

Exhibit 3

Part III: Manner of Operations

Item 4: Hours of Operations

- a. *Provide the days and hours of operation of the NMS Stock ATS, including the times when orders or trading interest can be entered on the ATS, and any hours of operation outside of regular trading hours.*

The ATS' regular trading hours are between 9:30 a.m. and 4:00 p.m. Eastern Time (the "Regular Trading Session"). Beginning on June ~~10~~17, 2026, the ATS will operate pre-market trading between 7:00 a.m. and 9:30 a.m. Eastern Time (the "Early Trading Session"). Both the Regular Trading Session and Early Trading Session operate Monday through Friday according to the daily schedule set out below, with the exception of the following NYSE market holidays: New Years Day, Martin Luther King Jr. Day, Presidents' Day, Good Friday, Memorial Day, Juneteenth, National Independence Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

~~Beginning on June 4, 2026, to~~ To allow for system testing prior to the launch of the Early Trading Session, ~~through June 16, 2026,~~ the ATS will permit Subscribers to begin connecting to the ATS at 5:30 a.m. Eastern Time, and Subscribers may submit orders to the ATS continuously between 6:45 a.m. and 4:00 p.m. Eastern Time. For clarity, orders submitted between 6:45 a.m. and 9:30 a.m. ~~from June 4, 2026~~ through June 9~~16~~, 2026 will only be eligible for the Regular Trading Session as the Early Trading Session will not begin until June ~~10~~17, 2026. As detailed in Part III Item 7, beginning on June ~~10~~17, 2026, Subscribers may designate orders submitted to the ATS on an order-by-order basis or at the session level as (i) only eligible for the Regular Trading Session or (ii) eligible for both the Early Trading and Regular Trading Sessions. Orders received without a specific instruction as to session eligibility will by default only be eligible for the Regular Trading Session. For clarity, Subscribers may submit orders designated as only eligible for the Regular Trading Session beginning at 6:45 a.m. Eastern Time.

Early Trading Session:

As noted above, Subscribers may enter orders eligible for matching in the Early Trading Session beginning at 6:45 a.m. The ATS will begin matching and executing orders in the Early Trading Session at 7:00 a.m. (i.e., first call auction for eligible orders will take place at or after 7:00 am). Orders eligible for matching during the Early Trading Session will be matched and executed in accordance with the ATS' standard logic, as detailed in Part III Item 11. Open orders, if any, following the final auction occurring during the Early Trading Session (i.e., as of 9:30 a.m.) will remain eligible for matching during the Regular Trading Session, including before the Regular Session Opening Auction (defined in Part III Item 10) for the applicable symbol. Please see Part III Item 7 for additional detail.

Regular Trading Session:

As noted above, ~~beginning on June 4, 2026,~~ Subscribers may enter orders eligible for matching in the Regular Trading Session beginning at 6:45 a.m. though the Early Trading Session will

not begin until June 10¹⁷, 2026. ~~Until June 4, 2026, the ATS will continue to accept eligible orders for the Regular Trading Session at 9:15 a.m. Eastern Time.~~ The ATS will begin matching and executing orders eligible for the Regular Trading Session at 9:30 a.m. (i.e., first call auction for eligible orders will take place at or after 9:30 am). The ATS will stop matching and executing orders at 4:00 p.m. (i.e., final call auction will take place at or before 4:00 p.m.).* Open orders, if any, will be canceled back to the relevant Subscriber.

* The ATS stops matching and executing orders at 1:00pm instead of 4:00pm on: the day prior to observed Christmas Day, the day prior to observed Independence Day, and the day after Thanksgiving Day. FIX sessions are disconnected at 2:00pm instead of 5:00pm on these days.

b. *Are the hours of operations the same for all Subscribers and the Broker-Dealer Operator?*

Yes No

Item 5: Means of Entry

a. *Does the NMS Stock ATS permit orders and trading interest to be entered directly into the ATS (e.g., via Financial Information eXchange (“FIX”) protocol, Binary)?*

Yes No

The ATS is designed to accommodate multiple points of presence (“**Points of Presence**”, “**PoP**”, “**PoPs**”) for order entry. Only Subscribers may directly submit orders to the ATS, and may only do so by establishing a connection via FIX (4.2) protocol at a PoP maintained by the Operator. ~~Currently, the~~The Operator maintains a ~~single~~ PoP at Equinix NY5 and ~~following June 10, 2026 will maintain~~maintains an additional PoP at Equinix NY3. Such orders are time-stamped then transmitted to the (centralized) matching engine location at Equinix NY5. Further information on the PoP model follows in Part III Items 5, 6 and 11. No other order entry protocols are available.

ORDER AND BIDDER LOGIC SUBMISSION:

Only a Subscriber may submit orders to the ATS. External Users may submit their Bidder Logic to the ATS (as described in Part II Item 5), but such Submitted Bidder Logic submissions are NOT orders themselves.

An External User’s Submitted Bidder Logic represents conditionality that may be attached to an order submitted to the ATS (termed a “Target Order”) for execution. Subscribers may submit Target Orders that reference Submitted Bidder Logic (the combination of which is the “Expressive Order”) to the ATS via FIX protocol. An External User that is not a Subscriber may direct a Subscriber with which it has established a customer relationship to submit an Expressive Order on its behalf that references the External User’s Submitted Bidder Logic.

b. *If yes to Item 5(a), are the protocols required to be identified in Item 5(a) the same for all Subscribers and the Broker-Dealer Operator?*

Yes No

- c. *Are there any other means for entering orders and trading interest into the NMS Stock ATS (e.g., smart order router, algorithm, order management system, sales desk)?*

Yes No

If yes, identify and explain the other means for entering orders and trading interest, indicate whether the means are provided through the Broker-Dealer Operator, either by itself or through a third-party contracting with the Broker-Dealer Operator, or through an Affiliate of the Broker-Dealer Operator, and list and provide a summary of the terms and conditions for entering orders or trading interest into the ATS through these means.

- d. *If yes to Item 5(c), are the terms and conditions required to be identified in Item 5(c) the same for all Subscribers and the Broker-Dealer Operator?*

Yes No

If no, identify and explain any differences.

Item 6: Connectivity and Co-location

- a. *Does the NMS Stock ATS offer co-location and related services (e.g., cabinets and equipment, cross-connects)?*

Yes No

If yes, provide a summary of the terms and conditions for co-location and related services, including the speed and connection (e.g., fiber, copper) options offered.

The ATS allows Subscribers to connect directly to the ATS via cross-connect or extranet, through one or more of the ATS's Point of Presence systems (see Part III Item 5 for a description of points of presence). The currently maintained PoP is located at Equinix NY5 and any new connection directly to the ATS for a Subscriber ~~after June 10, 2026 will be~~ via cross-connect ~~or extranet~~ will be at the ATS's PoP at Equinix NY3. Connectivity is provided via 10 gigabit single-mode optical fiber (SMF). See Part III Items 11(a) and 11(c) for details. Cross-connects are managed by Equinix. Subscribers must maintain an agreement with Equinix to establish a cross-connect with the ATS.

- b. *If yes to Item (6)(a), are the terms and conditions required to be identified in Item 6(a) the same for all Subscribers and the Broker-Dealer Operator?*

Yes No

- c. *Does the NMS Stock ATS offer any other means besides co-location and related services required to be explained in this Item 6(a) to increase the speed of communication with the ATS?*

Yes No

- d. *Does the NMS Stock ATS offer any means to reduce the speed of communication with the ATS?*

(e.g., speed bumps)?

Yes No

Item 7: Order Types and Attributes

a. *Identify and explain each order type offered by the NMS Stock ATS. In your explanation, include the following:*

- i. *priority, including the order type's priority upon order entry and any subsequent change to priority (if applicable); whether and when the order type can receive a new time stamp; the order type's priority vis-a-vis other orders on the book due to changes in the NBBO or other reference price; and any instance in which the order type could lose execution priority to a later arriving order at the same price;*
- ii. *conditions, including any price conditions (e.g., how price conditions affect the rank and price at which it can be executed; conditions on the display or non-display of an order; or conditions on executability and routability);*
- iii. *order types designed not to remove liquidity (e.g., post-only orders), including what occurs when such order is marketable against trading interest on the NMS Stock ATS when received;*
- iv. *order types that adjust their price as changes to the order book occur (e.g., price sliding orders or pegged orders) or have a discretionary range, including an order's rank and price upon order entry and whether such prices or rank may change based on the NBBO or other market conditions when using such order type; when the order type is executable and at what price the execution would occur; whether the price at which the order type can be executed ever changes; and if the order type can operate in different ways, the default operation of the order type;*
- v. *whether an order type is eligible for routing to other Trading Centers;*
- vi. *the time-in-force instructions that can be used or not used with each order type;*
- vii. *the circumstances under which order types may be combined with another order type, modified, replaced, canceled, rejected, or removed from the NMS Stock ATS; and*
- viii. *the availability of order types across all forms of connectivity to the NMS Stock ATS and differences, if any, in the availability of an order type across those forms of connectivity.*

STANDARD ORDER TYPES: The ATS supports the following "Standard Order" types:

1) "Limit Order": an order which (if filled) executes at or above (for an order to sell) or at or below (for an order to buy) the User specified price. Limit Orders must include a security (symbol), a side (buy or sell), a limit price, and a maximum quantity (shares);

2) “Peg Order”: a type of Limit Order which (if filled) executes at the NBB, NBO, or midpoint of the NBBO (or better) as indicated by execution instructions. Determination of the NBBO and midpoint price follows in Part III Items 11 and 23. Peg Orders must include a security (symbol), a side (buy or sell), and a maximum quantity (shares). Peg orders can also optionally include a limit price and/or an offset amount. Offset amounts must be expressed in increments greater than or equal to one penny (\$.01). Buy orders will not execute at a price greater than the lowest of: the limit price, the NBO, or the peg price plus or minus the offset amount. Sell orders will not execute at a price lower than the greatest of: the limit price, the NBB, or the peg price plus or minus offset amount.

Limit prices greater than or equal to \$1.00 must be expressed in increments of at least \$.01 (i.e. sub-penny prices are not permitted). Limit prices less than \$1.00 must be expressed in increments of at least \$.0001. This applies to limit prices on all order types. If a Peg Order (including offset amount) would result in an effective price that is a sub-penny increment for a given auction, then the effective price for that order will be automatically rounded conservatively to the nearest permissible increment (i.e. the effective price will be rounded down for a buy order, and the effective price will be rounded up for a sell order) so that the order may participate in that auction.

EXPRESSIVE ORDERS: The ATS also supports Expressive Orders, an order type that allows Subscribers or other External Users entering Bidder Logic to specify execution instructions spanning one or more individual Limit or Peg Orders. Any Limit or Peg Order or collection of Limit or Peg Orders referencing Bidder Logic receives treatment as an Expressive Order.

Expressive Orders have four components: 1) Bidder Logic: static functions that take data and return execution instructions. External Users approved to use the Expressive Bidding Service may provide their Bidder Logic via the mechanism described in Part III Item 5 under “ORDER AND BIDDER LOGIC SUBMISSION”; 2) Bidder Inputs: data provided by Subscribers (for example, notional maximum values or symbol ratios/weightings) for use in Expressive Orders. Bidder Inputs are provided as a FIX tag and may be specified on any Target Order entered in connection with an Expressive Order; 3) Target Orders: Limit or Peg Orders submitted by Subscribers via FIX that reference Submitted Bidder Logic upon which such Bidder Logic acts; and 4) Market Inputs: market data (e.g. the NBBO) supplied by the Operator for use in Bidder Logic (see Part III Item 23 and Example B below).

BIDDER LOGIC SUBMISSION: Bidder Logic can be expressed using a programming language supported by the Operator, or via a domain-specific language developed by the Operator. External Users using the Expressive Bidding Service must submit its Bidder Logic via ATS operations personnel in advance of its use in any Expressive Order. The Operator may require External Users to certify their Bidder Logic in the OneChronos UAT environment before the Bidder Logic is available in production, particularly when the Bidder Logic is first submitted, or if the Bidder Logic is altered in a material way (minor updates to Bidder Inputs such as the tolerance of a fill ratio on a pairs order may not require certification). When UAT certification is not required, updates to existing Bidder Logic will be available on the next calendar day after receipt by the ATS.

The ATS evaluates each Bidder Logic submission to confirm that it meets the required

technical requirements (e.g. that it can successfully terminate), then assigned a unique reference ID, which is provided back to the External User, for inclusion in Target Orders. As detailed in Part III Item 5, Bidder Logic is not itself an order. The orders, i.e. Expressive Orders and the associated Target Orders themselves, can only be submitted directly to the ATS by Subscribers. The Subscriber may elect to have Bidder Logic apply to orders on an order-by-order basis or at the session level.

The ATS supports Bidder Logic that enables the External User to submit one or more Target Orders as an Expressive Order on the ATS (see examples below). The ATS supports up to two Target Orders in a given Expressive Order. Target Orders will only execute if the constraints imposed on them by the applicable Bidder Logic are met.

The applicable constraints may be customized and specified using Bidder Logic such that the constraints, when not satisfied, will result in the applicable Target Order(s) not being executed. These constraints act on the prices or quantities set out in a given Target Order or across the Expressive Order (i.e. across one or more Target Orders). For example, in an Expressive Order comprised of two Target Orders where one relates to symbol A and the other to symbol B, a constraint in the applicable Bidder Logic could be, only execute the Target Order for shares of A if executing the Target Order for shares of B. A similar, more restrictive constraint would be, only execute the Target Order for shares of A if also executing the Target Order for an equal number of shares of B (i.e. if the share quantity in both symbols is equal). In either case, if the applicable constraints cannot be met, the Target Orders will not be filled in either A or B.

Bidder Logic cannot permit an execution that would violate the parameters of a Target Order; likewise, Target Order parameters cannot permit an execution that would violate constraints provided in Bidder Logic. For example: an Expressive Order with Bidder Logic specifying willingness to execute multiple orders at the calculated midpoint or better, will not execute if dependent on inclusion of a Target Order whose limit price is less aggressive than the calculated midpoint and the clearing price of the auction.

The following examples further illustrate this functionality:

EXAMPLE A: Price Improvement Size-Up: A trader may be willing to transact a different quantity at different price levels: sell up to 500 shares at \$20, or sell up to 1,000 shares if the price is more favorable at \$21, but not both (i.e. not 1,500 total). This is an example of an Expressive Order involving a single Target Order.

EXAMPLE B: Imbalance Discretion: A trader may wish to defer the execution decision between bidding at the midpoint price or at a more aggressive price until the time of auction on the ATS, based on external market conditions measured by the ATS via the SIP and made available as Market Inputs. For example, a trader might wish to enter an order on the following basis: if there is at least twice as much top of book quantity available at the national best offer (NBO) than is available at the national best bid (NBB), then buy 100 shares up to the NBO. Otherwise, buy 100 shares only up to the midpoint.

EXAMPLE C: Hedge Trade Involving two Target Orders: A trader may wish to transact in

two different symbols in similar amounts: buy A if and only if selling an approximately equal (within \ \$1,000) notional amount of B.

Note: side (buy/sell) for A and B is expressed in the underlying two Target Orders. Additional logic could be constructed to identify and select buy vs. sell side Target Orders for participation if Target Orders were provided for both sides.

ORDER AVAILABILITY: The ATS uses periodic call auctions that make use of mathematical optimization techniques to match buyers and sellers. These auctions take place multiple times per second throughout the trading day. Each auction considers all eligible orders across all symbols simultaneously and seeks an “optimal” matching between buyers and sellers as described in Part III Item 11. All order types, including Expressive Orders, are available to all Subscribers of the ATS, and have the same eligibility criteria and time cut-offs for participation in a given auction. Expressive Orders are evaluated (i.e. Bidder Logic code is processed) in each auction prior to the start of the auction’s optimization process. Given that Expressive Orders could allow for varying degrees of complexity, their evaluation is resource constrained. That is, each Expressive Order is allocated a finite amount of computation resources and is evaluated prior to the commencement of the Match Optimization process described in Part III Item 11 under the Auction Procedure heading. These computational constraints apply to all Expressive Orders equally (i.e. regardless of order complexity or from whom the ATS received the order). An Expressive Order and its associated Target Orders will not be eligible for the auction if the Expressive Order exceeds its evaluation constraints.

ORDER PRIORITY: The ATS periodically holds auctions (multiple times per second) designed to seek an optimal matching between buyers and sellers across all eligible orders. Each order’s eligibility for participation is determined by its time-stamped receipt at one of the Operator’s distributed PoPs (the Operator currently maintains a ~~single-PoP,~~ in Equinix NY5 and ~~following June 10, 2026 the Operator will maintain~~ an additional PoP at Equinix NY3). Executions, allocations, and per symbol clearing prices are determined using mathematical optimization techniques, maximizing Aggregate Price Improvement dollars across eligible orders in a given auction. See Part III Item 11 under the Distributed Point of Presence System and Auction Procedure headings for specific details.

EXECUTION INSTRUCTIONS: The ATS supports a set of execution instructions applicable to both of its Standard Order types (Limit Orders and Peg Orders) at the FIX layer. These execution instructions also apply to the Target Orders that are used in connection with Expressive Bidding, and Conditional Indications (as described in Part III Item 9). Subscribers may use these execution instructions on a per order basis, subject to system bounds established and imposed by the ATS itself as described in Part III Item 8. The following execution instructions are available:

- 1) Price Limit (minimum price verification on a per-share basis);
- 2) Maximum number of shares;
- 3) Minimum number of shares;
- 4) Time-in-force: Day, Immediate or Cancel, Fill or Kill, Good ‘Til Date (with an expire time

not to exceed the end of the current trading session);

With respect to a time-in-force of Immediate or Cancel, a Subscriber may opt in, at the FIX session level, to have each Immediate or Cancel order submitted during the applicable session to be handled as if it was submitted with a time-in-force of Good 'Til Date (an “**Extended IOC**”). To opt in, a Subscriber must specify an expiration time for each Extended IOC order as an offset from the Extended IOC order’s PoP arrival timestamp. The expiration time specified for an Extended IOC order may not exceed the end of the current trading session.

An Extended IOC order remains eligible for subsequent auctions until the earlier of (i) its execution, (ii) the specified expiration time, or (iii) cancellation by the Subscriber.

These message-layer constraints cannot be overridden by Expressive Bidding and Bidder Logic.

ORDER CANCELLATION, MODIFICATION, AND REPLACEMENT: the ATS does not support modification of resting orders, but Subscribers can cancel and replace orders with either a single cancel-replace request or two separate cancellation and new order entry requests. Order entry and cancellation requests are processed as described in Part III Item 11(c). As discussed in Part III Item 9, Firm Up Orders sent in response to a Conditional Invitation may not be cancelled and replaced.

ROUTING: The ATS does not route orders to other trading centers.

The ATS does not support any order types designed not to remove liquidity, as the ATS does not distinguish between providing and removing liquidity.

CUSTOM COUNTERPARTY GROUPS: As described in Part III Item 14, the ATS offers functionality for Subscribers to specify custom groups of counterparties against which to execute on an order-by-order basis or at the session level, for both orders and Conditional Indications.

REGULAR TRADING SESSION AND EARLY TRADING SESSION: As discussed in Part III Item 4, the ATS operates a Regular Trading Session and an Early Trading Session. Subscribers may designate orders submitted to the ATS on an order-by-order basis or at the session level as (i) only eligible for the Regular Trading Session or (ii) eligible for both the Early Trading and Regular Trading Sessions. Orders received without a specific instruction as to session eligibility will by default only be eligible for the Regular Trading Session. All order instructions are available in both the Early Trading and Regular Trading Sessions.

b. *Are the terms and conditions for each order type and attribute the same for all Subscribers and the Broker-Dealer Operator?*

Yes No

If no, identify and explain any differences.

Item 11: Trading Services, Facilities and Rules

- a. *Provide a summary of the structure of the NMS Stock ATS marketplace (e.g., crossing system, auction market, limit order matching book) and explain the means and facilities for bringing together the orders of multiple buyers and sellers on the NMS Stock ATS.*

MATCHING SYSTEM: Rather than matching orders continuously as they arrive at the matching engine (as in a continuous limit order book) the ATS periodically holds auctions designed to seek an optimal matching between buyers and sellers across all eligible orders. As part of this mechanism, Subscribers can enter Limit Orders or Peg Orders in single securities or, by the use of Expressive Bidding, specify execution instructions that span one or more Target Orders (note, the ATS supports up to two Target Orders in a given Expressive Order). Expressive Bidding allows External Users to express constraints on orders to fit their business specific execution and or risk management objectives. As explained in Part III Item 7, Expressive Orders are comprised of Target Orders sent via FIX by Subscribers; Bidder Logic (computer code specifying constraints); and Bidder Inputs or Market Inputs, if any, to complement the Bidder Logic as it may apply to a given Target Order. Auctions are multilateral: one or more buyers can match against one or more sellers. Within a given auction the mechanism computes per-security uniform transaction prices that apply to all buyers and sellers of that security. The ATS matching mechanism is a call auction in that order matching happens at a specific point in time. All NMS stocks are eligible to trade in the ATS, with the exception of any NMS stocks that cannot be processed by the ATS's clearing or trade reporting partners. Eligibility is subject to procedures described in Part III Item 10 (Opening Procedure).

DISTRIBUTED POINT OF PRESENCE SYSTEM: The Operator maintains a distributed and time-synchronized PoP system at multiple data centers for order entry and market data intake (see also Item III, Part 5 above for further information on the PoP system). Although matching happens at a centralized location, Subscribers can enter orders at any PoP. PoP arrival timestamps dictate order eligibility. Orders received at a PoP by a Cutoff Timestamp (the "Cutoff" or "Cutoff Time") selected by the ATS for a given auction are eligible for matching in that auction; orders received after the Cutoff are not eligible until the next auction. By using PoP arrival timestamps (rather than matching engine arrival timestamp) as described below, the distributed PoP system endeavors to promote equality of access to Subscribers with systems located in different geographies. The Operator operates the ATS with a ~~single~~-PoP in Equinix NY5 at 800 Secaucus Road, Secaucus, New Jersey 07094 and ~~following June 10, 2026 the Operator will maintain~~ an additional PoP at Equinix NY3 at 600 Jefferson Avenue, Secaucus, NJ 07094.

ORDER ENTRY AND EXECUTION PROCESS: PoPs apply high precision (recorded in nanoseconds) timestamps to orders as they arrive. After receiving a timestamp, orders proceed to the matching engine located at Equinix NY5 in Secaucus, NJ. Orders are eligible for all auctions with a Cutoff Time greater than or equal to their PoP timestamp. The Cutoff Time is also used as a basis for computing NBBO (see Part III Item 23). Aside from the determination of orders' eligibility, the auctions have no notion of time priority (i.e. all orders participating in the same auction are on parity from a time perspective). Price priority and share allocation proceeds per the mechanism described in Part III Item 11(c).

Because orders require time to propagate from their entry PoP to the matching engine, the matching engine pauses for a duration (the "**Buffer Window**" or "**Buffer**") long enough to

allow the arrival of market data from the SIP as well as orders from all PoPs before commencing an auction. The duration of the Buffer Window is calibrated based on measured historical and real-time network latencies and may change over time but will remain on the order of milliseconds or tens of milliseconds. This Buffer seeks to prevent orders entered at PoPs further (in the sense of network transmission time) from the matching engine from experiencing a time disadvantage relative to PoPs closer to the matching engine. Execution report dissemination uses a similar system as described in Part III Item 21.

REGULAR TRADING SESSION AND EARLY TRADING SESSION: The ATS operates a Regular Trading Session and, starting on June 10~~17~~17, 2026, an Early Trading Session. Subscribers may designate orders submitted to the ATS on an order-by-order basis or at the session level as (i) only eligible for the Regular Trading Session or (ii) eligible for both the Early Trading Session and Regular Trading Session. Orders received without a specific instruction as to session eligibility will by default only be eligible for the Regular Trading Session. All order instructions are available in both the Early Trading and Regular Trading Sessions; however, while the Early Trading Session immediately commences trading at opening in accordance with the ATS' standard matching and execution logic, the Regular Trading Session commences trading, on a security-by-security basis, only once there has been an opening or a re-opening print from the primary listing exchange for that security.

- b. *Are the means and facilities required to be identified in Item 11(a) the same for all Subscribers and the Broker-Dealer Operator?*

Yes No

If no, identify and explain any differences.

- c. *Explain the established, non-discretionary rules and procedures of the NMS Stock ATS, including order interaction rules for the priority, pricing methodologies, allocation, matching, and execution of orders and trading interest, and other procedures governing trading, such as price improvement functionality, price protection mechanisms, short sales, locked-crossed markets, the handling of execution errors, and the time-stamping of orders and executions.*

The core mechanism underlying execution on the ATS is the combinatorial call auction process. This auction process uses a matching optimization formula that considers orders in all securities in a given auction simultaneously in an effort to identify mutually beneficial matches between buyers and sellers across the ATS's entire market.

AUCTION PROCEDURE: In summary, auctions consist of the following steps:

0) "Auction Preprocessing": the OneChronos ATS analyzes orders, Conditional Indications, and market data (all received prior to the start of this step) for conditional counterparty liquidity and sends Conditional Invitations, as described in Part III Item 14. Conditional Indications and orders received after the start of this step will not be processed until Auction Preprocessing for the subsequent auction.

1) "Initialization Time": an auction Cutoff Time (as defined in the following paragraph) which is randomly chosen per the procedure described below as the start of an auction;

- 2) “Auction Network Buffer” (or “Buffer”): this Buffer is intended to allow orders and market data enough time to arrive from distant PoPs as described in Part III Item 11(a). More specifically, the Buffer allows sufficient time for orders and market data to arrive from the furthest (measured in network transmission time) PoP from the matching engine. The length of the Buffer can vary based on expected transmission times, but would typically be on the order of milliseconds or tens of milliseconds;
- 3) “Match Optimization”: ATS systems evaluate Expressive Orders and run the combinatorial matching process, which determines prices and share allocations across all symbols;
- 4) “Post Auction Network Buffer”: upon completion of the Match Optimization process, the matching engine broadcasts auction results to all PoPs. Each PoP waits until a pre-determined time (which always precedes the following auction’s Cutoff), to distribute execution reports, thereby providing a synchronized dissemination of such data externally. As with the Auction Network Buffer, the length of the Post Auction Network Buffer can vary based on expected transmission times, but would typically be on the order of milliseconds or tens of milliseconds;
- 5) “Data Dissemination”: at the conclusion of the Post Auction Network Buffer period, PoPs communicate auction results in the form of execution reports to external parties, including Subscribers, the ATS’s direct clearing provider, and the Trade Reporting Facility.

The complete lifecycle of these steps spans a timescale of less than 100 milliseconds. Auctions occur at discrete “Cutoff Times”, following the completion of the prior auction lifecycle, drawn at random within a range of 20 milliseconds to 200 milliseconds from the previous auction. When the Auction Network Buffer has elapsed, the matching engine establishes auction eligibility per the PoP arrival timestamps as described in Part III Item 11(a). At this point, Market Inputs used by Expressive Orders and the data used for constructing NBBO is final. See Part III Item 23 under MEASUREMENT OF MARKET DATA AND NBBO for a detailed explanation of NBBO construction. All ATS timestamps, including those that appear on execution/trade reports, are recorded in nanoseconds.

AUCTION ELIGIBILITY: the ATS accepts orders and Conditional Indications (Conditional Indications are described in Part III Item 9). Subscribers can send cancellation requests for resting orders and Conditional Indications. Cancellation requests received and timestamped before the Cutoff Time have immediate effect. Cancellation requests received after the Cutoff Time but before the completion of the auction cycle do not have effect until the following cycle (and therefore the order may still participate in the auction notwithstanding the cancellation request). The order entry system removes the referenced order from the matching engine as soon as the next auction window opens if the order is still present (not filled) and rejects it otherwise. With regards to a partial fill, the residual quantity is treated as the maximum fill quantity for the order in subsequent auctions, unless its time-in-force instructions dictate that it be cancelled.

RISK CONTROLS: After determining auction eligibility (per Part 3 Item 11(a)) and selecting market data (per Part 3 Item 23) upon the completion of the Auction Network Buffer, the ATS carries out a series of pre-match market quality and risk checks. These consist of testing for locked and crossed markets (rules for trading during locked and crossed markets follow later

in this section), verifying that user configured risk checks pass, and flagging “clearly erroneous orders” as ineligible. For Subscriber controlled risk checks, the following parameters are configurable within the bounds established by the ATS (see Part III Items 7 and 8 for minimum and maximum values):

- 1) Total notional value maximums per order;
- 2) Total quantity maximums per order;
- 3) Symbol restrictions;
- 4) Short sale restrictions;
- 5) Self-Trade prevention by MPID and/or FIX session;

As an additional risk control, orders with External User-supplied prices 10% or more aggressive than the NBBO are not eligible for participation. The ATS rejects orders for which this is true at the time of submission. Subscribers can configure this behavior to be more restrictive (i.e. less than 10%) but not less restrictive (i.e. greater than 10%). The ATS may also enforce share quantity and notional value constraints according to maximums put in place by the ATS’s clearing provider.

MATCH OPTIMIZATION: After identifying a set of eligible, risk checked orders, matching of firm orders can proceed (Conditional Indications are not evaluated during this phase). Matching is conducted via a uniform clearing price combinatorial auction - a form of mathematical optimization that attempts to match one or more buyers with one or more sellers in a fashion that maximizes the chosen objective(s) while enforcing constraints. Because orders can include constraints that span securities (e.g., buy A if and only if an accompanying order for B gets filled) the optimization process must run over all securities simultaneously. The optimization procedure includes a rule that the solution found must respect the constraints placed on orders by participants (e.g. price limits, volume ratios) as well as the market wide constraints placed by the ATS (e.g., ensuring that aggregate buy fill volume equals aggregate sell fill volume on a security-by-security basis).

The ATS optimization process consists of multiple optimization techniques (see “Additional Details on Optimization” below) that attempt to maximize the following two objectives:

- 1) **Aggregate Price Improvement:** the optimization attempts to maximize the total price improvement realized across all orders eligible to participate in the auction, incorporating both price per share and number of shares filled. For an individual order to buy or sell a single security, “Price Improvement Dollars” refers to the difference between the limit price on the order and the auction clearing price (i.e. the price at which the order is filled) for the given security, times the quantity filled. For an Expressive Order to buy and/or sell multiple securities simultaneously, price improvement refers to differences in limit prices and clearing prices for each respective security, summed across all securities times the quantities filled. See below under “Priority and Price Formation Example” for information on treatment of NBBO. When considering a crossed buy and sell order for a security, Price Improvement Dollars can be calculated as the difference between limit prices for the two orders. Aggregate Price

Improvement represents the sum of Price Improvement Dollars across all eligible orders under consideration for a given optimization solution, and across all securities. As a result, it is possible that an order (i.e. Standard Order or Expressive Order) may receive lower match priority in favor of an Expressive Order containing a less aggressively priced Target Order in the same security. This can occur if and only if prioritizing the less aggressive order results in a solution that is at least as optimal as other feasible solutions that include the more aggressive order (see a specific example lower in this section under heading: Priority And Price Formation Example). In other words, maximizing Aggregate Price Improvement is the dominant and first objective of the optimization.

2) Volume: as a secondary objective, the optimization attempts to maximize the total share volume cleared in aggregate across all securities.

Each optimization technique evaluates these two objectives using a mathematical formula known as an objective function to implement the priority outlined above, producing one or more sets of potential executions (“solutions”). The solution with the highest value (i.e. score) of the objective function is selected. A solution that represents the largest value of the objective function possible is known as globally optimal. Given finite computing resources obtaining globally optimal solutions is not always possible. Furthermore, globally optimal solutions are not always unique in that multiple solutions might yield identical values for the optimization objective. The ATS is designed such that solutions: a) do not violate constraints placed on orders by users or the global constraints placed by the ATS, such as those described below under “LOCKED AND CROSSED MARKETS” and those in Part III Item 20; and b) are optimal amongst the solutions explored during the optimization process. In the event that multiple solutions are equally optimal (i.e., have equal values of the objective function), any candidate in the set of equally optimal solutions may be selected based on which solution maximizes filled shares in Custom Counterparty Groups, which solution maximizes the average fill size of each execution, or a solution may be chosen randomly. The tie-breaking logic is the same for all Subscribers and in all cases does not consider the identity of Subscribers or the identities of their respective clients.

Once a solution to the optimization is identified, clearing prices are determined for each symbol. A solution to the optimization represents a matching of buyers to sellers for which it is possible to find a list of per-security auction clearing prices (the “price vector”). For a given auction, all orders selected for participation via the solution to the optimization receive fills at the same clearing price on a per-security and, where applicable, a per-Custom Group (see below) basis. A given output to the optimization might yield more than one possible set of clearing prices (solution). When more than one possible set of clearing prices is identified, the ATS then uses a secondary procedure that seeks to identify distinct per-security clearing prices at the middle of the feasible range of clearing prices. In the absence of a two-sided quote (measured as described in Part III Item 23) the optimizer uses the last trade price (also measured as described in Part III Item 23) instead of the midpoint. The optimization solution represents a matching of buyers and sellers and is the mechanism for establishing order priority and share allocation.

When orders with identical sets of constraints enter the auction (e.g. Limit Orders for the same security at the same limit price with no further constraints) an individual optimization

technique may treat them as components of a single, larger “synthetic” order. When this approach results in a partially filled synthetic order (i.e. when there is insufficient volume on the contra side to fill the entire synthetic order), allocation to constituent orders happens via a randomized round-robin mechanism. Round-robin allocation is equivalent to:

- 1) Assigning a random sequencing to all constituent orders;
- 2) Allocating a random number of shares (up to 100 shares at a time) to constituent orders according to the random sequence, honoring all constraints (e.g. maximum quantity);
- 3) Repeating step 2 above until the supply of available contra shares runs out.

In the case where only Limit Orders and Peg Orders with no further constraints (i.e. beyond price / quantity constraints) are eligible to participate for a given security (in a given auction), the ATS match process behaves the same as described above.

CUSTOM COUNTERPARTY GROUPS: As described in Part III Item 14, the ATS offers functionality for Subscribers to specify Custom Groups of counterparties against which to execute on an order-by-order basis or at the session level. The optimization logic for determining which orders execute, and at what price, is the same for orders within a Custom Group as for orders outside the Custom Group. Subscribers may provide an execution instruction on their Custom Group order to specify whether they would like their order to only execute against other orders in the Custom Group (which is also the default behavior if no instruction is provided), or to allow some or all of their order’s fillable quantity to be executed outside of the Custom Group (i.e. in cases where not all of the order’s fillable quantity can be executed within the Custom Group). The number of shares executed within Custom Groups is used as a tie-breaker in the optimization process described in Part 3 Item 11 under the MATCH OPTIMIZATION heading.

All orders in a given security that do not execute as part of a Custom Group will execute at the same price in a given auction. Given the different set of counterparty liquidity within Custom Groups, Custom Group orders may receive executions at different (i.e. potentially better or worse) prices than orders not in that particular Custom Group. As also discussed in Part III Item 14, orders may participate in multiple Custom Groups simultaneously. In this scenario, an order may be executed at unique prices per Custom Group in which it executes. As discussed in Part III Item 21, the OneChronos ATS submits one trade report per price per symbol per auction.

ADDITIONAL DETAILS ON OPTIMIZATION: Combinatorial auctions belong to a class of computationally intensive search and optimization tasks known as non-deterministic polynomial-time (NP) hard problems. Given that problem instances (auctions) could allow for varying degrees of complexity and therefore computational requirements, they cannot always be exhaustively evaluated. Accordingly, the ATS uses time and resource bounded optimization techniques whereby computational resources are utilized over a period of time lasting on the order of 10s of milliseconds. The amount of resources to be used for a given auction optimization cycle is fixed a priori and arrived at without knowledge of the orders participating in a given auction cycle. Between auctions, the total amount of resources available for

optimization may fluctuate as a function of historical and expected future need for computational resources. While these optimization techniques are intended to improve the efficacy of the matching process, they might not identify a globally optimal solution in every scenario. Specifically, the optimizer makes decisions about the allocation of finite computing resources to exploring subsets of the solution space in ways that might leave portions of the search space unexplored.

To ensure that the optimization techniques utilized by the ATS do not result in a “worse” overall outcome for Subscribers than if the ATS utilized individual security-by-security order books for matching securities, every auction includes a “lower bounding” procedure. The lower bounding procedure is deterministic and works by computing the value of the hierarchical objective strictly considering the components of Limit Orders, and Peg Orders. This produces a similar set of outcomes as a traditional per-security call auction would if it were to use a similar matching objective. As such, it places a deterministic lower bound on the performance of the optimization. A solution found through this deterministic search process is selected if it maximizes the objective function more than other solutions found by the optimization process.

PRIORITY AND PRICE FORMATION EXAMPLE: Illustrative examples of the ATS optimization, and price assignment procedure follow.

Example 1: Basic Bilateral Fill

Order 1: Buy 100 @ \$10.01

Order 2: Sell 100 @ \$10.00

Orders 1 and 2 will fill 100 shares @ 10.005. Any price in the interval [\$10.00, \$10.01] is a valid clearing price that will maximize price improvement. In the absence of these other constraints, OneChronos will fill at the midpoint of the clearing price range.

Example 2: Basic Multilateral Fill

Order 1: Buy 100 @ \$10.01

Order 2: Buy 100 @ \$10.01

Order 3: Sell 200 @ \$10.00

Orders 1 and 2 will fill 100 shares at \$10.005. Order 3 will fill 200 shares @ 10.005.

Example 3: Expressive Bidding Order 1: Buy 100 ABC @ \$10.01 (Target Order from Subscriber A) Order 2: Sell 100 ABC @ \$10.00 (from Subscriber B)

In this example, Subscriber A has entered a Target Order using the Expressive Bidding functionality, and has specified via Bidder Logic and Market Input that its Target Order should fill only if it is executed at the midpoint of the NBBO. If we assume the midpoint of the NBBO is \$10.005, then since the constraint is met, Orders 1 & 2 will match at \$10.005 (as in Example

#1) and is equivalent in outcome to a midpoint Peg order.

Example 4: Pairs Expressive Bidding

Order 1: Buy 100 ABC @ \$10.01 (Order #1 of a Pair Order from Subscriber A)

Order 2: Sell 100 XYZ @ \$30.00 (Order #2 of a Pair Order from Subscriber A)

Order 3: Sell 100 ABC @ \$10.00 (from Subscriber B)

Order 4: Buy 100 XYZ @ \$30.01 (from Subscriber C)

In this example, Subscriber A has entered a pairs order using the Expressive Bidding functionality, and has specified via Bidder Logic that both orders should fill, or neither order should fill. Since there is contra interest on both sides, Orders 1 & 3 will match at \$10.005 (as in Example #1), and similarly, Orders 2 and 4 will match at \$30.005.

Example 5: Multilateral Limit Order Fill

Order 1: Sell 100 shares, midpeg, @ \$20.33

Order 2: Buy 25 shares, limit @ \$20.40

Order 3: Buy 25 shares, limit @ \$20.36

Order 4: Buy 50 shares, limit @ \$20.35

NBBO: \$20.32 x \$20.35

In this example, all four orders will fully fill at \$20.3425. The midpoint of the NBBO is \$20.335, which is more passive than the sell order's limit price of \$20.33, therefore the effective limit price of the sell order becomes \$20.335. All buy orders' limit prices are at or more aggressive than the NBO of \$20.35, so their effective prices are each \$20.35. The range of clearing prices is then [\$20.335, \$20.35]. Any fill price in this interval will result in an aggregate price improvement of \$2, so the midpoint of the range is chosen.

The aggregate price improvement is calculated as follows:

$$((\$20.3425 - \$20.33) * 100) + ((\$20.35 - \$20.3425) * 25) + ((\$20.35 - \$20.3425) * 25) + ((\$20.35 - \$20.3425) * 50) = \$2$$

LOCKED AND CROSSED MARKETS:

The ATS flags securities as locked or crossed at the start of each auction using the NBBO "snapshot" created using the procedure described in Part III Item 23(a) "MEASUREMENT OF MARKET DATA AND NBBO." Because the time scales on which auctions run (10s of milliseconds) are much longer than the duration of a typical locked market (< 100 microseconds) the ATS allows Subscribers to specify via a port level setting if their orders for locked securities should remain eligible for the auction. Subscribers making this election might

receive executions during a locked market. The default setting permits executions during locked markets. The ATS does not execute trades in crossed securities as measured by the process described in Part III Item 23. Securities that were not crossed at the time of measurement (i.e. at the Cutoff Time) but become crossed during the auction may still receive fills.

EXECUTION ERRORS:

The Operator maintains Written Supervisory Procedures that include procedures for handling execution errors. Execution errors may be the result, for example, of an ATS system failure, an error on the part of an ATS Subscriber, or an error in data (e.g. NBBO) provided to the ATS and used in executing a trade. In any of these cases, ATS personnel contact all Subscribers party to the transaction or transactions affected by the error and determine the appropriate course of action. If all Subscribers party to the trade wish to keep the trade in place and applicable FINRA, SEC, and SRO rules allow, no action is taken and the trade is processed. If one or more of the Subscribers wishes to break or correct a trade, the Operator may accordingly cancel or issue corrections for erroneous trades. If the Operator determines a transaction to be a bona fide error, the Operator may in its sole discretion accept erroneous legs of a transaction into an error account maintained with the Operator's clearing provider. The Operator promptly trades out of any positions it takes into the error account via execution services offered by its clearing provider. The CCO reviews all activity in the Operator's error account on a monthly basis to ensure that the account maintains a zero balance and that the account is only used for bona fide errors.

- d. *Are the established, non-discretionary rules and procedures required to be identified in Item 11(c) the same for all Subscribers and the Broker-Dealer Operator?*

Yes *No*

If no, identify and explain any differences.