

**Bloomberg SEF LLC**  
**New Contract Submission 2023-P-02**  
**March 28, 2023**

1. The Contract's terms and conditions are provided in Attachment A.
2. The intended listing date is March 31, 2023.
3. Attached, please find a certification that, concurrent with this submission, Bloomberg SEF LLC ("BSEF") posted on its website: (a) a notice of pending certification of this Contract with the U.S. Commodity Futures Trading Commission ("Commission"); and (b) a copy of this submission.
4. Attached, please find a certification that the Contract complies with the Commodity Exchange Act (the "Act") and the Commission regulations thereunder.
5. Capitalized terms used but not defined herein have the meaning ascribed to them in the BSEF Rulebook.

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**EXPLANATION AND ANALYSIS OF THE CONTRACT'S COMPLIANCE WITH  
APPLICABLE CORE PRINCIPLES AND COMMISSION REGULATIONS**

As required by Commission Regulation § 40.2(a), the following analysis demonstrates that the Contract is consistent with the requirements of the Act and the Commission regulations and policies thereunder (in particular, Appendix B to Part 37 and Appendix C to Part 38, respectively).

**Appendix B to Part 37—Demonstration of Compliance That a Contract Is Not Readily Susceptible to Manipulation**

**Core Principle 3 of Section 5h of the Act—Swaps Not Readily Susceptible to Manipulation.** The swap execution facility shall permit trading only in swaps that are not readily susceptible to manipulation.

**(a) Guidance.**

**(1) In general, a swap contract is an agreement to exchange a series of cash flows over a period of time based on some reference price, which could be a single price, such as an absolute level or a differential, or a price index calculated based on multiple observations. Moreover, such a reference price may be reported by the swap execution facility itself or by an independent third party. When listing a swap for trading, a swap execution facility shall ensure a swap's compliance with Core Principle 3, paying special attention to the reference price used to determine the cash flow exchanges. Specifically, Core Principle 3 requires that the reference price used by a swap not be readily susceptible to manipulation. As a result, when identifying a reference price, a swap execution facility should either: Calculate**

its own reference price using suitable and well-established acceptable methods or carefully select a reliable third-party index.

**(2) The importance of the reference price's suitability for a given swap is similar to that of the final settlement price for a cash-settled futures contract. If the final settlement price is manipulated, then the futures contract does not serve its intended price discovery and risk management functions. Similarly, inappropriate reference prices cause the cash flows between the buyer and seller to differ from the proper amounts, thus benefitting one party and disadvantaging the other. Thus, careful consideration should be given to the potential for manipulation or distortion of the reference price.**

This Contract is standard of a non-deliverable forward contract, in that the counterparties arrange settlement by calculating the difference between the contracted reference currency rate ("Forward Rate"), which is agreed on between the counterparties at the start of the Contract, and the spot reference currency rate, on the Fixing Date ("Spot FX Rate"). This difference is then multiplied by the notional amount, which is also determined at the start of the Contract. As such, the reference price is the prevailing Spot FX Rate on the date / time in which the parties agree that the comparison will be made ("Fixing Date"). The applicable Spot FX Rate for this Contract is calculated by Central Banks, the Emerging Market Trades Association ("EMTA"), Bloomberg Index Services Limited ("BISL"), and Refinitiv Benchmark Services Limited ("Refinitiv").

### ***Reference Price is Not Readily Susceptible to Manipulation***

The applicable Spot FX Rate (i.e., the reference price) of the Contract is not easily susceptible to manipulation since it is generated through a transparent, rules-based process.

Spot FX Rates are easily accessible to the public from the sources indicated below.<sup>1</sup>

- **AOA (Angolan Kwanza):** The Spot FX Rate ("AOA OFFICIAL" or "AOA1") for the Fixing Date will be the Angolan Kwanza/U.S. Dollar currency exchange rate, expressed as the amount of Angolan Kwanza per one U.S. Dollar, for settlement in two Business Days, reported by the Banco Nacional de Angola (National Bank of Angola) ([www.bna.ao](http://www.bna.ao)) as its selling ("Venda") rate by approximately 5:00 p.m., Luanda time, on that Rate Calculation Date. AOA OFFICIAL is currently published on the Bloomberg Terminal page WMCO<GO>, under Daily Spot Rate Fixings then US Dollar Rates Source, and on the Refinitiv Screen AOAFIX= on the relevant Rate Calculation Date.
- **CRC (Costa Rican Colon):** The Spot FX Rate ("CRC") for the Fixing Date will be the spot rate, or closing spot rate, as the case may be, for the Currency Pair identified in the related Confirmation reported by either:

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<sup>1</sup> Please see <https://www.bloomberg.com/professional/product/indices/bfix/> and <https://www.emta.org/media/fdtdeoj/annex-a-to-the-1998-fx-and-currency-option-definitions-amended-and-restated-as-of-november-19-2017-amended-february-23-2022.pdf>. Terms used but not defined herein or otherwise defined in this Contract have the meaning ascribed to them in the documents referenced in this footnote 1.

- **BFX03:** Bloomberg Index Services Limited which appears on Bloomberg Screen BFIX under the caption “MID” at the Specified Time on that Rate Calculation Date. A further description of the “Bloomberg MID” or “BFX03” Spot FX rate for CRC is currently published on the Bloomberg Terminal page under BFIX.
- **WMR03:** Refinitiv Benchmark Services (UK) Ltd. which appears on the Refinitiv Screen WMRPSPOT (or Refinitiv Screen WMRSPOT, in the case of the closing rate) for such Currency Pair under the caption “MID” at the Specified Time on that Rate Calculation Date. A further description of the “WM/Refinitiv MID” or “WMR03” Spot FX rate for CRC is currently published on the Bloomberg Terminal page WMCO under Daily Spot Rate Fixings then US Dollar Rates Source; or
- **DOP (Dominican Republic Peso):** The Spot FX Rate (“DOP”) for the Fixing Date will be the spot rate, or closing spot rate, as the case may be, for the Currency Pair identified in the related Confirmation reported by either:
  - **BFX03:** Bloomberg Index Services Limited which appears on Bloomberg Screen BFIX under the caption “MID” at the Specified Time on that Rate Calculation Date. A further description of the “Bloomberg MID” or “BFX03” Spot FX rate for DOP is currently published on the Bloomberg Terminal page under BFIX.
  - **WMR03:** Refinitiv Benchmark Services (UK) Ltd. which appears on the Refinitiv Screen WMRPSPOT (or Refinitiv Screen WMRSPOT, in the case of the closing rate) for such Currency Pair under the caption “MID” at the Specified Time on that Rate Calculation Date. A further description of the “WM/Refinitiv MID” or “WMR03” Spot FX rate for DOP is currently published on the Bloomberg Terminal page WMCO under Daily Spot Rate Fixings then US Dollar Rates Source; or
- **GEL (Georgian Lari):** The Spot FX Rate (“GEL”) for the Fixing Date will be the spot rate, or closing spot rate, as the case may be, for the Currency Pair identified in the related Confirmation reported by either:
  - **BFX03:** Bloomberg Index Services Limited which appears on Bloomberg Screen BFIX under the caption “MID” at the Specified Time on that Rate Calculation Date. A further description of the “Bloomberg MID” or “BFX03” Spot FX rate for GEL is currently published on the Bloomberg Terminal page under BFIX.
  - **WMR03:** Refinitiv Benchmark Services (UK) Ltd. which appears on the Refinitiv Screen WMRPSPOT (or Refinitiv Screen WMRSPOT, in the case of the closing rate) for such Currency Pair under the caption “MID” at the Specified Time on that Rate Calculation Date. A further description of the “WM/Refinitiv MID” or “WMR03” Spot FX rate for GEL is currently published on the Bloomberg Terminal page WMCO under Daily Spot Rate Fixings then US Dollar Rates Source; or
- **NPR (Nepalese Rupee):** The Spot FX Rate (“NPR”) for the Fixing Date will be the spot rate, or closing spot rate, as the case may be, for the Currency Pair identified in the related Confirmation reported by either:

- **BFX03:** Bloomberg Index Services Limited which appears on Bloomberg Screen BFIX under the caption “MID” at the Specified Time on that Rate Calculation Date. A further description of the “Bloomberg MID” or “BFX03” Spot FX rate for NPR is currently published on the Bloomberg Terminal page under BFIX.
- **WMR03:** Refinitiv Benchmark Services (UK) Ltd. which appears on the Refinitiv Screen WMRSPOT (or Refinitiv Screen WMRSPOT, in the case of the closing rate) for such Currency Pair under the caption “MID” at the Specified Time on that Rate Calculation Date. A further description of the “WM/Refinitiv MID” or “WMR03” Spot FX rate for NPR is currently published on the Bloomberg Terminal page WMCO under Daily Spot Rate Fixings then US Dollar Rates Source; or
- **PYG (Paraguayan Guarani):** The Spot FX Rate (“PYG”) for the Fixing Date will be the spot rate, or closing spot rate, as the case may be, for the Currency Pair identified in the related Confirmation reported by either:
  - **BFX03:** Bloomberg Index Services Limited which appears on Bloomberg Screen BFIX under the caption “MID” at the Specified Time on that Rate Calculation Date. A further description of the “Bloomberg MID” or “BFX03” Spot FX rate for PYG is currently published on the Bloomberg Terminal page under BFIX.
  - **WMR03:** Refinitiv Benchmark Services (UK) Ltd. which appears on the Refinitiv Screen WMRSPOT (or Refinitiv Screen WMRSPOT, in the case of the closing rate) for such Currency Pair under the caption “MID” at the Specified Time on that Rate Calculation Date. A further description of the “WM/Refinitiv MID” or “WMR03” Spot FX rate for PYG is currently published on the Bloomberg Terminal page WMCO under Daily Spot Rate Fixings then US Dollar Rates Source; or
- **UGX (Ugandan Shilling):** The Spot FX Rate (“UGX MID” or “UGX01”) for the Fixing Date will be the arithmetic average of the Ugandan Shilling/U.S. Dollar “Mid” buying and selling exchange rates, expressed as the amount of Ugandan Shilling per one U.S. Dollar, for settlement in two Business Days, reported by the Bank of Uganda ([www.bou.or.ug](http://www.bou.or.ug)) by approximately 12:00 noon, Kampala time, on that Fixing Date. UGX MID is currently published on the Bloomberg Terminal page WMCO under Daily Spot Rate Fixings then US Dollar Rates Source.

The relevant Spot FX Rates for CRC, DOP, GEL, NPR, and PYG (“Non-Trade Currencies”) are calculated as reported by BISL, the administrator of the Bloomberg Fixings (“BFIX”) Spot, Forward and NDF rate fixings for certain currencies and metals, or Refinitiv, the administrator of the WM/Refinitiv Spot, Forward and NDF foreign exchange benchmarks; each are supervised by the European Securities and Markets Authority (“ESMA”) and the UK Financial Conduct Authority (“FCA”) as a Benchmark Administrator.

**(3) For swaps that are settled by physical delivery or by cash settlement refer to the guidance in appendix C to part 38 of this chapter—Demonstration of Compliance That a Contract is not Readily Susceptible to Manipulation, section b(2) and section c(4), respectively.**

## **Appendix C to Part 38 - Demonstration of Compliance That a Contract Is Not Readily Susceptible to Manipulation**

**(c) Futures Contracts Settled by Cash Settlement. (1) Cash settlement is a method of settling certain futures or option contracts whereby, at contract expiration, the contract is settled by cash payment in lieu of physical delivery of the commodity or instrument underlying the contract. An acceptable specification of the cash settlement price for commodity futures and option contracts would include rules that fully describe the essential economic characteristics of the underlying commodity (e.g., grade, quality, weight, class, growth, issuer, maturity, source, rating, description of the underlying index and index's calculation methodology, etc.), as well as how the final settlement price is calculated. In addition, the rules should clearly specify the trading months and hours of trading, the last trading day, contract size, minimum price change (tick size) and any limitations on price movements (e.g., price limits or trading halts).**

### ***Terms of the Contract***

The terms of the contract are attached as Attachment A and will be added to BSEF Rule 1401.

### ***Calculation of Cash Settlement Price***

As noted above and as is typical with non-deliverable forwards, the cash settlement price will be the difference between the Forward Rate and the prevailing Spot FX Rate multiplied by an agreed upon notional amount. Thus, the settlement will be based on the following:

1. **Reference Currency:** As selected by the counterparties at the Trade Date (i.e., start of the Contract); available Reference Currencies are listed in Annex B.
2. **Settlement Currency:** As determined by the counterparties at the Trade Date; available currencies are listed in the Contract's terms and conditions (Annex A).
3. **Notional Amount:** Amount agreed by the counterparties at the Trade Date.
4. **Forward Rate:** Rate agreed by counterparties, expressed as Reference Currency per unit of Settlement Currency.
5. **Spot FX Rate:** Exchange rate, expressed as Reference Currency per unit of Settlement Currency. The Spot FX Rate is determined on the Fixing Date by reference to a rate published by a source set forth in Annex B hereto.
6. **Fixing Date:** Date, agreed by counterparties, on which the difference between the Spot FX Rate and the Forward Rate is calculated.
7. **Settlement Date:** Date, agreed by counterparties, on which settlement payments will be made.

On the Fixing Date, the parties will calculate the difference between the Forward Rate and the Spot FX Rate and multiply that difference by the notional amount, to arrive at the cash settlement price. The cash settlement will be due on the Settlement Date. As noted, this method of calculating settlement for the Contract is a common, widely-used, and widely accepted method of calculating the cash settlement for non-deliverable forward contracts.

**2) Cash settled contracts may be susceptible to manipulation or price distortion. In evaluating the susceptibility of a cash-settled contract to manipulation, a designated contract market should consider the size and liquidity of the cash market that underlies the listed contract in a manner that follows the determination of deliverable supply as noted above in (b)(1). In particular, situations susceptible to manipulation include those in which the volume of cash market transactions and/or the number of participants contacted in determining the cash-settlement price are very low. Cash-settled contracts may create an incentive to manipulate or artificially influence the data from which the cash-settlement price is derived or to exert undue influence on the cash-settlement price's computation in order to profit on a futures position in that commodity.**

**The utility of a cash-settled contract for risk management and price discovery would be significantly impaired if the cash settlement price is not a reliable or robust indicator of the value of the underlying commodity or instrument. Accordingly, careful consideration should be given to the potential for manipulation or distortion of the cash settlement price, as well as the reliability of that price as an indicator of cash market values. Appropriate consideration also should be given to the commercial acceptability, public availability, and timeliness of the price series that is used to calculate the cash settlement price.**

**Documentation demonstrating that the settlement price index is a reliable indicator of market values and conditions and is commonly used as a reference index by industry/market agents should be provided. Such documentation may take on various forms, including carefully documented interview results with knowledgeable agents.**

The Contract is not readily susceptible to manipulation for a number of reasons. First, the foreign exchange market is an extremely liquid market with massive volume, making manipulation very difficult to achieve. Second, as noted above, the method for calculating the cash settlement price – calculating the difference between the Spot FX Rate and the Forward Rate – is widely used and generally accepted by market participants. Third, as discussed above, the reference used for the Spot FX Rate is very reliable and widely available, and used by numerous market participants. And last, BSEF has a robust market surveillance program that is designed to surveil this market, detect uncommon activity, and investigate any such activity for signs of manipulation.

**(3) Where an independent, private-sector third party calculates the cash settlement price series, a designated contract market should consider the need for a licensing agreement that will ensure the designated contract market's rights to the use of the price series to settle the listed contract.**

**(i) Where an independent, private-sector third party calculates the cash settlement price series, the designated contract market should verify that the third party utilizes business practices that minimize the opportunity or incentive to manipulate the cash-settlement price series. Such safeguards may include lock-downs, prohibitions against derivatives trading by employees, or public dissemination of the names of sources and the price quotes they provide. Because a cash-settled contract may create an incentive to manipulate or artificially influence the underlying market from which the cash-settlement price is derived or to exert undue influence on the cash-settlement computation in order to profit on a**

**futures position in that commodity, a designated contract market should, whenever practicable, enter into an information-sharing agreement with the third-party provider which would enable the designated contract market to better detect and prevent manipulative behavior.**

Please see above regarding the calculation of the cash settlement price.

**(ii) Where a designated contract market itself generates the cash settlement price series, the designated contract market should establish calculation procedures that safeguard against potential attempts to artificially influence the price. For example, if the cash settlement price is derived by the designated contract market based on a survey of cash market sources, the designated contract market should maintain a list of such entities which all should be reputable sources with knowledge of the cash market. In addition, the sample of sources polled should be representative of the cash market, and the poll should be conducted at a time when trading in the cash market is active.**

Please see above regarding the calculation of the cash settlement price, indicating that the method of calculating the cash settlement price is widely accepted in the market.

**(iii) The cash-settlement calculation should involve computational procedures that eliminate or reduce the impact of potentially unrepresentative data.**

**(iv) The cash settlement price should be an accurate and reliable indicator of prices in the underlying cash market. The cash settlement price also should be acceptable to commercial users of the commodity contract. The registered entity should fully document that the settlement price is accurate, reliable, highly regarded by industry/market agents, and fully reflects the economic and commercial conditions of the relevant designated contract market.**

Please see above regarding the reliability and widespread acceptance of the method used to generate the cash settlement price.

**(v) To the extent possible, the cash settlement price should be based on cash price series that are publicly available and available on a timely basis for purposes of calculating the cash settlement price at the expiration of a commodity contract. A designated contract market should make the final cash settlement price and any other supporting information that is appropriate for release to the public, available to the public when cash settlement is accomplished by the derivatives clearing organization. If the cash settlement price is based on cash prices that are obtained from non-public sources (e.g., cash market surveys conducted by the designated contract market or by third parties on behalf of the designated contract market), a designated contract market should make available to the public as soon as possible after a contract month's expiration the final cash settlement price as well as any other supporting information that is appropriate or feasible to make available to the public.**

The Spot FX Rates are readily available via a number of sources including websites of Central Banks, EMTA, Bloomberg, and Refinitiv.

**(4) Contract terms and conditions requirements for futures contracts settled by cash settlement.**

**(i) An acceptable specification of the terms and conditions of a cash-settled commodity contract will also set forth the trading months, last trading day, contract size, minimum price change (tick size) and daily price limits, if any.**

The terms and conditions of the Contract include all applicable information, including that: (a) the cash settlement amount of the contract will be determined on the Fixing Date; (b) payments will be transferred on the Settlement Date; and (c) the Contract size will be determined by the counterparties.

**(A) Commodity Characteristics: The terms and conditions of a commodity contract should describe the commodity underlying the contract.**

The terms and conditions of the Contract note that the Contract is based on the applicable foreign exchange rates.

**(B) Contract Size and Trading Unit: An acceptable specification of the trading unit would be a contract size that is consistent with customary transactions in the cash market. A designated contract market may opt to set the contract size smaller than that of standard cash market transactions.**

The size of the Contract, which will be determined by the counterparties, is consistent with customary transactions in the market.

**(C) Cash Settlement Procedure: The cash settlement price should be reliable, acceptable, publicly available, and reported in a timely manner as described in paragraphs (c)(3)(iv) and (c)(3)(v) of this appendix C.**

The cash settlement procedure and an explanation of how it is reliable, accepted, publicly available, and reported in a timely manner appears above.

**(D) Pricing Basis and Minimum Price Fluctuation (Minimum Tick): The minimum price increment (tick) should be set a level that is equal to, or less than, the minimum price increment commonly observed in cash market transactions for the underlying commodity. Specifying a futures' minimum tick that is greater than the minimum price increment in the cash market can undermine the risk management utility of the futures contract by preventing hedgers from efficiently establishing and liquidating futures positions that are used to hedge anticipated cash market transactions or cash market positions.**

As agreed between the counterparties, the pricing basis is consistent with customary transactions in the market.

**(E) Maximum Price Fluctuation Limits:** Designated contract markets may adopt price limits to: (1) Reduce or constrain price movements in a trading day that may not be reflective of true market conditions but might be caused by traders overreacting to news; (2) Allow additional time for the collection of margins in times of large price movements; and (3) Provide a “cooling-off” period for futures market participants to respond to bona fide changes in market supply and demand fundamentals that would lead to large cash and futures price changes. If price-limit provisions are adopted, the limits should be set at levels that are not overly restrictive in relation to price movements in the cash market for the commodity underlying the futures contract. For broad-based stock index futures contracts, rules should be adopted that coordinate with New York Stock Exchange (“NYSE”) declared Circuit Breaker Trading Halts (or other market coordinated Circuit Breaker mechanism) and would recommence trading in the futures contract only after trading in the majority of the stocks underlying the index has recommenced.

As agreed between the counterparties.

**(F) Last Trading Day:** Specification of the last trading day for expiring contracts should be established such that it occurs before publication of the underlying third-party price index or determination of the final settlement price. If the designated contract market chooses to allow trading to occur through the determination of the final settlement price, then the designated contract market should show that futures trading would not distort the final settlement price calculation.

The last trading day is the Fixing Date, when the difference between the prevailing market exchange rate and the agreed upon exchange rate is calculated.

**(G) Trading Months:** Trading months should be established based on the risk management needs of commercial entities as well as the availability of price and other data needed to calculate the cash settlement price in the specified months. Specification of the last trading day should take into consideration whether the volume of transactions underlying the cash settlement price would be unduly limited by occurrence of holidays or traditional holiday periods in the cash market. Moreover, a contract should not be listed past the date for which the designated contract market has access to use a proprietary price index for cash settlement.

The contract will be entered into on the Trade Date, the settlement price will be determined on the Fixing Date, and the settlement payments will be made on the Settlement Date. As is common with non-deliverable forwards, these dates will be set by the individual counterparties.

**(H) Speculative Limits:** Specific rules and policies for speculative position limits are set forth in part 150 and/or part 151, as applicable, of the Commission’s regulations.

None required by Parts 150 or 151.

**(I) Reportable Levels:** Refer to § 15.03 of the Commission’s regulations.

BSEF will adhere to the applicable reporting levels set forth in § 15.03 of the Commission's regulations.

**(J) Trading Hours: Should be set by the designated contract market to delineate each trading day.**

The Contract is traded 14:00 Sunday to 17:00 Friday U.S. Eastern Time.

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

I hereby certify that: 1) the Contract complies with the Commodity Exchange Act, 7 U.S.C. §1 *et seq.* and regulations thereunder; and 2) concurrent with this submission, Bloomberg SEF LLC posted on its website: (a) a notice of pending certification of the Contract with the Commission; and (b) a copy of this submission.

*Daniel Glatter*

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By: Daniel Glatter  
Title: Chief Compliance Officer

## **Attachment A**

### *Terms and Conditions*

|   |   |
|---|---|
| Contract Overview                                   | A non-deliverable forward (NDF) is a forward contract which counterparties settle by exchanging in Settlement Currency the difference between the Forward Rate agreed upon at the inception of the contract and the Reference Rate on the Fixing Date on an agreed notional amount. |
| Ticker  | NDF-[currency pair][settlement currency][fixing date]   |
| Reference Currency (i.e., Non-Deliverable Currency) | <ul style="list-style-type: none"><li>• AOA Angolan Kwanza</li><li>• CRC Costa Rican Colon</li><li>• DOP Dominican Republic Peso</li><li>• GEL Georgian Lari</li><li>• NPR Nepalese Rupee</li><li>• PYG Paraguayan Guarani</li><li>• UGX Ugandan Shilling</li></ul>                 |
| Reference Rate                                      | For a specific currency, see Annex B  |
| Settlement Currency                                 | See Settlement Currency List in Annex A   |
| Quoting Convention and Minimum Increment            | Notional amount, as agreed by counterparties.   |
| Minimum Size  | Notional amount, as agreed by counterparties.   |
| Notional Currency                                   | Currency in which contract size is expressed in, as agreed by counterparties.   |
| Trading Conventions                                 | Buy or Sell, which refers to the contract size expressed in notional currency.  |
| Forward Rate  | Currency exchange rate expressed as the amount of Reference Currency per unit of Settlement Currency.   |
| Trade Date  | The date on which parties enter into the contract.  |
| Settlement Date                                     | Specified settlement or payment date, as agreed by counterparties.  |
| Fixing Date   | The date at which the difference between the Reference Rate and the Forward Rate is calculated.   |
| Settlement Procedure                                | Bilateral settlement performed in settlement currency.  |
| Trading Hours                                       | 14:00 Sunday to 17:00 Friday Eastern Time.  |
| Block Size  | As set forth in Appendix F to Part 43 of the CFTC Regulations.  |
| Speculative Limits                                  | As set in Part 151 of the CFTC Regulations.   |
| Reportable Levels                                   | As set in CFTC Regulation 15.03.  |

## **Annex A**

### *Settlement Currencies*

|                              |                           |                            |                              |
|------------------------------|---------------------------|----------------------------|------------------------------|
| AED UAE Dirham               | GBP British Pound         | MRO Mauritania Ouguiya     | SLL Sierra Leone Leone       |
| AFN Afghanistan Afghani      | GEL Georgia Lari          | MUR Mauritius Rupee        | SOS Somali Shilling          |
| AMD Armenia Dram             | GHS Ghanaian cedi         | MVR Maldives Rufiyaa       | SRD Suriname Dollar          |
| ANG Neth. Ant. Guilder       | GMD Gambian Dalasi        | MWK Malawi Kwacha          | SSP South Sudanese Pound     |
| AOA Angolan Kwanza           | GNF Guinea Franc          | MXN Mexican Peso           | STD Sao Tome Dobra           |
| ARS Argentine Peso           | GTQ Guatemala Quetzal     | MYR Malaysian Ringgit      | SVC El Salvador Colon        |
| AUD Australian Dollar        | GYD Guyana Dollar         | MZM Mozambique Metical     | THB Thai Baht                |
| AWG Aruban Guilder           | HKD Hong Kong Dollar      | MZN New Mozambique Metical | TJS Tajikistan Somoni        |
| BAM Bosnia-Herze Convrt Mrka | HNL Honduras Lempira      | NGN Nigeria Naira          | TND Tunisian Dinar           |
| BBD Barbados Dollar          | HRK Croatia Kuna          | NID New Iraqi Dinar        | TOP Tonga Pa'Anga            |
| BDT Banglaldesh Taka         | HTG Haiti Gourde          | NIO Nicaragua Cordoba      | TRY Turkish Lira             |
| BGD Bulgarian Lev            | HUF Hungarian Forint      | NLG Dutch Guilder          | TTD Trinidad/Tobago Dol      |
| BHD Bahraini Dinar           | IDR Indonesian Rupiah     | NOK Norwegian Krone        | TWD Taiwan Dollar            |
| BIF Burundi Franc            | ILS Israeli Shekel        | NPR Nepalese Rupee         | TZS Tanzanian Shilling       |
| BMD Bermudian Dollar         | INR Indian Rupee          | NZD New Zealand Dollar     | UAH Ukraine Hryvnia          |
| BND Brunei Dollar            | ISK Iceland Krona         | OMR Omani Rial             | UDI Mexican UDI              |
| BOB Bolivian Boliviano       | JMD Jamaica Dollar        | PAD Panamanian Balboa      | UGX Ugandan Shilling         |
| BRL Brazilian Real           | JOD Jordanian Dinar       | PEN Peruvian New Sol       | USD US Dollar                |
| BSD Bahamas Dollar           | JPY Japanese Yen          | PGK Papua N.G. Kina        | UYU Uruguay Peso             |
| BWP Botswana Pula            | KES Kenyan Shilling       | PHP Philippines Peso       | UZS Uzbekistan Sum           |
| BYR Belarus Ruble            | KGS Kyrgyzstan Som        | PKR Pakistani Rupee        | VEE Venezuela Essential Rate |
| BZD Belize Dollar            | KHR Cambia Riel           | PLN Polish Zloty           | VEF Venezuelan Bolivar       |
| CAD Canadian Dollar          | KMF Comoros Franc         | PTE Portuguese Escudo      | VND Vietnamese Dong          |
| CDF Congolese Franc          | KRW South Korean Won      | PYG Paraguay Guarani       | VUV Vanuatu Vatu             |
| CHF Swiss Franc              | KWD Kuwaiti Dinar         | ROL Romanian Leu           | WAR Qatari Riyal             |
| CLP Chilean Peso             | KYD Cayman Islands Dollar | RON New Romanian Leu       | WST Samoa (West) Tala        |
| CNY China Renminbi (NDF)     | KZT Kazakhstan Tenge      | RSD Serbian Dinar          | XAF CFA Franc Beac           |
| COP Colombian Peso           | LAK Laos Kip              | RUB Russian Ruble (NDF)    | XCD East Caribbean Dollar    |
| CRC Costa Rican Colon        | LBP Lebanese Pound        | RWF Rwanda Franc           | XDR Special Drawing Rights   |
| CVE Cape Verde Escudo        | LKR Sri Lankan Rupee      | SAR Saudi Riyal            | XOF CFA Franc Bceao          |
| CZK Czech Koruna             | LTL Lithuanian Litas      | SBD Solomon Is. Dollar     | XPF Pacific Island Franc     |
| DJF Djibouti Franc           | LVL Latvian Lats          | SCR Seychelles Rupee       | XSU Sucre                    |
| DKK Danish Krone             | MAD Moroccan Dirham       | SDD Sudanese Dinar         | YER Yemeni Rial              |
| DOP Dominican Repb.          | MDL Moldova Leu           | SDG New Sudanese Pound     | ZAR S. African Rand          |
| DZD Algerian Dinar           | MGA Malagascy Ariary      | SDP Old Sudanese Pound     | ZMK Zambian Kwacha           |
| EGP Egyptian Pound (NDF)     | MKD Macedonia Denar       | SEK Swedish Korna          | ZMW Zambia Kwacha            |
| ERN Eritrean Nakfa           | MMK Myanmar Kyat          | SGD Singapore Dollar       | ZWR Zimbabwe Dollar          |
| EUR Euro                     | MNT Mongolian Togrog      | SIT Slovenia Tolar         |                              |
| FJD Fiji Dollar              | MOP Macau Pataca          | SKK Slovakia Koruna        |                              |

**Annex B***Exchange Rate Sources*

| <b>Currency</b>               | <b>Spot FX Rate Sources</b> | <b>Description</b>   |
|-------------------------------|-----------------------------|--|
| Angolan Kwanza (AOA)          | AOA Official or AOA1        | “AOA Official” or “AOA1” as described in ANNEX A to the 1998 FX and Currency Option Definitions effective on the Fixing Date published by International Swaps and Derivatives Association, Inc and Trade Association for the Emerging Markets.       |
| Costa Rican Colon (CRC)       | Bloomberg MID or BFX03      | “Bloomberg MID” or “BFX03” as described in the ANNEX A to the 1998 FX and Currency Option Definitions effective on the Fixing Date published by International Swaps and Derivatives Association, Inc and Trade Association for the Emerging Markets. |
|                               | WM/Refinitiv MID or WMR03   | “WM/ RefinitivMID” or “WMR03” as described in ANNEX A to the 1998 FX and Currency Option Definitions effective on the Fixing Date published by International Swaps and Derivatives Association, Inc and Trade Association for the Emerging Markets.  |
| Dominican Republic Peso (DOP) | Bloomberg MID or BFX03      | “Bloomberg MID” or “BFX03” as described in the ANNEX A to the 1998 FX and Currency Option Definitions effective on the Fixing Date published by International Swaps and Derivatives Association, Inc and Trade Association for the Emerging Markets. |
|                               | WM/Refinitiv MID or WMR03   | “WM/ RefinitivMID” or “WMR03” as described in ANNEX A to the 1998 FX and Currency Option Definitions effective on the Fixing Date published by International Swaps and Derivatives Association, Inc and Trade Association for the Emerging Markets.  |
| Georgian Lari (GEL)           | Bloomberg MID or BFX03      | “Bloomberg MID” or “BFX03” as described in the ANNEX A to the 1998 FX and Currency Option Definitions effective on the Fixing Date published by International Swaps and Derivatives Association, Inc and Trade Association for the Emerging Markets. |
|                               | WM/Refinitiv MID or WMR03   | “WM/ RefinitivMID” or “WMR03” as described in ANNEX A to the 1998 FX and Currency Option Definitions effective on the Fixing Date published by International Swaps and Derivatives Association, Inc and Trade Association for the Emerging Markets.  |
| Nepalese Rupee (NPR)          | Bloomberg MID or BFX03      | “Bloomberg MID” or “BFX03” as described in the ANNEX A to the 1998 FX and Currency Option Definitions effective on the Fixing Date published by International Swaps and Derivatives Association, Inc and Trade Association for the Emerging Markets. |
|                               | WM/Refinitiv MID or WMR03   | “WM/ RefinitivMID” or “WMR03” as described in ANNEX A to the 1998 FX and Currency Option Definitions effective on the Fixing Date published by International Swaps and Derivatives Association, Inc and Trade Association for the Emerging Markets.  |
| Paraguayan Guarani (PYG)      | Bloomberg MID or BFX03      | “Bloomberg MID” or “BFX03” as described in the ANNEX A to the 1998 FX and Currency Option Definitions effective on the Fixing Date published by International Swaps and Derivatives Association, Inc and Trade Association for the Emerging Markets. |
|                               | WM/Refinitiv MID or WMR03   | “WM/ RefinitivMID” or “WMR03” as described in ANNEX A to the 1998 FX and Currency Option Definitions effective on the Fixing Date published by International Swaps and Derivatives Association, Inc and Trade Association for the Emerging Markets.  |
| Ugandan Shilling (UGX)        | UGX MID or UGX01            | “UGX MID” or “UGX01” as described in ANNEX A to the 1998 FX and Currency Option Definitions effective on the Fixing Date published by International Swaps and Derivatives Association, Inc and Trade Association for the Emerging Markets.           |