

## **CX Futures Exchange, L.P. – Rule 40.2 New Contract Submission**

### **High Extreme Daily Temperature Index Swaps Contract**

#### **Submission #2019-03**

May 2, 2019

CX Futures Exchange, L.P. (“CX” or “Exchange”) hereby certifies its listing of the following new contract: High Extreme Daily Temperature Index (“HEDTI”) Swaps Contract. This submission is being made in accordance with Section 5c(c)(1) of the Commodity Exchange Act, as amended, 7 U.S.C. §1 et seq. (“Act”) and Commodity Futures Trading Commission (“Commission”) Rule 40.2 thereunder:

1. The text of the proposed contract terms and conditions is attached.
2. The proposed listing date of the contract will be May 6, 2019.
3. Attached, please find a certification that: (1) the contract complies with the Commodity Exchange Act, and the Commission’s regulations thereunder; and (2) that CX posted on its website a notice of this pending product certification with the Commission and a copy of the submission, concurrent with the filing of this submission with the Commission.
4. A concise explanation and analysis of the product and its compliance with applicable provisions of the Act, including core principles, and the Commission's regulations thereunder, appears below.
5. Confidentiality for this submission is not requested.

---

#### **CONCISE EXPLANATION AND ANALYSIS OF THE PRODUCT AND ITS COMPLIANCE WITH APPLICABLE PROVISIONS OF THE ACT, INCLUDING CORE PRINCIPLES AND THE COMMISSION’S REGULATIONS THEREUNDER**

Pursuant to Commission Rule 40.2(a)(3)(v), the following is a concise explanation and analysis of the product and its compliance with the Act and Commission rules.

##### **I. Introduction**

CX Futures Exchange, L.P. (“CX” or “Exchange”), is adding a new swaps contract to its complex of weather-related contracts. This contract is a swap (cash-settled option) on high extreme temperatures. Specifically, High Extreme Daily Temperature Index (“HEDTI”) Swaps Contracts are swaps (cash-settled options) that offer a contingent claim payout dependent upon, and as a function of, the High Extreme Daily Temperature amount measured by the U.S.

National Weather Service at various locations (typically airports) near major U.S. metropolitan areas. As with CX's other weather-related contracts, including its named storm, snowfall and rainfall contracts, the HEDTI contract will provide an opportunity for participants to hedge commercial risks arising from specified weather conditions.

The HEDTI contract's trading mechanics are substantially similar to CX's precipitation-based weather contracts (i.e. CX's DASI and DARI contracts) notwithstanding that the underlying measurement is based upon daily high temperature rather than precipitation amounts.

Like all other CX contracts, trading is on a principals-only basis, and all participants are self-clearing. Like all CX contracts, the Original Margin amount for the contract always equals the maximum at-risk amount. Accordingly, the risk position of all participants is fully margined in accordance with the CX Clearinghouse, L.P. (the "Clearinghouse") Order of Registration and its rules.

CX developed the HEDTI contract in conjunction with meteorological experts at AccuWeather. CX believes that the HEDTI contract is in accordance with the standards of the Commission's Guideline 1, now found in Appendix C to Part 38 of the Commission's rules, including as described in greater detail below, the ability to use the high extreme temperature contract on more than an occasional basis for mitigating commercial risk.

CX has considered the Core Principles and Commission rules thereunder. Because features of the HEDTI contract are identical to contracts previously listed by CX, in accordance with the requirements of Commission Rule 40.2, CX notes that:

## **II. Core Principle 3**

Core Principle 3 and Rule 38.200 provide that a DCM shall not list for trading contracts that are readily susceptible to manipulation. The HEDTI contract is a cash settled contract based upon the objective determination of the High Extreme Daily Temperature amount occurring at a specific location on a specific calendar day.

The cash settlement index of the HEDTI contract is not readily susceptible to manipulation due to its objective nature and its determination by a government agency. The National Weather Service is an agency of the U.S. government and the CLI report(s) used as the primary settlement source are publicly available, published within 24 hours of the contract's Final Settlement Date and based on objective information. No individual can manipulate or distort this information. Nor is any individual able to affect prices on CX by manipulating these reports. Thus, the cash settlement determination is based upon publicly available, timely information that is reliable and widely accepted as an authoritative source for this information.

As with its existing weather-related contracts, CX has retained authority to use other sources of information for determining the high temperature used to calculate the index settlement value in its discretion, if the best interest of the market so requires. This authority would only be used in the unforeseen event that National Weather Service reports were unavailable, or transmission of

such report was corrupted. Such a secondary source would also be objective and verifiable. CX would document any such decision.

The contract's design also renders the contract not readily susceptible to manipulation through abusive trading strategies. First, the contract is not readily susceptible to spoofing or similar forms of trade practice abuse because bids, once submitted may not be withdrawn (although they may be modified). This renders spoofing an ineffective strategy. Similarly, excessively bidding one Strike Level in an effort to affect the price is discouraged because the size of the payment cannot be unduly influenced by one trader; the relative size of the counter positions taken by other market participants primarily determines the Final Settlement Price. Additionally, the Final Settlement Price methodology employed removes any possible distortion of Final Settlement Prices due to excessively large bids by providing for a minimum 0.01 HEDTI Conversion Factor on all "out-of-the-money"<sup>1</sup> positions; algorithmically this caps payouts at a maximum of 250:1 ratio. In light of the low dollar value of the contract, this limitation effectively limits the incentive to attempt to manipulate the market in this way.

The HEDTI contract has specified delivery dates that correspond to the calendar day at the high extreme temperature measurement reporting station. Each HEDTI contract will be available for trading until 5:00 PM Eastern Time on the Trading Day prior to the Final Settlement Date.

CX has provided for a position accountability level of 10,000 contracts for all HEDTI Contracts combined.

#### **A. Risk mitigation purpose of the contract**

CX designed the HEDTI contract with the assistance of informed experts in the field and looked at the experiences of other weather-related contracts that have been listed on CX and other designated contract markets. The design of the terms and conditions is intended to mitigate the financial risks related to high extreme temperatures. The salient features of the contract are designed to enable the contract to be used on more than an occasional basis for the mitigation of commercial risks relating to high extreme temperatures, to reduce basis risk, to increase liquidity, and to ensure that the contract is not readily susceptible to manipulation.

Contracts based on temperature were introduced in 1999 when the Chicago Mercantile Exchange ("CME") launched futures contracts based on "degree days"<sup>2</sup>. In 2007, the CME shortened the tenor of these contracts to one week citing that this change gives "the opportunity to have more defined hedges on a shorter time frame" and "allows for multiple options to fit a variety of risk management strategies."<sup>3</sup>

---

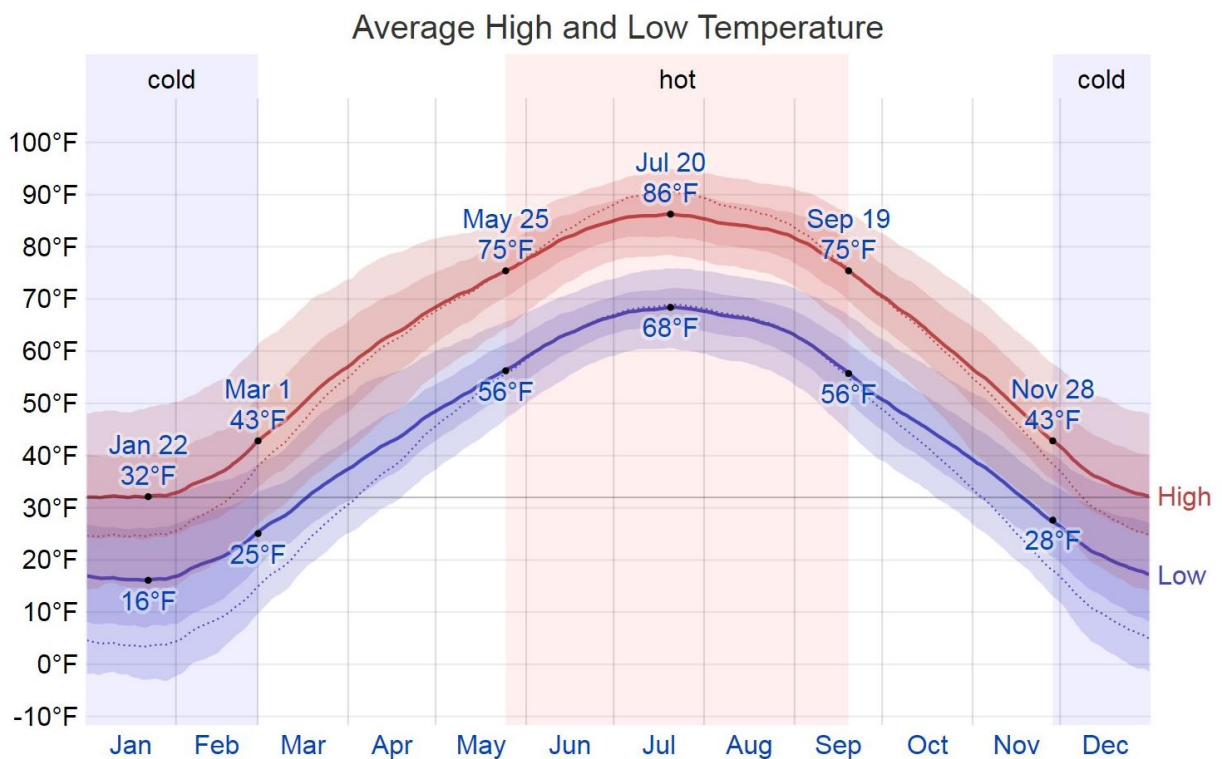
<sup>1</sup> Since all HEDTI contracts will have a minimum final settlement value of at least \$0.01, strictly speaking there are no "out-of-the money" HEDTI contracts. Notwithstanding this, the Exchange uses the term "Out-of-the-money" to refer to Strike Levels that have a Conversion Factor equal to 0.01; the term "In-the-money" is used when referring to Strike Levels with a Conversion Factor of 0.07 or higher.

<sup>2</sup> A degree day is defined as the difference between the average outdoor temperature and 65 degrees Fahrenheit for one day. A cooling degree day occurs when the average outdoor temperature is above 65 degrees Fahrenheit and a heating degree day occurs when the average outdoor temperature is below 65 degrees Fahrenheit.

<sup>3</sup> Currently the CME offers seasonal and monthly degree day contracts in eight U.S. cities and 2 European cities.

Degree day contracts use a constant reference temperature of 65 degrees for all days of the year and in all locations. CX determined that this reference temperature is relevant for heating and cooling applications, but a single fixed temperature at all locations does not provide a useful reference temperature for when temperature extremes are the cause of economic losses. Therefore, CX chose to employ a reference temperature for its HEDTI contract that varies by location and date since many economic losses are closely linked to unusual high temperatures (i.e. extremes) rather than absolute differences from 65 degrees. Accordingly, the reference point used for the HEDTI contract is the normal high for the location and date rather than a global fixed reference point of 65 degrees.

The chart below shows the normal temperature ranges for Des Moines, Iowa. The HEDTI is measured relative to the solid red line in the chart, and specifically provides hedging opportunities when extremely warm temperatures (that is, those that lie above the solid red line) occur. Note that this varies considerably by month with extremely warm temperatures in January being substantially cooler than extremely warm temperatures in July.



The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands. The thin dotted lines are the corresponding average perceived temperatures.

The HEDTI contract can be used anytime unseasonably warm temperatures will cause economic loss. For example, certain crops are especially sensitive to unseasonably high temperatures during periods when the soil moisture content is low as well as during the tasseling and

pollination phases. Unseasonably high temperatures also result in increased fire risk, exacerbate certain health risks such as heat exhaustion, and reduce productivity in outdoor work environments.

Another consideration CX has taken in the design of its contract is the inherently long-term unpredictability and short-term duration of extreme temperature related economic risks. Typical “heat waves” last for only a few days and generally cannot be forecasted to occur more than 7 to 14 days in advance. This means that effective hedges need to be placed for only a few days at a time and relatively close to the temperature measurement (i.e. settlement) period. Accordingly, the HEDTI contract was designed with daily settlements.

It’s worth noting that high extreme temperatures are year-round and not exclusive to summer heat waves. For example, consider a ski resort in Vermont that experiences 60-degree days in January or an area with poor drainage that is subjected to sudden and extreme spring melt-off of winter snows due to a string of abnormally high temperature days in March.

In summary, CX believes that the HEDTI contract offers a unique opportunity for hedgers that have risks associated with high extreme temperatures.

## **1. Delivery location**

Although each measurement location is analogous to a specific “delivery point,” deliverable supplies are not a relevant consideration for this contract nor is location relevant to construction of a pricing index. CX will list contracts at locations that have an NWS measuring station and that issue the relevant daily high extreme temperature reports. Additional factors that may be considered are: (1) whether high extreme temperatures are likely to be a meaningful factor in commercial activity for that area; (2) agricultural activity in the immediate surrounding area as well as metropolitan area population; (3) representative geographical diversity; and (4) market liquidity limitations. The HEDTI contract’s measurement locations are generally located at major airports located in proximity to the listed city. These locations are well defined and almost immediately recognizable for most commercial market users.

CX intends to list approximately 80 locations at the time of market launch and may list any location that has adequate weather reporting capabilities to calculate the HEDTI value. All delivery locations will be published on the CX website and made available via the Cantor Direct System. This initial list of about 80 locations provides many localized hedging opportunities and reduces basis risk both by more precisely capturing the affected area of each high extreme temperature condition and by permitting individual commercial interests to customize and balance the concentration of geographical risk that their business profile might inherently have.

Furthermore, CX notes that temperature is generally a regional phenomenon and with over 80 measurement locations the HEDTI contract is useful over a large portion of the continental United States.

## **2. Contract pricing**

For the HEDTI contract CX will use the same asynchronous, single-sided call market mechanism used in CX's other weather markets. This market structure is especially efficacious in weather markets, where there is no tradeable underlying instrument. As implemented for the HEDTI contract, the one-sided call market provides participants an opportunity to place bids into the market (and at that time depositing Original Margin equal to the maximum at-risk amount) with all bids converted into contract positions upon Termination of Trading. Once placed, bids may not be withdrawn and a contract position, once established, can be liquidated only by final cash settlement.<sup>4</sup> All HEDTI contract positions open at the time of Final Settlement will be automatically exercised through book entry with no action necessary on the part of the holder.

The HEDTI is designed to mitigate economic risk arising from high extreme temperatures above the normal high for the location and date. For example, Des Moines, Iowa has a normal high temperature of 86 degrees Fahrenheit on July 15. Therefore, for this location and date, an HEDTI Strike Level of "0" represents a high temperature of 86 degrees or less. Subsequent Strike Levels are made available for each degree Fahrenheit above 86 with a Strike Level of "1" representing 87 degrees, "2" representing 88 degrees, and so on.

The current value of each Strike Level, based on current bids in the market, will be displayed on CX's web-based trading interface. For bids placed 7 or more days before contract expiration, the HEDTI contract provides that all bid contract premium prices and required Original Margin deposits are \$1.00 per contract, which is also its notional value. Because the forecast accuracy of expected high extreme temperature amounts improves significantly as the expiration date draws to within the 7-day forecast window, to compensate for the accretive value contained in this information, the HEDTI contract provides for an increasing contract premium price per contract, and corresponding Original Margin deposit, inside of the 7-day forecast window. Table 1 shows this relationship.<sup>5</sup>

As provided in other CX weather contracts, after placing a bid, market participants may adjust their positions by switching from the current position's Strike Level to another Strike Level for the same delivery day and location by depositing any additional margin that may be required for the contract. This will enable participants to fine-tune their hedges after they obtain a position at a given Strike Level and shift their positions between Strike Levels as high extreme temperature forecasts or market prices change. This includes, if desired, positions switching from a specified high extreme temperature Strike Level to the zero or minimum Strike Level. This ability to modify bid Strike Levels assists the price discovery process and furthers hedging efficacy.

---

<sup>4</sup> Because of the asynchronous nature of the single-sided call auction mechanism, once a position is established, it may only be exited via the HEDTI contract's Final Settlement process. This is designed to mitigate the detrimental effects on market information and pricing of traders placing large bids in the market and then cancelling such bids.

<sup>5</sup> The increase in Original Margin deposit is not designed to precisely account for differences in forecast accuracy, which is statistically indeterminate and unstable across time, but rather provides a known schedule that market participants will utilize to determine the timing of their bid placement. CX will monitor how market participants utilize the differentials in Table 1 and, if necessary, modify them in subsequent contract filings. Nevertheless, in all cases the amount in Original Margin will be no less than the at-risk amount.

### **3. Payout for Losses**

The payout structure for HEDTI contracts is substantially similar to those for CX's other weather contracts. All of CX's weather contracts employ "risk pooling" for establishing the amount of the pay-out associated with in-the-money positions. Risk pooling is the mutualization of economic risks among participants in a pool. Risk pooling is a recognized and accepted financial market tool. Such pools are used to share economic risks in many financial transactions. Most obviously, all insurance markets are predicated on the mutualization of market participant risk. Furthermore, it was recently brought to CX's attention that risk pooling is a feature of certain agricultural cooperatives. Unlike insurance however, payout from the CX contract risk pool is not predicated upon a loss event specific to the claimant. Rather, in CX swap contracts, all in-the-money positions share in the payout from the risk pool.

As with CX's precipitation contracts, the HEDTI payout structure provides payouts at all Strike Levels with the payouts monotonically increasing generally with higher extreme temperatures. This payout structure aligns with the physical reality that increasing temperatures are progressively less likely to occur. Such payouts are consistent with binary option markets where deep-in-the-money binary options with different Strike Levels have virtually the same payout to cost ratios whereas binary options with an at-the-money strike will have a more favorable payout to cost ratio than the next nearby in-the-money strike.

The HEDTI contract achieves this as shown in Table 2 by factoring payouts. Factors are approximately inversely proportional to the difference, measured in degrees Fahrenheit, by which the HEDTI exceeds the Strike Level.

### **III. Core Principle 9—Execution of Transactions**

As noted above, the trading mechanics for the HEDTI contract are the same as for CX's precipitation contracts. Each HEDTI contract opens at 5:00 PM Eastern Time on the first Trading Day. The Final Settlement Date for each contract may be any calendar day that is not more than ninety-one (91) days and not less than one (1) day from the current Trading Day as made available to Participants on the CX Direct System. Termination of Trading for each contract occurs at 5:00 PM ET on the Trading Day that precedes the Final Settlement Date. The system is available continuously (24 hours x 7 days per week) except that CX may reduce its availability for the purposes of technology maintenance, abbreviated holiday schedules, and as otherwise required by market or environmental considerations. Any such changes shall be posted on the Exchange website.

During the open period, market participants may bid for contracts by specifying the Ticker Symbol and HEDTI Strike Level of the contract. All bids will be at the contract premium price per contract specified in Table 1 and require Original Margin to be deposited with the Clearinghouse equal to the per-contract amount. Any such bids, once accepted by CX, may not be canceled. However, the Strike Levels of bids received by CX may be modified provided that it is still for the same measurement station and Final Settlement Date. The price difference, if any, between the original bid price and the contract premium price per contract in effect at the

time of the bid modification (as specified in Table 1) must also be placed as Original Margin on deposit with the Clearinghouse.

The Final Settlement Price of the positions at various Strike Levels is a function of how many positions are aggregated at each Strike Level versus the total number of positions. Strike Levels that are in-the-money and closer to the HEDTI will have a higher Final Settlement Price than positions that are in-the-money but further from the HEDTI (as determined by Table 2).

Core Principle 9 and CFTC Rule 38.500 provide that a designated contract market shall provide a competitive, open, and efficient market and mechanism for executing transactions that protects the price discovery process of trading in the centralized market. The HEDTI contract provides for trading on a centralized, open and competitive market in that all prices are derived from trading on CX, a centralized market that is a “trading facility,”<sup>6</sup> and not through pre-arrangement or the private negotiation of two parties.<sup>7</sup>

#### **IV. Core Principle 11—Financial Integrity of Transactions**

Core Principle 11 and Rule 38.601 require that a contract be subject to mandatory clearing. The HEDTI Contracts are subject to mandatory clearing on the same terms as all other contracts cleared by the Clearinghouse.

#### **V. All Remaining Requirements**

All remaining Core Principles are satisfied through operation of CX and the Clearinghouse under the Rules, processes and policies applicable to the other contracts traded thereon. Nothing in this contract requires any change from current rules, policies, or operational processes.

\* \* \* \* \*

Based on the above analysis, CX certifies the High Extreme Daily Temperature Index Swaps Contract as consistent with, and in accordance with the Core Principles of Section 5 of the Commodity Exchange Act, and rules thereunder.

---

<sup>6</sup> Id. at 36622.

Transactions in the HEDTI contract occur as the result of the interaction of multiple bids that are matched (and settled) through the operation of a pre-determined, non-discretionary algorithm, clearly meeting prong (ii) of the definition “Trading Facility.”. See, section 1a (51) of the Commodity Exchange Act.

<sup>7</sup> The Commission has always analyzed “competitive markets” as those in which the price is determined through the centralized market and not through private negotiations. The Commission has said, “Proposed §38.502 implemented the core principle’s requirement that DCMs provide a market and mechanism for executing transactions that protects the price discovery process of trading in its centralized market. The rule proposed a centralized market trading requirement for all contracts listed on a DCM.” “Core Principles and Other Requirements for Designated Contract Markets; Final Rule,” *77 Fed Reg.* 36612 (June 19, 2012)(“DCM Rulemaking”) at 36643. The price for these contracts, determined at the time of settlement, is determined through the central market and not as a result of any non-competitive trading activity.



CERTIFICATIONS PURSUANT TO SECTION 5c OF THE  
COMMODITY EXCHANGE ACT, 7 U.S.C. §7A-2 AND  
COMMODITY FUTURES TRADING COMMISSION RULE  
40.2, 17 C.F.R. §40.2

I hereby certify that:

- (1) the High Extreme Daily Temperature Index Swaps Contract complies with the Commodity Exchange Act, and the Commodity Futures Trading Commission's regulations thereunder; and
- (2) concurrent with this submission, CX Futures Exchange, L.P. posted on its website: a notice of this pending product certification with the Commission and a copy of this submission, concurrent with the filing of this submission with the Commission.



---

By: Nolan Glantz  
Title: COO  
Date: 5/2/2019