# PHLX System Settings

## Hours Of Operation

7:30 a.m. ET – System begins accepting orders.

9:30 a.m. ET – System begins disseminating imbalance and price information for the opening auction.

9:30 a.m. ET – System begins executing orders.

4:00 p.m. ET – System stops accepting and executing equity options orders.

4:15 p.m. ET – System stops accepting and executing ETF and Index Options orders.

## Opening

- The PHLX Opening Process utilizes the Primary Listing Market for the Underlying Security.
- **Valid Width Quote Differentials Table** – The table of values defined as an acceptable bid/ask differential for individual market maker quotes required to

| Bid Price low end of range | Bid Price high end of range | Maximum bid/ask differential |
|---|---|---|
| $0.00 | $1.99 | $0.75 |
| $2.00 | $4.99 | $1.20 |
| $5.00 | $9.99 | $1.50 |
| $10.00 | $19.99 | $2.40 |
| $20.00 | $20.00+ | $3.00 |

- **Quality Opening Market Differentials Table** – The table of values defined as an acceptable bid/ask differential in order to establish a "quality opening market."

**Non-Penny Issues:**

| Price low end of range | Price high end of range | Maximum bid/ask differential |
|---|---|---|
| $0.00 | $1.00 | $0.15 |
| $1.01 | $2.00 | $0.22 |
| $2.01 | $3.00 | $0.30 |
| $3.01 | $5.00 | $0.45 |
| $5.01 | $7.00 | $0.60 |
| $7.01 | $10.00 | $0.75 |
| $10.01 | $20.00 | $0.90 |
| $20.01 | $30.00 | $1.20 |
| $30.01 | $40.00 | $1.50 |
| $40.01 | 40.01+ | $2.25 |

Standard Penny Issues (excluding SPY/IWM/QQQQ):

| Price low end of range | Price high end of range | Maximum bid/ask differential |
|---|---|---|
| $0.00 | $1.00 | $0.10 |
| $1.01 | $2.00 | $0.10 |
| $2.01 | $3.00 | $0.14 |
| $3.01 | $5.00 | $0.20 |
| $5.01 | $7.00 | $0.30 |
| $7.01 | $10.00 | $0.40 |
| $10.01 | $15.00 | $0.60 |
| $15.01 | $20.00 | $0.80 |
| $20.01 | $30.00 | $1.20 |
| $30.01 | $40.00 | $1.60 |
| $40.01 | $40.01+ | $2.00 |

Special Penny Issues (SPY/IWM/QQQQ)

| Price low end of range | Price high end of range | Maximum bid/ask differential |
|---|---|---|
| $0.00 | $0.40 | $0.06 |
| $0.41 | $1.00 | $0.10 |
| $1.01 | $2.00 | $0.12 |
| $2.01 | $3.00 | $0.14 |
| $3.01 | $5.00 | $0.18 |
| $5.01 | $7.00 | $0.24 |
| $7.01 | $10.00 | $0.40 |
| $10.01 | $15.00 | $0.60 |
| $15.01 | $20.00 | $0.80 |
| $20.01 | $30.00 | $1.00 |
| $30.01 | $40.00 | $1.20 |
| $40.01 | $40.01+ | $1.60 |

- **Opening Quote Range Table** – The table of values added to the offer and subtracted from the bid to establish PHLX's maximum Opening Quote Range.

Non-Penny Issues:

| Price low end of range | Price high end of range | Acceptable range (highest bid – X or lowest ask + X) | Range Multiplier for options that expire >9 months away |
|---|---|---|---|
| $0.00 | $1.00 | $0.10 | 1.5X |
| $1.01 | $2.00 | $0.15 | 1.5X |
| $2.01 | $3.00 | $0.20 | 1.5X |
| $3.01 | $5.00 | $0.30 | 1.5X |
| $5.01 | $7.00 | $0.40 | 1.5X |
| $7.01 | $10.00 | $0.50 | 1.5X |
| $10.01 | $20.00 | $0.60 | 1.5X |

| Price low end of range | Price high end of range | Acceptable range (highest bid – X or lowest ask + X) | Range Multiplier for options that expire >9 months away |
|---|---|---|---|
| $20.01 | $30.00 | $0.80 | 1.5X |
| $30.01 | $40.00 | $1.00 | 1.5X |
| $40.01 | + | $1.50 | 1.5X |

**Standard Penny Issues (excluding SPY/IWM/QQQQ):**

| Price low end of range | Price high end of range | Acceptable range (highest bid – X or lowest ask + X) | Acceptable Range for options that expire >9 months away |
|---|---|---|---|
| $0.00 | $1.00 | $0.05 | $0.10 |
| $1.01 | $2.00 | $0.05 | $0.14 |
| $2.01 | $3.00 | $0.07 | $0.18 |
| $3.01 | $5.00 | $0.10 | $0.40 |
| $5.01 | $7.00 | $0.15 | $0.50 |
| $7.01 | $10.00 | $0.20 | $0.60 |
| $10.01 | $15.00 | $0.30 | $0.75 |
| $15.01 | $20.00 | $0.40 | $0.90 |
| $20.01 | $30.00 | $0.60 | $1.20 |
| $30.01 | $40.00 | $0.80 | $1.50 |
| $40.01 | + | $1.00 | $2.25 |

**Special Penny Issues (SPY/IWM/QQQQ)**

| Price low end of range | Price high end of range | Acceptable range (highest bid – X or lowest ask + X) | Range Multiplier for options that expire >9 months away |
|---|---|---|---|
| $0.00 | $0.40 | $0.03 | 2.0X |
| $0.41 | $1.00 | $0.05 | 2.0X |
| $1.01 | $2.00 | $0.06 | 2.0X |
| $2.01 | $3.00 | $0.07 | 2.0X |
| $3.01 | $5.00 | $0.09 | 2.0X |
| $5.01 | $7.00 | $0.12 | 2.0X |
| $7.01 | $10.00 | $0.20 | 2.0X |
| $10.01 | $15.00 | $0.30 | 1.5X |
| $15.01 | $20.00 | $0.40 | 1.5X |
| $20.01 | $30.00 | $0.50 | 1.5X |
| $30.01 | $40.00 | $0.60 | 1.5X |
| $40.01 | + | $0.80 | 1.5X |

- **Imbalance Timer** – 500 milliseconds – Amount of time the system may wait before opening an option with an imbalance after broadcasting an Imbalance Message.
- **Number of Imbalance Process Iterations Before an Opening with an Imbalance** – 4 iterations - Number of times the system will repeat the imbalance process before opening with a remaining imbalance.

- **Duration to Display Orders in the PHLX Quote Before Cancelling Them Back to the Firm** – 0 seconds - Amount of time unexecuted contracts from the imbalance, which were not traded or routed, will be displayed in the PHLX quote at the opening price prior to being cancelled back to the entering participant.
- **Opening Order Cancel Timer** – 30 seconds – Period of time after the primary market underlying has opened and PHLX has not initiated an Opening Cross, at which all non-GTC orders submitted over FIX in the affected option will be cancelled back to the sending firm. This feature is optional to participants and is engaged at the firm mnemonic level.

## Routing

- **Opening Route Timer** – 1 second - Amount of time the system waits before routing to an away market as part of the opening process.
- **Route Timer** – 200 milliseconds - Amount of time the system will allow participants and other market participants to interact with a FIND or SRCH order before the order is routed to an away market during an during normal trading.

## Quote Exhaust & Acceptable Trade Range

- **Quote Exhaust Timer** – 200 milliseconds - Amount of time after a quote has been exhausted during which any participant may submit quotes, sweeps or orders to allow possible price improvement before PHLX trades at the next available price.
- **Acceptable Trade Range (ATR) Refresh Period** – 200 milliseconds - Amount of time an order or quote will be posted at the boundary price of an ATR to allow the market to refresh before continuing to execute at more aggressive prices.
- **Acceptable Range Table** – The table of values added or subtracted from the reference price to establish PHLX's Acceptable Range for executions of remaining contracts from an initiating quote or order. These tables are used for both Quote Exhaust and ATR.

Non-Penny Issues:

| Price low end of range | Price high end of range | Acceptable Range from Reference Price | Acceptable Range for options that expire >9 months away |
|---|---|---|---|
| $0.00 | $1.00 | $0.05 | $0.05 |
| $1.01 | $2.00 | $0.05 | $0.05 |
| $2.01 | $3.00 | $0.10 | $0.15 |
| $3.01 | $5.00 | $0.10 | $0.15 |
| $5.01 | $7.00 | $0.15 | $0.20 |
| $7.01 | $10.00 | $0.15 | $0.20 |
| $10.01 | $20.00 | $0.20 | $0.30 |
| $20.01 | $30.00 | $0.30 | $0.45 |
| $30.01 | $40.00 | $0.50 | $0.75 |
| $40.01 | + | $0.50 | $0.75 |

Standard Penny Issues (excluding SPY/IWM/QQQQ):

| Price low end of range | Price high end of range | Acceptable Range From Reference Price | Acceptable Range for options that expire >9 months away |
|---|---|---|---|
| $0.00 | $1.00 | $0.05 | $0.10 |
| $1.01 | $2.00 | $0.05 | $0.10 |
| $2.01 | $3.00 | $0.07 | $0.14 |

| Price low end of range | Price high end of range | Acceptable Range From Reference Price | Acceptable Range for options that expire >9 months away |
|---|---|---|---|
| $3.01 | $5.00 | $0.10 | $0.20 |
| $5.01 | $7.00 | $0.15 | $0.30 |
| $7.01 | $10.00 | $0.20 | $0.40 |
| $10.01 | $15.00 | $0.30 | $0.45 |
| $15.01 | $20.00 | $0.40 | $0.60 |
| $20.01 | $30.00 | $0.60 | $0.90 |
| $30.01 | $40.00 | $0.80 | $1.20 |
| $40.01 | + | $1.00 | $1.50 |

Special Penny Issues (SPY/IWM/QQQQ)

| Price low end of range | Price high end of range | Acceptable Range From Reference Price | Acceptable Range for options that expire >9 months away |
|---|---|---|---|
| $0.00 | $0.40 | $0.03 | $0.06 |
| $0.41 | $1.00 | $0.05 | $0.10 |
| $1.01 | $2.00 | $0.06 | $0.12 |
| $2.01 | $3.00 | $0.07 | $0.14 |
| $3.01 | $5.00 | $0.09 | $0.18 |
| $5.01 | $7.00 | $0.12 | $0.24 |
| $7.01 | $10.00 | $0.20 | $0.40 |
| $10.01 | $15.00 | $0.30 | $0.45 |
| $15.01 | $20.00 | $0.40 | $0.60 |
| $20.01 | $30.00 | $0.50 | $0.75 |
| $30.01 | $40.00 | $0.60 | $0.90 |
| $40.01 | + | $0.80 | $1.20 |

- **Iterations of ATR and Quote Exhaust** – 5 iterations – Number of iterations that ATR and/or Quote Exhaust may occur before an aggressively priced order or quote will be cancelled back to the sending participant.

## Risk Protection Thresholds

- **Market Order Spread Protection** – default $5.00 – Maximum bid/ask differential permissible for a Market Order to be accepted by the trading system; if the bid/ask differential of the NBBO and internal BBO is wider than a configurable amount (configured at the underlying symbol level), a Market Order submitted into the system will be rejected; this protection is not applicable to complex orders.  All symbols are configured at 5.00, with the following exceptions:

| Symbol | Width |
|---|---|
| AZO | $20.00 |
| BIO | $20.00 |
| BKNG | $22.00 |
| BLK | $20.00 |
| CHE | $20.00 |
| CHTR | $20.00 |

| Symbol | Width |
| --- | --- |
| CMG | $20.00 |
| EQIX | $20.00 |
| ISRG | $20.00 |
| LMT | $20.00 |
| MELI | $20.00 |
| MKL | $22.00 |
| MTD | $20.00 |
| NDX | $100.00 |
| NOC | $20.00 |
| ORLY | $20.00 |
| REGN | $20.00 |
| ROP | $20.00 |
| SIVB | $20.00 |
| TDG | $20.00 |
| TSLA | $20.00 |
| Y | $20.00 |

## Complex

**Complex Opening Delay Timer** – 5 seconds – Amount of time the system will wait after the last options component of a complex order strategy has opened before initiating an opening Complex Auction.

**Complex Order Opening Process (COOP) Duration** – 250 milliseconds** – Amount of time participants have to submit interest responding to a complex opening auction notification.

**Complex Live Auction (COLA) Duration** – 100 milliseconds – Amount of time participants have to submit interest responding to a complex auction notification.

**Acceptable Complex Execution Parameter (ACE)** – greater of $0.05 or 5% for non-stock tied orders; 0.5% for stock tied orders - A price range, based on the cNBBO, outside of which a Complex Order will not be executed.

**Strategy Price Protection (SPP)** - $0.02 – Acceptable range for Vertical Spreads to trade below zero or above the difference in the strikes; Acceptable range for Time Spreads to trade below zero.

**Butterfly Spread Protection Maximum Buffer** - $0.00 and 0% – Acceptable range for a Butterfly Spread to above the intrinsic value of the spread defined as the difference in in the strike prices of the middle and outer leg for a Butterfly spread.

**Butterfly Spread Protection Minimum Buffer** - $0.00– Acceptable range for a Butterfly Spread to trade below zero.

**Box Spread Protection Maximum Buffer** - $0.00 and 0% – Acceptable range for a Box Spread to above the intrinsic value of the spread defined as the difference in in the strike prices of the middle and outer leg for a Box spread.

**Box Spread Protection Minimum Buffer** - $0.00– Acceptable range for a Box Spread to trade below zero.

*No COLAs will begin with less than 10 seconds remaining in the trading day.

## Price improvement (PIXL)

**PIXL Auction Duration** – 100 milliseconds – Amount of time participants have to submit interest responding to a price improvement (PIXL) auction notification.

For more information, contact Transaction Services U.S. Market Sales at +1 800 846 0477 (Option #2).

## Message Traffic Mitigation

PHLX shall disseminate an updated bid and offer price together with the associated size to OPRA when the bid or offer price changes, the quantity decreases or the quantity increases by an amount greater than or equal to 10%.