

EXHIBIT 5A

(additions are underlined; deletions are [bracketed])

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Rules of Cboe Exchange, Inc.

(currently effective)

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[Rule 6.2. Hybrid Opening (and Sometimes Closing) System (“HOSS”)]

(a) Pre-Opening Period. For each trading session, the System begins accepting orders and quotes (subject to subparagraph (i) below) in all classes no earlier than 2:00 a.m. (all times are Central time) for Regular Trading Hours or 4:00 p.m. on the previous day for Global Trading Hours, but no later than 15 minutes prior to the expected initiation of an opening rotation at the times set forth in paragraph (b) below (the Exchange determines the specific time at which the pre-opening period begins for all classes).

(i) During the pre-opening period, the System accepts all quotes and all order types except immediate-or-cancel, fill-or-kill, intermarket sweep orders, and Market-Maker trade prevention orders. If an order entered during the pre-opening period for Regular Trading Hours is not eligible for book entry (including minimum volume, not held and market-if-touched orders), the System routes the order via the order handling system pursuant to Rule 6.12.

(ii) Beginning at a time (determined by the Exchange) no earlier than three hours prior to the expected initiation of an opening rotation for a series, the System disseminates expected opening information messages (“EOIs”) to all market participants that have elected to receive them at regular intervals of time (the length of which is determined by the Exchange) or less frequently if there are no updates to the opening information since the previously disseminated EOI. EOIs contain information based on resting orders and quotes in the Book, which may include the expected opening price (“EOP”), the expected opening size (“EOS”), any reason why a series may not open pursuant to paragraph (d) below, and any imbalance information, including the size and side of the imbalance. The EOP is the price at which any opening trade is expected to execute, and the EOS is the size of any expected opening trade. Notwithstanding the foregoing, the System only disseminates EOP and EOS messages: (A) if the width between the highest quote bid and lowest quote offer on the Exchange is no wider than the OEPW range (as defined below), in classes in which HAL is not activated for openings; or (B) if the width between the highest quote bid and lowest quote offer on the Exchange or disseminated by other exchanges is no wider than the OEPW range, in classes in which HAL is activated for openings (“HALO”).

(b) Opening Rotation Initiation and Notice.

(i) Unless unusual circumstances exist, the System initiates the opening rotation procedure on a class-by-class basis:

(A) for Regular Trading Hours:

(1) with respect to equity and ETP options, after the opening trade or the opening quote is disseminated in the market for the underlying security, or at 8:30 for classes determined by the Exchange (including over-the-counter equity classes); or

(2) with respect to index options, at 8:30 a.m., or at the later of 8:30 a.m. and the time the Exchange receives a disseminated index value for classes determined by the Exchange; and

(B) for Global Trading Hours, at 2:00 a.m.

For purposes of this subparagraph (i), the “market for the underlying security” is either the primary listing exchange or the first exchange to open the underlying security (as determined by the Exchange on a class-by-class basis).

(ii) Upon initiating the opening rotation procedure, the System notifies market participants of such opening rotation initiation (“Rotation Notice”).

(c) Opening Rotation Period. After the System initiates the opening rotation procedure and sends the Rotation Notice, the System begins the opening rotation period. During the opening rotation period for a series:

(i) The System matches and executes resting orders and quotes against each other in order to establish an opening BBO and trade price, if any, for the series.

(A) The opening trade price of a series is the “market-clearing” price, which is the single price at which the largest number of contracts in the Book can execute, leaving bids and offers that cannot trade with each other. If there are multiple prices at which the same number of contracts would clear, the System uses: (1) the price at or nearest to the midpoint of the opening BBO, or the widest offer (bid) point of the OEPW range if the midpoint is higher (lower) than that price point, in classes in which the Exchange has not activated HALO; or (2) the price at or nearest to the midpoint of the range consisting of the higher of the opening NBB and widest bid point of the OEPW range, and the lower of the opening NBO and widest offer point of the OEPW range, in classes in which the Exchange has activated HALO.

(B) All orders (except complex orders and, in classes in which the Exchange has not activated HALO, all-or-none orders and orders with a stop contingency) and quotes in a series in the Book prior to the opening rotation period participate in the opening rotation for that series. Contingency orders that participate in the opening rotation

may execute during the opening rotation period only if their contingencies are triggered.

(C) The System prioritizes orders and quotes in the following order: (I) market orders, (II) limit orders and quotes whose prices are better than the opening price, and (III) resting orders and quotes at the opening price. Contingency orders are prioritized as set forth in Rules 6.45.

(ii) The System continues to disseminate EOIs (the Exchange may determine a shorter interval length for the dissemination of EOIs during the Rotation Period than during the pre-opening period).

(iii) After a period of time determined by the Exchange for all classes (which period of time may be no longer than five seconds), the System opens series of a class in the following order:

(A) ATM and OTM Series with Expirations of 29 to 31 Days. During the initial interval (the Exchange determines the length of this interval for all classes, the length of which may be no longer than three seconds), the System opens:

(I) at-the-money (“ATM”) puts and a group of out-of-the-money (“OTM”) puts with strike prices closest to the ATM strike price, in a random order;

(II) ATM calls and a group of OTM calls with strike prices closest to the ATM strike price, in a random order; and

(III) alternating groups of further OTM puts and further OTM calls, each in a random order.

During this interval, the System attempts to open any ATM or OTM series that could not open on its first attempt.

(B) All Other Series. After the initial interval, the System opens all other series, and any series that did not open pursuant to subparagraph (A), in a random order, staggered over regular intervals of time (the Exchange determines the length and number of these intervals for all classes, the length of which intervals may be no longer than two seconds).

(C) Definition of ATM. For purposes of subparagraph (A), a put (call) is ATM if its strike price equals or is the first strike above (below) the last disseminated transaction price in the underlying security or index value on the same trading day. If the System begins an opening rotation for a class prior to receiving a disseminated transaction price in the underlying security or index value, the System will open all series in the class pursuant to subparagraph (B).

Subject to paragraph (d) below, the opening rotation period (including these intervals) may not exceed 30 seconds.

(d) Opening Conditions. Notwithstanding paragraph (c) above:

(i) In classes in which the Exchange has not activated HALO:

(A) if there are no quotes in the series on the Exchange, the System does not open the series;

(B) if the width between the Exchange's best quote bid and best quote offer (for purposes of this subparagraph (d)(i), the "opening quote") is wider than an acceptable opening price range (as determined by the Exchange on a class-by-class and premium basis) (the "Opening Exchange Prescribed Width range" or "OEPW range") and there are orders or quotes marketable against each other, the System does not open the series. However, if the opening quote width is no wider than the intraday acceptable price range as set forth in Rule 6.13(b)(v) (the "Intraday Exchange Prescribed Width range" or "IEPW range") and there are no orders or quotes marketable against each other, the System opens the series. If the opening quote width is wider than the IEPW range, the System does not open the series;

(C) if the opening trade price would be outside of the OEPW range, the System does not open the series; or

(D) if the opening trade would leave a market order imbalance (i.e., there are more market orders to buy or to sell for the particular series than can be satisfied by the orders and quotes on the opposite side), the System does not open the series. However, if a sell market order imbalance exists, there is no bid in the series and the best offer is \$0.50 or less, the System opens the series (see Rule 6.13(b)(vi)). If a sell market order imbalance exists, there is no bid in the series and the best offer is greater than \$0.50, the System does not open the series.

(ii) In classes in which the Exchange has activated HALO

(A) if there are no quotes on the Exchange or disseminated from at least one away exchange present in the series, the System does not open the series;

(B) if the width between the best quote bid and best quote offer, which quotes may consist of Market-Maker quotes or bids and offers disseminated from an away exchange(s) (for purposes of this subparagraph (d)(ii), the "opening quote") is wider than the OEPW range and there are orders or quotes marketable against each other or that lock or cross the OEPW range, the System does not open the series. However, if the opening quote width is no wider than the IEPW range and there are no orders or quotes marketable against each other or that lock or cross the OEPW range, the System opens the series. If the opening quote width is wider than the IEPW range, the System does not open the series. If the opening quote for a series consists solely of bids and offers disseminated from an away exchange(s), the System opens the series by matching orders and quotes to the extent they can trade and reports the opening trade, if any, at the opening trade price. The System then exposes any remaining marketable buy (sell) orders at the widest offer (bid) point of the OEPW range or NBO (NBB), whichever is lower (higher);

(C) if the opening trade price would be outside of the OEPW range or NBBO, the System opens the series by matching orders and quotes to the extent they can trade and reports the opening trade, if any, at an opening trade price not outside either the OEPW range or NBBO. The System then exposes any remaining marketable buy (sell) orders at the widest offer (bid) point of the OEPW range or NBO (NBB), whichever is lower (higher);

(D) if the opening trade would leave a market order imbalance (i.e., there are more market orders to buy or to sell for the particular series than can be satisfied by the orders and quotes on the opposite side), the System opens the series by matching orders and quotes to the extent they can trade and reports the opening trade, if any, at the opening trade price. The System then exposes any remaining marketable buy (sell) orders at the widest offer (bid) point of the OEPW range or NBO (NBB), whichever is lower (higher); or

(E) if the opening quote bid (offer) or NBB (NBO) crosses the opening quote offer (bid) or NBO (NBB) by more than a specified amount determined by the Exchange on a class- by-class and premium basis, the System does not open the series. If the opening quote bid (offer) or NBB (NBO) crosses the opening quote offer (bid) or NBO (NBB) by no more than the specified amount, the System opens the series by matching orders and quotes to the extent they can trade and reports the opening trade, if any, at the opening trade price, then exposes any remaining marketable buy (sell) orders at the widest offer (bid) point of the OEPW range or NBO (NBB), whichever is lower (higher). If the best away market bid and offer are inverted by no more than the specified amount, there is a marketable order on each side of the series, and the System opens the series, the System exposes the order on the side with the larger size and routes for execution the order on the side with the smaller size to an away exchange that is at the NBBO.

The exposure of any orders pursuant to this subparagraph (ii) will be conducted via HAL pursuant to Rule 6.14A for an exposure period designated by the Exchange for a class (which period of time will not exceed 1.5 seconds). Any remaining balances of orders not executed after the exposure period enter the book at their limit prices (to the extent consistent with Rule 6.53) or route via the order handling system pursuant to Rule 6.12 in accordance with their routing instructions.

Any orders exposed under this subparagraph (d)(ii) that are priced or would be executed at a price not within an acceptable tick distance from the initial HAL price will route via the order handling system pursuant to Rule 6.12 (except any remaining balances of opening contingency orders will be cancelled). The Exchange determines an “acceptable tick distance” on a class-by-class and premium basis, which may be no less than two minimum increment ticks and, in classes in which HAL is also activated intraday, will be the same as the acceptable tick distance established under Rule 6.13(b)(v).

(iii) If the System does not open a series pursuant to subparagraphs (i) or (ii), notwithstanding paragraph (c) above, the opening rotation period continues (including

dissemination of EOIs) until the condition causing the delay is satisfied or if the Exchange otherwise determines it is necessary to open a series in accordance with paragraph (e).

(e) Help Desk. Senior Help Desk personnel may deviate from the standard manner of the opening procedure in this Rule 6.2, including delay or compel the opening of any series in any option class, modify timers or settings described in this rule, and not use the modified opening procedure set forth in Interpretation and Policy .01 below, when necessary in the interests of commencing or maintaining a fair and orderly market, in the event of unusual market conditions or in the public interest. The Exchange will make and maintain records to document all determinations to deviate from the standard manner of the opening procedure, and periodically review these determinations for consistency with the interests of a fair and orderly market.

(f) Trading Halts. The procedure described in this Rule may be used to reopen a class or series after a trading halt; however, based on then-existing facts and circumstances, there may be no pre-opening period or a shorter pre-opening period than the regular pre-opening period. The Exchange will announce the reopening of a class or series after a trading halt as soon as practicable via verbal message to the trading floor and electronic message to Trading Permit Holders that request to receive such messages. The Exchange may also reopen a class after a trading halt as otherwise set forth in the Rules, including Rules 6.3, 6.3B, and 6.3C.

(g) Closing Rotation Procedure. For any series that opens pursuant to the procedure described in this Rule, senior Help Desk personnel and senior management may decide to conduct a closing rotation pursuant to the procedure described in this Rule after the end of the normal close of any trading session whenever the Exchange concludes that such action is appropriate in the interests of a fair and orderly market. The factors that may be considered in holding a closing rotation procedure include, but are not limited to, whether there has been a recent opening or reopening of trading in the underlying security, a declaration of a fast market, or a need for a closing procedure in connection with expiring individual security options, an end of the year procedure, or the restart of a procedure which is already in progress. The Exchange will notify Trading Permit Holders of the decision to conduct a closing rotation procedure as soon as practicable via verbal message to the trading floor and electronic message to Trading Permit Holders that request to receive such messages.

. . . Interpretations and Policies:

.01 Modified Opening Procedure for Series Used to Calculate the Exercise or Final Settlement Value of Expiring Volatility Index Derivatives.

(a) Definitions. For purposes of this Interpretation and Policy .01, the following terms have the meanings below:

Volatility Index Derivatives

The term “volatility index derivatives” means volatility index options listed for trading on the Exchange (as determined under Rule 24.9(a)(5) and (6)), (security) futures listed for trading on an affiliated designated contract market, or over-the-counter derivatives overlying a volatility index whose exercise or final settlement values, as applicable, are calculated pursuant to, or by reference to, as applicable, the modified opening procedure described in this Interpretation and Policy .01.

Exercise Settlement Value Determination Day

The term “exercise settlement value determination day” means a day on which the Exchange determines the exercise or final settlement value, as applicable, of expiring volatility index derivatives.

Constituent Option Series

The term “constituent option series” means all option series listed on the Exchange that are used to calculate the exercise or final settlement value, as applicable, of expiring volatility index derivatives.

Strategy Order

The Exchange deems individual orders (considered collectively) a market participant submits for participation in the modified opening procedure to be a “strategy order,” based on related facts and circumstances considered by the Exchange, only if the orders:

- (1) relate to the market participant’s positions in expiring volatility index derivatives;
- (2) are for option series with the expiration that the Exchange will use to calculate the exercise or final settlement value, as applicable, of the applicable volatility index derivative;
- (3) are for option series with strike prices approximating the range of series that are later determined to constitute the constituent option series for the applicable expiration;
- (4) are for put (call) options with strike prices equal to or less (greater) than the “at-the-money” strike price; and
- (5) have quantities approximating the weighting formula used to determine the exercise or final settlement value, as applicable, in accordance with the applicable volatility index methodology.

Non-Strategy Order

The term “non-strategy order” means any order (including an order in a constituent option series) a market participant submits for participation in the modified opening procedure that is not a strategy order (or a change to or cancellation of a strategy order). Examples of non-strategy orders include, but are not limited to:

- (1) a buy (sell) order in a constituent options series if an EOI disseminated no more than two minutes prior to the time a market participant submitted the order included a sell (buy) imbalance and the size of the order is no larger than the size of the imbalance in the EOI, regardless of whether the market participant previously submitted a strategy order or has positions in expiring volatility index derivatives; or
- (2) a Market-Maker bid or offer in a constituent option series, as set forth in paragraph (e) below.

(b) Use of Modified Opening Procedure. On exercise settlement value determination days, the Exchange uses the opening procedure described in Rule 6.2, as modified by this Interpretation and Policy .01, for constituent option series.

(c) Strategy Order Cut-Off Time. Market participants must submit strategy orders (which orders must be entered into the Exchange by a Trading Permit Holder), and change to or cancellations of strategy orders, prior to the strategy order cut-off time. Market participants may not change or cancel strategy orders after the strategy order cut-off time, unless the market participant submits the change or cancellation:

(1) after the series is open for trading; or

(2) prior to the non-strategy order cut-off time in order to correct a legitimate error, in which case the market participant submitting the change or cancellation must prepare and maintain a memorandum setting forth the circumstances that resulted in the change or cancellation and submit a copy of the memorandum to the Exchange no later than the next business day in a form and manner prescribed by the Exchange.

The Exchange determines the strategy order cut-off time on a class-by-class basis, which may be no earlier than 8:00 a.m. Chicago time and no later than the opening of trading in a series. The Exchange will announce any changes to the strategy order cut-off time at least one day prior to implementation.

(d) Non-Strategy Order Cut-Off Time. Market participants must submit non-strategy orders (which orders must be entered into the Exchange by a Trading Permit Holder) prior to the non-strategy order cut-off time. The Exchange determines the non-strategy order cut-off time on a class-by-class basis, which may be no earlier than 8:25 a.m. and no later than the opening of trading in a series. The Exchange will announce any changes to the non-strategy order cut-off time at least one day prior to implementation.

(e) Market-Makers. A Market-Maker with an appointment in a class with constituent option series may submit bids and offers in those series for bona fide market-making purposes in accordance with Rule 8.7 and the Exchange Act for its market-maker account prior to the open of trading for participation in the modified opening procedure. The Exchange will deem these bids and offers to be non-strategy orders, and will not deem them to be changes to or cancellations of previously submitted strategy orders, if:

(i) the Trading Permit Holder with which the Market-Maker is affiliated has established, maintains, and enforces reasonably designed written policies and procedures (including information barriers, as applicable), taking into consideration the nature of the Trading Permit Holder's business and other facts and circumstances, to prevent the misuse of material nonpublic information (including the submission of strategy orders); and

(ii) when submitting these bids and offers, the Market-Maker has no actual knowledge of any previously submitted strategy orders.

.02 Market-Maker Quotes. The Exchange determines on a class-by-class basis

(a) Minimum Size. The Exchange determines on a class-by-class basis the minimum number of contracts for the initial size of a Market-Maker's opening quote, which minimum must be at least one contract. For SPX, the Exchange may also determine minimum initial quote size on a premium basis and an expiration basis for series with expirations (1) no more than one week, (2) between one week and three months, (3) between three months and six months, (4) between six months and 15 months, and (5) 15 months or more.

(b) Bid/Ask Differentials. The Exchange determines on a class-by-class and premium basis the bid/ask differential requirements with which Market-Makers' opening quotes must comply, which minimum and differential requirements may be different for the opening than those applicable intraday. For SPX, the Exchange may determine bid/ask differential requirements for series with expirations of (1) less than 15 months and (2) 15 months or more, and for all other classes, the Exchange may determine bid/ask differential requirements for series with expiration of (1) less than nine months and (2) nine months or more.

.03 Reserved.

.04 Allocation Algorithm. The electronic allocation algorithm from Rule 6.45 that applies to a class intraday also applies to the class during rotations, unless the Exchange determines to apply a different algorithm from Rule 6.45 to a class during rotations if the Exchange deems necessary or appropriate. The Exchange may determine to apply a separate electronic allocation algorithm for series that open at a minimum price increment due to a sell market order imbalance.

.05 Exchange Determinations. The Exchange will announce to Trading Permit Holders all determinations it makes pursuant to Rule 6.2 and its Interpretations and Policies via Regulatory Circular with appropriate advanced notice or as otherwise provided. To the extent the Exchange authorizes a class to trade on a group basis pursuant to Rule 8.14, Interpretation and Policy .01, the Exchange may make determinations pursuant to this Rule 6.2 and its Interpretations and Policies on a group-by-group basis that would otherwise be made on a class-by-class basis.

.06 Aftermarket Valuation Processes:

(a) End-of-Month Theoretical Fair Value: Following the close of trading on the last business day of each calendar month, the Exchange will conduct special non-trading closing rotations for each series of S&P 500 Index ("SPX") options in order to determine the theoretical "fair value" of such series as of time of the close of trading in the underlying cash market. During such special non-trading closing rotations, LMMs or Select Market Makers ("SMMs") in the SPX options in each series of SPX options, may provide bid and offer quotations, the midpoint of which will reflect the theoretical fair value of the series of SPX options, as determined by the LMM(s) or SMM(s) pursuant to the LMMs' or SMMs' algorithmic analysis of relevant and available data.

Notwithstanding that trading in SPX options on the Exchange continues until fifteen minutes after the close of trading in the underlying cash market, on the last business day of each month, after the close of trading, the Exchange shall disseminate the fair value quotations as of the close of trading in the underlying cash market provided by the LMM(s) or SMM(s) as the quotations used to calculate the theoretical fair value for each series of SPX options, provided, however, that the Exchange may determine, in the interest of fair and orderly markets, not to disseminate such quotations.

(b) End-of-Day Indicative Value: Following the close of trading of Regular Trading Hours on any trading day that is not the last business day of a calendar month, in addition to the Exchange's regular end-of-day quotations, the Exchange may determine, on a series-by-series basis, to disseminate two-sided indicative values in non-expiring series of SPX options in the interests of fair and orderly markets. The Exchange will derive end-of-day indicative values for series of SPX options using an algorithm based on quotations and orders displayed in series of SPX options prior to the close of trading or, in the absence of sufficient quote and order data in a series, using generally accepted volatility and options pricing models as determined by the Exchange. End-of-day indicative values shall be clearly identified and disseminated via the Options Price Reporting Authority in an appropriate manner as determined by the Exchange and announced via Regulatory Circular.

.07 Limit Up-Limit Down States. If the underlying security for an option class is in a limit up- limit down state as defined in Rule 6.3A when the class moves to opening rotation, then all market orders in the system will be cancelled except market orders that are considered limit orders pursuant to Rule 6.13(b)(vi) and entered the previous trading day. In addition, if the opening rotation has already begun for an options class when a limit up-limit down state initiates for the underlying security of that class, market and limit orders will continue through the end of the opening rotation.]

EXHIBIT 5B

(additions are underlined; deletions are [bracketed])

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Rules of Cboe Exchange, Inc.

(effective as of October 7, 2019)

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CHAPTER 5. OPTIONS TRADING

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Section C. Electronic Trading

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Rule 5.31. Opening Auction Process

(a) Definitions. For purposes of the opening auction process in this Rule 5.31, the following terms have the meaning below. A term defined elsewhere in the Rules has the same meaning with respect to this Rule 5.31, unless otherwise defined below.

Composite Market

The term “Composite Market” means the market for a series comprised of (1) the higher of the then-current best appointed Market-Maker bulk message bid on the Exchange and the ABB (if there is an ABB) and (2) the lower of the then-current best appointed Market-Maker bulk message offer on the Exchange and the ABO (if there is an ABO). The term “Composite Bid (Offer)” means the bid (offer) used to determine the Composite Market.

Composite Width

The term “Composite Width” means the width of the Composite Market (i.e., the width between the Composite Bid and the Composite Offer) of a series.

Maximum Composite Width

The term “Maximum Composite Width” means the amount that the Composite Width of a series may generally not be greater than for the series to open (subject to certain exceptions set forth in subparagraph (e)(1)). The Market Composite Widths for all classes are as follows (based on the Composite Bid for a series):

<u>Composite Bid</u>	<u>Market Composite Width</u>
0 – 1.99	0.50

<u>2.00 – 5.00</u>	<u>0.80</u>
<u>5.01 – 10.00</u>	<u>1.00</u>
<u>10.01 – 20.00</u>	<u>2.00</u>
<u>20.01 – 50.00</u>	<u>3.00</u>
<u>50.01 – 100.00</u>	<u>5.00</u>
<u>100.01 – 200.00</u>	<u>8.00</u>
<u>≥ 200.01</u>	<u>12.00</u>

The Exchange may modify these amounts during the opening auction process when it deems necessary to maintain a fair and orderly opening process (which modifications the Exchange disseminates to all subscribers to the Exchange’s data feeds that deliver opening auction updates).

Opening Auction Updates

The term “opening auction updates” means Exchange-disseminated messages that contain information regarding the expected opening of a series based on orders and quotes in the Queuing Book for the applicable trading session and, if applicable, the GTH Book, including the expected opening price, the then-current cumulative size on each side at or more aggressive than the expected opening price, and whether the series would open (and any reason it would not open).

Opening Collar

The term “Opening Collar” means the price range that establishes limits at or inside of which the System determines the Opening Trade Price for a series. The Opening Collar is determined by determining the midpoint of the Composite Market, and adding and subtracting half of the applicable width amount above and below, respectively, that midpoint. The Opening Collar widths for all classes are as follows (based on the Composite Bid for a series):

<u>Composite Bid</u>	<u>Opening Collar Width</u>
<u>0 – 1.99</u>	<u>0.50</u>
<u>2.00 – 5.00</u>	<u>0.80</u>
<u>5.01 – 10.00</u>	<u>1.00</u>
<u>10.01 – 20.00</u>	<u>2.00</u>
<u>20.01 – 50.00</u>	<u>3.00</u>
<u>50.01 – 100.00</u>	<u>5.00</u>
<u>100.01 – 200.00</u>	<u>8.00</u>
<u>≥ 200.01</u>	<u>12.00</u>

The Exchange may modify these amounts during the opening auction process when it deems necessary to maintain a fair and orderly opening process (which modifications the Exchange disseminates to all subscribers to the Exchange’s data feeds that deliver opening auction updates).

Opening Trade Price

The term “Opening Trade Price” means the price at which the System executes opening trades in a series during the opening rotation.

Queuing Book

The term “Queuing Book” means the book into which Users may submit orders and quotes (and onto which GTC and GTD orders remaining on the Book from the previous trading session or trading day, as applicable, are entered) during the Queuing Period for participation in the applicable opening rotation. Orders and quotes on the Queuing Book may not execute until the opening rotation. The Queuing Book for the GTH opening auction process may be referred to as the “GTH Queuing Book,” and the Queuing Book for the RTH opening auction process may be referred to as the “RTH Queuing Book.”

Queuing Period

The term “Queuing Period” means the time period prior to the initiation of an opening rotation during which the System accepts orders and quotes in the Queuing Book for participation in the opening rotation for the applicable trading session.

(b) Queuing Period.

(1) Time. The Queuing Period begins at 2:00 a.m. for All Sessions Classes and at 7:30 a.m. for RTH Only Classes.

(2) Orders and Quotes. Orders and quotes on the Queuing Book are not eligible for execution until the opening rotation pursuant to paragraph (e) below. During the Queuing Period, the System accepts all orders and quotes that are available for a class and trading session pursuant to Rule 5.30, and they are all eligible for execution during the opening rotation, except as follows:

(A) the System rejects IOC and FOK orders during the Queuing Period;

(B) the System accepts orders and quotes with MTP Modifiers during the Queuing Period, but does not enforce them during the opening rotation;

(C) the System accepts all-or-none, stop, and stop-limit orders during the Queuing Period, but they do not participate in the opening rotation. The System enters any of these orders it receives during the Queuing Period into the Book following completion of the opening rotation (in time priority);

(D) the System converts all ISOs received prior to the completion of the opening rotation into non-ISOs; and

(E) complex orders do not participate in the opening auction process described in this Rule 5.31 and instead may participate in the COB Opening Process pursuant to Rule 5.33(c).

(c) Opening Auction Updates. Beginning at a time 2:00 a.m. for the GTH trading session and at 8:30 a.m. for the RTH trading session, and until the conclusion of the opening rotation for a series, the Exchange disseminates opening auction updates for the series. The Exchange disseminates opening auction updates every five seconds, unless there are no updates to the opening information since the

previously disseminated update, in which case the Exchange disseminates updates every minute, to all subscribers to the Exchange's data feeds that deliver these messages until a series opens.

(d) Opening Rotation Triggers. Upon the occurrence of one of the following triggers for a class, the System initiates the opening rotation for the series in that class, and the Exchange disseminates a message to market participants indicating the initiation of the opening rotation.

(1) Regular Trading Hours. After a time period (which the Exchange determines for all classes) following the System's observation after 9:30 a.m. of the first disseminated (A) transaction in the security underlying an equity option on the primary market or (B) index value for the index underlying an index option, the System initiates the opening rotation.

(2) Global Trading Hours. At 3:00 a.m., the System initiates the opening rotation.

(e) Opening Rotation. After the System initiates the opening rotation for a series pursuant to paragraph (d) above, the System conducts the opening rotation as follows.

(1) Maximum Composite Width Check.

(A) If the Composite Market of a series is not crossed, and the Composite Width of the series is less than or equal to the Maximum Composite Width, the series is eligible to open (and the System determines the Opening Trade Price pursuant to subparagraph (2) below).

(B) If the Composite Market of a series is not crossed, and the Composite Width of the series is greater than the Maximum Composite Width, but there are (i) no non-M Capacity (a) market orders or (b) buy (sell) limit orders with prices higher (lower) than the Composite Bid (Offer) and (ii) no orders or quotes marketable against each other, the series is eligible to open (and the System determines the Opening Trade Price pursuant to subparagraph (2) below).

(C) If the conditions in neither subparagraph (A) nor (B) are satisfied for a series, the series is ineligible to open. The Queuing Period for the series continues (including the dissemination of opening auction updates) until one of the conditions in subparagraph (A) or (B) for the series is satisfied, or the Exchange opens the series pursuant to paragraph (h).

(2) Opening Trade Price Determination. After a series satisfies the Maximum Composite Width Check in subparagraph (1), if there are orders and quotes marketable against each other at a price not outside the Opening Collar, the System determines the Opening Trade Price for the series. If there are no such orders or quotes, there is no Opening Trade Price. The Opening Trade Price is the volume-maximizing, imbalance minimizing price ("VMIM price") that is not outside the Opening Collar. The VMIM price is:

(A) the price at which the largest number of contracts can execute (i.e., the volume-maximizing price);

(B) if there are multiple volume-maximizing prices, the price at which the fewest number of contracts remain unexecuted (i.e., the imbalance-minimizing price); or

(C) if there are multiple volume-maximizing, imbalance-minimizing prices, (i) the highest (lowest) price, if there is a buy (sell) imbalance, or (ii) the price at or nearest to the midpoint of the Opening Collar, if there is no imbalance.

(3) Opening of a Series.

(A) Opening Trade. If the System establishes an Opening Trade Price, the System executes orders and quotes in the Queuing Book at the Opening Trade Price.

(i) The System prioritizes orders and quotes in the following order: market orders, limit orders and quotes with prices better than the Opening Trade Price, and orders and quotes at the Opening Trade Price.

(ii) The System allocates orders and quotes at the same price on a pro-rata basis pursuant to Rule 5.32. The System applies a Priority Customer overlay to all classes, except for SPX (including SPXW) and VIX (excluding VIXW).

(B) No Opening Trade. If there is no Opening Trade Price, the System opens a series without a trade.

(f) Unexecuted Orders and Quotes. Following the conclusion of the opening rotation, the System enters any unexecuted orders and quotes (or remaining portions) from the Queuing Book into the Book in time sequence (subject to a User's instructions), where they may be processed in accordance with Rule 5.32. The System cancels any unexecuted OPG orders (or remaining portions) following the conclusion of the opening rotation

(g) Opening Auction Process Following Trading Halts. The Exchange opens series using the same opening auction process described in this Rule following a trading halt in the class declared by the Exchange pursuant to Rule 5.20, except:

(1) Queuing Period. The Queuing Period begins immediately when the Exchange halts trading in the class.

(2) Open Orders. If a User has orders or quotes resting on the Book at the time of a trading halt, the System queues those orders and quotes in the Queuing Book for participation in the opening rotation following the trading halt, unless the User entered instructions to cancel its resting orders and quotes.

(3) Opening Time. The System initiates the opening rotation for a class upon the Exchange's determination to resume trading pursuant to Rule 5.20.

(h) Deviation from Standard Opening Auction Process. The Exchange may deviate from the standard manner of the opening auction process described in this Rule 5.31, including adjusting the timing of the opening rotation in any option class, modifying any time periods described in this

Rule 5.31, and delaying or compelling the opening of a series if the opening width is wider than the Maximum Composite Width, when it believes it is necessary in the interests of a fair and orderly market. The Exchange makes and maintains records to document all determinations to deviate from the standard manner of the opening auction process, and periodically reviews these determinations for consistency with the interests of a fair and orderly market.

(i) *Limit Up-Limit Down States.* If the underlying security for a class is in a limit up-limit down state when the opening rotation begins for that class, then the System cancels or rejects all market orders. In addition, if the opening rotation has already begun for a class when a limit up-limit down state initiates for the underlying security of that class, market and limit orders will continue through the end of the opening rotation.

(j) *Modified Opening Auction Process.* All provisions set forth above in this Rule 5.31 apply to the opening of SPX constituent option series for Regular Trading Hours on exercise settlement value determination days, except as otherwise provided in this paragraph (j) (“modified opening auction process”). The Exchange uses the opening trade prices of SPX series that comprise the settlement strip (or the average of a series’ opening bid and ask if there is no opening trade in that series) established by the modified opening auction process to calculate the exercise or final settlement value, as applicable, of expiring VIX derivatives.

(1) *Definitions.* For purposes of the modified opening auction process, the following terms have the meanings below:

VIX Derivatives

The term “VIX derivatives” means VIX options listed for trading on the Exchange (as determined under Rule 4.11), VIX futures listed for trading on an affiliated designated contract market, or over-the-counter derivatives overlying VIX whose exercise or final settlement values, as applicable, are calculated pursuant to, or by reference to, as applicable, the modified opening auction process.

Exercise Settlement Value Determination Day

The term “exercise settlement value determination day” means a day on which the Exchange determines the exercise or final settlement value, as applicable, of expiring VIX derivatives.

Constituent Option Series

The term “constituent option series” means all SPX (including SPXW) option series listed on the Exchange with the expirations the Exchange uses to calculate the exercise or final settlement value of the expiring VIX derivative on exercise settlement value determination days.

Maximum Composite Width

The term “Maximum Composite Width” has the meaning set forth in paragraph (a) above, except the following Maximum Composite Widths apply to constituent option series on exercise settlement value determination days:

<u>Composite Bid</u>	<u>Market Composite Width</u>
<u>0 – 0.25</u>	<u>0.25</u>
<u>0.25 – 0.50</u>	<u>0.30</u>
<u>0.51 – 1.00</u>	<u>0.35</u>
<u>1.01 – 2.00</u>	<u>0.40</u>
<u>2.01 – 5.00</u>	<u>0.60</u>
<u>5.01 – 10.00</u>	<u>0.70</u>
<u>10.01 – 20.00</u>	<u>1.00</u>
<u>20.01 – 30.00</u>	<u>1.80</u>
<u>30.01 – 40.00</u>	<u>2.40</u>
<u>40.01 – 50.00</u>	<u>3.00</u>
<u>50.01 – 100.00</u>	<u>6.00</u>
<u>100.01 – 200.00</u>	<u>9.00</u>
<u>≥ 200.01</u>	<u>14.00</u>

Opening Collar

The term “Opening Collar” has the meaning set forth in paragraph (a) above, except the following Opening Collar widths apply to constituent option series on exercise settlement value determination days:

<u>Composite Bid</u>	<u>Opening Collar Width</u>
<u>0 – 0.25</u>	<u>0.25</u>
<u>0.25 – 0.50</u>	<u>0.30</u>
<u>0.51 – 1.00</u>	<u>0.35</u>
<u>1.01 – 2.00</u>	<u>0.40</u>
<u>2.01 – 5.00</u>	<u>0.60</u>
<u>5.01 – 10.00</u>	<u>0.70</u>
<u>10.01 – 20.00</u>	<u>1.00</u>
<u>20.01 – 30.00</u>	<u>1.80</u>
<u>30.01 – 40.00</u>	<u>2.40</u>
<u>40.01 – 50.00</u>	<u>3.00</u>
<u>50.01 – 100.00</u>	<u>6.00</u>
<u>100.01 – 200.00</u>	<u>9.00</u>
<u>≥ 200.01</u>	<u>14.00</u>

Settlement Strip

The term “settlement strip” means the constituent option series with strike prices within a specified strike range used to calculate the exercise or final settlement value, as applicable, of expiring VIX derivatives.

(A) The Exchange determines this strike range pursuant to an algorithm. The Exchange disseminates the highest call strike and lowest put strike of the strike range to all subscribers through the Exchange’s data feeds that deliver opening auction update messages, no later than 8:45 a.m. on exercise settlement value determination days.

(B) The Exchange may update this strike range until 9:15 a.m. pursuant to an algorithm due to changes to the value of VIX, prices of related futures, or other algorithmic inputs. The Exchange disseminates any updates as soon as reasonably possible.

Settlement Liquidity Opening Order and SLOO

The terms “settlement liquidity opening order” and “SLOO” mean a limit order in a constituent option series designated with an OPG Time-in-Force that Users may only submit to the Exchange on exercise settlement value determination days following the cut-off time described in subparagraph (3) below. The System cancels a SLOO (or remaining portion) that does not execute during the modified opening auction process. Users may not designate bulk messages as SLOOs.

(A) If the limit price of a buy (sell) SLOO crosses the midpoint of the then-current Opening Collar upon entry, the System adjusts its price to equal the midpoint of the Opening Collar (rounded up (down) to the nearest minimum increment), except for a sell SLOO when the midpoint is less than or equal to 0.175. If the midpoint of the Opening Collar changes during the Queuing Period, the System re-adjusts the SLOO’s price to equal to the new Opening Collar midpoint (rounded as provided above), up to its limit price.

(B) The prices of SLOOs in the Queuing Book are not disseminated in the Exchange’s Multicast PITCH and Multicast TOP data feeds.

(2) Exchange Determinations.

(A) To the extent the Exchange makes a determination for the opening auction process pursuant to this Rule 5.31, it may make a separate determination for the modified opening auction process pursuant to this paragraph (j), including but not limited to (i) the Opening Collar width, (ii) the Maximum Composite Width, and (iii) the time intervals at which the Exchange disseminates opening auction updates.

(B) The Exchange may determine it is necessary in the interests of a fair and orderly market (for example, due to the existence of unusual market conditions or

circumstances) to delay the time at which the System begins attempting to observe an opening rotation trigger pursuant to subparagraph (d)(1) above for the modified opening auction process. If that occurs, the Exchange determines a revised time and announces it to market participants as soon as reasonably possible. Additionally, to correspond to that revised time, the Exchange adjusts (i) the times at which it determines the strike range of the settlement strip as described in subparagraph (1) above, and (ii) the cut-off time described in subparagraph (3) below.

(C) The Exchange may determine it is necessary in the interests of a fair and orderly market (for example, due to the existence of unusual market conditions or circumstances) to not use the modified opening auction process described in this paragraph (j). If that occurs, the Exchange will announce that to market participants as soon as reasonably possible.

(3) Order Entry Cut-Off Time. During the Queuing Period, the System accepts orders and quotes in constituent option series as follows, subject to paragraph (b)(2) above.

(A) The System accepts all orders and quotes (except SLOOs, which the System rejects), and any changes to or cancellations of those orders and quotes, prior to 9:20 a.m.

(B) After 9:20 a.m. (until the opening of trading in a series), the System only accepts (A) SLOOs (including changes to and cancellations of SLOOs); and (B) bulk message bids and offers (including changes to and cancellations of bulk message bids and offers submitted before and after the cut-off time) from Market-Makers with an SPX appointment. The System rejects all other orders and quotes (and all other changes to and cancellations of orders and quotes submitted prior to the cut-off time).

(4) Opening Rotation. On exercise settlement value determination days, the opening rotation process occurs as set forth in paragraph (e) above, except the System determines the Opening Trade Price pursuant to this subparagraph (4), in lieu of subparagraph (e)(2) (except as otherwise provided). After a series satisfies the Maximum Composite Width Check in subparagraph (e)(1), if there are orders and quotes marketable against each other at a price not outside the Opening Collar, the System determines the Opening Trade Price for the series. If there are no such orders or quotes, there is no Opening Trade Price.

(A) The System determines the VMIM price pursuant to subparagraphs (e)(2)(A) through (C) above.

(B) If the VMIM price is not outside the Opening Collar, it is the Opening Trade Price, and the System opens the series pursuant to subparagraph (e)(3) above.

(C) If (i) the VMIM price is outside the Opening Collar or (ii) there would be unexecuted market orders (or remaining portions), the series does not open. The Queuing Period for the series continues (including the dissemination of opening

auction updates) until the VMIM price is not outside the Opening Collar, or the Exchange opens the series pursuant to paragraph (h).

(5) *Opening Rotation Self-Trades.* A User may submit multiple orders and quotes in accordance with subparagraph (3) above. If, during the opening rotation, the System executes an order or quote of that User against another order or quote of that User, the Exchange does not deem that fact alone to cause these executions to be considered violations of Section 9(a)(1) of the Exchange Act, and instead will evaluate other facts and circumstances. The Exchange reviews all activity, including these executions, during the modified opening auction process for compliance with the Rules and the Exchange Act, including Rule 10.6 (which prohibits manipulation).

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