Open Auction 2.0

- With this release we are also improving the Open Auction Model for US and Canadian Exchanges, similarly to Close Auction 2.0 **we will use auction feeds leveraging imbalance and paired volume data versus 20-day historical averages**, to more accurately forecast the open auction slice.
- Impacts: **If auction is enabled for POV, AP, Open+ and Open Target algos**. TWAP/VWAP are out of scope.
- We will use the same auction feeds from the exchanges as listed in Close Auction 2.0. No open auction feed for CA
- Open Auction 2.0 can send as many replaces as necessary to respond to the auction feed data received, unlike Close Auction 2.0 which will only recompute and submit one time
- There are two **auction feed response types**:
    - **Offset All** – which will use the auction feed data and commit as much as it can into the open while respecting any max volume settings on the order. Applies by default to AP, and Open+ (preserving existing behavior).
    - **Target** – will respect percentage of volume settings on an order. Applies by default to POV and Open Target (preserving existing behavior).
    - In a subsequent release these options will be available on the Client Portal to configure.
- **Open Auction Behavior**
    1. Upon order entry, we will determine if we can react to the auction data feed or cached data. If we can, we will use the auction feed response type to compute the open auction slice. A null value will default to Offset All.
    2. For Open+ only, if the auction feed responses is Target and no target participation is identified, we will use urgency to compute the target auction participation
    3. When new auction feed data comes in after order entry we will validate, and if the submit cut-off time has not passed, we will recompute the auction size and send a new MOO/LOO order

Close Auction 2.0

- With this release we are improving the Close Auction Model for US and Canadian Exchanges **we will use auction feeds leveraging imbalance and paired volume data versus 20-day historical averages**, to more accurately forecast the close auction slice.
- If we can improve the forecast of close auction volumes, we can better determine how much we need to get done in the core session
- Impacts: **If auction is enabled for POV, AP, Close+ and Close Target algos**. TWAP/VWAP are out of scope.
- We will use auction feeds for the following exchanges:
  - **US** – NYSE (XYNS), Nasdaq (XNAS), NYSE Arca (ARCX), and NYSE American (XASE). CBOE Bats is not in scope as we don't consume their feed and there is not a lot of primary listing volume.
  - **Canada** – TSX (XTSE) and TSXV (XTSX). CSE is not is scope as they don't have a close auction and NEO Lit is not in scope as they have similar LSE Close style auction model and are mostly ETFs which don't have Close Auctions.
  - **EMEA** – there is no change to the EMEA models as they don't have cut-off times, and we continuously consume auction data in real-time
- **Close Auction behavior based on Order Entry**
  - If an order comes in prior to imbalance forecast start time, wait for imbalance to come in after the forecast time to start reacting
  - If an order comes in after the imbalance forecast start time, check the cached imbalance data and if it is marked closing it should immediately react
  - If an order comes in after the imbalance forecast end time, check the cached imbalance data and if it is marked closing it should immediately react

Venue	Auction	Dissemination of Imbalance Data	Order Type Restrictions
NYSE	Open	8:00am – 9:30 am (every 1 sec)	MOO/LOO can be placed/cancelled until the DMM (Designated Market Maker) opens the security; can occur after 9:30am
	Close	3:50pm – 4:00pm (every 1 sec)	3:50 pm cutoff to place/cancel electronic MOC/LOC; Regulatory Imbalance (>=50K shares imbalance) offsetting orders only (limit/market) after 3:50 pm. 3:59:50 pm cutoff to place/cancel DOrders; Note Dorders are included in imbalance after 3:55pm
Nasdaq	Open	9:25am – 9:28am (every 10sec) 9:28am – 9:30am (every 1 sec)	9:28am cutoff to place MOO/LOO; Late LOO accepted until 9:29:20am if limit is more passive than 9:28am; Imbalance orders only after 9:29:30am
	Close	3:50pm – 3:55pm (every 10sec) 3:55pm – 4:00pm (every 1sec)	3:55pm cutoff to place MOC/LOC; Late LOC accepted until 3:58pm if limit is more passive than 3:50pm or the 3:55pm reference price.
ARCA	Open	8:00am – 9:30am	9:29am cutoff to place/cancel MOO/LOO; Imbalance reducing orders (limit/market) accepted after 9:29am during the freeze period
	Close	3:00pm – 4:00pm	3:59pm cutoff to place/cancel MOC/LOC; Imbalance reducing orders (limit/market) accepted after 3:59pm during the freeze period
ASE	Open	8:00am – 9:30am	9:29am cutoff to place/cancel MOO/LOO; Imbalance reducing orders (limit/market) accepted after 9:29:55am during the freeze period
	Close	3:00pm – 4:00pm	3:50pm cutoff to place/cancel MOC/LOC; Imbalance reducing orders (limit/market) accepted after 3:50pm during the freeze period
TSX/TSXV	Open	Not applicable	Not applicable
	Close	3:50pm – 4:00pm (every 10 sec)	3:50 cutoff to cancel/amend; New MOC accepted until 3:56pm (freeze period*); 3:50pm cutoff to cancel LOC; LOC aggressive price amends only until 3:56pm (freeze period*); New LOC accepted until Close