SUBMISSION COVER SHEET

IMPORTANT: Check box if Confidential Treatment is requested ☐

Registered Entity Identifier Code (optional): <u>19-415</u>

Organization: <u>Chicago Mercantile Exchange Inc. ("CME")</u>

Filing as a: ☒ **DCM**   ☐ **SEF**   ☐ **DCO**   ☐ **SDR**

Please note - only ONE choice allowed.

Filing Date (mm/dd/yy): <u>12/20/2019</u>   Filing Description: <u>Initial listing of the Options on Bitcoin Futures Contract</u>

SPECIFY FILING TYPE

Please note only ONE choice allowed per Submission.

Organization Rules and Rule Amendments

☐	Certification	§ 40.6(a)
☐	Approval	§ 40.5(a)
☐	Notification	§ 40.6(d)
☐	Advance Notice of SIDCO Rule Change	§ 40.10(a)
☐	SIDCO Emergency Rule Change	§ 40.10(h)

Rule Numbers:

New Product   **Please note only ONE product per Submission.**

☒	Certification	§ 40.2(a)
☐	Certification Security Futures	§ 41.23(a)
☐	Certification Swap Class	§ 40.2(d)
☐	Approval	§ 40.3(a)
☐	Approval Security Futures	§ 41.23(b)
☐	Novel Derivative Product Notification	§ 40.12(a)
☐	Swap Submission	§ 39.5

Product Terms and Conditions (product related Rules and Rule Amendments)

☐	Certification	§ 40.6(a)
☐	Certification Made Available to Trade Determination	§ 40.6(a)
☐	Certification Security Futures	§ 41.24(a)
☐	Delisting (No Open Interest)	§ 40.6(a)
☐	Approval	§ 40.5(a)
☐	Approval Made Available to Trade Determination	§ 40.5(a)
☐	Approval Security Futures	§ 41.24(c)
☐	Approval Amendments to enumerated agricultural products	§ 40.4(a), § 40.5(a)
☐	"Non-Material Agricultural Rule Change"	§ 40.4(b)(5)
☐	Notification	§ 40.6(d)

Official Name(s) of Product(s) Affected:
Rule Numbers:

Christopher Bowen
Managing Director and Chief Regulatory Counsel
Legal Department

December 20, 2019

VIA ELECTRONIC PORTAL

Mr. Christopher J. Kirkpatrick
Office of the Secretariat
Commodity Futures Trading Commission
3 Lafayette Center
1155 21st Street NW
Washington, DC   20581

> **Re: CFTC Regulation 40.2(a) Certification. Initial listing of the Options on Bitcoin**
> **Futures Contract.**
> **CME Submission No. 19-415**

Dear Mr. Kirkpatrick:

Chicago Mercantile Exchange Inc. ("CME" or "Exchange") hereby certifies to the Commodity Futures Trading Commission ("CFTC" or "Commission") the initial listing of the Options on Bitcoin Futures contract (the "Options Contract"), for trading on the CME Globex electronic trading platform and for submission for clearing via CME ClearPort effective on Sunday, January 12, 2020 for trade date Monday, January 13, 2020.

In discussing the initial listing of the Options Contract:

- Section 1 summarizes Options Contract terms and conditions;
- Section 2 provides background on the index underlying Bitcoin Futures and the development of Bitcoin Futures liquidity; and
- Section 3 addresses compliance of CME rules and rule amendments with applicable Core Principles for Designated Contract Markets ("Core Principles") under the Commodity Exchange Act ("Act").

Appendix A appends the CME Rulebook Chapter governing Options Contract terms and conditions. Appendix B provides an analysis of bitcoin deliverable supply. Appendix C addresses the Options Contract's position limits and reportable position levels pursuant to CME Rulebook Chapter 5. Appendix D sets forth the applicable CME Globex non-reviewable trading ranges as prescribed in CME Rule 588.H. Appendix E defines the pertinent special price fluctuation limits pursuant to CME Rule 589.

Section 1 – Contract Specifications

Table 1 – Contract Specifications for Options on Bitcoin Futures

Contract Title/Rulebook Chapter/ Commodity Code	Options on Bitcoin Futures/Chapter: 350A.
Underlying Futures Contract/Rulebook Chapter/Commodity Code	Bitcoin Futures/Chapter: 350/Commodity Code: BTC (equivalent to 5 bitcoin).
Price Basis and Minimum Price Fluctuation	Prices are quoted and traded in U.S. dollar per bitcoin. Regular Tick: 5 index points ($25.00 per contract).
Trading and Clearing Hours	5:00pm to 4:00pm Central Time/CT Sun-Fri with a 60-minute break each day beginning at 4:00pm CT.
Commodity Code	CME Globex: BTC CME ClearPort BTC Clearing: BTC
Options Style	European (no contrary exercise instructions).
Margining Style	Equity
Strike Intervals	10,000 index point integer multiples: 10,000 to 600% of the prior day's settlement price on the underlying futures contract, or prior day's underlying index reference price upon initial listing of the futures contract. 1,000 index point integer multiples: 1,000 to 400% of the prior day's settlement price on the underlying futures contract, or prior day's underlying index reference price upon initial listing of the futures contract. 500 index point integer multiples: 50% to 150% of the prior day's settlement price on the underlying futures contract once the underlying futures contract becomes the second nearest month. 100 index point integer multiples: 80% to 110% of the prior day's settlement price on the underlying futures contract once the underlying futures contract becomes the second nearest month. 50 index point integer multiples: 80% to 110% of the prior day's settlement price on the underlying future contract once the underlying futures contract becomes the second nearest month and the prior day's settlement price of the underlying futures contract price is below 5,000 index points.
Listing Schedule	The nearest six (6) consecutive months and the nearest two (2) Decembers.
Termination of Trading	4:00 p.m. London time on the last Friday of the contract month.
Settlement at Expiration	Option exercise results in a position in the underlying cash-settled futures contract. In-the-money options are automatically exercised into expiring cash-settled futures, which settle to the CME CF Bitcoin Reference Rate (BRR) at 4:00 p.m. London time on the last Friday of the contract month.
Position Limits	2,000 contracts
Minimum Block Trade Threshold Level	5 contracts (Reporting window: RTH 5 min; ETH/ATH 15 min)
Price Limits	Price limits for a given Business Day are tied to the underlying Bitcoin Futures (CME Rule Chapter 350).
CME Globex Matching Algorithm	F: First In First Out (FIFO)

Table 2 – Exchange Fees

Membership Type	Venue/Transaction Type	Fee
Individual Members Clearing Members Rule 106.J Equity Member Firms & Rule 106.J Qualified Subsidiaries Rule 106.I Members & Rule 106.I Qualified Affiliates Rule 106.S Member Approved Funds	CME Globex	$2.50
	EFP|EFR	$3.75
	Block	$3.75
	Delivery	$1.25
	Exe|Asn|Future From	$1.30
Rule 106.D Lessees Rule 106.F Employees	CME Globex	$4.00
	EFP|EFR	$6.00
	Block	$6.00
	Delivery	$2.00
	Exe|Asn|Future From	$2.05
Rule 106.R Electronic Corporate Members (For other than CME Globex - Non-Member rates apply)	CME Globex	$4.10
Rule 106.H and 106.N Firms	CME Globex	$4.40
	EFP|EFR	$6.40
	Block	$6.40
	Delivery	$2.20
	Exe|Asn|Future From	$2.25
International Incentive Program (IIP) and International Volume Incentive Program (IVIP) Participants (Open Outcry at same rate as CME Globex for Interest Rate products only)	CME Globex	$4.50
Central Bank Incentive Program (CBIP), Emerging Markets Bank Incentive Program (EMBIP), Latin American Fund Manager Incentive Program (FMIP), Latin American Proprietary Trading Incentive Program (LAPTIP) Participants	CME Globex	$4.85
Members Trading Outside of Division (For other than CME Globex During ETH - Non-Member rates apply)	CME Globex During ETH Only	$4.75
Non-Members	CME Globex	$5.00
	EFP|EFR	$7.50
	Block	$7.50
	Delivery	$2.50
	Exe|Asn|Future From	$2.55

Processing Fees	Fee
106.D Lessee/106.H Brokerage	$0.13
106.F Employee Brokerage	$0.13
Floor / "New" Brokerage	$0.04
Position Adjustments/Position Transfers	$0.10
Give-Up Surcharge	$0.05
Facilitation Fee	$0.40

Section 2 – CME CF Bitcoin Reference Rate (BRR)

Each Options Contract is exercisable into one Bitcoin Futures contract, which in turn will immediately come to final cash settlement at the CME CF Bitcoin Reference Rate ("BRR") published on the futures contract's last day of trading.

The BRR is calculated and administrated by CF Benchmarks Ltd, a leading provider of cryptocurrency indices. The BRR aggregates the executed trade flow of major bitcoin spot exchanges during a specific calculation window into a once-a-day reference rate of the U.S. dollar price of one bitcoin.

The BRR, has been calculated and published daily, without exception since its inception on November 14, 2016. The BRR is a registered benchmark under European Benchmarks Regulation ("EU BMR"). CF Benchmarks is recognized under the EU BMR and authorized by the U.K.'s Financial Conduct Authority ("FCA") as an index administrator.

Methodology[1]

The BRR is calculated based on the executed transactions in the BTC:USD currency pair at Constituent Exchanges during one hour from 3:00p.m to 4:00 p.m. daily London time (the "Observance Period"). The trades are reported through each Constituent Exchange's API to CF Benchmarks.[2] The calculation methodology for the BRR is as follows:

1. All relevant transactions are added to a joint list, recording the trade price and size for each transaction.
2. The list is partitioned into a number of equally-sized time intervals – 12 partitions of 5 minutes each.
3. For each partition separately, the volume-weighted median trade price is calculated from trades submitted by each exchange.
4. The BRR is then calculated as the equally-weighted average of the volume weighted medians of all partitions.

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[1] This passage summarizes, at high level, detail set forth in the following primary source:
Crypto Benchmarks Methodology Documentation: https://www.cfbenchmarks.com/documentation.

[2] For further details, please refer to the Constituent Exchange Criteria: https://www.cfbenchmarks.com/documentation.

The BRR is a robust underlying index due to the volume of executed transactions which form the basis of its calculation, as shown in Table 3 below. CME's Bitcoin Futures contract has successfully settled to the BRR on the futures final settlement day every month since the launch of the futures contract on December 18, 2017.

Table 3 – Number of trades and bitcoin transactions included in the daily BRR calculation, average by month and total number on the Final Settlement Day of each contract month

Year	Month	Average Number of daily trades included in BRR calculation	Average Number of bitcoin traded in the daily BRR calculation	Number of trades included in BRR calculation on Final Settlement day	Number of bitcoin traded in BRR calculation on Final Settlement day
2018	Jan	11,218	2529.6100	13,152	3162.9896
	Feb	9,645	3072.0210	6,215	2216.8220
	Mar	6,788	2178.4872	13,482	5893.8044
	Apr	6,430	2151.4047	4,085	1081.2821
	May	4,954	1526.0273	3,151	1178.7429
	Jun	4,620	1247.2131	3,708	1421.8128
	Jul	4,817	1047.3698	4,959	1636.6144
	Aug	5,380	1327.1896	3,943	929.6842
	Sep	4,175	945.6233	4,363	1316.7580
	Oct	2,933	757.4578	2,980	1139.2822
	Nov	5,157	2243.5523	6,515	3302.0619
	Dec	5,774	2831.6107	13,852	8606.4238
2019	Jan	3,566	1428.8089	2,705	960.1435
	Feb	3,819	1420.0676	3,822	1557.3860
	Mar	2,962	831.5107	2,902	852.6933
	Apr	3,718	1300.0159	3,896	1484.9987
	May	5,858	1809.4265	6,518	1761.1095
	Jun	7,552	2005.9382	9,657	2342.9539
	Jul	8,519	2682.2867	4,997	1829.0497
	Aug	5,190	1268.4567	3,927	780.3366
	Sep	5,269	1475.3345	7,721	3147.6048

Source: CF Benchmarks Ltd

Evaluation of CME's Bitcoin Futures Contract

Since its launch on December 18, 2017, the Bitcoin Futures contract has continuously developed liquidity. Clearing support is provided by a broad spectrum of futures commission merchants. As demonstrated below, the market for CME's Bitcoin Futures can readily support options trading. Since launch and through November 2019:

- 3,594 unique accounts have traded Bitcoin Futures contract across all client types and time periods
- 2.4MM contracts have been traded representing +$89BN in notional value
- The Average Daily Volume ("ADV") is 4,933 contracts
  o Highest volume day: May 13, 2019 – 33,677 contracts traded ($1.3BN)
  o Best month: May 2019 – averaged 13,604 contracts traded per day ($513MM)
  o Strongest quarter: Q2 2019 - ADV 10,710 contracts ($403MM)
- The Average Open Interest ("OI") is 3,283 contracts
  o Highest OI day: July 1, 2019 – 6,128 contracts ($535MM)
  o Best month: July 2019 – averaged 5,252 contracts OI per day
  o Strongest quarter: Q2 2019 – average daily OI 4,672 contracts

Looking more closely in 2019 YTD, greater market adoption has led to higher ADV:
- 2019 YTD ADV (through November) is 6,468 contracts ($247MM)
- Q3 2019 ADV was 5,534 contracts
- There is also strong growth in OI:
    - Average daily OI YTD (through November) is 4,189 contracts
    - Q3 2019 OI was 4,629 contracts

The pace of new account additions has expanded in 2019 showing that the marketplace is increasingly using CME's Bitcoin Futures contract to hedge bitcoin risk and/or exposure. Over 1,500 accounts have been added in 2019, with over 1,070 accounts actively trading in June 2019. Geographically, almost 50% of our volume is traded outside the U.S. with ~26% coming from APAC and 21% coming from EMEA. Institutional interest continues to build and the average number of large open interest holders with at least 25 BTC contracts grew to approximately 47 during Q3 2019. The highest number of large open interest holders recorded was 56 as shown on the July 9, 2019 CFTC's Commitment of Traders Report.

Section 3 – Compliance with Core Principles

The Exchange has reviewed the Core Principles as set forth in the Act and has identified that the listing of the Options Contract may bear upon the following Core Principles:

Core Principle 2 – Compliance with Rules
Trading in the Options Contract will be subject to CME Rulebook Chapter 4, which includes prohibitions against fraudulent, noncompetitive, unfair, and abusive practices. Additionally, trading in these contracts will be subject to the Exchange's trade practice rules, the majority of which are contained in Chapter 5 and Chapter 8 of the Rulebook. Trading activity in the Options Contract will also be subject to monitoring and surveillance by CME Group's Market Regulation Department, which has the authority to exercise its investigatory and enforcement power where potential rule violations are identified.

Core Principle 3 – Contracts Not Readily Subject to Manipulation
Each Options Contract delivers a Bitcoin Futures contract which in turn settles in cash, by reference to the BRR. There is strong underlying liquidity in the futures contract, with meaningful daily volume and open interest. Price transparency exists from the orderly, onscreen markets made available to trade.

The Exchange has resources in place to monitor and surveil the market such as dynamic circuit breakers, inline credit controls and velocity logic. The Options Contract is subject to position limits and a bitcoin reportable level of 1 contract has been set; giving the Exchange visibility into the identity of market participants.

The underlying reference rate is a registered benchmark under the EU BMR. CF Benchmarks is the recognized Benchmark Administrator under the EU BMR and is also authorized as an administrator by the FCA.

The BRR is reflective of the spot market price of USD to bitcoin trading. The index is calculated from a large number of trades observed during the calculation window. The use of medians reduces the effect of outlier prices on one or more exchange. The volume-weighting of medians filters out high numbers of small trades that may otherwise dominate a non-volume weighted median. The use of 12 non-weighted partitions assures that price information is sourced equally over the entire observation period. The combination of volume weighting of medians and non-weighted partitions makes the reference rate resistant to manipulation.

Core Principle 4 – Prevention of Market Disruption
Trading in the Options Contract will be subject to CME Rulebook Chapters 4 and 7, which include prohibitions on manipulation, price distortion, and disruption to the expiration and assignment process. As with any new product listed for trading on a CME Group designated contract market, trading activity in the contracts certified herein will be subject to monitoring and surveillance by CME Group's Market Regulation

Department. Trading in the Contracts will be aligned with trading in the underlying Bitcoin Futures, which are subject to price limits that are both limit-up and limit-down. Trading in Option Contracts shall be halted at any time that the underlying future is halted for trading. The Exchange will initially and may on an ongoing basis supplement the monitoring process by providing expiration surveillance reports to the Commission's Division of Market Oversight staff.

Core Principle 5 – Position Limits or Accountability
The speculative position limits for the Options Contract as demonstrated in this submission are consistent with the Commission's guidance. Positions in the Options Contract will count against the existing position limit on a net basis as futures equivalent positions. These limits can be readily adjusted to respond to changes in the market.

Core Principle 7 – Availability of General Information
The Exchange shall disseminate a Special Executive Report ("SER") to market participants, that sets forth information regarding Options Contract specifications, terms, and conditions. The SER will also be published on the Exchange's website.

Core Principle 8 – Daily Publication of Trading Information
The Exchange will publish trading volumes, open interest levels, and price information daily of the Options Contract on its website and through quote vendors.

Core Principle 9 – Execution of Transactions
The Options Contract will be listed for trading on the CME Globex electronic trading platform and for clearing through CME ClearPort. The CME Globex electronic trading venue provides for competitive and open execution of transactions. CME Globex affords the benefits of reliability and global connectivity. The applicable CME Globex non-reviewable trading ranges shall be as set forth in Appendix D.

Core Principle 10 – Trade Information
All requisite trade information will be included in the audit trail and will suffice for the Market Regulation Department to monitor for market abuse.

Core Principle 11 – Financial Integrity of Transactions
The Options Contract will be cleared by CME Clearing, which is registered with the Commission as a derivatives clearing organization, and which is subject to all CFTC regulations related thereto.

Core Principle 12 – Protection of Markets and Market Participants
CME Rulebook Chapters 4 and 5 set forth multiple structures that preclude intermediaries from disadvantaging their customers. These Rules apply to trading in all of the Exchange's competitive trading venues and will apply to transactions in the Options Contract.

Core Principle 13 – Disciplinary Procedures
CME Rulebook Chapter 4 provides for the Exchange to discipline, suspend, or expel members or market participants who violate the rules of the Exchange. Trading in the Options Contract shall be subject to these provisions. The Exchange's Market Regulation Department has the authority to exercise its powers of enforcement, in the event that rule violations in these products are identified.

Core Principle 14 – Dispute Resolution
Disputes in respect of the Options Contract shall be subject to the arbitration provisions set forth in CME Rulebook Chapter 6, which allow all nonmembers to submit to arbitration claims for financial loss resulting from transactions on the Exchange. Pursuant to these provisions, any member named as a respondent in any such claim submitted by a nonmember is required to participate in arbitration proceedings. Additionally, the Exchange requires members to resolve via arbitration all disputes concerning transactions on the Exchange.

Pursuant to Section 5c(c) of the Act and CFTC Regulation 40.2(a), the Exchange certifies that the Options Contract complies with the Act including all regulations thereunder. There were no substantive opposing views to the listing of the Options Contract.

The Exchange certifies that this submission has been concurrently posted on the Exchange's website at: http://www.cmegroup.com/market-regulation/rule-filings.html.

Should you have any questions concerning the above, please contact the undersigned at (212) 299-2200 or CMEGSubmissionInquiry@cmegroup.com.

Sincerely,

/s/ Christopher Bowen
Managing Director and Chief Regulatory Counsel

Attachments: Appendix A   Rulebook Chapter 350A Options on Bitcoin Futures
Appendix B   Deliverable Supply Analysis
Appendix C   Position Limit, Position Accountability, and Reportable Level Table in Chapter 5 of the CME Rulebook (attached under separate cover)
Appendix D   CME Rule 588.H. – ("Globex Non-Reviewable Trading Ranges") Table
Appendix E   CME Rule 589. – ("Special Price Fluctuation Limits and Daily Price Limits") Table

Appendix A

Chapter 350A
Options on Bitcoin Futures

350A00.   **SCOPE OF CHAPTER**

This chapter is limited in application to options on Bitcoin Futures ("futures"). In addition to this chapter, options on futures shall be subject to the general rules and regulations of the Exchange as applicable.

Unless otherwise specified, times referenced herein shall refer to and indicate Chicago time.

350A01.   **OPTIONS CHARACTERISTICS**

350A01.A. Contract Months, Trading Hours, and Trading Halts

Options shall be listed for expiration on such dates and shall be scheduled for trading during such hours as may be determined by the Exchange, *provided that* there shall be no trading in options when trading is halted in the underlying Futures Contract Month for Bitcoin Futures.

350A01.B. Trading Unit

The trading unit shall be an option to buy in the case of a call, or to sell in the case of a put, one Bitcoin Futures contract (Chapter 350). Such Bitcoin Futures contract shall represent 5 bitcoin as valued by the CME CF Bitcoin Reference Rate ("BRR") in accordance with Rule 35001.

350A01.C. Minimum Fluctuations

Option prices shall be quoted in USD per bitcoin (BRR Index points), each BRR Index point representing $1.00 per bitcoin or $5.00 per Bitcoin Futures contract.
The minimum price fluctuation shall be $5.00 per bitcoin (equal to $25.00 per option contract.)
Option Spreads and Combinations
Any option contract that trades as a component of a spread or combination shall be traded at a price that conforms to the applicable minimum price fluctuation as set forth in this Rule.

350A01.D. Underlying Futures Contract
Monthly Options
For any Monthly option, the Underlying Futures Contract shall be for delivery on the last Friday of the same month as such option's named month of expiration, subject to Rule 35003.A.

350A01.E. Exercise Prices
Monthly Options
On any Business Day, the Exchange shall ensure that Monthly put and call options are listed for trading at all eligible exercise prices, as follows:

10000 Point Exercise Prices
For Monthly options exercisable into a given Underlying Futures Contract (Rule 350A01.D.1.), the Exchange shall ensure that such put and call options are listed for trading at all exercise price levels that are integer multiples of 10000 Index points (e.g., 10000, 20000, 30000) and that lie within a range from 10000 Index points to 600 percent of the preceding Business Day's daily settlement price of the Underlying Futures Contract.

1000 Point Exercise Prices
For Monthly options exercisable into a given Underlying Futures Contract (Rule 350A01.D.1.), the Exchange shall ensure that such put and call options are listed for trading at all exercise price levels that are integer multiples of 1000 Index points (e.g., 9000, 10000, 11000) and that lie within a range from 1000 Index points to 400 percent of the preceding Business Day's daily settlement price of the Underlying Futures Contract.

500 Point Exercise Prices
For options exercisable into Underlying Futures Contracts for either the nearest or the second-nearest Underlying Futures Contract Months, the Exchange shall ensure that such put and call options are listed for trading at all exercise price levels that are integer multiples of 500 Index points

(e.g., 9500, 10000, 10500) and that lie within a range from 50 percent to 150 percent of the preceding Business Day's daily settlement price of the Underlying Futures Contract.

<u>100 Point Exercise Prices</u>
For options exercisable into Underlying Futures Contracts for either the nearest or the second-nearest Underlying Futures Contract Months, the Exchange shall ensure that such put and call options are listed for trading at all exercise price levels that are integer multiples of 100 Index points (e.g., 9500, 9600, 9700) and that lie within a range from 80 percent to 110 percent of the preceding Business Day's daily settlement price of the Underlying Futures Contract.

<u>50 Point Exercise Prices</u>
For options exercisable into Underlying Futures Contracts for either the nearest or the second-nearest Underlying Futures Contract Months, if the daily settlement price of such Underlying Futures Contract on the preceding Business Day is below 5000 price points, then the Exchange shall ensure that such put and call options are listed for trading at all exercise price levels that are integer multiples of 50 Index points (e.g., 4850, 4900, 4950) and that lie within a range from 80 percent to 110 percent of the preceding Business Day's daily settlement price of the Underlying Futures Contract.

New options may be listed for trading on any Business Day up to and including the termination of trading in such options.

350A01.F. Position Limits, Exemptions, Position Accountability and Reportable Levels
The applicable position limits and/or accountability levels, in addition to the reportable levels, are set forth in the Position Limit, Position Accountability and Reportable Level Table in the Interpretations & Special Notices Section of Chapter 5.

A Person seeking an exemption from position limits for bona fide commercial purposes shall apply to the Market Regulation Department on forms provided by the Exchange, and the Market Regulation Department may grant qualified exemptions in its sole discretion.

Refer to Rule 559 for requirements concerning the aggregation of positions and allowable exemptions from the specified position limits.

350A01.G. Nature of Options
Upon exercise of a put option on behalf of the long holder of such option, the short holder of such option shall incur the obligation to assume a long position in one Underlying Futures Contract (Rule 350A01.D.) at such option's exercise price (Rule 350A01.E.). Upon exercise of a call option on behalf of the long holder of such option, the short holder of such option shall incur the obligation to assume a short position in one Underlying Futures Contract at such option's exercise price.

Monthly Options
A Monthly option (Rule 350A01.D.1.) will be exercised only at its expiration.

350A01.H. Daily Price Limits
At the commencement of each trading day, the contract shall be subject to special price fluctuation limits and daily price limits as set forth in Rule 589 and in the Special Price Fluctuation Limits Table in the Interpretations & Special Notices Section of Chapter 5.

350A01.I. Termination of Trading

Monthly Options
Trading in any Monthly option shall terminate on the same date and at the same time as the termination of trading in such option's Underlying Futures Contract (Rule 350A01.D.1.).

If that day is not a business day in both the UK and the US, trading shall terminate on the preceding day that is a business day for both the UK and the US.

350A01.J. [Reserved]

350A02.   EXERCISE AND ASSIGNMENT

In addition to the applicable procedures and requirements of Chapter 7, the following shall apply to the exercise of options.

350A02.A. Exercise

Monthly Options

Any Monthly option (Rule 350A01.D.1.) may be exercised only at, and not before, the expiration of such option. Following termination of trading in expiring options, any such option that is in the money shall be automatically exercised by the Clearing House, and any such option that is out of the money shall be abandoned by the Clearing House. For the avoidance of doubt, no such option that expires in the money may be abandoned, and no such option that expires out of the money may be exercised.

An expiring call option shall be in the money if the corresponding Final Settlement Price for the Underlying Futures Contract (Rule 35003.A) is at or above such option's exercise price, and shall be out of the money if the corresponding Final Settlement Price is strictly below such option's exercise price.

An expiring put option shall be in the money if the corresponding Final Settlement Price for the Underlying Futures Contract (Rule 35003.A) is strictly below such option's exercise price, and shall be out of the money if the corresponding Final Settlement Price is at or above such option's exercise price.

350A02.B. Assignment

Monthly Options

For a given option contract, an exercise by the Clearing House in accordance with Rules 350A02.A. shall be assigned by the Clearing House to clearing members carrying open short positions in such option contract.

The clearing member representing the short holder of such option shall be assigned a short position in such option's Underlying Futures Contract (Rule 350A01.D.) if such option is a call, or a long position in such option's Underlying Futures Contract if such option is a put.

The clearing member representing the long holder of such option shall be assigned a long position in such option's Underlying Futures Contract if such option is a call, or a short position in such option's Underlying Futures Contract if such option is a put.

All such futures positions shall be assigned at a price equal to the exercise price of such option contract, and shall be marked to market (in accordance with Rule 814) on the Business Day on which the Clearing House automatically exercises such.

350A03.-29.   [RESERVED]

(End Chapter 350A)

Deliverable Supply Analysis

Bitcoin in Circulation

Bitcoin is a decentralized digital currency. The bitcoin protocol defines, in advance, how the currency will be created and at what rate. The supply of new bitcoins is designed to grow toward a ceiling of 21 million units.

Bitcoin mining is the process by which new bitcoin enter circulation. Miners secure the network by verifying transactions and adding them to a public leger; the bitcoin blockchain, in what is called blocks. Mining requires specialist equipment and great power. As a financial incentive, the miner that finds the newest block first will be rewarded with bitcoin.

The bitcoin code is designed to create a new block every ten minutes. As such the number of bitcoin in existence increases about every 10 minutes when new blocks are mined and added to the bitcoin blockchain.

The bitcoin protocol defines how many bitcoin are released each time a miner discovers a new block. At the current mining rate each new block adds 12.5 bitcoin into circulation, which is approximately 1,800 bitcoin per day.

Initially, the block reward was set to 50 bitcoin per solved block. The protocol states that the number of bitcoin created per block, the mining reward, will decrease geometrically. This gradual systematic process will see a 50% reduction every 210,000 blocks, or approximately every four years, until all the 21 million units of bitcoin have been created. In 2020, the rate at which new bitcoin are issued into circulation will be halved from the current 12.5 to 6.25 bitcoin.

At the time of writing, circa 85%[1] of bitcoin have been issued, meaning there are just over 18 million of the 21 million bitcoin in existence today.

The graph in Table 4 depicts the amount of Bitcoin in circulation over time. It clearly shows a logarithmic trend.

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[1] November 30, 2019: https://www.blockchain.com/en/charts/total-bitcoins.

Table 4 – Total Number of bitcoin over time

Total Bitcoins over time
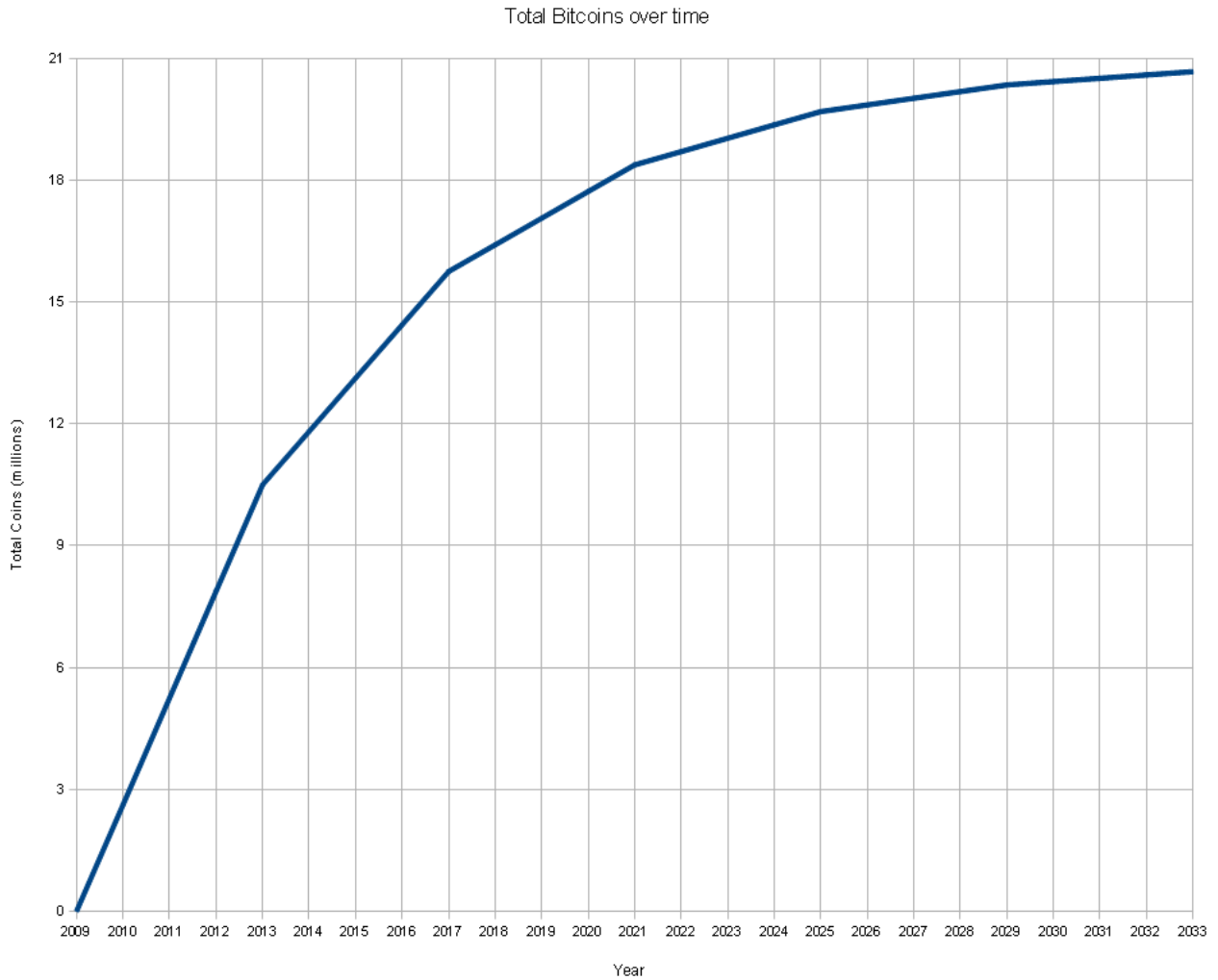
Source: blockchain.com

The total number of bitcoin, however, is not the total spendable supply. The total spendable supply is lower than the theoretical total supply, and is subject to accidental loss, willful destruction, and technical peculiarities

From the total supply, one must discount for unrecoverable bitcoin that are burned; permanently withdrawn from circulation or lost. There is no consensus on the number to be deducted, but best estimates indicate there to be about a 20% loss. For the purposes of this filing, the total supply of 18 million down estimated down by 20% to 14.4 million bitcoin.

Deliverable Supply

Each Options Contract is exercisable into one CME Bitcoin Futures contract, which in turn will immediately settle to the CME CF Bitcoin Reference Rate published on the futures contract's last day of trading.

In theory, all 14.4 million units extant may be considered as notional deliverable supply of contract-grade commodity. A prudentially conservative estimate, however, would acknowledge that bitcoin is traded in multiple currency denominations, of which USD is but one.

During the six months ending November 30, 2019, around 61% of bitcoin transaction volume was in the BTC:USD currency pair.[2] Were this used as a proxy for the share of bitcoin in circulation that stands as the supply of contract-grade commodity notionally eligible for delivery in fulfilment of expiring Bitcoin futures, it would produce an estimate available supply of 8.8 million bitcoin (equal to 14.4 million x 0.61).

A spot-month position limit of 2,000 contracts would be equivalent to one tenth of one percent of the estimated supply of bitcoin well within any conservative guide. Additionally, the one (1) contract reportable gives the Exchange ability to conduct effective market surveillance.

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[2] Source: *data.bitcoinity.org*, which consolidates transaction data drawn, currently, from 10 crypto-currency markets. For more information, visit: http://data.bitcoinity.org/markets/volume/30d?c=e&t=b

Appendix C

**CME Rulebook
Chapter 5
("Trading Qualifications and Practices")**

Position Limit, Position Accountability, and Reportable Level Table
(attached under separate cover)

Appendix D

**CME Rulebook
Chapter 5
("Trading Qualifications and Practices")**

CME Rule 588.H. ("Globex Non-Reviewable Trading Ranges") Table

(additions <u>underscored</u>)

Instrument	Globex Symbol	Non-Reviewable Range (NRR)
Options on Bitcoin Futures	BTC	The greater of the following: •Delta multiplied by the underlying futures non-reviewable range •20% of premium up to ¼ of the underlying futures non-reviewable range •5 ticks

Appendix E

CME Rulebook
Chapter 5
("Trading Qualifications and Practices")

CME Rule 589. ("Special Price Fluctuation Limits and Daily Price Limits") Table
(additions underscored)

Product	Rulebook Chapter	Commodity Code	Primary/ Associated	Associated With	Daily Price Limit
Options on Bitcoin Futures	350A	BTC	Associated	BTC	Daily Price Limit Table