CME Group

CME Clearing: Principles for Financial Market Infrastructures Disclosure

The information provided in this disclosure is accurate as of November 1, 2023. For further information, please contact CMEPFMIResponse@cmegroup.com.

NOVEMBER 1, 2023

Responding institution: Chicago Mercantile Exchange Inc.
Jurisdiction in which the FMI operates: United States
Authority regulating, supervising or overseeing the FMI: Commodity Futures Trading Commission

The date of this disclosure has an as of date of November 1, 2023.
This disclosure can also be found at *www.cmegroup.com/pfmidisclosure*.
For further information, please contact *CMEPFMIResponse@cmegroup.com*.

I. Executive Summary

CME Group Inc. ("CME Group"), on behalf of its subsidiary Chicago Mercantile Exchange Inc. ("CME Inc."), supports the work of the Committee on Payments and Market Infrastructures ("CPMI")[1] and the International Organization of Securities Commissions ("IOSCO") to encourage the clear and comprehensive disclosures set forth in the *Principles for financial market infrastructures: Disclosure framework and Assessment methodology* (the "Disclosure Framework").[2]

CME Inc. operates CME Clearing (or "the Clearing House"), which provides clearing and settlement services for a broad range of exchange-traded futures and options on futures ("options") contracts (also, referred to as "exchange-traded derivatives products") and over-the-counter ("OTC") derivatives (also, referred to as "cleared swaps"). CME Inc. is registered with the Commodity Futures Trading Commission ("CFTC") of the United States ("U.S") as a derivatives clearing organization ("DCO"). In July 2012, CME Inc. was designated a systemically important financial market utility ("SIFMU") under Title VIII of the Dodd-Frank Wall Street Reform and Consumer Protection Act ("Dodd-Frank Act") by the Financial Stability Oversight Council ("FSOC").

CME Clearing provides its clearing and settlement services to a diverse set of market participants, from hedgers to speculators. Those that face CME Clearing directly in accessing the Clearing House's clearing services are clearing members ("Clearing Members"). CME Clearing employs various risk management practices to prudently manage the risks to which it is exposed, including market, credit, liquidity, and operational risks. Some of the risk management practices CME Clearing employs include:

- Real-time risk monitoring;
- Counterparty credit and liquidity risk management;
- Daily exchange of funds for mark-to-market movements;
- Initial margin collection; and
- An established financial safeguards waterfall.

These risk management practices are described in greater detail below.

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

[1] CPMI was formerly known as "CPSS" or "Committee on Payment and Settlement Systems".
[2] Committee on Payment and Settlement Systems and Board of the International Organization of Securities Commissions, *Principles for Financial Market Infrastructures: Disclosure Framework and Assessment Methodology* (Dec. 2012).

Consistent with guidance under the Disclosure Framework and CFTC Regulation §39.37(b), CME Clearing updates its qualitative disclosure framework ("CME Clearing PFMI Disclosure document") at least every two years and following material changes to its systems or the environment in which it operates. Where CME Clearing updates the CME Clearing PFMI Disclosure document following material changes, CME Clearing provides notice of the updates to the CFTC no later than ten business days after the updates are made and such notice includes a version of the document showing all deletions and additions made from the preceding version.

This version of the CME Clearing PFMI Disclosure document published with an as of date of November 1, 2023 includes the following primary changes, since the last version was published with an as of November 30, 2021:

- Updates to the description of CME Clearing's margin methodologies to reflect the employment of the SPAN 2 methodology;
- Revisions relating to the descriptions of the critical functions of CME Clearing to reflect organizational changes;
- Addition of the Operational Risk Management Committee to reflect its formalization as one of CME Clearing's internal management committees; and
- Updates to reflect the delisting of European-style Swaptions referencing USD LIBOR as the floating rate.

Other revisions were made to the CME Clearing PFMI Disclosure document, which primarily clarify language describing CME Clearing's current risk management practices. For a comparison of what has changed since our last publication, a black-line version of this document can be found on the CME Clearing Knowledge Center.

III. General background on the FMI

General description of CME Clearing and markets it serves

The exchanges for which CME Clearing provides clearing services offer a wide range of benchmark products across asset classes, including exchange-traded futures and options on interest rates, equity indexes, foreign exchange ("FX"), energy, metals, and agricultural commodities products. CME Clearing also provides clearing services for cleared swaps, including interest rate swaps ("IRS") and FX swaps products. CME Clearing provides clearing and settlement services for four designated contract markets ("DCMs"), collectively referred to as the "CME Group Exchanges" – these include CME Inc., the Board of Trade of the City of Chicago, Inc. ("CBOT"), the New York Mercantile Exchange, Inc. ("NYMEX"), and the Commodity Exchange, Inc. ("COMEX"). The CME Group Exchanges serve the hedging, risk management, and trading needs of their global customer base by facilitating transactions through the CME Globex ("Globex") electronic trading platform and privately negotiated transactions. CME Clearing also has arrangements to provide clearing services for the Dubai Mercantile Exchange ("DME") and FEX Global ("FEX"). CME Group provides hosting, connectivity, and customer support for electronic trading through its co-location services. CME Clearing also maintains connectivity to market infrastructures that serve the OTC derivatives market, such as existing trade affirmation platforms, swap execution facilities ("SEFs"), and swap data repositories ("SDRs"). CME Group also offers a wide range of market data services including live quotes, delayed quotes, market reports, and a comprehensive historical data service.

CME Group understands its role in assuring the safety and soundness of the markets for which it provides clearing services and the importance of ensuring that its Clearing Members and their customers are able to assess the risk profile of their activity through appropriately articulated, transparent risk management standards supported by public documents available on the CME Group website.[3] As financial markets and the economy have evolved,

[3] *See* https://www.cmegroup.com/clearing/cme-clearing-knowledge-center.html

CME Clearing has worked to adapt its clearing services to meet the needs of its market participants. CME Clearing applies robust risk management standards for the transactions its clears for exchange-traded and cleared swaps derivatives products.

CME Clearing's integrated clearing function is designed to ensure the safety and soundness of its markets by serving as the counterparty to every trade – becoming the buyer to each seller and the seller to each buyer. Moreover, CME Clearing's clearing model is based on an "agency" relationship between its Clearing Members and their underlying customers. CME Clearing has a diverse set of entities approved as its Clearing Members, which include some of the largest bank-affiliated, broker-dealer, and financial services firms in the world. Many of these Clearing Members are also registered with the CFTC as futures commission merchants ("FCMs") and therefore, can provide client clearing services for CME Clearing's markets. A list of CME Clearing's Clearing Members can be found on the CME Group website.[4]

CME Clearing utilizes a combination of risk management tools to assess Clearing Member's account exposure levels 24-hours a day, six-days a week for both of the financial safeguards waterfalls for which it provides clearing services, Base products[5] and IRS products[6]. These risk management tools include, novation and netting, real-time risk monitoring, facilitating the exchange of mark-to-market payments, and the collection of performance bond,[7] among others. CME Clearing marks open positions to market at least once a day for all products and at least twice daily for exchange-traded derivatives products listed on the CME Group Exchanges during U.S. regular trading hours[8] and as such, reduces the accumulation of debt in the system through facilitating the exchange of settlement variation[9] by requiring payments from Clearing Members whose positions have lost value and making payments to Clearing Members whose positions have gained value.

CME Clearing maintains two independent financial safeguards waterfalls, which are for:

- Base products, which includes exchange-traded derivatives and FX swaps products;[10] and
- IRS products.

CME Clearing's financial safeguards waterfalls are designed to ensure that sufficient resources are in place to manage multiple Clearing Member default events under extreme but plausible market conditions.

General organization of CME Clearing

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[4] *See* http://www.cmegroup.com/tools-information/clearing-firms.html

[5] A reference to Base products encompasses exchange-traded futures and options, including Dubai Mercantile Exchange and FEX products, and all non-IRS cleared swaps products that are cleared by CME Clearing.

[6] A reference to IRS products encompasses fixed-float swaps, zero coupon swaps, overnight index swaps, basis swaps, and forward rate agreements, and applicable interest rate exchange-traded derivatives that are portfolio margined with the aforementioned products that are cleared by CME Clearing.

[7] In the context of the CME Clearing PFMI Disclosure document the term "performance bond" refers to either initial margin or maintenance margin, unless otherwise specifically referenced – e.g., initial performance bond. The term "performance bond" may also be used interchangeably with "margin" in this document.

[8] As described further in CME Clearing's disclosures for Principle 6, products listed on DME are also subject to twice daily settlement cycles during U.S. regular trading hours and products listed on FEX are subject to at least once daily settlement cycles during Australian regular trading hours, but may be subject to twice daily settlement cycles where predetermined thresholds are exceeded.

[9] In the context of the CME Clearing PFMI Disclosure document, for ease of reading, the term "settlement variation" refers to settlements made pursuant to CME Group Exchange Rule 814, which captures the settlement of any outstanding exposures – i.e., obligations to pay include any settlement variation payment and any other payments due in respect of a product (e.g., options premium and price alignment amount).

[10] A reference to FX swaps products encompasses FX non-deliverable forwards, FX cash-settled forwards, and FX cash-settled options that are cleared by CME Clearing.

The Board of Directors of CME Inc. is comprised of the same individuals as the Board of Directors CME Group (collectively referred to as "the Board"). The Board recognizes the important role CME Clearing plays in the marketplace and the importance of providing active governance designed to ensure the safety and soundness of CME Clearing's operations, as noted in CME Group's publicly available Corporate Governance Principles.[11] As part of fulfilling its oversight and governance responsibilities, the Board has established dedicated committees to focus on specific governance matters of the organization. The committees of most relevance to CME Clearing are the Clearing House Oversight Committee ("CHOC"), Risk Committee ("Board Risk Committee"), Clearing House Risk Committee ("CHRC"), and IRS Risk Committee ("IRSRC").

The management responsibilities of CME Group, which includes CME Inc. and its clearing services, are divided into divisions led by the management team ("Management Team"). The individuals that lead functions within CME Clearing including the Chief Compliance Officer ("CCO") of CME Clearing and the Chief Risk Officer ("CRO") of CME Clearing report directly to the Global Head of Clearing & Post-Trade Services who is also a member of the Management Team.

Legal and regulatory framework
CME Inc. is a wholly-owned subsidiary of CME Group. CME Inc. is registered as both a DCO and DCM, and CBOT, NYMEX, and COMEX are registered as DCMs. Each of the CME Group Exchanges remain a separate self-regulatory organization with three unique rulebooks for CME Inc., CBOT, and NYMEX/COMEX. In order to provide a common framework, the rulebooks for CME Inc., CBOT, and NYMEX/COMEX ("CME Group Exchange Rulebooks") have been harmonized, making the rules parallel in structure, numbering, and language, to the extent practicable. Certain Chapters within each of the CME Group Exchange Rulebooks are focused more heavily on the role CME Inc. plays as a DCO.

CME Clearing's primary regulator is the CFTC. As a DCO and SIFMU designee by FSOC, CME Clearing complies with the core principles for DCOs ("DCO Core Principles") defined under the Commodity Exchange Act ("CEA") and regulations defined by the CFTC under Part 39 of CFTC Regulations, including those for systemically important DCOs ("SIDCOs"). This forms the primary legal basis for the provision of CME Clearing's clearing and settlement services. Further, CME Clearing is also subject to the oversight of the Board of Governors of the Federal Reserve System.

Due to its adherence to Part 39 of CFTC Regulations, CME Clearing also adheres to the CPMI-IOSCO's *Principles for financial market infrastructures* ("PFMI") published in April 2012, as is demonstrated by this document.[12] CME Clearing also publishes a quantitative disclosure document in line with the recommendations laid out under CPMI-IOSCO's *Public quantitative disclosure standards for central counterparties* published in February 2015.[13] CME Clearing's quantitative disclosure document ("CME Clearing Quantitative PFMI Disclosure document") is updated on a quarterly basis and provides a comprehensive view into key quantitative metrics that are pertinent to understanding CME Clearing's clearing services.

System design and operations
CME Group offers a number of exchange-traded derivatives products for trading and clearing and avenues for market participants to execute transactions electronically via proprietary and third-party front-end systems – these systems are listed on the CME Group website.[14] Trade submission platforms are open nearly 24-hours a day, throughout the trading week, though trades may be booked the next business day depending on the time during the trading day that they are submitted for clearing.

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[11] *See* http://investor.cmegroup.com/static-files/60827cf0-529e-4656-a57a-d2007fa68e30
[12] Committee on Payment and Settlement Systems and Technical Committee of the International Organization of Securities Commissions, *Principles for Financial Market Infrastructures* (Apr. 2012).
[13] Committee on Payments and Market Infrastructures and Board of the International Organization of Securities Commissions, *Public Quantitative Disclosure Standards for Central Counterparties* (Feb. 2015).
[14] *See* http://www.cmegroup.com/globex/trading-cme-group-products/trading-applications/isv.html

Prior to being accepted for execution, Globex trades must successfully pass Globex Credit Controls that are required to be implemented by Clearing Members. Globex Credit Controls allow Clearing Members to specify limits for their customers' activity. Similar limits are utilized for IRS products.

Regardless of execution venue, once a trade has been executed, it is submitted to CME Clearing's clearing system, and clearing trade confirmation data is sent to the Clearing Member. Additionally, transaction data is sourced to necessary systems for regulatory reporting and analysis, as appropriate. Specific trading data is also sent to the Market Data Platform where quote vendors and other third-parties can access that information.

Risk management systems pull in necessary transaction data for the calculation of settlement variation obligations and performance bond requirements. This includes the performance bond calculations using CME Clearing's proprietary margin methodologies. Trades are also included in daily valuations, or mark-to-market calculations. All trades are marked to market at a minimum at the end of each trading day and performance bond requirements are also recalculated. At least twice a day, CME Clearing's exchange-traded derivatives products listed on the CME Group Exchanges are marked to market and performance bond requirements recalculated. Trading hours for the CME Group Exchanges are defined on a per product basis available on the CME Group website.[15]

Daily settlement pricing is performed for exchange-traded and cleared swaps derivatives products based on industry accepted trading conventions, as detailed on the CME Group website. The financial settlement system creates settlement variation and performance bond call settlement instructions, after the risk management calculations have been completed, for review and approval by CME Clearing. Once approved, these settlement instructions are submitted to CME Clearing's settlement banks for direct debit and credit to Clearing Members' bank accounts and reports are generated for Clearing Members.

CME Clearing has an established timeline for the movement of funds for intraday and end-of-day settlements cycles for performance bond and settlement variation requirements, as summarized below:[16]

- 7:30 AM Chicago time – Settlement banks confirm debits from Clearing Members' accounts for credit to CME Clearing's accounts for the prior day's end-of-day settlement cycle;
- 8:30 AM Chicago time – Settlement banks confirm debits from CME Clearing's accounts for credit to Clearing Members' accounts for the prior day's end-of day settlement cycle;
- 12:30 PM Chicago time – Where applicable, intraday settlement cycle instructions distributed to settlement banks;
- 1:30 PM Chicago time – Where applicable, settlement banks confirm debits from and credits to Clearing Members' accounts for the intraday settlement cycle; and
- 3:00 AM Chicago time – End-of-day settlement cycles instructions distributed to settlement banks.

The full banking timeline is also available on the website.[17]

IV. Principle-by-principle summary narrative disclosure

[15] *See* https://www.cmegroup.com/trading-hours.html
[16] Note, as described in CME Clearing's disclosures for Principle 6, CME Clearing performs settlement cycles for FEX products that align with Australian trading hours.
[17] *See* https://www.cmegroup.com/clearing/operations-and-deliveries/transaction-timelines.html#bankingTimeline

CME Group

CME Clearing advises that in reading the principle-by-principle summary narrative disclosure that Appendix I be referred to appropriately, which outlines key terms and acronyms that are utilized throughout CME Clearing's disclosures. Additionally, while some relevant CME Group Exchange Rules may be discussed with respect to CME Clearing's practices, all matters pertaining to rules and specifications herein are made subject to, and are superseded by, the CME Group Exchange Rulebooks. Current versions of the CME Group Exchange Rules should always be consulted.[18]

Principle 1: Legal Basis

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.	CME Clearing accepts for clearing derivatives trades executed on or through trading facilities and matched OTC derivatives trades executed bilaterally. Pursuant to CME Group Exchange Rules 804, 8G05, and 8F005 for exchange-traded derivatives, IRS, and other cleared swaps derivatives products, respectively, CME Clearing becomes substituted through novation as the legal counterparty to every buyer and every seller of a trade that CME Clearing accepts for clearing. Following a trade being accepted for clearing, CME Clearing: • Collects and manages performance bond collateral to support each position or portfolio of positions; • Collects and disburses funds to mark positions to market at least daily and reduce residual debt in the system; • Performs the liquidation of positions by netting, final settlement, and/or manages physical delivery, in conformance with a contract's specifications; and • To the extent necessary, would manage the default of a Clearing Member. In line with DCO Core Principle R: Legal Risk and CFTC Regulation §39.27(b), each of the activities described above along with, more generally, the application of CME Clearing's risk management practices, requires a well-founded legal framework. In understanding the legal basis underpinning CME Clearing's activities, it's important to recognize that the vast majority of the counterparties and related exposures CME Clearing has are to institutions organized in the U.S., including its Clearing Members. While CME Clearing predominantly deals with U.S.-domiciled institutions as a matter of practice, prior to accepting a foreign-domiciled institution as a Clearing Member, or contracting with a foreign-domiciled financial institution as a settlement bank, collateral custodian, or party to any other contract that is material to CME Clearing's operations, a thorough evaluation of the legal risks is conducted. This encompasses securing a legal opinion evaluating the enforceability of CME Clearing's legal and contractual rights and obligations vis-à-vis that counterparty.

[18] *See* https://www.cmegroup.com/rulebook/CME/

	CME Clearing's evaluation of the legal basis for its activities focuses on matters that may have an impact on the credit and liquidity risks that CME Clearing faces through the provision of its clearing services and depository risk with respect to the location of the collateral held by CME Clearing. Credit, liquidity, and depository risks primarily relate to the activities of CME Clearing's Clearing Members, settlement banks and collateral custodians, and the financial institutions that may provide liquidity to CME Clearing – e.g., lines of credit providers. Additionally, the legal basis for these activities is also considered in the management of a Clearing Member default event. The CME Group Exchange Rulebooks are legally binding and establish the basis for CME Clearing's clearing and settlement activities and the terms and conditions under which CME Clearing and its Clearing Members operate.[19] Further, CME Group Exchange Rule 418 stipulates that any person executing a transaction directly or through an intermediary and any person for whose benefit the transaction has been executed expressly consents to the jurisdiction of the appropriate CME Group Exchange and to be bound by and comply with the rules of the CME Group Exchange, including CME Inc. that operates CME Clearing. In addition to the contractual relationships with Clearing Members governed by the terms of the CME Group Exchange Rulebooks, CME Clearing relies upon contractual legal agreements executed with financial institutions that serve as settlement banks and collateral custodians for providing daily settlement services between CME Clearing and its Clearing Members and depository services for collateral on deposit with CME Clearing, respectively. The cash settlement agreements and custody agreements that are in place to allow for CME Clearing to facilitate the offering of its clearing services are generally governed by U.S. law. Such contractual agreements with settlement banks and collateral custodians are designed to ensure the finality of settlements and access to collateral, respectively, in both business as usual and stress scenarios, which could include where a Clearing Member defaults. Regarding the legal basis for the finality of settlements, this is primarily achieved through CFTC Regulation §39.14(d) and CME Group Exchange Rule 814, in addition to the aforementioned contractual agreements, as further described in CME Clearing's disclosures for Key Consideration 1 of Principle 8. CFTC Regulation §39.14(d) establishes a clear legal framework for the finality of settlements and reads in pertinent part: *"A derivatives clearing organization shall ensure that settlements are final when effected by ensuring that it has entered into legal agreements that state that settlement fund transfers are irrevocable and unconditional no later than when the derivatives clearing organization's accounts are debited or credited; provided, however, a derivatives clearing organization's legal agreements with its settlement banks may provide for the correction of errors."*

[19] Notably, individual chapters of the CME Group Exchange Rulebooks set forth the contract specifications for derivatives contracts cleared by CME Clearing.

	U.S. Legal Framework As noted above, U.S. law is the governing law under which CME Clearing operates and the U.S. is the critical venue for the vast majority of CME Clearing's operations and provides for legal certainty as to the mitigation and management of the foregoing risks. Under U.S. law, the legal framework in which CME Clearing operates is sound, tested, and provides a high degree of assurance that CME Clearing will be able to conduct its clearing and settlement activities on an ongoing basis, including in managing a Clearing Member default event. The U.S. legal framework under which CME Clearing operates consists primarily of the CEA, related CFTC regulations, and U.S. Bankruptcy Code, which CME Clearing recognizes through the CME Group Exchange Rulebooks and related policies. In line with CFTC Regulation §39.27, the CME Group Exchange Rulebooks, in conjunction with relevant CFTC regulations, provide for a well-founded, transparent legal framework that addresses the activities undertaken by CME Clearing. In the U.S., the CFTC is the federal agency responsible for the administration of the CEA and regulatory oversight of commodity derivatives markets. The CFTC is charged with the oversight of clearing systems and market participants, deterrence and prevention of disruptions to market integrity, ensuring the financial integrity of transactions, and the avoidance of systemic risk.[20] Under the CEA, CME Inc. is registered with the CFTC as a DCO and is subject to the CFTC's regulatory oversight. CME Inc. has also been deemed a SIFMU and as such, is also subject to the oversight of the Board of Governors of the Federal Reserve System under delegation from the FSOC. The CEA establishes a clear framework under which the rules of a DCO are adopted and enforced. The ability of CME Clearing to enforce its rules and policies to accomplish its core activities, in ordinary and extraordinary circumstances, has been tested and confirmed. The CEA sets forth an extensive set of DCO Core Principles that govern the operation of a DCO.[21] In general, it is well-established that state laws that impair the operation of a DCO are preempted by the CEA. The DCO Core Principles have been supplemented by regulations and other guidance adopted by the CFTC to more granularly define the obligations of a DCO, which are primarily outlined under Part 39 of CFTC Regulations. Each DCO is required to adopt rules that comport with the DCO Core Principles and CFTC controlling regulations and in turn, is required to enforce those rules. As a SIDCO, CME Clearing is obligated to comply with Subpart C of Part 39 of CFTC Regulations, along with Subparts A and B of Part 39 of CFTC Regulations. Compliance with these regulations is also indicative of CME Clearing's compliance with the PFMIs, which have been implemented through Part 39 of CFTC Regulations, as recognized explicitly under CFTC Regulation §39.40. U.S. law also establishes a clear framework for the management of a Clearing Member default event and even the failure of a DCO and as such, Part 190 of CFTC Regulations provides a well-tested road map for the liquidation of a commodity broker that is insolvent. The U.S. Bankruptcy Code and Part 190 of

[20] *See* 7 USC 5(b).
[21] *See* 7 USC 7a-1.

	CFTC Regulations include safe harbors that protect a DCO's right to immediately enforce its interest in the collateral it holds to margin positions and to guarantee performance of its Clearing Members' obligations. Additionally, CME Clearing holds collateral in a manner that is designed to ensure the security interest of the Clearing House will be enforceable, as described in greater detail below.
Key consideration 2 An FMI should have rules, procedures and contracts that are clear, understandable, and consistent with relevant laws and regulations.	The laws and regulations governing CME Clearing's operations as a DCO and the CME Group Exchange Rulebooks, which set out the contractual provisions for its participants, are clearly stated, understandable, and readily accessible to participants and the public. The CEA and CFTC regulations are clear and publicly available on the CFTC's website and through other public sources. The CEA's DCO Core Principles, in conjunction with the CFTC's promulgation of such principles under Part 39 of CFTC Regulations, provide the primary requirements that a DCO must initially satisfy and continue to satisfy on an ongoing basis in order to act as a DCO. Through the CME Group Exchange Rulebooks, CME Clearing has adopted rules and additionally employed multiple policies and procedures in accordance with Part 39 of CFTC Regulations and other relevant CFTC regulations to clarify and clearly demonstrate the manner in which CME Clearing complies and requires its Clearing Members to comply with applicable legal requirements. The CME Group Exchange Rulebooks are publicly available on the CME Group website. Although, the CME Group Exchange Rulebooks are intended to be clearly organized and coherent to the public, CME Clearing's staff are available to answer questions regarding the interpretation or application of specific rules. As a registered DCO, CME Clearing is required to employ rules that are consistent with the DCO Core Principles and applicable CFTC regulations, including those for SIDCOs. In order to assess CME Clearing's adherence with the DCO Core Principles, on at least on an annual basis, CME Clearing is subject to a Title VIII Exam, which is conducted by the CFTC in conjunction with the Board of Governors of the Federal Reserve System and the Federal Reserve Bank of Chicago. Through this process, CME Clearing's risk management tools are reviewed and evaluated for consistency with applicable CFTC regulations. In addition to these exams, CME Clearing has formal meetings with the CFTC that occur at least bimonthly, where CME Clearing provides an update on its recent activities, which would encompass any significant, recent rule changes. The aforementioned formal meetings with the CFTC are also supplemented with regular conversations between CME Clearing and the CFTC as matters arise. Additionally, CME Clearing's primary internal frameworks and policies, such as the Risk Management Framework, described in greater detail in CME Clearing's disclosures for Principle 3, are subject to annual review. These frameworks and policies are guided by the DCO Core Principles, relevant CFTC regulations, and CME Group Exchange Rulebooks and as such, this annual review acts a vehicle for CME Clearing to conduct a self-assessment of its adherence with such regulations. **Changes to CME Clearing's Rules** Changes to the CME Group Exchange Rulebooks are filed with the CFTC in accordance with Part 40 of CFTC Regulations. Such filings are publicly available through the CFTC's website and CME Group

	website. These rules filings follow a standardized format, which is intended to allow for rule filings to be easily digestible to market participants and where appropriate, provides a venue that is suitable for market participants to provide their commentary to CME Clearing and other key market stakeholders over a given period of time. Generally, rule filings that are deemed to have a non-material impact on the Clearing House are filed in accordance with CFTC Regulations §40.6, which permits CME Clearing to submit rule filings for self-certification no later than ten business days prior to date on which the rule will be implemented. However, new rules or rule revisions that may have a material impact on the risk profile of the Clearing House will generally be filed in accordance with CFTC Regulation §40.10, which requires CME Clearing to provide notice to the CFTC no later than 60 calendar days prior to the date on which the rule will be implemented and further involves the review of the new or revised rule by the Board of Governors of the Federal Reserve System. In particular, filings made pursuant to CFTC Regulation §40.10 encompass proposed changes to CME Clearing's rules, procedures, or operations that could materially affect the nature of the level of risks to which CME Clearing is exposed. The given period of time afforded during the ruling filing process also provides the CFTC time to issue a stay of the certification or extend the review period of the proposed new rule or amendment to a current rule on the grounds that the CFTC believes it is necessary to have additional time to further analyze such proposals, with such power afforded to it under CFTC Regulations §40.6(c) and §40.10(f). Additionally, CME Clearing publishes new policies and procedures and changes to existing policies and procedures that could impact its market participants through Clearing Advisories, which are available on the CME Group website. Interested parties may also subscribe to receive Clearing Advisories by email. When advisories are published they generally contain a point of contact at CME Clearing, which market participants can utilize as a source to address any of their inquiries related to said advisories. This is designed to ensure that policies and procedures are clear and understandable to market participants.
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.	The CME Group Exchange Rulebooks, supported by the CEA and relevant CFTC regulations, form the legal basis for CME Clearing's core activities. The legal basis for CME Clearing's activities, where these activities are subject to change, is also exhibited as part of the public rule filing process with the CFTC as the legal basis for the proposed rule is described in the filing. CME Clearing routinely articulates the legal basis for its activities to relevant authorities and its Clearing Members, as well as the general public. Such articulation occurs through various forums, including the rule filing process, as well as: • In regard to relevant regulatory authorities, DCO Title VIII Exams, bimonthly meetings, and regular one-on-one conversations with the CFTC and Board of Governors of the Federal Reserve System, as applicable. • In regard to Clearing Members, regular one-on-one meetings with Clearing Members and Clearing Member due diligence reviews of CME Clearing that generally include conversations of the authority under which CME Clearing undertakes its activities. • In regard to other market stakeholders, which may also include Clearing Members and relevant regulatory authorities, CME Clearing's participation on and hosting of industry groups and forums.

	Further, as noted in CME Clearing's disclosures for Key Consideration 1 of this Principle, the CME Group Exchange Rulebooks, Clearing Advisories, and other publicly available information outline the activities CME Clearing undertakes in providing its clearing and settlement services and are publicly available on the CME Group website. CME Clearing also publishes a wide variety of educational materials for the general public, including on the CME Clearing Knowledge Center, which serves as a central location on the CME Group website to find a variety of documents to educate and provide transparency on these activities.[22] Additionally, as an output of CME Clearing's adherence to the PFMIs and the CFTC's implementation of the PFMIs, CME Clearing and the CFTC regularly participate in and contribute to CPMI-IOSCO's industry surveys and reports that discuss the regulatory regimes in various jurisdictions, including the U.S., with final reports frequently made available to the public.
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.	As described in CME Clearing's disclosures for Key Consideration 1 of this Principle, CME Clearing's activities are generally governed by U.S. law, primarily the CEA and relevant CFTC regulations promulgated thereunder. Further, CME Clearing's legal rights vis-à-vis Clearing Members and other market participants are also generally governed by U.S. law. CME Clearing has a high level of confidence that its rules and procedures are enforceable, as the enforceability of its rules and procedures are tested time and time again through the daily execution of its core activities. Each day of the trading week, CME Clearing is able to perform its core activities effectively and efficiently while serving a large number of market participants, which provides CME Clearing confidence that its rules and procedures are enforceable. Additionally, with respect to a Clearing Member default and CME Clearing's ability to resolve such a default in accordance with its rules, including closing out or liquidating open positions, liquidating collateral and/or liquidating or transferring customer positions and collateral, CME Clearing's practices are governed by the CME Group Exchange Rulebooks and bound by the U.S. Bankruptcy Code and Part 190 of CFTC Regulations. The legal framework afforded by U.S. law provides CME Clearing the ability to prudently manage a Clearing Member default event and appropriately utilize the tools laid out under the CME Group Exchange Rulebooks in doing so. This legal framework provides CME Clearing a high level of confidence that its rules would be enforceable under such an event. Further, this has been demonstrated in CME Clearing's effective management and navigation of past market stress events, where the relevant CME Group Exchange Rules proved enforceable and CME Clearing was able to continue perform its core activities. Further, there is a high degree of certainty that CME Clearing will be able to act under and enforce the CME Group Exchange Rules without being subject to stays, or such rules being voided, or CME Clearing's actions being reversed. It is well-established in the U.S. that a DCO's rules are enforceable against its clearing members and participants, and no court of law with jurisdiction over the business of CME Clearing

[22] *See* https://www.cmegroup.com/clearing/cme-clearing-knowledge-center.html

	has held that the CME Group Exchange Rules were unenforceable. Additionally, state law claims that could affect the trading or operations of a futures market or DCO are preempted by the federal law of the CEA, limiting the risk that actions in a state or local court could undermine application of the CME Group Exchange Rules and ensuring that any claims against CME Inc. related to its regulated activities must be pursued in U.S. federal courts under the CEA's comprehensive legal framework. **Legal Framework for Managing a Clearing Member Default Event** With respect to the default or insolvency of a Clearing Member, the U.S. Bankruptcy Code establishes a well-tested regime designed to limit systemic risk that is also supportive of promoting central clearing and as such, includes specific provisions directed at FCM insolvencies that extend certain authority to the CFTC and protect certain actions of DCOs. The commencement of a case under the U.S. Bankruptcy Code occurs with a filing of a petition by either the debtor or the debtor's creditors that generally institutes an automatic stay to preserve the bankrupt estate. In the absence of an exception, a stay could interfere with a DCO's operations and resolution of a defaulted Clearing Member in a crisis situation, but certain activities of DCOs are generally protected, allowing the DCO to effectively manage the default event in accordance with its rules. The U.S. Bankruptcy Code provides various "safe-harbors" and exceptions designed to mitigate disruptions to clearing regimes when a counterparty to certain financial contracts or agreements enters proceedings under the U.S. Bankruptcy Code. There are specific exceptions to an automatic stay that permit the exercise of certain contractual rights, such as offset, netting out, payment, or transfer obligations, by, among others, a DCO. As such, the ability of CME Clearing to exercise any of these rights in a default event is afforded to it under the CME Group Exchange Rulebooks, particularly Chapters 8 and 8G for Base and IRS products, respectively. The U.S. Bankruptcy Code emphasizes that the aforementioned specific exceptions to the automatic stay "shall not be stayed by any order of a court or administrative agency in any proceeding" under the U.S. Bankruptcy Code, which provides CME Clearing a high degree of confidence that the relevant rules it has implemented related to these exceptions are enforceable under a default event. Furthermore, U.S. courts have recognized that such exceptions to a stay in a bankruptcy proceeding are consistent with legislative intent to avoid systemic harm to clearing regimes and market integrity. In addition to exceptions to an automatic stay, the U.S. Bankruptcy Code protects a non-debtor party's contractual right to liquidate, terminate, or accelerate commodity contracts and swap agreements. The U.S. Bankruptcy Code also generally limits a bankruptcy trustee's powers to reclaim property transferred prior to a bankruptcy filing, if the transfer was made by, to, or for the benefit of a "commodity broker," which would include CME Clearing and FCMs. The CME Group Exchange Rules are drafted to align with the U.S. Bankruptcy Code and Part 190 of CFTC Regulations and as such, CME Clearing believes that in managing a default of a Clearing Member that is an FCM, where it actively works to protect the interests of the defaulted Clearing Member's customers, its rules would be enforceable, as not only are such rules in line with relevant regulations, they

	are in line with the aim of protecting solvent market participants and more generally, the broader financial system.
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.	CFTC Regulation §39.27 requires DCOs to identify and address material conflicts of laws when offering clearing services outside the U.S. CME Clearing evaluates and mitigates legal risk arising from potential conflicts of laws across jurisdictions of which it has a presence in a number of ways. CME Clearing relies upon the U.S. legal framework under which its rules are adopted and enforceable, and to which all participants are deemed to consent to be bound pursuant to CME Group Exchange Rule 418, as described in CME Clearing's disclosures for Key Consideration 1 of this Principle, thus acting to reduce potential conflicts of laws when operating in multiple jurisdictions. CME Clearing evaluates the potential legal risk associated with the variety of counterparties it faces, including accepting Clearing Members, settlement banks, and collateral custodians that are domiciled in foreign jurisdictions. Prior to accepting Clearing Members domiciled in any foreign jurisdiction, CME Clearing conducts an analysis concerning the risks in relation to the enforceability of the CME Group Exchange Rules against such Clearing Members. Similarly, prior to accepting foreign-domiciled institutions as settlement banks or collateral custodians, CME Clearing evaluates the applicable legal and regulatory regimes of where such institutions are domiciled to determine if there is a high degree of certainty that the terms and conditions of CME Inc.'s agreements with such institutions would be enforceable and not subject to a material risk of actions being stayed or the agreements being voided. Only upon a determination that the terms of such agreement would be enforceable with a high degree of certainty would CME Clearing be able to consider allowing such a foreign-domiciled institution to act as a settlement bank or collateral custodian. Broadly, when conducting legal risk analysis of accepting such counterparties, CME Clearing holistically evaluates the risks and appropriately balances the legal risks against other risk management considerations. Further, CME Clearing identifies and addresses material risks arising from potential conflicts of laws. When determining whether to accept a new Clearing Member, settlement bank, or collateral custodian that is domiciled in a foreign jurisdiction, CME Clearing evaluates, the legal risk arising from potential conflicts of laws. As further described below with respect to CME Clearing's disclosures for Principle 2, such evaluation will also be presented to the relevant oversight committee prior to accepting the Clearing Member, settlement bank, or collateral custodian. Additionally, with regard to its clearing membership, CME Group Exchange Rule 905, which acts as an enforceable contract term upon Clearing Members, implements a choice of law provision for adjudicating any action, claim, dispute, or litigation between CME Clearing and a Clearing Member, with the choice of law being the laws of the state of Illinois. Save any reservations in Chapters 4 thru 6 of the CME Group Exchange Rulebooks, any action, claim, dispute, or litigation of any kind between the Clearing Member and the relevant CME Group Exchange arising from the Clearing Member's membership shall be adjudicated in a federal or state court in Chicago, Illinois. Additionally, CME Group Exchange Rule 905

	also requires all Clearing Members to waive any sovereign immunity claim that a Clearing Member could otherwise assert. Risks arising from potential conflicts of laws across jurisdictions are further mitigated by the manner in which collateral supporting Clearing Members' obligations are held by CME Clearing. Collateral, regardless of type posted by a Clearing Member to CME Clearing as performance bond or Guaranty Fund contributions, is held by CME Clearing in cash or custody accounts in the name of CME Inc. directly, subject to certain account naming conventions and regulatory requirements as to accounts that hold funds posted with respect to customer positions, giving CME Clearing ongoing control over and direct rights to access such collateral. Such accounts are further governed by written settlement agreements or custody agreements between CME Inc. and the relevant institution that set forth CME Clearing's rights to access, liquidate, and apply such collateral. Further, CME Group Exchange Rules 819 and 8F008 for Base and cleared swaps products, respectively, requires Clearing Members to grant CME Clearing a first priority and unencumbered lien against performance bond collateral and contributions to the Guaranty Funds. As such, all Clearing Members are required to grant CME Clearing a first priority and unencumbered lien against collateral meeting their obligations and such aforementioned rules, provide that Clearing Members execute any documents required by CME Clearing to create and enforce such lien. As noted above, the manner in which CME Clearing holds collateral in conjunction with the aforementioned CME Group Exchange Rules support CME Clearing's unimpeded ability to liquidate collateral of all types and thus, reduces potential conflicts of laws that could arise in a scenario where CME Clearing liquidates such collateral.

Principle 2: Governance

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.	CME Inc., which operates CME Clearing, is a wholly-owned subsidiary of CME Group, a Delaware corporation, with its shares of Class A Common Stock publicly traded on the NASDAQ Global Select Market. The Board of Directors of CME Inc. is comprised of the same individuals as the Board of Directors of CME Group – collectively referred to as "the Board". CME Group has an established Statement of Risk Appetite, which outlines the expectations set by the Board and Management Team as to the amount of residual risk CME Group is willing to accept within a given risk category/type in pursuit of its objectives and when additional action is deemed necessary to reduce the risk, as recommended by the Management Team and approved by the Board based on the recommendation of the Board Risk Committee. The Statement of Risk Appetite recognizes the important role CME Group and in particular, CME Clearing, plays in the marketplace and the importance of providing active governance designed to ensure the safety and soundness of its operations. The Board believes that sound risk management practices, among other core values, through protection of CME Group's clients, business practices, and reputation, helps maximize share value, which ensures

	proper support of these practices from the Board and the Management Team of CME Group, of which the Global Head of Clearing and Post-Trade Services is a member.[23] As such, in the Board's publicly available Corporate Governance Principles it is tasked with the primary governance and oversight responsibility of the safety and efficiency of the Clearing House.[24] Additionally, consistent with CFTC Regulation §39.24(a)(1), the Board takes into account the stability of the broader financial system and other relevant public interest considerations in its decision-making and governance processes regarding CME Clearing. This remit is defined in many of the Board and CME Clearing's internal governance documents. An objective of the Board and of CME Clearing is to support an offering that prioritizes the safety and efficiency of the Clearing House and generally supports the stability of the broader financial system. As such, the Corporate Governance Principles state the following: *"The Board has governance and oversight responsibility of the safety and efficiency of CME Clearing. This includes CME Clearing's operation in accordance with applicable regulations and subject to governance arrangements that prioritize the safety and efficiency of the Clearing House, generally support the stability of the broader financial system and consider the legitimate interests of clearing members and customers of clearing members and take into account prudent risk management standards (including systemic risk mitigation) and best practices in the industry."* Further, the Corporate Governance Principles, like many of CME Clearing's internal governance documents, are reviewed on at least an annual basis, which is designed to ensure that such documents remain accurate, as well as identify any areas of necessary enhancement in meeting their defined objectives. Additionally, as described in CME Clearing's disclosures for Principle 1, it is subject to an annual Title VIII Exam conducted by the CFTC in conjunction with the Board of Governors of the Federal Reserve System and the Federal Reserve Bank of Chicago and governance is regularly a topic of discussion during such exams. Additionally, CME Clearing is committed to ensuring the integrity of the contracts it clears and supporting the stability of the broader financial system. While CME Clearing performs its risk management function independently of the commercial business functions of CME Group, CME Inc. as a DCM and DCO, is highly committed to supporting the publics' interests of promoting fair and efficient markets. CME Inc.'s dual registration as both a DCO and DCM, as well as CME Group's ownership of the other CME Group Exchanges, promotes effective and efficient risk management. In particular, such structure allows CME Inc. to holistically manage risks during the entire lifecycle of a trade by implementing cohesive and coordinated pre- and post-trade risk management tools and controls. Additionally, having the Board of Directors of CME Inc. and CME Group comprised of the same individuals allows for timely decision-making that takes into account holistic risk management, resource sharing, and the need to manage liquidity across CME Group affiliates. Notwithstanding this, CME Inc. is subject to distinct financial

[23] *See* http://investor.cmegroup.com/management
[24] *See* http://investor.cmegroup.com/static-files/60827cf0-529e-4656-a57a-d2007fa68e30

	resource requirements as a DCO and DCM pursuant to CFTC Regulations 39.11 and 38.1101, respectively, resulting in appropriately robust required financial resource levels based on the services provided by CME Inc.
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.	The governance arrangements of CME Inc., which operates CME Clearing, are primarily driven by the following: • Registration as a DCO with the CFTC, its primary regulator; • Designation as a SIFMU under Title VIII of the Dodd-Frank Act by FSOC; • Delaware corporate law; and • Listing standards of the NASDAQ Global Select Market, as a wholly-owned subsidiary of CME Group, which has its Class A Common Stock shares publicly traded under the symbol “CME”. CME Inc.’s corporate structure is set forth in its Certificate of Incorporation and its Bylaws.[25] As a Delaware corporation, CME Inc. is governed by its Board, which is composed of at least a majority of independent directors. The biographies of each of the Board members are publicly available on the CME Group website.[26] As noted in CME Clearing’s disclosures for Key Consideration 1 of this Principle, the Board has adopted Corporate Governance Principles that are publicly available, which set forth principles to assist the Board in the exercise of its responsibilities and guide the governance decisions of the Board. The Board maintains primary oversight of the governance of CME Inc. and therefore, CME Clearing. The Corporate Governance Principles set forth the mission of the Board: *“The Board believes that all directors represent the balanced interests of the Company’s shareholders as a whole.* *It represents the shareholders’ interest in perpetuating a successful business and optimizing long-term financial returns consistent with legal requirements and ethical standards. The Board also recognizes the important role the Company plays in the marketplace and the importance of providing active governance designed to ensure the safety and soundness of its operations. The Board is responsible for establishing the general oversight framework, including identifying and taking reasonable actions, intended to achieve these goals.* *The Board’s principal oversight functions are to:* • *Review, approve and monitor the Company’s major strategic, financial and business activities and opportunities, including declarations of dividends and major transactions;*

[25] *See* https://www.cmegroup.com/rulebook/files/CME-Certificate-of-Incorporation.pdf and https://www.cmegroup.com/rulebook/files/CME-Bylaws.pdf
[26] *See* http://investor.cmegroup.com/board-of-the-directors

	• *Review, approve and monitor the Company's annual budget;* • *Review, monitor and take reasonable actions with respect to the Company's financial performance;* • *Review, assess and provide oversight of the Company's risk management practices, the integrity and adequacy of its Enterprise Risk Management program, which is designed to identify, manage and plan for its clearing house, compliance, financial, operational, reputational, and strategic and commercial risks, including the Compliance & Ethics Program.* • *Select, evaluate and compensate the Chairman and Chief Executive Officer and, if necessary, appoint a replacement.* • *Review and monitor plans for the succession of the Chairman and Chief Executive Officer and other members of senior management; and* • *Identify, evaluate and nominate candidates for Equity Director."*[27] As part of fulfilling its oversight and governance responsibilities, the Board has established and delegated responsibilities to dedicated committees to focus on specific governance matters. Consistent with CFTC Regulation §39.24(b), the roles and responsibilities of each of these committees are set forth in written charters, which are publicly available on the CME Group website.[28] The Co-Chairs or Chair, as applicable, of these committees, each a member of the Board, make regular reports to the full Board to keep the Board apprised of their key activities. A summary of the roles of the committees that have direct input and oversight into the decision-making of CME Clearing is included in CME Clearing's disclosures for Key Consideration 3 of this Principle. CME Clearing also maintains various internal management committees, which are comprised entirely of staff of CME Clearing. CME Clearing's internal management committees are tasked with providing expertise and oversight of specific areas of risk management relating to the Clearing House. These committees work closely with the Senior Management of CME Clearing[29] and as such, at least one member of the Senior Management of CME Clearing sits on such committees. Further, the CRO of the Clearing House is a member or chairs each of the internal management committees and the other members of the committees are senior-level employees that provide expertise on specific product groups and/or areas of risk management. These internal committees keep each other informed of their respective actions as appropriate, which is, in part, supported by the cross-committee participation of CME Clearing staff, in particular, the CRO of the Clearing House's participation across committees. **Accountability of CME Clearing's Governing Bodies to Key Stakeholders**

[27] Note, references to "the Company" are references collectively to CME Group and the CME Group Exchanges.
[28] *See* https://www.cmegroup.com/investor-relations/committees.html
[29] The "Senior Management of CME Clearing" is comprised of the Global Head of Clearing & Post-Trade Services and those individuals that report directly to the Global Head of Clearing & Post-Trade Services.

	CME Clearing demonstrates that it is accountable to key stakeholders through its established and documented governance arrangements, which generally include a provision to consider the legitimate interests of Clearing Members and their customers.[30] Additionally, the Board and committees of the Board, include participation from market participants, which allows for market participants to hold such bodies accountable for considering their legitimate interests. In particular, the CHRC and IRSRC (collectively, "the CME Clearing Risk Committees"), are required pursuant to their respective charters to be primarily comprised of Clearing Member representatives. CME Clearing is held accountable by the CFTC for observing its governance arrangements and notably, CFTC Regulation §39.24(a)(1) that requires its governance arrangements to explicitly support relevant public interest considerations of its market stakeholders. As was noted in CME Clearing's disclosures for Principle 1, it maintains an open line of communication with the CFTC and is subject to annual Title VIII Exams conducted by the CFTC in conjunction with the Board of Governors of the Federal Reserve System and the Federal Reserve Bank of Chicago.
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.	As explained in CME Clearing's disclosures to Key Consideration 2 of this Principle, and consistent with CFTC Regulation §39.24(a)(1), the Board, pursuant to the Corporate Governance Principles, is responsible for the primary oversight of CME Clearing with the main priority of the Board in this regard and CME Clearing being to promote the safety and efficiency of the Clearing House and generally support the stability of the broader financial system, while considering the legitimate interests of key market stakeholders. In accomplishing this priority, the Board has established committees to focus on specific areas of risk management with respect to CME Clearing, as described below. To fulfill its responsibilities relevant to CME Clearing, the Board and its committees interact regularly with the Global Head of Clearing & Post-Trade Services to oversee, among other things, the Clearing House's performance towards achieving its key initiatives. Additionally, the CHOC regularly interacts with the Senior Management of CME Clearing, in its oversight role. In particular, the CHOC must review and approve substantive changes to CME Clearing's risk management practices. Further, if the CHOC determines such changes, could have a significant impact on the risk profile of the Clearing House then the Board must review and approve such changes. The Board also assesses its own performance and the performance of individual members of the Board. The results of the Board's self-evaluations are overseen by the Board's Nominating and Governance Committee and provided to the full Board. The committee evaluations are first reviewed by the particular committee and then reported on to the full Board with the written copies provided to the full Board on an aggregate basis. The individual director peer reviews are reviewed and discussed with the Governance and Nominating Committee and any identified areas for enhancement are then discussed with the individual Board member and/or taken into consideration as part of the nomination process.

[30] Notably, this includes the Corporate Governance Principles and the charters for CHOC, CHRC, and IRSRC.

	Committees of the Board *Clearing House Oversight Committee* The CHOC, which is comprised entirely of Board members, works cohesively with the full Board in advising it on its oversight of the risk management activities of the Clearing House, including the effectiveness of CME Clearing's risk management program but excluding operational risk as overseen by the Board Risk Committee. Like the governance arrangements of the Board with respect to CME Clearing, the CHOC's activities are undertaken with a mindset of prioritizing the safety and efficiency of the Clearing House, generally supporting the stability of the broader financial system, and considering legitimate interests of Clearing Members and their customers at all times in accordance with prudent risk management standards (including systemic risk mitigation) and best practices in the industry. With the authority granted by its charter. the CHOC has responsibilities relating to the following matters through actions that include, but are not limited to:[31] • Reviewing the adequacy of the financial safeguards waterfalls and to assist them in doing this, receives regular risk reports from the Clearing House indicative of the performance of CME Clearing's risk management program and reviews the Guaranty Funds' sizing computations at least annually; • Reviewing and approving substantive changes to the method with which the Clearing House calculates the Guaranty Funds and performance bond policies and recommending to the Board for approval any changes that would have a significant impact on the Clearing House's risk profile; • Reviewing and approving changes to core processes and core systems for the Clearing House that significantly impact the risk profile of the Clearing House and refers such changes to the Board for approval; • Reviewing the results of independent validations of CME Clearing's risk models and overseeing any such remediation plan, if any is required; • Reviewing and approving all applications for Clearing Members and all such Clearing Member mergers, substantive changes, and withdrawals, as well as substantive changes to clearing membership requirements; • Reviewing and approving all new financial institutions to perform the functions of a settlement bank, collateral custodian, cash depository, and investment counterparty for the Clearing House; • Reviewing the terms and conditions of the 364-day credit facility and FX facility, including analysis regarding the sizes of the facilities and recommending their approval to the Board or the Board's Executive Committee, where necessary; • Reviewing and approving the primary risk management policies of CME Clearing at least annually and following any substantive change thereto; • Reviewing and approving any new products that significantly impact the risk profile of the Clearing House and referring such products to the Board for approval; and

[31] *See* http://investor.cmegroup.com/static-files/16d6afbf-c684-41eb-ad3f-2abf91234717

- Reviewing and approving changes to the charters for the CME Clearing Risk Committees and recommending their approval to the Board; and
- Reviewing and approving substantive changes to the CME Group Exchange Rules that impact the Clearing House and recommending to the Board for approval any changes that would have a significant impact on the Clearing House's risk profile.

Additionally, the CRO of the Clearing House and CCO of the Clearing House have indirect reporting lines to the CHOC, which encompasses periodic meetings in executive sessions, reviews of their performance evaluations, and reviews of their budgeting and staffing. The CHOC is also responsible for reviewing and making recommendations with respect to succession planning and management development for the roles of Global head of Clearing & Post-Trade Services, CRO of the Clearing House, and CCO of the Clearing House.

Risk Committee of the Board
The Board Risk Committee, which is comprised entirely of Board members, is tasked with overseeing CME Group's risk management practices and to assist the Board in its oversight of the effectiveness of the CME Group's policies and processes to identify, manage, and plan for its clearing house, compliance, financial, operational, reputational, and strategic and commercial risks, as is laid out under its publicly available charter.[32] In this role, the Board Risk Committee oversees CME Group's risk management practices as it relates to enterprise risk management, global information security, compliance and ethics, and operational resilience and global security. Regarding the Clearing House, the Board Risk Committee maintains oversight of the implications of the operational risk posed by CME Clearing to CME Group on an enterprise-level basis. Given its focus on this, the Board Risk Committee reviews and makes recommendations to the Board with regard to the approval of CME Clearing's Operational Risk Management Framework, which is reviewed and approved at least annually.

The Board Risk Committee coordinates its risk management oversight with other Board committees (e.g., the CHOC) to satisfy the Board's responsibility to ensure the comprehensive and holistic oversight of CME Group's risk management processes.

Other Committees of the Board
In addition to the committees previously discussed, the Board has also established other committees comprised entirely of Board members with specified focus areas to assist the Board in fulfilling its oversight responsibilities, which include the Audit Committee, Compensation Committee, Executive Committee, Finance Committee, Market Regulation Oversight Committee ("MROC"), and Nominating and Governance Committee. Each of these committees operates pursuant to a charter available on the CME Group website.[33]

[32] *See* http://investor.cmegroup.com/static-files/86ce3be0-764a-4be6-b1b2-841b6a28af86
[33] *See* http://investor.cmegroup.com/committee-details/risk

	Clearing House Risk Committee and IRS Risk Committee The CME Clearing Risk Committees are designed to provide additional expertise relating to CME Clearing's risk management policies to the Senior Management of CME Clearing and the Board, including the CHOC. Each of the CME Clearing Risk Committees established by the Board is chaired by one or more members of the Board, which is intended to provide transparency and consistent communication between the Board and the CME Clearing Risk Committees, as well as to ensure alignment between the Board's risk management focus and CME Clearing Risk Committees' activities. In order to garner the expertise and necessary input from a diverse set of market stakeholders, the CME Clearing Risk Committees also include representatives from Clearing Members and other market stakeholders, including a minimum number of outside participants unaffiliated with CME Clearing or its Clearing Members. The relevant CME Clearing Risk Committee provides risk management guidance to the Clearing House on matters relevant to the products under its purview – i.e., Base products are under the purview of the CHRC and IRS products are under the purview of the IRSRC. Consistent with CFTC Regulation §39.24(b), both the CHRC and IRSRC have written charters that set forth their responsibilities, available on the CME Group website.[34] With the authority granted by their respective charters, the CHRC and IRSRC have responsibilities relating to the following matters relevant to Base and IRS products, respectively, through actions that include, but are not limited to: • Reviewing the adequacy of the financial safeguards waterfalls and to assist them in doing this, receives regular risk reports from the Clearing House indicative of the performance of CME Clearing's risk management program; • Reviewing and approving substantive changes to the method with which the Clearing House calculates the Guaranty Funds and performance bond policies and recommending such approvals to the CHOC; • Providing feedback to the Clearing House on applications for clearing membership, which would be communicated to the CHOC, as well as reviewing and approving substantive changes to clearing membership requirements and recommending such approvals to the CHOC; • Providing guidance on risk management issues relating to the financial condition of relevant Clearing Members; • Providing guidance on the development of relevant default management guidelines and approving substantive changes to such guidelines; • Reviewing and approving any new products that significantly impact the risk profile of the Clearing House and referring such products for approval to the CHOC; and

[34] See http://investor.cmegroup.com/static-files/7445789a-8aaa-46ec-8539-069e8cbf0fab and http://investor.cmegroup.com/static-files/50a72d75-6269-41ec-8bec-1799c4ac19e1

	• Advising on the relevant risk management policies and practices, including where appropriate, reviewing and approving proposed changes to the CME Group Exchange Rules that impact the Clearing House and recommending such approvals to the CHOC. Additionally, the CHRC is charged with providing oversight on major risk management policy issues. As such, the CHRC reviews and approves certain risk management policies at least annually and any substantive changes thereto and further, makes a recommendation to the CHOC on their approval. The CHRC also reviews and approves new financial institutions to serve in the role of settlement bank or collateral custodian for the Clearing House and recommends their approval to the CHOC. Further, the CHRC, in conjunction with the MROC, oversees the financial surveillance activities of the Financial and Regulatory Surveillance ("FRS") department. Each of the CME Clearing Risk Committees are required by their charters to prioritize the safety and efficiency of the Clearing House, generally support the stability of the broader financial system and consider legitimate interests of clearing members and customers of clearing members at all times in accordance with prudent risk management standards (including systemic risk mitigation) and best practices in the industry. While serving as a member of any CME Clearing Risk Committee, members are required to act with a duty of care that prioritizes the safety and efficiency of the Clearing House and the stability of the broader financial markets. Additionally, with regard to cleared swaps, default management committees will be convened as necessary, to assist the Clearing House in managing a Clearing Member default. These committees are the Active IRS Default Management Committee and Active Base OTC Default Management Committee – collectively referred to as the "Active Default Management Committees". The Active Default Management Committees are responsible for providing guidance to the Clearing House and relevant CME Clearing Risk Committee on areas related to a potential or actual default of a Clearing Member carrying swaps positions cleared by CME Clearing. **Managing Potential Conflicts of Interest** Performing with integrity is critical to CME Group, including CME Clearing. The structure, composition, and policies of the Board prioritizes CME Clearing's compliance with its regulatory obligations as a DCO. Having the same members of the Board of CME Inc. as the Board of CME Group and the other CME Group Exchanges promotes effective and efficient risk management as it allows for the holistic management of risks, thus allowing the Board to oversee CME Inc.'s compliance with its regulatory obligations as DCO in a manner that prioritizes the Clearing House's safety and efficiency and generally supports the stability of the broader financial system. Further, risk management is the core function upon which CME Group's franchise value is predicated, which creates an inherent incentive for the Board to support sound risk management practices.

	CME Group has established a robust set of policies and procedures to address potential conflicts of interest: • The Board has adopted a Conflict of Interest Policy;[35] • CME Group Exchange Rules 234 and 416 set protocols for dealing with conflicts of interest; • The CME Clearing Risk Committees are designed to ensure that decisions take into consideration legitimate interests of Clearing Members and their customers and in particular, the charters of each of the CME Clearing Risk Committees require each member to disclose any potential conflicts relating to any matter being presented and be recused, as appropriate, from considerations on such matters; • The Board includes representation from individuals classified as "public" as defined by CFTC regulations; and • MROC is responsible for providing independent oversight over the operation of CME Group's self-regulatory functions and as part of its duties, MROC meets independently on a regular basis with the CCO of the Clearing House and senior management of the FRS department. Further, the Conflict of Interest Policy incorporates various provisions of applicable corporate law and other standards adopted by CME Group that is designed to ensure that Board and committee decisions are not impacted by conflicts of interest. Directors are expected to avoid any action, position, or interest that conflicts with an interest of CME Group, or gives the appearance of a conflict, in accordance with the Conflict of Interest Policy and any rules adopted by the CME Group Exchanges. CME Group annually solicits information from directors in order to monitor potential conflicts of interest and directors are expected to be mindful of their fiduciary obligations to CME Group. Additionally, CME Group has adopted a Code of Conduct[36] that applies to all employees, including the Management Team and Chief Accounting Officer. The provisions of the Code of Conduct, in conjunction with Conflicts of Interest Policy (i.e., applicable to all employees),[37] address potential and actual conflicts of interest. On an annual basis, employees are required to certify that they have received and agree to abide by the provisions of the Code of Conduct and Conflicts of Interest Policy.
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).	In accordance with the Corporate Governance Principles, the Board seeks directors from diverse professional backgrounds who combine a broad spectrum of experience and expertise with a reputation for integrity.[38] In making their nominations, the Nominating and Governance Committee and the Board shall take into consideration applicable board of directors' composition requirements of the CFTC and applicable listing standards. In addition, Board members must have the characteristics essential for effectiveness as a member of the Board, including but not limited to:

[35] *See* http://investor.cmegroup.com/static-files/aadd1beb-39e7-4616-bc0a-ba4f89ece6ea
[36] *See* http://investor.cmegroup.com/static-files/40101af3-32be-457a-a1bd-230f1e9ae820
[37] Note, this policy is applicable to CME Group employees and distinct from the Conflict of Interest Policy applicable to directors of the Board.
[38] *See* http://investor.cmegroup.com/board-of-the-directors

	• Integrity, objectivity, sound judgment, and leadership; • The relevant expertise and experience required to offer advice and guidance to the Chairman and Chief Executive Officer and other members of senior management; • The ability to make independent analytical inquiries; • The ability to collaborate effectively and contribute productively to the Board's discussions and deliberations; • A commitment to enhancing long-term shareholder value; • An understanding of CME Group's business, strategy, and challenges; • The willingness and ability to devote adequate time and effort to Board responsibilities and to serve on committees at the request of the Board; and • Is not a "Disqualified Person", as defined in the Corporate Governance Principles. On an annual basis, the Nominating and Governance Committee assesses the current and future needs of the Board. This process is designed to follow the guiding principle that the composition of a board should reflect a diversity of thought, backgrounds, skills, experiences and expertise, and a range of tenures that are appropriate given CME Group's current and anticipated circumstances. Additionally, at least a majority of the directors are independent directors as required by applicable public company listing standards. The Board has adopted and disclosed categorical standards to assist it in determining a director's independence, as described below. The Board also believes that it is often in the best interest of CME Group and its shareholders to have non-independent directors. The expectation of the Board is that the number of employee directors should not exceed two. **Independence Standards** The Board has adopted standards, laid out under CME Group's Corporate Governance Principles to determine if a director of the Board is independent, which are also in adherence to NASDAQ's listing standards, as CME Group's Class A Common Stock is hosted on NASDAQ Global Select Market. In particular NASDAQ Rule 5605(a)(2) defines an "Independent Director" as: *"A person other than an Executive Officer or employee of the Company or any other individual having a relationship which, in the opinion of the Company's board of directors, would interfere with the exercise of independent judgment in carrying out the responsibilities of a director."* Under CME Group's Corporate Governance Principles, a director who satisfies the independence requirements under NASDAQ's listing standards and meets the following categorical standards is presumed to be "independent":

- The director does not (directly or indirectly as a partner, shareholder or officer of another company) provide consulting, legal, or financial advisory services to CME Group or CME Group's present or former auditors.
- Neither the director nor any member of his or her immediate family is a significant shareholder in the CME Group's Class A Common Stock or Class B Common Stock. For purposes of this categorical standard, a shareholder shall be considered significant if the ownership of shares of Class A Common Stock is greater than five percent (5%) of the outstanding Class A Common Stock or if the ownership of shares of any series of Class B Common Stock is greater than five percent (5%) of the outstanding Class B Common Stock in such series.
- Neither the director nor any member of his or her immediate family serves as an executive officer of a civic or charitable organization that receives financial contributions from CME (excluding payments pursuant to a matching charitable gift program), CBOT, or NYMEX or the CME Group Foundation in excess of $200,000 or five percent (5%) of that entity's total annual charitable receipts and other revenues, whichever is greater, per year. The Board shall also consider whether any charitable donations made to a civic or charitable organization in which a director or member of his or her immediate family serves as a director, trustee or employed fundraiser impact the particular director's independence; provided, however, donations less than $200,000 per year shall be presumed to be insignificant and, therefore, not impact such director's independence.

In addition, the Board has determined that a director who acts as a floor broker, floor trader, employee or officer of an FCM, clearing member firm, market participant, or other similarly situated person that intermediates transactions in or otherwise uses CME Group products and services shall be presumed to be "independent," if he or she otherwise satisfies all of the above categorical standards and the independence requirements of the applicable listing standards and such transactions are made in the ordinary course of business of CME Group on terms consistent with those prevailing at the time for corresponding transactions by similarly situated, unrelated third-parties.

The Board also makes an assessment as to which directors may be classified as "public directors" as defined by the CFTC. A director is considered a "public director" based upon their lack of relationship with any of the CME Group Exchanges and the industry.

Incentives for Retaining Board Members

Board members are provided compensation commensurate with their workload, risk, and opportunity costs. The compensation program is designed to compensate directors based on their respective level of Board participation and responsibilities, including service on committees directed by the Board. CME Group generally targets the 50th percentile of the competitive market for compensation of the Board, while also reviewing the range of values around the median, including the 25th and 75th percentiles. The primary components of the Board compensation package consist of an annual equity stipend of CME Group's stock, an annual cash stipend, annual Board committee meeting retainers, annual chairperson retainers for Board committees, and additional meeting fees for service on functional committees. CME Group also

	believes that due to its status as a significant financial institution, service on the Board brings with it a level of prestige that attracts qualified candidates to the Board. CME Group's annual proxy statement contains additional information on the compensation program for Board members.[39]
Key consideration 5 The roles and responsibilities of management should be clearly specified. An FMI's management should have the appropriate experience, a mix of skills, and the integrity necessary to discharge their responsibilities for the operation and risk management of the FMI.	The Senior Management of CME Clearing is comprised of individuals that possess the necessary skills and experiences in the derivatives industry and more granularly, in the area for which they maintain responsibilities. Further, members of the Senior Management of CME Clearing, like all employees, pursuant to the Code of Conduct, are expected to demonstrate a high level of integrity in performing their roles. The expertise and skillset that is expected to be observed in the Senior Management of CME Clearing, along with the related responsibilities of each function of CME Clearing, is defined in CME Clearing's Risk Management Framework. The standards employed by CME Clearing regarding the expertise and skillset of the Senior Management of CME Clearing are designed to ensure that they are well placed to have responsibilities related to the functions for which they lead. In order to ensure that members of the Senior Management of CME Clearing have the necessary experience to perform their roles, generally, as a matter of practice each member of the Senior Management of CME Clearing has at least ten-years' experience in the derivatives industry and/or in a field that is directly related to the function in which they oversee. Additionally, members of the Senior Management of CME Clearing typically possess a master's degree or professional certification that contributes to their ability to perform their function, which is designed to ensure that the Senior Management of CME Clearing retains the necessary skillset. Each member of the Senior Management of CME Clearing is subject to an annual performance review, where they are assessed against predefined performance goals. This review is designed to help ensure that the Senior Management of CME Clearing is fulfilling their roles and responsibilities, including in a manner that is consistent with CME Group's objective of leading with integrity. The review process starts with setting individual performance goals at the start of each year, which are aligned to CME Clearing's goals and the given function's goals. These goals are set by each member of the Senior Management of CME Clearing in conjunction with the Global Head of Clearing & Post-Trade Services. Setting quality goals is designed to create alignment and accountability and promote successful performance. CME Clearing has distinct functions that are led by members of the Senior Management of CME Clearing. Collectively these functions are under the oversight of the Global Head of Clearing & Post-Trade Services, who is a member of the Management Team of CME Group. All members of the Senior Management of CME Clearing have a direct reporting line to the Global Head of Clearing & Post-Trade Services. The functions of the Clearing House are as follows: • **Clearing Operations & Banking**

[39] *See* https://investor.cmegroup.com/static-files/548420f0-89c9-4d90-a344-6c85f2ac9e71?_gl=1*irggx7*_ga*ODUxNDQxNTYzLjE2ODYxNzAxNzE.*_ga_L69G7D7MMN*MTY5MDgyNTI0MC41Ni4xLjE2OTA4MjYxNDkuNy4wLjA

	The Clearing Operations & Banking function has various responsibilities related to the functioning of CME Clearing that includes general clearing services operations, deliveries, and banking. The Clearing Operations & Banking function is responsible for the daily operations of the Clearing House, including global risk monitoring outside of normal U.S. hours, and as such, is responsible for key operational events during the clearing and settlement cycles. The Clearing Operations & Banking function also acts as a first point of contact for managing and fulfilling market participants' needs as it relates to the clearing process and works closely with the other functions of the Clearing House in performing its role. The Clearing Operations & Banking function also has various responsibilities related to collateral services, cash management, and processing and reconciliation for banking. • **Clearing Policy & Compliance** The Clearing Policy & Compliance function is tasked with the responsibility and authority to implement and administer policies and procedures that are designed to ensure that CME Clearing complies with the DCO Core Principles and all other laws and regulations applicable to the operation of CME Clearing's clearing services. Additionally, the Clearing Policy & Compliance function oversees CME Clearing's annual examinations and any other regulatory examinations of CME Clearing. The Clearing Policy & Compliance function also plays a critical role in assessing the clearing regulatory landscape and representing the Clearing House to key market stakeholders to encourage the development of appropriate regulatory requirements and risk management standards. • **Clearing Risk Management** The Clearing Risk Management function[40] has various responsibilities related to the functioning of CME Clearing that includes credit, market and liquidity risk management, risk methodologies, risk research and development, pricing and valuations, and default management. The Clearing Risk Management function is responsible for the development and maintenance of the risk models utilized for the calculation of performance bond and Guaranty Fund requirements. Further, the Clearing Risk Management function monitors market participants' positions in real-time 24-hours a day, six-days a week, while also marking positions to real-time prices. The Clearing Risk Management function also monitors and manages the credit quality of CME Clearing's counterparties and is responsible for implementing CME Clearing's liquidity risk management framework. In fulfilling its responsibilities, the Clearing Risk Management function works closely with the Clearing Operations & Banking function. • **Clearing & Post-Trade Product Management** The Clearing & Post-Trade Product Management function has various responsibilities related to clearing solutions and business architecture, including optimization. The Clearing & Post-Trade

[40] Staff- and senior-level employees in this function are referenced collectively as the "Risk Management team" throughout this document.

	Product Management function works across the Clearing House to drive the high level prioritization, design and implementation of the Clearing House's new initiatives. The functions of the Clearing House, to the extent appropriate, work closely with the CME Group Exchanges' FRS department, which is primarily responsible for examining Clearing Members' compliance with financial and customer segregation requirements. The FRS department performs the designated self-regulatory organization ("DSRO") function for CME Group Exchanges pursuant to CFTC Regulation §1.52. **The Clearing House's Internal Committees** The Senior Management of CME Clearing is responsible for the smooth operation of the Clearing House's functions. In fulfilling their responsibilities, the Senior Management of CME Clearing either participates or leads internal management committees. These committees are comprised of members of the CME Clearing's senior-level staff that have expertise in the relevant committees' areas of focus and other staff of CME Clearing regularly attend the committees' meetings to provide their expertise on a given topic being discussed. CME Clearing maintains the following internal management committees: • **Credit & Liquidity Committee** The Credit & Liquidity Committee operates pursuant to its written charter and the charter is subject to the at least annual review and approval of the Credit & Liquidity Committee. As established under its charter, the Credit & Liquidity Committee is responsible for the internal oversight of CME Clearing's counterparty credit, collateral, investment, and liquidity risk management practices. In this capacity, it reviews CME Clearing's internal credit ratings for its counterparties, liquidity risk assessments and resources, and collateral acceptance programs, as well changes in practices related to these areas. If any changes are substantive changes to CME Clearing's procedures related to the aforementioned items, they are escalated as appropriate to the CHRC and/or CHOC. The Credit & Liquidity Committee meets on a monthly basis. • **Collateral Committee** The Collateral Committee operates pursuant to its written charter and the charter is subject to the at least annual review and approval of the Credit & Liquidity Committee. In certain instances, the Credit & Liquidity committee has allocated more granular areas of responsibility related to its oversight to the Collateral Committee regarding administering relevant policies and procedures related to collateral, investment, and liquidity risk management matters. In this capacity, it reviews the credit profiles of collateral issuers, collateral haircuts and limits, and collateral programs, as well as changes in practices related to these areas. If any changes are substantive changes to CME Clearing's procedures related to the aforementioned items, they are escalated as appropriate to the CHRC and/or CHOC. The Collateral Committee meets on a weekly basis. • **Model Risk Committee**

	The Model Risk Committee operates pursuant to its written charter and the charter is subject to the at least annual review and approval of the Model Risk Committee. As established under its Charter, the Model Risk Committee is responsible for the internally overseeing the monitoring of and enhancements to CME Clearing's margin methodologies. In this capacity, it reviews sensitivity analysis and backtesting results of the margin methodologies. If any changes to the margin methodologies are substantive changes to CME Clearing's procedures, they are escalated as appropriate to the relevant CME Clearing Risk Committee(s) and/or the CHOC. The Model Risk Committee also oversees the independent validation of all risk models. The Model Risk Committee meets on a monthly basis. • **Stress Testing Committee** The Stress Testing Committee operates pursuant to its written charter and the charter is subject to the at least annual review and approval of the Stress Testing Committee. As established under its charter, the Stress Testing Committee is responsible for the internal oversight of the monitoring of and enhancements to CME Clearing's stress testing methodologies. In this capacity, the Stress Testing Committee reviews changes to the stress testing programs at CME Clearing, including calculations for the Guaranty Funds and reverse stress testing results. If any changes are substantive changes to CME Clearing's procedures related to the aforementioned items, they are escalated as appropriate to the relevant CME Clearing Risk Committee(s) and/or CHOC. The Stress Testing Committee meets on a monthly basis. • **Default Management Committee** The Default Management Committee operates pursuant to its written charter and the charter is subject to the at least annual review and approval of the Default Management Committee. As established under its charter, the Default Management Committee is responsible for the internal oversight of CME Clearing's Clearing Member default management guidelines. The Default Management Committee considers the guidance of the CME Clearing Risk Committees when developing these guidelines. The Default Management Committee meets on a twice-yearly basis, or more frequently as needed. • **Operational Risk Management Committee** The Operational Risk Management Committee operates pursuant to its written charter and the charter is subject to the at least annual review and approval of the Operational Risk Management Committee. As established under its charter, the Operational Risk Management Committee is responsible for the oversight of CME Clearing's systems for managing operational risk. In this capacity, the Operational Risk Management Committee provides guidance on matters relating to the measurement, management and control of operational risk relating to the core clearing processes. The Operational Risk Management Committee meets on a quarterly basis.

Key consideration 6 The board should establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.	CME Clearing maintains a Risk Management Framework, as described in CME Clearing's disclosures for Principle 3, which encompasses the core risk management policies, procedures, and methodologies CME Clearing employs to meet its rigorous standards for risk management and works in harmony with the CME Group Exchange Rulebooks. These policies, procedures, and methodologies conform to CME Clearing's regulatory requirements, including CFTC Regulation §39.13(b), requiring each DCO to have and implement a written risk management framework. Additionally, the Risk Management Framework is supplemented with other policies, procedures, and methodologies, which more granularly address the risks to which CME Clearing is exposed through its activities. As required under CFTC regulations, the CRO of the Clearing House is responsible for implementing the Risk Management Framework of CME Clearing, which is approved by the Board and CHOC at least annually. In addition to the at-least annual review and approval, the CHOC also reviews and approves all substantive changes to the Risk Management Framework and submits a recommendation to the Board for changes to the Risk Management Framework that would have a significant impact on the risk profile of the Clearing House, which the Board would then review for approval. Additionally, the CME Clearing Risk Committees contribute to the Risk Management Framework through their oversight of CME Clearing's risk management practices that are reflected in the Risk Management Framework, as described in CME Clearing's disclosures for Key Consideration 3 of this Principle. If any material changes to CME Clearing's risk management practices occur, they are reflected in the Risk Management Framework and these changes would be subject to the oversight of the appropriate governance body consistent with the Risk Management Framework and appropriate governing body's charter, as described above in CME Clearing's disclosures for this Principle. As noted above, changes, including to CME Clearing's risk models, that could have a significant impact on the risk profile of the Clearing House must be approved by the full Board. The Global Head of Clearing and Post-Trade Services, CRO of the Clearing House, and CCO of the Clearing House are responsible for making a recommendation to the CHOC on whether a matter would have significant impact on the risk profile of the Clearing House. Following this recommendation, the determination to bring these changes to the full Board is then made by the CHOC, which pursuant to its charter is required to approve these changes prior to making a recommendation to the full Board for its approval. In addition to this oversight by the Board, the Board is kept apprised of the relevant activities of CME Clearing related to the Risk Management Framework via regular reporting at Board meetings by the Global Head of Clearing & Post-Trade Services, the Chairs of the CME Clearing Risk Committees, and the Chair of the CHOC. The Board's oversight of changes that could have a significant impact on the risk profile of CME Clearing, as well as ongoing reporting on CME Clearing's activities, is designed to ensure that sufficient governance is in place in order for the Clearing House to make changes to its risk management practices. The Board also has established an Audit Committee, which oversees the Global Assurance department that is responsible for the internal audit function and determining whether CME Group's network of risk management and control processes, as designed, are adequate and functioning effectively towards the

	accomplishment of CME Group's defined objectives, including those related to CME Clearing. Internal audits are performed annually and findings relating to CME Clearing, if any, are presented to the applicable Board committee, such as the CHOC for financial risks and the Risk Committee for operational risks. **Overview of CME Clearing's Risk Management Framework** The Risk Management Framework guides CME Clearing's risk management practices based upon the philosophy that a strong risk culture is integral to the establishment of effective risk management practices. The Risk Management Framework, in conjunction with its supplementary policies and procedures, describes CME Clearing's approach for managing the risks facing the Clearing House, which include, but are not limited to: • Collateral risk; • Counterparty risk; • Credit risk; • Default risk; • Liquidity risk; • Market risk; • Model risk; and • Operational risk. The CFTC has adopted risk management regulations for DCOs consistent with the PFMIs and the Dodd-Frank Act and CEA. These regulations guide CME Clearing's risk management practices as a DCO. CME Clearing complies with CFTC Regulation §39.40, which requires it to establish practices consistent with the PFMIs, as have been implemented through the CFTC's Part 39 Regulations. Specifically, CFTC Regulation §39.13(b) requires: *"A derivatives clearing organization shall have and implement written policies, procedures, and controls, approved by its board of directors, that establish an appropriate risk management framework that, at a minimum, clearly identifies and documents the range of risks to which the derivatives clearing organization is exposed, addresses the monitoring and management of the entirety of those risks, and provides a mechanism for internal audit. The risk management framework shall be regularly reviewed and updated as necessary."* CME Clearing, in compliance with this regulation, has constructed its risk management practices, as laid out under the Risk Management Framework, to proactively mitigate and manage risk. These practices and the independent financial safeguards waterfalls that have been established for Base and IRS products pursuant to the CME Group Exchange Rulebooks are detailed in the Risk Management Framework. While

	the Board is ultimately responsible for the oversight of the risk management of CME Clearing, the Senior Management of CME Clearing is responsible for the day-to-day operations of CME Clearing and supports the CRO of the Clearing House in his implementation of the Risk Management Framework. These responsibilities are defined in the Risk Management Framework and detailed in CME Clearing's disclosures for Key Consideration 5 of this Principle. CME Clearing, including the Senior Management of CME Clearing, performs its risk management function independently of the commercial business functions of CME Group. The Risk Management Framework not only defines the responsibilities of the Senior Management of CME Clearing in business as usual, but also lays out the decision-making authority of certain governing bodies in an emergency pursuant to the CME Group Exchange Rulebooks. Under CME Group Exchange Rule 230.K, the Board has the power to take actions to protect CME Clearing's markets in an emergency in which the free and orderly market is likely to be disrupted or the financial integrity of CME Inc., the operator of CME Clearing, is threatened. Similarly, the CHRC is afforded similar authority under CME Group Exchange Rule 403.C. Further, as described in greater detail in CME Clearing's disclosures for Principle 13, with respect to an emergency related to the financial and operational condition of a Clearing Member that would jeopardize the integrity of CME Inc., the CHRC, IRSRC, and Emergency Financial Committee, comprised of certain members of the Management Team and the Board, may each take necessary actions pursuant to CME Group Exchange Rules 403.C and 975 for Base products and 8G27 and 8G975 for IRS products. Actions taken pursuant to the aforementioned CME Group Exchange Rules would be taken in line with CME Clearing's governance arrangements that are designed to protect the safety and efficiency of the Clearing House and explicitly support the stability of the broader financial system. In addition, the Risk Management Framework is designed to work cohesively with the Enterprise Risk Management Framework. Consistent with CFTC Regulation §39.10(d)(1), application of the Enterprise Risk Management Framework allows CME Group to identify and assess the sources of risk and their potential impact on the operations and services of the Clearing House. Under such frameworks, these risks are appropriately measured, monitored, and managed in accordance with CME Group's Statement of Risk Appetite. **Global Assurance Department** The Global Assurance department's responsibilities are to: • Develop, implement, and communicate to the Audit Committee an annual audit plan using an appropriate risk-based methodology; • Issue periodic reports to the Audit Committee, other applicable committees of the Board, and management summarizing the results of internal audit activities, including reporting of significant issues, potential improvements, timing for any management corrective action via a written report at the conclusion of each audit, and provide information concerning such issues through resolution;

	• Keep the Audit Committee informed of emerging trends and successful practices in internal auditing; and • Periodically communicate to the Audit Committee the adequacy of the Global Assurance department's staffing resources. The Global Assurance department reports directly to the Audit Committee and meets privately with the Audit Committee on a regular basis. The Global Assurance department has established policies to ensure the internal audit activity remains free from undue interference by any element in the organization including matters of audit selection, scope, procedures, frequency, timing, or report content to permit maintenance of necessary independence and objectivity. The Head of Global Assurance and staff of the Global Assurance department are authorized to have unrestricted access to all functions, records, property, and personnel, with full and free access to the Audit Committee. On the other side, the Head of Global Assurance and staff of the Global Assurance department are not authorized to perform any operational duties for CME Group and its subsidiaries.
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.	Consistent with the Corporate Governance Principles and charters for the CHOC, CHRC, and IRSRC, the Board in relation to its oversight of CME Clearing, the CHOC, and the CME Clearing Risk Committees consider the legitimate interests of Clearing Members and their customers. In particular, CME Clearing considers the interests of market participants through the CME Clearing Risk Committees, as well as through the participation of market participants who serve on the Board. The CME Clearing Risk Committees are comprised of key market stakeholders, including Clearing Members and other market participants. The CME Clearing Risk Committees act as forums for CME Clearing to garner the risk management expertise of its market participants, where they act with a duty of care that prioritizes the safety and efficiency of the Clearing House and the stability of the broader financial system. The CME Clearing Risk Committees assist in forming the overall risk management policies at CME Clearing, subject to approval by the CHOC and Board, as appropriate. CME Clearing also has numerous other ways to interface with Clearing Members and other market participants to gain their input. CME Clearing hosts forums to communicate with market participants, such as the FCM Advisory Group, OTC Risk Forum, and OTC Operations Forum. CME Clearing is also able to consider the ideas of market participants through its participation in the Futures Industry Association ("FIA") and International Swaps and Derivatives Association, among other industry groups. Further, CME Clearing consults market participants on material changes to its risk management practices through informal one-on-one conversations, allowing both CME Clearing and market participants to speak openly. Consistent with CFTC Regulation §39.24(a)(3), CME Clearing discloses major decisions made by the Board and other decision-making bodies to relevant stakeholders and where decisions have broad market impact they are disclosed to the public. Generally, this encompasses decisions that materially impact the risk profile of CME Clearing and as such, these decisions would be reflected in publicly available rule

	filings made pursuant to CFTC Regulation §40.10. Decisions of the Board and other decision-making bodies are disclosed through various forms of communication that are readily accessible to the public, which include but are not limited to: • **Press Releases**: Utilized for distributing significant updates regarding the operation of CME Group's business;[41] • **Rule Filings**: Utilized for distributing changes to CME Group Exchange Rulebooks – the process for making various rule changes is described in CME Clearing's disclosures to Key Consideration 2 of Principle 1;[42] • **Special Executive Reports**: Utilized to provide additional information regarding changes to CME Group Exchange procedures, such as changes to existing products and new product listings and other changes to the CME Group Exchange Rulebooks;[43] • **Clearing Advisories**: Utilized by CME Clearing to provide information targeted at Clearing Members and other market participants, such as changes in performance bond requirements, option expiration procedures, and systems updates;[44] and • **Market Regulation Advisory Notices**: Utilized by the Market Regulation department to provide guidance on the interpretation of the CME Group Exchange Rules.[45]
Principle 3: Framework for the Comprehensive Management of Risks 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.	CME Clearing maintains a Risk Management Framework, which encompasses the core risk management policies, procedures, and methodologies CME Clearing employs to meet its rigorous standards for risk management. CME Clearing's risk management practices are addressed in greater detail throughout CME Clearing's disclosures in this document and its disclosures for this Principle primarily provide an overview of CME Clearing's holistic approach to risk management, as is defined in the Risk Management Framework. As described in further detail in CME Clearing disclosures for Principle 2, the Risk Management Framework is reviewed and approved on at least an annual basis by the CHOC and the Board. CME Clearing additionally maintains other policies, procedures, and methodologies, which support the Risk Management Framework and, in part, address some of the risks listed below more granularly and where

[41] *See* https://www.cmegroup.com/media-room.html
[42] *See* https://www.cmegroup.com/market-regulation/rule-filings.html
[43] *See* https://www.cmegroup.com/tools-information/advisorySearch.html#cat=advisorynotices%3AAdvisory+Notices%2FSER+Advisories&pageNumber=1&searchLocations=%2Fcontent%2Fcmegroup%2F
[44] *See* https://www.cmegroup.com/tools-information/advisorySearch.html#cat=advisorynotices%3AAdvisory+Notices%2FClearing+Advisories&pageNumber=1&searchLocations=%2Fcontent%2Fcmegroup%2F
[45] *See* https://www.cmegroup.com/tools-information/advisorySearch.html#cat=advisorynotices%3AAdvisory+Notices%2FMarket+Regulation+Advisories&pageNumber=1&searchLocations=%2Fcontent%2Fcmegroup%2F

	relevant, are referenced throughout this document. These policies and procedures are also subject to defined review schedules. As noted above, the primary risks that CME Clearing faces in providing its clearing services are as follows: • Collateral risk; • Counterparty risk; • Credit risk; • Default risk; • Liquidity risk; • Market risk; • Model risk; and • Operational risk. While CME Clearing faces these risks, CME Clearing has a variety of risk management tools in place to proactively manage these risks in both normal and extreme market conditions and maintains a neutral position to the market with respect to all cleared contracts, except potentially in the case of a Clearing Member default scenario. The core purpose of the Risk Management Framework is to prioritize the safety and efficiency of CME Clearing and generally support the stability of the broader financial system, while considering the risk management views of key market stakeholders. As a part of this, on an ongoing basis CME Clearing assesses the effectiveness of its risk management practices, including through their daily utilization and the at least annual review and approval of the Risk Management Framework. CME Clearing actively monitors its counterparty relationships and as noted, has established two independent financial safeguards waterfalls (i.e., one for its Base products and one for its IRS products), which include multiple layers of protection against market participant losses in the event of a Clearing Member default. The foundation for CME Clearing's financial safeguards waterfalls is the methodologies it employs for margining and stress testing to size the Guaranty Funds, as well as the application of policies for collateral acceptance and management and liquidity risk management. CME Clearing's financial safeguards waterfalls are designed to support CME Clearing in protecting its Clearing Members and customers against the impacts of a Clearing Member default, in accordance with CME Group Exchange Rules 802 and 8F006 for Base products and CME Group Exchange Rule 8G802 for IRS products. A financial safeguards waterfall would be activated in the event a Clearing Member that has a membership associated with the products covered by such waterfall defaults, where a Clearing Member default is declared pursuant to these CME Group Exchange Rules.

	CME Clearing mitigates the likelihood of a Clearing Member default and subsequent activation of the relevant financial safeguards waterfall(s) by maintaining a series of practices that are designed to support the financial integrity of its Clearing Members, such as adopting prudent minimum clearing membership requirements and employing related reporting requirements. Additionally, the Clearing House has implemented a series of controls that support the financial safeguards waterfalls and provide robust risk management to protect Clearing Members and their customers. Through daily risk monitoring, ongoing evaluations of model soundness, and operational risk management, the Clearing House strives to protect the mechanisms of the financial safeguards waterfalls. CME Clearing's risk monitoring practices encompass counterparty evaluations and financial examination functions. Further, CME Clearing monitors Clearing Members' exposures, including their customers, throughout the day. In particular, CME Clearing systems allow it to monitor trading activity and impacts of price movements on a real-time basis, 24-hours a day, six-days a week. Additionally, customers that carry sizeable exposures are subject to heightened daily monitoring by CME Clearing.[46] CME Clearing's systems also allow CME Clearing to aggregate these customers exposures across Clearing Members. Additionally, the Clearing House has a developed framework for managing operational risk, which is, in part, managed through the continuous observation of its systems' performance on a 24-hours a day, six-days a week basis. Multiple shifts are staffed across the globe to ensure consistent coverage for monitoring key systems' performance. More broadly, CME Clearing's risk management practices are overseen by and operated under the governance arrangements that are adopted by the Board, as described in CME Clearing's disclosures for Principle 1.
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.	CME Clearing provides transparency into its risk management practices through numerous public disclosures, as described in CME Clearing's disclosures for Principle 23. CME Clearing publishes a CME Clearing PFMI Disclosure document[47] and CME Clearing Quantitative PFMI Disclosure document,[48] which lay out CME Clearing's risk management practices and provide numerous data points to understand the implementation of these practices, respectively. CME Clearing also makes the CME Group Exchange Rulebooks publicly available on the CME Group website.[49] In addition to the CME Group Exchange Rulebooks, Clearing Members and customers are provided notice of new risk management practices or changes to practices that impact their operations through Clearing

[46] For exchange-traded derivatives, these customers are referenced as Large Trader accounts in this document and these accounts are disclosed to CME Clearing where they have positions that exceed defined reportable levels, which are defined under CME Group Exchange Rule 561 in combination with CFTC Regulation §15.03(b).
[47] *See* http://www.cmegroup.com/clearing/risk-management/files/cme-clearing-principles-for-financial-market-infrastructures-disclosure.pdf
[48] *See* http://www.cmegroup.com/clearing/cpmi-iosco-reporting.html
[49] *See* http://www.cmegroup.com/market-regulation/rulebook.html

	Advisories that are published on the CME Group website.[50] Interested parties may also subscribe to receive such advisories by email. The CME Group Exchange Rulebooks establish the standards to which CME Clearing and its Clearing Members are held, covering the full range of CME Clearing's activities. Pursuant to CME Group Exchange Rule 982, Clearing Members are required to maintain written policies that ensure the firm is "able to perform certain basic risk and operational functions at all times." CME Clearing has defined these to include, at a minimum: • Monitoring the credit risks of accepting trades, including give-up trades, of specific customers; • Monitoring the risks associated with proprietary trading; • Limiting the impact of significant market moves through the use of tools, such as stress testing or position limits; • Maintaining the ability to monitor account activity on an intraday basis, including overnight; • Ensuring order entry systems include the ability to set automated credit controls or position limits or requiring a firm employee to enter orders; • Defining sources of liquidity for increased settlement obligations; and • Determining a risk profile for each account it carries, including whether such account presents a heightened risk profile. CME Clearing's policies and systems are designed to ensure that participants can effectively understand and manage the risks to which they are exposed to through their activities and that CME Clearing provides them the necessary tools to do so. As noted above, CME Clearing works to achieve this through being transparent in its risk management practices. CME Clearing is committed to providing its Clearing Members the tools required to manage their risk profile, including regular reports on performance bond, settlement variation, collateral (including haircuts), and Guaranty Fund. CME Clearing also offers its market participants numerous tools through Globex and other systems to effectively manage their exposures from a pre- and post-trade perspective, including the ability to set defined credit controls on their customers as prescribed by to CME Group Exchange Rule 949.. Additionally, CME Clearing provides a variety of tools to help both Clearing Members and their customers estimate their performance bond requirements.[51] Market participants must manage the risks they bring into the system. While there are a number of incentives for market participants to manage the risks they bring to CME Clearing, two of the primary ones are the collection of performance bond and at least daily exchange of settlement variation. CME Clearing requires that both Clearing Members and customers of Clearing Members meet the performance bond

[50] *See* http://www.cmegroup.com/tools-information/advisorySearch.html
[51] *See* https://www.cmegroup.com/clearing/margin-services.html

	requirements set by the Clearing House. Clearing Members are required to collect, at a minimum, the performance bond requirement set by CME Clearing from each of their customers. This is in addition to meeting applicable settlement variation obligations. In particular, customers are incentivized to manage their risk because, pursuant to CFTC Regulation §39.13(g)(8)(i) and (ii), all customers are margined on a gross basis (i.e., the exposures of unaffiliated customers cannot offset each other) and this margin is collected by a Clearing Member from each of its customers and passed on to CME Clearing. Broadly, the structure and level of risk covered by each layer of CME Clearing's financial safeguards waterfalls for Base and IRS products are designed to incentivize market participants to manage the risk they bring. Each of CME Clearing's financial safeguards waterfalls are comprised of the following layers: • Defaulted Clearing Member's performance bond contributions; • Defaulted Clearing Member's Guaranty Fund contributions; • CME Clearing's contribution for managing a Clearing Member default event; • Non-defaulting Clearing Members' Guaranty Fund contributions; and • Capped assessments of non-defaulting Clearing Members for additional resources. In addition to the incentives instilled through the collection of performance bond and exchange of settlement variation, Clearing Members are further incentivized to manage the risk they bring to the system (i.e., on behalf of their customers and themselves) through the collection of Guaranty Fund contributions, which may be subject to mutualization in the event of a Clearing Member default. CME Clearing's Guaranty Funds for Base and IRS products are independently sized to cover the default of CME Clearing's two largest Clearing Members and their affiliated Clearing Members under extreme but plausible market conditions – i.e., two largest potential stress shortfalls determined as a function of stress loss less performance bond. In particular, Guaranty Fund contributions are also designed to appropriately incentivize Clearing Members to actively participate in the default management process. CME Clearing also demonstrates its confidence in its own risk management practices through making a meaningful first loss contribution to each of its two financial safeguards waterfalls for Base and IRS products, which are currently sized at $100 million and $150 million, respectively. Overly large CCP contributions to cover a clearing member default event could reduce risk management incentives for a CCP's clearing members. This scenario reduces the likelihood that the mutualized resources of clearing members would be utilized. Therefore, clearing members could be less incentivized to actively participate in the default management process. Additionally, CME Clearing's capped assessment powers are designed to incentivize recovery rather than wind-down, in the unlikely event such severe stress event arises. In particular, assessments further incentivize Clearing Members to actively participate early in the default management process to efficiently close-out the defaulter's portfolio in order to reduce the likelihood that any losses persist that may trigger calls for assessments.

	Further, where Clearing Members are found to have inadequate risk management through any number of the means CME Clearing employs for monitoring them, as described in CME Clearing's disclosures for Key Consideration 3 of this Principle, they are required to remediate those shortcomings and may be subject to disciplinary action. These powers are designed to ensure Clearing Members are properly incentivized to maintain robust risk management processes. For example, CME Clearing may decide to require additional performance bond funds be deposited by a Clearing Member, as described in CME Group Exchange Rules 824 and 8G824 for Base and IRS products, respectively, or may subject Clearing Members to more frequent reporting obligations or risk reviews.
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.	Consistent with CFTC Regulation §39.13(f), CME Clearing actively takes steps to avoid a Clearing Member default and subsequent activation of the relevant financial safeguards waterfall(s) by maintaining a series of policies that are designed to ensure the financial integrity of its Clearing Members are adequately maintained, as established under the requirements for clearing membership described in CME Clearing's disclosures for Principle 18 and predominantly set out in Chapter 9 of the CME Group Exchange Rulebooks. CME Clearing has designed its clearing membership requirements to ensure that Clearing Members are financially sound and have the operational capabilities to act as Clearing Members. As a CCP, CME Clearing intermediates transactions between its Clearing Members with operational services from entity types that include collateral custodians and commercial banks that provide settlement and depository services (e.g., payment and receipt of settlement variation and call/release of performance bond collateral). Additionally, CME Clearing partners with other CCPs and exchanges to facilitate its cross-margin and mutual offset programs, respectively, as described in CME Clearing's disclosures for Principle 20. To manage the inherent counterparty risks associated with acting as a CCP, CME Clearing has developed a comprehensive policy for reviewing and monitoring the relationships it maintains. This policy is designed to ensure that CME Clearing's counterparties are held to rigorous standards for credit quality to protect CME Clearing against excessive credit and counterparty risks. **Management and Monitoring of CME Clearing's Relationships** CME Clearing performs initial and ongoing assessments of the credit profile of Clearing Members and other counterparties it bears exposures from that are designed to ensure the level of scrutiny and ongoing monitoring for which a counterparty is subject is consistent with the counterparty's respective risk profile and that they continue to meet CME Clearing's counterparty credit quality standards. CME Clearing monitors its exposures to counterparties holistically across all relationships and at the counterparty level based on the service it provides to CME Clearing. *Counterparty Credit Assessments* As set out in CME Clearing's counterparty monitoring policy, which is outlined in the Risk Management Framework, CME Clearing conducts a credit assessment of its counterparties at least annually to identify

	any material risks it bears from its counterparties. Where appropriate, assessments are supplemented with on-site reviews, at least annually or biennially, based on counterparty type. Additionally, select counterparties elect to conduct annual on-site credit due diligence reviews of CME Clearing, as well as send written due diligence questionnaires to aid in their risk assessment of CME Clearing. These formalized means for evaluating risks supplement the open line of communication that CME Clearing maintains with its counterparties. CME Clearing's credit assessment of its counterparties is conducted using its internal credit rating methodology. The internal credit ratings for CME Clearing's counterparties are based on a variety of quantitative and qualitative metrics. Quantitative metrics may include profitability, leverage, liquidity, asset quality, and capitalization metrics. Qualitative metrics may include an assessment of a counterparties' business profile, operating environment, management and governance, and risk management practices. Within the credit rating methodology, counterparties are classified based on their business type. The composition of the internal credit rating templates are based on counterparty type and industry, among other factors. Outside of internal credit ratings being reviewed at least annually, they are also updated as necessary to reflect current market information. Counterparties are monitored daily through CME Clearing's key risk indicator dashboard to help identify issues that may require a change in rating or more rigorous reviews. Alerts are set to notify the Risk Management team of notable movements in credit default swap price, stock price, or external credit ratings. Additionally, CME Clearing monitors its counterparties against noteworthy news items and financial standing and reports. Noteworthy items are reported out in a timely manner to the senior members of the Risk Management team and addressed accordingly. Based on CME Clearing's daily monitoring and internal credit ratings, CME Clearing maintains a Watch List of counterparties that are subject to heightened monitoring. Through ongoing monitoring, CME Clearing continually assesses its exposures to its counterparties. *Daily Risk Monitoring of Clearing Members* CME Clearing monitors changing market movements for cleared products and the trading activity of market participants 24-hours a day, six-days a week using real-time data. CME Clearing conducts intraday mark-to-market calculations on Clearing Member and customer positions throughout the day and overnight. CME Clearing monitors position exposures at various levels of granularity, from the Clearing Member level to the individual account level. CME Clearing's daily Clearing Member risk monitoring process includes monitoring: • Price moves of products in relation to current performance bond levels in real-time; • Real-time profit or loss and real-time performance bond changes for each Clearing Member to detect large losses and/or large short option positions, as well as large swings in performance bond requirements;

	• Clearing Member's real-time trading activity to identify large increases in positions, as well as transfer and give-up activity, that could trigger a large performance bond call; and • To identify potential abnormalities in Clearing Member trading behavior and individual trade characteristics, including to capture erroneous trade entries (i.e., "fat finger" trades). In line with CFTC Regulation §39.13(h)(1), each Clearing Member is assigned tolerance thresholds used for monitoring their intraday and aggregate trading activity. CME Clearing's daily monitoring and annual credit assessment process, which encompasses its internal credit rating methodology, contributes to determining tolerance thresholds for a Clearing Member. Tolerance thresholds are used to flag Clearing Members' settlement variation and/or performance bond payment obligation amounts that exceed pre-set levels benchmarked against their typical activity. When a threshold is exceeded, the Risk Management team investigates the cause and escalates it accordingly to address it appropriately, as described in CME Clearing's disclosures for Principle 4. *Counterparty Reviews and Risk-Based Examinations* CME Clearing has a well-established policy of conducting due diligence reviews of its counterparties, including Clearing Members and settlement banks. Consistent with CFTC Regulation §39.13(h)(5)(ii), CME Clearing's risk reviews of its Clearing Members include a review of their risk management policies, procedures, and practices. In connection with CME Group Exchange Rules 982 and 983, Clearing Members complete a questionnaire describing their practices and provide requested policies and procedures to CME Clearing as part of the review. Risk reviews of each Clearing Member occur at least every two years or more frequently as necessary – e.g., a Clearing Member's risk profile changes. The schedule for risk reviews is reviewed and approved by the Credit & Liquidity Committee. Risk reviews of Clearing Members cover credit, market, liquidity, and operational risks through a series of topics including: • Customer credit risk monitoring and control; • Proprietary trading risk monitoring and control; • Risk monitoring practices, including stress test reports; • Risk management systems and credit control functionality; • Liquidity risk management and capital planning, particularly for satisfying payment obligations to CME Clearing; and • Operational risk management practices and disaster recovery and business continuity plans. Following a Clearing Member's risk review, CME Clearing may recommend actions to be taken to address any identified concerns. Where recommendations are made, the Risk Management team tracks the progress on addressing such concerns until it is confirmed that such concerns have been addressed.

	In addition to risk reviews led by the Risk Management team, risk-based examinations of Clearing Members are carried out by the FRS department in fulfilling the CME Group Exchanges' obligations as a DSRO. The FRS department's risk-based examinations focus primarily on a Clearing Members' financial standing and adherence to customer protection requirements, including segregation requirements. **Effectiveness of CME Clearing's Risk Management Tools** CME Clearing continually strives to structure its clearing and settlement services both effectively and efficiently, while supporting prudent risk management. This encompasses maintaining and utilizing effective tools for risk management to address its exposures. In part, the effectiveness of CME Clearing's risk management policies, procedures, and systems are evaluated through the at least annual review and approval process of the Risk Management Framework. The appropriateness of CME Clearing's risk management tools is also assessed through the validation of its risk models, sensitivity analysis, and daily backtesting and stress testing. These practices are designed to proactively address potential model risk. Additionally, changes to risk models are vetted internally by senior members of the Risk Management team, as well as by qualified independent parties, depending the materiality of the change. Additionally, CME Clearing's risk management practices are subject to annual regulatory examination by the CFTC and the Board of Governors of the Federal Reserve System.
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.	CME Clearing has identified stress scenarios that could potentially prevent it from providing its critical operations and services (i.e., clearing services). Consistent with CFTC Regulation §39.39(b), CME Clearing's Recovery and Wind-Down Plans address extreme but plausible scenarios relating to uncovered credit losses or liquidity shortfalls and separately, extreme but plausible scenarios relating to general business risk, operational risk, or any other risk that could threaten CME Clearing's viability as a going concern. These scenarios capture situations where uncovered credit losses and liquidity shortfalls could result from the default of at least CME Clearing's three largest Clearing Members. CME Clearing's Recovery Plan identifies both operational and financial interconnections and interdependencies with other affiliates of CME Group and third-parties. The Recovery Plan is also considerate of the multiple ways in which a counterparty faces CME Clearing – i.e., as a Clearing Member and liquidity provider, etc. – and as such, CME Clearing has tools in place to manage an event where a counterparty that faces CME Clearing in multiple ways fails to meet its obligations. CME Clearing believes that recovery is greatly preferred to wind-down, in order to support the financial stability of the marketplace, as many market participants are dependent upon the critical operations and services CME Clearing provides. Therefore, CME Clearing, has structured its default management policies and procedures, financial safeguards waterfalls, and its Recovery Plan to facilitate recovery over wind-down. However, CME Clearing notes that it is unlikely that CME Clearing would have to implement the Recovery Plan, as a result, in part, of the prudent manner in which the sizes of its pre-funded financial safeguards waterfalls are determined.

	Recovery Plan The Recovery Plan affords CME Clearing tools to address multiple Clearing Member default scenarios and scenarios not related to a Clearing Member default. *Multiple Clearing Member Default Scenarios* If CME Clearing were to implement the Recovery Plan, as a result of a Clearing Member default scenario that would imply that at least the three largest Clearing Members (and their affiliated Clearing Members) for Base or IRS products have defaulted, as each of CME Clearing's pre-funded financial safeguards waterfalls cover the simultaneous default of two largest Clearing Members and their affiliated Clearing Members. The financial safeguards waterfall structure is designed to protect Clearing Members and their customers against the impacts of a fellow Clearing Member default. Prior to the Recovery Plan being implemented, CME Clearing would utilize its pre-funded financial resources in managing such default events, as further described in CME Clearing's disclosures for Principle 4. As noted above, CME Clearing's pre-funded financial safeguards waterfalls are comprised of the following layers and would be utilized in the following order, as defined under CME Group Exchange Rules 802 and 8G802 for Base and IRS products, respectively: • Defaulted Clearing Member's performance bond contributions, relevant Guaranty Fund contributions of the defaulted Clearing Member, and other assets available of the defaulted Clearing Member; • CME Clearing's contribution to the relevant financial safeguards waterfall; and • Non-defaulting Clearing Members' Guaranty Fund contributions to the relevant financial safeguards waterfall. The point at which CME Clearing utilizes the resources from its capped assessment powers would be the point at which the Recovery Plan is implemented. Although, it is highly unlikely that CME Clearing would have to utilize its assessment powers they are prudently sized and transparent to Clearing Members through regular reporting and the CME Group Exchange Rulebooks. For the Base products' financial safeguards waterfall, pursuant to CME Group Exchange Rule 802.B, if a single default occurs, a Base Clearing Member can be assessed up to 2.75 times its Base Guaranty Fund requirement at the time of the default during the Base products' cooling off period, which is defined under CME Group Exchange Rule 802.H as five business days following the default of the Base Clearing Member. Further, if another default occurs within that five-day period, then a Base Clearing Member can be assessed up to an additional 2.75 times its Base Guaranty Fund requirement at the time of the first default during an extended Base products' cooling off period, which is defined under CME Group Exchange Rule 802.H as five business days following the default of the additional Base Clearing Member(s). For the IRS products' financial safeguards waterfall, pursuant to CME Group Exchange Rule 8G07, CME Clearing's assessment powers are sized to cover the default of the IRS Clearing Members with the third and fourth largest potential stress shortfalls (i.e., stress loss less performance bond) during the IRS products' cooling off period, which is defined under CME Group Exchange Rule 8G802.H as 25 business days following the

	default of the IRS Clearing Member. The allocation of such assessments is on a pro-rata basis, using the same approach that is used to allocate IRS Clearing Members their respective IRS Guaranty Fund requirements. Beyond assessment powers, CME Clearing is also required by CFTC Regulation §39.39 to have other tools defined under its Recovery Plan and the CME Group Exchange Rules to address uncovered credit losses and liquidity shortfalls. The additional recovery tools that CME Clearing has available to it include, but are not limited to, voluntary tools, portfolio gains haircutting, tear-up, and rules-based liquidity tools. Pursuant to the structure of having distinct financial safeguards waterfalls for Base and IRS products, CME Clearing will fulfil settlement variation payments to the extent resources attributable to the relevant financial safeguards waterfall are available, but where an uncovered credit loss event is triggered, portfolio gains may be haircut for market participants with positions that are "in the money" to offset the losses resulting from the Clearing Member defaults. In satisfaction of CFTC Regulation §39.39, pursuant to CME Group Exchange Rules 802.B.7 and 8G802.B.2, CME Clearing may apply up to five business days of portfolio gains haircuts for Base and IRS products, respectively. The CHOC may extend or reduce the number days by which portfolio gains haircuts are executed by one or two business days from the initial three business days, allowing such haircuts to be applied for a maximum of five business days. To make an adjustment to the number of days in which portfolio gains haircuts would be executed, the CHOC would consider any recommendations from the relevant Emergency Financial Committee, which is comprised of the Chief Executive Officer, Chairman of the Board, Chair of the relevant CME Clearing Risk Committee, and Global Head of Clearing & Post-Trade Services. Additionally, CME Clearing has the right to execute contract tear-ups for the Base and IRS products under CME Group Exchange Rules 802.B.8 and 8G802.B.3, respectively. The CHOC would determine the appropriate scope of the tear-ups, considering any recommendations provided by the relevant Emergency Financial Committee. Pursuant to the relevant CME Group Exchange Rules, the decision to execute portfolio gains haircuts and determination of the scope of tear-ups by CME Clearing and the CHOC and any related recommendations made by the relevant Emergency Financial Committee would be made in the interest of protecting the integrity of the Clearing House and supporting the stability of the broader financial system, while taking into consideration the legitimate interests of the Clearing House's Clearing Members and their customers. Under CME Group Exchange Rule 822, CME Clearing can substitute a defaulted Clearing Member's U.S. Treasuries for U.S. Dollar cash contributed by Clearing Members to the given Guaranty Fund, where a liquidity event has occurred and all other liquidity arrangements are unavailable. CME Group Exchange Rule 822 further provides that CME Clearing can require Clearing Members that are U.S. Government Securities Broker-Dealers or have affiliates that are U.S. Government Securities Broker-Dealers to substitute their U.S. Treasuries contributed to the Guaranty Fund with U.S. Dollar cash. CME Group Exchange Rule 822 also provides that the Clearing House may offset its U.S. Dollar settlement variation

	obligations to Clearing Members that are U.S. Government Securities Broker-Dealers or have affiliates that are U.S. Government Securities Broker-Dealers, up to the amount of those Clearing Members' Guaranty Fund contribution(s), by selling U.S. Treasuries in exchange for U.S. Dollar cash from those Clearing Members. CME Clearing believes such recovery tools for addressing multiple Clearing Member default scenarios would allow it to continue to maintain its viability and provide its critical operations and services to the marketplace. *Scenarios Not Related to a Clearing Member Default* In the unlikely event a scenario not related to a Clearing Member default triggers the use of CME Clearing's Recovery Plan, CME Clearing has the following tools available to it: • Intercompany agreements; • Cost reduction initiatives; and • Request for resources from CME Group. CME Clearing believes such recovery tools for addressing scenarios not related to a Clearing Member default would allow it to continue to maintain its viability and provide its critical operations and services to the marketplace. **Wind-down Plan** In line with CFTC Regulation §39.39(a), CME Clearing's Wind-down Plan addresses the strategies to effect the permanent cessation, sale, or transfer of one or more services. In line with CFTC Regulation §39.11(a), CME Clearing holds adequate financial resources to cover at least twelve-months of operating costs, calculated on a rolling basis. As set out in the Wind-down Plan, these resources are designed to enable CME Clearing to cover its potential operating costs for a period of not less than one-year in the event it needs to wind-down one or more of its services. Additionally, pursuant to CFTC Regulation §39.11(e), at least six-months' of such resources are held in unencumbered, liquid financial assets. These financial resources are designed to enable CME Clearing to maintain its critical operations and services, so it may wind-down in an orderly manner. **Governance of Recovery and Wind-down Plans** CME Clearing's Recovery and Wind-down Plans are reviewed and approved on at least an annual basis or more frequently, as necessary, by the CHOC and full Board.

Principle 4: Credit Risk

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.	CME Clearing's framework for managing credit exposures, including counterparty monitoring and margining practices, is contained in its Risk Management Framework, which is covered in CME Clearing's disclosures for Principle 3. As noted above, the Risk Management Framework is reviewed and approved by the CHOC and Board at least annually or more often by the CHOC to reflect any substantive changes thereto. CME Clearing continually evaluates its risk management practices, including through their daily execution, against the changing market environment and best practices, and relative to new product offerings, among other things. If any of the aforementioned items require a material change to CME Clearing's risk management practices, CME Clearing will go through the appropriate steps to update the Risk Management Framework, as covered in CME Clearing's disclosures for Principles 2 and 3. In addition to the Risk Management Framework, CME Clearing maintains a Credit Policy, which supplements the Risk Management Framework and more granularly describes the Clearing House's methodology for managing credit risk exposure from Clearing Members, as well as other counterparties it faces, including, but not limited to, collateral custodians and settlement banks. The Credit Policy, in conjunction with the Collateral Policy, also describes the Clearing House's practices for managing the potential credit risk of collateral deposits. The Credit Policy and Collateral Policy are reviewed and approved by the Credit & Liquidity Committee, CHRC, and CHOC on at least an annual basis.
Key consideration 2 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.	In developing appropriate risk management policies, CME Clearing has identified the potential credit risks it faces in the normal course of its operations. In general, these risks are created through the relationships formed between the Clearing House and the other institutions involved in the clearing and settlement process. These relationships include to Clearing Members, settlement banks, collateral custodians, letter of credit providers, liquidity providers, and CCPs. However, CME Clearing primarily faces credit risks to its Clearing Members through the risk of non-performance of its Clearing Members in satisfying their obligations to the Clearing House. CME Clearing has tools to monitor and measure credit exposures for Base and IRS products based on current portfolios and risk factors using real-time pricing and position information that is available 24-hours a day, six-days a week. CME Clearing's risk management tools are continually assessed to provide for adequacy and effectiveness across potential circumstances and evaluated against prevailing industry best practices for their appropriateness in measuring potential risks facing the Clearing House. CME Clearing's daily risk monitoring practices act as a way for CME Clearing to actively assess the effectiveness of its tools used to manage sources of credit risk.

	To appropriately limit the build-up of risk exposures, CME Clearing performs mark-to-market settlement variation and performance bond settlement cycles for all products at least once per day and Base products listed on the CME Group Exchanges are subject to settlement cycles twice per day during U.S. regular trading hours.[52] CME Clearing also reserves the right to perform *ad hoc* settlement cycles as market conditions or price fluctuations warrant and to call for additional performance bond funds as necessary. To further manage its exposures, CME Clearing has a prudent collateral acceptance policy, which limits the amount of certain types of collateral market participants can post to meet their obligations to CME Clearing, while being appropriately diverse. Having a diverse, but prudent collateral acceptance policy minimizes liquidation risk and assists market participants in meeting their collateral obligations to CME Clearing in a market environment where there is an ever-increasing demand for collateral that bears minimal market, credit, and liquidity risks. **Risk Monitoring Tools** CME Clearing's systems are designed to allow CME Clearing to review potential risks at a number of levels of granularity, including at the settlement and performance bond account level. Using these tools, CME Clearing can also assess potential concentrations in either Clearing Members' customer or house portfolios. Through CME Clearing's systems, CME Clearing monitors intraday price movements and trading activity throughout the trading session in real-time. CME Clearing conducts intraday mark-to-market calculations throughout the day and overnight on Clearing Member and customer positions. The Risk Management team continuously monitors profit and loss on real-time positions that are marked to real-time market prices. As described in CME Clearing's disclosures for Principle 3, CME Clearing has a defined internal credit rating methodology that is applied to the variety of counterparties with which CME Clearing has established relationships with related to its provision of clearing services. CME Clearing's internal credit rating methodology is reflective of key financial metrics, including regulatory capital ratios, and incorporates trends influencing the creditworthiness of its Clearing Members and other counterparties. Each counterparty is evaluated at least annually within CME Clearing's internal credit rating methodology utilizing appropriate metrics based on counterparty type. Additionally, throughout the day the Risk Management team monitors significant changes in the financial condition of and market metrics for its varying counterparty relationships through its key risk indicator dashboard. The internal credit rating methodology serves as a foundation for CME Clearing's internal tolerance thresholds for Clearing Members, which inform CME Clearing's real-time risk monitoring. In line with CFTC Regulation §39.13(h)(1), each Clearing Member is assigned tolerance thresholds for both intraday and aggregate trading activity. Tolerance thresholds highlight when Clearing Members' settlement variation and/or performance bond obligations exceed defined thresholds for those Clearing Members and warrant

[52] As described further in CME Clearing's disclosures for Principle 6, products listed on DME are also subject to twice daily settlement cycles during U.S. regular trading hours and products listed on FEX are subject to at least once daily settlement cycles during Australian regular trading hours, but may be subject to twice daily settlement cycles where predetermined thresholds are exceeded.

	further investigation. Escalation policies are designed to ensure that atypical exposures are noted and approved by senior members of the Risk Management team, with additional follow-up as necessary with Clearing Members. The Risk Management team, subject to any necessary governance arrangements, may take the following actions, where a Clearing Member's exposures appear to be atypical of its normal exposure levels, that include, but are not limited to: • Contacting the Clearing Member to discuss changes to its risk profile and assess next steps; • Requesting additional collateral; • Adjusting tolerance thresholds to reflect the risk profile; • Imposing position limits; and/or • Permitting risk-reducing trades only. Additionally, to measure and monitor its exposures to its counterparties, CME Clearing conducts daily stress testing of Clearing Member portfolios and large customer accounts. Stress test results are monitored against a variety of metrics, including, but not limited to, performance bond on deposit and Clearing Member capital. CME Clearing also conducts daily backtesting to validate that its margin methodologies are performing as they were intended and are meeting the defined coverage standards for each product and portfolio. Further, as described in CME Clearing's disclosures for Principle 3, CME Clearing conducts risk reviews of its Clearing Members, along with due diligence reviews of settlement banks, typically on-site.[53] These reviews allow CME Clearing to assess its credit exposure to such counterparties. Risk reviews primarily focus on a Clearing Member's market risk management practices, particularly where they support the clearing of customers. The outcomes of these reviews inform CME Clearing's internal credit rating process and daily risk monitoring. The FRS department also conducts risk-based examinations of Clearing Members, described in CME Clearing's disclosures for Principle 3. In addition to these post-trade risk management tools, pre-trade risk control systems are in place to assist Clearing Members, particularly ones that support customers, in managing the access they are providing to the markets cleared by the CME Clearing. These tools allow Clearing Members to limit their total exposure to their customers through various tools, such as credit controls, cancel on disconnect, and kill switch capabilities. Further, Globex incorporates numerous market integrity controls that are designed to ensure fair and efficient markets, including messaging controls, price limits and banding, and velocity logic. CME Clearing requires that all Clearing Members set credit controls on their customers, pursuant to CME Group Exchange Rule 949. Credit controls allow risk managers to manage a Clearing Member's own exposures and its client exposures, based on their risk bearing capacity. Credit controls provide CME

[53] CME Clearing makes its best efforts to complete a review meeting of its Clearing Members and settlement banks on-site, but where an on-site meeting does not occur the meeting is held virtually.

	Clearing an additional avenue, outside of the practices enumerated above, to gain insight into Clearing Members' management of their credit exposures. CME Clearing maintains the right to advise a Clearing Member if any limits appear to be inappropriate for the Clearing Member's customers for exchange-traded and cleared swaps derivatives products.
Key consideration 3 A payment system or SSS should cover its current and, where they exist, potential future exposures to each participant fully with a high degree of confidence using collateral and other equivalent financial resources (see Principle 5 on collateral). In the case of a DNS payment system or DNS SSS in which there is no settlement guarantee but where its participants face credit exposures arising from its payment, clearing, and settlement processes, such an FMI should maintain, at a minimum, sufficient resources to cover the exposures of the two participants and their affiliates that would create the largest aggregate credit exposure in the system.	This Key Consideration is not applicable to CME Clearing because it is not a payment system or securities settlement 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	CME Clearing utilizes a variety of methods to cover current and potential future exposures. This includes mark-to-market settlement cycles for all products at least daily and twice daily during U.S. regular trading hours for Base products listed on the CME Group Exchanges.[54] These settlement cycles encompass the exchange of settlement variation payments to cover current exposures and the collection of performance bond to cover future exposures. CME Clearing reserves the right to make *ad hoc* settlement variation and performance bond calls as market conditions or price fluctuations warrants. Additionally, once a settlement bank irrevocably commits to meet the funding obligations on behalf of a Clearing Member, the funds are debited directly from the Clearing Member's account, as described in CME Clearing's disclosures for Principle 8. As described in CME Clearing's disclosures for Principle 6, CME Clearing applies prudent margin coverage standards, including by considering the liquidity characteristics and market structure of the products which it clears in determining the appropriate margin period of risk. To ensure appropriate coverage of potential future exposures, CME Clearing has set margin levels to meet at least a 99% portfolio level coverage standard on an *ex post* basis using the minimum defined margin period of risk for a product. Further, CME Clearing monitors Clearing Members' customer and house portfolios for

[54] As described further in CME Clearing's disclosures for Principle 6, products listed on DME are also subject to twice daily settlement cycles during U.S. regular trading hours and products listed on FEX are subject to at least once daily settlement cycles during Australian regular trading hours, but may be subject to twice daily settlement cycles where predetermined thresholds are exceeded.

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.	concentration risk and other portfolio level risks (e.g., tail risk) and may require additional performance bond as warranted. Greater detail on CME Clearing's margining practices is covered in CME Clearing's disclosures for Principle 6. As described in CME Clearing's disclosures for Principle 14, CME Clearing calculates and collects performance bond requirements for a Clearing Member's customer exposures on a gross basis, consistent with CFTC Regulation §39.13(g)(8)(i). More specifically, during the end-of-day settlement cycle, performance bond is calculated for each customer account at the Clearing Member individually and the aggregate sum is the performance bond requirement that the Clearing Member must post to CME Clearing for its customers. Additionally, pursuant to CME Group Exchange Rules and CFTC Regulation §39.13(g)(8)(ii), Clearing Members are required to collect margin from their customers that is at least equal to the minimum performance bond level set by CME Clearing. This ensures that the Clearing Member cannot finance the performance bond requirement of its customers, which could increase risk and decrease the portability of customer accounts in the event the Clearing Member defaulted. In addition to the coverage of risks provided by performance bond, CME Clearing has established two financial safeguards waterfalls for Base and IRS products, which have two distinct Guaranty Funds. Consistent with CFTC Regulation §39.33(a), each of CME Clearing's Guaranty Funds for Base and IRS products are designed to cover at least the potential losses caused by the simultaneous default of the two Clearing Members, and their affiliated Clearing Members, with the largest potential stress shortfalls – e.g., Cover 2 standard. CME Clearing also applies a buffer when sizing its Guaranty Funds, above the potential losses caused by the default of these Clearing Members, that is designed to ensure it meets the Cover 2 standard on an ongoing basis. The sizes of the Guaranty Funds are determined independently, but each Guaranty Fund is sized to cover the tail risks under extreme but plausible market conditions, derived from both historical and hypothetical stress testing scenarios. CME Clearing assesses the adequacy of its Guaranty Funds through daily stress testing. Results of daily stress testing are reported to the Stress Testing Committee, which is comprised senior-level staff of CME Clearing. Each of CME Clearing's Guaranty Funds are re-sized on at least a monthly basis. The Guaranty Funds can be re-sized more frequently if market conditions warrant with the exception of within the applicable cooling off period following a Clearing Member default, as described further below. In particular, the Stress Testing Committee focuses on fluctuations, if any, of the potential stress shortfalls relative to the overall size of the Guaranty Fund that could lead to breaching the Cover 2 standard. This risk could be addressed by re-sizing the impacted Guaranty Fund or calling for additional financial resources from a subset of Clearing Members driving the shortfall. The Stress Testing Committee's decision would be made based on the prevailing facts and circumstances. As described more thoroughly in CME Clearing's disclosures to Key Consideration 7 of this Principle, in the event of a Clearing Member default, the defaulted Clearing Member's financial resources, including its performance bond funds and Guaranty Fund contributions, would be used first to satisfy its obligations

	to CME Clearing. If those resources are insufficient, the next layer of the relevant financial safeguards waterfall is used, which is CME Clearing's contribution. Only after the utilization of the defaulted Clearing Member's resources and CME Clearing's relevant contribution would the applicable mutualizable Guaranty Fund contributions of non-defaulting Clearing Members be utilized. Additionally, in the highly unlikely event that the pre-funded portions of CME Clearing's financial safeguard waterfalls are insufficient to cure the losses, CME Clearing can assess Clearing Members for additional funds pursuant to CME Group Exchange Rules 802.B and 8G07, as described in CME Clearing's disclosures for Principle 3. As further described in CME Clearing's disclosures for Principle 2, CME Clearing's Stress Testing Committee is the primary governing body within the Clearing House that oversees the stress testing framework, which is the basis for the sizing of CME Clearing's Guaranty Funds. On at least a monthly basis, stress testing results and parameters are reviewed by the Stress Testing Committee. The policy supporting the Guaranty Fund sizing methodologies is primarily maintained in the Risk Management Framework and supplemented by other policies specific to Base and IRS products. Additionally, the CHRC and IRSRC also provide oversight of the adequacy of the financial safeguards waterfalls for Base and IRS products, respectively, including the approval of any related substantive changes to the stress testing and Guaranty Fund sizing methodology and recommending these approvals to the CHOC. Like the CME Clearing Risk Committees, the CHOC also provides oversight of the adequacy of the financial safeguards waterfalls for Base and IRS products, including the approval of any substantive changes to the stress testing and Guaranty Fund sizing methodology and recommends to the Board any changes that would have a significant impact on the Clearing House's risk profile for review and approval. In fulfilling their roles, the CME Clearing Risk Committees and CHOC receive regular risk reports from the Clearing House on the financial safeguards waterfalls.
Key consideration 5 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	The adequacy of each Guaranty Fund is assessed through daily stress testing, utilizing numerous scenarios that capture extreme but plausible market conditions that are specifically designed to capture the unique risks of the products covered by the Base and IRS products' financial safeguards waterfalls. In determining "extreme but plausible" market conditions, historically extreme market moves are reviewed to assist in the construction of both historical and hypothetical stress testing shocks to determine potential losses. Extreme historical and hypothetical shocks are utilized to determine the size of the potential stress losses of Clearing Members and their affiliates and ultimately, to size the Guaranty Funds to cover the default of at least the two Clearing Members (and their affiliated Clearing Members) with the largest potential stress shortfalls. Scenarios, whether historical or hypothetical, used to size the Guaranty Funds are designed to represent extreme but plausible market conditions in determining resulting potential losses, considering the current market environment (e.g., interest rate levels). As noted above, stress testing results are analyzed daily by the Risk Management team and reported to the Stress Testing Committee. Additionally, reports of the stress testing results are provided to the CHOC and relevant CME Clearing Risk Committee on a monthly basis, which is in addition to reports that are provided to the Stress Testing Committee on at least monthly or more frequently as market conditions warrant. The Stress Testing Committee's monthly review is designed to ensure that the calculated sizes

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.	of the Guaranty Funds are appropriate to cover potential future exposures within each financial safeguards waterfall arising from the default of the two Clearing Members and their affiliates with the largest potential stress shortfalls. In particular, the monthly reports the Stress Testing Committee receives, consistent with CFTC Regulation §39.39(a)(2), include comprehensive analyses of stress testing scenarios and underlying parameters. This analysis may be conducted more frequently than monthly, where high levels of market volatility are observed or other significant market events occur. The results of these reviews could include a confirmation of the adequacy of the current scenario set or recommendation that changes to the current scenario set is warranted. Additionally, independent validations of CME Clearing's risk models are performed at least annually. The results of independent validations are presented to CME Clearing's Model Risk Committee, with the management response reviewed and approved by the Model Risk Committee. Overviews of validations are provided to the CHOC, which also oversees any remediation efforts where they arise. All substantive changes to CME Clearing's stress testing and Guaranty Fund sizing methodology, including as a result of a validation, are vetted thoroughly across the Risk Management team, including the Stress Testing Committee, and brought to the appropriate CME Clearing Risk Committee and CHOC for review and approval.
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.	**Overview of CME Clearing's Stress Testing** The key objective of CME Clearing's stress testing framework is to prudently account for extreme but plausible market conditions in sizing its Base and IRS Guaranty Funds. Consistent with CFTC Regulation §39.33(a)(1), each of CME Clearing's Guaranty Funds are sized to cover the default of the two Clearing Members (and their affiliated Clearing Members) with the largest potential stress shortfalls; for avoidance of doubt, the Base and IRS Guaranty Funds are sized independently of each other, even where Clearing Members participate in both service offerings. The potential stress shortfall of each Clearing Member for Base and IRS products is determined through stress testing and is a function of stress loss less the portion of performance bond funds on deposit that are required consistent with CFTC Regulation §39.11(c)(2). CME Clearing takes a scenarios-based approach to stress testing through utilizing both historical and hypothetical scenarios that identify extreme movements in price and volatility across various risk factors, as well as identifying extreme correlation breaks. For Base and IRS products, scenarios are selected to ensure that extreme historical events are captured through utilizing data that demonstrate periods of extreme volatility, utilizing a confidence level of at least 99.9% and an appropriate lookback period, which captures some of the most extreme market moves observed in history. Consistent with CFTC Regulation §39.36(a)(4), CME Clearing's stress testing framework for Base and IRS products captures relevant peak historical price volatilities, shifts in price determinant, yield curves, multiple defaults over various time horizons, and simultaneous pressures in funding and asset markets. Stress tests are designed using a set of shocks to simulate extreme but plausible market conditions. Shocks are determined using historical analysis of product movements to identify the impact of significant price volatility. In addition, CME Clearing employs scenarios using a combination of shock values that

	could be representative of potential future market instability. Stress values are compared to current market activity and future expectations to help to ensure the stress tests are representative of sufficiently extreme but plausible market conditions within the current market environment. CME Clearing analyzes stress test results for a given Clearing Member's portfolio across Base and IRS products in an uncorrelated fashion. Where applicable, Clearing Members that are affiliates of each other within the same financial safeguards waterfall are stressed together and separately to determine the largest potential stress shortfall. Additionally, under CME Clearing's stress testing, a Clearing Member's gains related to a customer account under a given scenario cannot be used to offset any losses related to the house account. This is designed to ensure that the Guaranty Funds are sized sufficiently to cover a Clearing Member's potential losses, as determined by stress testing, while observing CFTC regulations for customer segregation. *Base Products' Stress Testing* CME Clearing utilizes a stress testing methodology for Base products that is comprised of historical, forward looking event-based, and spread-based stress scenarios, as well as conditional value-at-risk ("cVaR") scenarios where shocks are sized using a 99.9% confidence interval and over a 30-year lookback period, where data is available, relevant, and reliable given the products. CVaR, also known as expected shortfall, is a risk assessment technique which is derived by taking a weighted average between the value-at-risk ("VaR") and the expected losses exceeding the VaR. The shocks used for Base products' stress testing are based on market events captured within the lookback period and then adapted to be applicable to current market conditions. Stress testing results for Base products are aggregated across each product class, covering all possible permutations of up and down movements for each product class. In other words, no correlation is assumed across product classes, leading to a data driven and hypothetical basis for the stress scenarios. The theoretical breaking of correlations across product classes reflects single market events that have not occurred to date. *IRS Products' Stress Testing* CME Clearing utilizes a scenarios-based VaR methodology as the foundation for its IRS products' stress testing framework. Stress scenarios are designed to stress movements across different risk factors. Historical scenarios are primarily based on extreme historical moves across each currency using historical data from the past 30-years, where data is available, relevant, and reliable given the products. Hypothetical scenarios are based on a variety of extreme but plausible market moves, which include but are not limited to, extreme Principle Component Analysis ("PCA") scenarios that capture the stressing of both intra-currency and inter-currency correlations, macroeconomic event-driven scenarios that correspond to moves in certain risk factors (e.g., oil supply crisis and crises in emerging markets), and forecasted event-driven scenarios that are designed to identify certain types of movements that the market could, or are likely to, experience in the future. Both historical and hypothetical stress scenarios utilize a 99.9% confidence interval within a stress period of risk of five-days. Depending on the IRS product, CME

	Clearing may also utilize volatility scaling and normalization techniques to more effectively model exposures. **Review of CME Clearing's Stress Testing Framework** While CME Clearing's stress testing framework is designed to account for a variety of market conditions, CME Clearing continually evaluates its stress testing scenario set, including its appropriateness for the current market environment, which would allow it to react swiftly to market developments to the extent necessary. As such in compliance with CFTC Regulation §39.36(a)(2), on at least a monthly basis, the Stress Testing Committee reviews CME Clearing's stress testing scenarios and assesses if any changes need to be made or additional scenarios need to be added to the stress testing framework. Additionally, summary stress testing results are provided to the CHOC and CME Clearing Risk Committees on a monthly basis. CME Clearing's stress testing framework is also evaluated through the annual validation process. CME Clearing also routinely conducts reverse stress testing on the overall size of its Guaranty Funds, which is designed to identify conditions that may exceed the resources of CME Clearing's financial safeguards waterfalls. These results are reviewed at least monthly to help inform CME Clearing's stress testing policies and analyze overall exposures. Reverse stress testing offers insight into the potential results of severe and unexpected changes in the market impacting specific products cleared and/or Clearing Members' portfolios.
Key consideration 7 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.	The management of credit losses CME Clearing may face as a result of a Clearing Member default event are primarily addressed by Chapters 8 and 8G of the CME Group Exchange Rulebooks, which are additionally supported by CME Clearing's default management procedures and the Risk Management Framework. A credit loss may arise out of the failure of a Clearing Member to meet its obligations when due. The CME Group Exchange Rulebooks consider CME Clearing's legal and regulatory mandates, prior experiences, and prudent risk management practices in addressing credit losses in manner that is designed to continue to allow CME Clearing to provide its clearing and settlement services to the marketplace. In particular, Chapters 8 and 8G of the CME Group Exchange Rulebooks detail the manner in which a defaulted Clearing Member's collateral and the other layers of the financial safeguards waterfalls for Base and IRS products, respectively, would be used to cover the losses associated with the default of a Clearing Member. Maintaining a defined sequence on the order of the use of the resources of the financial safeguards waterfalls is critical to providing transparency to Clearing Members on how a default event would be managed and supports a structure that creates incentives for Clearing Members to effectively manage the risk they bring to the system. In the event of a Clearing Member default, CME Clearing would first use resources of the financial safeguards waterfall in which the defaulted Clearing Member contributed, as defined under CME Group Exchange Rules 802 and 8G802 for Base and IRS products, respectively. As noted above, the following

	pre-funded layers comprising each of the financial safeguards waterfalls would be utilized in the order listed below: • Defaulted Clearing Member's performance bond contributions, relevant Guaranty Fund contributions of the defaulted Clearing Member, and other assets available of the defaulted Clearing Member; • CME Clearing's contribution to the relevant financial safeguards waterfall; and • Non-defaulting Clearing Member's Guaranty Fund contributions to the relevant financial safeguards waterfall. If the defaulted Clearing Member's resources are exhausted before the losses have been cured, CME Clearing would utilize other available pre-funded resources. First, CME Clearing would apply CME Clearing's relevant contributions, which are pre-funded at $100 million for Base products and $150 million for IRS products. If there are remaining losses after the application of those resources, CME Clearing will utilize the pre-funded Guaranty Fund contributions of non-defaulting Clearing Members, limited to the financial safeguards waterfall(s) associated with the default. The sizing of the Guaranty Funds is described in CME Clearing's disclosures for Key Consideration 6 of this Principle. In the highly unlikely event that the available pre-funded resources are insufficient in curing the losses associated with the Clearing Member defaults, CME Clearing would utilize its capped assessment powers, as described in CME Clearing's disclosures for Key Consideration 4 of Principle 3. Beyond assessment powers, CME Clearing is also required by CFTC Regulation §39.39 to have other tools, defined under its Recovery Plan and the CME Group Exchange Rules, to address uncovered credit losses. The additional available recovery tools include, but are not limited to voluntary tools, portfolio gains haircutting, and tear-up. These tools are also described in greater detail in CME Clearing's disclosures for Key Consideration 4 of Principle 3. Following the end of the applicable cooling off period of five business days after the default of the Base Clearing Member and 25 business days following the default of the IRS Clearing Member, Clearing Members must replenish their Guaranty Fund requirements to the re-calculated size of the Guaranty Fund. The re-calculated size of the Guaranty Fund would cover the default of the two Clearing Members (and their affiliated Clearing Members) with the largest potential stress shortfalls, as described above. Assessments collected but not utilized by the Clearing House to manage the default(s) can be used to satisfy a Clearing Member's re-calculated Guaranty Fund requirement. Finally, pursuant to CME Group Exchange Rules 802.E and 8G802.E for Base and IRS products, respectively, CME Clearing must take commercially reasonable steps to recover – including claims submitted in bankruptcy court – unpaid amounts of a defaulted Clearing Member. Generally, if any portion of these amounts is subsequently recovered by CME Clearing, the net amount of such recovery shall be credited to non-defaulting Clearing Members in the order listed on a pro-rata basis: i) the amount of their

	and their customers' (if applicable) voluntary contributions; ii) the amount of their and their customers' (if applicable) aggregate portfolio gains haircuts; iii) the amount of their assessments utilized by the Clearing House; and iv) the amount of their Guaranty Fund contributions utilized by the Clearing House.

Principle 5: Collateral

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.	CME Clearing employs a policy for establishing and reviewing its criteria for acceptable collateral posted to the Clearing House to meet performance bond and Guaranty Fund requirements, which is defined under CME Clearing's Collateral Policy. The Collateral Policy supplements CME Clearing's Risk Management Framework. The Collateral Policy is overseen by CME Clearing's internal Credit & Liquidity Committee and the CHOC and CHRC and is subject to at least an annual review and approval process. The guidelines utilized to identify acceptable collateral types are designed to ensure that CME Clearing accepts only assets with minimal credit, market, liquidity, and wrong way risks and that also meet the requirements under CFTC Regulations §39.11(e)(4) and §39.13(g)(10). Additionally, CME Clearing takes into account the collateral types naturally held by its participants and endeavors, consistent with the Clearing House's risk management standards, to accept types of collateral that enhance participants' abilities to access CME Clearing's risk management services. As such, CME Clearing's Collateral Policy permits market participants to meet collateral requirements with a broad set of eligible asset types, which is designed to reduce concentration risk in any one asset type that could lead to liquidation constraints in the event of a Clearing Member default. In addition to establishing criteria for accepting collateral, the Collateral Policy also outlines practices related to collateral haircuts, limits, and valuation. Collateral eligibility is guided by three principles: i. Accept liquid collateral, within conservative collateral limits, that carries minimal credit and market risks to cover CME Clearing's exposure to its Clearing Members; ii. Ensure accepted collateral can be utilized promptly in the event of a Clearing Member default; and iii. Promote collateral acceptability criteria supported by a legal framework that clearly provides the Clearing House with a first priority, perfected interest in the collateral. While CME Clearing's collateral eligibility principles are consistently applied to all forms of collateral, the terms under which CME Clearing accepts different forms of collateral vary with respect to haircuts, collateral limits, and requirement type.[55] The collateral types accepted by CME Clearing from its Clearing Members are further distinguished by performance bond and Guaranty Fund requirements. The permitted collateral types for performance bond requirements are defined based on whether they are accepted for

[55] *See* https://www.cmegroup.com/clearing/financial-and-collateral-management.html

the clearing of IRS products, cross-margining program with Options Clearing Corporation (“OCC”), clearing of FEX products, and clearing of all other Base products. Collateral accepted by CME Clearing is dedicated to meet the Clearing Member’s specific obligation – e.g., performance bond requirements for the customer segregated, cleared swaps customer, secured 30.7, or non-segregated (i.e., Clearing Member proprietary) account classes or Guaranty Fund requirements. This collateral cannot be used by CME Clearing to cover general business risk or satisfy the Clearing House’s own financial resource requirements and in the case of performance bond funds, is generally bankruptcy remote from the insolvency of the Clearing House. Additionally, CME Clearing has the ability to accept additional collateral types on an exceptional basis within its rules and governance structure, if it is in the best interest of the marketplace.

The Risk Management team conducts an initial analysis of collateral types, focusing on the credit profile of the issuer, liquidity, price volatility, operational considerations, and other relevant metrics. The initial review takes into consideration stressed market conditions to establish haircuts, collateral limits, and the need for funding arrangements, where applicable. CME Clearing generally utilizes the Bank for International Settlements’ (“BIS”) standards for high quality liquid assets (“HQLA”). Recommendations and related analysis for the acceptance of new forms of collateral are presented to the Credit & Liquidity Committee, CHRC, and CHOC for their review and approval.

The risks associated with various forms of acceptable collateral are mitigated through ongoing review, daily valuation, prudent haircuts, and collateral limits. CME Clearing has staff that are dedicated to the management of collateral related risks, including evaluation of collateral issuers and monitoring of acceptable collateral types, among other activities. CME Clearing analyzes acceptable collateral types on a daily basis to track impacts of market events and general market developments. Collateral is primarily evaluated on the basis of two main elements: i) stability of price movements within an acceptable volatility level; and ii) ability to convert the collateral into cash in a timely manner. CME Clearing monitors significant changes related to acceptable collateral on a daily basis using internally developed systems and relying on experienced personnel.

Additionally, the Risk Management team monitors the collateral posted by each of its Clearing Members to identify any potential breaches in collateral limits. Potential and actual breaches of collateral limits are identified and escalated as appropriate to ensure the breach is either avoided or resolved, respectively. Where a breach does occur, the collateral on deposit of that type in excess of the applicable limit will not count towards the given Clearing Member’s obligations to CME Clearing. In addition to CME Clearing’s daily analysis of acceptable collateral, a formal review is undertaken during the internal Collateral Committee meetings on at least a monthly basis. This review includes a review of collateral profile changes and trends, as well as collateral concentrations. The Risk Management team also assesses impacts to acceptable collateral from relevant market events and general market developments.

	CME Clearing monitors and manages wrong way risk, including through its day-to-day monitoring of collateral and risk assessment process. For example, CME Clearing proactively manages wrong way risk by disallowing Clearing Members from posting collateral that has been issued by themselves or any of their affiliates. To further protect against wrong way risk, pursuant to CME Group Exchange Rules 930.C and 8G930.C, Clearing Members for Base and IRS products, respectively, are prohibited from accepting securities as performance bond that have been issued, sponsored, or otherwise guaranteed by the account holder or an affiliate of the account holder, unless they submit a petition to be otherwise permitted.
Key consideration 2 An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.	Consistent with CFTC Regulations §§39.13(g)(5) and (11), CME Clearing uses a reliable source of timely data for valuing the collateral it accepts and sound valuation models for addressing circumstances where pricing data is not readily available or reliable. CME Clearing marks collateral to market at least daily, or more often as appropriate, and continually monitors collateral prices throughout the day through its internal systems. To the extent that prices are not representative of true market value, based on CME Clearing's ongoing monitoring, CME Clearing has the discretion to manually update prices within its systems. Exception reports are utilized to validate prices to highlight atypical intraday price moves. CME Clearing reviews the exception reports to validate current market prices with approved third-party data sources. In addition to its valuation practices, CME Clearing applies prudent haircuts to acceptable collateral, which are designed to capture the potential decline in value and liquidity of the collateral during stressed market conditions, consistent with CFTC Regulation §39.13(g)(12).[56] CME Clearing has developed a collateral haircut methodology designed to prudently quantify market, liquidity, and operational risks into haircuts for CME Clearing's acceptable collateral. Factors that are considered in CME Clearing's collateral haircut methodology include, but are not limited to, the volatility in the collateral associated with stressed market events, the liquidation characteristics of the collateral, and the BIS' HQLA characteristics for the collateral. The collateral haircut methodology leverages a series of VaR calculations using a 99% confidence interval and a four-year lookback period, supplemented by additional risk adjustments to set collateral haircuts. Qualitative analysis also helps identify and account for factors that affect market fundamentals but may not yet be reflected in the quantitative information. In some cases, CME Clearing has defined minimum collateral haircuts as a substitute to the collateral haircuts that are an output of the VaR-driven calculations; for avoidance of doubt, collateral haircuts are never lower than the VaR-driven outputs. The appropriateness of CME Clearing's collateral haircuts are evaluated on an ongoing basis through CME Clearing's internal systems. Consistent with CFTC regulations, CME Clearing conducts a review of its haircuts on at least a monthly basis. CME Clearing may also undertake more frequent reviews of collateral haircuts as market conditions warrant. Results of collateral haircut reviews are discussed and reviewed by the Collateral Committee. Additionally, on at least an annual basis, CME Clearing engages an independent party to perform a liquidation analysis to assist in the validation of CME Clearing's assumptions for same-day liquidation

[56] *See* https://www.cmegroup.com/clearing/files/acceptable-collateral-futures-options-select-forwards.pdf and https://www.cmegroup.com/clearing/files/acceptable-collateral-irs.pdf

	market capacity for acceptable collateral types. The liquidation analysis is performed under the assumption of stressed market conditions. Further, CME Clearing's collateral haircut methodology is regularly validated by a qualified, independent party.
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.	CME Clearing's collateral haircuts are designed to capture the potential decline in value and liquidity risk of acceptable collateral types during stressed market conditions. Haircuts are established with consideration given to periods of market stress to avoid procyclical adjustments in response to changes in market volatility. This is accomplished through CME Clearing's collateral haircut methodology, as described in CME Clearing's disclosures for Key Consideration 2 of this Principle. In particular, the collateral haircut methodology is designed to avoid the need for procyclical adjustments by using a prudent lookback period and making risk adjustments as appropriate to the VaR-driven calculations.
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.	CME Clearing's Collateral Policy requires regular reviews of collateral concentrations, overseen by the Collateral Committee. CME Clearing's Collateral Policy is designed to proactively mitigate the potential for concentrated holdings of certain assets by way of its collateral limits. Further, the design of CME Clearing's collateral acceptance practices mitigates concentration risk by allowing CME Clearing to accept a broad set of assets for collateral. This is designed to mitigate the risk that CME Clearing may be materially impacted by idiosyncratic risk in a single market. CME Clearing's diverse collateral acceptance practices are designed to reduce the risk that illiquidity or pricing issues in one type of collateral will have a negative impact on Clearing Members' abilities to meet their collateral requirements. Consistent with CFTC Regulation §39.13(g)(13), collateral limits are established using quantitative and qualitative metrics, including analysis of historical liquidation characteristics, reflecting CME Clearing's need to liquidate assets on a same-day basis. Clearing Members may satisfy 100% of their performance bond requirements with the most liquid forms of collateral, such as U.S. Dollar cash and certain U.S. Treasuries – i.e., no collateral limits are applied on an *ex ante* basis. Where collateral limits are applied, they are generally applied as hard dollar limits per Clearing Member and in a limited number of instances, percentage-based per Clearing Member (e.g., 25% of a Clearing Member's total performance bond requirement). The collateral limits CME Clearing applies are published on the CME Group website.[57] CME Clearing also has the right to limit any given Clearing Member's posting of a specific collateral type on an *ad hoc* basis. As a general rule, collateral with a short-term liquidation horizon can be utilized to acquire cash promptly. However, to further reduce concentration risk, CME Clearing maintains a diverse set of liquidity arrangements. The liquidity arrangements CME Clearing has in place are covered in CME Clearing's disclosures for Principle 7. Collateral limits are monitored on an ongoing basis and consistent with CFTC regulations, reviewed for appropriateness by the Collateral Committee on at least a monthly basis, particularly in light of changing market conditions. Potential collateral concentrations are identified through CME Clearing's internal systems, which are monitored throughout the day. At least annually, CME Clearing completes a liquidity

[57] *See* https://www.cmegroup.com/clearing/financial-and-collateral-management/summary-of-collateral.html

	analysis using a detailed scenario examination, which considers haircut coverage, market dynamics, concentrations, market volume, and other liquidity factors. A holistic review of CME Clearing's collateral management practices, including its policies for managing concentration risk, is undertaken on at least annual basis through the review and approval of the Collateral Policy by the Credit & Liquidity Committee, CHOC, and CHRC. This review includes a review of asset type specific collateral limits. These reviews may be undertaken more frequently where market conditions warrant.
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.	With respect to cross-border collateral, CME Clearing aligns with the regulatory requirements established under CFTC Regulation §1.49, which dictates requirements for collateral custodians that can hold customers' funds. Further, similar to other collateral types, cross-border collateral is reviewed and analyzed in consideration of credit, liquidity, market, and wrong way risks, before being accepted. The evaluation of these risks is described further in CME Clearing's disclosures for Key Consideration 1 of this Principle. CME Clearing considers the legal implications for accepting cross-border collateral as part of its initial and ongoing review of these collateral types. In accordance with its obligations under CFTC Regulation §39.27, CME Clearing operates pursuant to a well-founded, enforceable legal framework that ensures CME Clearing's interest in collateral, including cross-border collateral. CME Clearing conducts a legal risk review that evaluates its ability to access and liquidate the collateral it accepts in a timely manner. Additionally, CME Clearing reviews the risk of potential challenges in using cross-border collateral in the event of a bankruptcy. Risks arising from potential conflicts of laws across jurisdictions are mitigated by the manner in which collateral, regardless of asset type, is held by CME Clearing. Performance bond and Guaranty Fund collateral are generally held in accounts in the name of CME Clearing on behalf of its Clearing Members, giving CME Clearing immediate control over and timely access to posted collateral. Such accounts are governed by written settlement or custody agreements that establish CME Clearing's rights to access, liquidate, and apply collateral under applicable law. Additionally, under CME Group Exchange Rules 819 and 8F008 for Base and cleared swaps products, respectively, CME Clearing has a first priority and unencumbered lien against performance bond funds and contributions to the Guaranty Funds. Further, these CME Group Exchange Rules provide that Clearing Members shall execute any documents required by CME Clearing to create and enforce such lien. Additional rules and processes operate in conjunction with these rules to support CME Clearing's unimpeded ability to liquidate all collateral types in a timely manner. To allow CME Clearing to liquidate cross-border collateral in a timely manner, CME Clearing limits the acceptance of cross-border collateral through the application of collateral limits to account for FX and liquidity risk. CME Clearing also imposes cross-currency haircuts on assets that are pledged to meet

	performance bond requirements in a different currency than the currency of trade.[58] The use of cross-border collateral in a timely manner is also supported by CME Clearing's liquidity arrangements, outlined in CME Clearing's disclosures for Principle 7.
Key consideration 6 An FMI should use a collateral management system that is well- designed and operationally flexible.	Collateral is managed and maintained by a robust system that allows for timely collateral valuation and management of collateral holdings, pursuant to various rules and limit structures.[59] The collateral management system enables CME Clearing to permit new performance bond deposit types, collateral limits, and other enhancements when necessary. CME Clearing maintains systems, rules and procedures, and resources that are designed to ensure that CME Clearing has the capacity to: • Accept a diverse set of assets as collateral that pose minimal credit, market, and liquidity risks within well-defined governance arrangements; • Monitor and value collateral throughout the day, including during market stress events; • Monitor and manage the composition of its collateral pool, including through ongoing reporting; • Implement prudent collateral haircuts and limits, in addition to analyzing such haircuts and limits on a regular basis; and • Manage and mobilize collateral to obtain liquidity promptly within a well-founded legal framework, with limited adverse price effects. Within CME Clearing's collateral management system, CME Clearing has established a clearly defined and transparent timeline for Clearing Member collateral deposits and withdrawal transactions, calculation of the value of assets, and reporting.[60] The timeline is established for the benefit of CME Clearing's market stakeholders to effectively facilitate the collateral posting process. Operational risk is mitigated through the collateral management systems' process, automation, and the efficiency of the collateral management timeline. CME Clearing can also perform *ad hoc* collateral valuation cycles as needed. CME Clearing reconciles its internal system against its holdings at collateral custodians and other depository institutions daily. CME Clearing's internal Collateral Committee is responsible for overseeing the collateral management system. The Collateral Committee meets weekly to discuss collateral related topics, including collateral acceptance programs and collateral haircuts and limits. Changes to the collateral programs, haircuts, and limits are approved by the Credit & Liquidity Committee and/or Collateral Committee, as applicable. Finally, CME Clearing maintains full control of collateral, as each Clearing Member grants to CME Clearing a first priority and unencumbered lien as security for all obligations to the Clearing House against any property and collateral deposited with CME Clearing by the Clearing Member – this arrangement is further described in CME Clearing's disclosures for Key Consideration 5 of Principle 2. The majority of collateral

[58] *See* https://www.cmegroup.com/clearing/financial-and-collateral-management/acceptable-collateral-for-cash.html#usdcash
[59] CME Clearing does not reuse collateral and has a conservative investment policy, as described in CME Clearing's disclosures for Principle 16.
[60] *See* https://www.cmegroup.com/clearing/operations-and-deliveries/transaction-timelines.html

	CME Clearing accepts is transferred on a "free delivery" basis into an account in CME Clearing's name at a collateral custodian which guarantees simultaneous possession and control. CME Clearing may also accept pledges of "control only" collateral.

Principle 6: Margin

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.	As is documented in CME Clearing's Risk Management Framework, consistent with CFTC Regulation §39.13(g)(2)(i), CME Clearing's margin methodologies are designed to require margin commensurate with the risks of each product and portfolio, including any unusual characteristics of, or risks associated with, the products and portfolios cleared, including market, liquidity, and concentration risks. CME Clearing's margin methodologies yield performance bond requirements that are designed to capture CME Clearing's potential future exposures, including the estimated time needed to liquidate a defaulting Clearing Member's portfolio. CME Clearing's margin methodologies are designed to meet a 99% coverage standard over the defined margin period of risk on an *ex post* basis, in line with CFTC Regulation §39.13(g)(2)(iii). A more detailed overview of the margin methodologies CME Clearing employs is provided in CME Clearing's disclosures for Key Consideration 3 of this Principle. As detailed further in CME Clearing's disclosures for Principle 14, consistent with CFTC Regulation §39.13(g)(8)(i), CME Clearing employs prudent performance bond collection and account structure standards and as such, during the end-of-day settlement cycle, performance bond is collected on a gross basis for all customer accounts (and net for Clearing Members' house accounts). Simplistically, the collection of performance bond on a gross basis means that the amount for each customer account at the Clearing Member is individually calculated and the aggregate sum of all individual customer's margin requirements is the minimum performance bond requirement that is posted to CME Clearing for a Clearing Member's customers. This is also the minimum amount of performance bond funds collected by Clearing Members from their customers. Additionally, a Clearing Member's affiliate activity is captured in the house account, which reduces the exposure a Clearing Member's customers have to the activity of its Clearing Member or the affiliates of its Clearing Member. Further, consistent with CFTC Regulation §39.13(g)(8)(ii), a Clearing Member must charge at least the minimum initial performance bond level to customers it has determined have a heightened risk profile. The initial performance bond level is calculated as a percentage, determined by the Clearing House, above the amount of the maintenance performance bond level derived by the applicable margin methodology of CME Clearing. Clearing Members' house accounts and customers determined by Clearing Members to not have a heightened risk profile can be margined at the maintenance performance bond level. The minimum initial performance bond level above the maintenance performance bond level is determined by the Risk Management team and currently, set at 10%. If performance bond on deposit at the Clearing Member for a customer with a heightened risk profile falls below the maintenance performance bond requirement, the Clearing Member is responsible for ensuring that the account's performance bond is topped up at the required, higher initial performance bond level. While all customers

	are required to at least deposit the maintenance performance bond level amount with their Clearing Members, customers who are charged at the initial performance bond, as determined by their Clearing Members, are required to deposit at least this amount with their Clearing Member. In turn, Clearing Members are responsible for depositing, at a minimum, the maintenance performance bond portion with CME Clearing. For all other customer accounts and Clearing Members' house accounts, Clearing Members are also required to deposit, at a minimum, the maintenance performance bond requirement amount with CME Clearing. Clearing Members may, and commonly do, impose more stringent performance bond requirements on their customers than the minimums established by CME Clearing. Settlement variation and performance bond obligations are managed separately, but calculated and collected on similar timelines, at least daily, but twice daily for most products. At each settlement cycle, performance bond is collected from Clearing Members and settlement variation is collected from and paid to Clearing Members. In line with CFTC Regulation §39.14(b) and CME Group Exchange Rule 814, performance bond and settlement variation obligations are calculated for every account origin individually per Clearing Member (e.g., customer segregated, cleared swaps customer, secured 30.7, and house accounts) during regular settlement cycles, but at least once daily. Settlement cycles for Base products occur twice per day, once at intraday and end-of-day, with the exception of FX swaps products that are only subject to once daily settlement cycles at end-of-day.[61] There is a daily settlement cycle for IRS products at the end-of-day.[62] An overview of the timeline for the movement of funds for intraday and end-of-day settlements cycles for performance bond and settlement variation requirements is outlined in CME Clearing's disclosures for Key Consideration 4 of this Principle. Once a settlement bank irrevocably commits to meet the funding obligations on behalf of a Clearing Member, the funds are debited directly from the Clearing Member's account. A failure of a Clearing Member to satisfy a performance bond call at the intraday or end-of-day settlement cycles is grounds for CME Clearing to declare such Clearing Member in default pursuant to CME Group Exchange Rules 802 and 8G802 for Base and IRS products, respectively. More detail on CME Clearing's default management practices is covered in CME Clearing's disclosures for Principle 13. In addition to CME Clearing's prudent performance bond collection and account structure standards, a Clearing Member's financial health is monitored on an ongoing basis, as described further in CME Clearing's disclosures for Principles 3 and 4. Clearing Members that present concerns related to liquidity or creditworthiness or present the largest exposures to the markets cleared by CME Clearing, are monitored accordingly. These Clearing Members may be required to provide supplemental financial

[61] All Base products, with the exception of FEX products, are subject to a settlement cycle at the end of the U.S. regular trading hours and Base products, with the exception of FX swaps and FEX products, are subject to a settlement cycle during the middle of the U.S. regular trading hours. All FEX products are subject to a settlement cycle at the end of the Australian regular trading hours and FEX products are subject to a settlement cycle during the middle of Australian regular trading hours, if, on a per Clearing Member basis at the segregation account-level, the amounted owed is above a predetermined threshold.

[62] All IRS products are subject to a daily settlement cycle at the end of the U.S. regular trading hours and IRS products that are exchange-traded derivatives are subject to an additional settlement cycle during the middle of the U.S. regular trading hours.

	information to CME Clearing regarding their exposures or post additional performance bond collateral as deemed appropriate by CME Clearing, as outlined under CME Group Exchange Rules 824 and 8G824 for Base and IRS products, respectively. These practices are supported by CME Clearing's well-developed risk monitoring process that utilizes real-time data, where positions are marked to real-time prices throughout the day. **Transparency of CME Clearing's Margining Practices** CME Clearing maintains internal and external documentation relating to the methodologies and procedures for each of its margin models. CME Clearing's margin methodologies are outlined in both the Risk Management Framework, an internal document, and CME Clearing PFMI Disclosure document, as well as other publicly available documents.[63] Changes impacting Clearing Members are communicated through Clearing Advisories published on the CME Group website. Additionally, material changes to CME Clearing's margin methodologies are subject to public rule filings, which are published on both the CME Group website and CFTC website. CME Clearing also supports an online margin replication application called CME CORE, which market participants may use to calculate their margin requirements for both exchange-traded derivatives and cleared swaps portfolios.[64] Further, the product-level margin levels for exchange-traded derivatives are available on the CME Group website[65] and the SPAN framework and SPAN risk parameter files, both current and historical, can be downloaded from the CME Group website.[66] Risk management and operational support are available via the CME Clearing risk hotline 24-hours a day, throughout the trading week.[67]
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.	CME Clearing maintains processes that are designed to ensure robust settlement prices, which are the basis of CME Clearing's daily performance bond calculations. These processes ensure that settlement prices are reviewed for appropriateness. CME Clearing's primary sources of price data are derived from trades, quotes, and other market information gathered from transaction activity on the CME Group Exchanges and from third-party sources in the case of cleared swaps. CME Clearing also has the flexibility to modify prices, so that they best reflect the true market valuation at the time of the close.
Key consideration 3	CME Clearing's risk-based margin methodologies are designed to achieve a 99% coverage level on an *ex post* basis using parameters based on relevant historical data spanning a prudent lookback period. CME Clearing's margin methodologies are designed to capture the product-specific risks inherent to

[63] *See* https://www.cmegroup.com/clearing/risk-management/span-overview.html, https://www.cmegroup.com/clearing/risk-management/span-overview/span-2-methodology.html and https://www.cmegroup.com/education/files/cleared-otc-irs-margin-methodology.pdf
[64] *See* https://www.cmegroup.com/clearing/margin-services.html
[65] *See* https://www.cmegroup.com/clearing/margins/outright-vol-scans.html#sortField=exchange&sortAsc=true&pageNumber=1
[66] *See* https://www.cmegroup.com/ftp/span/data/cme/
[67] *See* https://www.cmegroup.com/tools-information/contacts-list.html

A CCP should adopt initial margin models and parameters that are risk-based and generate margin requirements sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default. Initial margin should meet an established single-tailed confidence level of at least 99 percent with respect to the estimated distribution of future exposure. For a CCP that calculates margin at the portfolio level, this requirement applies to each portfolio's distribution of future exposure. For a CCP that calculates margin at more-granular levels, such as at the sub-portfolio level or by product, the requirement must be met for the corresponding distributions of future exposure. The model should (a) use a conservative estimate of the time horizons for the effective hedging or close out of the particular types of products cleared by the CCP (including in stressed market conditions), (b) have an appropriate method for measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products, and (c) to the extent practicable and prudent, limit the need for destabilising, procyclical changes.	Clearing Members' portfolios, which is achieved through the appropriate calibration of the margin parameters – e.g., lookback, margin period of risk, confidence interval, etc. Risk characteristics that CME Clearing considers in setting its performance bond requirements for a given product include transparency and liquidity, including through looking at if the product is traded on a central limit order book, market depth (i.e., open interest and volume), and the level of standardization of a product. CME Clearing calibrates its margin methodologies to capture the liquidity profiles of the products and portfolios it clears, considering the need to liquidate in times of market stress. As such, the margin periods of risk (i.e., anticipated time needed to liquidate a position or portfolio) CME Clearing utilizes for its products are driven by their liquidity characteristics and market structure. All performance bond requirements for exchange-traded derivatives products are set using a minimum margin period of risk of at least one-day and, pursuant to CME Group Exchange Rule 826, performance bond requirements for exchange-traded derivatives products in clearing member proprietary accounts are set using a minimum margin period of risk of at least two-days.[68] All performance bond requirements for IRS and FX swaps products are set using a minimum margin period of risk of at least five-days. However, the margin period of risk for a given product may exceed these minimums, considering the liquidation profile of the product, concentration profile of the market, seasonality, or other market specific factors. CME Clearing's margin methodologies are designed to account for a variety of market conditions and to avoid procyclical changes in performance bond requirements. There a number of practices embedded into CME Clearing's margin methodologies that act to avoid large step changes in performance bond requirements – e.g., volatility floors and seasonality parameters, etc. CME Clearing also proactively makes anticipatory changes to performance bond levels, where events (e.g., political elections) may result in heightened market volatility.[69] At all times, to ensure that risks are appropriately collateralized, CME Clearing maintains the right to adjust margin parameters as market conditions warrant. Additionally, in order to capture the unique risks of Clearing Members' portfolios, CME Clearing may collect additional performance bond from given Clearing Members due to the risks (e.g., concentration) associated with their portfolios – typically referred to as "performance bond add-ons". **Futures & Options Margin Model** For exchange-traded derivatives products, performance bond requirements are determined using CME Clearing's proprietary SPAN and SPAN 2 margining systems, which provide replicability, transparency,

[68] Certain agricultural exchange-traded derivatives contracts may be margined using a one-day margin period of risk, even if they are for a clearing member proprietary account.
[69] *See* https://www.cmegroup.com/clearing/files/stability-in-times-of-stresscme-clearings-anti-procyclical-margining-regime.pdf.
CME Group's paper *Stability in Times of Stress: CME Clearing's Anti-Procyclical Margining Regime* examines how despite unprecedented volatility in March and April 2020, CME Clearing successfully performed its core risk management functions in a manner that supported financial stability and reduced systemic risk, a result due, in part, to its anti-procyclical margin methodologies. In particular, the paper illustrates the appropriateness of CME Clearing's initial margining practices by evidencing the relatively modest size of initial margin increases as compared to the unprecedented volatility observed in March and April 2020.

	and anti-procyclical tools.[70] The SPAN and SPAN 2 margin methodologies take into account a variety of data points to capture historical and seasonal volatility, as well as forward-looking measures. The SPAN and SPAN 2 margin methodologies also consider liquidity, market concentration, current and anticipated market conditions and other relevant information also used in establishing appropriate performance bond levels. The volatility measures CME Clearing utilizes for setting performance bond levels for exchange-traded derivatives products are anti-procyclical by nature and consistent with the European Commission's equivalence decision for the CFTC's regulatory framework, designed to ensure that margins are at least as stable and conservative as those calculated using volatility estimated over a 10-year historical lookback period or applying a 25% margin buffer that could be temporarily eroded during periods of stress.[71] The total performance bond requirement for an exchange-traded derivatives portfolio that contains products that are margined using the SPAN and SPAN 2 margin methodologies has a portfolio-level requirement that is determined using a combination of the margin methodologies, including offsets between products within and across SPAN and SPAN 2 margin methodologies.[72] Consistent with CFTC Regulation §39.14(g)(4), offsets are only provided where such products demonstrate an observed significant and reliable historical correlation, as evidenced by a conceptual basis for the offset. In addition, an exchange-traded derivatives portfolio may also be subject to performance bond add-ons because of the unique risks associated with the portfolio. For Base products margined under the SPAN and SPAN 2 margin methodologies, Clearing Members are subject to concentration margin if the results of a set of particular stress tests, which shock the requirements of specific product groups within the portfolio up and down by a defined multiplier, exceed defined thresholds for stress test losses or adjusted net capital ratios. Additionally, for Base products margined under the SPAN 2 methodology, the liquidity and concentration risks of closing out an exchange-traded derivatives portfolio where Clearing Member defaults are accounted for separately. The SPAN 2 margin methodology's liquidity charge uses available bid-ask spreads from the central limit order book, while also allowing for the consideration of the results of default management drills, and the SPAN 2 margin methodology's concentration charge uses volume-based thresholds. Additionally, regardless of margin methodology, Base Clearing Members with the largest potential stress shortfalls for Base products may also be subject to a performance bond add-on if the Clearing Member has a stress shortfall that is greater than a predefined threshold. Clearing Members that exceed this threshold are charged a defined percentage of the amount by which the Clearing Member's stress shortfall exceeds the predefined stress shortfall threshold.

[70] The commodity cleared swaps, Dubai Mercantile Exchange, and FEX Global products for which CME Clearing provides clearing are also margined using the SPAN margin system. For avoidance of doubt, neither the SPAN or SPAN 2 margin systems is used to margin exchange-traded derivatives products that are portfolio margined with other IRS products, which in the context of this document are captured in any reference to IRS products.

[71] Commission Implementing Decision 2016/377 on the equivalence of the regulatory framework of the United States of America for central counterparties that are authorised and supervised by the Commodity Futures Trading Commission to the requirements of Regulation (EU) No 648/2012 of the European Parliament and of the Council (March 2016).

[72] The SPAN 2 methodology is being rolled out for specific product groupings in a phased multi-year approach. A list of the products margined using the SPAN 2 methodology is available here: https://www.cmegroup.com/clearing/files/phase-1-energy-products-10-9.xlsx.

	SPAN Margin Methodology The SPAN margin methodology evaluates overall portfolio risk by calculating the worst possible loss that a portfolio could reasonably incur over the applicable margin period of risk under the defined scenarios, using a 99% confidence interval. The SPAN margin methodology utilizes a representative number of market simulations to define its scenarios, each moving the underlying price and/or implied volatility up or down by the prescribed price and volatility shock set by CME Clearing for that product. The SPAN margin methodology leverages varying weighted lookback periods dependent on the asset class. Weights may be applied to observations across three-, six-, and twelve-months and four- and ten-years or longer, depending on the product. The weightings applied to differing asset classes are designed to take into account the need to manage procyclicality, and seasonality associated with certain products. At the core of the methodology is the SPAN risk array, which represents a contract's hypothetical gain or loss under a specific set of market conditions – each condition comprising a risk scenario. The numeric value for each risk scenario represents the gain or loss that a particular contract could experience for a particular combination of price changes, volatility changes, and decrease in time to expiration. The SPAN framework is comprised of the below parameters, which are calibrated to achieve a coverage level of at least 99% on an *ex post* basis at the portfolio-level: • **Price Scan Ranges**: The maximum price movement reasonably likely to occur for each instrument, or, for options, their underlying instrument; • **Volatility Scan Ranges**: The maximum change reasonably likely to occur for the implied volatility of each option; • **Intra-Commodity Spreading Parameters**: Rates and rules for evaluating the risk of spreading across different expirations of the same product; • **Inter-Commodity Spreading Parameters**: Rates and rules for evaluating risk offsets between related products; • **Delivery (spot) Risk Parameters**: Rates and rules for evaluating the increased risk of positions in physically deliverable products as they approach or enter their delivery period; and • **Short Option Minimum Parameters**: A minimum risk charge for deep out-of-the-money short options positions. The SPAN framework classifies products of a portfolio into combined commodity groups, which are evaluated against each of the parameters above to ultimately determine a portfolio-level performance bond requirement. *SPAN 2 Margin Methodology* To capture the market risk of cleared derivatives in the performance bond requirement, the SPAN 2 methodology is comprised of two primary aspects: i) filtered Historical Value-at-Risk ("HVaR") component generally weighted at 75%; and ii) Stressed Value-At-Risk ("SVaR") component generally weighted at

	25%. The HVaR component, or historical risk component, uses past events to generate possible scenarios in the future. The filtered HVaR component uses an appropriate lookback period for the given products and uses historical volatility and correlation to calculate returns, adjusting them based on appropriate forecasts of short-term volatility (e.g., exponentially weighted moving average (“EWMA”)). The SVaR component, or stressed risk component, incorporates historical and hypothetical stress scenarios that are designed to capture market moves that have occurred or are likely to occur, respectively. The historical scenarios included in the SVaR component include periods of stress within and outside of the HVaR lookback period. The combination of these components captures the most relevant historical periods, including periods of market volatility, using an appropriate confidence interval, which is designed to effectuate the necessary margin coverage and stability in the margin requirements. The SPAN 2 margin methodology is designed to appropriately cover the variety of risks associated with the products that could comprise an exchange-traded derivatives portfolio, including portfolios that include products across multiple asset classes and expiries. Further, the SPAN 2 margin methodology identifies the risk factors and attributes that are relevant to a specific product and then applies the appropriate parameters based on those factors and attributes identified. For example, explicit treatment is made for seasonal risk and for options where the implied volatility surface issues included skew as risk factors. **IRS Products Margin Model** For IRS products, performance bond requirements are determined using CME Clearing’s proprietary margining system, which like the SPAN and SPAN 2 margin systems, provides replication, transparency, and anti-procyclical tools. The IRS products margin methodology is designed to cover the rate risks from different IRS products (e.g., interest rate curves). The IRS products margin methodology generates scenarios for risk factors relevant to IRS products (e.g., interest rate curves). To capture the market risk of IRS products in the performance bond requirement, the IRS products margin methodology is comprised of two primary aspects: i) filtered HVaR components weighted at 75%; and ii) unscaled components weighted at 25%. The filtered HVaR components use at least a five-year rolling lookback period and adjusts the five-day historical returns based on appropriate forecasts of short-term volatility (i.e., EWMA). The unscaled components incorporate historical scenarios from longer lookback periods, in addition to the rolling five-year lookback, and also allow for the injection of hypothetical scenarios. The combination of these components captures the most relevant historical periods, including periods of market volatility, using a 99.7% confidence interval, which is designed to effectuate the necessary margin coverage and stability in the margin requirements. Additionally, for portfolios that contain options on IRS products, the specific risk of these products, such as valuation uncertainty and skew, is incorporated into performance bond requirements to capture residual risks, including due to potentially larger price dispersions. The IRS products margin methodology also has a specific event risk component that is designed to capture anticipated moves in the market arising from event-specific risks. Consistent with the European Commission’s equivalence decision for the CFTC’s regulatory framework,

	performance bond requirements for IRS products are designed to ensure that they are not lower than those that would be calculated using volatility estimated over a ten-year lookback period.[73] Beyond the performance bond requirement capturing the market risk of IRS products, a portfolio of IRS products may also be subject to performance bond add-ons because of the unique risks associated with the portfolio. For example, an IRS Clearing Member may be subject to a concentration performance bond add-on to account for the potential liquidation risk in a stress event based on the size of its IRS products' positions relative to the overall size of the market. The concentration performance bond add-on for IRS products is calculated on a per currency basis, as a function of portfolio Greeks. **FX Swaps Products Margin Model** For FX swaps products, performance bond requirements are determined using CME Clearing's proprietary margining system, which like the margin methodologies utilized for exchange-traded derivatives and IRS products, provides replicability, transparency, and tools for anti-procyclicality. The FX swaps products margin methodology is designed to mitigate the FX risks from different FX swaps products (e.g., FX spot and FX forward). To capture the market risk of FX products in the performance bond requirement, the FX swaps products margin methodology is comprised of two primary aspects: i) a filtered HVaR component weighted at 75%; and ii) a SVaR component weighted at 25%. The HVaR component of the performance bond requirement for FX swaps products uses a lookback period of at least five-years that incorporates a sampling of five-day returns to generate a portfolio risk estimate. In addition, the SVaR component of the FX swaps products margin methodology uses stressed events to derive scenarios when the largest historical moves in the captured risk factors occurred, which is designed to prevent procyclical changes in the margin calculation. The combination of these components captures the most relevant historical periods, including periods of market volatility, using a 99.7% confidence interval, which is designed to ensure the necessary margin coverage and stability. The FX swaps products margin methodology also accounts for the unique characteristics of certain currencies, such as if a given currency is pegged to another. Additionally, for portfolios that contain options on FX swaps products, the specific risk of these products, such as valuation uncertainty, is incorporated into performance bond requirements to capture residual risks due to potentially larger price dispersions. Beyond the performance bond requirement capturing the margin risk of FX swaps products, a portfolio of FX swaps products may also be subject to performance bond add-ons because of the unique risks associated with such portfolio. As such, a Base Clearing Member may be subject to a concentration performance bond add-on to account for the potential market exposures in a stress event the size of its FX swaps products' positions present relative to the overall size of the market. The concentration

[73] Commission Implementing Decision 2016/377 on the equivalence of the regulatory framework of the United States of America for central counterparties that are authorised and supervised by the Commodity Futures Trading Commission to the requirements of Regulation (EU) No 648/2012 of the European Parliament and of the Council (March 2016).

	performance bond add-on for FX swaps products is calculated on a per currency pair basis, as a function of portfolio Greeks.
Key consideration 4 A CCP should mark participant positions to market and collect variation margin at least daily to limit the build-up of current exposures. A CCP should have the authority and operational capacity to make intraday margin calls and payments, both scheduled and unscheduled, to participants.	Settlement variation is calculated at least daily using current market prices based on positions from the previous settlement cycles. Intraday settlement variation calculations use a combination of current market prices and theoretical prices. End-of-day mark-to-market settlement obligations are calculated using settlement prices established by CME Clearing through the settlement process outlined in CME Group Exchange Rules 813 and 8G813 for Base and IRS products, respectively. As noted in CME Clearing's disclosures for Key Consideration 1 of this Principle, CME Clearing conducts two settlement cycles per day for most products and at least one settlement cycle per day for all products where performance bond calls and the exchange of settlement variation payments are effectuated. Daily intraday settlement cycles are performed for exchange-traded derivatives products,[74] in addition to an end-of-day settlement cycle. For IRS and FX swaps products, an end-of-day settlement cycle is performed. The timing of CME Clearing's daily settlement cycles is outlined below:[75] • 7:30 AM Chicago time – Settlement banks confirm debits from Clearing Members' accounts for credit to CME Clearing's accounts for the prior day's end-of-day settlement cycle; • 8:30 AM Chicago time – Settlement banks confirm debits from CME Clearing's accounts for credit to Clearing Member accounts for the prior day's end-of day settlement cycle; • 12:30 PM Chicago time – Where applicable, intraday settlement cycle instructions distributed to settlement banks; • 1:30 PM Chicago time – Where applicable, settlement banks confirm debits from and credits to Clearing Members' accounts for the intraday settlement cycle; and • 3:00 AM Chicago time – End-of-day settlement cycles instructions distributed to settlement banks. Consistent with CFTC Regulation §39.14(b) and CME Group Exchange Rule 814, CME Clearing has the authority and the operational capacity to execute *ad hoc* intraday settlement cycles to make performance bond calls and facilitate the exchange of settlement variation payments.
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.	In order to recognize the risk-reducing relationship between the different products it clears, CME Clearing calculates performance bond requirements on a portfolio-level basis. CME Clearing offers performance bond offsets across the products it clears based on the relationships between the products, while maintaining adherence to a 99% coverage standard on an *ex post* basis. Consistent with CFTC Regulation §39.13(g)(4), CME Clearing provides risk offsets across products where the price risks of the positions are significantly and reliably correlated and only where there is a conceptual basis demonstrating the reliability of the correlation. CME Clearing also considers the need to liquidate such products in stressed market conditions in determining offsets. Risk offsets are subject to review on a regular basis, along with

[74] Note, as described in CME Clearing's disclosures for this Principle, IRS products that are exchange-traded derivatives are subject to an intraday settlement cycle.
[75] Note, as described in CME Clearing's disclosures for this Principle, CME Clearing performs settlement cycles for FEX products that align with Australian trading hours.

Where two or more CCPs are authorized to offer cross-margining, they must have appropriate safeguards and harmonized overall risk-management systems.	a review of "outright margin" levels (i.e., performance bond level for a given product). Performance bond reductions are adjusted or eliminated where appropriate, based on changing market conditions or cross-product correlations. In addition to providing risk offsets across different exchange-traded derivatives products (i.e., inter-commodity spreads), as well as across IRS products, CME Clearing provides risk offsets between portfolio margined exchange-traded and cleared swaps derivatives products and between exchange-traded derivatives products included in CME Clearing's cross-margining programs with products cleared by other clearing houses. **Portfolio Margined Futures & Options and Cleared Swaps Derivatives** CME Clearing permits the portfolio margining of exchange-traded interest rate derivatives products with other IRS products. Portfolio margined exchange-traded interest rate products are subject to the protections provided under the IRS products' financial safeguards waterfall and margined using CME Clearing's IRS products margin methodology, which includes applying a margin period of risk of five-days to those exchange-traded interest rate derivatives products. CME Clearing also permits the portfolio margining of certain exchange-traded and cleared swaps derivatives products that are margined under the SPAN or SPAN 2 margin methodologies (e.g., agricultural commodity derivatives), which are both already subject to the protections provided under the Base products' financial safeguards waterfall. For customers, positions in portfolio margined exchange-traded derivatives products and related collateral are held in the cleared swaps customer account pursuant to CME Group Exchange Rules 831 and 8G831. In line with CME Clearing's standard risk management practices for the products it clears, portfolio margined products are subject to regular risk monitoring and backtesting. Additionally, CME Clearing has developed default management procedures for addressing portfolio margined portfolios. **Cross-Margined Exchange-Traded Derivatives Products** Pursuant to CME Group Exchange Rule 830, CME Clearing supports two cross-margining arrangements with two other clearing houses that adhere to the PFMIs, the: • Fixed Income Clearing Corporation ("FICC") for certain exchange-traded interest rate derivatives products and fixed-income securities products; and • OCC for certain exchange-traded equity derivatives products. The risk offsets for cross-margined products are, in part, derived from the observed significant and reliable historical correlation, as evidenced by a conceptual basis for the offset (e.g., products share a significant common input). Eligibility for such risk offsets are determined by the Risk Management teams of both clearing houses.

CME Group

	As is detailed further in CME Clearing's disclosures for Principle 20, CME Clearing monitors the overall creditworthiness of the clearing houses with which it has cross-margining arrangements and cross-margined products are subject to regular risk monitoring and backtesting. Additionally, CME Clearing has default management procedures for cross-margined products. The legal and operational requirements of the cross-margining arrangements with FICC and OCC are laid out in CME Group Exchange Rule 830 and the respective programs' contractual agreements between CME Clearing and FICC or OCC, as applicable.
Key consideration 6 A CCP should analyze and monitor its model performance and overall margin coverage by conducting rigorous daily backtesting and at least monthly, and more- frequent where appropriate, sensitivity analysis. A CCP should regularly conduct an assessment of the theoretical and empirical properties of its margin model for all products it clears. In conducting sensitivity analysis of the model's coverage, a CCP should take into account a wide range of parameters and assumptions that reflect possible market conditions, including the most-volatile periods that have been experienced by the markets it serves and extreme changes in the correlations between prices.	Consistent with CFTC Regulation §39.13(g)(7), CME Clearing conducts backtesting of its margin models to monitor their appropriateness, with particular focus on adherence to the 99% coverage standard. Backtesting is incorporated into the design, development, and implementation of CME Clearing's margin models. Prior to making material changes to a margin model or launching a new margin model, the impact of the proposed change is evaluated using a series of backtesting exercises that are designed to ensure adequate coverage is achieved over historical timeframes, sufficient to cover periods of stress. If backtesting results indicate that the margin model is not performing as expected, then the model changes or new model are not implemented in production environments until the backtesting results are sufficiently robust. Additionally, prior to launching a new product for clearing, backtesting is conducted to confirm that the applicable margin model will provide sufficient coverage. CME Clearing also conducts backtesting in the form of portfolio performance bond coverage testing to assess that the margin models and their parameters are performing as expected and meeting the required targeted coverage standards. Consistent with CFTC Regulation §39.13(g)(7), this testing compares portfolio losses to those performance bond requirements driven by market risk factors. CME Clearing's daily backtesting assesses the adequacy of each Clearing Member's performance bond requirement independently for Base and IRS products, by house and customer origins, in meeting CME Clearing's targeted coverage standard of 99% within the margin period of risk (e.g., five-days for IRS products). Portfolio margined exchange-traded and cleared swaps derivatives products, as well as cross-margined exchange-traded derivatives products, are captured in CME Clearing's daily backtesting. Any backtesting breaches of the 99% coverage standard trigger analysis exercises to assure model parameters are appropriately tuned to existing market conditions. Any significant backtesting breaches, identified in daily or monthly backtesting, are brought to the Model Risk Committee for review, which may result in the decision by the committee to adjust margin model parameters, as appropriate. On a monthly basis, CME Clearing's internal Model Risk Committee takes a more in-depth review of the results of the daily backtesting, as well as reviewing backtesting results for specific products and spreads as needed. Backtesting run on specific products and spreads allows the Risk Management team to evaluate the applicable margin model's ability to capture the unique risk characteristics of a given product. The time period used for backtesting is specific to the type of backtesting being conducted – i.e., product- or portfolio-level. Backtesting timeframes may represent a static number of days or specific periods of

	time historically, chosen for their volatility or significance to the marketplace. Backtesting results are published on a quarterly basis in the CME Clearing Quantitative PFMI Disclosure document. To supplement its backtesting, CME Clearing performs monthly sensitivity analysis on the margin models to assess the impact that adjusting the calibration of the margin models has on the models' performance and performance bond coverage at a product- and portfolio-level, consistent with CFTC Regulation §39.36(b). The sensitivity analysis captures the results of making various modifications to a wide range of margin model parameters – e.g., confidence interval, lookback, price scan, among others. CME Clearing's sensitivity analysis is designed to ensure that the margin models are appropriately calibrated to protect the Clearing House, particularly against market stress. On a monthly basis, the results of CME Clearing's sensitivity analysis are reviewed by the Model Risk Committee. Where CME Clearing has identified that a margin model is not performing as expected, through backtesting and/or sensitivity analysis or otherwise, CME Clearing would take the necessary steps to address this. The Risk Management team would undertake any further analysis to understand the shortcoming and any related changes would be subject to the appropriate governance, as described in CME Clearing's disclosures for Principle 2.
Key consideration 7 A CCP should regularly review and validate its margin system.	In accordance with CFTC Regulation §39.13(g)(3), CME Clearing's margin models, which in the case of cleared swaps products encompasses the pricing and valuation aspects for settlement, are validated by a qualified, independent party annually. Where no material changes to the margin model have occurred, previous validations can be reviewed and affirmed as part of the annual review process. Additionally, prior to launching a new margin model or making significant changes to an existing model, CME Clearing requires an independent model validation, designed to ensure proper coverage of the relevant products. The validation process is designed to affirm the appropriateness of the margin model's implementation and its theoretical soundness. The independent third-party validation function is overseen by the CCO of the Clearing House and functions independently from the model developers and users involved in the design and use of the margin models. Generally, the validation of CME Clearing's margin models covers the following areas: • Model Documentation; • Inputs; • Assumptions; • Theory; • Implementation – e.g., review of the calibration of margin model parameters; and • Outputs and use – e.g., review of the appropriateness of the margin model for products covered and backtesting results.

	Margin model validation results, including the management response to the validation, are reviewed by the Model Risk Committee. The Model Risk Committee determines the appropriate actions to be taken by CME Clearing to remediate any findings from a validation, where they arise. Following the Model Risk Committee's review and approval of the management response, it is reviewed by the CHOC, which oversees any remediation efforts, as applicable, in response to findings from the validations. Changes to a margin model as a result of the validation process would be subject to the appropriate governance, as outlined in CME Clearing's disclosures for Principle 2.

Principle 7: Liquidity Risk

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.	The policies and practices for managing liquidity risk are laid out in CME Clearing's Risk Management Framework and then more granularly in CME Clearing's Liquidity Risk Management Framework, which comprehensively addresses the requirements for liquidity risk management pursuant to CFTC Regulations §39.33 and §39.36. The Liquidity Risk Management Framework includes the policies and procedures CME Clearing has implemented to maintain access to liquidity, in all currencies for which CME Clearing's settlement obligations are denominated, throughout a range of stress events, including, but not be limited to, the default of a Clearing Member (and its affiliated Clearing Members, where applicable) creating the largest potential liquidity obligation under extreme but plausible market conditions. Further, the Liquidity Risk Management Framework defines CME Clearing's practices for the monitoring, measurement, and management of potential liquidity events and describes the resources available to CME Clearing to satisfy potential liquidity obligations, including under extreme but plausible market conditions. The potential size of CME Clearing's liquidity obligations and related liquidity resources are disclosed publicly on a quarterly basis through the CME Clearing Quantitative PFMI Disclosure document. The Liquidity Risk Management Framework is under the ultimate oversight of the Board and as such, is reviewed and approved by the Board on at least an annual basis, in addition to its review and approval by the CHRC and CHOC that precede the Board's final approval. Within the Clearing House, the Liquidity Risk Management Framework is overseen by the Credit & Liquidity Committee, which, among other things, is also responsible for reviewing liquidity risk and resources on at least a quarterly basis. The Liquidity Risk Management Framework covers CME Clearing's practices for calculating its largest liquidity need under extreme but plausible market conditions. The calculation of the largest liquidity need for CME Clearing is driven by scenarios relating to the default of a Clearing Member. CME Clearing also considers scenarios that evaluate the simultaneous failure of a Clearing Member and its settlement bank, as further described in CME Clearing's disclosures for Key Consideration 4 of this Principle. The Liquidity Risk Management Framework is designed to allow CME Clearing to continue to meet its settlement variation payment obligations to non-defaulting Clearing Members in a liquidity event. In this event, CME

	Clearing may convert a defaulted Clearing Member's collateral into cash to meet its payment obligations, while adhering to the necessary customer protection rules and requirements. Liquidity risk, in part, is measured and monitored through daily liquidity stress testing. On at least a monthly basis, or more frequently as market conditions warrant, more detailed analysis of liquidity resources and obligations by currency are presented to the Stress Testing Committee. CME Clearing manages liquidity risk through the daily measurement and monitoring of its Clearing Members' potential payment obligations to CME Clearing. If a counterparty (including through an affiliate) provides CME Clearing multiple services, CME Clearing will evaluate the counterparty individually, per service, as well as in aggregate, in order to capture total liquidity exposure. For example, in calculating the liquidity need arising from the default of a Clearing Member, it is assumed where an affiliate of such Clearing Member acts as a liquidity provider that it would be unable to do so in the event the Clearing Member defaults. Additionally, CME Clearing's collateral acceptance programs and collateral management work cohesively with its liquidity risk management practices, including to help manage liquidity risk by limiting acceptable collateral to highly liquid asset types. Further, in line with the general approach to managing risks holistically and consistent with CFTC Regulation §39.15(c), CME Clearing manages its collateral in a manner that minimizes the risk of loss or of delay in the access to such collateral, while supporting its ability to effectively manage its overall risk.
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.	Consistent with its regulatory obligations as a DCO, CME Clearing measures settlement flows by tracking the movement of funds associated with settlement and performance bond obligations. These flows are monitored through CME Clearing's internal systems on an ongoing basis. CME Clearing employs internally developed systems to identify, measure, and monitor settlement and funding flows. CME Clearing's settlement banks confirm funding of settlement variation flows once communicated to Clearing Members, as described in greater detail in CME Clearing's disclosures for Principle 8. CME Clearing's systems allow the Risk Management team to monitor positions and settlement variation exposures in real-time throughout the day. These systems additionally provide CME Clearing the ability to flexibly analyze Clearing Member settlement variation obligations by Clearing Member, settlement account, and product. Where necessary, CME Clearing communicates expected settlement variation requirements throughout the day to Clearing Members and settlement banks to mitigate risks by providing transparency to key participants in the settlement process. Additionally, if the current observed activity of a Clearing Member exceeds its typical settlement activity based on historically observed activity in both normal and stressed periods, an alert is triggered that prompts the Risk Management team to investigate the activity. In these cases, CME Clearing generally notifies the Clearing Member of the estimated settlement obligation to provide early notice of large payments and to ensure accuracy of data. CME Clearing also has additional

	counterparty credit risk monitoring tools, as discussed in CME Clearing's disclosures for Principle 4, which allow the Clearing House to continually monitor the risks posed by Clearing Members' credit profiles.
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.	This Key Consideration is not applicable to CME Clearing because it is not a payment system or securities settlement system.
Key consideration 4 A CCP should maintain sufficient liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments, and meet other payment obligations on time with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should consider maintaining additional liquidity resources sufficient to cover a wider range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions.	Consistent with CFTC Regulation §39.33(c)(1), CME Clearing employs liquidity stress testing to assess the sufficiency of its liquidity resources, in all currencies for which CME Clearing's settlement obligations are denominated, to cover the potential cash outflow required as a result of a Clearing Member (and its affiliated Clearing Members, where applicable) defaulting that would generate the largest payment obligation owed to CME Clearing. CME Clearing also considers the size of the potential cash outflow as a result of two Clearing Members (and their affiliated Clearing Members, where applicable) defaulting that would generate the largest payment obligation owed to CME Clearing. As determined by liquidity stress testing, the potential payment obligation CME Clearing may owe as a result of a Clearing Member default has been identified as CME Clearing's potential largest liquidity exposure. Such liquidity exposure could be triggered by the default of a Clearing Member alone or the default of a Clearing Member with the simultaneous default of its settlement bank, where the Clearing Member cannot otherwise meet its payment obligations to CME Clearing. CME Clearing currently defines payment obligation as the defaulted Clearing Member's potential settlement variation obligation and, when applicable, the potential replacement cost incurred should the same defaulted Clearing Member have physical delivery obligations. Clearing Members' potential payment obligations are aggregated by related entities (i.e., affiliates) and across Guaranty Funds. Liquidity stress testing is performed daily using predetermined parameters and a report is provided to CME Clearing's Stress Testing Committee. CME Clearing analyzes all Clearing Members in its daily liquidity stress testing. Further, consistent with CFTC Regulation §39.36(c)(3), at least monthly, CME Clearing's Stress Testing Committee analyzes the appropriateness of stress testing scenarios and their underlying parameters. The Risk Management team may recommend a greater frequency of review if market conditions warrant.

	In addition to the Stress Testing Committee's review of the stress scenarios, the Credit & Liquidity Committee analyzes and discusses the appropriateness of the size of CME Clearing's liquidity resources relative to its potential payment obligations. As such, the Credit & Liquidity Committee reviews and considers the top two liquidity needs and determines the appropriate coverage standard under extreme but plausible market conditions. Additionally, the Credit & Liquidity Committee reviews the resources to meet such needs. CME Clearing, at a minimum, maintains liquidity resources, in all currencies for which CME Clearing's settlement obligations are denominated, to meet the single largest potential payment obligation and considers the second largest potential payment obligations.
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.	As determined by liquidity stress testing, CME Clearing maintains qualifying liquidity resources, in all currencies for which CME Clearing's settlement obligations are denominated, to meet the largest potential payment obligation resulting from a Clearing Member default on a same day basis. The resources CME Clearing relies upon to facilitate its access to liquidity are generally sourced from the collateral of the defaulted Clearing Member. CME Clearing has multiple prearranged and highly reliable liquidity funding arrangements in place to facilitate same-day liquidity in the currency of need, described in greater detail below: • Committed lines of credit – i.e., the "Credit Facility"; • Committed FX spot facility – i.e., the "FX Facility"; • Master repurchase agreements; • Liquidation agent relationships; and • Rules-based liquidity resources. The arrangements that facilitate CME Clearing's access to liquidity allow for resources that are not by regulatory definition *prima facie* liquid to be treated as "qualifying liquidity resources" under CFTC Regulation §39.33(c)(3). Liquidity resources can be considered qualifying liquidity resources based on the categorization of the actual resource (e.g., cash in the currency of need) or appropriate funding arrangement supporting the resource. However, as an initial step, CME Clearing would generally attempt to utilize market action to access liquidity, which could include but is not limited to selling securities or foreign currency cash through existing relationships. CME Clearing's secured Credit Facility is maintained with a large consortium of diverse domestic and international banks. CME Clearing may draw down on the Credit Facility to provide temporary liquidity in the unlikely event of a Clearing Member default or a liquidity constraint. The Credit Facility may also be accessed if there is a temporary problem with the domestic payments system that would delay payments, including payment of settlement variation between CME Clearing and its Clearing Members. Collateralized borrowings of up to $7 billion are available under the Credit Facility, with the option to request an increase up to $10 billion. The Credit Facility includes sub-limits for each currency that can be drawn down. CME Clearing considers potential and historical liquidity needs in determining the size of the Credit Facility to cover the largest potential liquidity needs on an aggregate and per currency basis.

	CME Clearing's FX Facility commits an FX provider to enter into spot FX trades in eligible currencies with CME Clearing up to the U.S. dollar-equivalent of $750 million. Transactions in each eligible currency pair are subject to the sub-limit specified for such currency pair in the FX Facility agreement. The FX Facility allows CME Clearing to convert cash to another currency within generally accepted local market timeframes in order to continue to meet its obligations to non-defaulting Clearing Members. Under CME Group Exchange Rule 901.Q, if a Clearing Member or one of its affiliates is a U.S. Government Securities Broker-Dealer it (or an affiliate that is a bank) is required to establish a master repurchase agreement with CME Inc. CME Clearing has multiple master repurchase arrangements across a variety of firms, including with some Clearing Members, or their affiliates, pursuant to CME Group Exchange Rule 901.Q. CME Group Exchange Rule 901.Q is designed to expand the scope of CME Inc.'s master repurchase agreement counterparties, which enhances the diversification of the Clearing House's available liquidity sources. As described in CME Clearing's disclosures for Key Consideration 4 of Principle 3, under CME Group Exchange Rule 822, CME Clearing can substitute a defaulted Clearing Member's U.S. Treasuries for U.S. Dollar cash Guaranty Fund contributions and sell U.S. Treasuries to meet the Clearing House's U.S. Dollar cash settlement variation obligations, where a liquidity event has occurred and all other liquidity arrangements are unavailable. Further, pursuant to CME Group Exchange Rule 832, with respect to satisfying liquidity obligations where a foreign currency market disruption impacts the ability of the Clearing House and its Clearing Members to meet settlement variation or final settlement obligations in any non-U.S. Dollar currency, the Clearing House and its Clearing Members may satisfy such obligations in U.S. Dollar. A foreign currency market disruption exists when: i. Events not within the Clearing House's control make it illegal or impossible to transact in a non-U.S. Dollar currency; ii. Authoritative action such as the adoption of capital controls, asset freezes, imposition of sanctions, nationalization or any other similar action by any governmental entity impedes or is likely to impede the Clearing House's ability to effect settlement transactions in any non-U.S. Dollar currency; or iii. Any event with similar effect to the foregoing occurs. CME Clearing is responsible for ensuring liquidation arrangements are in place to support the rapid deployment of collateral to cash in the currency of need if it becomes necessary. In line with CFTC Regulation §39.33(d)(4), CME Clearing conducts tests on its liquidity arrangements at least once per calendar year, with more frequent tests commonly employed for new liquidity providers or in the event of certain operational changes. Additionally, the Clearing House has agreements with liquidation agents that

	could assist in the liquidation of collateral. CME Clearing conducts at least one liquidation simulation annually.
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.	As noted above, CME Clearing's first step would generally be to attempt to utilize market action to access liquidity, which could include but is not limited to selling securities or foreign currency cash through existing relationships. This action would effectively use supplemental liquidity resources rather than relying on the prearranged and highly reliable liquidity funding arrangements (i.e., qualifying liquidity resources) to facilitate access to liquidity. CME Clearing is confident in its ability to execute market actions in a stressed market environment through its prudent collateral eligibility standards, third-party liquidation simulations, and CME Clearing's own experience in liquidating collateral for same-day settlement. When evaluating a CCP's "supplemental" liquidity resources it's important to consider what types of resources are "qualifying liquidity resources" on an *ex ante* basis. Pursuant to CFTC Regulation §39.33(c)(3) qualifying liquidity resources include: • Cash in the currency of the requisite obligations; • Committed lines of credit; • Committed foreign exchange swaps; • Committed repurchase agreements; and • Highly marketable collateral, including high quality, liquid, general obligations of a sovereign nation that are readily available and convertible into cash pursuant to prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. Under the CFTC's criteria for qualifying liquidity resources, obligations of the U.S. and other sovereign nations, that are of high quality and highly liquid cannot be treated as *prima facie* qualifying liquidity resources – i.e., "prearranged and highly reliable funding arrangements" are required.
Key consideration 7 An FMI should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum required qualifying liquid resources, whether a participant of the FMI or an external party, has sufficient information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its commitment. Where relevant to assessing a liquidity provider's performance reliability with respect to a particular currency, a liquidity provider's potential access to credit from the	CME Clearing has relationships with liquidity providers to satisfy its obligation to maintain qualifying liquidity resources. Liquidity providers include participating banks in CME Clearing's Credit Facility and FX Facility, master repurchase agreement counterparties, and certain Clearing Members (and their affiliates), as described in CME Group Exchange Rules 901.Q and 822. CME Clearing performs counterparty credit assessments on liquidity providers to determine if providers meet CME Clearing's minimum counterparty credit criteria and thus, are able to perform on their commitments in relevant currencies. Further, CME Clearing conducts test draws with liquidity providers to assess the timeliness and reliability of its access to liquidity resources. The results of these tests are reported to the CME Clearing's Credit & Liquidity Committee for their review. CME Clearing also executes liquidity simulations on at least an annual basis. The counterparty credit assessment process also reviews the likelihood of a liquidity provider being able and willing to provide liquidity in a stressed market environment based on the credit strength and resources likely available during that event. CME Clearing analyzes liquidity providers on a standalone

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.	basis and does not consider access to the central bank as a criterion to fulfil the necessary liquidity requirements. In line with CFTC Regulation §39.33(d)(2), CME Clearing assesses and reviews all counterparties, including liquidity providers, through its internal credit rating process on at least an annual basis. CME Clearing requires that liquidity providers maintain a minimum internal credit rating based on CME Clearing's Credit Policy. CME Clearing's due diligence reviews and internal credit rating processes for liquidity providers are in addition to CME Clearing's daily risk monitoring processes, where CME Clearing monitors its exposures to its counterparties each day. CME Clearing's internal credit rating methodology and its risk monitoring processes are further described in CME Clearing's disclosures for Principle 3. CME Clearing's liquidity providers have sufficient information to understand and manage their associated obligations to CME Clearing. Liquidity providers' obligations associated with the Credit Facility and FX Facility are limited to the commitment outlined in the relevant legal agreement. The liquidity obligations of Clearing Members subject to the CME Group Exchange Rule 822, as described in CME Clearing's disclosures for Key Consideration 4 of Principle 3, are limited to the size of the Clearing Member's Guaranty Fund deposits at the time of the liquidity event. Clearing Members are fully aware of their Guaranty Fund obligations, as they are informed of them on at least a monthly basis. CME Clearing regularly communicates with liquidity providers the information that they need to assess their liquidity risks, requirements, and obligations. This occurs either through the CME Group Exchange Rulebooks that are publicly available and/or applicable legal agreements. Clearing Members agree to be legally bound by the obligations under the CME Group Exchange Rulebooks, upon membership, as described in CME Clearing's disclosures for Principle 1.
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.	CME Inc. maintains accounts at the Federal Reserve Bank of Chicago for depositing a portion of house and customer (i.e., customer segregated and cleared swaps customer accounts) performance bond funds (e.g., U.S. dollar cash and U.S. Treasuries). Consistent with CFTC Regulation §39.33(d)(5), where CME Clearing is able to deposit collateral it receives at the Federal Reserve Bank of Chicago, it does so where practical, based in part on its ability to effectively manage liquidity risk. CME Inc. also maintains accounts at the Bank of Canada for depositing a portion of customer and house Canadian dollar performance bond funds. CME Clearing notes however, it could be impractical for the Clearing House to use a Federal Reserve Bank to settle in central bank money given CME Clearing's Clearing Members are a diverse set of entities that are banks, bank-affiliated entities, and non-bank affiliated entities. Further, settling in central bank money at a Federal Reserve Bank is not available in a manner that would comport with CFTC regulations. Notwithstanding the impracticality, CME Clearing would likely be unable to use a Federal Reserve Bank to conduct FX settlements.

	Additionally, on July 18, 2012, FSOC designated CME Inc. a SIFMU under Title VIII of the Dodd-Frank Act. As part of its SIFMU designation, CME Inc. may receive discount and borrowing privileges from a Federal Reserve Bank under unusual or exigent circumstances. CME Clearing does not currently have access to a Federal Reserve Bank's discount window, nor does CME Clearing consider access to a Federal Reserve Bank's discount window in constructing its liquidity risk management program. CME Clearing operates under the assumption that access to a Federal Reserve Bank's discount window will not be available or needed and does not consider access to a Federal Reserve Bank's discount window as a liquidity enhancement to determine liquidity needs or adequacy.
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.	As described in CME Clearing's disclosures for Key Consideration 1 of this Principle, CME Clearing's liquidity stress testing practices are outlined in CME Clearing's Liquidity Risk Management Framework. CME Clearing employs liquidity stress testing to size and assess the sufficiency of its liquidity resources. In particular, liquidity stress testing is used to assess the sufficiency of CME Clearing's liquidity resources to cover the potential cash outflow on an aggregate and per currency basis required as a result of a Clearing Member default, assuming payment obligations are met on a same-day basis. CME Clearing's liquidity stress testing is informed by the same stress testing scenarios utilized to size its Guaranty Funds, which are described in CME Clearing's disclosures for Principle 4. CME Clearing also estimates potential payment obligations resulting from the simultaneous failure of a settlement bank by applying shocks to historical settlement bank flows at each Clearing Member. In contrast to stress testing for sizing the Guaranty Funds, liquidity stress testing focuses on point in time in payment obligations rather than period of time credit obligations and additionally considers the relationship liquidity providers and settlement banks have to the Clearing Member that is assumed to have defaulted. In line with CFTC Regulation §39.36(c), CME Clearing's liquidity stress testing framework captures extreme but plausible market conditions, considering relevant peak historical price volatilities, shifts in price determinant, yield curves, multiple defaults over various time horizons, and simultaneous pressures in funding and asset markets. Liquidity stress tests are designed to model potential cash flows under extreme but plausible market conditions in the event of a Clearing Member default and the default of a Clearing Member with the simultaneous default of its settlement bank, where the Clearing Member cannot otherwise meet its payment obligations to CME Clearing. Further, the potential multiple roles of key entities, such as liquidity providers that are affiliated with Clearing Members and the associated effects on liquidity resources, are accounted for in CME Clearing's liquidity stress testing. To be specific, when analyzing the scenario in which "Clearing Member A" is the defaulter, liquidity provided by "Clearing Member A" and any of its affiliates is deemed to be zero. The scenarios consider the settlement structure and timing required for liquidity needed due to settlement cycles and currently, under CME Clearing's liquidity stress testing, it conservatively assumes that all liquidity obligations are due on day one, upon a Clearing Member default event. On a daily basis, liquidity stress testing results are reported to the Stress Testing Committee, including the CRO of the Clearing House. The daily computation of liquidity stress tests gives CME Clearing the ability to test the adequacy of its liquidity resources on a daily basis, allowing CME Clearing to continually

	assess the effectiveness of its liquidity stress testing framework. Through this process, CME Clearing assesses and appropriately adjusts the size and composition of its liquidity resources commensurate with current and stressed market conditions so that its resources are sufficiently sized on an ongoing basis. As such, sudden and significant increases in position and price volatility, as well as concentration in collateral holdings which could impact CME Clearing's liquidity resources, would be identified through CME Clearing's daily liquidity stress testing and risk monitoring processes. Additionally, concentration in positions is captured by the Risk Management team's monitoring of market participants' changing positions throughout the day, as described in greater detail in CME Clearing's disclosures for Principle 3. Further, on at least a monthly basis CME Clearing's liquidity stress testing results are discussed and reviewed by CME Clearing's Stress Testing Committee. CME Clearing assesses the effectiveness and appropriateness of its assumptions and parameters for its liquidity stress testing scenarios through the Stress Testing Committee. Additionally, as a part of the Credit & Liquidity Committee's role of overseeing the methodology to determine potential payment obligations, it reviews potential payment obligations and related liquidity resources on at least a quarterly basis. The appropriateness of CME Clearing's stress testing framework is assessed through the independent validation process. Consistent with CFTC Regulation §39.36(e), CME Clearing's liquidity risk management model is independently validated at least annually or when material changes are made. The results of the validation of the liquidity risk management model, including the management response to the validation, are reviewed by the Model Risk Committee. The Model Risk Committee determines the appropriate actions to be taken by CME Clearing to remediate any findings from a validation, where they arise. Following the Model Risk Committee's review and approval of the management response, it is reviewed by the CHOC, which oversees any remediation efforts, as applicable, in response to findings from the validations.
Key consideration 10 An FMI should establish explicit rules and procedures that enable the FMI to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default among its participants. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the FMI's process to replenish any liquidity resources it may employ during a stress	CME Clearing has explicit rules and prearranged and highly reliable liquidity funding arrangements in place, as described in CME Clearing's disclosures for Key Consideration 5 of this Principle, that are designed to ensure performance of same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following a Clearing Member default. CME Clearing's practices are designed to enable it to effectuate the settlement of its payment obligations as described in CME Clearing's disclosures for Principle 8, even in a scenario where a Clearing Member defaults. Further, liquidation simulations and test draws with liquidity providers, as described above, are designed to provide assurance to CME Clearing that liquidity shortfalls can be expeditiously managed without unwinding, revoking, or delaying the same-day settlement of payment obligations. As described in CME Clearing's disclosures for Principle 4, a liquidity shortfall as a result of a Clearing Member default will be managed in accordance with CME Clearing's financial safeguards waterfall structure. The waterfall structure provides for utilization of performance bond deposits of a defaulted Clearing Member first. Next, the defaulted Clearing Member's relevant Guaranty Fund deposits and other resources are available to meet any liquidity need as an outcome of the Clearing Member's default. CME

event, so that it can continue to operate in a safe and sound manner.	Group Exchange Rules 802 and 8G802 for Base and IRS products, respectively, also specify terms under which any liquidity needs are satisfied by the ordered application of CME Clearing's contributions and non-defaulting Clearing Member resources (e.g., Guaranty Funds). CME Clearing's right to collateral is clearly defined under CME Group Exchange Rules 819 and 8F008 for Base and cleared swaps products, respectively, which provide a first lien priority on collateral posted by CME Clearing's Clearing Members to meet their obligations, as covered in CME Clearing's disclosures for Principle 1. As described in greater detail in CME Clearing's disclosures for Key Consideration 5 of this Principle, in managing a potential liquidity shortfall that is caused by the default of a Clearing Member, CME Clearing would generally first attempt to liquidate the collateral of the defaulted Clearing Member through market action, but also has the following tools at its disposal for accessing qualifying liquidity resources: • The Credit Facility and FX Facility; • Master repurchase agreements; • Liquidation agent relationships; and • Rules-based liquidity resources. In particular, as described further in CME Clearing's disclosures for Key Consideration 4 of Principle 3, CME Group Exchange Rule 822 provides CME Clearing tools to effectively resolve an uncovered liquidity shortfall and not cause any unwinding, revocation, or delay of same-day settlements. CME Clearing can replenish liquidity funding arrangements, such as its committed Credit and FX Facilities or uncommitted repo, by directing the counterparty to liquidate the collateral being used to secure the draw or unwinding the trade, respectively. To the extent that CME Clearing's Guaranty Funds are replenished, the ability of CME Clearing to utilize its powers under CME Group Exchange Rule 822 is re-established.

Principle 8: Settlement Finality

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.	To effectuate timely and irrevocable settlement on a daily basis, CME Clearing defines the point at which settlement is final in CME Group Exchange Rule 814. CME Clearing's settlement banks are contractually committed to communicate acceptance of CME Clearing's settlement instructions within a defined period of time. Pursuant to CME Group Exchange Rule 814, settlement is deemed final, irrevocable and unconditional no later than when the Clearing House's bank account at the relevant settlement bank is debited or credited with payment. Outstanding exposures that are considered settled under CME Group Exchange Rule 814 include obligations to pay, as applicable, any settlement variation payment and any other payments due in respect of the derivatives

	contract (e.g., price alignment amount, coupon payments, option premiums and upfront fees and, for the avoidance of doubt, excluding any posting of performance bond). Legal certainty in regard to settlement finality is achieved through both the contractual agreements between CME Inc. and its settlement banks and the CME Group Exchange Rulebooks, as described in CME Clearing's disclosures for Principle 1. Consistent with CME Group Exchange Rule 814, the exchange of settlement variation payments constitutes a 'settlement' pursuant to CFTC Regulation §39.14(a). Such payments are final settlements and not collateralization of an exposure and, accordingly, CME Clearing maintains no security interest over such payments. The point at which settlement is final reflects provisions of U.S. bankruptcy law. In the event of a Clearing Member default, CME Clearing has no recourse to funds paid by a defaulted Clearing Member to satisfy a settlement obligation where such settlement is final. Further, it is well-established in the U.S. that a DCO's rules are enforceable against its clearing members and participants. Regarding CME Clearing's cross-border activities, CME Clearing undertakes the necessary legal analysis to evaluate the enforceability of the CME Group Exchange Rulebooks, which includes CME Group Exchange Rule 814. Additionally, the links CME Clearing has with other financial market infrastructures ("FMIs") noted in CME Clearing's disclosures for Principle 20 are incorporated into the normal course of business practices and abide by established settlement finality arrangements, as outlined above.
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 (Large-Value Payment System) or SSS (Securities Settlement System) should consider adopting RTGS (Real Time Gross Settlement) or multiple-batch processing during the settlement day.	As detailed further in CME Clearing's disclosures for Key Consideration 1 of Principle 6, CME Clearing conducts two settlement cycles per day for most products (e.g., exchange-traded derivatives products listed on the CME Group Exchanges) and at least one settlement cycle per day for all products. Settlement of market participants' outstanding exposures occurs at intraday and end-of-day utilizing settlement prices for the corresponding cycle. CME Clearing has the operational capability and contractual right to conduct *ad hoc* settlement cycles, as provided under CME Group Exchange Rule 814. Clearing Members have access to settlement reports through CME Clearing's systems. CME Clearing's systems are utilized to facilitate the transfer of funds between CME Clearing, Clearing Members, and settlement banks. Through CME Clearing's systems, Clearing Members can electronically manage their settlement obligations.
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.	Settlement variation payments are final, irrevocable, and unconditional no later than when the correct Clearing House bank account at the relevant settlement bank is debited or credited with the payment. Settlement banks are contractually bound to approve the prior day's end-of-day settlement cycle by 7:30 AM Chicago time on the following business day, and timing of intraday settlements are defined under the contractual agreement CME Inc. has with each settlement bank, but is typically by 1:30 PM Chicago time. Settlement information is made available in advance of the relevant settlement banks' confirmation and

	generally becomes available between 11:30 AM – 1:00 PM Chicago time and 10:00 PM – 12:00 AM Chicago time for intraday and end-of-day cycles, respectively.[76] More generally, scheduling of settlement cycles considers relevant holidays, as described in CME Clearing's procedures and communicated to Clearing Members through established channels, such as Settlement Notices in preparation for such an event. Both Settlement Notices and CME Group's Holiday Calendar are publicly available on the CME Group website.[77] Additionally, a clearing transaction timeline is publicly available on the CME Group website.[78] The contractual agreements between CME Inc. and its settlement banks provide specific instances and conditions, such as a correction of errors, where settlement instructions can be amended or revoked. Although highly unlikely, CME Clearing may determine it necessary to revoke an instruction due to an operational issue. The settlement instruction in question would be revoked via SWIFT with verbal and/or written communications involving the relevant settlement bank(s) and Clearing Member(s).

Principle 9: Money Settlements

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

Key consideration 1 An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.	CME Clearing has established relationships with a diverse set of commercial banks in order to facilitate money settlements, both the payment and receipt, in all of the currencies for which the contracts it clears are settled. CME Clearing's Clearing Members are a diverse set of entities that are banks, bank-affiliated entities, and non-bank affiliated entities, making it potentially impractical for the Clearing House to settle in central bank money. Notwithstanding the impracticality, CME Clearing would likely be unable to use a Federal Reserve Bank to conduct FX settlements.
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.	Clearing Members' financial obligations are settled in cash. Settlement variation obligations are denominated in the currency for which the contract is settled in and sometimes referenced as the currency of trade. Additionally, performance bond calls are met in U.S. Dollar cash.[79] These processes are designed to ensure the financial obligations to CME Clearing are met with minimal credit and liquidity risks. Settlement banks are selected according to the criteria established by CME Clearing's Credit Policy, as described in CME Clearing's disclosures for Principle 4. Institutions that act as settlement banks for CME Clearing are reviewed and approved by the Credit & Liquidity Committee, CHRC, and CHOC. Settlement

[76] Note, as described in CME Clearing's disclosures for Principle 6, CME Clearing performs settlement cycles for FEX products that align with Australian trading hours and thus, settlement banks have different contractual obligations with regard to the timing of settlement for those products.
[77] *See* http://www.cmegroup.com/tools-information/holiday-calendar.html
[78] *See* http://www.cmegroup.com/clearing/operations-and-deliveries/transaction-timelines.html
[79] Note, performance bond calls for FEX products are met in Australian dollar.

	banks must have and maintain a minimum internal credit rating for which CME Clearing determines based on its comprehensive internal credit rating methodology and must meet other minimum requirements that are designed to ensure a settlement bank can fulfil their daily obligations. These requirements are, in part, assessed during the annual due diligence review CME Clearing conducts of its settlement banks, which are typically on-site.[80] Due diligence reviews are conducted in addition to the ongoing daily monitoring CME Clearing employs for all of its counterparty relationships, including settlement banks. Through CME Clearing's daily monitoring it is able to actively manage its credit and liquidity exposures to its settlement banks. Please note that physical deliveries are discussed in CME Clearing's disclosures for Principle 10.
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, capitalization, 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. 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, capitalization, 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.	Consistent with CFTC Regulations §39.14(c) and §39.36(g), CME Clearing monitors, manages, and limits the credit and liquidity risks presented from its settlement banks, as described in CME Clearing's disclosures for Principle 4. CME Clearing regularly evaluates all settlement banks against defined criteria through its due diligence reviews, internal credit rating methodology, and daily monitoring related to: • Capitalization; • Creditworthiness; • Access to liquidity; • Operational reliability; • General risk management and governance; and • Regulatory standing. These criteria are closely evaluated through CME Clearing's annual due diligence review of its settlement banks. Prior to a review, each settlement bank is given a questionnaire to complete which is then used to evaluate its policies, procedures, and expertise in performing its settlement services for CME Clearing. All settlement banks must demonstrate a sufficient financial position, commensurate with the services provided, as well as an understanding and acceptance of the responsibilities of being a settlement bank for CME Clearing. New settlement banks are subject to a similar preliminary review, which are then reviewed and approved by the Credit & Liquidity Committee, CHRC, and CHOC. Further, settlement banks' financial statements are reviewed at least annually to monitor credit quality, liquidity resources, and overall counterparty strength. On at least an annual basis CME Clearing rates its counterparties, including its settlement banks, utilizing its defined internal credit rating methodology, which is described further in CME Clearing's disclosures for Principle 3. Entities must maintain a minimum defined internal credit rating in order to act as a settlement bank for CME Clearing. The due diligence reviews and internal credit rating process are informed by CME Clearing's daily monitoring of its settlement banks. Settlement banks are monitored on a daily basis against various market

[80] CME Clearing makes its best efforts to complete a due diligence review of its settlement banks on-site, but where an on-site meeting does not occur, a meeting is held virtually.

	metrics through CME Clearing's key risk indicator dashboard. Each settlement bank is also evaluated against historical payment flows per bank. On a daily basis a report on settlement bank activity is distributed to relevant members of the Risk Management team, including senior members, and where appropriate, atypical activity is escalated accordingly to members of the Senior Management of CME Clearing. CME Clearing takes the actions it deems necessary in response to observations highlighted through its daily monitoring, which may include but are not limited to updating an internal credit rating or subjecting the settlement bank to additional monitoring. CME Clearing maintains a diverse set of high-quality settlement bank relationships, which are monitored as described above. Where possible, CME Clearing seeks diversification across its commercial settlement banks to avoid concentration risk. The Risk Management team reviews settlement concentration metrics and Clearing Member distribution among settlement banks. While CME Clearing primarily has relationships with U.S.-domiciled settlement banks, to the extent it has relationships with foreign settlement banks, a thorough evaluation of the legal risks is conducted, as described in CME Clearing's disclosures for Principle 1.
Key consideration 4 If an FMI conducts money settlements on its own books, it should minimize and strictly control its credit and liquidity risks.	As described above, CME Clearing conducts settlements through commercial settlement banks that are disclosed on its website.[81] Additionally, CME Clearing offers a functionality called "Combined Cash Flow", where a Clearing Member can elect to have its settlement variation gains credited to its performance bond account and can have settlement variation losses debited from its performance bond account in the currency of need. With Combined Cash Flow, gains are deposited and held by CME Clearing as performance bond, as opposed to being wired to the Clearing Member's settlement bank account. Losses are debited from the Clearing Member's excess performance bond cash on deposit with CME Clearing where available or debited from the performance bond account at the Clearing Member's settlement bank account if excess cash is not available. Combined Cash Flow is available to be used for any currency at the request of the Clearing Member. While Combined Cash Flow is available for all currencies, in particular, it allows Clearing Members to conservatively manage its credit and liquidity risks for foreign currency denominated products.
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	As described in CME Clearing's disclosures for Principle 8, the contractual agreements CME Inc. has with each settlement bank clearly state the point at which settlements are final and irrevocable. Further, the point at which settlements are final is defined under CME Group Exchange Rule 814. Settlement are final, irrevocable, and unconditional no later than when the Clearing House's bank account at the relevant settlement bank is debited or credited with the payment. Once settlement is final, Clearing Members have the right to move any funds they have received. CME Clearing's disclosures for Principle 8 also outline the timeline for the movements of funds.

[81] *See* https://www.cmegroup.com/clearing/financial-and-collateral-management/settlement-banks.html

intraday, in order to enable the FMI and its participants to manage credit and liquidity risks.	

Principle 10: Physical Deliveries 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.	The CME Group Exchanges list physically deliverable exchange-traded derivatives contracts in the following product classes: • Agriculture; • Energy; • FX; • Interest rates; and • Metals. The CME Group Exchanges list derivatives contracts for trading across a diverse set of products, all of which are cleared and settled by CME Clearing. A variety of these exchange-traded derivatives contracts provide for physical delivery of the underlying product in final satisfaction of the contractual obligation. As further outlined in CME Clearing's disclosures for Key Consideration 2 of this Principle, CME Clearing assists in the facilitation of deliveries and provides certain services. The obligations of the contract with respect to the delivery of a physical instrument or commodity are specified in the respective contract specifications under the publicly available CME Group Exchange Rulebooks. Additionally, an overview of a contract's specifications, including the optionality for physical delivery, is disclosed on the CME Group website through CME Group Slate.[82] CME Group Exchange Rules 702, 714, and 715 specify the obligations of the Clearing House related to an event where a Clearing Member fails to perform on its delivery obligations. Under these rules, CME Clearing is responsible for the financial performance (i.e., replacement cost) with respect to the delivery. This amount shall generally be determined by the difference between the delivery price of the underlying commodity and the reasonable market price of such commodity at the point in time delivery was required. Additionally, pursuant to CME Group Exchange Rules 702, 714, and 715, Clearing Members are responsible to the Clearing House for any damages incurred by the Clearing House as a result of a failures to satisfy a delivery obligation, including related to its customers. For avoidance of doubt, pursuant to CME Group Exchange Rule 714, CME Clearing is not obligated to make or accept physical delivery of the actual underlying commodity or instrument. Further, CME Group Exchange Rule 743.C, outlines in detail the mechanism by which CME Clearing guarantees financial performance in regard to physically deliverable

[82] *See* https://www.cmegroup.com/trading/products/

	FX products, which is consistent with CPMI-IOSCO's guidance for the *Clearing of deliverable FX instruments* to have in place a committed FX swap.[83] Further, under CME Group Exchange Rule 716, prior to the last trading day of a physically deliverable exchange-traded derivatives contract, each Clearing Member is responsible for assessing the account owner's ability to make or take delivery and absent satisfactory information from the account owner, the Clearing Member is responsible for ensuring that the open positions are liquidated in an orderly manner prior to expiration. Additionally, as described further in CME Clearing's disclosures for Key Consideration 2 of this Principle, CME Clearing monitors Clearing Members' exposures that are entering into delivery and reaches out to them as appropriate prior to expiration. More generally, in order to maintain clearing membership, Clearing Members must exhibit the necessary product expertise, which encompasses knowledge of physical delivery obligations for the products they are clearing.
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.	CME Clearing's processes for facilitating delivery for exchange-traded derivatives contracts with a physical delivery component is designed to ensure that the risks and costs associated with such delivery are effectively identified, monitored, and managed. As such, the processes and obligations for delivery detailed under Chapter 7 of the CME Group Exchange Rulebooks are designed to be clear and mitigate and address the risks that can arise from physical delivery. In particular, the chapter outlines the obligations imposed on parties involved in the delivery process, including Clearing Members and delivery facilities. Similar to how CME Clearing outlines minimum criteria for firms to act as Clearing Members, as described in CME Clearing's disclosures for Principle 18, minimum criteria for operators of delivery facilities, including conditions for regularity, are outlined in Chapter 7 of the CME Group Exchange Rulebooks. As such, pursuant to CME Group Exchange Rule 703, in most cases, operators of delivery facilities must be declared regular for delivery with the approval of the relevant CME Group Exchange. Further, such facilities that wish to increase their regular capacity must get the approval of the relevant CME Group Exchange and if they wish to decrease their regular capacity, they must file a notice with the relevant CME Group Exchange. As appropriate, delivery facilities are also subject to inspection, including to verify that they continue to meet the requirements associated with its current application for regularity on file with the relevant CME Group Exchange, which allows for the risks associated with delivery to be actively managed and monitored. Further, the CME Group Exchanges frequently review facilities to ensure proof of insurance and bonding is current and up-to-date. The CME Group Exchanges also conduct due diligence reviews to confirm the facilities and their clearing agents continue to meet minimum financial requirements and the CME Group Exchanges maintain the right to take action if the financials are non-compliant. The practices employed for overseeing delivery facilities allow the risks and costs associated with physical delivery to be effectively monitored and managed, while also ensuring minimum standards are met and maintained for the physical delivery of exchange-traded derivatives contracts' underlying commodity or instrument. CME Clearing works with Clearing Members and delivery facilities to ensure the facility,

[83] *See* https://www.bis.org/cpmi/publ/d143.pdf

	position, open interest, and delivery of technical information, such as long date reporting, is accurate and timely. These reports are published on a daily basis on the CME Group website.[84] The primary risk CME Clearing has identified related to the physical delivery for exchange-traded derivatives contracts is the failure of a buyer or seller to satisfy their obligation to deliver the physical commodity or make the related cash payment for the delivery. To mitigate this risk, CME Clearing closely monitors Clearing Members exposures in contracts that have a physical delivery component and in particular, when they enter into a delivery period. In advance of a physical delivery, CME Clearing works with its Clearing Members to affirm that their arrangements to make delivery are sufficient. Further, the CME Group Exchanges engage key cash market participants and facility operators to confirm their ability to physically load out and transport product, as well as to estimate the timeline to complete such movements. These participants also provide information around the end product in areas outside of CME Group's business, such as transportation dynamics, end product quality, and availability and delivery performance of participants. This communication channel helps mitigate potential market congestion for exchange-traded derivatives contracts with a physical delivery component. The CME Group Exchanges also review third-parties that participate in the delivery process. Additionally, where firms hold positions in physically deliverable exchange-traded derivatives contracts when such contracts go into their respective delivery period, they are typically assessed a delivery performance bond requirement. Delivery performance bond requirements are monitored within the overall risk profile of the Clearing Member on an individual basis. For most deliverable contracts, delivery performance bond requirements are calculated pursuant to the relevant margin methodology, except that the risk of the position is not allowed to be offset against that of any other contract. In effect, the position is margined naked, as if it had been moved to a separate account. However, for a few physically deliverable contracts (e.g., crude oil and natural gas), long positions are assessed the full value of the contract (i.e., long full value margining). For some physically deliverable contracts, all positions in a maturing contract go into the delivery period at the same time and are assessed delivery performance bond beginning on that date. For other deliverable contracts, there is a range of dates during which delivery may be initiated. For these, if the position has gone into the delivery process, then the delivery performance bond requirement is assessed, and for positions not in delivery, the performance bond requirement is calculated using the standard margin methodology. CME Clearing may utilize Delivery-versus-Payment ("DvP") or Payment-versus-Payment ("PvP") mechanisms to control delivery performance risk, which is designed to ensure the timely exchange of cash for the physical delivery of a given contract's underlying commodity or instrument. CME Clearing has worked to adapt the delivery service infrastructure in order to reduce the costs and risk profile associated with a particular delivery process, as appropriate. Clearing Members generally utilize the market standard, Continuous Linked Settlement ("CLS") and its PvP methodology to satisfy their delivery obligations for

[84] *See* http://www.cmegroup.com/clearing/operations-and-deliveries/deliveries.html

	CLS eligible, physically deliverable FX exchange-traded derivatives contracts and an Order-to-Pay ("OTP") or wire transfer methodology to satisfy their delivery obligations for non-CLS eligible, physically deliverable FX exchange-traded derivatives contracts. For certain exchange-traded derivatives contracts with physical delivery, CME Clearing matches open short contracts to open long contracts using the longest dated contracts first. This ensures that the oldest open dated contract, based on when the position was established, will be selected for delivery first. Further for certain contracts, CME Clearing also maintains an electronic delivery system that inventories electronic warehouse certificates and warrants, consistent with a given contract's physical delivery specifications. The specific legal obligations for physical delivery related to a particular exchange-traded derivatives contract are laid out in the contract specifications under the CME Group Exchange Rulebooks and the general legal obligations of Clearing Members that result out of trading and clearing physically deliverable contracts are defined under Chapter 7 of the CME Group Exchange Rulebooks, as noted throughout this Principle. Under CME Group Exchange Rule 701, the Chief Executive Officer, Chairman, Chief Operating Officer, or Chief Regulatory Officer, or their delegates, may make a determination that a delivery or final settlement cannot be completed as a result of a Force Majeure event. The ability to declare such an event allows CME Clearing to effectively manage and reduce the risks and costs to its market participants under atypical market circumstances, where the delivery of the underlying commodity or instrument related to the contracts impacted by the event may be threatened. Force Majeure is defined in the CME Group Exchange Rulebooks as: *"Any circumstance (including but not limited to an act of God, strike, lockout, blockage, embargo, governmental action or terrorist activity) which is beyond the control of the buyer or seller and precludes either party from making or taking delivery of product or precludes the Exchange from determining a final settlement as provided for in Exchange Rules."* Any declaration of a Force Majeure will be considered binding upon all parties within the contract and will be reported publicly and to the CFTC as soon as possible. Force Majeure may result in a suspension of delivery, changes in the settlement price processes, or other actions deemed necessary. Clearing Members and facilities are required to notify CME Clearing of any situation which may result in a declaration of Force Majeure.

Principle 11: Central Securities Depository

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.

This Principle is not applicable to CME Clearing because it is not central securities depository.

Principle 12: Exchange-of-Value Settlement Systems

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.
This Principle is not applicable to CME Clearing because it is not an exchange of value system. Third-party facilities are available for CME Clearing's Clearing Members to use for settlements. Details on settlement of physically deliverable exchange-traded derivatives contracts are described in CME Clearing's disclosures for Principle 10 and details on money settlements are described in CME Clearing's disclosures for Principle 9.

Principle 13: Participant-Default Rules and Procedures

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 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.	In line with CFTC Regulation §39.16, CME Group Exchange Rules and procedures allow CME Clearing to take timely action to contain losses and to quickly meet its obligations in the event of a Clearing Member default, along with continuing to provide its clearing and settlement services to the marketplace. CME Clearing has employed effective and clearly defined rules and procedures to manage a Clearing Member default event. CME Group Exchange Rules 802.A and 8G802.A for Base and IRS products, respectively, define a default by a Clearing Member to be the failure of such Clearing Member to promptly discharge any obligation to the Clearing House or such Clearing Member becomes subject to any bankruptcy, insolvency, or similar proceedings. Upon declaration of a default, CME Clearing would notify the CFTC, as well as communicate the declaration of default through notice on the publicly available CME Group website. Further, CME Group Exchange Rules 975 and 8G975 for Base and IRS products, respectively, allow the Global Head of Clearing & Post-Trade Services to empanel the respective Emergency Financial Committee when he/she determines that the financial or operational condition of a Clearing Member or one of its affiliates is such that to allow that Clearing Member to continue its operation would jeopardize the integrity of the CME Group Exchanges, or negatively impact the financial markets by introducing an unacceptable level of uncertainty, volatility or risk, whether or not the Clearing Member continues to meet the required minimum financial requirements. Such Emergency Financial Committee is authorized upon a unanimous vote, to order: • An immediate position limitation; • An immediate suspension of the Clearing Member; • That all open trades of said Clearing Member be for liquidation only; • The liquidation or transfer of all or a portion of the open positions of the Clearing Member; • Additional performance bond to be deposited with the Clearing House; and/or • Any other action necessary to protect the financial integrity of the Clearing House. These rules allow CME Clearing to protect non-defaulting Clearing Members and protect the integrity of markets for which it clears, in managing a potential or actual Clearing Member default event. Additionally, the Board, CHRC, and IRSRC are afforded similar powers as those of the relevant Emergency Financial

	Committees under CME Group Exchange Rules 230.K, 403, and 8G27, respectively. Decisions to utilize the powers afforded under such rules would be made in accordance with CFTC regulations, including those under CFTC Regulation §39.24, which require CME Clearing to have governance arrangements that place a high priority on the safety and efficiency of CME Clearing and explicitly support the stability of the broader financial system. CME Clearing maintains default management rules and procedures which are designed to allow it to effectively manage defaults when they occur and continue its operations efficiently to protect the broader financial system. As such, where a Clearing Member defaults, CME Clearing would intend to conduct its normal settlement cycles, as described in CME Clearing's disclosures for Principle 8. CME Clearing's default management rules and procedures are developed, in consultation with the appropriate CME Clearing Risk Committee, to address the unique characteristics of derivatives products cleared at CME Clearing and the unique circumstances that could surround a Clearing Member default event that could potentially challenge its typical operations. Actions that CME Clearing may undertake to manage a default pursuant to CME Group Exchanges Rules 802 and 8G802 for Base and IRS products, respectively, include the ability to execute the prompt transfer, liquidation, or hedging of customer and house positions of a defaulted Clearing Member. The rules relevant to the management of a Clearing Member default event under the CME Group Exchange Rulebooks afford CME Clearing the necessary flexibility and discretion in determining when and which actions to take in managing such an event. These rules are designed to allow CME Clearing to appropriately consider the facts and circumstances at the time of default and act in manner that is designed to protect the safety and efficiency of the Clearing House and explicitly support the stability of the broader financial system. However, the order in which CME Clearing can utilize the layers of each of its financial safeguards waterfalls are clearly defined under the CME Group Exchange Rulebooks and described in greater detail below. Generally, the first step in CME Clearing's default management process is to evaluate the defaulted Clearing Member's portfolio. Where the defaulted Clearing Member has non-defaulting customers, CME Clearing would identify non-defaulting Clearing Members that would be well-suited to take on the customer portfolio. As such, CME Clearing would attempt to port all non-defaulting customers as quickly as practicable to a non-defaulting Clearing Member, in line with CME Group Exchange Rules 802.G and 8G802.G for Base and IRS products, respectively. CME Clearing would work to identify stable Clearing Members with similar and/or complementary customer profiles who have sufficient financial resources that may be well placed to absorb non-defaulting customers prior to the default of the distressed Clearing Member, where possible, minimizing the amount of time necessary to port customers once the default has been declared. Any Clearing Member that accepts customers for porting must have the necessary risk management expertise.

	Depending on the characteristics of the defaulted Clearing Member's portfolio, current market conditions, and other qualitative and quantitative factors, the portfolio may be liquidated immediately or hedged and auctioned, where applicable, in line with CME Group Exchange Rules 802.B and 8G802.B for Base and IRS products, respectively. For example, selling a portfolio through a central limit order book provides transparency and access to a broader, centrally located group of potential bidders, which could reduce the likelihood of needing to hedge the portfolio, through allowing for greater access to liquidity. Additionally, regarding a default related to the Base products' financial safeguards, CME Clearing may also elect to conduct an auction for selected buy- and sell-side participants to bid on the defaulted Base Clearing Member's portfolio. Participation in the Base products' financial safeguards waterfall default management auction for exchange-traded derivatives is voluntary. Pursuant to CME Group Exchange Rules 8F025 and 8G25, CME Clearing will consult the traders of certain Clearing Members seconded to the relevant Active Default Management Committee related to the waterfall in which the default occurred for cleared swaps derivatives, regarding the hedging, auction, and/or liquidation process, where appropriate. Further information on the Active Default Management Committees is included in CME Clearing's disclosures for Principle 2. Additionally, pursuant to CME Group Exchange Rules 8F014 and 8G14, as part of the default management process for Base Clearing Members with OTC products (i.e., cleared swaps) and IRS Clearing Members, respectively, it is expected that they bid in an auction of a defaulted Clearing Member's portfolio, relative to their membership(s) and the product class(es) for which they clear at CME Clearing. CME Clearing would not require a Clearing Member to bid for a portion of the defaulted Clearing Member's portfolio that is not proportional to the size of the bidding Clearing Member's portfolio in the relevant product class(es); however, this limitation would not preclude a Clearing Member from voluntarily bidding for more than its proportional share, where permitted by CME Clearing. Under CME Group Exchange Rules 8G02.B, CME Clearing also employs a structure to incentivize IRS Clearing Members to construct reasonable bids, where the failure to provide a reasonable bid will result in the juniorization of their IRS Guaranty Fund contributions to others that have submitted reasonable bids. **Financial Safeguards Waterfalls** Pursuant to CME Group Exchange Rules 802.A and 8G802.A for Base and IRS products, respectively, in the event of a Clearing Member being declared in default, CME Clearing is authorized to apply the defaulting Clearing Member's performance bond on deposit, Guaranty Fund contributions, proceeds from the sale of any memberships, and any other available assets, allowing CME Clearing to quickly act in the event of a default. However, at no time is it permitted for customer performance bond funds to be used to satisfy losses associated with a Clearing Member's house account. CME Clearing will initially use performance bond funds and Guaranty Fund contributions of the defaulted Clearing Member with respect to the financial safeguards waterfall in which the default event occurred to satisfy any losses associated with products covered under such Guaranty Fund. After satisfying all losses associated with products for a particular financial safeguards waterfall, CME Clearing may use any excess

	assets of the defaulted Clearing Member related to such waterfall to satisfy losses associated with products covered in the other financial safeguards waterfall. For example, if a Clearing Member is clearing products associated with the Base products' financial safeguards waterfall and IRS products' financial safeguards waterfall and excess performance bond or Base Guaranty Fund deposits of such Clearing Member remain after resolution of all losses of such Clearing Member associated with Base products, CME Clearing may apply such excess funds to meet the obligations of such Clearing Member associated with IRS products. In the unlikely event the defaulted Clearing Member's performance bond funds, Guaranty Fund contributions, and other available assets are insufficient to satisfy losses associated with the financial safeguards waterfall in which the default event occurred, CME Clearing would utilize the assets in the respective financial safeguards waterfall in the following order, as prescribed in CME Group Exchange Rules 802.B and 8G02.B for Base and IRS products, respectively: • CME Clearing's contribution to the relevant financial safeguards waterfall; • Non-defaulting Clearing Members Guaranty Fund contributions to the relevant financial safeguards waterfall; and • CME Clearing would use its assessment authority over each non-defaulting Clearing Member up to the limits prescribed for the relevant financial safeguards waterfall.[85] As a result of the clearly defined order in which CME Clearing can utilize available resources to manage a Clearing Member default event, in line with CFTC Regulation §39.16, CME Clearing's practices are designed to allow it to promptly act and thus, contain losses. Additionally, as described in CME Group Exchange Rule 817, subject to certain limitations, assets deposited by a defaulting Clearing Member to satisfy Guaranty Fund and performance bond requirements may be applied to secure a draw on any liquidity facility, including the Credit Facility and/or FX Facility, maintained by CME Clearing for the purpose of providing prompt liquidity. Additionally, as described in CME Clearing's disclosures for Key Consideration 4 of Principle 3, CME Group Exchange Rule 822 affords CME Clearing the capacity to secure liquidity under defined circumstances, which could include a Clearing Member default, by utilizing its Clearing Members' Guaranty Fund contributions and in some cases, relying on the role of certain Clearing Members (or their affiliates) as U.S. Government Securities Broker-Dealers. CME Group Exchange Rule 822 provides CME Clearing the ability to act promptly to utilize such rule if necessary. **Replenishment of Resources Following a Clearing Member Default**

[85] As described in CME Clearing's disclosures for Key Consideration 4 of Principle 3, beyond assessment powers, CME Clearing has other tools defined under its Recovery Plan and the CME Group Exchange Rules to address uncovered credit losses and liquidity shortfalls.

	As described in CME Group Exchange Rules 802.F and 8G802.F for Base and IRS products, respectively, Clearing Members are required to restore their contributions to the relevant Guaranty Fund(s) prior to the close of business on the business day following the day the Guaranty Fund(s) contributions are used; provided that any such replenishment shall be subject to the maximum assessments during the applicable cooling off periods – five business days for the Base products' financial safeguards waterfall and 25 business days for the IRS products' financial safeguards waterfall. Where Clearing Members must restore their contributions to the relevant Guaranty Fund(s), the size of total Guaranty Fund and each Clearing Member's respective contribution would be determined based on CME Clearing's methodology and allocation practices described in CME Clearing's disclosures for Principle 4. Further, CME Group Exchange Rules 802.H and 8G802.H allow CME Clearing to assess solvent Clearing Members for the maximum amounts defined by relevant CME Group Exchange Rules during a cooling off period related to the financial safeguards waterfalls for Base and IRS products, respectively. Further, under such rules any unutilized amount for which a Clearing Member is assessed in curing the Clearing Member default event after the applicable cooling off period ends, may be utilized to meet its Guaranty Fund requirement(s) to replenish the Guaranty Fund(s) of the relevant financial safeguards waterfall(s).
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.	In conjunction with CFTC Regulation §39.16(b), CME Clearing has defined within its internal documentation, in addition to the CME Group Exchange Rulebooks, the roles and responsibilities of the Global Head of Clearing & Post-Trade Services and other members of the Senior Management of CME Clearing in managing a Clearing Member default event. CME Clearing maintains and regularly updates its default management guidelines, which includes its operational procedures for managing Clearing Member default events. Along with these guidelines, CME Clearing maintains a communication protocol that has contact information of relevant regulatory agencies and internal personnel for the timely communication of information related to a default. CME Clearing will communicate to its market participants the declaration of a Clearing Member default through notice on the publicly available CME Group website. Additionally, CME Clearing's default management guidelines are developed considering the guidance of the relevant CME Clearing Risk Committee and as such, the relevant CME Clearing Risk Committee approves substantive changes to such guidelines. CME Clearing also conducts default management drills on a regular basis across the product classes it clears to test its procedures and to continually improve its procedures and practices through lessons learned from such drills, while employing and developing industry best practices, as further described in CME Clearing's disclosures for Key Consideration 4 of this Principle.
Key consideration 3 An FMI should publicly disclose key aspects of its default rules and procedures.	In line with CFTC Regulation §39.16(c), CME Clearing's default rules and procedures are contained in the CME Group Exchange Rulebooks that are publicly available on the CME Group website and as such, its disclosures for this key consideration should be read in consideration of CME Clearing's disclosures for Key Consideration 1 of this Principle. CME Group Exchange Rules 802.A and 8G802.A for Base and IRS products, respectively, provide CME Clearing the ability to declare a Clearing Member in default upon its failure to promptly discharge any obligation to the Clearing House or where the Clearing Member becomes subject to any bankruptcy, insolvency, or similar proceedings. Generally, declarations of default will be

	made by the Global Head of Clearing & Post-Trade Services or a delegate, with such declarations communicated on the publicly available CME Group website. In managing a Clearing Member default event, CME Clearing's procedures are designed to allow it to continue to perform on its obligations as a Clearing House to non-defaulting Clearing Members and continue to execute its clearing and settlement activities. With respect to a defaulted Clearing Member, by its authority granted under CME Group Exchange Rules 802.B and 8G802.B for Base and IRS products, respectively, the Clearing House will as quickly as practicable seek to port non-defaulting customers of a defaulted Clearing Member to non-defaulting Clearing Members and may liquidate and/or auction positions associated with the defaulted Clearing Member's house account. Following a Clearing Member default, cleared swaps derivatives customers may settle with the Clearing House directly in accordance with the mechanisms established by the Clearing House. In the event a cleared swaps customer fails to make a payment when due, the Clearing House may apply such customer's performance bond against such obligation and may declare the customer in default and proceed to liquidate the portfolio. CME Clearing, together with the relevant Active Default Management Committee, where applicable, will also determine if it should enter into any hedging transactions for the defaulting Clearing Member's house and/or customer portfolios, as described under CME Group Exchange Rules 802.B and 8F025 for Base products and 8G25 for IRS products. CME Clearing will then conduct an auction of such positions among Clearing Members and other market participants, where appropriate, pursuant to the CME Group Exchange Rules. CME Group Exchange Rules 802.B and 8G802.B for Base and IRS products, respectively, further provide that upon the default of a Clearing Member the Clearing House will apply all relevant performance bond funds, Guaranty Fund contributions, and all other assets held by, or pledged to, the Clearing House to discharge the Clearing Member's obligations to the Clearing House. As described in CME Clearing's disclosures for Key Consideration 1 of this Principle, in line with the aforementioned rules, initially, the performance bond funds and Guaranty Fund contributions of the defaulted Clearing Member for a products associated with the financial safeguards waterfall in which the default occurred will be used to discharge the obligations of the defaulted Clearing Member – e.g., IRS products' performance bond funds and Guaranty Fund contributions of the defaulted Clearing Member will be used to satisfy losses of such Clearing Member related to IRS products prior to being used to satisfy any other obligations of the Clearing Member. After the satisfaction of all losses associated with the funds designated for a specific financial safeguards waterfall, any excess performance bond funds, Guaranty Fund contributions, and other assets of the Clearing Member may be utilized to satisfy losses associated with the other financial safeguards waterfall where it maintains a membership; for avoidance of doubt, this excludes any assets related to the customer account being utilized to cure house account driven losses. Additionally, as discussed further

	herein, the Clearing House maintains a Credit Facility and FX Facility that could be utilized in the event certain assets of the defaulted Clearing Member need to be converted into a currency of need.
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.	Consistent with CFTC Regulation §39.16(b), Clearing Members and other market participants, where appropriate, as determined by CME Clearing, participate in twice-yearly default management drills for each of CME Clearing's financial safeguards waterfalls. These drills afford Clearing Members and other market participants the opportunity to become familiar with CME Clearing's default management rules and procedures and provide a forum for participants to test their ability to evaluate sizable portfolios, including under extreme but plausible market conditions. CME Clearing conducts default management drills for a diverse set of portfolios across product classes for Base and IRS products. The drills are structured consistent with existing Clearing Member exposures and contain large and complex portfolios representative of the risks held by existing Clearing Members. Each drill consists of a hedging phase, where appropriate, and an auction and/or liquidation of the hypothetically defaulted Clearing Member's portfolio. Default management drills conducted by CME Clearing may also include a customer porting exercise. The results of each drill are reviewed with the relevant CME Clearing Risk Committee and changes to default management processes are implemented when warranted. Additionally, CME Clearing periodically conducts testing of its access to the Credit Facility and FX Facility it maintains that are designed to ensure prompt receipt of cash against performance bond funds and Guaranty Fund contributions utilized to collateralize the draw, as described in CME Clearing's disclosures for Principle 7. CME Clearing also conducts annual liquidation simulations, as described in CME Clearing's disclosures for Principle 5. CME Clearing considers potential collateral concentrations when analyzing collateral held and when conducting collateral liquidation simulations.
Principle 14: Segregation and Portability 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	As set out under CME Group Exchange Rule 973, CME Clearing's segregation arrangements satisfy the requirements under Sections §4d(a)(2) and §4d(f)(2) of the CEA[86] that customer positions and performance bond funds are segregated from the positions and performance bond funds of their Clearing Member (and their affiliates) and CME Clearing – commonly referred to as customer segregated accounts for exchange-traded derivatives and cleared swaps customer accounts for cleared swaps derivatives. Further, under CFTC regulations, customers' exchange-traded derivatives positions and performance bond funds are segregated from customers' cleared swaps derivatives positions and performance bond funds; unless customers' exchange-traded and cleared swaps derivatives positions are portfolio margined as elected by the customer. Additionally, where CME Clearing offers clearing services to a foreign board

[86] Also of relevance to customer segregation are CFTC Regulations §39.15(b), §1.20(g), §22.3, and §30.7.

should take steps to ensure that such protection is effective.	of trade, customers related funds are segregated in secured 30.7 accounts (e.g., FEX).[87] Segregation at the CME Clearing- and FCM-level is achieved by utilization of customer segregated, cleared swaps customer, and secured 30.7 account classes. The funds in each customer account class are held on an omnibus basis. Any Clearing Member that supports customer clearing at CME Clearing must register as an FCM. FCM registration invokes specific CFTC regulatory requirements related to customer protection, including but not limited to obligations related to segregation of customer funds, margin collection requirements, recordkeeping, and reporting. In line with margin collection requirements under CFTC Regulation §39.13(g)(8)(i), during the end-of-day settlement cycle, CME Clearing requires its FCM Clearing Members to collect performance bond for customer segregated, cleared swaps customer, and secured 30.7 accounts on a gross basis for each customer. To facilitate this process, pursuant to CME Group Exchange Rule 980.G, each FCM Clearing Member submits daily reports to CME Clearing that include legal entity identifiers, where available, and end-of-day gross positions of each individual customer account within the customer segregated, cleared swaps customer, and secured 30.7 accounts. The collection of margin on a gross basis fully margins each customer's positions independently by requiring that the exposures of each individual customer of an FCM Clearing Member's cannot be offset against each other – i.e., a long position of Customer A in a given contract cannot be offset against a short position of Customer B in the same contract. The collateralization of risk at an individual customer-level and segregation of customers' performance bond from that supporting the proprietary positions of their Clearing Members — which under CFTC Regulation §1.3(y) includes affiliates of the Clearing Member — provides significant customer protections in the event of a Clearing Member default and greatly enhances the likelihood of successfully porting customers of a defaulted Clearing Member to one or more Clearing Members in good standing. CFTC Regulations §1.20 and §22.5 also require that FCMs and DCOs obtain from each commercial depository where customer funds are held letters acknowledging the segregation of such customer collateral, waiving the right of any offset or lien against such collateral, and obligating the institution to provide information to the CFTC. While the acknowledgement letter is not always required in the same format for central banks, those banks have also acknowledged the segregated nature of customer collateral and foregone their liens on such collateral. With respect to cleared swaps customers, CME Clearing complies with applicable requirements of Part 22 of CFTC Regulations. Of particular relevance is CFTC Regulation §22.3, which establishes the requirements for the legally segregated, operationally commingled ("LSOC") standard, which fundamentally provides that a DCO must track the collateral value of each cleared swaps customer. As such, in accordance with CFTC Regulation §22.11, CME Clearing requires any FCM Clearing Member

[87] However, consistent with CFTC Regulation 39.15(b)(2)(ii), the CFTC has permitted CME Clearing to commingle customer funds relating to DME positions in the customer segregated account.

	posting cleared swaps customer performance bond funds to identify at least once per business day the identity of the cleared swaps customer on whose behalf such funds were posted and the amount. Under LSOC, if one or more customers were to default to the FCM Clearing Member, and the FCM Clearing Member, in turn, defaulted to CME Clearing in the customer origin, CME Clearing can only use the value attributable to a particular customer to cure the losses of that customer where other customers have not defaulted – e.g., collateral value of Customer A where Customer A has not defaulted cannot be used to satisfy the losses of Customer B where Customer B has defaulted. CME Clearing's implementation of LSOC is further described in CME Clearing's disclosures for Key Consideration 2 of this Principle. In the ordinary course of business, customers may elect to transfer their accounts – position and performance bond – to a different Clearing Member, as described under Key Consideration 3 of this Principle. CME Clearing's system capacity and operations are designed to facilitate the efficient transfer of customers' positions and performance bond funds. In the event of a Clearing Member default, CME Clearing is able to process transfers on an expedited basis through an established and well-tested framework underpinned by Subchapter IV of Chapter 7 of the U.S. Bankruptcy Code and the CFTC's Part 190 Regulations. To further improve the probability of successful porting of a customer's positions where such positions are to be transferred due to distress or default of its Clearing Member, CME Clearing conducts "white knight" analysis that is designed to, on an *ex ante* basis, identify Clearing Members with similar and/or complimentary risk and business profiles that have the necessary risk management expertise to leverage in managing a default. As a part of this analysis, CME Clearing also examines Clearing Members' customer profiles, exchange memberships, financial resources, capital requirements, and other factors, as needed. It is important to note the white knight analysis is not a conclusive measure, but rather a means to proactively manage the risk of a potential Clearing Member default scenario, as ultimately the discretion to absorb non-defaulting customers is left to the non-defaulting Clearing Members. Additionally, during CME Clearing's risk review process it gauges Clearing Members' interest in accepting customers for porting in the event of a Clearing Member default. Collection of customer margin on a gross basis, in addition to identifying stable Clearing Members that are well-prepared to take on a distressed or defaulted Clearing Member's customer portfolio, significantly increases the likelihood that porting is successfully executed in a timely manner. CME Group Exchange Rules 802.G and 8G802.G for Base and IRS products, respectively, provide CME Clearing with the immediate right to transfer non-defaulting customer positions and associated performance bond value to another Clearing Member. As such, as described in Key Consideration 3 of this Principle, in the event of a Clearing Member's distress, CME Clearing can initiate the porting of the customers, which CME Clearing would consider if it was appropriate given the prevailing facts and circumstances and more generally, its objective to support the stability of the broader financial system. This "negative consent" approach has successfully allowed CME Clearing to port customers, either the entire book of customers or subsets of similar customers, to non-defaulting Clearing Members efficiently

	and quickly, allowing customers to continue to maintain market access to manage their risks. In the event of an FCM Clearing Member's insolvency, the U.S. Bankruptcy Code and the CFTC's Part 190 Regulations generally provide that the bankruptcy trustee of such FCM may not challenge a transfer of customer accounts that occurred prior to the entry for relief under the U.S. Bankruptcy Code and for seven-days after an entry for relief, provided that the CFTC has not disapproved such transfer. While CME Clearing would endeavor to port customers of a defaulted Clearing Member prior to the appointed trustee stepping-in, CFTC Regulation §190.02 implements additional requirements that are supportive of porting and require the trustee to immediately use its best effort to transfer open customer contracts within seven-days of the Clearing Member filing for bankruptcy. **Legal Basis** The legal basis for the enforceability of the CME Group Exchange Rules for segregation and porting is well-established and provides CME Clearing certainty that it would be able to take the appropriate actions to port customers of a defaulted Clearing Member. The CME Group Exchange Rules are consistent with the CME Clearing's regulatory requirements for segregation and portability. The rules-basis under which CME Clearing is able to process customer transfers in the ordinary course of business or port customers in a Clearing Member default event provide CME Clearing a high degree of assurance that it would be able to do so efficiently, while protecting the positions and performance bond funds of the defaulted Clearing Member's customers, as further described in CME Clearing's disclosures for Key Consideration 4 of Principle 1. Applicable to all CFTC-registered DCOs, CFTC Regulation §39.27(b) requires CME Clearing to operate pursuant to a legal framework that provides for, inter alia, the steps CME Clearing would take to address the default of a Clearing Member, including but not limited to the ability to transfer positions in a timely manner. The framework established under CME Group Exchange Rules 802 and 8G802 for Base and IRS products, respectively, for managing a default is designed to protect the customers of a defaulted Clearing Member. Additionally, as described further in CME Clearing's disclosures for Principles 1, CME Group Exchange Rules 819 and 8F008 for Base and cleared swaps products, respectively, require each Clearing Member to grant a first priority, unencumbered security interest in all collateral it posts to CME Clearing – for customer and house positions – and to execute any documents required by CME Clearing to create and enforce such liens. Having a first priority and unencumbered security interest in collateral allows CME Clearing to access collateral and facilitate porting in the event a customer's Clearing Member defaults. When offering clearing services outside the U.S., CFTC Regulation §39.27(c) requires CME Clearing to specify a choice of law and address any material conflicts of law issues. Further, the DCO must be able to demonstrate the enforceability of its choice of law in relevant jurisdictions and that its rules, procedures, and contracts are enforceable in all relevant jurisdictions. The enforceability of the CME Group Exchange Rulebooks in a Clearing Member default event are described in detail in CME Clearing's disclosures for Principle 1. At a high level, prior to accepting a foreign-domiciled institution as a Clearing Member or

	contracting with a foreign financial institution as a settlement bank or collateral custodian, CME Clearing conducts a thorough evaluation of the legal risks associated with doing so and secures the necessary legal opinions evaluating the enforceability of its legal and contractual rights and obligations vis-à-vis that counterparty. This analysis is designed to ensure that CME Clearing has similar rights and protections under applicable local law, including the ability to enforce its segregation and portability arrangements in foreign jurisdictions, as afforded under the CFTC's Part 190 Regulations, the U.S. Bankruptcy Code, and any other applicable U.S. law.
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.	As noted above, the positions and performance bond funds of a customer are required to be segregated from the positions and performance bond funds of its Clearing Member and their affiliates, pursuant to the CEA, applicable CFTC regulations, and CME Group Exchange Rule 973. CME Clearing protects customer positions and performance bond funds against the risk from their FCM Clearing Member through application of the margining, segregation, and Clearing Member reporting requirements consistent with the standards set forth in CFTC regulations, as described under Key Consideration 1 of this Principle. Customer performance bond is held to protect CME Clearing from the failure by a Clearing Member to make payments related to its customers' exposures, in particular, settlement variation payments. As noted above, performance bond for customers is collected on a gross basis consistent with CFTC Regulation §39.13(g)(8)(i) and these funds are held on an omnibus basis pursuant to the CEA and CFTC regulations. Each account containing customer positions or performance bonds funds is identified as belonging to customers. Customer positions and performance bond funds are segregated from positions and collateral of the FCM Clearing Member and further, exchange-traded derivatives customer positions and performance bond funds are segregated from cleared swaps derivatives customer positions and performance bond funds – an exception to this is where positions are portfolio margined for which customers must opt into, consistent with CME Group Exchange Rules 831 and 8G831. Segregation of customer positions and performance bond funds occur at the FCM Clearing Member, CME Clearing, and relevant depository institution. CME Group Exchange Rule 980 outlines the records each Clearing Member must prepare, maintain and make available to CME Clearing, including but not limited to reconciliations for all accounts. Of particular relevance is CME Group Exchange Rule 980.G, which requires each Clearing Member to submit daily reports to the Clearing House that includes legal entity identifiers, where available, and end-of-day gross positions by each individual customer account within a segregation account origin. Additionally, CME Group Exchange Rule 971 requires each FCM Clearing Member to prepare complete and materially accurate daily computations of funds held in each customer account class (i.e., customer segregated, cleared swaps customer, and secured 30.7 accounts) it clears. Pursuant to CFTC Regulations §1.20 and §22.5, CME Clearing also obtains acknowledgement letters from depositories and custodians holding customer segregated and cleared swap funds and collateral, as described above. **Managing Fellow Customer Risk Relating to a Double Default Event**

	Fellow customer risk is the risk that one or more customers will default on their obligations to their FCM Clearing Member and that such loss will be so great that the FCM Clearing Member, in turn, will default on its obligations to CME Clearing – also known as a "double default". The CFTC's Part 22 and 39 Regulations and CME Group Exchange Rules prohibit CME Clearing from using customer collateral to satisfy any obligations of the FCM Clearing Member with respect to its proprietary positions and from using customers' exchange-traded derivatives collateral to satisfy customers' cleared swaps derivatives obligations and vice-versa, unless a customer has opted into the portfolio margining. Fellow customer risk is mitigated by margining customers on a gross basis, in addition to the requirement under CFTC regulations that an FCM Clearing Member maintain a targeted amount of additional Clearing Member funds attributable to the customer accounts in excess of the aggregate collateral deposited by customers – also referenced as "residual interest". Although CME Clearing would make its best efforts to protect non-defaulting customers of a defaulted FCM Clearing Member in a double default event, CME Clearing may use the entire pool of collateral in the customer segregated account (i.e., exchange-traded derivatives customer account) to cure losses associated with positions in that account. However, for cleared swaps derivatives customers, the CFTC's Part 22 Regulations and CME Group Exchange Rules are designed to ensure that CME Clearing may ascertain the positions and collateral value contributed at the individual customer level and in turn, prohibit CME Clearing from using the value contributed by one customer that has not defaulted to satisfy losses created by another customer that has defaulted, further limiting any fellow customer risk.
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.	In the ordinary course of business, CME Clearing can execute the efficient transfer of a Clearing Member's customers positions and performance bond. Customers may elect to transfer their accounts to a new Clearing Member subject to the execution of new account documentation. The transfer of positions and performance bond between Clearing Members at the request of a customer is standard industry practice, and it can be done quickly, and in most circumstances within one business day. Under NFA Rule 2-27, FCM Clearing Members are required to process such transfers within two business days. Further, where a Clearing Member does not promptly execute the transfer of a customer's positions and performance bond to another Clearing Member, CME Clearing can intervene to facilitate the customer's request. In the event of a Clearing Member default, CME Clearing can process transfers on an expedited basis through an established and well-tested legal regime under Subchapter IV of Chapter 7 of the U.S. Bankruptcy Code and the CFTC's Part 190 Regulations. This process is enhanced by the practice of customer gross margining, which ensures that each customer is independently margined, thus increasing the flexibility of CME Clearing to port customers to multiple Clearing Members or a single Clearing Member in the event of a default. CME Clearing's systems and operations are designed to handle the prompt transfer of positions at either the customers' direction, or in the absence of a customer request, CME Clearing can direct a bulk transfer where it believes it is in the best interest of the non-defaulting customers based on the facts and circumstances surrounding the Clearing Member default event. Customers who have been ported to a non-defaulting Clearing Member at the direction of CME Clearing have the right to transfer their accounts to a new Clearing Member.

	As discussed above, CME Clearing complies with the legal and regulatory requirements concerning identification of customer positions and collateral under the CEA and CFTC regulations. Although customer positions and performance bond funds may be held in an omnibus account, CME Group Exchange Rules require a Clearing Member to identify the performance bond funds attributable to customers. In the event of a Clearing Member default event, CME Clearing is able to facilitate expeditious bulk transfers of customer omnibus accounts from the defaulted Clearing Member to one or more non-defaulting Clearing Member(s). Furthermore, in the event of a shortfall of customer performance bond funds, CME Clearing may be able to process partial transfers of customer accounts to other Clearing Members. CME Clearing has the ability to administer the transfer of performance bond attributable to customers of a defaulted Clearing Member from the Clearing House account of the defaulted Clearing Member to the account of the receiving Clearing Member to the extent such performance bond is on deposit in a CME Clearing-controlled bank or custody account and to the extent practical and legally permissible. CME Clearing would do this in coordination with the CFTC and the bankruptcy trustee, if one has been appointed.
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.	The segregation and portability arrangements of CME Clearing, along with the extent to which any risks, costs, and uncertainties exist, are reflected in the CME Group Exchange Rules, which are publicly disclosed on the CME Group website, as required under CFTC Regulation §39.21(d). The CME Group Exchange Rules are designed to provide certainty, including with respect to segregation and portability, as has been demonstrated through CME Clearing's success in protecting non-defaulting customers in managing the distress of Clearing Members historically. Additionally, as described further in CME Clearing's disclosures for Principle 23, CME Clearing also publishes various documents on the CME Group website specific to CME Clearing on the page, the "CME Clearing Knowledge Center".[88] This page includes documents that provide an overview of the safeguards afforded to trades cleared through CME Clearing, including CME Clearing's customer protections and account classes. Information on the application and effect of the account segregation and portability models is also available on the CME Group website via the CME Group Exchange Rulebooks.
Principle 15: General Business Risk 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 materialize. 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	CME Group, the parent company of CME Inc., which operates CME Clearing, maintains management and financial controls that track crucial financial performance measures that allows CME Group to establish

[88] *See* https://www.cmegroup.com/clearing/cme-clearing-knowledge-center.html

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.	short-, medium-, and long-term financial goals and objectives to protect it against general business risk, while encouraging investment growth initiatives. The key processes are as follows: • Annual strategic planning process; • Annual budget process; and • Monthly financial forecast. Leveraging these key processes, CME Group identifies potential sources of general business risk, which allows CME Group to put in place effective tools to manage potential sources of such risk. Additionally, the results yielded from these processes are used to develop a comprehensive financial plan and annual budget, which includes planned levels of operating earnings and cash flows. The financial plan addresses the level of resources necessary for CME Group to execute its business plans, while also considering potential risks to which CME Group could be exposed. As such, projected operating earnings and cash flow levels are determined by utilizing market, economic, and volatility projections and their impact on core products and new revenue opportunities and any incremental impact on baseline expenses and cash flows are considered. The parameters of the projection models are regularly reviewed and refined based on anticipated shifts in revenue estimates. Additionally, CME Group utilizes sensitivity analysis methodologies to measure CME Group's ability to cover costs and capital commitments during periods of reduced growth and market contraction. This analysis also enables CME Group to establish contingency plans for deteriorating financial conditions. The strength of these plans was confirmed during the financial crisis of 2008, following the bankruptcy of Lehman Brothers, during which the financial durability of the CME Group proved sufficient to continue to support both capital commitments and dividends. To sufficiently prepare the Management Team and Board to manage CME Group's financial situation and exposure to general business risk, CME Group has defined a reporting structure to enable oversight and monitoring of various exposures and risks. This structure includes daily, monthly, and quarterly reviews that are designed to ensure both proper granularity and trend analyses are available to the Management Team and Board.
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	In line with CFTC Regulation §39.11(a)(2), CME Clearing maintains resources sufficient to cover one-year of its operating costs, calculated on a rolling basis; for avoidance of doubt, CME Clearing notes these resources are distinct from its Guaranty Funds. In accordance with CFTC Regulations §39.11(e)(2), the resources to cover at least six-months of its operating costs must be maintained in unencumbered, liquid financial assets. Such resources are sufficient to allow CME Clearing to continue to provide its clearing and settlement services as a going concern in implementing its Recovery and Wind-down Plans. CME Clearing uses forecasts for future revenue and business as usual operating expenses to determine the appropriate size of resources to maintain. On an ongoing basis, CME Clearing monitors the primary drivers of its operational expenses. Additionally, as part of its wind-down planning, CME Clearing also considers the changes in revenue and operating expenses it may observe in wind-down.

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.	Above and beyond the resources CME Clearing maintains in satisfaction of CFTC Regulation §39.11, CME Group maintains a strong capital base and treats its own funds and assets conservatively to protect and ensure their safety and minimize the risk of loss. In accordance with CFTC regulations, CME Clearing submits a quarterly report to the CFTC setting forth its financial resources and projected operating costs.
Key consideration 3 An FMI should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, an FMI should hold liquid net assets funded by equity equal to at least six months of current operating expenses. These assets are in addition to resources held to cover participant defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.	In line with CFTC Regulation §39.39(b), CME Clearing maintains Recovery and Wind-down Plans that address extreme but plausible scenarios relating to uncovered credit losses or liquidity shortfalls and separately, extreme but plausible scenarios relating to general business risk, operational risk, or any other risks that could threaten CME Clearing's viability as a going concern. The multiple Clearing Member default scenario identified in the Recovery Plan addresses scenarios in which the layers of CME Clearing's pre-funded financial safeguards waterfalls have been exhausted, triggered by the default under extreme but plausible market conditions of at least three Clearing Members (and their affiliated Clearing Members) with the largest potential stress shortfalls. The potential scenarios not related to a Clearing Member default considered as part of recovery planning address scenarios in which CME Clearing would be exposed to general business and operational risks, such as fraudulent activity or cybersecurity threats. CME Clearing notes that it believes the likelihood of needing to implement the Recovery Plan to be very low, as it employs many proactive risk management practices, as described throughout its disclosures, and CME Clearing reiterates that the scenarios identified in the Recovery Plan are meant to be extreme but plausible in nature. As described in CME Clearing's disclosures for Key Consideration 2 of this Principle, pursuant to CFTC Regulation §39.11(a), CME Clearing maintains, at a minimum, resources to cover CME Clearing's operating costs for a period of at least one-year, calculated on a rolling basis. Although highly unlikely to occur, CME Clearing has determined that these resources would be sufficient to facilitate CME Clearing's orderly wind-down. CME Clearing notes again that these resources are distinct from its Guaranty Funds. The CME Group Exchange Rulebooks dictate the circumstances under which the Clearing House would be forced to wind-down its clearing services related to Clearing Member defaults, as described in CME Group Exchange Rules 802 and 8G802 for Base and IRS products, respectively.
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.	CME Clearing actively manages its general business risk and as described above, holds sufficient liquid resources to cover at least one-year of its operating costs, with resources to cover at least six-months of such costs held in unencumbered, liquid financial assets. CME Clearing defines eligible funds for compliance with these requirements in accordance with guidance provided by the CFTC. On a monthly basis, CME Clearing forecasts its operating expenses and projected revenue for the upcoming twelve months and compares it to the net liquid assets.

	CME Clearing also maintains a credit line with CME Group, its parent company, which in turn maintains sufficient reserves of cash, cash equivalents, and marketable securities, that could be used to support CME Clearing's continuing operations. The total amount is reported in CME Group's annual 10-K securities filing, which is available on the CME Group website.[89] Additionally, CME Clearing maintains insurance policies that could be utilized in managing losses related to certain types of general business risk.
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.	CME Clearing also maintains a financial plan to raise additional equity if need be, as required under CFTC Regulation §39.39(e), which is approved by the Board and updated annually; CME Clearing notes that it considers the need to raise additional equity rare. The main feature of the financial plan includes equity infusions from its parent, CME Group, should CME Inc.'s equity falls close to or below the amount required to meet debt covenants and the regulatory requirements for maintenance of financial resources to cover one-year of operating costs. Additionally, CME Group has access to public debt and public equity markets. Pursuant to the rules of the Securities and Exchange Commission ("SEC"), CME Group maintains a shelf-registration where it has pre-emptively registered a share issuance, so that it can readily access markets to raise capital when needed. In addition to CME Clearing's access to public debt and public equity markets through its parent, CME Group maintains a multi-year, multi-currency revolving credit facility with a consortium of banks. This credit facility provides committed liquidity that may be used by CME Group for general corporate purposes, which includes providing financial support to its subsidiaries, including CME Inc., the operator of CME Clearing.
Principle 16: Custody and Investment Risks 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.	As described in CME Clearing's disclosures for Key Consideration 8 of Principle 7, CME Clearing holds the assets of its market participants at the Federal Reserve Bank of Chicago and the Bank of Canada and commercial banks[90] and collateral custodians,[91] primarily domiciled in the U.S. These depository institutions must satisfy requirements consistent with CFTC regulations to act as depositories for CME Clearing and utilize Generally Accepted Accounting Principles or acceptable international accounting standards. Clearing Members maintain accounts at these depository institutions to deposit collateral to meet their performance bond and Guaranty Fund obligations to CME Clearing and facilitate the payment or acceptance of payments related to daily mark-to-market settlement cycles.

89 *See* http://investor.cmegroup.com/financial-information
90 *See* http://www.cmegroup.com/clearing/financial-and-collateral-management/settlement-banks.html
91 *See* http://www.cmegroup.com/clearing/financial-and-collateral-management/custodian-banks.html#irsproducts

	In order to facilitate relationships with high quality counterparties, CME Clearing has adopted specific criteria for selecting commercial banks and collateral custodians to provide services to CME Clearing and its Clearing Members and as such, these criteria are related to the following areas: • Capitalization; • Creditworthiness; • Access to liquidity; • Operational reliability; • General risk management and governance; and • Regulatory standing. As described in greater detail to CME Clearing's disclosures for Principle 3, CME Clearing's commercial banks and collateral custodians are assigned an internal credit rating and monitored as part of CME Clearing's daily risk monitoring process. Prior to any commercial bank and collateral custodian providing services for CME Clearing and its Clearing Members, CME Clearing conducts a credit assessment and due diligence review, related to the aforementioned areas to assess their financial standing and ability to fulfil their obligations, among others. Where a settlement bank and collateral custodian meets CME Clearing's standards, the relationship would then be reviewed and approved by the Credit & Liquidity Committee, CHRC, and CHOC. The Risk Management team continually assesses CME Clearing's commercial banks and collateral custodians counterparty credit profile and ability to perform settlement and custody services, as applicable. Further, on a daily basis, the Risk Management team monitors and manages its counterparty exposures, including those to commercial banks and collateral custodians, through its key risk indicator dashboard, as described in CME Clearing's disclosures for Principle 3. The Risk Management team also monitors for any concentration risk that may be posed by its relationships with commercial banks and collateral custodians; as a proactive risk management tool against such risk, where possible, CME Clearing strives to maintain a diverse set of commercial banks and collateral custodians. As described in CME Clearing's disclosures for Principle 9, in addition to daily monitoring, the Risk Management team conducts at least annual due diligence reviews of its settlement banks. CME Clearing also conducts regular reviews of commercial banks' and collateral custodians' financial statements and regulatory compliance, which includes but is not limited to, accounting practices, safekeeping procedures, and internal controls. CME Clearing ensures a contractual agreement is in place with each of its collateral custodians, which provides explicit terms that clarify that the assets of CME Clearing and its Clearing Members held in custody are the exclusive property of CME Clearing and its Clearing Members, respectively, and do not constitute general assets of the collateral custodians. In addition, CME Clearing requires that commercial banks and collateral custodians provide segregation letters verifying that they adhere to the CFTC's segregation requirements for customer funds. Further, FCM Clearing Members are required to submit to the CFTC and the FRS department, in its capacity as a

	DSRO, daily statements outlining the requirements and funds in customer segregation for exchange-traded and cleared swaps derivatives products, pursuant to CFTC Regulations §1.32(d), §22.2(g), and §30.7(l). Further, on at least a monthly basis FCM Clearing Members are required to submit a report that outlines the total amount of funds held in customer segregation and which entities hold such funds, among other items.
Key consideration 2 An FMI should have prompt access to its assets and the assets provided by participants, when required.	The contractual agreements CME Inc. has with its depository institutions and the account structures that it supports reflect CME Clearing's first priority and unencumbered security interest in the collateral posted by its Clearing Members in satisfaction of their obligations to it. In line with CFTC Regulation §39.15(c), this is designed to ensure that CME Clearing has prompt access to collateral assets held at such depository institutions and in accordance with the CME Group Exchange Rules, the ability to liquidate or apply the collateral when needed. CME Clearing has the ability to direct its depository institutions to transfer, deposit, distribute, or otherwise dispose of the assets. Further, as elaborated on in CME Clearing's disclosures for Principle 1, in line with CFTC Regulation §39.27(b), CME Clearing operates under a well-founded legal framework that provides it with first priority and unencumbered security interest in the collateral deposited by its Clearing Members to meet their obligations to the Clearing House. As such, under CME Group Exchange Rules 819 and 8F008, Clearing Members are required to grant the Clearing House a first priority and unencumbered lien against all collateral deposited by them to meet their obligations to the Clearing House. CME Clearing also maintains the operational and legal ability to access liquidity through the Credit Facility and the FX Facility using collateral posted by Clearing Members to the Clearing House, as described in CME Clearing's disclosures for Principle 7, in the event of a Clearing Member default or temporary problem with the domestic payments system.
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.	The Risk Management team analyzes and evaluates counterparty credit risk according to its credit review process, described in CME Clearing's disclosures for Principle 3, and according to CME Clearing's Risk Management Framework and Credit Policy. This includes evaluating exposures across CME Clearing, including its collateral custodians. As noted in CME Clearing's disclosures for Key Consideration 1 of this Principle, CME Clearing performs reviews at least annually or more frequently as deemed appropriate to assess its collateral custodians' capitalization, creditworthiness, liquidity resources, operational reliability, and overall counterparty strength. Further, CME Clearing may apply thresholds on the degree of exposure to which CME Clearing will accept from a given collateral custodian. The aforementioned reviews are also in addition to CME Clearing's daily monitoring of its counterparties, including collateral custodians, through its key risk indicator dashboard. CME Clearing mitigates the risk posed by its collateral custodians by only using supervised and regulated entities, as well as by engaging multiple providers, where possible. Further, CME Clearing holds Clearing Member and customer funds in a manner which is designed to minimize the loss of or delay in the access to these funds, as discussed in CME Clearing's disclosures for Key Consideration 2 of this Principle.
Key consideration 4	In line with CFTC Regulations §39.11(e)(4) and §39.15(e), CME Clearing is committed to undertaking a conservative approach to the investment of its cash collateral that is designed to ensure that principal is

An FMI should evaluate and understand its exposures to its custodian banks, taking into account the full scope of its relationships with each.	preserved and participants are protected from losses through CME Clearing directed investment activity. These are defined objectives under CME Clearing's Investment Policy, which supplements the Risk Management Framework. The Investment Policy is subject to the review and approval of the CHOC and the Board receives a copy of it on at least an annual basis following its approval by CHOC. CME Clearing's approach to investments is in line with the practices laid out under CME Clearing's Risk Management Framework to minimize the risks to which CME Clearing is exposed in providing clearing services and to in turn, support the stability of the broader financial system. CME Clearing, as a DCO, complies with CFTC Regulation §1.29, which requires that a DCO bear all market value losses related to the DCO directed investment of customer funds. CME Clearing also goes above and beyond the requirements under CFTC Regulation §1.29 and provides investment loss protections consistent with such regulation for CME Clearing directed investments of house account funds. This practice is in line with CME Clearing's overall risk management practices of providing fulsome protections to all market participants, a key tenet of the Risk Management Framework. Further, CME Clearing does not believe it is prudent to pass clearing house directed investment losses in market value onto market participants, as investment risk should be borne by the party making the investment decision. Investments are made in a conservative, risk prudent manner in order to minimize liquidity risk, so that CME Clearing can meet daily liquidity demands. Return on investment is of secondary importance, behind the safety and preservation of principal and liquidity objectives of the Investment Policy. As such, pursuant to CME Clearing's Investment Policy it only re-invests cash collateral in instruments that have minimal credit, liquidity, and market risks. Further, CME Clearing's Investment Policy is consistent with the instruments defined under CFTC Regulation §1.25 for the investment of customer funds and instruments available for the investment of Clearing Members' own funds are similarly conservative. This is designed to ensure a high level of safety and liquidity of investments that minimizes the risk of loss and delay in access to assets. CME Clearing leverages the same market knowledge gained through determining collateral eligibility and performing collateral haircut analysis to ensure that eligible investments are those that allow for timely liquidation with little adverse price effect. Additionally, the risk of loss from over-concentration of investments in a specific maturity, specific issuer, or specific class of securities is reduced through the establishment of concentration limits for investment types, which are outlined in CME Clearing's Investment Policy. CME Clearing also imposes restrictions on its investment counterparties that are designed to ensure that invested cash is in the possession of high-quality obligors. Investment limits are set considering defined diversification requirements for the exposure type and investment counterparties' internal credit ratings. CME Clearing monitors its investment portfolio on a daily basis, including its: • Investment performance for each investment and for the entire portfolio;

	• Exposures compared to pre-determined limits; and • Weighted average maturity of the portfolio. CME Clearing also evaluates the composition of its investment portfolio on an ongoing basis, in part through quarterly reports that are presented to CME Clearing's Credit & Liquidity Committee and the CHOC.

Principle 17: Operational Risk

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 fulfillment of the FMI's obligations, including in the event of a wide-scale or major disruption.

Key consideration 1 An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.	CME Clearing has policies and processes in place for identifying plausible sources of operational risks, whether the risks arise from internal or external sources. CME Clearing's Operational Risk Management Framework aides CME Clearing in managing operational risk, which is designed to work in harmony with CME Group's Enterprise Risk Management Framework. Consistent with CFTC Regulation §39.10(d)(1), the Enterprise Risk Management program identifies and assesses sources of risk and their potential impact on the operations and services of the Clearing House. The Operational Risk Management Framework and Enterprise Risk Management Framework were designed considering industry best practices and standards and, of particular note the Enterprise Risk Management Framework is considerate of the recommendations under 2017 COSO ERM Integrated Framework, 2021 COSO Enterprise Risk Management for Cloud Computing, and ISO 31000 Risk Management. The Operational Risk Management Framework describes CME Clearing's processes used in the identification, measurement, and mitigation of operational risk, while establishing decision controls, as well as monitoring and reporting policies, that are designed to ensure effective management of operational risk. The Operational Risk Management Framework, in conjunction with other supporting documents, also addresses the communication procedures and standards of the Clearing House, which are further described in CME Clearing's disclosures for Principle 22. The Operational Risk Management Framework is reviewed and approved on at least an annual basis by the Operational Risk Management Committee, the Board Risk Committee and the full Board, as further described in CME Clearing's disclosures for Principle 2. In particular, the objective of the Operational Risk Management Framework is to provide overall guidance and a common approach to CME Clearing staff to measure, manage, and control operational risk, within the defined Statement of Risk Appetite and risk tolerance thresholds, for the core clearing processes, as described below. The Operational Risk Management Framework identifies the core clearing processes and related key risks to these processes. The Operational Risk Management Framework also defines risk impact and likelihood ratings for each core clearing process based on the Statement of Risk Appetite and risk tolerance for the relative core clearing process.

	In line with the Operational Risk Management Framework, CME Clearing identifies and defines the scope of risks that could impede CME Clearing's core clearing processes and the strategy for managing these risks. CME Clearing identifies and closely monitors potential risks posed to its core clearing processes. Additionally, the cross-functional Enterprise Risk Management team maintains a process to identify and monitor risks to the broader CME Group business, which encompasses CME Clearing. Under the Enterprise Risk Management program these risks are measured, monitored, and managed in accordance with CME Group's Statement of Risk Appetite. Operational risk is managed through a number of independent processes, including system and process surveillance, performance as measured in accordance with Service Level Agreement ("SLAs") targets, and use of risk and payment systems designed to mitigate any operational risk that could introduce financial and/or reputational risk to CME Group and its affiliates. Real-time alerts are also used to monitor processing jobs maximum run times, which are designed to ensure monitoring teams are aware of potential processing issues. The identified core clearing processes in the Operational Risk Management Framework are: i. Ability to accept executed trades for clearing; ii. Ability to view and manage market and credit risks; and iii. Ability to process and manage settlement and collateral. In line with the core clearing processes, CME Clearing's primary responsibility to its market participants is to consistently provide trade processing and settlement services within a defined timeframe. CME Clearing operates 24-hours a day, six-days a week, and continually monitors its activities to prevent operational interruptions. CME Clearing supports multiple operating units responsible for monitoring various operational components of its functions to mitigate operational risk. The Clearing House is staffed from Sunday at 5:00PM Chicago time through Saturday at 2:00AM Chicago time to assist Clearing Members with any operational issues. On a daily basis, multiple shifts are staffed to ensure consistent coverage of system performance, including monitoring CME Clearing's core clearing processes identified above and the systems to support those processes. As described further below, CME Clearing also monitors its ongoing performance against defined SLAs relative to the core clearing processes. CME Clearing also monitors in real-time clearing messaging queue dashboards for inbound and outbound message traffic, observing inbound and outbound message transmission rates, as well as queue depths to identify potential issues. CME Clearing also monitors for certain types of message traffic, such as large bulk transfer activity and pending give-up activity between Clearing Members, as these activities can impact their risk profiles. CME Clearing maintains an open communication channel with CME Group's Global Command Center ("GCC") (i.e., trading operations and risk management for the CME Group Exchanges) to discuss trade activity, which is particularly important during high volume days or periods of high price volatility.

	In light of its objective to continually be able to execute its core clearing processes, wide-scale disruptions extending, or expected to extend, beyond anticipated timelines could present an innate challenge to CME Clearing and the markets it serves. Therefore, CME Clearing, in line with CFTC Regulation §39.34(a), adheres to a two-hour recovery time objective, where upon a wide scale disruption it will resume its daily processing, clearing, and settlement services within two-hours. *Staff for CME Clearing's Operations* The Human Resources Division undertakes a number of initiatives to recruit, hire, and train qualified employees, which regarding CME Clearing is designed to ensure that the Clearing House has the necessary staff to facilitate its clearing and settlement services. CME Group has a dedicated group of recruiters to support firm hiring. New employees participate in a New Hire Orientation program designed to give an overview of CME Group's business and employee benefits and compensation programs. The Human Resources Division also oversees the CME Group's knowledge network site, which is designed to distribute information regarding CME Group's overall business and will partner with the CME Group's business leaders to develop tailored training as necessary. Additionally, one of the key objectives of the Human Resources Division is to hire and retain talented personnel with the necessary expertise to perform their functions. CME Clearing's compensation program is designed to drive performance and retain talent, while not providing the incentive of risk taking. Given the full Board's oversight role of CME Clearing, the Board appoints the Global Head of Clearing & Post-Trade Services and the CRO of the Clearing House following recommendations from the CHOC. The Board plays an active role in assuring that the operations of CME Clearing are overseen by personnel with the necessary qualifications and expertise. Additionally, CME Group has in place a workforce succession planning process in which critical roles within the organization are identified and readiness plans for potential successors are developed. While, overall, the Board and its Nominating and Governance Committee are responsible for the succession planning of the management of CME Group, with respect to the Clearing House, the CHOC also meets with the Global Head of Clearing & Post-Trade Services to review succession planning and management development for the roles of Global Head of Clearing & Post-Trade Services, CRO of the Clearing House, and CCO of the Clearing House. CME Group also operates a global Compliance & Ethics Program which is designed to prevent and detect misconduct, including fraud. The Global Chief Compliance Officer is responsible for the Compliance & Ethics Program which is ultimately overseen by the Board with the support of the Board Risk Committee. The Employee Code of Conduct, available on the CME Group website, is the primary policy guiding the conduct of CME Group's employees.[92] The Code of Conduct sets forth the organization's business principle of leading with conviction and integrity and its expectations that employees comply with all

[92] *See* http://investor.cmegroup.com/static-files/40101af3-32be-457a-a1bd-230f1e9ae820?_gl=1*1ub7uvf*_ga*MTE0NzEyMDAyNC4xNjY4MDk4NDkz*_ga_L69G7D7MMN*MTY5MjI3ODA1My4xNjEuMS4xNjkyMjc4MDY3LjQ2LjAuMA..

	applicable laws. In accordance with the Code of Conduct, all employees are required to raise issues of non-compliance to the organization through one of the many available channels, including instances of fraud. In order to facilitate raising compliance issues or concerns, including anonymous reports, CME Group maintains EthicsPoint, which is a helpline administered by an independent third-party. EthicsPoint generates reports which are categorized and communicated to certain members of CME Group's Global Corporate Compliance and Ethics team and, in instances of fraud, to the Chair of the Audit Committee. Additionally, CME Group has internal controls in place which are designed to detect and prevent fraud and general corporate misconduct.
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.	The Board is responsible for the governance of the organization and maintains the ultimate oversight over CME Clearing's risk management, including its operational risk management. The Board has established a defined Statement of Risk Appetite, which recognizes the Clearing House's obligations under CFTC Regulation §39.24 to prioritize the safety and efficiency of the Clearing House. Additionally, as noted above, the Board and the Board Risk Committee are responsible for reviewing and approving the Operational Risk Management Framework. Specifically, in relation to operational risk management, some of the key responsibilities of CME Clearing are to: • Have appropriate systems in place to identify, evaluate, and manage the risks faced; • Ensure that staff understand their own roles and responsibilities, so that practices and processes are subject to the necessary oversight by appropriately trained and competent staff; and • Monitor and maintain reports on operational risk exposure and take appropriate actions as necessary. Further, relative to the Board Risk Committee's oversight of enterprise risk management, it reviews and approves substantive changes to the Enterprise Risk Management Framework and the related risk universe. It also recommends to the Board the Statement of Risk Appetite, which contains the various levels of acceptable key risks underlying CME Group's business and strategy. Additionally, the Board Risk Committee also reviews the structure and staffing of the CME Group's Enterprise Risk Management Program. In its role, the Board Risk Committee receives and reviews quarterly risk assessment reports, including on Clearing House operations. Additionally, given the CHOC's oversight of the risk management activities of the Clearing House, it also reviews aspects of this quarterly report relevant to the Clearing House and reviews and approves any changes to core processes and core systems for the Clearing House that significantly impact the risk profile of the Clearing House and refers such changes to the Board for approval. Additionally, CME Group utilizes skilled auditors, both internal and external, to provide an independent evaluation function, which validates the effectiveness of risk management processes and the internal control environment. These evaluations are provided to the Board and relevant members of senior management, including members of the Senior Management of CME Clearing, where applicable. Internal audit functions are executed and overseen by the Global Assurance department, which functions independently from CME Clearing. The scope of Global Assurance's responsibilities is to determine

	whether the organization's network of risk management and control processes, as designed by management, are adequate and functioning to ensure: • Risks are appropriately identified and managed; • Interaction with the various compliance groups occurs as needed; • Significant financial, managerial, and operating information is accurate, reliable, and timely; • Employees' actions are in compliance with policies, standards, procedures, and applicable laws and regulations; • Resources are employed effectively and efficiently; • Assets are appropriately safeguarded; • Programs, plans, and objectives are achieved; • Quality and continuous improvement are fostered in the organization's control processes; and • Significant legislative or regulatory issues impacting the organization are recognized and addressed appropriately. Additionally, the Global Assurance department issues periodic reports to the Audit Committee and other committees of the Board and management summarizing the results of internal audit activities. This encompasses the Audit Committee reviewing summaries of the internal audit findings and inquiring as to whether appropriate corrective actions have been undertaken on significant audit findings.
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.	In line with CFTC Regulation §39.38(c), CME Clearing has clearly defined operational reliability objectives that are measurable and achievable and imply that defined minimum service levels be met, which are laid out in CME Clearing's Operational Risk Management Framework. The primary operational reliability objectives related to CME Clearing's operations, as described in CME Clearing's disclosures for Key Consideration 1 of this Principle, are to consistently provide its core clearing processes. To achieve this, CME Clearing partners with the Global Operational Resilience team, which focuses on the reliability and resiliency of the Clearing House's systems, infrastructure, business processes, people, and monitoring tools. Critical functional components that support CME Clearing's services are required to have a backup optionality with the ability to switch from primary to the backup while meeting business driven recovery time objectives. Additionally, CME Clearing's production systems are designed with multiple layers of redundancy so that, generally speaking, when something occurs in product, there is little to no impact to customers or interruptions to markets. Technology and Clearing House support teams monitor the systems infrastructure 24-hours a day, six-days week and procedures are established to restore the clearing services in the event of component failures. CME Group has an established set of defined SLAs for customer-facing clearing processes. These are monitored by CME Clearing against real-time metrics for items such as message latency and application uptime, and batch metrics for settlement cycles and margining. To measure its performance against its SLA targets, CME Clearing also generates a series of reports on a daily basis reflecting observed performance against SLA targets. Among other things, CME Clearing has defined its minimum

	functionality with regards to trade capture and message processing, as well as the completion and timing of specific file production and distribution, as appropriate. If CME Clearing misses a target of its SLAs, it reviews the matter to determine the cause and makes recommended changes, where applicable, to prevent the recurrence of the event. Weekly status updates on performance against SLA targets are provided and discussed amongst Clearing Operations & Banking and other key functions. This process allows CME Clearing to identify if changes need to be made to current practices or if new SLA targets need to be initiated and the broader monitoring process needs to be enhanced. Additionally, pursuant to CFTC Regulation §39.38(a), CME Clearing must efficiently and effectively design its clearing and settlement arrangements and use of technology. Further, in line with CFTC Regulation §39.38(b), the monitoring CME Clearing undertakes against its SLA targets provides a mechanism for CME Clearing to evaluate the effectiveness and efficiency of the design of its clearing and settlement arrangements and use of technology and therefore, its operational reliability. As such, CME Clearing's monitoring processes against its defined performance targets under its SLAs provides CME Clearing a high degree of operational reliability. Additionally, the manner in which CME Clearing's systems are structured and supported and the provision of backup optionality for systems that are necessary for CME Clearing to perform its critical functions provides a high level of operational reliability.
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.	Scalable capacity is maintained by CME Clearing to address increased volumes, while maintaining its SLA targets. In line with the requirements under CFTC Regulation §39.18(b), capacity planning is an ongoing cyclical process that involves defining SLAs, monitoring production systems, modeling CME Clearing's capacity for anticipated future growth, testing the performance of the system under load, upgrading capacity, and resetting SLA targets, as appropriate. In relation to capacity planning, CME Clearing defines SLA targets by identifying internal milestones and establishing real-time performance goals. Production monitoring allows CME Clearing to validate performance against the defined SLA targets, which is designed to ensure effective capacity levels are maintained for current operational needs. Forecasts of future transactional and service needs, considered in the context of SLA targets, act as models used in estimating potential capacity needs in the future. Systems are tested against the models to identify if and when capability upgrades are necessary. When a system is upgraded, the SLAs and performance goals are then updated to remain consistent with the service objectives, particularly as it relates to CME Clearing's key operational reliability objectives. The capacity planning process is implemented to encompass all aspects of capacity management for CME Clearing's critical systems. The mission of the capacity planning process' design is to use an appropriate balance of modeling and monitoring to prevent any capacity issues from impacting core systems. It is CME Clearing's practice to have a minimum of two times the last known peak load in capacity for a given application system. The long-term capacity model for CME Clearing's systems is monitored, updated, and reviewed and further, presented in a report to Management Team on a quarterly basis. Additionally, the long-term capacity planning process is used to develop resource allocation and

	architecture decisions. The capacity planning process is further designed to avoid a situation where operational capacity is neared or exceeded.
Key consideration 5 An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats.	CME Clearing maintains comprehensive physical and information security policies. *Physical Security* CME Group has a robust global security program that encompasses several programs such as access controls, CCTV, cameras, and social media monitoring. The guard force that is used to secure CME Group's assets is comprised of a combination of CME Group employees and contracted armed and unarmed security officers. CME Group's security staff continue to engage in frequent exercises and drills with local partners such as the fire and police departments and other tenants and building management to ensure best practices are applied and response frameworks are effective. Access control data center and office procedures allow for appropriate proximity/swipe access on a strictly as-needed basis for all staff, market participants, and vendors. Prior to receiving access, these groups are subject to background checks which are revalidated based on CME Group's procedures. Packages and deliveries are scanned or inspected prior to entering CME Group spaces and visitor procedures include several controls around access, approval, magnetometers, and escorts. CME Group has a state of the art 24-hours a day, seven-days a week manned Global Security Operations Center ("GSOC"), which is managed by physical security personnel. The GSOC has visibility into the various critical security components for monitoring and response and is the hub for all coordination and communication with officers, other global security programs, and regional security teams. CME Group's security management team maintains a high degree of collaboration and cooperation with local, state, federal, and international law enforcement and intelligence agencies including the Chicago and New York police departments, Federal Bureau of Investigation, Secret Service, Department of Homeland Security, and Scotland Yard, amongst other agencies and partnerships. Through these relationships, CME Group receives timely intelligence briefings and threat assessments. *Information Security* CME Clearing's information security practices are governed by the CME Group Information Technology and CME Group Information Security Policies which define standards, procedures and controls that govern information security management practices. Both policies as well as the Global Information Security Program are based on accepted international, national and industry-level frameworks and guidelines. CME Group's Global Information Security department supports the integrity of CME Group's global markets, maintains customer and employee trust, enables the business to achieve its objectives, contribute to shareholder value, and protects CME Group's information assets in order to defend CME Group's reputation and good name. The mission of CME Group's Global Information Security Program is to safeguard the confidentiality, integrity, and availability of information through a structured program designed and operated to mitigate

	information security risks and threats to CME Group. The program utilizes a defense-in-depth approach to manage risk and as such recognizes the importance of people, processes, and technology in upholding information security and safeguarding its sensitive data and that of CME Group's customers, partners, and employees. Global Information Security developed and maintains a core set of programmatic components informed by industry best practice and standards to enable the information security mission and objectives, as well as CME Group's business, compliance, and privacy requirements. The information security program components also include cross-functional areas outside of Global Information Security, but with accountabilities for information security. The Global Information Security program components are as follows: • Technology Risk and Compliance; • Identity Access Management ("IAM"); • Security Testing; • Cybersecurity Operations and Engineering; • Security Architecture; and • Business Information Security Office. The following areas further support the information security missions and objectives and are governed by teams within the broader Technology Division: • Asset Management; • Change and Release Management; • Configuration Inventory and Management; • Patch Management; • System Development Life Cycle; and • Problem and Incident Management. As part of its strategic priority to manage risk, teams within the Technology Division conduct independent quality assurance reviews of software changes, take mandated training on secure coding practices, assess, and remediate software for security vulnerabilities, and control access to source code as part of standard practices. CME Group also conducts regular testing of its infrastructure and application environments to demonstrate the effectiveness of control designs and operation. CME Group conducts testing using internal resources as part of established processes and procedures and leverages objective third-parties to validate the effectiveness of its information security program. Results of testing are remediated using a risk-based

	approach and are reported to the management and the Board Risk Committee consistent with the enterprise risk management practices. CME Group has a well-founded framework which considers plausible sources of information security vulnerabilities and threats. CME Group is continually assessing and enhancing its practices for managing information security risks.
Key consideration 6 An FMI should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a wide-scale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical information technology (IT) systems can resume operations within two hours following disruptive events. The plan should be designed to enable the FMI to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. The FMI should regularly test these arrangements.	In line with the requirements under CFTC Regulation §39.18(e), CME Clearing's Business Resilience Plans set out objectives, policies, and procedures that allow for the rapid recovery and timely resumption of critical operations following a wide-scale or major disruption. The Business Resilience Plans are designed to mitigate potential impacts to the markets and customers CME Clearing serves and define procedures which safeguard the interests of key market stakeholders and establishes steps necessary to protect the Clearing House's reputation and brand, following a disruption. These plans help to ensure CME Group's resiliency, including CME Clearing's, through: • Aligning with U.S. and international standards for business continuity management; • Implementing incident response, information technology/system resilience and business recovery strategies that are both flexible and agile; • Building effective partnerships to effectively manage risk; • Employing tested exercise models that evolve with the environment and architecture; • Identifying opportunities for enhanced resilience; • Establishing collaborative relationships with external entities, partnerships and agencies; and • Continually monitoring and adjusting program components to meet both domestic and international regulatory requirements, and that reflect any material changes to the business. Some of CME Clearing's resiliency strategies include robust incident response frameworks, extensive testing to ensure recovery time objectives can be met, and cross-training staff to ensure out of region coverage is available, if needed. CME Clearing participates in several testing variations, including full failover exercises at least twice annually, annual FIA industry-wide drills, business unit recovery exercises, and CME Group's incident response exercises. CME Group's operational resilience strategies focus on scenarios and frameworks where staff, site, systems, or suppliers are unavailable which can include extreme but plausible scenarios. CME Clearing has implemented a streamlined data center approach, which includes housing all production systems within one data center and all backup systems in a second, out-of-region data center; both data centers rely on separate infrastructure. CME Clearing transaction data is replicated in near real-time to both primary and secondary sites. In the event CME Group experiences a data center outage, its production data center would failover to its out-of-region, secondary data center, located approximately 800 miles away from the primary site. Additionally, at least twice a year, all critical applications are failed over from the production location to the backup location; the results of the failover tests are documented

	in after-action reports. CME Group also conducts additional incremental testing, outside of the two tests mentioned above, to further validate the recovery strategy. The Business Resilience Plans also utilize incident response teams to ensure CME Group, including CME Clearing, continually meets its defined operational objectives after a disruption within its defined recovery time objective. CME Group's Crisis Management Team is accountable for managing incidents and is led by the commander of the Crisis Management Team. The Crisis Management Team is comprised of senior leaders across CME Group business lines and is supported by the Global Incident Response Team, which is made up of representatives from critical areas across the organization that directly support, both operationally and logistically, the response to and recovery from an incident. The response teams are primarily responsible for ensuring CME Group's priorities are met during the recovery. There also are active Regional Incident Response Teams within each regional office, which are led by a senior manager in that office and are made up of local representatives who coordinate the response to an incident occurring in their region. If multiple events were occurring, the recommended action by the Regional Incident Response Teams will be submitted to the Chief Operating Officer, who is the Commander of the Crisis Management Team, to ensure overall coordination and cooperation. CME Clearing's clearing and settlement processes are recoverable upon a disruption, in no more than two-hours. The remaining systems are recoverable upon disruption, in four-hours. Both CME Clearing's Operational Risk Management Framework and CME Group's operational resilience policies address the two-hour requirement and work in tandem.
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.	While CME Clearing does not outsource any of its critical functions to third-parties, CME Clearing identifies, monitors, and manages the risks that key participants, other FMIs, and service and utility providers might pose to its operations. CME Clearing also adheres to the following principles, which is largely demonstrated through the implementation of the of the operational risk management practices: • Enterprise-wide operational resilience governance resides with the Chief Operating Officer and ultimately the Board; • Adoption of planning and testing procedures across CME Group businesses and technologies; • Geographic coverage of critical operations and technology processing centers; • Utilization of remote, real-time data replication designed for rapid systems recovery and protection from data loss; • Telecommunication diversification both through connectivity and infrastructure; and • Back-up strategies that meet or exceed processing and regulatory requirements. The granular practices CME Clearing employs with regard to specific types of relationships are addressed throughout its disclosures, but in particular relating to Principles 3, 4, and 20. CME Clearing also participates in the annual disaster recovery exercise, organized by FIA which may include partner

	exchanges and other CCPs and frequently participates in sector-wide exercises with government partners and peers. *Movement of Funds* CME Clearing utilizes a network of settlement banks, with certain settlement banks acting as a concentration bank for settlement variation. The function of a settlement concentration bank is to aggregate and distribute funds to and receive funds from other settlement banks for the purposes of paying and collecting settlement variation from Clearing Members. In the event a settlement concentration bank is experiencing operational issues and unable to move funds in a timely manner, CME Clearing has the ability to switch settlement concentration banks or work with that bank to utilize its contingency procedures for initiating wire payment. CME Clearing reviews contingency plans with each settlement bank during the annual settlement bank review process. Additionally, CME Group has a service agreement with SWIFT for all daily payable/receivable settlements. The SWIFT system is monitored by CME Clearing 24-hours a day, six-days a week, but particularly during both the intraday and end-of-day settlement cycles. Monitoring is completed to ensure the system settlement wires are created, routed, and processed per arrangements with both Clearing Members and settlement banks. In the event CME Clearing experiences a SWIFT outage, CME Clearing maintains alternative methods of communicating authenticated payment instructions at each settlement bank. Methods include encrypted email, facsimile from authorized signers, and wire initiation using a bank's online payment and banking portal.

Principle 18: Access and Participation Requirements

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

Key consideration 1 An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.	Consistent with CFTC Regulation §39.12(a), CME Clearing's participation requirements for clearing membership provide for fair and open access to its clearing services. The CME Group Exchange Rulebooks establish transparent rules for the participation of its Clearing Members, which include, but are not limited to the following provisions: • **General Clearing Membership Requirements**: CME Group Exchange Rules 901, 8F004 & 8G804; • **Performance Bond**: CME Group Exchange Rules 820, 930 & 8G930; • **Guaranty Fund**: CME Group Exchange Rules 816, 8F007 & 8G07; • **Credit Control Policies**: CME Group Exchange Rule 949; • **Disclosures to CME Clearing and the CFTC**: CME Group Exchange Rule 951; • **Minimum Financial Requirements and Associated Reporting**: CME Group Exchange Rules 970, 972 & 8F011; • **Segregation of Customer Funds and Accounts**: CME Group Exchange Rules 971 & 973; • **Recordkeeping and Reporting**: CME Group Exchange Rule 980; • **Anti-Money Laundering Compliance Policies**: CME Group Exchange Rule 981;

	Risk Management Policies: CME Group Exchange Rules 982 & 8F010; **Business Continuity and Disaster Recovery Policies**: CME Group Exchange Rule 983; and **Default Management**: CME Group Exchange Rules 802 & 8G802. On the CME Group website, as described further below, CME Clearing provides a comprehensive summary of the participation requirements including operational, financial, reporting, and risk management. CME Clearing's participation requirements for clearing members are designed to permit CME Clearing to assess and verify the ability of its Clearing Members to address operational, financial, and other risks that may arise in the offering of its clearing services. CME Clearing's clearing membership requirements are designed to provide a standard of proficiencies at Clearing Members without being excessively arduous. CME Clearing provides fair and open access to its clearing services by establishing appropriate admission and continuing participation requirements that are objective, public, and risk-based. CME Clearing publishes a Clearing Membership Handbook on the CME Group website, which provides an overview and clarity on its clearing membership requirements.[93] Additionally, the application to become a Clearing Member is also available on the CME Group website.[94] An overview of CME Clearing's clearing membership requirements is provided below, but for avoidance of doubt, the CME Groupe Exchange Rulebooks should still be referred to for requirements: **General Clearing Membership Requirements** - A Clearing Member must be a corporation, partnership, or other entity approved by the relevant CME Group Exchange. - A Clearing Member shall agree to abide by all CME Group Exchange Rules and to cooperate in their enforcement. - A Clearing Member shall be engaged in or demonstrate immediate capacity to engage in the conduct of business of a Clearing Member. - A Clearing Member shall agree to guarantee and assume complete responsibility for the financial obligations attendant to all trades and orders executed or accepted for execution by a member it qualifies. - A Clearing Member must have appropriate risk management capabilities, operational infrastructure, and experience to support the products it clears. - A Clearing Member shall comply with all credit control policies developed by the CME Group Exchanges and/or CME Clearing for customer and proprietary transactions.

93 *See* http://www.cmegroup.com/company/membership/files/cme-group-clearing-membership-handbook.pdf
94 *See* https://www.cmegroup.com/company/membership/files/application-and-clearing-agreement-writeable.pdf

- A Clearing Member must maintain bank and securities safekeeping accounts at one or more settlement banks and collateral custodians for purposes of posting cash and securities to meet settlement variation, performance bond, and Guaranty Fund obligations.
- A Clearing Member that clears exchange-traded and/or cleared swaps derivatives for customers must be registered with the CFTC as an FCM.
- To become an exchange-traded derivatives Clearing Member, the firm must purchase and/or have assigned the required number of exchange memberships for the desired exchange.

Guaranty Fund Requirements

- All Clearing Members must make a Guaranty Fund deposit with the Clearing House for their obligations. The minimum Guaranty Fund deposit for a Clearing Member that clears:
  - Exchange-traded derivatives that are Base products is established as the greater of $500,000 or its proportionate share of the Base Guaranty Fund;
  - Cleared swaps that are Base products (e.g., FX swaps products) is established as the greater of $2.5 million or its proportionate share of the Base Guaranty Fund; and
  - IRS products is established as the greater of $15 million or its proportionate share of the IRS Guaranty Fund.

Capital Requirements

- A Clearing Member must maintain a minimum amount of capital defined as the greater of the minimums listed below or its risk-based capital requirement. For non-bank Clearing Members, capital is defined as Adjusted Net Capital as computed in accordance with CFTC Regulation §1.17. For bank Clearing Members, capital is defined as Tier 1 Capital.
- The minimum capital requirement for a Clearing Member is the greater of the CFTC or SEC capital requirement or:
  - For a non-bank Clearing Member: i) $5 million if it clears exchange-traded derivatives and/or agricultural cleared swaps derivatives; ii) $50 million if it clears other cleared swaps derivative products (e.g., IRS and FX swaps products); or iii) 20% of aggregate performance bond requirement for all customer and house accounts containing CME Clearing cleared IRS products.
  - For a bank Clearing Member: i) $5 billion if it clears exchange-traded derivatives; ii) $50 million if it only clears cleared swaps derivatives; or iii) 20% of aggregate performance bond requirements for all customer and house accounts containing CME Clearing cleared IRS products.
- Notwithstanding the above minimums, a Clearing Member's risk-based capital requirement is computed as 8% of customer and non-customer (excluding proprietary) risk maintenance performance bond requirements for all exchange-traded and cleared swaps derivatives.

Financial Reporting Requirements

	• A non-bank Clearing Member is subject to monthly financial statement reporting requirements. This typically requires submitting monthly CFTC Form 1-FR or SEC FOCUS reports (if a U.S. registered broker-dealer). A bank Clearing Member is required to file any and all financial reports which are filed with its primary banking regulator, with such reports filed on at least a quarterly basis. These financial reports must demonstrate compliance with the above mentioned minimum capital requirements.
	• A Clearing Member must submit an annual certified financial statement. A bank Clearing Member must submit such an annual statement five-days after the statement is filed with its primary banking regulator.
	• A non-bank Clearing Member must comply with the requirements set forth in CFTC Regulations §1.10, 1.12, 1.17, and 1.18 unless an exemption is granted by the Clearing House.
	• A Clearing Member which is an FCM must submit daily customer segregated, cleared swaps customer, and secured 30.7 account statements and bimonthly reports on customer segregated, cleared swaps customer, and secured 30.7 investments.
	
	Notification Requirements
	• A Clearing Member must provide written notice to the FRS department whenever the Clearing Member:
	  ○ Fails to maintain minimum capital;
	  ○ Fails to maintain early warning capital;
	  ○ Fails to maintain sufficient funds in customer segregated, cleared swaps customer, and/or secured 30.7 accounts;
	  ○ Fails to maintain current books and records;
	  ○ Determines the existence of a material inadequacy as specified in CFTC regulations;
	  ○ Fails to comply with additional accounting, reporting, financial and/or operational requirements as prescribed by the CME Group Exchanges;
	  ○ Changes its fiscal year; and
	  ○ Changes its public accountant.
	• Additional notification is required for:
	  ○ Significant business transactions or changes in operations;
	  ○ Changes to up-to-date personnel contact information; and
	  ○ Any ownership changes.
	• A Clearing Member's Chief Executive Officer, Chief Financial Officer, or their authorized representative must approve a 25% or greater disbursement of firm funds from customer segregated, cleared swaps customer, or secured 30.7 accounts. Following such approval, the Clearing Member must notify the FRS department.
	
	Other Clearing Membership Risk Management Requirements

	• All Clearing Members must have a written anti-money laundering and economic sanctions compliance program approved by senior management. • All Clearing Members must have written risk management policies and procedures in place to ensure they are able to perform certain basic risk and operational functions at all times. • All Clearing Members must have written disaster recovery and business continuity policies and procedures in place. CME Clearing conducts an initial review of each applicant Clearing Member during which the prospective Clearing Member must demonstrate a strong risk management infrastructure and the ability to analyze its transactions for all products for which it is applying to clear as stated in CME Group Exchange Rule 982. Additionally, the applicant Clearing Member must show a well-built screening process for client suitability for all products it intends to clear for customers. All applicant Clearing Members are presented to the appropriate CME Clearing Risk Committee for review and feedback and the CHOC for approval. CME Clearing continues to review all Clearing Members' risk management practices on at least a biennial basis, in addition to being subject to ongoing monitoring, as described in CME Clearing's disclosures for Principle 3. CME Clearing believes that the variety of clearing membership requirements and practices it employs prior to accepting a Clearing Member for membership yields a clearing membership base that is able to effectively manage risks and assists in safeguarding the markets CME Clearing serves.
Key consideration 2 An FMI's participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI's specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavour to set requirements that have the least-restrictive impact on access that circumstances permit.	As a SIDCO, CME Clearing is highly committed to supporting public interests of fostering fair and efficient markets, employing and enforcing sound and comprehensive risk management practices, and offering market-leading financial safeguards. CFTC Regulation §39.12 establishes the participant eligibility standards reflected in CME Clearing's clearing membership criteria and requirements. In relevant part, the regulation provides that CME Clearing's participation requirements shall permit fair and open access and that CME Clearing shall not adopt restrictive clearing membership standards if less restrictive requirements that achieve the same objective, while not materially increasing risk to the DCO or its Clearing Members, could be adopted. CME Clearing's participation requirements are risk-based criteria, as they reflect measures designed to ensure each Clearing Member is capable of conducting its activities without presenting unanticipated financial, operational, or legal risks to CME Clearing, its fellow Clearing Members, and their customers. These requirements constitute the least-restrictive criteria that appropriately capture the exposures brought by CME Clearing's Clearing Members. These criteria are publicly available through the CME Group Exchange Rulebooks on the CME Group website. CME Clearing's clearing membership requirements establish appropriate capital, operational, and risk management requirements that are overseen by the CHOC and appropriate CME Clearing Risk Committee, which include Clearing Members and other key market stakeholders to provide for the consideration of risk-based input from various perspectives, as described in CME Clearing's disclosures for Principle 2. Pursuant to their respective charters, the CHOC and each of the CME Clearing Risk

	Committees are charged with prioritizing the safety and efficiency of the Clearing House, generally supporting the stability of the broader financial system, and considering legitimate interests of Clearing Members and their customers at all times in accordance with prudent risk management standards (including systemic risk mitigation) and best practices in the industry. Financial requirements are designed to scale with Clearing Member exposures to the Clearing House, which is designed to ensure Clearing Members are able to effectively manage the risks of the exposures they carry and have the financial wherewithal to add exposure without compromising the safety of CME Clearing. Scaling these requirements in this manner is also designed to ensure that smaller Clearing Members with lower exposures may enjoy the benefits of clearing membership without being subject to requirements in excess of the risk brought to CME Clearing by them.
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.	CME Clearing, particularly through the Risk Management team, monitors on an ongoing basis all Clearing Members' compliance with CME Clearing requirements, including in conjunction with the Market Regulation department and FRS department. Collectively, the procedures and standards employed by CME Clearing and these departments monitor Clearing Members' compliance with applicable rules, regulations, and standards. CME Group Exchange Rules 970 and 971 provide that Clearing Members must report monthly financial statements, daily customer segregated, cleared swaps customer and secured 30.7 account statements, and bimonthly segregated investment detail reports. However, bank Clearing Members may submit financial statements quarterly, in line with submissions to their banking regulator. Further, CME Group Exchange Rule 901 imposes a number of notification requirements on Clearing Members with respect to significant business transactions, significant changes in operations, and material changes in personnel, which are described in CME Clearing's disclosures for Key Consideration 1 of this Principle. CME Clearing also conducts regular risk reviews of Clearing Members, as described in CME Clearing's disclosures for Principle 3. In particular, as further described in such disclosures and not covered fulsomely under this Principle, CME Clearing conducts ongoing monitoring and risk reviews of each Clearing Member at least once every two-years to monitor compliance with relevant risk management requirements. A Clearing Member may also be subject to enhanced risk monitoring and reporting to CME Clearing based on the characteristics of its risk profile. Additionally, the FRS department operates a sophisticated financial surveillance program that focuses on Clearing Members' compliance with operational, capital and customer protection regulatory requirements. This program includes reviews of daily customer segregation and financial statements submitted by Clearing Members to demonstrate that they have adequate customer fund protection and are in capital compliance. As described in CME Clearing's disclosure for Principle 3, the FRS department also conducts risk-based examinations of Clearing Members that include a targeted review of the Clearing Members' financial statements and customer protection procedures to ensure that they conform to CFTC regulations and CME Group Exchange Rules.

	If a participant fails to fulfill certain requirements and requests from CME Clearing to re-establish compliance with relevant requirements in a timely fashion, a Clearing Member's privileges may be limited or suspended pursuant to the processes and procedures established under the CME Group Exchange Rules, including CME Group Exchange Rules 230.K, 402, 403, 412, 435, 8G27, 8G975, 913, 8G913, 974, 975, 8G975, 976, 977, 978, and 979.[95] A suspended Clearing Member may have the express right to appeal the decision as established under the relevant CME Group Exchange Rule. As noted in CME Clearing's disclosures for Principle 13, decisions to utilize the powers afforded under such rules would be made in accordance with CFTC regulations, including those under CFTC Regulation §39.24, which require CME Clearing to have governance arrangements that place a high priority on the safety and efficiency of CME Clearing and explicitly support the stability of the broader financial system. The CFTC would be notified immediately upon a Clearing Member suspension. Any suspended or expelled Clearing Member must comply with any orders provided by the Board, the relevant CME Clearing Risk Committee, or duly authorized CME Clearing personnel. CME Clearing may take whatever means necessary to affect an order with which the Clearing Member refuses to abide. A suspended or expelled Clearing Member may designate a Clearing Member to close-out open trades in a manner acceptable to CME Clearing. CME Clearing may also appoint a Clearing Member or Clearing Members to which all such open positions shall be transferred for liquidation or may appoint a Clearing Member or Clearing Members to liquidate such positions on behalf of such suspended Clearing Member.
Principle 19: Tiered Participation Arrangements 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.	Clearing Members are the direct participants of CME Clearing and indirect participants include Clearing Members' customers and their non-Clearing Member affiliates. The primary risk presented to Clearing Members that provide customer clearing services is that the potential losses related to a customer account are so large that it causes the Clearing Member to become distressed and potentially default, which, in turn, can pose risks to the Clearing House. However, CME Clearing employs many proactive risk management tools that are designed to ensure that its Clearing Members are taking on a level of risk that is within their wherewithal, in part employed through its clearing membership requirements, as described in CME Clearing's disclosures for Principle 18. Consistent with CME Clearing's obligations under CFTC Regulation §39.19(c), pursuant to relevant CME Group Exchange Rules, Clearing Members must provide certain information to CME Clearing on a daily basis to identify each of their individual customer accounts within a segregation account origin. Specifically, pursuant to CME Group Exchange Rule 980.G, each FCM Clearing Member is required to submit daily reports to CME Clearing that include legal entity identifiers, where available, and end-of-day gross positions of each individual customer account within the customer segregated, cleared swaps customer, and secured 30.7 accounts. Such reporting, in part, is primarily used by the Clearing House to

[95] *See also*, https://www.cmegroup.com/clearing/files/cme-group-response-fsb-questionnaire-continuity-of-access-20210301.pdf

	facilitate the collection of customer margin on a gross basis. Customer gross margining inherently ensures a certain level of transparency into individual clients' exposures. Additionally, under the CFTC's Part 22 Regulations, which implements the LSOC account structure, additional reporting is required to support the enhanced protections provided to customers for their specific collateral value, as described further in CME Clearing's disclosures for Principle 14. Further, pursuant to CME Group Exchange Rule 980.A, each Clearing Member of CME Clearing is required to maintain current books and records consistent with CME Group Exchange Rules, the CEA, and CFTC regulations and such books and records shall be open to inspection and promptly provided upon request. In particular, CFTC Regulation §1.37 requires each FCM to keep the name and address of the person for whom each account is carried and CFTC Regulations §1.20, §22.2, and §30.7 require each FCM to account for funds owed to and from each customer. In addition to the reporting pursuant to CME Group Exchange Rule 980, which, in part, is primarily used by the Clearing House to facilitate the collection of customer margin on a gross basis, pursuant to the CFTC's Part 15 Regulations and Chapter 5 of the CME Group Exchange Rulebooks, additional information is required for exchange-traded derivatives customers' positions that exceed reportable levels, such as being identified to CME Clearing under daily reporting requirements – commonly referenced as Large Trader customers. In particular, CME Group Exchange Rule 560 requires that a person who owns or controls positions in excess of reportable levels or substantial positions in a given contract to make available to the CME Group Exchanges the necessary information related to such positions. Further, CME Group Exchange Rule 561 requires daily reporting of positions at reportable levels and states the following: *"Positions at or above the reportable level in a particular expiration month of a futures contract, or in all puts or in all calls of a particular option contract expiration month, are required to be reported. For an account with reportable positions in a particular contract, all positions, regardless of size, in any contract month and in any contract that aggregates with that contract must be reported."* Reportable levels are specifically defined under CME Group Exchange Rule 561 in combination with CFTC Regulation §15.03(b). Reportable levels are defined conservatively, which is designed to ensure that Large Trader reports identify all market participants carrying sizeable exposures in a given exchange-traded derivatives product. Reportable levels are published on the CME Group website.[96] Additionally, for cleared swaps derivatives, pursuant to CFTC Regulation §22.11, all cleared swaps customers' positions are required to be identified to CME Clearing under similar daily reporting requirements. Large Trader, as well as cleared swaps, customers' positions are captured by internal CME Clearing systems where the information is organized to gather basic information on Clearing Members' customers. As described in CME Clearing's disclosures for Principle 3, CME Clearing monitors the risks presented

[96] *See* https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf and https://www.ecfr.gov/cgi-bin/text-idx?SID=e06755667421f4518804ed5b4533dc5e&mc=true&node=pt17.1.15&rgn=div5

	by its Clearing Members, including for their proprietary and customer accounts, on a real-time basis. While CME Clearing continually monitors the changing exposures of a Clearing Member's customer segregated, cleared swaps customer, and secured 30.7 accounts, as applicable, consistent with CFTC Regulation §39.13(h)(2), individual customers that carry sizeable exposures (e.g., Large Trader customers) are subject to heightened daily monitoring, as described in CME Clearing's disclosures for Key Consideration 3 of this Principle. The risks presented by customers is further managed through information requests from CME Clearing to its Clearing Members in regard to their customers' activity, where warranted and additionally, CME Clearing may advise Clearing Members to impose additional risk measures on their customers to support their activity. Additionally, as described in CME Clearing's disclosures for Principle 16, Clearing Members also prepare daily reports that detail the segregation and funds for its exchange-traded and cleared swaps derivatives customers. Such reports demonstrate that the positions of the Clearing House's Clearing Members are collateralized with funds that are held for the sole purpose of covering their customers' exposures. As described further in CME Clearing's disclosures for Principle 3, CME Clearing also conducts regular risk reviews of its Clearing Members, which, in part, focuses on their clearing for customers. These reviews allow CME Clearing to assess the manner in which its Clearing Members are managing the exposure they bear from their customer accounts and the risk management practices they employ to manage such risks. CME Clearing is also able to manage the risk created vis-à-vis tiered participation arrangements through CME Group Exchange Rule 418, which stipulates that any person executing a transaction directly or through an intermediary and any person for whose benefit the transaction has been executed expressly consents to the jurisdiction of the appropriate CME Group Exchange and to be bound by and comply with the rules of the CME Group Exchange, ensuring that customers comply with the necessary requirements when ultimately sending their exposures to the Clearing House for clearing.
Key consideration 2 An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.	CME Clearing assesses the material dependencies between Clearing Members and customers on an ongoing basis, which would be identified through both CME Clearing's daily monitoring and risk reviews, as described in CME Clearing's disclosures for Principle 3. One such dependency is a viable Clearing Member business model so that the Clearing Member maintains the appropriate financial and operational wherewithal, along with market expertise in the products it clears, to act as guarantor to CME Clearing for the transactions of its customers. CME Clearing monitors customer clearing activity through a variety of daily monitoring tools. Additionally, CME Clearing is able to leverage the knowledge its Clearing Members have of their customers in its monitoring and management of the overall exposures of their customer accounts. Clearing Members maintain the primary customer relationship and as such, are responsible for the financial performance of their clients and the first line of recourse in the event of a default. As a result of a Clearing Member's relationship to its customers, it has the greatest understanding of its customers' risk profiles, including its credit and financial profile, as well as the customer's exposures across the markets it clears. While Clearing Members maintain this relationship with their customers, CME Clearing also maintains the right

	to advise a Clearing Member if its customer exposures seem outside of its risk profile. As described further in CME Clearing's disclosures for Principle 3, this could be identified through CME Clearing's defined tolerance thresholds for each Clearing Member.
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.	Through its daily monitoring and internal systems CME Clearing is able to monitor and manage the risks posed by Clearing Members' customers and in particular, those who are considered Large Trader customers, as described in CME Clearing disclosure for Key Consideration 1 of this Principle. CME Clearing takes a number of steps to monitor the risk posed by a customer to its Clearing Member, relative to overall activity and the given customer's Clearing Member. Consistent with CFTC Regulation 39.13(h)(2), the Risk Management team is able to monitor customers with large exposures at one Clearing Member and across Clearing Members – e.g., Large Trader customers. Further, the Risk Management team reviews accounts that have significant risks arising from concentration of positions, breadth of positions, and concentrations of deliverable supply, among others. Additionally, the profit or loss and margin levels of Large Trader customers are monitored and are measured against their Clearing Member's available capital. Further, consistent with CFTC Regulation 39.13(h)(3), the Risk Management team conducts daily stress tests of Large Trader customers. CME Clearing maintains an open line of communication with its Clearing Members, in particular, to discuss and understand the larger and more complex customer exposures it carries. Also, the defined tolerance thresholds CME Clearing sets for each of its Clearing Members helps identify customer exposures that are outside of the typical levels for the Clearing Member. As such, the Risk Management team monitors tolerance thresholds related to settlement variation and performance bond changes for each Clearing Member, including those related to its customer accounts, to detect large losses and/or large short options positions. If the Risk Management team identifies that a Clearing Member's exposure to a customer account is exceeding the tolerance thresholds, then it will take the necessary steps (e.g., contacting the Clearing Member, enhance monitoring, and reducing exposures, etc.) to address the exceedance, which, in part, are dependent on the exposure level relative to its typical activity. Additionally, CME Clearing offers its Clearing Members a variety of risk management tools to manage the risks to which they are exposed to through their customers. These tools include credit controls, which are required by CME Clearing for its Clearing Members to employ pursuant to CME Group Exchange Rule 949. Further, CME Clearing has a variety of pre-execution risk control tools that allow Clearing Members to limit their exposure to their customers. CME Clearing also manages the risks arising from customers through risk reviews of Clearing Members. Through these reviews, the Risk Management team increases their understanding of how a Clearing Member risk manages its customers' exposures. These reviews include, but are not limited to, their risk management procedures for:

	• Monitoring the credit risks of accepting trades, including give-up trades, of specific customers; • Monitoring account activity on an intraday basis, including overnight; • Operational risk management, including systems capabilities; • Functioning of order entry systems, including the ability to set credit controls; • Liquidity risk management; and • Determining if a customer account presents a heightened risk profile.
Key consideration 4 An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.	The Risk Management Framework outlines the policies CME Clearing employs to identify and manage the risks posed by customers of its Clearing Members and is supplemented as appropriate by other policies and procedures. As noted above, the Risk Management Framework is reviewed and approved on at least an annual basis by the Board and the CHOC. As noted above in CME Clearing's disclosure for Key Consideration 3 of this Principle, CME Clearing's Risk Management team utilizes internal systems to continually assess the risk profiles of customers' portfolios. The risk review process complements these assessments, providing CME Clearing an additional mechanism for assessing how a Clearing Member manages its customers' activities. CME Clearing also manages and limits the risks from tiered participation arrangements through the application of relevant CME Group Exchange Rules, which define minimum requirements for a Clearing Member to manage the exposures borne by its customers. These requirements include CME Group Exchange Rules 982 and 981, which require a Clearing Member to establish a written risk management program and anti-money laundering compliance program, respectively. CME Clearing maintains the right to instruct a customer via its Clearing Member to make appropriate changes to its portfolio in order to reduce its risk profile, including moving an account from one Clearing Member to another, reduce positions, or deposit additional performance bond funds, among other possibilities, depending on the particular situation. As such, CME Group Exchange Rules 930.L and 8G930.J permit CME Clearing, at its sole discretion, consistent with its risk management and regulatory priorities, to require Clearing Members to collect additional performance bond deposits from specific account holders in circumstances deemed necessary by CME Clearing for Base and IRS products, respectively.
Principle 20: FMI Links 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	The FMIs with which CME Clearing has links with must demonstrate a strong financial standing and an understanding and acceptance of their obligations under such link, similar to any counterparty for which CME Clearing has a relationship. In establishing any future links with other clearing houses, the risk of the program would be thoroughly investigated and analyzed from legal, credit, liquidity, custody, and operational risks' perspectives so that the exposures can be managed within CME Clearing's risk management practices without undue additional risks to the financial safeguards waterfalls. If it is determined that it is appropriate for a new link (i.e., cross-margining relationship) to be established, such

designed such that each FMI is able to observe the other principles in this report.	link would be subject to regulatory review and approval by the CFTC. Additionally, new cross-margining relationships must be approved by the appropriate CME Clearing Risk Committee and the CHOC. Currently, CME Clearing has three links with other FMIs that each provide their own risk management benefits. Through these links, eligible market participants are able to effectively manage their exposures across CME Clearing and the other participating FMIs. CME Clearing believes that the arrangements it supports through its FMI links help reduce overall systemic risk by allowing participating market participants to manage their risks more efficiently across regions and FMIs, as well as supporting liquidity and capital efficiencies for markets and participating market participants, respectively. Below is a brief overview of the FMI links CME Clearing supports: • **Singapore Exchange ("SGX")**: Since 1984, CME Clearing has had a mutual offset arrangement with SGX (or its predecessor) that enables market participants to open certain futures positions on one exchange and liquidate them on the other. • **OCC**: Since 1989, CME Clearing has had a cross-margining arrangement with OCC that allows certain exchange-traded equity derivatives positions cleared at CME Clearing and OCC that are significantly and reliably correlated to be combined into a single portfolio for margining and settlement purposes. Performance bond requirements are computed based on the combined positions maintained in the cross-margin accounts of the participating market participants using a risk-based margin methodology. This results in one performance bond requirement for the participating market participants covering relevant exposures at CME Clearing and OCC. • **FICC**: Since 2000, CME Clearing has had a cross-margining arrangement with FICC (or its predecessors) to cross-margin interest rate exchange-traded derivatives and fixed-income securities that are significantly and reliably correlated so that long and short positions in such products offset one another to some degree for purposes of determining performance bond requirements. Exposures under these arrangements with SGX, OCC, and FICC are collateralized consistent with the risk exposures of a given Clearing Member's portfolio. Additionally, each of CME Clearing's FMI links are subject to CME Clearing's standard counterparty monitoring, as described in CME Clearing's disclosures for Principle 4. As such, each of the above counterparties is subject to CME Clearing's at least annual internal credit rating process and monitored on an ongoing basis through CME Clearing's daily monitoring practices. CME Clearing has a specific credit rating template designed for its clearing house counterparty relationships. Further, CME Clearing's daily risk monitoring also encompasses the monitoring of participating Clearing Members' activity in the arrangements CME Clearing supports with SGX, OCC, and FICC. In regard to the exposures related to CME Clearing's FMI links, CME Clearing can view risk both intraday and end-of-

	day and performs additional risk management activities, such as backtesting. CME Clearing's FMI links adhere to the margin and risk management policies defined in the PFMIs and they employ risk management practices of similar caliber to that of CME Clearing.
Key consideration 2 A link should have a well-founded legal basis, in all relevant jurisdictions, that supports its design and provides adequate protection to the FMIs involved in the link.	As described under CME Clearing's disclosures for Key Consideration 1 of this Principle, CME Clearing has established links with SGX, which is primarily regulated in Singapore, and OCC and FICC, which are primarily regulated in the U.S. These arrangements are governed by contracts and authorized by the local regulator(s) of each FMI. Additionally, as described under CME Clearing's disclosures for Principle 1, CME Clearing has a high degree of certainty that its rules are enforceable, including CME Group Exchange Rule 830 and Chapter 8A of the CME Group Exchange Rulebooks that outline requirements relative to CME Clearing's FMI links. In establishing a new FMI link, CME Clearing would conduct the necessary legal analysis and due diligence, operational review, and regulatory review.
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.	This Key Consideration is not applicable to CME Clearing because it is not a central securities depository.
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.	This Key Consideration is not applicable to CME Clearing because it is not a central securities depository.
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.	This Key Consideration is not applicable to CME Clearing because it is not a central securities depository.
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	This Key Consideration is not applicable to CME Clearing because it is not a central securities depository.

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.	CME Clearing evaluates the credit profile of each prospective FMI link counterparty and as such, assesses the risk expected to arise from such link. CME Clearing's review process for new FMI links would include a counterparty credit assessment of the FMI, a review of the FMI's financials, and a review of the FMI's capital, overall business model, risk management standards, and creditworthiness, among other areas. By undertaking such assessments, CME Clearing is able to determine its level of comfort in taking on the risk associated with the FMI link and whether, it is appropriate to institute any limits or other risk mitigation practices with respect to the link. As described above, CME Clearing integrates the monitoring of the risk exposures of participating market participants from its FMI links into its risk management programs to holistically review the impacts of changing prices, volatilities, and positions. CME Clearing monitors these risk exposures continually and assesses the risk exposures relative to the available financial resources. While CME Clearing does not believe there would be spillover effects as a result of a linked FMI defaulting because the exposures under the link are appropriately collateralized, to the extent that a default occurs and results in additional direct exposures to CME Clearing, it would use any available resources to manage the exposures and call for additional resources, as necessary, in accordance with the CME Group Exchange Rules. Additionally, the contractual agreements CME Inc. has in place to facilitate each of CME Clearing's FMI links address scenarios where a participating FMI is in distress. For avoidance of doubt, CME Clearing notes that it has no collective link arrangements (i.e., links established with three or more clearing houses).
Key consideration 8 Each CCP in a CCP link arrangement should be able to cover, at least on a daily basis, its current and potential future exposures to the linked CCP and its participants, if any, fully with a high degree of confidence without reducing the CCP's ability to fulfill its obligations to its own participants at any time.	Once a link is established, CME Clearing implements a number of controls, such as daily monitoring of current risk exposures. CME Clearing also reviews financial resources of Clearing Members participating in the arrangements related to its FMI links to assess if they can appropriately manage the obligations associated with such arrangements. Further, the exposures borne by market participants in the arrangements related to CME Clearing's FMI links are collateralized with performance bond that is designed to cover 99% of market moves within the applicable margin period of risk. Regular backtesting is conducted relative to CME Clearing's FMI links. CME Clearing does not make any contribution to the Guaranty Fund of any of the FMIs with which it has a link, and likewise, they do not contribute to any of CME Clearing's Guaranty Funds. Rules governing CME Clearing's FMI links are primarily outlined under CME Group Exchange Rule 830 for OCC and FICC and Chapter 8A of the CME Group Exchange Rulebooks for SGX. These rules are publicly available and designed to inform participating market participants of their obligations related to participating in the arrangements CME Clearing supports with SGX, OCC, and FICC.
Key consideration 9	This Key Consideration is not applicable to CME Clearing because it is not a trade repository.

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

Principle 21: Efficiency and Effectiveness

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 choose of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures.	As a SIDCO, CME Clearing is required under CFTC Regulation §39.38(a) to efficiently and effectively design its operating structure to meet the needs of its Clearing Members and the markets it serves. As such, the structure of CME Clearing considers the needs of its participants and the markets it serves. CME Clearing provides clearing and settlement services for exchange-traded derivatives, including those listed on the CME Group Exchanges, and a variety of cleared swaps, including IRS products. Support for trading and clearing services across such a diverse set of asset classes is designed to allow CME Clearing's market participants to prudently and effectively manage their risks. Further, the structure under which CME Clearing operates allows for end-to-end risk management by the CME Group Exchanges and CME Clearing to Clearing Members and their customers. In particular, as further elaborated on in CME Clearing's disclosures for Principle 2, CME Inc.'s dual registration as both a DCO and DCM, as well as CME Group's ownership of the other CME Group Exchanges, promotes effective and efficient risk management. Market participants clearing exposures through CME Clearing have access to pre- to post-trade risk controls to manage their exposures holistically. CME Clearing leverages information and services provided by the CME Group divisions outside of its own division, in performing its risk management function, such as the GCC, Legal, and Market Regulation departments. The cross-functional division structure under which the Clearing House operates allows it to offer superior risk management services via this enhanced information sharing capability and visibility into the markets for which the Clearing House clears. CME Clearing performs its risk management function independently from the commercial and business divisions of CME Group. Additionally, the structure under which CME Clearing operates allows CME Clearing to consider the needs of its market participants and the markets it serves and to assess whether its design allows for the provision of efficient clearing and settlement services. This is in part due to the open lines of communication between GCC and CME Clearing. With that in mind, market participant facing employees on both the exchange and clearing sides can communicate with each other efficiently and effectively to meet the risk management needs of the market participants that CME Clearing serves. CME Clearing continuously assesses whether it is meeting the requirements and risk management needs of its participants, including through routine communications with its market participants. Market participant outreach can occur through a number of forums for discussing enhancements to CME Clearing's offering, including industry associations and advisory groups, such as the FCM Advisory Committee. CME Clearing also participates in industry events and conferences, which allows it to be an

	active contributor to industry dialogues and respond to industry developments and demands. Further, an open line of communication between market stakeholders and CME Clearing allows CME Clearing to solicit and gain an understanding of market stakeholders' views related to a variety of industry topics. Pursuant to CME Group's Corporate Governance Principles, the Board, CHOC, and CME Clearing Risk Committees are charged with considering the legitimate interests of key market stakeholders and industry best practices in fulfilling their responsibilities. As noted in CME Clearing's disclosures for Principle 2, the CME Clearing Risk Committees are comprised of Clearing Members and other key market stakeholders which in their functions as members of these committees are acting with a duty of care which prioritizes the safety and efficiency of the Clearing House and the stability of the broader financial system. The CME Clearing Risk Committees provide a forum for representatives to provide their risk-based input to CME Clearing on topics which are under the purview of the relevant CME Clearing Risk Committee. This input allows CME Clearing to efficiently and effectively meet the risk management needs of the market participants and markets it serves. Additionally, when supporting a new offering or altering a current service offering that has a material impact on the risk profile of the Clearing House, CME Clearing will solicit the risk management views of key market stakeholders through a variety of forums, including those listed above and would also submit a rule filing to the CFTC. As further described in CME Clearing's disclosures for Principle 1, the rule filing process is transparent to market participants and rule changes and additions to the CME Group Exchange Rulebooks are publicly available on the CME Group and CFTC websites. The rule filing process for changes with a material impact also provides a forum for feedback on the filings.
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.	Under CME Group's governance arrangements, CME Clearing has measurable and achievable goals and objectives that are designed to mitigate risk taking and are consistent with applicable SLAs. Corporate governance arrangements, as set out under CME Clearing's disclosures for Principle 2, are designed to ensure that these goals are pursued and are measurable and achievable. The Board recognizes the important role the Clearing House plays in the marketplace and the importance of providing active governance designed to ensure the safety and soundness of its operations. As such, the Statement of Risk Appetite adopted by the Board places a high priority on the safety and soundness of the Clearing House. CME Clearing's risk management practices, as defined in its policies and procedures, particularly the Risk Management Framework, are consistent with this priority. In particular, CME Clearing's risk management practices are based upon a philosophy that a strong risk culture is integral to the establishment of effective and efficient risk management practices that prioritize the safety and soundness of the Clearing House. The extent to which CME Clearing is meeting its priority of employing its risk management practices both effectively and efficiently is continually assessed through CME Clearing performing its operations daily and meeting the defined minimum levels of service CME Clearing has agreed to meet under its SLAs. First and foremost, at a minimum, CME Clearing is obligated to keep its systems operational at the times

	for which CME Clearing has agreed that they would be available, which CME Clearing achieves through round the clock staffing. CME Clearing seeks to provide its market participants reliable access to its markets, allowing them to effectively manage their risks. As such, CME Clearing's objectives are designed to: • Maintain 24-hours a day, six-days a week coverage of all necessary operational functionality, including customer assistance staffing; • Continuously monitor clearing functions, including trade processing and settlement, and adhere to key operational standards; • Allow for 24-hours a day, seven-days a week risk management monitoring and report generation capabilities; • Support 24-hours a day, seven-days a week communication with market participants and Clearing Members, where necessary; and • Provide 24-hours a day, five-days a week settlement and banking functionality with Clearing Members. These objectives are designed to ensure the continuity of CME Clearing's clearing and settlement services for Clearing Members and market participants under both business-as-usual and stress scenarios, while also protecting CME Clearing from stress events and continually affording the marketplace a prudent risk management offering.
Key consideration 3 An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.	The Board has governance and oversight responsibility of CME Clearing. The Board's primary objective for overseeing CME Clearing is to provide active governance that prioritizes the safety and efficiency of the Clearing House and generally supports the stability of the broader financial system. Additionally, the CHOC, similarly, prioritizes the safety and efficiency of the Clearing House and generally supports the stability of the broader financial system in performing its oversight function of the Clearing House, which is described in greater detail in CME Clearing's disclosures for Principle 2. Through the Board's and CHOC's regular reviews of CME Clearing's risk management policies and reports they receive on the activities of the Clearing House, they have insight into the extent to which CME Clearing is efficiently employing its risk management practices. The Board regularly receives reports from the CHOC and CME Clearing Risk Committees on the risk management activities of the Clearing House and regularly reviews the Statement of Risk Appetite. Further, CME Clearing has established more targeted mechanisms for the regular review of its efficiency and effectiveness through the internal review of its practices for improvement (e.g., business process improvement planning) and the Global Assurance department. The Global Assurance department performs regular, independent, risk-based audits to provide reasonable assurance as to the appropriateness of certain activities undertaken by the Clearing House. Global Assurance reports its findings to the committees of the Board, as appropriate.

	CME Clearing also maintains key operational and service metrics, as discussed in CME Clearing's disclosures for Key Consideration 2 of this Principle, that are reviewed to gauge that operational commitments are being met against agreed upon minimum standards.
Principle 22: Communication Procedures and Standards An FMI should use, or at a minimum accommodate, relevant internally 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.	CME Clearing is committed to utilizing a number of internationally accepted communication procedures and standards in its daily operations, including but not limited to FIXML and FPML, particularly to support its clearing and recording functions and payments and settlement processing. Any cross-border activities for which CME Clearing undertakes are appropriately accommodated through its utilization of internationally accepted communication procedures and standards regarding its operational procedures, processes, and systems. The below activities are a few of the activities that CME Clearing undertakes that are designed to ensure CME Clearing's compliance with CFTC Regulation §39.38(d), which requires that each SIDCO shall facilitate efficient payment, clearing, and settlement by accommodating internationally accepted communication procedures and standards. **Clearing and Recording** FIXML and FPML are utilized for trade capture, trade capture acknowledgement of cleared trades, and Firm Account Validation for IRS products. Firm FIXML Trade Register provides firms with a complete list of trades cleared on a daily basis and CME Clearing FIXML Product Reference File provides market participants a comprehensive set of definitions of all CME Group instruments that can be easily loaded into their systems. *FIXML Trade Register* The FIXML Trade Register file allows market participants to easily reconcile CME Group trade and position quantities and amounts with their own back-end systems as the file contains machine readable information. The FIXML Trade Register contains both Position Reports and Trade Capture Reports, which are produced twice daily, once at intraday and once upon the completion of the end-of-day cycle. • The **Position Report** represents positions that have been established for each instrument in which the firm has entered trades and the positions are maintained as long as the firm continues to hold said positions. • The **Trade Capture Reports** are utilized to confirm trade data to counterparties of the trade, while also confirming trades for parties not directly involved in the execution, such as exchanges and other service providers. Trade Capture Reports are also utilized to report privately negotiated trades, trades executed on the floor, and trades executed from an automated order routing

	mechanism. Additionally, Trade Capture Reports are utilized to request a cancellation or amendment to a confirmed trade. *CME Clearing FIXML Product Reference File* Product reference data is communicated using standard message types for the given product, which includes Security Definition Message and Derivative Security List Message. • The **Security Definition Message** is used for futures, to define an individual security or set of securities for futures and for strategies and to send a related list of securities in which each security is individually defined within the list. The Security Definition Message contains a list of securities for a single market segment and allows trading rules to be specified if different trading rules are specified on a market segment message. • The **Derivatives Security List Message** is used to send a predefined list of securities (usually options) based on a common underlying and option series. The Derivatives Security List Message can also be used to send the rules for security creation (usually options) which imply the existence of a set of securities. **Payments and Settlement Processing** As noted, CME Clearing also uses a number of internationally accepted communications procedures that are designed to ensure the efficient processing of payments and settlement that include: • CME Clearing's use of **SWIFT** to safely facilitate margin, settlement, and collateral related payments. SWIFT instructions are also utilized for the purpose of settling both foreign and domestic securities used for collateral purposes by CME Clearing's Clearing Members. SWIFT messaging infrastructure is the international banking standard. • Daily **Margin and Settlement Files**, which are included in the suite of information provided to participants. These files are available in various formats, which allow them to be easily digestible to market participants. **Communication Standards** CME Clearing is committed to utilizing internationally accepted communications standards as well as fully complying with the DCO Core Principal M: Information Sharing and CFTC Regulation §39.22 and as such, consistently works with the appropriate industry groups, including FIA, to set and implement industry communication standards. CME Clearing's participation in these assists it in having an active role in setting industry wide communication standards that are accepted internationally. Further, its participation assists CME Clearing in ensuring that it is utilizing industry accepted best practices in communication standards.

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

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.	CME Clearing strives to be transparent in the activities it undertakes and regarding the obligations its market participants have when facing it. CME Clearing has adopted clear and comprehensive rules and procedures that are fully disclosed to participants through the CME Group Exchange Rulebooks. The CME Group Exchange Rulebooks are publicly disclosed on the CME Group website.[97] CME Clearing has worked with Clearing Members and other market stakeholders to establish prudent risk management rules and procedures in line with industry best practices, including to address business as usual and stress scenarios. The CME Group Exchange Rulebooks address actions CME Clearing may take under events that are considered non-routine, though could be foreseeable. As noted under CME Clearing's disclosures for Key Consideration 6 of Principle 2, the CME Group Exchange Rules afford CME Clearing, as well as the CME Clearing Risk Committees and the Board, appropriate authority and powers to act in an emergency pursuant to governance arrangements that are designed to protect the safety and efficiency of the Clearing House and generally support the stability of the broader financial system. CME Clearing verifies that the CME Group Exchange Rulebooks are clear and comprehensive through maintaining an open line of communication with key market stakeholders, which allows market stakeholders to easily raise their questions and concerns if they arise. CME Clearing additionally hosts various forums and participates in industry groups, which allows it to easily garner the input of market participants on the clarity of its current and forthcoming rules and procedures to the extent necessary. Further, as discussed in CME Clearing's disclosures for Principles 1 and 2, all substantive changes to the CME Group Exchange Rulebooks impacting the Clearing House are reviewed and approved by the appropriate CME Clearing Risk Committee and CHOC and changes that could have a significant impact on the risk profile of the Clearing House are also reviewed and approved by the Board. This provides a mechanism for CME Clearing to receive and consider the risk-based input from these bodies and for the comprehensiveness of a rule change to be challenged and appropriately addressed. Changes to the CME Group Exchange Rulebooks may be prompted by any number of sources, including, but not limited to, market stakeholder feedback, including Clearing Members and customers, enhancements to CME Clearing processes, and evolving regulatory requirements, among others. All rule changes are publicly filed with the CFTC in the manner described under CME Clearing's disclosures for Principle 1, which provides an additional mechanism for CME Clearing to receive feedback from market participants.
Key consideration 2	CME Clearing's systems are designed to reliably support its daily clearing and settlement services to the marketplace. Critical areas of focus are systems security, speed, reliability, functionality, and capacity. CME Clearing supports a wide variety of technologies to meet customer needs to support fast connectivity

[97] *See* https://www.cmegroup.com/market-regulation/rulebook.html

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.	worldwide.[98] Details on clearing systems, particularly on those systems for which CME Clearing's market participants interface, are available on the CME Group website.[99] CME Clearing maintains the necessary powers to employ changes to its systems and would inform market participants of changes that would directly impact the manner in which they interface with CME Clearing through Clearing Advisories that are publicly available on the CME Group website, which market participants can sign-up to receive directly by email.[100] The rights and obligations of CME Clearing's Clearing Members and the risks incurred from such membership are clearly disclosed under the CME Group Exchange Rulebooks, which are available on the CME Group website. More generally, CME Clearing provides information to its Clearing Members on clearing membership through the CME Group website.[101]
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.	CME Clearing facilitates its Clearing Members understanding of the rules, procedures, and risks associated with participation through a variety of means, including training programs with flexible schedules and educational resources. The training approach utilizes hands-on training sessions, access to user manuals, and provides webinar training sessions to meet the different learning needs and time constraints of its participants. These hands-on training sessions are available in-person at CME Group office locations and via virtual meeting spaces. Clearing Members can also contact CME Clearing for *ad hoc* training requests and support, including for specific clearing applications, procedures, and processes. CME Clearing also undertakes a significant education effort when onboarding Clearing Members that is designed to ensure they understand the obligations of clearing membership. In particular, CME Clearing works with a prospective Clearing Member so that they understand and can in turn meet the risk management obligations, as defined under the CME Group Exchange Rulebooks, associated with clearing membership. Ultimately, prior to acceptance as a Clearing Member, the Clearing Member must demonstrate its ability to meet such obligations to CME Clearing. CME Clearing also discloses a significant amount of information on the CME Group website, particularly the "CME Clearing Knowledge Center" page, which is designed to facilitate a clear understanding of the rules, procedures, and risks associated with clearing membership. This page includes documents on various topics, particularly CME Clearing's risk management practices, that also range in level of detail. Information published on the CME Group website, includes but is not limited to: • Risk Management and Financial Safeguards;

[98] *See* https://www.cmegroup.com/globex/files/connectivityoptions.pdf
[99] *See* https://www.cmegroup.com/clearing/operations-and-deliveries/system-manuals.html#fixml&OtherSpecifications and https://www.cmegroup.com/clearing/operations-and-deliveries/system-manuals.html#recordLayouts
[100] *See* https://www.cmegroup.com/tools-information/advisorySearch.html#cat=advisorynotices%3AAdvisory+Notices&pageNumber=1&searchLocations=%2Fcontent%2Fcmegroup%2F
[101] *See* https://www.cmegroup.com/company/membership/files/cme-group-clearing-membership-handbook.pdf and https://www.cmegroup.com/company/membership/membership-and-lease-pricing.html#cme

	• Application and Agreement for Clearing Membership; • Clearing Membership Handbook; • Exchange Fees for Clearing & Trading; • Membership & Lease Pricing; • CME Clearing PFMI Disclosure document; and • CME Clearing Quantitative PFMI Disclosure document. The copious amounts of information that CME Clearing discloses through its website and its face-to-face interactions with its Clearing Members is designed to facilitate a clear understanding of its rules, procedures, and any risks that arise out of clearing membership. In the event that CME Clearing identifies a Clearing Member whose behavior demonstrates a lack of understanding of the CME Group Exchange Rulebooks and the risks associated with clearing membership, the appropriate remedial action will be taken pursuant to the CME Group Exchange Rulebooks. This action will be based on the facts and circumstances pursuant to CME Clearing's governance arrangements that are designed to protect the safety and efficiency of the Clearing House and generally support the stability of the boarder financial system. However, it could include suspension of the Clearing Member, but at a minimum, the behavior of concern would have to be stopped.
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.	Fee guides are accessible via the links below and are transparent to the public via the CME Group website: • CME, CBOT, and NYMEX/COMEX Fee Schedules; and • IRS Products Fee Schedule. Fees are assessed per side for all exchange-traded derivatives contracts. Fees vary by product and volume traded. Market participants and the public are notified of fee changes on a timely basis and such changes are published on the CME Group website. The prices for membership are also accessible via the link below and are transparent to the public via the CME Group website: • Membership & Lease Pricing.
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	Consistent with CFTC Regulation §39.37(b), CME Clearing updates the CME Clearing PFMI Disclosure document following any material changes to its systems or the environment in which it operates or at a minimum every two years. Pursuant to CFTC Regulation §39.37(b)(1), a material change to CME Clearing's system or the environment in which it operates is a change that would significantly change the accuracy and usefulness of the existing disclosure.

minimum, disclose basic data on transaction volumes and values.	CME Clearing publishes various data on the CME Group website through the CME Clearing Quantitative PFMI Disclosure document, which is updated on a quarterly basis. Additionally, the following reports, generally on a daily basis, are published to the CME Group website: • Volume/Open Interest Reports; • Settlements; • Daily Product Bulletin; and • Delayed Quotes. CME Clearing discloses a variety of other information on the CME Group website, as discussed throughout its disclosures to this Principle. Information disclosed to the public is published through the CME Group website. The CME Group website is also available in a variety of languages.

CME Group

V. List of publicly available resources

The following documents are available on the CME Group website:

- CME Group Exchange Rulebooks;
- Rule Filings for CME Group Exchanges;
- Certificate of Incorporation and By-Laws;
- Earnings Releases and Financial Reports;
- CME Group Corporate Governance Principles;
- Board of Directors;
- Management Team;
- Board Committees;
- CHOC Charter;
- CHRC Charter;
- IRSRC Charter;
- CME Group Code of Conduct;
- CME Group Press Releases;
- Clearing Advisories;
- Market Regulation Advisories;
- CME Clearing Knowledge Center;
- Risk Management and Financial Safeguards;
- Clearing Members;
- Application and Agreement for Clearing Membership;
- Clearing Membership Handbook;
- Membership & Lease Pricing;
- Globex Reference Guide;
- Connectivity Options;
- Technology Vendor Services;
- Exchange-Traded Derivatives Listed on the CME Group Exchanges;
- Trading Hours for Exchange-Traded Derivatives;
- Volume/Open Interest Reports;
- Daily Product Bulletin;
- Delayed Quotes;
- IRS Products;
- FX Swaps Products;
- Exchange Fees for Clearing & Trading;
- Financial Safeguards Waterfalls;
- SPAN Overview;
- Product-Level Margins for Exchange-Traded Derivatives;
- IRS Products Margining Overview;
- Margining Tools;
- Acceptable Collateral;
- Base Products' Collateral Haircuts and Limits;
- IRS Products' Collateral Haircuts and Limits;
- Cross-Currency Haircuts;
- CME Clearing Collateral Custodians;
- Clearing Transaction Timelines;
- Deliveries Information;
- CME Clearing Holiday Calendar;
- Settlements Procedures;
- Daily Settlements;
- CME Clearing Settlement Banks;
- CME Group Contact Information;
- CME Clearing PFMI Disclosure Document;
- CME Clearing Quantitative PFMI Disclosure Document; and
- CME Clearing Response to FSB Questionnaire on Continuity of Access for Firms in Resolution.