Cboe Digital

November 1, 2023

Christopher J. Kirkpatrick
Secretary
Commodity Futures Trading Commission
Three Lafayette Centre
1155 21st Street, N.W.
Washington, D.C. 20581

> Re: Cboe Digital Exchange, LLC Product and Rule Certification for Margin Futures on Bitcoin and Ether Submission Number CDE-2023-06E

Dear Mr. Kirkpatrick:

Pursuant to Section 5c(c)(1) of the Commodity Exchange Act, as amended ("Act"), and Regulation 40.2 and Regulation 40.6 of the regulations promulgated by the Commodity Futures Trading Commission ("CFTC" or "Commission") under the Act, Cboe Digital Exchange, LLC ("CDE" or "Exchange") hereby submits terms and conditions for physically- and financially-settled digital asset futures on a margined basis ("Products") to be traded on CDE and accompanying rule amendments to incorporate the Products into CDE's rules ("Amendment").

This submission contains the following:

- A summary of the terms and conditions of the Products;
- A summary of the rule changes being made as part of the Amendment to incorporate the Products into CDE's rules;
- An explanation and analysis of the Products' and the Amendment's compliance with the applicable provisions of the Act, including the Designated Contract Market ("DCM") Core Principles ("Core Principles"), and the Commission regulations thereunder;
- A certification that the Products and Amendment comply with the Act and Commission regulations thereunder;
- A certification of a notice of pending product and rule certification with the Commission and a copy of the submission on the Exchange's website;
- A copy of the Products' contract specifications attached as **Exhibit A**;
- The rule changes included in the Amendment attached as **Exhibit B**; and
- A copy of the Cboe Kaiko Rates methodology attached as **Exhibit C**.

The terms and conditions for the Products and the Amendment will become effective on November 16, 2023 ("Effective Date"). The Products may be listed for trading on CDE on or after the Effective Date on a date to be announced by the Exchange through the issuance of an Exchange notice.

Products Description

The Exchange plans to list the following Products: physically-settled bitcoin futures ("BTC") on a margin basis; physically-settled Ether futures ("ETH") on a margin basis; financially-settled bitcoin futures ("FBT") on a margin basis; and financially-settled Ether futures ("FET") on a margin basis. The Exchange notes that up until recently it listed physically-settled futures contracts on Ether and bitcoin on a fully-funded basis, that is, they were fully-funded at the time of execution, with final settlement at execution price. The Exchange removed its offering of fully-funded bitcoin and Ether futures products in anticipation of launching the margined Products.

Underlying Digital Asset Market

Bitcoin is a digital asset based on the decentralized, open-source protocol of a peer-to-peer payments network. The Bitcoin network hosts the decentralized public transaction ledger, the Bitcoin blockchain (or ledger), on which all bitcoin is recorded. The blockchain is a linked body of data, made up of units called blocks containing information about each transaction processed. Blocks are created by "miners" that solve highly complex mathematical problems. The bitcoins themselves are the assets that can be transferred on the network, to which one claims ownership. No single entity owns or operates the Bitcoin network. The infrastructure of the Bitcoin network is collectively maintained by a decentralized user base. The Bitcoin blockchain is capped at 21 million bitcoin. As of October 2023, the total supply of bitcoin is approximately 19.5 million bitcoins, which represents close to $660 billion in market capitalization. The 21 million bitcoin limit is anticipated to be reached sometime in 2140.

Ethereum is likewise a decentralized, open-source protocol of a peer-to-peer payments network built using blockchain technology, and Ether is the native digital asset of the Ethereum blockchain. Blocks are created by "validators" that must stake at least 32 Ether to own the right to validate transactions. Like bitcoin, Ether is the asset that can be transferred on the network, to which one claims ownership, and no single entity owns or operates the Ethereum network as the infrastructure of the Ethereum network is collectively maintained by a decentralized user base. Unlike bitcoin, Ether is not capped at a maximum supply, but it does have a monetary policy that follows the objective of minimum issuance to secure the network. That is, the Ether monetary policy aims to reduce issuance to minimum amounts without sacrificing security. As Ethereum is a decentralized network, the monetary policy cannot be modified unless there is a majority consensus from all the stakeholders (developers, community members, ecosystem projects, validators and network participants). As of October 2023, the total supply of Ether is approximately 120.2 million Ether, which represents close to $214 billion in market capitalization.

Bitcoin and Ether may be obtained through various methods, including paying cash for bitcoin or Ether or providing a good or service in exchange for bitcoin or Ether (including exchange on the secondary market); verifying other bitcoin transactions through mining, which rewards miners with bitcoin, thus incentivizing more miners to try to solve the mathematical

problems in turn making the network more secure, or verifying other Ether transactions, which rewards the validators with additional Ether, thus incentivizing more validators to stake their Ether and own the right to validate transactions in turn making the network more secure.

Since early 2019, the volume traded in bitcoin and Ether has experienced substantial growth. The 30-day moving average of dollar value of USD-based bitcoin volume has grown from $675 million in February 2019 to approximately $4.8 billion as of October 2023. The 30-day moving average of dollar value of USD-based Ether volume has grown from $344 million in February 2019 to approximately $2.1 billion in October 2023. [1]

Contract Specifications

The Products are based on the price of bitcoin (BTC and FBT futures) and Ether (ETH and FET futures) in U.S. dollars based on the Cboe Kaiko Bitcoin Rate ("CKBR") Index or the Cboe Kaiko Ether Rate ("CKER") Index (collectively, the "Cboe Kaiko Rates"), as applicable.[2] These futures are designed to reflect economic exposure related to the price of bitcoin or Ether. As reflected in the attached contract specifications (Exhibit A) and in revised Chapter 11 of the CDE Rulebook, the contract specifications for the Products include the following:

The contract unit for a BTC futures contract will be 1 bitcoin, as represented by CKBR. and the minimum tick increment is $5.00 per bitcoin (thus, $5.00 per contract). The contract unit for a FBT futures contract will be 0.1 bitcoin, as represented by CKBR, and the minimum tick increment is $1.00 per bitcoin (thus, $0.10 per contract). The contract unit for an ETH futures contract will be 10 Ether, as represented by CKER, and the minimum tick increment is $0.50 per Ether (thus, $5.00 per contract). The contract unit for a FET futures contract will be 1 Ether, as represented by CKER, and the minimum tick increment is $0.10 per Ether (thus, $0.10 per contract). All Product prices will be quoted in USD per 1 bitcoin or Ether, as applicable.

For each of the Products, CDE may list up to 3 weekly expirations, the nearest 2 serial months and the nearest 4 quarterly months. Expiry will occur in the same manner as it did for fully-funded bitcoin and Ether futures; 10:00 a.m. CT on the Friday of the expiry week or on the last Friday of the contract month, as applicable. If expiry Friday is a non-business day, then expiration will occur on the preceding business day.

Block Trades will be permitted in the Products provided that they satisfy the requirements of CDE Rule 601 (Block Trades). Block Trades may be negotiated in $0.01 increments in each Product, as was the permissible increment for Block Trades in the Exchange's fully-funded bitcoin and Ether futures product offerings. The Block Trade minimum size for BTC futures will be 5 contracts, 10 contracts for FBT futures, 1 contract for ETH futures, and 10 contracts for FET futures. The minimum Block Trade parameters for FBT and FET futures are

---

[1] Statistics derived from https://rates.coinmetrics.io/.

[2] The Cboe Kaiko Reference Rates are customized rates, developed by Kaiko for Cboe Digital.

equivalent in structure to the Block Trade parameters applied to the Exchange's fully-funded bitcoin and Ether futures, respectively, which have the same minimum contract size, price increment and notional value as FBT and FET futures. The minimum Block Trade parameters for BTC and ETH futures are smaller than that of their FBT and FET counterparts to account for the larger minimum contract sizes, price increments and notional values of the BTC and ETH futures contracts.

The position limits for the Products will be as follows: 20,000 contracts for BTC futures, 200,000 for FBT futures, 40,000 for ETH futures, and 400,000 for FET futures. The position limits for the Products are consistent with position limits previously in place either on the Exchange (for fully-funded bitcoin and Ether futures) or imposed by other DCMs for substantively the same products.[3]

The Large Trader reporting requirements under CDE Rules 532 and 533 will apply to the Products. The Large Trader reporting threshold applicable to each Product is as follows: 5 contracts for BTC futures, 25 contracts for FBT futures, 5 contracts for ETH futures, and 25 contracts for FET futures. The Exchange believes that the reporting thresholds appropriately correspond to the Products' sizes.

The Exchange will determine the final settlement price for each Product based on the reference rate of the relevant Cboe Kaiko index at the time of expiration (i.e., at 10:00 a.m. CT on expiration Fridays).

Pursuant to Exchange Rule 906(c) and each Product's contract specification, the Products' final settlement prices are based on the CKBR or CKER, as applicable. CKBR and CKER each provide a USD-denominated reference rate for the spot price of BTC and ETH, respectively. The Cboe Kaiko Rates leverage real-time prices from the constituent exchanges to provide a reliable and accurate reflection of the underlying spot market. The CKBR and CKER represent the price of bitcoin and Ether, respectively, by aggregating trade data from eligible trading

---

[3] For example, Coinbase Derivative Exchange offers a bitcoin futures contract with a contract size of 1 and position limit of 20,000 contracts, like BTC futures, a nano bitcoin futures contract with a contract size of 0.10 and position limit of 200,000, like that of FBT futures, an Ether futures contract with a contract size of 10 and a position limit of 40,000 contracts, like that of ETH futures, and a nano Ether futures contract with a contract size of 1 and a position limit of 400,000 contracts, like that of FET futures. See Coinbase Derivatives Exchange Rulebook. Rules CME also has position limits that are notionally in line with the Products' limits, offering a bitcoin futures contract with a contract size of 5 bitcoin and a position limit of 4,000, thus a position limit equal to a notional of 20,000 bitcoin, like BTC futures (size of 1 bitcoin x 20,000 limit); a micro bitcoin futures contract with a contract size of 0.01 of CME's standard bitcoin futures contract and a position limit of 4,000, thus a position limit equal to a notional 200,000 bitcoin, like FBT futures (size of 0.10 bitcoin x 200,000 limit); an Ether futures contract with a contract size of 50 Ether and a position limit of 8,000, thus a position limit equal to a notional of 400,000 bitcoin, like ETH futures (size of 10 Ether x 40,000 limit); and a micro Ether futures contract with a contract size of 0.01 of CME's standard Ether futures contract and a position limit of 8,000, thus a position limit equal to a notional 400,000 Ether, like FET futures (size of 1 Ether x 400,000 limit).

venues during one-hour calculation windows. Kaiko implements an aggregation methodology that consists of a look-back that splits the one-hour reference rate calculation periods into ten six-minute segments (or, "partitions") and, for each partition, calculates the most representative trade price used for the final rate calculation. Specifically, executed trades in each partition are subject to a volume-weighted median price calculation. A time-weighted average price calculation is then applied to each partition's volume-weighted median (providing more weights to the last partitions which are the most recent). The ten weighted partition prices are then aggregated to provide the final index reference rate for the hour.

Pursuant to the Cboe Kaiko Rates methodology, if for any reason any constituent transactions are identified as potentially suspect within a partition, the most representative trade may be adjusted to disregard spurious data. In addition, Kaiko may remove a constituent exchange or otherwise revise its methodology to ensure the Cboe Kaiko Rates continue to reflect the target underlying economic reality, particularly if a constituent exchange has been found to have experience an "exclusion action" such as fraud, market manipulation, or significant loss of volume or liquidity.

For the purpose of any Kaiko reference rates computation, including the Cboe Kaiko Rates, Kaiko implements strict vetting of data sources to include only the trusted and liquid exchanges. The Cboe Kaiko Rates follow a quarterly rebalancing calendar (March, June, September and December). An asset-agnostic vetting process for the Cboe Kaiko Rates is carried out on a quarterly basis by the Kaiko team and approved by the Kaiko Exchange Ranking Steering Committee. Each underlying exchange must meet the following criteria as part of the vetting process: is absent from any sanction list; has been operating for the past five years; is located in a stable and open country; is regulated by an independent government body; has KYC/AML controls in place; has trading policies in place; offers reliable REST API and WebSocket data feeds; offers reliable live and historical trade data; and provides cold storage for customers funds. Additionally, the liquidity of each exchange is assessed to only consider meaningful contributors, defined as at least 0.5% of the total observed liquidity over the past three months.

A description of the procedures and rules governing the Cboe Kaiko Rates will be posted on the Kaiko website and a copy of which is provided as an informational part of this submission in **Exhibit C**.

Each of the underlying component exchanges has a comprehensive set of rules or binding terms and conditions for members. The rules or terms and conditions governing activity on each underlying exchange have provisions in place that prohibit members from engaging in fraudulent acts, market manipulation and abusive practices.[4] The Exchange understands that

---

[4] See Cboe Digital Spot Market Rules available at: https://www.cboedigital.com/wp-content/uploads/CboeDigital/Cboe%20Digital%20Exchange%20Rulebook%20%2820231023%29.pdf; Itbit's Marketplace Rules available at: https://paxos.com/market-manipulation-protection/; LMAX Digital Rulebook at: www.lmaxdigital.com/documents/LMAXDigital-Rulebook.pdf; and Bitstamp's Terms of Use available at: https://www.bitstamp.net/legal/terms-of-use/inc/.

each underlying exchange has surveillances in place to monitor for market abuse and other trade practice violations. Additionally, each of the constituent exchanges is regulated as a money services business ("MSB') under Financial Crimes Enforcement Network ("FinCEN') and subject to strict anti-money laundering and know-your-customer ("AML/KYC Program") compliance obligations.

At the time of this submission, the Cboe Kaiko Rates have four eligible trading venues: LMAX Digital, Bitstamp, itBit and Cboe Digital.[5] The Exchange represents that it has or will have entered into an Information Sharing Agreement ("ISA") that complies with CFTC guidance and requirements with each of the non-Cboe-affiliated three other constituent exchanges[6] that comprise the CKBR and CKER prior to listing the Products for trading on the Exchange. Additionally, Kaiko will provide CDE the trades (by timestamp, symbol, price, quantity, and underlying exchange) that make up the Cboe Kaiko Rates during final settlement price period (9:00 a.m. to 10:00 a.m. CT) to assist CDE's ability to monitor trading in the reference indices. Prior to and during the final settlement price period on the final settlement date for the Products, CDE will monitor the bitcoin and Ether transactions in U.S. dollars on those trading venues using the information that is available to CDE and request additional information from the trading venues as appropriate.

CDE conducted an analysis of the Cboe Kaiko Rates prices compared to other bitcoin and Ether indices over the last year to determine whether the Cboe Kaiko Rates are representative of the broader bitcoin and Ether markets. Specifically, the analysis compared the Cboe Kaiko Rates against the daily CME CF Bitcoin and Ether Reference Rates,[7] the weekly CoinDesk Bitcoin and Ether Price Index rates and the Kaiko Bitcoin and Ether Reference Rates. The CME CF Reference Rates are comprised of pricing sourced from Bitstamp, Coinbase, Gemini, itBit, Kraken, and LMAX Digital; the CoinDesk Index rates are comprised of pricing sourced from Bitstamp, Coinbase, Kraken, and LMAX Digital; and the Kaiko Index Rates are comprised of pricing sourced from Coinbase, Gemini, LMAX Digital, Kraken and Bitstamp. As such, the pricing sources that comprise the Cboe Kaiko Reference Rates, the CME CF Reference Rates, the CoinDesk Index Rates and the Kaiko Reference Rates are representative

---

[5] The Exchange currently operates a digital asset spot market, separate from its DCM ("Cboe Digital Spot Market"). The Cboe Digital Spot Market is regulated as a money services business ("MSB') under Financial Crimes Enforcement Network (FinCEN) and is licensed in various states in accordance with state money transmitter licensing ("MTL") requirements. The Exchange implements best practices of a traditional financial market surveillance program designed around CFTC Core Principles which was established to help protect investors and the integrity of our markets. Participation in the Cboe Digital Spot Market is governed by a comprehensive Rulebook and membership requirements, and subject to substantially the same market surveillance program as for Cboe Digital's futures market. The Cboe Digital Spot Market offers trading in bitcoin (BTC) and Ether (ETH) in U.S dollars on a central limit order book ("CLOB"), which allows for continuous interactions between fully-displayed marketable orders and limit orders. Cboe Digital Exchange requires all orders placed in BTC and ETH on its spot market to be fully-funded.

[6] As Cboe Digital's spot market and futures market are part of the same legal entity, Cboe Digital Exchange, LLC, an ISA does not need to be in place to access such information.

[7] CME Bitcoin and Ether futures are based on the CME CF Reference Rates.

of the broader digital asset spot market.

CDE reviewed the correlation between the daily returns of the Cboe Kaiko Rates and the CME CF Reference Rates.[8] CDE identified a 0.998 correlation between the Cboe Kaiko Bitcoin Rate and the CME CF Bitcoin Reference Rate, as well as a 0.998 correlation between the Cboe Kaiko Ether Rate and the CME CF Ether Reference Rate. A 0.998 correlation indicates the rates' prices are very strongly aligned.

CDE also reviewed the correlation between the daily returns of the Cboe Kaiko Rates and the Kaiko Reference Rates. CDE identified a 0.999 correlation between the Cboe Kaiko Bitcoin Rate and the Kaiko Bitcoin Rate, as well as a 0.999 correlation between the Cboe Kaiko Ether Rate and the Kaiko Ether Rate. A 0.999 correlation indicates the rates' prices are very strongly aligned.

Cboe Digital also reviewed the differences between the Cboe Kaiko Rates and the daily CME CF Reference Rates, the weekly CoinDesk Index Rates and the hourly Kaiko Reference Rates over a year look-back:[9]

- The average difference between the daily CME CF Bitcoin Reference Rate and Cboe Kaiko Bitcoin Reference Rate was 0.06%, and the median difference 0.03%;
- The average difference between the daily CME CF Ether Reference Rate and Cboe Kaiko Ether Reference Rate was 0.07%, and the median difference 0.04%;
- The average difference between the weekly Coindesk Indices Bitcoin Index and Cboe Kaiko Bitcoin Reference Rate was 0.13%, and the median 0.1%;
- The average difference between the weekly Coindesk Indices Ether Index and Cboe Kaiko Ether Reference Rate was 0.13%, and the median 0.9%;
- The average difference between the hourly Kaiko Bitcoin Reference Rate and the Cboe Kaiko Bitcoin Reference Rate was 0.01%, and the median difference 0.0096%; and
- The average difference between the hourly Kaiko Ether Reference Rate and the Cboe Kaiko Ether Reference Rate was 0.02%, and the median 0.01%.

CDE's analysis demonstrates that the Cboe Kaiko Rates adequately and consistently represent the price of the bitcoin and Ether spot markets due to high price correlation and marginal, price divergence as compared to other digital asset spot market indexes generally representative of the wider spot market. CDE notes that such marginal differences in reference prices, in particular when compared to the CoinDesk Index Rates and CME CF Reference

---

[8] The CME CF Reference Rates are published daily at 4:00 pm ET. CDE conducted this review on the daily rates at 4:00 pm ET from November 2022 through October 2023.

[9] See supra note 8 regarding CDE's review timeframe for the CME CF Reference Rates. Regarding CDE's review timeframe for the CoinDesk Index rates, CDE reviewed the CoinDesk Index rates at weekly expiration (each Friday at 10:00 am CT) from September 2022 through September 2023. Regarding CDE's review timeframe for the Kaiko Reference Rates, CDE reviewed the Kaiko Reference Rates each hour from December 2020 through October 2023.

Rates, are by and large due to the differences in index methodology calculations between the different indexes.

Additionally, CDE conducted an analysis of the volume over the last year[10] during the final settlement price period (9:00 a.m. to 10:00 a.m. CT) between the Cboe Kaiko Rates and the Lukka Bitcoin Reference Rate, which is used to settle comparable digital asset futures products certified for offering by another DCM and is based on prices sourced from only two exchanges.[11] CDE identified that, on average, the volume included in the Cboe Kaiko Bitcoin Rate was three times greater (or 192% greater) than the volume included in the Lukka Bitcoin Reference Rate, and the volume included in the Cboe Kaiko Ether Rate was 16% greater than the volume included in the Lukka Bitcoin Reference Rate.[12] This further emphasizes the fact that the Cboe Kaiko Rates are representative of the broader market and the exchange constituents experience deeper levels liquidity as compared to another digital asset index on which competing futures products currently may be offered.

Additional Product Information

In addition to the above, the Exchange notes that the applicable margin methodology for each Product will be calculated and administered by the Exchange's affiliated derivatives clearing organization ("DCO"), Cboe Clear Digital, LLC ("CCD"), through which all Products are settled and cleared. A participant trading in the Products on the Exchange will be required to clear all transactions in the Products through a futures commission merchant ("FCM") clearing member of CCD.[13] Margin for each Product will be computed on a daily basis and posted daily on the Cboe Digital website.

Legal Conditions

CDE has undertaken a due diligence review of the legal conditions, including conditions that relate to contractual and intellectual property rights, which may materially affect the trading of the Product. Kaiko has granted a license to CDE permitting CDE to use the Cboe Kaiko Rates for the purposes of providing settlement prices for CDE's futures contracts. Kaiko is permitted to use CDE data for the Cboe Kaiko Rates, and CDE also understands that Kaiko

---

[10] From January 2022 through October 2023.
[11] MGEX's BTF Futures Contracts and TINI Futures Contacts are based on the Lukka Bitcoin Reference Rate, which is comprised only of trade prices executed on Gemini and Bitstamp.
[12] CDE notes that while the volume in the Cboe Kaiko Ether Rate and the Lukka Bitcoin Rate are measured on transactions in different spot digital assets, the volume of the transactions that comprise the Lukka Bitcoin Rate should generally represent a sufficient level of volume in a digital asset index for which a digital asset futures product may be deemed not generally susceptible to manipulation.
[13] The margin methodology implements a filtered historical simulation method for implementing value-at-risk ("FHSVaR") using a lookback period of five years (or longest available) and two-day market return and 99th percentile (0.5 percent for each tail of the distribution) risk coverage. The FHSVaR approach uses historical changes in spot bitcoin and Ether price returns to generate historical distribution and does not rely on any assumptions regarding distributional shape or distributional parameters.

has data licensing agreements in place with the other three constituent exchanges.

Potential Product Use

As the Products' prices are derived from the Cboe Kaiko Rate, which accurately reflect the underlying spot market, market participants may use the Products to achieve both long and short exposure to the price of bitcoin or Ether, as applicable. The Products will allow miners to hedge production costs, bitcoin or Ether merchant processors to hedge inventories, merchants that accept bitcoin or Ether to hedge inventories, and holders of bitcoin or Ether to adequately hedge their holdings in a less capital-intensive manner than that of fully-funded futures. The Products will likewise provide liquidity providers with a less capital-intensive means to hedge their bitcoin and/or Ether exposure from their transactions on the Cboe Digital Spot Market, other exchanges, in the over-the-counter markets, and on other markets for bitcoin and Ether derivatives. Additionally, FBT and FET futures in particular will provide market participants that do not wish to transact in or hold spot digital assets with a way to gain exposure to bitcoin or Ether, as applicable, without the need to take or make delivery of the actual digital asset. BTC and ETH will allow market participants that hold or anticipate holding bitcoin or Ether to adequately hedge their holdings as well as take delivery of the underlying digital asset.

The physically-settled futures contract (BTC and ETH) have a 1 bitcoin contract size with a $5.00 price increment and a 10 Ether contract size with a $0.50 price increment, respectively, may assist larger, crypto-familiar institutions that seek to utilize larger contract sizes and higher-capitalized firms with the capacity to make or take delivery of the underlying digital assets to achieve their business needs. The financially-settled futures contracts (FBT and FET) have a 0.1 bitcoin contract size with a $1.00 price increment and a 1 Ether contract size with a $0.10 price increment, respectively; finer increments and smaller contracts sizes than their physically-delivered counterparts are intended to provide Customers with additional flexibility to tailor their exposure to the digital asset ecosystem without the need to hold the underlying digital assets. Price increments across the Products' two settlement styles complement each other while allowing for aggregation of size compared to the underlying digital assets, which typically trade at $0.01 increments. Customers trading in BTC and ETH futures will benefit from the correlated larger size and larger price increments as customers will be able to fill such larger sizes without their orders receiving fills across numerous price levels. Smaller sizes and smaller price increments for FBT and FET futures will enable liquidity providers to offset risk while providing liquid quote-driven markets for the Products.

Rule Changes

The Amendment updates the Exchange rules to incorporate the Products' contract specifications, as described herein above and reflected in **Exhibit A**, into Rule 1101 and Rule 1102.[14] Specifically, the Amendment incorporates into Rule 1101 and 1102, as applicable:

---

[14] On October 27, 2023, CDE submitted a self-certification (Submission Number 2023-05E) to remove

Rule 1101(a), which provides for the contract specifications applicable to margin-based physically-settled BTC futures; Rule 1101(b), which provides for the contract specifications applicable to margin-based financially-settled FBT futures; Rule 1102(a), which provides for the contract specifications applicable to margin-based physically-settled ETH futures; and Rule 1102(b), which provides for the contract specifications applicable to margin-based financially-settled FET futures.

Additionally, the Amendment updates the Position Limit, Position Accountability, Reportable Level, and Volume Threshold Level Table ("Table") in Rule 533 to reflect the levels applicable to each Product. Specifically, the Table is being updated to reflect the Large Trader and position limit levels for each Product as described in detail in the "Contract Specifications" section above, and to reflect a reportable volume threshold of 50 contracts applicable to each Product.[15] The Amendment also adds language to Rule 533 clarifying that such other volume threshold reportable levels than those set forth in the Table may otherwise be designated by the Commission.

The Amendment also adds new Rule 540 to address temporary trading halts applicable to the Products. Rule 540(a) provides that the market for a Contract (which includes the Products) will enter into a halt state for a period of time designated by the Exchange, during Trading Hours for the Contract, if a circuit breaker is triggered: the price of a bid (offer) in the Contract is higher (lower) than a percentage designated by the Exchange as compared to the highest (lowest) bid (offer) observed during the lookback window as designated by the Exchange. The Exchange shall publish the circuit breaker parameters as designated by the Exchange on its website. Further, Rule 540(b) provides that the Exchange may, in its discretion, temporarily halt trading in a Contract or modify the circuit breaker parameters, including the time of a halt state, to preserve market integrity in a Contract market. The proposed rule additionally provides that any action taken in response to an Emergency is governed by Rule 212, including notification to the CFTC of any Emergency Rule in accordance with CFTC Regulations.

Finally, the Amendment updates Rule 906 to add subparagraph (c), which explicitly provides for the Exchange's determination of the final settlement price of the Products, as defined in the "Contract Specifications" section above.

Compliance

---

the contract specifications for fully-funded physically-settled BTC and ETH futures from Rules 1101 and 1102, respectively. Submission Number 2023-05E will become effective on November 13, 2023. Exhibit B reflects Rule 1101 and 1102 as amended pursuant to Submission Number 2023-05E. This rule change additionally removes the contract specs for futures on the Ether Bitcoin Pair in Rule 1103. The Exchange no longer lists, and in anticipation of its margin futures offering does not intend to re-list, these futures contracts.

[15] Like for fully-funded bitcoin and Ether futures contracts previously offered by the Exchange, there are no position accountability levels applicable to the Products.

CDE believes that the Products and the Amendment are consistent with the DCM Core Principles under Section 5 of the Act. In particular, CDE believes that the Products and the Amendment are consistent with the following DCM Core Principles:

DCM Core Principle 2 (Compliance with Rules) because CDE Rules include prohibitions against market manipulation and fraudulent, non-competitive, and disruptive trading practices that will apply to trading activity in the Products and CDE will conduct monitoring and surveillance of trading in the Product for compliance with CDE Rules;

DCM Core Principle 3 (Contracts not Readily Susceptible to Manipulation) because of, among other things, the following factors:

- The underlying digital asset market is a highly liquid and capitalized market, wherein the dollar value of bitcoin volume is currently approximately $4.8 billion and the dollar value of ether volume is currently approximately $2.1 billion;
- The methodology and constituent structure of the Cboe Kaiko Rates promote the integrity of the settlement price and discourage manipulative conduct. They do so because:
    - o The Cboe Kaiko Rates is calculated from a high volume of trades across four eligible trading venues during the final settlement period and, due to deep liquidity, are not generally susceptible to manipulation. As demonstrated and explained above, the Cboe Kaiko Rates experience volume during the final settlement period well-above that of the volume experienced during the final settlement period in a comparable digital asset index (comprised of only two constituent exchanges) on which competing futures products currently may be offered;[16]
    - o The Cboe Kaiko Rates accurately represent the underlying spot market prices. As demonstrated and explained above, Cboe Kaiko Rates adequately and consistently represent the price of the bitcoin and Ether spot markets due to high price correlation and insignificant levels of price divergence as compared to other digital asset spot market indexes generally representative of the wider spot market;
    - o Each index is comprised of multiple constituents. Therefore, to manipulate the index price a market participant would have to manipulate the prices in most if not all the constituent exchanges—a prohibitively costly endeavor. Arbitrage opportunities across multiple digital asset trading venues serves to reduce price discrepancies and converge prices. The Exchange notes that comparable digital asset futures products certified for offering by at least one other DCM are based on rates comprised of less than four constituent exchanges; [17]
    - o Focusing the volume- and time-weighted calculations on the trading activity

---

[16] MGEX's BTF Futures Contracts and TINI Futures Contacts are based on the Lukka Bitcoin Reference Rate, which is comprised only of trade prices executed on Gemini and Bitstamp.
[17] See supra note 16.

over an hour look-back decreases the likelihood in any attempt to manipulate the price over the full period of time by limiting the impact of any one transaction and highly mitigating the risk of incorporating outliers into the calculation. The one-hour look-back also greatly increases the cost of any attempt to manipulate due to arbitrage opportunities during the calculation window;

- o The Cboe Kaiko Rates are calculated using six 10-minute partitions. Calculation of the reference rate across six partitions limits any impact of attempted manipulation as transactions made in an attempt to manipulate executed during one partition will only have a limited effect on the overall reference rate;

- o Use of a volume-weighted median calculation is outlier resistant by nature. For distributions that may have outliers or may be skewed, as could be the case in an attempt to manipulate, the median is significantly less sensitive to outliers than the mean. Additionally, volume-weighting serves to reduce higher counts of smaller trades that may be outliers and could otherwise impact a non-volume weighted median;

- o As described above, Kaiko's methodology is designed to prevent outliers and minimize the impact of any one market deviating in price from the rest of the constituent markets. Particularly, to address any potential anomalies or manipulation at individual exchanges, the index provider implements measures that identify and disregard spurious data and that may remove a constituent exchange or otherwise revise its methodology in light of, but not limited to, fraud, market manipulation, or significant loss of volume or liquidity on a constituent exchange;

- o The data-sharing and ISAs in place between CDE and Kaiko and the underlying exchanges will assist CDE in monitoring for market manipulation and abuses, and in enforcing compliance with CDE rules;

- o Each of the underlying component exchanges have a comprehensive set of rules or binding terms and conditions for members that prohibit members from engaging in fraudulent acts, market manipulation and abusive practices, and surveillance in place to monitor for any such abusive practices;

- o As each constituent exchange is a registered MSB, all members of each exchange are subject to rigorous AML/KYC checks and procedures during the onboarding process;

- Pursuant to Rule 409(c), Trading Privilege Holders must make available to the Exchange any information regarding their activities in a reference market of an index on which a CDE futures product is based, which would include the Products; and

- The Products are subject to Rule 530, which governs position limits. Position limits apply to all accounts for which a person directly or indirectly owns (more than 10% ownership) or controls the trading, and all positions held by persons acting pursuant to an agreement. As described above, the position limits for the Products are substantially the same as position limits imposed for similar products on other DCMs.

DCM Core Principle 4 (Prevention of Market Disruption) because CDE Rules prohibit

participants from manipulating the market in, disrupting the orderly functioning of the market in, or creating a condition in which prices do not or will not reflect fair market values in the Products, and CDE enforces compliance with such CDE Rules. Further, the Amendment implements trading halt provisions applicable to the Products, which will halt trading in a Product during a circuit breaker event (parameters of which are determined by the Exchange and will be made available on its website), and makes it clear in the CDE Rules that the Exchange may halt trading or otherwise modify the circuit breaker parameters in its discretion in the interests of preserving market integrity, which will contribute toward reducing the potential risk of price distortions and market disruptions in the Products;

DCM Core Principle 5 (Position Limits or Accountability) because the Products' contract specification and the Amendment establish an appropriate initial position limit for the Products that will serve to reduce the potential for market manipulation in the Products;

DCM Core Principle 7 (Availability of General Information) because the contract specifications for each Product will be posted and maintained on CDE's website;

DCM Core Principle 8 (Daily Publication of Trading Information) because in that volume, open interest, settlement prices, and other price information for the Products will be made available publicly on a daily basis on CDE's website consistent with CFTC Regulation 16.01;

DCM Core Principle 9 (Execution of Transactions) because CDE will make the Products available for trading on CDE's trading system. This provides for a competitive, open, and efficient market and mechanism for executing transactions that protects the price discovery process of trading on CDE's centralized market. Block trades in Products must be submitted and reporting pursuant to the CDE block trading rules;

DCM Core Principle 10 (Trade Information) because CDE will maintain trade information for the Products as part of its audit trail and this information will be accessible to CDE Regulation for regulatory surveillance and enforcement purposes;

DCM Core Principle 11 (Financial Integrity of Transactions) because the Products will be cleared by CCD, which is registered with the Commission as a DCO and is subject to the provisions of the Act and CFTC regulations relating to DCOs;

DCM Core Principle 12 (Protection of Markets and Market Participants) because the CDE Rules include prohibitions against abusive practices, including abusive practices committed by a party acting as an agent for a participant, that will apply in relation to the Products, and promote fair and equitable trading in the Products;

DCM Core Principle 13 (Disciplinary Procedures) because CDE maintains disciplinary procedures and rules that authorize the Exchange to discipline market participants that commit CDE rule violations, including any rule violations relating to the Products;

DCM Core Principle 14 (Dispute Resolution) because the CDE Rules provide a mechanism for market participants to arbitrate disputes that arise out of transactions executed on or subject to the rules of the Exchange, including transactions in the Products;

DCM Core Principle 18 (Recordkeeping) because CDE's recordkeeping procedures, established pursuant to Commission Regulation 1.31, will apply with respect to Exchange records relating to the Product, including trade records and investigatory and disciplinary files;

DCM Core Principle 19 (Antitrust Considerations) because the listing of the Products will promote competition with digital asset futures products that are offered for trading on other markets; and

DCM Core Principle 20 (System Safeguards) because CDE maintains system safeguards controls and procedures for its operations and automated systems that will be utilized to facilitate trading in the Products.

Certification

CDE believes that the impact of the Products offering and the Amendment will be beneficial to the public and market participants. CDE is not aware of any substantive opposing views to the Amendment. CDE hereby certifies that the listing of the Products and the Amendment complies with the Act and the regulations thereunder. CDE further certifies that it has posted a notice of pending certification with the Commission and a copy of this submission on the Cboe Digital website (https://www.cboedigital.com/regulation/exchange-notices/) concurrent with the filing of this submission with the Commission.

Questions regarding this submission may be directed to Rebecca Tenuta at rtenuta@cboe.com or (312) 786-7570.

Sincerely,

/s/ Rebecca Tenuta

Rebecca Tenuta
Senior Counsel, Cboe Digital

EXHIBIT A

Contract Specifications

Physically-Settled Bitcoin Futures

Description	*A margin-based physically settled futures contract for bitcoin*
Contract Symbol	BTC
Contract Size	1 bitcoin, as defined by the Cboe Kaiko Bitcoin Rate (CKBR) Index
Price Quotation	USD per 1 bitcoin
Minimum Price Increment	$5.00 per bitcoin ($5.00 per contract) Block trades may be negotiated in $0.01 increments
Listed Contracts	Up to 3 weekly expirations, nearest 2 serial months and nearest 4 quarterly months
Settlement	Physically-settled Final settlement price is determined pursuant to Rule 906(c) and based upon the Cboe Kaiko Bitcoin Rate (CKBR) Index
Trading Days and Hours	Sunday through Friday 5:00 p.m. CT (open on previous business day) through 4:00 p.m. CT (close on trade date), unless otherwise determined by the Exchange and published in a Notice to Participants.
Daily Closing Time	4:00 p.m. CT
Last Trading Day/Time	Weekly - 10:00 a.m. CT Friday[*] of the expiry week Monthly - 10:00 a.m. CT Last Friday[*] of the contract month [*] Preceding business day if day falls on a non-business day
Block Trade Minimum	5 Contracts
Position Limit	20,000 Contracts
Large Trader Reporting	5 Contracts
Collateral Withheld	Collateral required on a margin-basis. Margin requirements are published daily on the Cboe Digital website at cboedigital.com.
Delivery	Pursuant to the Cboe Clear Digital Rulebook, an Eligible Delivery Member (EDM) must deposit all underlying assets required to make delivery immediately upon expiration. An EDM must deposit all funds required to take delivery no later than one hour following expiration. Delivery is made through the Clearinghouse to the EDM's delivery account. Further information about physical delivery can be found in Cboe Clear Digital Rule 410.
Forks	Support for forks in the underlying product will be evaluated in accordance with the Cboe Digital Fork Policy.

1

Financially-Settled Bitcoin Futures

Description	*A margin-based financially settled futures contract for bitcoin*
Contract Symbol	FBT
Contract Size	0.1 bitcoin, as defined by the Cboe Kaiko Bitcoin Rate (CKBR) Index
Price Quotation	USD per 1 bitcoin
Minimum Price Increment	$1.00 per bitcoin ($0.10 per contract) Block trades may be negotiated in $0.01 increments
Listed Contracts	Up to 3 weekly expirations, nearest 2 serial months and nearest 4 quarterly months
Settlement	Financially-settled. Final settlement price is determined pursuant to Rule 906(c) and based upon the Cboe Kaiko Bitcoin Rate (CKBR) Index.
Trading Days and Hours	Sunday through Friday 5:00 p.m. CT (open on previous business day) through 4:00 p.m. CT (close on trade date), unless otherwise determined by the Exchange and published in a Notice to Participants.
Daily Closing Time	4:00 p.m. CT
Last Trading Day/Time	Weekly - 10:00 a.m. CT Friday[*] of the expiry Week Monthly - 10:00 a.m. CT Last Friday[*] of the contract month [*] Preceding business day if day falls on a non-business day
Block Trade Minimum	10 Contracts
Position Limit	200,000 Contracts
Large Trader Reporting	25 Contracts
Collateral Withheld	Collateral required on a margin-basis. Margin requirements are published daily on the Cboe Digital website at cboedigital.com.
Forks	Support for forks in the underlying product will be evaluated in accordance with the Cboe Digital Fork Policy.

Physically-Settled Ether Futures

Description	*A margin-based physically-settled futures contract for ether*
Contract Symbol	ETH
Contract Size	10 ether, as defined by the Cboe Kaiko Ether Rate (CKER) Index

2

Price Quotation	USD per 1 ether
Minimum Price Increment	$0.50 per ether ($5.00 per contract) Block trades may be negotiated in $0.01 increments.
Listed Contracts	Up to 3 weekly expirations, nearest 2 serial months and nearest 4 quarterly months.
Settlement	Physically-settled. Final settlement price is determined pursuant to Rule 906(c) and based upon the Cboe Kaiko Ether Rate (CKER) Index.
Trading Days and Hours	Sunday through Friday 5:00 p.m. CT (open on previous business day) through 4:00 p.m. CT (close on trade date), unless otherwise determined by the Exchange and published in a Notice to Participants.
Daily Closing Time	4:00 p.m. CT
Last Trading Day/Time	Weekly - 10:00 a.m. CT Friday* of the expiry Week Monthly - 10:00 a.m. CT Last Friday* of the contract month * Preceding business day if day falls on a non-business day
Block Trade Minimum	1 Contracts
Position Limit	40,000 Contracts
Large Trader Reporting	5 Contracts
Collateral Withheld	Collateral required on a margin-basis. Margin requirements are published daily on the Cboe Digital website at cboedigital.com.
Delivery	Pursuant to the Cboe Clear Digital Rulebook, an Eligible Delivery Member (EDM) must deposit all underlying assets required to make delivery immediately upon expiration. An EDM must deposit all funds required to take delivery no later than one hour following expiration. Delivery is made through the Clearinghouse to the EDM's delivery account. Further information about physical delivery can be found in Cboe Clear Digital Rule 410.
Forks	Support for forks in the underlying product will be evaluated in accordance with the Cboe Digital Fork Policy.

Financially-Settled Ether Futures

Description	*A margin-based financially settled futures contract for ether*
Contract Symbol	FET
Contract Size	1 ether, as defined by the Cboe Kaiko Ether Rate (CKER) Index
Price Quotation	USD per 1 ether

Minimum Price Increment	$0.10 per ether ($0.10 per contract) Block trades may be negotiated in $0.01 increments.
Listed Contracts	Up to 3 weekly expirations, nearest 2 serial months and nearest 4 quarterly months.
Settlement	Financially-settled. Final settlement price is determined pursuant to Rule 906(c) and based upon the Cboe Kaiko Ether Rate (CKER) Index.
Trading Days and Hours	Sunday through Friday 5:00 p.m. CT (open on previous business day) through 4:00 p.m. CT (close on trade date), unless otherwise determined by the Exchange and published in a Notice to Participants.
Daily Closing Time	4:00 p.m. CT
Last Trading Day/Time	Weekly - 10:00 a.m. CT Friday[*] of the expiry Week Monthly - 10:00 a.m. CT Last Friday[*] of the contract month [*] Preceding business day if day falls on a non-business day
Block Trade Minimum	10 Contracts
Position Limit	400,000 Contracts
Large Trader Reporting	25 Contracts
Collateral Withheld	Collateral required on a margin-basis. Margin requirements are published daily on the Cboe Digital website at cboedigital.com.
Forks	Support for forks in the underlying product will be evaluated in accordance with the Cboe Digital Fork Policy.

4

<u>**Exhibit B**</u>

Amendments to the Cboe Clear Digital Rulebook

(All deletions are struck-through and all additions are underlined)

* * * * *

RULE 533.   Position Limit, Position Accountability, Reportable Level, and Volume Threshold Level Table

The reportable levels for all Contracts are set forth in the Position Limit, Position Accountability, Reportable Level, and Volume Threshold Level Table below. For purposes of the Large Trader Report, Contracts shall be reported according to discrete Commodity Code. The reportable level is the net long position or the net short position for each discrete Commodity Code. Pursuant to Rule 909, concurrent long and short positions must be reported to the Exchange for both sides as open positions (i.e., net long positions or net short positions). <u>Such other volume threshold reportable levels than those set forth in the Position Limit, Position Accountability, Reportable Level, and Volume Threshold Level Table may otherwise be designated by the Commission.</u>

Position Limit, Position Accountability, Reportable Level, and Volume Threshold Level Table:

Contract Name	Commodity Code	Reportable Futures Level for each discrete Commodity Code (Large Trader Report and Form 102A)	Position Accountability for each discrete Commodity Code	Position Limit for each discrete Commodity Code	Volume Threshold Reportable Level for each discrete Commodity Code (Form 102B)
Bitcoin Futures <u>(physically-settled)</u>	BTC	~~2~~5 contracts	N/A	20~~0~~,000	~~2~~50 contracts
<u>Bitcoin Futures (financially-settled)</u>	<u>FBT</u>	<u>25 contracts</u>	<u>N/A</u>	<u>200,000</u>	<u>50 contracts</u>
Ether Futures <u>(physically-settled)</u>	ETH	~~2~~5 contracts	N/A	75<u>40</u>,000	~~2~~50 contracts
Ether ~~Bitcoin~~ Futures <u>(financially-settled)</u>	~~ETBT~~<u>FET</u>	25 contracts	N/A	75<u>400</u>,000	~~2~~50 contracts

* * * * *

RULE 541. Trading Halts

(a) The market for a Contract will enter into a halt state for a period of time designated by the Exchange, during Trading Hours for the Contract, if a circuit breaker is triggered: the price of a bid (offer) in the Contract is higher (lower) than a percentage designated by the Exchange as compared to the highest (lowest) bid (offer) observed during the lookback window as designated by the Exchange. The Exchange shall publish the circuit breaker parameters as designated by the Exchange on its website.

(b) The Exchange may, in its discretion, temporarily halt trading in a Contract or modify the circuit breaker parameters, including the time of a halt state, to preserve market integrity in a Contract market. Any action taken in response to an Emergency is governed by Rule 212, including notification to the CFTC of any Emergency Rule in accordance with CFTC Regulations.

* * * * *

RULE 906. Settlement Prices

(a) The Exchange, in conjunction with the Clearing House, will determine the Settlement Price for Contracts. For each Contract, the Exchange shall publish a daily settlement price and information regarding volume, open interest and opening and closing ranges.

(b) Daily Settlement Price. Unless specified in the terms of a Contract, the daily settlement price for all Exchange Futures Contracts based on a Digital Currency Asset will be determined as follows:

> (1) Based on the volume weighted average price of executed trades for the cContract during the last ten (10) minutes of trading on each trading day, where the closing period will be broken down into two (2) distinct five (5) minute periods for which the volume weighted average price will be calculated and the average of the two (2) value weighted average prices will be the daily settlement price;

> (2) If no trades occur during the last ten (10) minutes of trading, the last trade in the Exchange's spot market during the same period for the relevant underlying Digital Currency will be used and adjusted by the difference between the previous day spot closing price and the previous day futures closing price; or

> (3) If no trade has occurred in the Exchange's spot market during this period or in the event that the Exchange concludes that the settlement price determined in accordance with the foregoing does not fairly represent the market value of the period, the Exchange may determine an alternative settlement price. Such determination may be based upon, among other things, a third party or combination of third-party index or reference prices.

(c) Final Settlement Price. Unless specified in the terms of a Contract, the final settlement price for all Exchange Futures Contracts based on a Digital Asset will be determined based on the reference rate of a third-party index, as specified in the relevant Contract specifications, published at the time of expiration.

(d) Notwithstanding the foregoing, the Clearing House may modify Settlement Prices in its discretion in accordance with Clearing House Rules.

* * * * *

RULE 1101. Bitcoin Futures

~~Reserved~~

(a) Physically-Settled Bitcoin Futures.

Description	A margin-based physically settled futures contract for bitcoin
Contract Symbol	BTC
Contract Size	1 bitcoin, as defined by the Cboe Kaiko Bitcoin Rate (CKBR) Index
Price Quotation	USD per 1 bitcoin
Minimum Price Increment	$5.00 per bitcoin ($5.00 per contract) Block trades may be negotiated in $0.01 increments
Listed Contracts	Up to 3 weekly expirations, nearest 2 serial months and nearest 4 quarterly months
Settlement	Physically-settled. Final settlement price is determined pursuant to Rule 906(c).
Trading Days and Hours	Sunday through Friday 5:00 p.m. (open on previous business day) through 4:00 p.m. (close on trade date), unless otherwise determined by the Exchange and published in a Notice to Participants.
Daily Closing Time	4:00 p.m.
Last Trading Day/Time	Weekly - 10:00 a.m. Friday[*] of the expiry week Monthly - 10:00 a.m. Last Friday[*] of the contract month [*] Preceding business day if day falls on a non-business day
Block Trade Minimum	5 Contracts
Position Limit	20,000 Contracts
Large Trader Reporting	5 Contracts
Collateral Withheld	Collateral required on a margin-basis. Margin requirements are published daily on the Cboe Digital website at cboedigital.com.

Delivery	Pursuant to the Cboe Clear Digital Rulebook, an Eligible Delivery Member (EDM) must deposit all underlying assets required to make delivery immediately upon expiration. An EDM must deposit all funds required to take delivery no later than one hour following expiration. Delivery is made through the Clearinghouse to the EDM's delivery account. Further information about physical delivery can be found in Cboe Clear Digital Rule 410.
Forks	Support for forks in the underlying product will be evaluated in accordance with the Cboe Digital Fork Policy.

(b) Financially-Settled Bitcoin Futures.

Description	*A margin-based financially settled futures contract for bitcoin*
Contract Symbol	FBT
Contract Size	0.1 bitcoin, as defined by the Cboe Kaiko Bitcoin Rate (CKBR) Index
Price Quotation	USD per 1 bitcoin
Minimum Price Increment	$1.00 per bitcoin ($0.10 per contract) Block trades may be negotiated in $0.01 increments
Listed Contracts	Up to 3 weekly expirations, nearest 2 serial months and nearest 4 quarterly months
Settlement	Financially-settled. Final settlement price is determined pursuant to Rule 906(c).
Trading Days and Hours	Sunday through Friday 5:00 p.m. (open on previous business day) through 4:00 p.m. (close on trade date), unless otherwise determined by the Exchange and published in a Notice to Participants.
Daily Closing Time	4:00 p.m.
Last Trading Day/Time	Weekly - 10:00 a.m. Friday[*] of the expiry Week Monthly - 10:00 a.m. Last Friday[*] of the contract month [*] Preceding business day if day falls on a non-business day
Block Trade Minimum	10 Contracts
Position Limit	200,000 Contracts
Large Trader Reporting	25 Contracts
Collateral Withheld	Collateral required on a margin-basis. Margin requirements are published daily on the Cboe Digital website at cboedigital.com.
Forks	Support for forks in the underlying product will be evaluated in accordance with the Cboe Digital Fork Policy.

RULE 1102. Ether Futures

~~Reserved~~

(a) Physically-Settled Ether Futures.

Description	*A margin-based physically-settled futures contract for ether*
Contract Symbol	ETH
Contract Size	10 ether, as defined by the Cboe Kaiko Ether Rate (CKER) Index
Price Quotation	USD per 1 ether
Minimum Price Increment	$0.50 per ether ($5.00 per contract) Block trades may be negotiated on $0.01 increments
Listed Contracts	Up to 3 weekly expirations, nearest 2 serial months and nearest 4 quarterly months.
Settlement	Physically-settled. Final settlement price is determined pursuant to Rule 906(c).
Trading Days and Hours	Sunday through Friday 5:00 p.m. (open on previous business day) through 4:00 p.m. (close on trade date), unless otherwise determined by the Exchange and published in a Notice to Participants.
Daily Closing Time	4:00 p.m.
Last Trading Day/Time	Weekly - 10:00 a.m. Friday[*] of the expiry Week Monthly - 10:00 a.m. Last Friday[*] of the contract month [*] Preceding business day if day falls on a non-business day
Block Trade Minimum	1 Contracts
Position Limit	40,000 Contracts
Large Trader Reporting	5 Contracts
Collateral Withheld	Collateral required on a margin-basis. Margin requirements are published daily on the Cboe Digital website at cboedigital.com.
Delivery	Pursuant to the Cboe Clear Digital Rulebook, an Eligible Delivery Member (EDM) must deposit all underlying assets required to make delivery immediately upon expiration. An EDM must deposit all funds required to take delivery no later than one hour following expiration. Delivery is made through the Clearinghouse to the EDM's delivery account. Further information about physical delivery can be found in Cboe Clear Digital Rule 410.
Forks	Support for forks in the underlying product will be evaluated in accordance with the Cboe Digital Fork Policy.

(b) Financially-Settled Ether Futures.

Description	*A margin-based financially settled futures contract for ether*
Contract Symbol	FET
Contract Size	1 ether. by the Cboe Kaiko Ether Rate (CKER) Index
Price Quotation	USD per 1 ether
Minimum Price Increment	$0.10 per ether ($0.10 per contract) Block trades may be negotiated in $0.01 increments
Listed Contracts	Up to 3 weekly expirations, nearest 2 serial months and nearest 4 quarterly months.
Settlement	Financially-settled. Final settlement price is determined pursuant to Rule 906(c).
Trading Days and Hours	Sunday through Friday 5:00 p.m. (open on previous business day) through 4:00 p.m. (close on trade date), unless otherwise determined by the Exchange and published in a Notice to Participants.
Daily Closing Time	4:00 p.m.
Last Trading Day/Time	Weekly - 10:00 a.m. Friday[*] of the expiry Week Monthly - 10:00 a.m. Last Friday[*] of the contract month [*] Preceding business day if day falls on a non-business day
Block Trade Minimum	10 Contracts
Position Limit	400,000 Contracts
Large Trader Reporting	25 Contracts
Collateral Withheld	Collateral required on a margin-basis. Margin requirements are published daily on the Cboe Digital website at cboedigital.com.
Forks	Support for forks in the underlying product will be evaluated in accordance with the Cboe Digital Fork Policy.

RULE 1103. ~~Ether Bitcoin Futures~~[Reserved]

~~Description~~	*~~A fully funded physically settled futures contract for the Ether Bitcoin Pair~~*
~~Contract Symbol~~	~~ETBT~~

Contract Size	1 ETH
Price Quotation	BTC equivalent of 1 ETH
Minimum Price Increment	0.00001 Bitcoin
Listed Contracts	Up to 5 Daily expirations, 3 Weekly expirations, nearest 2 serial months and nearest 2 quarterly months.
Settlement	Physical Delivery
Trading Hours	Sunday 17:00 - Friday 16:00 (CT)
Daily Closing Time	16:00 (CT)
Last Trading Day/Time	Daily - 10:00 (CT) of the expiry day Weekly - 10:00 (CT) Friday[*] of the expiry Week Monthly - 10:00 (CT) Last Friday[*] of the contract month [*] Preceding business day if day falls on a non-business day
Position Limit	75,000
Large Trade Reporting	25 Contracts
Collateral Withheld	Buyer: No. of Contracts * Contract Size * Trade Price Seller: No. of Contracts * Contract Size
Delivery	Pursuant to the Cboe Clear Digital rulebook, purchase price of the future and the underlying deliverable commodity are deposited with the Clearinghouse (in accordance with Cboe Clear Digital Rules 403 and 315) by the buyer and seller prior to the futures trade. Therefore, delivery is made through the Clearinghouse to the buyer's account. Further information about delivery can be found in Cboe Clear Digital Rule 410.
Forks	Any forks in the underlying blockchain for the digital asset will be evaluated in accordance with Exchange Rule 911.

* * * * *

Cboe Kaiko Digital Assets Rates

CONTENT

Version	Publication date	Comments
1	26/10/2023	Created

INTRODUCTION

This document describes the methodology of the Cboe Kaiko Digital Assets Rates - (together, the "Cboe Kaiko Rates"). Designed to bring greater transparency to pricing, the Cboe Kaiko Rates are solely based on executed trades from centralised exchanges.

Calculation and dissemination: All Cboe Kaiko Rates are calculated hourly.

The list of all rates can be found here:

| Rate	Kaiko Symbol	ISIN
Cboe Kaiko Bitcoin Rate	Cboe-KAIKO_BTCUSD	TBD
Cboe Kaiko Ether Rate	Cboe-KAIKO_ETHUSD	TBD

REVIEW CALENDAR

Scheduled Review and Rebalancing

Rebalancing is a scheduled, regular process designed to ensure that the Cboe Kaiko Rates are composed of the most relevant price data feeds and to ensure the Cboe Kaiko Rates continue to comply with the methodology detailed in this document, including initial vetting, liquidity and optimization requirements (in particular please refer to the Exchange Selection Model section).

All Cboe Kaiko Rates will follow the same quarterly rebalancing calendar (March, June, September and December) with cut off and effective dates structuring the data collection and processing periods followed by publication periods.

Event	Date	Description
Cut-off	Last day of the month preceding the rebalancing	Data collection for composition determination stops on that day.*
Underlying data	Second Friday of the rebalancing month	The new exchange composition with corresponding weights is available.
Effective	Monday after the third Friday of the rebalancing month	The new exchange composition becomes effective in the calculation of the rates.

*For instance, if a 3-month Average Daily Traded Volume must be calculated, the covered period will start 3 months before the cut-off date and end on the cut-off date (included).
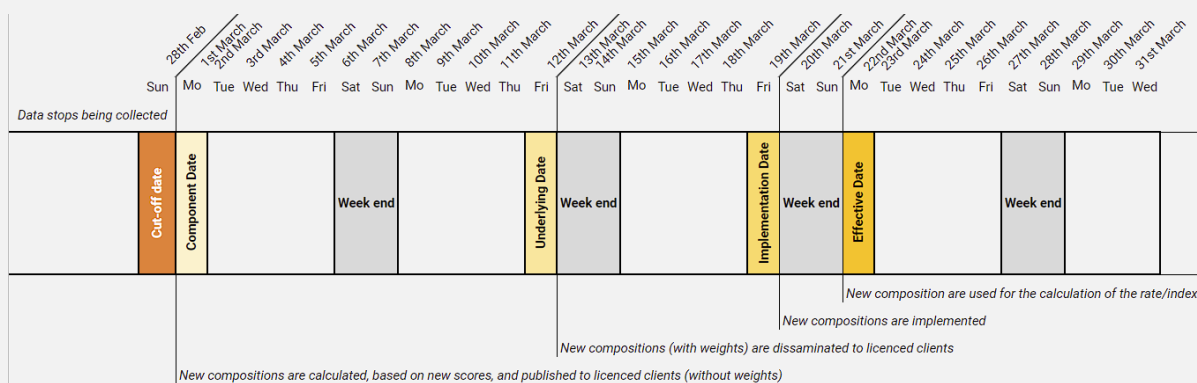
Extraordinary Review

On the basis of its qualified and expert judgement, Kaiko, in consultation with Cboe and other relevant stakeholders, reserves the right to exclude or replace an exchange selected during the Scheduled Review, or to suggest and consult on any methodology change that Kaiko considers necessary to ensure the Cboe Kaiko Rates continue to reflect the target underlying economic reality. Such a consultation could happen if, for example, an exchange has been found to experience an exclusion action including but not limited to:

- Fraud
- Market manipulation
- Significant loss of volume or liquidity

In such cases, the Kaiko Index Steering Committee will publish a consultation document, explaining its findings and any suggested methodology change. A clear timetable for the consultation will be outlined, including the proposed notice period that will be provided before the implementation of any change.

METHODOLOGY

Cboe Kaiko Rates emphasise data quality. Before any rate can be computed, each eligible exchange is screened for both quantitative and qualitative aspects. Said screenings compose a key element to ensure the reliability and authenticity of each and every rate.

Data Source

The daily price levels are based on the historical tick-by-tick trade data provided by Kaiko.

Kaiko is the leading source of cryptocurrency market data, providing businesses with industrial-grade and regulatory-compliant data. Kaiko empowers market participants with global connectivity to real-time and historical data feeds across the world's leading centralized and decentralized cryptocurrency exchanges. Kaiko's proprietary products are built to empower financial institutions and cryptocurrency businesses with solutions ranging from portfolio valuation to strategy backtesting, performance reporting, charting, analysis, indices, pre-and post-trade.

Exchange Selection Model

Markets in crypto assets are by nature highly fragmented, with hundreds or even thousands of exchanges spread over different geographical areas, each with their own regulatory framework. Each crypto asset trading platform works as an independent dark pool, and as such, official statistics and research data are rarely publicly available.

As a global digital asset market data provider, Kaiko covers more than one hundred cryptocurrency exchanges. However, not all exchanges offer the same level of standards in terms of legal and compliance frameworks, infrastructure security, liquidity, data quality or even technology.

An asset-agnostic vetting is built on [Kaiko Exchange Ranking](#) parameters. The Exchange Ranking assessment is carried out on a quarterly basis by the Kaiko team, and approved by the Kaiko Exchange Ranking Steering Committee.

Criteria	
Absent from any sanction list	Yes
Has been operating for the past	5 Years
Located in stable and open country	Yes
Regulated by an independent government body	Yes
KYC/AML controls	Strong
Trading Policies	Significant
Offers reliable REST API & WebSocket data feeds	Yes
Offers reliable live & historical trade data	Yes
Provide cold storage for customers funds	Yes

All exchanges fulfilling **all** criteria mentioned above constitute the Kaiko Vetted Exchanges List (KVEL) for the respective rates. Upon each quarterly review of the Exchange Ranking, a new associated KVEL is created. Kaiko's Exchange Ranking history goes back to January 2022. For the purposes of index and rate performance history older rebalancing periods will be associated with the January 2022 Exchange Ranking Review. Subsequent exchange selections will rely on their respective Exchange Ranking Review.

Additionally, the liquidity of each exchange in the relevant pairs is assessed to only consider meaningful contributors, defined as at least 0.5% of the total observed liquidity over the past 3 months in the relevant pair.

For the purpose of the Cboe Kaiko Rates computation, only market data coming from the following members of the KVEL are considered: Cboe Digital, LMAX, itBit and Bitstamp. In accordance with the Extraordinary Review section above, any material change to the methodology would be subject to consultation with all relevant stakeholders.

Publication Events

The Cboe Kaiko Rates are published on an hourly basis and use a fixed calculation window:

Rate	Publication Interval	Calculation Window
Cboe Kaiko Bitcoin Rate	Hourly fixings	Fixed at 3600 seconds
Cboe Kaiko Ether Rate	Hourly fixings	Fixed at 3600 seconds

Rates Calculation

The aggregation methodology consists of splitting the calculation period considered into equal size partitions and, for each of them, extracting the most representative trade whose price will be used for the final rate calculation.

All trades in the relevant pair from the relevant exchanges are pooled together and grouped into relevant time partitions. For each partition, the most representative trade is defined as the volume median one.

1. Step-by-step Methodology

- At fixing time, collect all executed trades in the calculation window (before the fixing) on all selected exchanges.
- Merge all the executed trades from the different exchanges in the same dataset sorted by prices in ascending order.
- Create K partitions of S_{part} size from the calculation window (eg. 1h calc. window with 10 partitions of 6 min).
- Each partition is then subject to a Volume Weighted Median (outlier resistant by nature). A detailed description of this aggregation method is provided below.
- A time weight is associated with each partition's volume-weighted median (more weights to the last partitions which are the most recent).
- Aggregation of those weighted prices (eg. 10 prices aggregated on 1h calc. window) to obtain the fixing price for this publication event.

2. Inputs

Symbol	Name	Description
t	Event	The timestamp at which the fixing price (FP) is calculated.
S_{wind}	Calculation Window Size	Size of the calculation period for which trades are collected and aggregated.
S_{part}	Partition Size	Size of each partition in the calculation window.
K	Number of Partitions	The number of partitions is an integer calculated as S_{wind}/S_{part}.
k	Partition Number	k_{th} partition.
I_k	Partition Trade Distribution	List of trades included in partition k and ordered by ascending price.

p_i^k	Partition Trade Price	i^{th} trade price in the k_{th} partition (price-ordered distribution).
v_i^k	Partition Trade Volume	i^{th} trade volume in the k_{th} partition (price-ordered distribution).
VWM_k	Volume-Weighted Median	Volume-weighted median of the k_{th} partition.
FP_t	Fixing Price	Fixing price (FP) at time t.

3. Volume Weighted Median

The volume-weighted median (VWM_k) is calculated as the price (p_j^k) of the jth trade where the jth trade is the trade that lies at 50% of the cumulative volume for the partition k. VWM_k is calculated for each partition in S_{wind}:

$$VWM_k = p_j^k \text{ where } j \text{ satisfies } \sum_{i=0}^{j-1} v_i^k < \frac{\sum_{i=1}^{I_k} v_i^k}{2} \text{ and } \sum_{i=j+1}^{I_k} v_i^k \leq \frac{\sum_{i=1}^{I_k} v_i^k}{2}$$

If $\exists\, j : v_j^k > \dfrac{\sum_{i=1}^{I_k} v_i^k}{2}$ then $VWM_k = p_j^k$

If $\exists\, j : \displaystyle\sum_{i=j+1}^{I_k} v_i^k = \dfrac{\sum_{i=1}^{I_k} v_i^k}{2}$ then $VWM_k = \dfrac{p_j^k + p_{j+1}^k}{2}$

4. Fixing Price

The Fixing Price (FP) is calculated as a time weighted average price (TWAP) of all the VWM_k of all the K partitions. We implement a sensitivity calibration method on partitions to increase the weight of the most recent prices included in the calculation window.

First, we apply a specific weighting function in order to obtain weights which are inversely proportional to time t. It gives:

$$w_k = \frac{1}{n} \sum_{j=0}^{I_k} 1_{j \leq k}$$

The weights are then normalised:

$$\overline{w_k} = \frac{w_k}{\sum_j w_j}$$

Thus, the fixing price is equal to:

$$FP_T = \sum_{k=1}^{K}(VWM_k \times \overline{w_k})$$

5. Partitioning Scheme

Each rate breaks down the window size into n partitions of equal size. Here is a summary of all the window size / partitions number combinations:

Rate	Number of partitions	Calculation Window
Cboe Kaiko Bitcoin Rate	10	Fixed at 3600 seconds
Cboe Kaiko Ether Rate	10	Fixed at 3600 seconds

6. Data Rounding

All rates are calculated with all available decimals but published with two decimals.

7. Blockchain Forks

In the event of a fork of the blockchain, the ticker used on each Constituent Exchange may be adjusted in order to represent the relevant instrument.

8. Data Gaps

Missing Data
At the time of the calculation (t), some relevant transactions may be missing for an array of reasons. If no relevant transactions are recorded on the relevant partition, the corresponding partition is excluded from the calculation and weights are adjusted accordingly. If no relevant transactions are recorded in the entire calculation window, the price is not published.

Delayed Data
If for any reason Kaiko was unable to retrieve relevant transactions at the Calculation Time, the corresponding partition is excluded from the calculation.

Spurious Data

If for any reason any transactions were identified as potentially suspect within a partition, the most representative trade may be adjusted to disregard the spurious data.