoring for lifecycle processing, system availability and data reporting; a metrics review of incident-related key risk indicators that have been identified for event processing, settlement processing, data reporting, system availability and other key processes. These monitoring activities are performed regularly and evaluated by management as required, with appropriate procedures and controls applied as needed.

To continuously maintain high levels of quality, DTC uses several improvement methodologies that, when integrated, provide the company with a powerful quality management toolkit. For example, Lean, Six Sigma and Kaizen techniques help to streamline business and operations processes, as well as reduce defects, waste and service failures. In Information Technology (IT), DTC employs a Capability Maturity Model Integration (CMMI) process improvement best practice model to optimize software development and the Information Technology Infrastructure Library (ITIL) best practice framework for IT service management and operations of its Enterprise Infrastructure.

Further, DTC uses a formalized internal Service Level Agreements ("SLAs") process across the enterprise between the service provider (IT) and their customers (Product Management). SLAs identify the critical business services and underlying IT services provided to fulfill them, their service performance targets, and the metrics associated with these services. Any SLA breaches are noted, and timely reports, with appropriate detail, are distributed to various levels within the organization including senior management.

These measures and metrics are re-evaluated on an annual basis as part of DTC's continuous improvement process.

Capacity planning

DTCC's Corporate Capacity Planning and Performance Management Framework provides a governance structure for meeting the requirements of ordinary course business, and for responding to events that may arise as a result of extraordinary market events.

The Corporate Capacity Planning and Performance Management Framework utilizes trend analysis, augmented by annual reviews of business application changes, to forecast the upcoming year's capacity demand for both processor and storage capacity for all data centers. The Framework incorporates business forecasts, application throughput, current capacity and scalability, SLAs, performance management, capacity utilization, and capacity modeling and forecasts. The annual reviews encompass business defined factors (i.e., growth, new product lines and new applications, etc.) to adjust the trend projection. Furthermore, the Framework's scope gives priority to and addresses the largest business areas and the associated production processing environments.

DTCC has dedicated capacity planning staff. The Capacity and Performance group is specifically responsible for forecasting and monitoring infrastructure capacity and utilization. Among the area's responsibilities are:

- supporting performance testing in the quality assurance environment in collaboration with the Test Support Group;
- reporting defects found during performance testing;
- researching and recommending tools to improve the efficiency, quality, and accuracy of capacity and performance reporting, monitoring, and testing;
- reviewing incidents and problems that have a direct impact on capacity or performance;
- measuring and reporting monthly on DTCC mainframe and distributed systems' usage trends for computer processing unit utilization, memory utilization, persistent storage utilization and traffic; and
- recording and reporting available capacity information for mainframe and distributed systems.

The Capacity and Performance group monitors capacity resulting in daily, weekly and monthly usage reports for review by IT Management, and utilizes several real-time performance monitoring tools to identify anomalies and opportunities for efficiency improvements. New systems are stress tested prior to being placed into production. Capacity management information and metrics are provided to the Operating Committee on a quarterly basis, with management presenting capacity planning to the Committee for discussion no less than two times per year. DTC performs stress tests periodically to demonstrate that application processing meets or exceeds the applicable business line's defined requirement. This includes testing prior to implementation of significant application changes and in other circumstances where significant volume increases may be anticipated.

Physical security

Global Security Management utilizes a comprehensive security assessment tool as part of an overall program aimed at developing and maintaining a consistent, structured and integrated methodology for identifying, monitoring, managing and reporting on security risks across physical sites and locations throughout the organization.

The process consists of several components, which include: (a) a Security Vulnerability Assessment checklist which is "risk-specific" and facilitates the analysis and reporting of risk information using a common language; and (b) quantitative information, including internal theft events and security breaches, area threat analysis (from a Federal and local perspective) and local area crime statistics to ascertain the effectiveness of current security control structures.

Because of the vast differences in the types of federal and non-public facilities and the variety of risks associated with each of them, there is no single relevant international, national, or industry-level standard for physical security by which guidance can be solely taken. Accordingly, select guidance is taken from a number of applicable resources.

Information Security

Technology Risk Management ("TRM") manages information security within DTCC, including the Clearing Agency Subsidiaries. This includes responsibility to:

- establish and maintain an information security management framework and an organization with the resources, expertise and training to support DTCC's security strategy;
- define roles, responsibilities and accountabilities for information security to strategically plan and to coordinate information security efforts throughout the enterprise;
- establish, maintain, communicate and periodically reassess information security policies and a comprehensive information security program that are approved by the Technology Risk Management Steering Committee, MRC and the Board of Directors, and that (1) incorporates relevant industry information security standards and (2) is published and communicated to all DTCC employees and relevant external parties;
- provide mandatory annual and periodic information security awareness, education, training and communication for DTCC employees and relevant external parties;
- identify current and potential legal and regulatory issues affecting information security; and
- perform enterprise-wide threat/vulnerability assessments to facilitate the determination of TRM's investment and remediation priorities.

The objective of DTCC Information Security Policy is to provide management direction and support for information security in accordance with business requirements and relevant laws and regulations. As there is no single relevant international, national, or industry-level standard by which guidance can be solely taken, select guidance is taken, as applicable, from a number of recognized information security standards, including:

- the internationally recognized standard "ISO/IEC 27001:2013– Information technology – Security techniques – Information security management systems – requirements";[76]

[76] http://www.iso.org/iso/home/standards/management-standards/iso27001.htm

- the FFIEC Information Technology (IT) Examination Handbook, which is comprised of several booklets covering a variety of technology and technology-related risk management guidance for financial institutions and examiners;[77] and
- the NIST cyber security framework consisting of standards, guidelines, and practices to promote the protection of critical infrastructure.[78]

Business continuity

Business Continuity Management ("BCM") is concerned with the governance and implementation of proactive and reactive measures which ensure that enterprise and business functions have resilience and recovery capabilities to continue, should a serious event occur. This is done through the: (1) integration and alignment with the various risk functions throughout the organization and sector, (2) development of guidance and standards relating to business continuity and environmental risk, (3) monitoring of compliance and (4) promotion of awareness and education. DTCC's Global Business Continuity Management Policy establishes requirements for how DTCC as a whole, including DTC, will effect and maintain controls that address defined threats which, if not otherwise implemented, could result in a high level of risk to the continuity of enterprise operations. This policy defines the governance structure, high-level roles and responsibilities and framework for DTCC's BCM process.

Given the nature and breadth of significant business disruptive events, BCM aligns its controls to the regional, enterprise, business, and support levels, including alignment with each of DTCC's Clearing Agency subsidiaries. DTCC provides a set of core business processes for each Clearing Agency subsidiary, including DTC. The business processes have a relative importance based on the service they provide. The ability to deploy sensible and balanced controls, as well as to triage recovery efforts, is based on this relative importance. DTC falls into the top rankings with a goal of two hours for resumption, and a maximum allowable downtime of four hours and fifteen minutes.

On an annual basis Business Continuity Plans are updated and include a Business Impact Analysis ("BIA"). The BIA validates the criticality of business areas to ensure the appropriate level of controls.

In support of DTC's business, DTCC has multiple data centers, including in-region and out-of-region sites. In-region sites utilize synchronous data replication between them, maintaining multiple exact copies of core production data in separate locations. Production processing is spread across the in-region data centers. Specifically, primary and secondary sites are within 10 miles of each other, and the tertiary site is approximately 1,500 miles from primary/secondary sites. The out-of-region site contains additional asynchronously replicated copies of production data. The asynchronous nature of the replication to this site is due to the limits inherent in current-day technology. The technology currently permits asynchronous replication sufficiently timed to ensure that there is no more than a two-minute variance in the data stored at the in-region sites and the data stored out-of-region.

In addition, all critical clearance and settlement transactions utilize private non-Internet networks such as the Securely Managed and Reliable Technology ("SMART"), BT Radianz, and the NYSE Secure Financial Transaction Infrastructure ("SFTI") networks. SMART is the primary network that provides connectivity between DTCC and its customers. SMART is a seamless, end-to-end, securely managed private communications system encompassing a geographically dispersed complex of processing centers, communications networks and control facilities. Each element of SMART is highly secure, engineered

[77] http://ithandbook.ffiec.gov/

[78] http://www.nist.gov/cyberframework/upload/cybersecurity-framework-021214-final.pdf

with multiple independent levels of redundancy. External traffic is split between these connections, which are always active with each having sufficient capacity for the entire traffic volume.

The BCM plans enable DTCC to effectively and efficiently assess the impact of the disruption, organize communication and decision-making and coordinate the company's response effort. The BCM Policy includes definitions of the types of communications necessary, the methodology and some template text to execute the plans. Moreover, BCM is typically responsible for the actual management of a crisis event, and its duties internally are to implement the crisis management procedures.

In addition, individual product line and support units are responsible for working with BCM and include a cross section of individuals from various departments throughout the organization, including senior management (decision making), facilities management (locations and safety), human resources (personnel issues and travel), marketing (media contact), finance/accounting (funds disbursement and financial decisions), Operations (Settlement) and Risk Management (Collection of Participants Fund), among others. In a crisis, BCM will immediately disseminate a message to internal and external audiences to ensure consistent communication to key audiences.

Review and testing

Contingency arrangements are reviewed throughout the year but at a minimum of once per product line or support unit. DTCC also conducts facility specific work area recovery exercises throughout the year, but at a minimum of once annually.

DTCC works with its customers and other industry infrastructure organizations to discuss the industry's business continuity preparations and DTCC's expectations regarding customers' own business continuity capabilities. Furthermore, DTCC conducts regular "tabletop" exercises to validate how its command teams would respond in the event of a catastrophic loss of the company's headquarters or other locations. As with real events, these various exercises involve debriefing sessions and checklists that are used to identify weaknesses or opportunities for improvement.

DTCC also engages in the following:

- *Ensuring connectivity* – DTCC has telecommunication networks with major participants to ensure continued connectivity for all of DTCC's data processing. This includes the participant's primary locations as well as the participant's backup locations. DTCC has met with several of its larger participants to review geographic diversity of their telecommunications and will continue to meet with others.
- *Connectivity testing* – Each year, DTCC's subsidiaries issue Important Notices that establish telecommunications connectivity requirements for major participants and customers. DTC requires its larger-volume Participants to test their connectivity with DTC at least once a year. This includes testing of connectivity from the Participant's primary and backup locations to several of the DTCC data processing locations.
- *Reg SCI testing* – As a designated Reg SCI entity, DTC performs functional and operational testing with clients that are, taken as a whole, the minimum necessary for the maintenance of fair and orderly markets in the event of the activation of DTC's business continuity and disaster recovery plans.
- *Industry testing* – DTCC participates in industry-wide testing with the Securities Industry and Financial Markets Association, as well as tests conducted by SWIFT, the FRB's Fedwire®

Securities Service, and other critical vendors. In addition, DTCC representatives participate in several industry committees that focus on business continuity issues at the industry level.

Risks to the FMI's operations and risks posed to other FMIs

As discussed more fully in Principle 3 (Framework for the comprehensive management of risks), given its central role in the U.S. securities markets, DTC potentially poses a number of risks to other entities, while it is also exposed to risks that may originate from other entities.

DTC's material service providers are subject to a comprehensive third party review and vetting process. DTC assesses its material service provider risks periodically, throughout the lifecycle of a third party service provider relationship. This includes protocols for reporting, escalation and remediation of third party risk and potential exposures. Mitigants may take the form of contractual protections, or additional or backup providers where deemed appropriate and feasible. For example, DTC utilizes price feeds from multiple third parties as an additional risk mitigant, and further employs price review and data scrubbing procedures to minimize the risk of using inaccurate prices. DTC's third party risk management processes are also discussed under Principle 3 (Framework for the comprehensive management of risks).

As described in Principle 20 (FMI links) DTC and NSCC have a critical interface for the book-entry movement of securities to settle CNS transactions. The attendant operational risks to both DTC and NSCC are monitored on an ongoing basis through DTCC Operations and Settlement areas, and are subject to DTCC's Operational Risk Management framework. DTC also acts as NSCC's settlement agent, to effectuate daily money settlement through use of the FRB's NSS system. These operations of DTC on behalf of NSCC may create operational risk in either direction and there is external exposure to the FRB and commercial banks to which funds are swept. The DTC settlement system, although conducted in central bank money, also depends on commercial banks as Settling Banks, as further described in Principle 9 (Money settlement). As noted there, DTC has established credit standards for entities providing settling bank services, and for investment and custody services as described in Principle 16 (Custody and investment risks). While Settling Banks are selected by, and act on behalf of, Participants, entities providing such services are held to strict operational standards, and are subject to fines and other disciplinary measures should they fail to abide by such requirements. DTC also interfaces with its affiliate, ITP. As ITP is a DTCC company, ITP is subject to the DTCC Operational Risk Management Framework discussed throughout herein.

With regard to risks that DTC might pose to other FMIs, including Participants and linked FMIs, DTC has communication and escalation processes in the event of system issues, to facilitate resolution. As appropriate, DTC also provides an opportunity for relevant FMIs to participate in default management and/or disaster recovery tests.

Along with other financial industry organizations, DTCC is an active participant in the Financial Services Sector Coordinating Council for Critical Infrastructure Protection and Homeland Security ("FSSCC"), a private sector group that interfaces with the U.S. Department of Treasury and the Financial Banking Information Infrastructure Committee on infrastructure protection issues. The FSSCC works to coordinate the financial services industry's initiatives to protect critical financial services infrastructure. The goal is to ensure that these efforts focus on complementary objectives and contribute to achieving the highest possible level of overall industry resiliency.

As noted above, DTCC staff actively participates in SIFMA industry-wide business continuity testing. Some of these tests include FEMA pandemic, cyber security, and backup site testing. DTCC is a member of the Financial Systemic Analysis and Resilience Center (FSARC). The FSARC's mission is to proactively identify, analyze, assess and coordinate activities to mitigate systemic risk to the U.S. financial system from current and emerging cyber security threats through focused operations and enhanced collaboration between participating firms, industry partners, and the U.S. Government.

DTCC is also a member of Sheltered Harbor. Sheltered Harbor is a voluntary industry initiative undertaken by the US financial services sector to enhance the sector's resiliency, and to provide additional protections for consumer account information. Its goal is to extend the industry's capabilities to securely save and restore account data in the event of a loss of operational capability.

Principle 18: Access and participation requirements; CCAS 17Ad-22(e)(18)

<u>**Principle 18: Access and participation requirements**</u>	<u>**CCAS 17Ad-22(e)(18)**</u>
An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:*
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. ***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. ***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.	(18) Establish objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access by direct and, where relevant, indirect participants and other financial market utilities, require participants to have sufficient financial resources and robust operational capacity to meet obligations arising from participation in the clearing agency, and monitor compliance with such participation requirements on an ongoing basis.

DTC's Access and Participation Requirements

DTC has established participation criteria and requirements relating to financial resources, creditworthiness and operational capability. These objective and risk-based requirements are designed to limit the risks a Participant may present to DTC or to its membership, while facilitating fair and open access by market participants. Eligibility requirements are set forth in DTC's Rules, which are publicly available on DTCC's website at www.dtcc.com.

In general, DTC participation requirements are set forth in Rule 2 (Participants and Pledgees) and Rule 3 (Participants Qualifications). DTC has two categories of participation – "Participants" and "Limited Participants". A Participant is a member to which DTC makes all of its services available and a Limited Participant is one to which DTC makes only certain services available.[79]

Under DTC Rule 2, DTC also offers the option to become a Pledgee. A Pledgee is a bank, trust company or other financial institution that DTC approves to be a Pledgee, including a Participant which is approved

[79] Notably, pursuant to DTC Rule 31 (DTCC Shareholders Agreement), a Participant (with only specified exceptions) is required to purchase and own common shares of DTCC; a Limited Participant is not subject to Rule 31.

for this service. A Pledgee that is not otherwise a Participant must enter into an agreement with DTC, satisfactory to DTC, to use the service for the purpose of the book entry pledge of securities at DTC.

Generally, the same rules and procedures apply within each DTC participation category, regardless of the identity, type, or location of the applicant. However, some Participant accounts may be subject to additional requirements or restrictions. For example, certain foreign CSDs maintain only free of payment accounts at DTC. These accounts are systemically restricted by DTC from receiving deliveries of securities versus payment or payment orders, but are not restricted from receiving or delivering securities free of payment. This restriction limits not only DTC's risks, but also those of the Participant subject to the restriction, by preventing misdirected valued transactions. Additional requirements applicable to non-U.S. entities are set forth in DTC Rule 32 (Policy Statements on the Admission of Participants) designed, as may be necessary, to address legal risk and differences in accounting standards for foreign applicants. Ultimately, an applicant for participation must conform to any condition and requirement that DTC reasonably deems necessary for the protection of DTC and its Participants.[80]

DTC reviews its risk-based participation criteria periodically. Any material changes to these criteria would be subject to the Proposed Rule Change Process,[81] and, accordingly, would be subject to public comment.

Participant Application Requirements

All applicants seeking to become Participants must provide DTC with certain information, depending on the nature and level of service sought by the applicant; this information is reviewed to confirm eligibility. Each applicant must provide information that is reviewed by FRM to determine whether the applicant has: (1) sufficient financial ability to make anticipated required deposits to the Participants Fund, to make the preferred stock investment in DTC and to meet its obligations to DTC; (2) personnel with sufficient operational background and experience to establish that the applicant has the ability to conduct its business with DTC; and (3) appropriate Settling Bank arrangements.

1. *Type of Legal Entity*. In accordance with Rule 3 of the DTC Rules, DTC makes its services available generally to regulated eligible institutions, which include (a) corporations that engage in clearance and settlement activities, (b) banks and trust companies subject to U.S. Federal or State supervision or regulation, (c) insurance companies subject to State supervision or regulation, (d) investment companies registered under Section 8 of the Investment Company Act of 1940, as amended, (e) pension funds or other employee benefit funds, (f) broker-dealers registered with the SEC under the Exchange Act, or other financial institutions that demonstrate to the Board of Directors that their business and capabilities are such that they could reasonably expect material benefit from direct access to DTC's services by the applicant.

2. *Financial Responsibility*. DTC sets financial requirements for establishing and continuing participation that are based on the type of legal entity and the types of services that the entity will use at DTC. Currently, among other requirements, brokers that have access to all DTC services must have a minimum of $500,000 in excess net capital, and banks must have more than $2 million in equity.

   In addition, DTC's Rule 4 (Participants Fund and Participants Investment) provides that all Participants are required to make a deposit to the Participants Fund, with the amount of each Participant's required

[80] Rule 2 also sets out participation disqualification criteria, such as certain criminal or fraud convictions, regulatory suspensions or other "statutory disqualifications" that may affect an applicant's suitability for participation in DTC.

[81] Described in detail under Principle 1 (Legal basis).

deposit being fixed by DTC in accordance with its Rules, based on historic activity of the Participant and relative to the aggregate requirements of DTC in sizing the Participants Fund as a liquidity resource.[82] As noted above, DTC also offers certain services to "Limited Participants" that may be subject to different requirements, as determined by DTC in relationship to their business model, activities and proposed use of DTC services.

3. *Operational Capability*. DTC will assess operational capability of each Participant, both in connection with the application process as well as during periodic reviews. DTC's Operations group, in conjunction with the DTCC Relationship Management group, verifies that the applicant is able to satisfactorily communicate with DTC and fulfill anticipated commitments to, and meet the operational requirements of, DTC with necessary promptness and accuracy, and that the applicant is able to establish appropriate arrangements to effect payment obligations to DTC. Prior to activating membership, DTC applicants are required to conduct connectivity testing with DTC to confirm that they are able to transmit files to, and receive files from, DTC.

All applicants, whether to be a Participant, Limited Participant or Pledgee, must submit required membership application documents depending on the DTC services the applicant seeks to utilize. These application documents include the applicable form of agreement with DTC providing, among other matters, that the applicant will abide by the DTC Rules and agreeing to New York governing law. There is a standard form Participant's Agreement for full service Participants and a standard form Pledgee's Agreement for Pledgees; for Limited Participants, the form of agreement will depend on the services to be made available. Once approved by DTC, the applicant must, as may be required under the Rules, make its required deposit to the Participants. (*See* DTC Rule 4 (Participants Fund and Participants Investment)).

DTC is required, under Rule 2, to apply its requirements on a nondiscriminatory basis, and any applicant that is aggrieved by DTC in applying such qualifications is entitled to a right of appeal under DTC Rule 22.

Ongoing Compliance with Membership Requirements

DTC monitors its Participants for their ongoing compliance with access criteria through review and analysis of financial and operational information and through regular market, news, and regulatory monitoring. Participants are required to submit annual audited financial statements, and monthly or quarterly regulatory reports (e.g., FOCUS or CALL Reports, subject to the applicable regulatory regime), depending on the frequency of the Participant's reporting, and notification of changes in condition. Participants are informed by Important Notice as to the due dates for providing this information.

Pursuant to its Rules, DTC may fine Participants that fail to timely provide required information and those fines are reported to the SEC, as required by Rule 19h-1 under the Exchange Act.

Through FRM, DTC reviews this information to confirm that applicants and Participants meet their applicable minimum financial requirements. DTC also monitors settlement obligations, capital adequacy, and transaction activity of each Participant on a daily basis to verify that the Participant continues to be capable of meeting its obligations to DTC. DTCC Operations staff monitors the operational capability of Participants, as applicable.

As part of the ongoing monitoring of Participant firms, an internal credit risk rating matrix (referred to as the "CRRM") is utilized to risk rate U.S. bank, U.S. broker/dealer and foreign bank Participants. The

[82] Participants are also required under Rule 4 to invest in DTC Series A Preferred Stock, which is purchased ratably based on the same factors as those that determine required deposits to the Participants Fund. The Preferred Stock is an additional resource available to DTC pursuant to Rule 4, in case of Participant default.

CRRM is produced systemically from financial data contained in the Participants' regulatory reports and from qualitative assessments from Counterparty Credit Risk ("CCR") analysts of FRM. As noted above, Participants are required to provide DTC with regulatory reports and other required financial information, timely, pursuant to DTC's Rules, and are informed by Important Notice as to the due dates for providing this information. A rating scale of 1 to 7 is utilized, with 1 being the strongest and 7 being the weakest. The key elements used to set a Participant's internal credit rating focus on certain quantitative and qualitative factors, as defined by the CRRM, including that firm's capital, leverage, liquidity, profitability, management quality, and market position. Once this rating is generated, it is reviewed by an assigned analyst, and approved by a manager, within the CCR group of FRM. The CCR analyst considers whether other factors, not captured by the CRRM, warrant an override to downgrade the model-generated rating. The resulting rating determines the level of financial review that will be performed on that Participant and may impact the Participant's Participants Fund requirement.

Participants with an internal credit rating (CRRM-rated a 5, 6 or 7) are automatically placed on DTC's Watch List. Participants on this Watch List may be monitored more closely and have lower Net Debit Caps.

CCR also maintains an enhanced surveillance list, which consists of Participants for which CCR conducts additional surveillance or requires additional information in order to more closely monitor their risk profile. Participants can be added to enhanced surveillance for a variety of reasons, including concerns about legal and/or regulatory issues, changes to organizational structure, Participant's liquidity arrangements, available news reports relating to the Participant, concern regarding Participant's ability to maintain membership standards, etc. A Participant can be subject to enhanced surveillance regardless of its CRRM rating. In addition, Participant types not subject to the CRRM may also be subject to enhanced surveillance and be monitored for financial condition and/or operational capability, as DTC deems necessary to protect itself and its Participants.

Retirement, Suspension and Orderly Exit of Participants

DTC's Rules contain provisions that facilitate the suspension and orderly exit of Participants that no longer meet the participation requirements:

A Participant may voluntarily retire by notifying DTC in writing. Notwithstanding any such notification, a Participant remains obligated to satisfy any open obligations and liabilities arising out of its membership existing at the time of such notification. DTC will issue an Important Notice to its Participants when a Participant voluntarily retires.

DTC Rule 32 (Wind-Down of a Participant) allows DTC to facilitate the orderly wind-down of a Participant's business when DTC is notified by such Participant that such Participant intends to wind-down its business. Under this Rule, DTC may impose conditions on, or take actions with respect to the "Wind-Down Participant" in order to mitigate risk, including (but not limited to) requiring the Wind-Down Participant to post increased Participants Fund deposits. DTC retains all of its other rights set forth in DTC's rules and participant agreements, including the right to cease to act for the Wind-Down Participant. The Rule provides that if DTC declares a Participant to be a Wind-Down Participant, DTC will notify the Participant, all other Participants (via Important Notice) and the SEC of such determination.

DTC Rule 10 (Discretionary Termination) permits DTC to cease to act for a Participant with respect to a particular transaction, program, or transactions generally if, based on DTC's judgment, adequate cause exists to do so. The Risk Committee of the Board has been delegated by the Board with authority to determine whether to exercise this right. For example, DTC may cease to act for a Participant generally if the Participant becomes subject to a formal insolvency proceeding, the Participant fails to perform its obligations to DTC, the Board has reasonable grounds to believe that the Participant has been responsible for fraudulent or dishonest conduct, or the Board has reasonable grounds to believe that the Participant is in significant financial difficulty.

DTC Rule 11 (Mandatory Termination) provides that DTC shall cease to act for a Participant upon determining, to its reasonable satisfaction, that the Participant no longer meets the membership qualifications set forth in the DTC Rules. DTC will notify DTC's regulators and all other Participants that it has ceased to act for such Participant. If DTC makes the determination to cease to act for a Participant, DTC may not at any time refuse to deliver to such Participant its Deposited Securities to which the Participant is entitled in accordance with DTC Rules and applicable law, or in the case of a bankruptcy, to the court-appointed Trustee or Receiver, for such Participant.

DTC Rule 12 (Insolvency) provides that DTC shall cease to act for a Participant upon determining to its reasonable satisfaction that the Participant has become insolvent, as defined in Rule 12, except as may be determined by DTC in any particular case. DTC will notify the insolvent Participant, all other Participants and Pledgees, that it has ceased to act for such Participant, stating, at least in general terms, how pending matters will be affected and what steps are to be taken in this connection. As a general rule, unless waived or varied by the Board, DTC will no longer accept instructions from other Participants to deliver or pledge securities to the insolvent Participant and will not accept instructions from the insolvent Participant to deliver or pledge securities to other Participants or Pledgees.

Principle 19: Tiered participation arrangements; CCAS 17Ad-22(e)(19)

Principle 19: Tiered participation arrangements	**CCAS 17Ad-22(e)(19)**
An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements. ***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. ***Key Consideration 2***: An FMI should identify material dependencies between direct and indirect participants that might affect the FMI. ***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. ***Key Consideration 4***: An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (19) Identify, monitor, and manage the material risks to the covered clearing agency arising from arrangements in which firms that are indirect participants in the covered clearing agency rely on the services provided by direct participants to access the covered clearing agency's payment, clearing, or settlement facilities.

Tiered Participation Arrangements at DTC

DTC, the U.S. central securities depository, exemplifies the indirect holding system for securities and other financial assets in the U.S., as further described above in Principle 11 (Central securities depositories). It maintains securities accounts for its direct Participants, generally banks and broker dealers, as well as linked CSDs. Those Participants that are themselves securities intermediaries may reflect securities as credited to the accounts of their customers and/or otherwise process securities transactions through DTC on behalf of their customers (in this context, indirect participants).

Under DTC Rules, each Participant is, in all cases, responsible as principal for transactions, activity and holding of securities in its accounts. DTC Participants do not maintain separate customer and proprietary accounts at DTC, so that customer activity is not generally self-evident. DTC does afford its Participants the option to segregate assets, which may be customer assets if so designated on the Participant's books and records, in order to hold them free and clear of any DTC lien, claim or security interest.

Identification and Monitoring of Indirect Participant Risk

The risks that indirect participants pose to DTC are identified and monitored as part of the application and on-boarding process for DTC Participants and as part of DTC's ongoing Participant due diligence process.

Among the aims of these processes is for DTC to understand the material dependencies between Participants and the indirect participants that rely on them for processing or settlement of their transactions, as well as any significant relationships between Participants and the indirect participants relying on them, and the various risk controls and mitigants that Participants employ to manage their risks with respect to such relationships.

During the Participant on-boarding process, DTC requests and reviews, pursuant to its authority under the DTC Rules, and in accordance with its internal processes and procedures established for this purpose, information from applicants regarding the types of businesses they conduct, including the anticipated activity to be introduced to DTC by such applicants on behalf of indirect participants. Once DTC has accepted a Participant, under DTC Rules, as part of ongoing due diligence, DTC collects information from the Participant periodically. This information is analyzed to understand the overall business condition, risk management practices, which may cover operational, credit, legal and other risks, and financial standing of Participants, including information related to the indirect participants that rely on them.

In particular, DTC requires that Participants submit information regarding the amount of revenue and settlement activity that significant indirect participants represent to the Participants, the criteria and procedures used by the Participants for on-boarding indirect participants, as well as the risk management policies and procedures employed by the Participants for ongoing monitoring and controlling of indirect participant activities, such as trading activity, including limits, acceptable levels of concentration and required levels of liquidity in securities traded.

Management of Indirect Participant Risk

DTC employs Rules-based tools including, but not limited to, those described below to manage the risks that both direct and indirect participants may pose to DTC.

Credit Risk Rating. DTC's review of the information received on indirect participants through its Participant on-boarding and periodic Participant due diligence processes described above may factor into the qualitative factors that affect DTC's credit risk rating of the Participant. As described in further detail in response to Principle 4 (Credit risk) and 18 (Access and participation requirements), the resulting credit risk rating of a Participant determines the level of financial review that will be performed on that Participant. If DTC believes the CRRM model-generated rating is insufficiently conservative, or deems such action necessary to protect itself and its Participants, DTC may opt to use mitigation actions such as, the override framework to lower the Participant's credit risk rating[83], and/or subject the Participant to enhanced surveillance, or membership termination. This would apply if a Participant fails to provide sufficient disclosure, as requested during the due diligence process, to allow DTC to assess the risk exposure posed by the Participant's activity, including the indirect participant's activity.

Adequate Assurances. DTC also has the authority under its Rules to seek adequate assurances from a Participant, if DTC determines that such adequate assurances are warranted. One basis for such a demand might be based on DTC's review of such Participant's indirect participant relationships.

Risk Management Controls (Net Debit Cap and Collateral Monitor)

Transactions processed through DTC for Participants are subject to risk management controls which include Net Debit Cap as described in Principle 7 (Liquidity Risk), and Collateral Monitor as described in Principle

[83] This may have the effect of placing the Participant on the Watch List if, as a result of the downgrade, the final rating is 5, 6, or 7. The Credit Risk Rating Matrix (CRRM) is utilized to risk rate U.S. banks, U.S. broker-dealer and foreign bank Members.

5 (Collateral). Risk management controls apply to Participant accounts and activities whether the transaction is proprietary to the Participant or on behalf of its customers.

Principle 20: FMI links; CCAS 17Ad-22(e)(20)

Principle 20: FMI links	CCAS 17Ad-22(e)(20)
An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks. ***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. ***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. ***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. ***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. ***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. ***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. ***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. ***Key Consideration 8***: Each CCP in a CCP link arrangement should be able to cover, at least on a	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (20) Identify, monitor, and manage risks related to any link the covered clearing agency establishes with one or more other clearing agencies, financial market utilities, or trading markets.

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 fulfil its obligations to its own participants at any time. ***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.	

DTC Identifies, Monitors and Manages Risks Related to Links

DTC maintains a risk review framework that sets forth procedures for both the review and approval of prospective link arrangements, and for the identification, monitoring and management of risks related to established links on an ongoing basis. Prospective links are subject to management and regulatory review and approval, as well as a formal risk assessment process designed to identify the risks inherent in the link and the controls and processes designed to mitigate those risks. DTC Link arrangements are subject to DTC Rules and Procedures.

A central element of the risk review framework is input from a cross-functional group of DTC businesses, functional units and control functions with the requisite subject matter expertise relevant to the particular link. The framework addresses the relevant risk categories including, but not limited to, operational, market, credit, liquidity, legal and compliance risks.

DTC's link arrangements are subject to DTC Rules that are designed to comply with and observe these Principles and, in evaluating a counterparty to establish a link, DTC applies these Principles as a standard of observance. Link relationships of DTC are subject to public rule filings and notices applicable to DTC Rules generally and, for cross-border links, the counterparty link must be established in a jurisdiction whose primary securities regulator has agreed with the SEC to an applicable Memorandum of Understanding between the two countries.

DTC reviews changes to relevant laws and regulations as they arise, and makes such changes to its link arrangements (including filing any Proposed Rule Changes or Advance Notices) as may be necessary or appropriate.

DTC has established links with other CSDs, CCPs, Federal Reserve Banks and Matching Utilities (as defined in the DTC Settlement Service Guide). DTC also maintains an interface link with its affiliate NSCC. These are described below.

DTC Links to other CSDs

Linked CSDs are Participants, subject to the Rules of DTC like all other Participants. In certain cases (such as CDS and Euroclear Bank), customized Rules may also apply, which would be filed with the SEC and published for approval under the same approach described for all Rules in Principle 1 (Legal basis). With respect to links in which the investor CSD holds securities on the books of DTC as the issuer CSD, the investor CSD will be required to follow the application process to become a Participant. If it is a foreign financial institution, its application will be subject to enhanced scrutiny, including evaluation of its applicable regulatory regime and applicable laws as to which any conflict of law must be resolved in favor of the enforceability of the DTC Rules against the linked CSD under New York law and the law of its jurisdiction.

Once the application of a CSD is received, it is evaluated for the types of activities to be conducted, whether any book-entry transfers will be free of payment only, or also versus payment, what Participants Fund deposit may be required, its Net Debit Cap (if valued transactions are permitted), etc. Currently, only five linked CSDs have the ability to conduct valued transactions. Some of these links support U.S. securities owned by participants of the other CSDs, while others support non-U.S. securities traded in the U.S. In several cases, including with CSDs in Canada and Germany, bilateral links support eligible U.S. and non-U.S. issues.

- *CSD Links in which DTC is the Investor CSD.* DTC currently has three "outbound" links involving a DTC account at a non-U.S. CSD (each an "Issuer CSD" within the terminology of these Principles) in order to enable DTC Participants to access the services or assets of the Issuer CSD through DTC's relationship with the Issuer CSD: (1) Clearstream Banking AG ("Clearstream") in Germany, (2) SIX SIS Ltd ("SIS") in Switzerland and (3) CDS in Canada. The CDS "northbound" link includes Canadian dollar settlement, as further provided in DTC Rules. The other two links are free of payment only. The existing links have been established pursuant to relevant rule filings with the SEC, subject to a public comment period.

  Where DTC has a link to an Issuer CSD, DTC operates the link via an omnibus account. DTC maintains accounts for its own Participants on DTC's records and in accordance with their rights and obligations under the DTC Rules. A key legal difference in the holding of these securities is that Cede, the DTC nominee, is not the registered holder on the books of the issuer; rather, the linked CSD is itself the registrar and/or the direct holder vis-à-vis the issuer, the securities may be denominated in currencies other than U.S. dollars and the Issuer CSD is initially responsible for asset servicing.

- *CSD Links in which DTC is the Issuer CSD.* All "in-bound" links involving a non-U.S. CSD (each an "Investor CSD" in the terminology of these Principles) having an account at DTC are considered DTC Participants and the Investor CSDs undergo the same Participant application and approval process as all other Participants, with applicable requirements for non-U.S. applicants including, e.g., Memorandum of Understanding between the foreign regulator and the SEC, more extensive credit review and quarterly financial reporting, legal opinions, confirmation of anti-money laundering policies and procedures, appointment of agent for service of process and U.S. tax withholding arrangements. This process is supported by the framework described under Principle 1 (Legal basis) with respect to the legal basis of the DTC Rules, including its membership application process and requirements.

  Investor CSDs that have DTC participant accounts with DVP settlement services are: (1) CDS, Canada; (2) CAVALI S.A. I.C.L.V., Peru; (3) Depósito Central de Valores, Chile; (4) S.D. Indeval, S.A. de C.V., Mexico; and (5) Caja de Valores, S.A., Argentina.

  Other Investor CSDs that have DTC accounts for free of payment transaction only, with no cash services other than corporate actions and billing are: (1) Clearstream, Germany; (2) CREST International Nominees Ltd., UK and Ireland; (3) Tel Aviv Stock Exchange Clearing House, Ltd. (TASECH), Israel; (4) Monte Titoli, S.p.A., Italy; (5) Japan Securities Depository Center, Inc.; (6) Central Depository (Pte.) Ltd., Singapore; (7) Hong Kong Securities Clearing Company Limited; and (8) Euroclear Bank SA/NV, Belgium.

  DTC uses the same risk controls as it employs with respect to the rest of its membership to measure, monitor and manage the credit and liquidity risks arising from its links to Investor CSDs. As is the case with respect to any Participant, the net debits of Investor CSDs with DVP links must be fully collateralized. Investor CSDs are also required to make Participants Fund Deposits and are subject to risk and loss mutualization.

For links with Investor CSDs that may only process free of payment deliveries, there is no settlement risk and deliveries/receives may be final intraday as described in response to Principle 8 (Settlement finality).

Several CSDs are also Pledgees at DTC, in order to receive Pledges of Securities as collateral. Each of these signs a separate Pledgee's Agreement, and is subject to DTC Rules.

The CDS Link

DTC has established a "northbound" Canadian-Link Service ("CDS Link Service") with CDS that supports valued transactions settled in Canadian dollars on the books of CDS, for DTC as a participant in the CDS system. This Canadian-Link Service enables DTC, on behalf of its Participants, to clear and settle two categories of securities transactions – cross-border Canadian dollar securities transactions with other participants of CDS ("CDS Participants") and intra-DTC Canadian dollar securities transactions with other DTC Participants. The Canadian-Link Service also enables DTC Participants to transfer Canadian dollar funds to CDS Participants (through the facilities of CDS) and to other DTC Participants (through Canadian settlement banks acting for DTC and such DTC Participants). As with U.S. dollar transactions, security positions received versus Canadian dollars are immediately available for redelivery in DTC as long as sufficient collateral and debit cap controls exist.[84]

As a result, and taking the "inbound" CDS link into account, DTC's Canadian Link provides Participants with a single depository interface for U.S. and Canadian dollar transactions and reduces cross-border processing costs and inefficiencies. The link also eliminates the problems associated with maintaining split inventories by permitting Participants to concentrate U.S. and Canadian security positions in their DTC accounts. This eliminates the need for Participants to maintain some portion of a position in a dually-listed issue in CDS for Canadian dollar settlements and the remainder in DTC for U.S. dollar settlements. It also eliminates the need for Participants to reposition inventory in preparation for corporate action events and/or transaction processing.

The Euroclear Bank (EB) Link for Collateral Transactions

In 2016, EB applied to join DTC as a foreign CSD to hold DTC eligible securities in order to process collateral transactions at EB. The EB Link, terms and conditions are specified in DTC Rule 34, approved by the SEC on July 19, 2016.[85]

A DTC Participant, which must also be an EB participant, would establish a dedicated sub-account and transfer to the sub-account securities to be made available for EB collateral services. EB, on behalf of the Participant, may then instruct DTC to deliver those securities, free of payment, to the EB account at DTC, and EB would credit the securities on its books to an account of the same participant. While the securities are held as inventory in the EB account at DTC, EB may process collateral transactions for the originating Participant. When the securities are no longer in use in the EB collateral system, EB will return them to

[84] As mentioned in response to Principle 9 (Money settlements), DTC Participants settle their Canadian dollar obligations with DTC's Canadian dollar concentration bank (Royal Bank of Canada). At the end of each business day, DTC performs a single net Canadian dollar settlement with CDS. DTC utilizes the services of Royal Bank of Canada for Canadian Dollar settlement as DTC does not have direct access to The Bank of Canada. Canadian Dollar Settlement accounts for less than 0.20 percent of DTC's average daily valued settlement volume.

[85] *See* Exchange Act Release No. 78358 (July 19, 2016), 81 FR 48482 (July 26, 2016) (SR-DTC-2016-004).

the originating Participant, unless there has been a default. In the case of default, the securities may be transferred to the DTC account of EB's global custodian, so that liquidating trades may be processed.

The EB Link is designed to support heightened needs for securities collateral globally, particularly as required by recent regulations for derivatives transactions (as further explained in the DTC rule filing noted above).

The NSCC link

DTC has critical links to its affiliate, NSCC. NSCC's CNS system relies on an interface with DTC for the book-entry movement of securities to settle obligations. DTC also acts as NSCC's settlement agent, for purposes of effecting end-of-day net funds settlement.[86] To support the interface of DTC and NSCC, and protect against Participant default, DTC and NSCC also maintain the Second Amended and Restated Netting Contract and Limited Cross Guaranty Agreement, as described below.

As provided for in the rules of NSCC and in the DTC Rules, CNS settlements are effected through transmission of instructions to DTC, on behalf of the DTC Participant/NSCC Member.[87] CNS short positions (*i.e.*, obligations to deliver) are compared against Members' DTC accounts to determine securities availability. If securities are available, they are transferred from the NSCC Member's account at DTC to NSCC's account at DTC, to cover the NSCC Member's short obligations to CNS. CNS long positions are transferred from the NSCC account at DTC to the accounts of NSCC Members at DTC, in accordance with the applicable algorithm built into the system. CNS deliveries made through DTC are made free of payment on a gross basis intraday on settlement date, with funds settlement occurring on a net basis (on the books of NSCC) at the end of the settlement day.

NSCC end-of-day money settlement is centralized with DTC, to obtain the benefit of funds netting and thus reduce funds transfers for Common Members. As part of this process, the net settlement debits or credits of Common Members are netted to produce a single net amount for each Common Member; those amounts are then further netted at the Settling Bank level to produce a single net-net debit or credit amount for each Settling Bank. Settlement is effected, with DTC acting as NSCC's settlement agent, in central bank funds through NSS (as further described in response to Principle 9 (Money settlements)). These arrangements are also reflected in the DTC Rules and in the Rules and Procedures of NSCC,[88] as well as in the DTC/NSCC Netting Contract and Limited Cross-Guaranty (which is structured as a netting contract under FDICIA).

The DTC/NSCC Netting Contract and Limited Cross-Guaranty includes special cross-guaranties and related arrangements designed to permit transactions to flow smoothly between the DTC system and the CNS system in a collateralized environment. These guaranties ensure, among other things, that debits to DTC settlement accounts of Participants continue to be collateralized sufficiently, under the Collateral Monitor, when securities are delivered into the CNS system as short covers, and reduce risk at NSCC by ensuring that long allocations, or the approximate value of long allocations, will be made available to NSCC in a default situation.[89]

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[86] For further detail as to NSCC, please refer to the NSCC Disclosure Framework on the DTCC website - www.dtcc.com.

[87] These provisions are contained chiefly in the DTC Settlement Service Guide and DTC Rule 6 (Services), and NSCC Rule 11 (CNS System) and NSCC Procedure VII (CNS Accounting Operation).

[88] *See* the DTC Settlement Service Guide, and NSCC Procedure VIII (Money Settlement Service).

[89] *See* discussion of default management process in response to Principle 13 (Participant-default rules and procedures).

The operational risks of the DTC/NSCC Netting Contract and Limited Cross-Guaranty arrangement are monitored on an ongoing basis through DTCC Operations and Settlement areas, and are subject to DTCC's Operational Risk Management framework. Processes and procedures to implement these arrangements are monitored and managed through DTC's automated Collateral Monitor risk management controls and failure-to-settle system, which are reviewed and tested on a regular basis.

The OCC Link

The OCC has a special pledge arrangement with DTC that is subject to provisions in the Rules (*see* the Settlement Service Guide).

OCC is a Participant and a Pledgee. OCC uses its Account as a Participant for its Market Loan Program in which the OCC acts as central counterparty for stock loan transactions. In this capacity, the OCC submits stock loan deliver orders to DTC on a locked-in basis on behalf of the parties to the transactions.

OCC as a Pledgee allows OCC members that are DTC Participants to meet their margin obligations with OCC by pledging securities to OCC at DTC. That is, a Participant writing an option on any options exchange may fully collateralize that option by pledging the underlying securities by book-entry through DTC to the OCC. If the option is called (exercised), the securities may be released and delivered on the books of DTC to a Participant that is (or is acting on behalf of) the holder of the call. If the option contract is not exercised, OCC would release the pledged securities to the Pledgor Participant's Account.

DTC Links with CCPs

In addition to the OCC, other CCPs also have Pledgee accounts at DTC in order to receive pledges of Securities held at DTC as collateral. Each of these Pledgees has signed a Pledgee's Agreement and is subject to DTC Rules. The level of this activity at DTC is insignificant in comparison to total DTC activity.

Federal Reserve Bank Pledge Services

The Federal Reserve Banks have special pledge arrangements with DTC that are subject to provisions in the Rules (see the Settlement Service Guide).[90] DTC maintains an automated interface with 12 Federal Reserve Banks, allowing DTC Participants to pledge collateral securities from their DTC accounts to Pledgee Accounts of these Federal Reserve Banks. The automated interface allows pledges and pledge release requests processed through DTC's Collateral Loan system to flow directly into and out of the FRS collateral management system.

Matching Utilities

For institutional trades, DTC Rules and Procedures provide that DTC may accept electronic transmission of affirmed/matched trades from any Matching Utility as defined in the Settlement Service Guide[91] that

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[90] DTC Settlement Service Guide, *available at* http://www.dtcc.com/~/media/Files/Downloads/legal/service-guides/Settlement.pdf.

[91] The Settlement Service Guide states that a "Matching Utility must be (i) a clearing agency registered pursuant to Section 17A of the Securities Exchange Act of 1934, as amended (the "Act"), (ii) an entity that has obtained an exemption from such registration from the U.S. Securities and Exchange Commission, or (iii) a "qualified vendor" for trade confirmation/affirmation services as defined by the rules of a self-regulatory organization."

has SEC approval to provide such services. Currently, DTC has links with three Matching Utilities: (1) its affiliate, DTCC ITP Matching (US) LLC, (2) Bloomberg STP LLC, and (3) SS&C Technologies, Inc.

Institutional investor trades of Securities that are DTC eligible and that are affirmed in the Matching Utility's trade confirmation and trade matching system are submitted electronically to DTC for automated processing and settlement on a trade-for-trade basis. Participants that are obligated to deliver securities give electronic authorization to DTC to process the deliveries from their Accounts and, if they have a sufficient quantity of such securities and satisfy risk management controls, the deliveries are processed.

Matching Utilities and related transactions and processes are subject to the DTC Rules, particularly the Settlement Service Guide.

Principle 21: Efficiency and effectiveness; CCAS 17Ad-22(e)(21)

Principle 21: Efficiency and effectiveness	**CCAS 17Ad-22(e)(21)**
An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves. ***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. ***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. ***Key consideration 3***: An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (21) Be efficient and effective in meeting the requirements of its participants and the markets it serves, and have the covered clearing agency's management regularly review the efficiency and effectiveness of its: (i) Clearing and settlement arrangements; (ii) Operating structure, including risk management policies, procedures, and systems; (iii) Scope of products cleared or settled; and (iv) Use of technology and communication procedures.

Efficiency and effectiveness in the low cost provision of needed services

DTC is efficient and effective in meeting the requirements of its Participants and the markets it serves, providing central securities depository and clearing agency services to promote the prompt and accurate clearance and settlement of securities transactions in U.S. markets. Operating as a low cost financial market utility, DTC strives for maximum efficiency in its operations and technology, and responsiveness to the needs of its Participants in the scope of services provided.

Scope of services responsive to market needs

DTC provides basic central security depository and securities settlement services that are part of its fundamental directive as a registered clearing agency under the Exchange Act. In providing these services, DTC seeks to enhance and expand the scope of services to support an evolving market, often in response to initiatives requested by its Participants, affiliates or other industry parties.

Fresh off the heels of DTCC's thought leadership to migrate the U.S. cash markets to a T+2 settlement cycle in September 2017, DTCC has proposed a series of far-reaching initiatives to both optimize and further accelerate the depository's settlement process, with a goal to further reduce cost and risk to the industry, streamline processing efficiencies and improve intra-day settlement finality. DTCC outlined its proposal of "Settlement Optimization" in its January 2018 White Paper *Modernizing the U.S. Equity-Post Trade Infrastructure*. As a first in a series of proposed initiatives, DTC will look to reengineer its 'delivery order' algorithms to maximize the number of transactions that could be processed by Participants in the night cycle prior to settlement. DTC estimates it can improve the current settlement rate of 40-50% to approximately 90% of all night cycle transactions. Subject to regulatory approval, DTC expects to implement this reengineered process with Participants in Q1 2019.

DTC engages with the industry and evaluates new initiatives, enhancements, strategic thinking, and its performance through the following mechanisms:

DTC employs a structured approach for the implementation and prioritization of new initiatives. The DTCC Investment and Operating Committee defines the process for proposing, evaluating and approving all initiatives. Among other things, the framework ensures new initiatives are fully aligned with the corporate strategy, offer sound financial viability and risk matters are properly considered.

- DTC and its parent company DTCC lead strategic thinking across the industry through their development of various White Papers which are designed to provoke discussions on relevant topics of note in an effort to continually improve the overall market infrastructure. The White Papers are available at www.dtcc.com.

- DTC actively evaluates whether it is meeting and will continue to meet the requirements and needs of its Participants through periodic customer satisfaction survey conducted by DTCC for all of its business lines, including DTC. Relationship Managers product-aligned to better support Participants.

DTC Participants have the opportunity to participate in product development through their involvement in Advisory Boards and/or Ad Hoc Working Groups. Advisory Boards are sometimes established to provide guidance, expertise and feedback on various initiatives. DTC also establishes Ad Hoc Working Groups, as necessary, to assist with more discrete programs, products or processes.

DTC's Management team additionally interacts with the industry through (a) industry associations and committees such as SIFMA and Asset Managers' Forum, (b) industry conferences, (c) forums organized by DTC to inform Participants of current and new products and services and (d) onsite visits.

Low cost pricing for accessibility of services

DTC's efficiency is ultimately reflected through its pricing. DTC operates a "low cost" pricing model, continually striving to drive down cost in the industry by providing efficient services. In addition to driving down cost, DTC also strives to drive down risk. (For a description of DTC's risk management processes, *see* Principle 3 (Framework for the comprehensive management of risks).)

DTC has in place procedures to control costs and to regularly review pricing levels against costs of operation. DTC uses a formal budgeting process to control its expenditures. It reviews pricing levels against its costs of operation typically during the annual budget process, providing guidance to the Business, Technology and Operations Committee of the Board and to the full Board of the price impact. The budget is reviewed by several Board committees and approved annually by the Board of Directors, as is any change in service fees. DTC's fees are cost-based plus a markup as approved by its Board. This markup or "low margin" is applied to recover development costs and operating expenses; and to accumulate capital sufficient to meet regulatory and economic requirements.

Furthermore, to help promote ongoing efficiency, DTCC maintains a Business Transformation Office which, for example, employs Quality Reengineering, Six Sigma and Lean techniques to analyze workflows and make appropriate recommendations for further efficiency improvements.

Membership representation in governance

DTC is a wholly owned subsidiary of DTCC which, as described in response to Principle 2 (Governance), is owned and governed by the users of DTCC's three clearing agency subsidiaries. The majority of

Directors on the Board are representatives of financial institutions that are significant users of DTC's services. As further described in Principle 2, in addition to management representatives, the Board also includes independent directors with industry, regulatory or academic backgrounds important to shaping institutional goals of DTCC and the clearing agency subsidiaries. The Board and its committees, such as the BTOC, Audit Committee and Risk Committee, are structured so that DTC's operations, delivery systems and technologies, services and products meet the needs of DTC's Participants and the markets that DTC serves.

Goals and Objectives

DTC Senior Management sets corporate goals annually, which are approved by the Board of Directors. The overarching corporate goals are used as the framework for the annual goals for each business line and/or control function area. Corporate goals encompass a range of benchmarks such as service level goals, financial goals, and overall business priorities.

To ensure that the goals are clearly defined, measurable and achievable, corporate goals are reviewed by several levels of management, including the Management Committee; they are then reviewed and approved by the Board. Historical results may be used as guidelines to set future targets, as appropriate. Results are tracked monthly by the Management Committee and the Board, with specific attention on those metrics that might be performing below target.

As described in Principle 2, a Corporate BBS holistically measures corporate performance addressing the strategic direction & health of DTCC and its wholly owned subsidiaries. The BBS is drafted annually by management and approved by the Board, and include various metrics across the customer experience, operational execution, financial performance, and human capital performance.

In addition, there are supporting scorecards for Operations and Information Technology that focus on additional metrics in those areas.

Processes and Metrics

DTCC uses a variety of metrics to measure DTC's efficiency and effectiveness. In addition to the BBS and monitoring against goals, DTCC employs the following:

- DTCC has established a Business Transformation Office which evaluates process efficiency and identifies improvement opportunities across the enterprise. Transformation practices are often based on the Lean and Six Sigma methodologies and results are frequently presented to the Management Committee and to the Board of Directors.

- DTCC also measures the effectiveness of DTC's technology process through industry standard methodologies such as the Capability Maturity Model Integration, Agile and Information Technology Infrastructure Library (ITIL).

- DTCC's Application Development group has been assessed by an independent party on process maturity.

- DTCC's Enterprise Infrastructure organization uses the ITIL framework for continued improvement with respect to IT service management.

DTC evaluates its efficiency and effectiveness at least monthly. This information is communicated to senior management monthly (via the BBS and other scorecards) and provided to the Board and/or Board Committees as a standing item during their regularly scheduled meetings.

Principle 22: Communication procedures and standards; CCAS 17Ad-22(e)(22)

Principle 22: Communication procedures and standards	CCAS 17Ad-22(e)(22)
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. ***Key consideration 1***: An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (22) Use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, and settlement.

Communication procedures and standards

DTC's policy on communications procedures and standards provides the manner in which DTC will accommodate relevant internationally accepted communication procedures and standards. Specifically, DTC will support relevant internationally accepted communication procedures and standards where there is industry support, and a business case for implementing such standards. In cases where a business relevant to DTC has decided to adopt an industry standard, DTC will work with the appropriate industry organizations that are defining those standards to ensure DTC's unique needs, given its position in the industry, are met. DTC has adopted the International Standards Organization (IS0) 15022 and 20022 messaging formats, which are used in transactions between financial institutions, for interacting with its Participants and other connected parties. DTC also supports several proprietary messaging formats.

DTC supports industry-standard communication interfaces through direct interface (direct end-to-end line) via DTCC's SMART network, and through the SFTI®, BT Radianz and SWIFTNet networks. SWIFTNet is a secure messaging service provided by the Society for Worldwide Interbank Financial Telecommunications (SWIFT). DTC also supports direct interface through the Internet. These communication interfaces are available for all entities that interface with DTC systems, including any linked FMIs. Participants are eligible to use any one or a combination of the communication interfaces supported by DTC. Participants identify their communication interface(s) during the on-boarding process and may modify these elections at any time subsequently, as needed.

Principle 23: Disclosure of rules, key procedures, and market data; CCAS 17Ad-22(e)(23)

Principle 23: Disclosure of rules, key procedures, and market data	CCAS 17Ad-22(e)(23)
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. ***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. ***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. ***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. ***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. ***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.	*Each covered clearing agency shall establish, implement, maintain and enforce written policies and procedures reasonably designed to, as applicable:* (23) Provide for the following: (i) Publicly disclosing all relevant rules and material procedures, including key aspects of its default rules and procedures; (ii) Providing sufficient information to enable participants to identify and evaluate the risks, fees, and other material costs they incur by participating in the covered clearing agency; (iii) Publicly disclosing relevant basic data on transaction volume and values; (iv) A comprehensive public disclosure that describes its material rules, policies, and procedures regarding its legal, governance, risk management, and operating framework, accurate in all material respects at the time of publication, that includes: (A) Executive summary. An executive summary of the key points from paragraphs (e)(23)(iv)(B), (C), and (D) of this section; (B) Summary of material changes since the last update of the disclosure. A summary of the material changes since the last update of paragraph (e)(23)(iv)(C) or (D) of this section; (C) General background on the covered clearing agency. A description of: (1) The covered clearing agency's function and the markets it serves; (2) Basic data and performance statistics on the covered clearing agency's services and operations, such as basic volume and value statistics by product type, average aggregate intraday exposures to its participants, and statistics on the covered clearing agency's operational reliability; and (3) The covered clearing agency's general organization, legal and regulatory framework, and system design and operations; and

	(D) Standard-by-standard summary narrative. A comprehensive narrative disclosure for each applicable standard set forth in paragraphs (e)(1) through (23) of this section with sufficient detail and context to enable a reader to understand the covered clearing agency's approach to controlling the risks and addressing the requirements in each standard; and (v) Updating the public disclosure under paragraph (e)(23)(iv) of this section every two years, or more frequently following changes to its system or the environment in which it operates to the extent necessary to ensure statements previously provided under paragraph (e)(23)(iv) of this section remain accurate in all material respects.

DTC Rules are public

DTC provides its Participants with comprehensive rules and procedures, including a schedule of its fees. These are readily available on DTCC's website, to Participants, DTC's supervisors and the public. Through other publications (including this Disclosure Framework) and Participant outreach, DTC also provides sufficient information to enable Participants to understand the risks, fees, and other material costs they incur by participating at DTC.

Rules and Procedures

DTC Rules, including its "Operational Arrangements Necessary for Securities to Become and Remain Eligible for DTC Services," Service Guides, and related policies and procedures are filed with the SEC for effectiveness. As discussed under Principle 1 (Legal basis), all Proposed Rule Changes and Advance Notices are posted on DTCC's website, and also published by the SEC on the SEC's website, www.sec.gov, and in the Federal Register (which is published online by the U.S. Government Printing Office). Participants are also notified of all Proposed Rule Changes and Advance Notices via Important Notices published on DTCC's website.

Except when filed for immediate effectiveness, publication of Proposed Rule Changes (and of Advance Notices) allows Participants and other interested parties the prior opportunity to comment on proposals, to understand what such proposals provide and how stakeholders may be affected.[92] Rules filed for immediate effectiveness are typically administrative or technical, and not controversial. Fee filings may be made immediately effective, but are objective and transparent to Participants, which may then elect whether and to what extent to utilize services for which there may be changes in fees. DTC Rules as in effect, as well as Proposed Rule Changes and Advance Notices, are available to the public via DTCC's website, www.dtcc.com.

All rule changes are subject to internal review and governance before they are submitted to the SEC. Changes to Rules may be initiated from a number of sources, including internal review and lessons learned

[92] Proposed Rule Changes and Advance Notices follow a format prescribed by the SEC. This includes a narrative description of the relevant proposal, with background information including the statutory basis for the proposal and discussion of its impact on Participants and stakeholders.

from actual events or simulations, process or product enhancements, Participant feedback, and evolving regulatory requirements.

In addition to its Rules, DTC also provides supplementary information on its services through Important Notices and a series of other documents that are made publicly available on www.dtcc.com.

Design and operations

As part of DTC's on-boarding process, Participants are provided with information about the design and operations of DTC's systems, including record layouts, if applicable, as well as other technical information necessary for Participants to establish connectivity with DTC and interact with DTC's systems.

Information about the design and operations of DTC's systems is also included in service descriptions and other forms of user documentation that are available on www.dtcc.com.

Participant rights, obligations and risks

Participant rights, obligations and risks are reflected in the Rules, including but not limited to: (i) participation requirements, (ii) DTC's ability to cease to act, either temporarily or definitively, in providing services to a Participant, (iii) the requirement for Participants to provide additional assurances of financial and operational capabilities, as DTC determines may be necessary, (iv) the obligation of Participants to make deposits to the Participants Fund and purchase DTC Preferred Stock, (v) Participant rights and obligations under the loss allocation process, (vi) Participant obligations in their use of the services, including with respect to certain indemnifications of DTC, (vii) Participant compliance with applicable law, (viii) settlement and payment obligations, (ix) settling bank requirements, and (x) disciplinary sanctions (including fines) and a Participant's right to appeal a decision adverse to it.

DTC Rules contain information referring to non-routine, though foreseeable, events, including but not limited to: (i) events that could trigger a suspension of services to a Participant, (ii) application of the Participants Fund for liquidity to complete settlement when a Participant defaults on its settlement obligation, (iii) allocation of losses, (iv) adjustments to risk controls as necessary to protect DTC and its Participants, (v) required additional assurances with respect to a Participant's operational and financial capacity, and (vi) the right of DTC to withhold the return of excess Participants Fund deposits. The Rules also provide for authority and reporting of waivers and/or suspension of the Rules, in the event of such a contingency. These provisions recognize, and provide for, a degree of discretion to management, to enable DTC to address situations as facts and circumstances may require.

Training and other resources

DTC offers training to new Participants prior to membership activation, which facilitates their understanding of their obligations under the DTC Rules, as well as the risks that such Participant may face from joining DTC. Additional training tools to help Participants learn how to more effectively use DTC's products and services are made available on www.dtcclearning.com. DTC also provides formal training on an ad-hoc basis to existing Participants, upon request.

The initial and ongoing membership requirements serve to demonstrate that DTC's Participants are able to: (i) satisfactorily communicate with DTC, (ii) fulfill their anticipated commitments, (iii) meet the operational requirements with necessary promptness and accuracy, and (iv) establish appropriate arrangements to effect payment obligations to DTC. Participants must demonstrate operational readiness both during the membership on-boarding process before being provided with access to DTC's systems, as well as on an ongoing basis as part of their continuing membership requirements. Each DTC Participant is assigned a dedicated Relationship Manager or Account Manager who is able to provide a number of resources or one-on-one education as needed to ensure Participants understand DTC's Rules, procedures, and the risks they face from participating in DTC.

If a Participant is observed to be lacking appropriate understanding of the DTC Rules, requirements or procedures, the concerned DTCC employee / department will reach out to Relationship Management staff to discuss remedies with the relevant firm's management. Remedial actions to address an apparent lack of understanding of the DTC Rules, procedures and the risks of participation may include one-on-one coaching, webinars or other forms of additional training and/or telephone support. DTC also maintains the right to institute disciplinary proceedings, including fines, for a Participant's violation of the DTC Rules.

Fees

DTC publicly discloses its fees for individual services and volume discounts, as well as descriptions of DTC's priced services. This information is available on DTCC's website, www.dtcc.com.

Generally, a forecast of fee changes is provided to Participants during the third quarter of the year. The fee changes are then finalized, approved by the Board of Directors and filed with the SEC during the fourth quarter of the year with an effective date of the following January 1. DTC notifies Participants of all fee and service changes via Important Notices that are available on DTCC's website. Mid-year fee changes are also filed with the SEC and Participants are provided notice of the changes via Important Notice.

In addition, DTCC discloses information on fees charged for operating and maintaining the SMART communications infrastructure that provides access to DTCC's (including DTC's) services. These fees are disclosed in the "Guide to SMART Charges" which is available on DTCC's website, www.dtcc.com.

Disclosure Framework

This DTC Disclosure Framework is available on DTCC's website, www.dtcc.com. DTC updates the Disclosure Framework every two years, at a minimum.

DTCC discloses other quantitative information regarding DTC in the DTCC Annual Report, which is published annually, and in the DTC financial statements, which are published quarterly. This information, as well as basic data on transaction volumes and values, is available to the public on the DTCC website.

In addition to the information provided above, DTC's public disclosures include the following:

1. Important Notices
2. Proposed Rule Changes and Advance Notices filed with the SEC
3. Management's Statements Regarding Internal Controls and Reports of Independent Accountants

Section VI of this Disclosure Framework includes a listing of publicly available resources, including information available on www.dtcc.com, on other public websites. Additional information is available to Participants on www.dtcclearning.com or upon request. All such information is available in English.

Principle 24: Disclosure of market data by trade repositories

Principle 24: Disclosure of market data by trade repositories	Not applicable for CCAS
A TR should provide timely and accurate data to relevant authorities and the public in line with their respective needs. ***Key consideration 1***: A TR should provide data in line with regulatory and industry expectations to relevant authorities and the public, respectively, that is comprehensive and at a level of detail sufficient to enhance market transparency and support other public policy objectives. ***Key consideration 2***: A TR should have effective processes and procedures to provide data to relevant authorities in a timely and appropriate manner to enable them to meet their respective regulatory mandates and legal responsibilities. ***Key consideration 3***: A TR should have robust information systems that provide accurate current and historical data. Data should be provided in a timely manner and in a format that permits it to be easily analysed.	

DTC is not a TR. Accordingly, Principle 24 does not apply to DTC.

V. Definitions of Key Terms and Abbreviations

AML	Anti-Money Laundering
Bankruptcy Code	The U.S. Bankruptcy Code
BBS	Balanced Business Scorecard is a component of DTCC's performance management framework; used to assess DTCC's contributions to the financial industry and markets throughout the year and measured against corporate priorities
BCM	Business Continuity Management
BEO	Book-entry only
BRC	Risk Committee of the Board of Directors
BSA	Bank Secrecy Act of 1970
CCAS	SEC's Covered Clearing Agency Standards
CCP	Central counterparty
CCR	Counterparty Credit Risk group
CDS	CDS Clearing and Depository Services Inc., the Canadian CSD and provider of CCP services
Cede	Cede & Co., the nominee of DTC
Clearing Agency	A self-regulatory organization that operates either as a clearing corporation or a CSD. Entities acting as clearing agencies in the U.S. are required to register with the SEC. (Source: SEC website, www.sec.gov)
CNS	NSCC's Continuous Net Settlement system
Collateral Monitor	Collateral Monitor, a DTC risk management control
CRRM	Credit Risk Rating Matrix
CSD	Central securities depository
CSO	Chief Security Office
DNS	Deferred net settlement
Dodd-Frank	The Dodd- Frank Wall Street Reform and Consumer Protection Act of 2010
DRS	Direct Registration Service

DTC Rules	DTC rules, procedures, service guides and operational arrangements
DTCC	The Depository Trust & Clearing Corporation
DVP	Delivery versus payment
EDM	Enterprise Data Management
ESTC	Enterprise Stress Test Council
Exchange Act	The Securities Exchange Act of 1934
FAST	Fast Automated Securities Transfer
FDIA	The Federal Deposit Insurance Act
FDIC	Federal Deposit Insurance Corporation
FDICIA	The Federal Deposit Insurance Corporation Improvement Act of 1991
Fedwire®	The Fedwire® Funds Service
FICC	Fixed Income Clearing Corporation
FMI	Financial Market Infrastructure
FORM	Financial and Operational Risk Management
FRB	The Board of Governors of the FRS
FRBNY	The Federal Reserve Bank of New York
FRM	Financial Risk Management
FRS	The Federal Reserve System
IAD	Internal Audit Department
IPA	Issuing and Paying Agent for MMIs
ITIL	Information Technology Infrastructure Library
LNA	Liquid net assets
MMI	Money Market Instrument
MRC	Management Risk Committee
MRGC	Model Risk Governance Committee

MVC	Model Validation and Control group
Net Debit Cap	Net Debit Cap, a DTC risk management control
NSCC	National Securities Clearing Corporation
NSS	The National Settlement Service of the FRS
NYSDFS	New York State Department of Financial Services
OLA	Orderly liquidation authority under Dodd Frank, Title II
ORM	Operational Risk Management
Participants Fund	Participants Fund provided under DTC Rule 4
Pledgee	DTC vis-à-vis its Participants or, otherwise, a bank, trust company, broker-dealer or other person approved by DTC to receive a book-entry pledge.
Pledgor	A DTC Participant that pledges securities to a Pledgee by book-entry
Reg SCI	Regulation Systems Compliance and Integrity
Rules	DTC rules, procedures, service guides and operational arrangements
SEC	U.S. Securities and Exchange Commission
Securities Act	The Securities Act of 1933
SFTI	NYSE Secure Financial Transaction Infrastructure
Shareholders Agreement	The DTCC Shareholders Agreement
SIFMU	Systemically Important Financial Market Utility
SIPA	Securities Investor Protect Act of 1970
SIPC	Securities Investor Protection Corporation
SLA	Service Level Agreement
SMART	DTCC's Securely Managed and Reliable Technology network
SWIFT	A secure messaging service provided by the Society for Worldwide Interbank Financial Telecommunications
TRM	Technology Risk Management

UCC	Uniform Commercial Code; the version of the UCC as adopted in the State of New York is sometimes referred to as the New York UCC or NYUCC

VI. Additional Publicly Available Resources

1. Statutes, Laws, Regulations and Reports
CPMI-IOSCO Principles for Financial Market Infrastructures, available at http://www.bis.org and http://www.iosco.org
Exchange Act Rules, available on the SEC website at http://www.sec.gov
Federal Deposit Insurance Act, available on the Federal Deposit Insurance Corporation website at http://www.fdic.gov
Federal Deposit Insurance Corporation Improvement Act of 1991, available on the Federal Deposit Insurance Corporation website at http://www.fdic.gov
New York Business Corporation Law, available at http://public.leginfo.state.ny.us
New York Uniform Commercial Code, particularly Articles 8 and 9, available at http://public.leginfo.state.ny.us
NY Banking Law, available at http://public.leginfo.state.ny.us
Regulation J, available on the Board of Governors of the Federal Reserve System website at http://www.federalreserve.gov; and Operating Circulars 6 and 12, available on the Federal Reserve Bank Services website at http://www.frbservices.org
Securities Act of 1933, as amended, available on the SEC website at http://www.sec.gov
Securities Act Rules, available on the SEC website at http://www.sec.gov
Securities Exchange Act of 1934, as amended, available on the SEC website at http://www.sec.gov
Securities Investor Protection Act of 1970, available on the SEC website at http://www.sec.gov
Standards for Covered Clearing Agencies, available at http://www.gpo.gov/fdsys/pkg/FR-2016-10-13/pdf/2016-23891.pdf
The Dodd-Frank Wall Street Reform and Consumer Protection Act, available at http://www.gpo.gov/, especially Title II regarding orderly liquidation authority, and Title VIII regarding Clearing and Settlement
Title 11 of the United States Code (The Bankruptcy Code), available at http://uscode.house.gov/

2. DTC and DTCC Documents
Board Code of Ethics, available at http://www.dtcc.com/about/leadership
Board of Directors Committee Charters, available at http://www.dtcc.com/about/leadership/committees
Board of Directors Mission Statement and Charter, available at http://www.dtcc.com/about/leadership/mission-and-charter
DTC Important Notice with Nominations Solicitations Letter and Procedures for the Annual Nomination and Election of Directors, available at http://www.dtcc.com/about/leadership and http://www.dtcc.com/legal/important-notices
DTC Rules, By-laws & Organization Certificate, available at http://www.dtcc.com/~/media/Files/Downloads/legal/rules/dtc_rules.pdf
DTC Service Guides (as follows), available at http://www.dtcc.com/legal/rules-and-procedures • Canadian Link Service • Custody • Deposits • Distributions • Redemptions • Reorganizations • Settlement • Underwriting
Identification of Board of Directors, available at http://www.dtcc.com/about/leadership/board
Identification of Senior Management Team, available at http://www.dtcc.com/about/leadership/management-committee
Important Notices, available at http://www.dtcc.com/legal/important-notices
Operational Arrangements (Necessary for Securities to Become and Remain Eligible for DTC Services), available at http://www.dtcc.com/~/media/Files/Downloads/legal/issue-eligibility/eligibility/operational-arrangements.pdf
Principles of DTCC Governance, available at http://www.dtcc.com/about/leadership
Procedures for the Annual Nomination and Election of the Board of Directors, available at http://www.dtcc.com/about/leadership

Rule Filings, Advance Notices, and related Regulatory Approval Orders, available at http://www.dtcc.com/legal/sec-rule-filings
White Papers and Industry Reports, available at http://www.dtcc.com/dtcc-connection
3. Financial Statements and Reports
DTCC Annual Reports, including Consolidated Audited Financial Statements, available at http://www.dtcc.com/about/annual-report and http://www.dtcc.com/legal/financial-statements
DTC Audited Financial Statements, available at http://www.dtcc.com/legal/financial-statements
DTC Interim (Unaudited) Financial Statements, available at http://www.dtcc.com/legal/financial-statements