SECURITIES AND EXCHANGE COMMISSION
(Release No. 34-102005; File No. SR-NYSEARCA-2024-112)

December 19, 2024

Self-Regulatory Organizations; NYSE Arca, Inc.; Notice of Filing of Proposed Rule Change to Amend Rule 7.31-E to Adopt the Selective Midpoint Order

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (the "Act"),[1] and Rule 19b-4 thereunder,[2] notice is hereby given that on December 18, 2024, NYSE Arca, Inc. ("NYSE Arca" or the "Exchange") filed with the Securities and Exchange Commission (the "Commission") the proposed rule change as described in Items I, II, and III below, which Items have been prepared by the Exchange. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization's Statement of the Terms of Substance of the Proposed Rule Change

The Exchange proposes to amend Rule 7.31-E to adopt the Selective Midpoint Order. The proposed rule change is available on the Exchange's website at www.nyse.com, at the principal office of the Exchange, and at the Commission's Public Reference Room.

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, the self-regulatory organization included statements concerning the purpose of, and basis for, the proposed rule change and discussed any comments it received on the proposed rule change. The text of those statements may be examined at the places specified in Item IV below. The Exchange has prepared summaries, set forth in sections A, B, and C below, of the most significant parts of such statements.

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1 15 U.S.C. 78s(b)(1).

2 17 CFR 240.19b-4.

A. Self-Regulatory Organization's Statement of the Purpose of, and the Statutory Basis for, the Proposed Rule Change

1. Purpose

The Exchange proposes to amend Rule 7.31-E(h)(3) to decommission the Discretionary Pegged Order ("DPO") and introduce the Selective Midpoint Order ("SeMi Order"). The SeMi Order will be similar to the DPO in that it is a discretionary order type, but will, unlike the current DPO, provide price protection during periods of market instability based on input from a gradient-boosting machine learning model.

Background

The Exchange currently offers the DPO, which is a non-displayed order to buy (sell) that is pegged to the same side of the PBBO and assigned a working price equal to the lower (higher) of the midpoint of the PBBO (the "Midpoint Price") or the limit price of the order.[3] Any untraded shares of such order are assigned a working price equal to the lower (higher) of PBB (PBO) or the order's limit price, which is automatically adjusted in response to changes to the PBB (PBO) for buy (sell) orders up (down) to the order's limit price. A DPO will exercise the least amount of discretion necessary from its working price to its discretionary price (defined as the lower (higher) of the Midpoint Price or the limit price of the order) to trade with contra-side interest.

Prior to November 2022, the DPO would not exercise discretion if the PBBO was determined to be unstable via a "quote instability calculation" that assessed the probability of a change to the PBB or PBO.[4] The Exchange used the quote instability calculation along with

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[3] See Rule 7.31-E(h)(3). As defined in NYSE Arca Rule 1.1, "PBBO" means the Best Protected Bid and the Best Protected Offer. Rule 1.1 also defines "PBB" as the highest Protected Bid and "PBO" as the lowest Protected Offer.

[4] See Securities Exchange Act Release No. 95154 (June 24, 2022), 87 FR 39134 (June 30, 2022) (SR-NYSEArca-2022-13) (Notice of Filing of Amendment No. 2 and Order Granting Accelerated Approval of a

real-time relative quoting activity of protected quotations to assess the probability of an imminent change to the PBBO (the "quote instability factor"). When the quoting activity met certain predefined criteria and the quote instability factor calculated was greater than the Exchange's predefined quote instability threshold, the Exchange treated the quote as unstable and restricted DPOs from exercising discretion. In November 2022, the Exchange amended Rule 7.31-E(h)(3) to eliminate the quote stability calculation, allowing DPOs to exercise discretion even during potential periods of quote instability.[5]

Proposed Rule Change

The Exchange proposes to modify Rule 7.31-E(h)(3) to replace the DPO with the SeMi Order. The SeMi Order will share the same basic attributes as the DPO. Like the DPO, the SeMi Order would be a non-displayed order to buy (sell) that is pegged to the same side of the PBBO and assigned a working price equal to the lower (higher) of the Midpoint Price or the limit price of the order. Any untraded shares of a SeMi Order would be assigned a working price equal to lower (higher) of the PBB (PBO) or the order's limit price and automatically adjusted in response to changes to the PBB (PBO) for buy (sell) orders up (down) to the order's limit price. In order to trade with contra-side orders on the NYSE Arca Book, a SeMi Order to buy (sell) would exercise the least amount of price discretion necessary from its working price to its discretionary price, which is defined as the lower (higher) of the Midpoint Price or the SeMi Order's limit price.

Proposed Rule Change, as Modified by Amendment No. 2, To Amend Rule 7.31-E(h)(3) Relating to Discretionary Pegged Orders).

5 See Securities Exchange Act Release No. 96322 (November 15, 2022), 87 FR 69376 (November 18, 2022) (SR-NYSEARCA-2022-76) (Notice of Filing and Immediate Effectiveness of Proposed Rule Change to Amend Rule 7.31-E). The Exchange resumed offering the DPO in November 2022, after previously filing to temporarily suspend its use in August 2022. See Securities Exchange Act Release No. 95584 (August 23, 2022), 87 FR 52826 (August 29, 2022) (SR-NYSEARCA-2022-54) (Notice of Filing and Immediate Effectiveness of Proposed Rule Change To Amend Rule 7.31-E).

SeMi Orders would not be displayed, must be designated Day, and would be eligible to be designated for the Core Trading Session only. SeMi Orders designated for the Early Trading Session or Late Trading Session would be rejected.

When exercising discretion, SeMi Orders (like DPOs today) would maintain their time priority at their working price as Priority 3 - Non-Display Orders and are prioritized behind Priority 3 - Non-Display Orders with a working price equal to the discretionary price of a SeMi Order at the time of execution. If multiple SeMi Orders are exercising price discretion during the same book processing action, they would maintain their relative time priority at the discretionary price.

Accordingly, the Exchange proposes to replace existing references to the "Discretionary Pegged Order" in Rule 7.31-E(h)(3) and subparagraphs (A) and (B) thereunder with references to the "Selective Midpoint Order."[6]

The Exchange proposes to add new Rule 7.31-E(h)(3)(C) to provide that the SeMi Order, as proposed, would exercise price discretion to its discretionary price, except during periods of quote instability as identified by the Selective Midpoint Indicator ("SMI") (as discussed in further detail below). If the SMI determines the PBBO for a particular security to be an unstable quote, both an arriving and resting SeMi Order would wait for a PBBO that is stable before the order's working price is adjusted and the order becomes eligible to trade. In other words, a SeMi Order would be ineligible to trade when the SMI identifies unstable market conditions and would remain in that state until the SMI determines that market conditions have stabilized, thereby preventing potentially undesirable executions during volatile or unstable market conditions.

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[6] The Exchange also proposes conforming changes in Rules 7.18-E(b)(1), 7.18-E(c)(1) and (5), 7.31-E(i)(3), and 7.34-E(c)(1)(A) to replace references to "Discretionary Pegged Orders" with references to "Selective Midpoint Orders."

Whereas the DPO previously relied on one static logistical regression model to forecast market instability and prevented DPOs in any symbol from exercising discretion to trade when the model anticipated an unstable market, the SeMi Order, as proposed, would rely on the SMI to predict market instability using a symbol-specific gradient-boosting machine learning model and would protect SeMi Orders from trading when the SMI predicts quote instability for a given symbol.

The Exchange also proposes new Rule 7.31-E(h)(3)(D) to provide for SeMi Orders to be optionally designated as Liquidity Providing. Proposed Rule 7.31-E(h)(3)(D)(i) would provide that a SeMi Order designated as Liquidity Providing will only execute on arrival against resting orders that include a Non-Display Remove Modifier and are priced within the Liquidity Providing SeMi Order's discretionary range.[7]

Proposed Rule 7.31-E(h)(3)(D)(ii) would provide that if a resting contra-side order that does not include a Non-Display Remove Modifier is priced within an arriving Liquidity Providing SeMi Order's discretionary range, the Liquidity Providing SeMi Order will be placed on the NYSE Arca Book, and its discretionary range will be adjusted to equal the resting price of a non-displayed contra-side order or to one MPV less aggressive than the resting price of a displayed contra-side order.[8]

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7 The Exchange also proposes related conforming changes to Rules 7.31-E(d)(2)(B), 7.31-E(d)(3)(F), and 7.31-E(e)(1)(C) to provide that Non-Displayed Limit Orders, MPL Orders, and Non-Routable Limit Orders designated with a Non-Display Remove Modifier will trade as takers against Liquidity Providing SeMi Orders.

8 The Exchange notes that allowing Liquidity Providing SeMi Orders to trade with resting orders with a Non-Display Remove Modifier, as well as adjusting the discretionary range of such orders, would be consistent with how similar discretionary order types function on other equities exchanges. See, e.g., Cboe EDGX Exchange, Rule 11.8(g)(5) ("[Midpoint Discretionary Orders ("MDOs")] that are not entered with a [Quote Depletion Protection ("QDP")] instruction, as defined in Rule 11.8(g)(10), will only act as the liquidity provider. MDOs entered with a QDP instruction will instead be allowed to remove liquidity, by default, unless the User chooses to require that the MDO only act as a liquidity provider. If the instructions included on an MDO do not permit the MDO to remove liquidity, it will only execute on entry against resting orders that include a Super Aggressive instruction priced at the MDO's pegged price if the MDO

Proposed Rule 7.31-E(h)(3)(D)(iii) provides that a Liquidity Providing SeMi Order resting on the NYSE Arca Book will not trade with an arriving contra-side order that cannot remove liquidity.[9] Once such arriving contra-side order is placed on the NYSE Arca Book, the discretionary range of the Liquidity Providing SeMi Order will be adjusted to equal the resting price of a non-displayed contra-side order or to one MPV less aggressive than the resting price of a displayed contra-side order.

Proposed Rule 7.31-E(h)(3)(D)(iv) would provide that, once resting on the NYSE Arca Book, the discretionary range of a Liquidity Providing SeMi Order will be adjusted based on resting contra-side interest as described in proposed subparagraphs (ii) and (iii) of this Rule when its working price Changes. In addition, proposed Rule 7.31-E(h)(3)(D)(iv)(a) and (b) provide that a Liquidity Providing SeMi Order to buy (sell) will not be eligible to trade at a price equal to or above (below) any sell (buy) orders that are displayed and that have a working price equal to or below (above) the working price of such Liquidity Providing SeMi Order, or at a price above (below) any sell (buy) orders that are not displayed and that have a working price below (above) the working price of such Liquidity Providing SeMi Order.

Finally, the Exchange proposes to renumber current Rule 7.31-E(h)(3)(C) as 7.31-E(h)(3)(E). The Exchange proposes that, as with DPOs, if the PBBO is locked or crossed, SeMi Orders would wait for a PBBO that is not locked or crossed before the working price is adjusted

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also contains a Displayed instruction, and against resting orders that include an NDS instruction priced either at the MDO's pegged price or within its discretionary range. If a resting contra-side order that does not include [a Non-Displayed Swap] instruction is priced within the discretionary range of an incoming MDO that is not permitted to remove liquidity, the incoming MDO will be placed on the EDGX Book and its discretionary range will be shortened to equal the limit price of the resting contra-side order. Likewise, where an incoming order with a Post Only instruction does not remove liquidity on entry pursuant to Rule 11.6(n)(4) against a resting MDO, the discretionary range of the resting MDO will be shortened to equal the limit price of the incoming contra-side order with a Post Only instruction.").

9 The Exchange notes that this proposed handling is also consistent with the handling of similar discretionary order types by other equities exchanges. See id.

and the order becomes eligible to trade. Accordingly, the Exchange proposes to substitute "Selective Midpoint Order" for "Discretionary Pegged Order" in the text of proposed Rule 7.31-E(h)(3)(E).

Selective Midpoint Indicator

As described in further detail in the white paper attached as Exhibit 3 to this proposed rule change,[10] the SMI was developed using a decision tree model, which is a supervised learning algorithm used for classification and regression tasks. A decision tree model is trained sequentially, and each successive model seeks to improve on errors in the previous model by focusing on accurately predicting where the previous model performs poorly.

The Exchange determined to use a decision tree model in developing the SMI in large part because of the transparency it offers to its designers. The output of a decision tree is a hierarchy of questions that allows a user to follow the model's decision-making process, assess the importance of a given feature to the model's output, and examine the reasons underlying a specific output from the model. The Exchange believed it was important to build a model that could be interpreted and understood in this way to allow for the evaluation of, among other things, the relationships between market shifts, feature selection, and feature weightings, as well as to be able to assess overall model performance.

Market Instability Assessment

The Exchange set out to develop a model that would allow the SMI to predict market instability. For purposes of the model, the Exchange defined "instability" at a high level as relatively large price moves during a relatively short time frame. The Exchange chose PBBO

[10] See Exhibit 3, Selective Midpoint Indicator (SMI): A Gradient Boosted Signal Enabling Stable Order Executions (the "White Paper").

updates as the fundamental data points for the model based on the evenly distributed nature of PBBO updates throughout the trading day and the granular level of information such updates offer. The model's objective is to identify windows where changes to the PBBO are unstable, in order to predict unstable markets in real time and prevent SeMi Order trading accordingly.

The Exchange established the concept of a "price jump" to further understand and categorize periods of instability. A price jump is defined as a PBBO mid-price change of a pre-defined percentage of a symbol's spread (referred to as the spread threshold ***X***), in either direction, within a configurable time interval (referred to as the time horizon ***G***). The Exchange sought to identify price jumps following a PBBO update, whether positive or negative. A price jump is marked at a given point in time if, looking back to the start of the time horizon, the mid-price was at least the spread threshold in difference from the current mid-price. This approach identifies discrete price jumps over configurable time intervals, thereby offering the Exchange flexibility to adjust the spread threshold and/or time horizon parameters according to symbol-specific dynamics.[11]

To build the SMI as a continuous signal of market instability, the Exchange next applied the price jump definition to delineate continuous periods of market instability. At each PBBO update (at index time *i*), the Exchange determined whether there had been a price jump. If there was no price jump, the market would be considered stable. If there was a price jump, the Exchange continued to look for price jumps within the time horizon ***G***, until no price jump occurred. At that point, the Exchange would mark an unstable time window starting at the

[11] Figure 1 in Section 4.1 of the White Paper provides a detailed example of how a price jump is calculated.

PBBO update that occurred at *i*-1 or 50 microseconds prior to the PBBO update at time *i*, whichever is closest to *i*, and ending at the last price jump identified.[12]

Finally, the Exchange employed an additional parameter for a minimum time increment ***g*** to establish that unstable windows identified using the spread threshold and time horizon parameters are indicative of persistent price instability. If multiple price jumps occur within a small timeframe, such that the distance between the first and last price jumps is less than ***g***, the Exchange would not mark the window as unstable. The application of the minimum time increment parameter allows the Exchange to more accurately identify true periods of instability by filtering out temporary price jumps that are quickly followed by a reversion to the price prior to the observed price jump.[13]

In developing the SMI to facilitate the SeMi Order's ability to provide protection against potentially unfavorable executions, the Exchange also wanted to be able to differentiate between quote instability on the bid side and ask side. For example, the Exchange would not want to prevent executions of buy orders based on upwards instability of the mid-price of the PBBO because executions under those conditions would likely be favorable. Accordingly, if the mid-price of the PBBO is higher at the end of an unstable window, the Exchange would only mark PBBO updates during such window as unstable for the ask side (and vice versa for the bid side).

Model Development

To develop and train the models underlying the SMI, the Exchange used data from the NYSE Arca Book from August 29, 2024 through October 22, 2024 for a set of 500 symbols

[12] Figure 2 in Section 4.2 of the White Paper provides an example of the identification of unstable windows.

[13] Figure 3 in Section 4.2 of the White Paper demonstrates the operation of the minimum time increment parameter.

selected to reflect a representative sample of the U.S. equity markets.[14] The Exchange created evaluation data points for each PBBO update that include the closest book depth state at the time of that update. This merged data set of PBBO updates and book depth data has the benefit of the information from both types of data without overinflating the size of the data set. All features and parameters used by the models are calculated based on this merged data set.

The Exchange identified a set of features based on NYSE Arca Book data—e.g., book depth information, PBBO updates, number of IOC orders—that would contribute to the models. The Exchange selected 83 unique features that could be considered for incorporation into the model.[15] These features were identified based on an iterative process, and features were selected based on their ability to explain unstable periods identified by the application of the parameters discussed above and, going forward, to predict market instability on a real-time basis so that the SMI can effectively protect SeMi Orders from potentially unfavorable executions. In production, the Exchange proposes to select a subset of these 83 features to be weighted in the model's assessment of market instability (rather than having the model utilize all available features), because focusing on the features that have been identified as most important in predicting market instability for a given symbol would both optimize prediction accuracy and processing speed.[16]

Symbol-Specific Models

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[14] The full symbol list is included in Appendix B of the White Paper. Symbols were chosen based on criteria including absolute price level, spread in dollars, spread in basis points, and liquidity (daily ADV). Because stable periods generally far outnumber unstable periods in the U.S. equity markets, the Exchange used under-sampling methods where appropriate to reduce the number of stable data points in the data set and randomly shuffled data before training.

[15] The full list of features is included in Appendix A to the White Paper. Appendix A also identifies the subset of features that were selected for the model training described in the White Paper.

[16] Once the SMI is implemented in production, the full list of features currently calculated in real-time and available for evaluation for inclusion in the SMI models will be published daily on the Exchange's website.

The Exchange proposes that the SMI will rely on symbol-specific models to leverage the ability of the models to incorporate different features and weightings to respond to individual symbols' unique profiles (e.g., the features most likely to accurately predict instability for a given symbol). To explore how symbol-specific models should be distributed, the Exchange ranked each of the 500 symbols in the representative data set according to the total number of unstable data points. The Exchange trained a model for each of the 500 symbols and used the model trained for the symbol SPY as a default "market model."

The Exchange found that the SMI performed better with a symbol-specific model for more active symbols (i.e., those with more unstable data points) than on the market model (i.e., testing showed sharp declines in precision and increases in overlocking behavior using the market model), whereas the SMI with a market model performed well for less active symbols (i.e., high recall with relatively small loss of precision and minimally more overlocking). The Exchange concluded that, for the SMI to provide optimal information and protection to SeMi Orders, more active symbols would benefit significantly from symbol-specific models, while less active symbols (which have fewer unstable data points to inform a symbol-specific model) could successfully default to a market model.

The Exchange believes that models tailored to individual symbols' specific characteristics would provide for better performance by the SMI and thus enhanced price protection by the SeMi Order. Accordingly, in production, the Exchange anticipates that at least 200 (and up to approximately 1,000) symbols that trade on the Exchange will have an individualized model that incorporates features that have been specifically identified for predicting market stability for that symbol. The remaining symbols that trade on the Exchange would use the market model, which would apply the same features and weightings for all

symbols.[17] Each day, the Exchange will identify the 1,000 symbols with most unstable data points and evaluate those symbols to determine whether a symbol-specific model or market model would yield better performance. The Exchange will publish on its website a list of the symbols that have an individual model to provide transparency to market participants regarding the operation of SeMi Orders.

Performance Metrics

The Exchange strategically prioritized developing the models to have a high rate of recall, which was intended to maximize the models' ability to accurately capture unstable PBBO updates while accepting that the models might identify more periods of instability than would exist in realistic market conditions. The Exchange focused on three metrics: (1) recall, or the model's ability to accurately identify true unstable data points; (2) precision, or the model's ability to identify only true unstable data points (i.e., to not misidentify stable data points as unstable); and (3) overlocking, or the model's ability to minimize the amount of time (measured in seconds) that the model incorrectly predicts unstable market conditions.[18] The Exchange intends for the models to maximize recall and precision, while minimizing overlocking.

To evaluate the performance of the models, the Exchange selected initial baseline values for each the three parameters ***X***, ***G***, and ***g*** to maximize these performance metrics. To define an unstable PBBO period, the Exchange selected a minimum time increment ***g*** of 100 microseconds; spread threshold ***X*** of 25%; and time horizon ***G*** of one millisecond.[19]

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[17] The Exchange proposes that a new symbol will operate on the market model until the Exchange has gathered at least three days' worth of data to be able to train a symbol-specific model and determine whether it outperforms the market model for that symbol.

[18] Recall, precision, and overlocking are discussed in more detail in Section 6.1 of the White Paper.

[19] The analysis the Exchange performed to arrive at these parameter values is discussed in more detail in Section 6.2 of the White Paper. The Exchange expects that the parameter values may change over time to ensure proper calibration. The Exchange anticipates implementing the SMI in production with these parameter values, but will continue to analyze data and train the models until the date of implementation

In final performance testing of the model, the aggregate results demonstrate that the model achieves an average recall rate or 90% and average precision of 30%, with overlocking occurring for an additional 3.8 seconds on average.[20]

Production Integration

The models' compact size and average prediction speed of approximately two microseconds allows for seamless integration of the model's prediction process into the NYSE Pillar trading platform ("Pillar") on which the Exchange operates.[21] The Exchange believes that it has designed the SMI to produce an output rapidly enough to keep up with real-time trading, without overburdening Exchange systems or otherwise impacting current system performance.

Pillar will have access to full real-time trading data and will continuously maintain required features for the model, including PBBO updates, order entries, order cancellations, and book depth information. The models are invoked as soon as an evaluation trigger (e.g., a PBBO update) is received.[22] The evaluation process concludes by sending a message the Pillar matching engine to indicate the beginning and end of an unstable period, which would inform whether SeMi Orders are eligible to trade. For example, when Pillar receives a SeMi Order, the SMI will indicate whether the market is stable or unstable. If the market is stable, the SeMi Order will be allowed to post to the NYSE Arca Book and trade. If the market is unstable, the order will be prevented from trading until the SMI next predicts that the market is stable. For as

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and may update these values to the extent that its analysis suggests that different values would improve performance.

20 Additional discussion of the Exchange's performance testing of the models appears in Section 6.4 of the White Paper.

21 Section 7 of the White Paper discusses the Exchange's analysis of the model's prediction time in more detail, as well as the integration of the model into the Pillar platform (see Figure 9).

22 In addition to PBBO updates, Pillar will respond to a timer-based evaluation trigger. The timer-based trigger is intended to ensure that the model remains updated when the NYSE Arca Book changes in the absence of a PBBO update (such as when non-displayed liquidity is added to the NYSE Arca Book).

long as the SMI predicts that the market will be unstable, a SeMi Order will remain ineligible to trade and will not execute until the SMI evaluates the market as stable.

On a given trading day, the SMI models will use the feature weights determined from the previous night's training, and the features will be calculated using real-time intraday data. The list of symbols with individualized models will be dynamically constructed daily and published before the start of trading each day.

The model will not change intra-day. The Exchange proposes to continue to retrain the model within the parameters described in this filing and the White Paper daily, outside of the Core Trading Session (on days when trading takes place on the Exchange). Retraining will be based on the last three trading days' worth of historical data. Retraining may result in changes to the features used by the model and/or the weighting of such features. The values assigned to the three parameters ***X***, ***G***, and ***g*** will not be adjusted as a result of regular model training but may be updated periodically based on the Exchange's analysis of overall model performance. Retraining is a standard and accepted process in the use of machine learning models like the ones underlying the SMI. The retraining process is not intended to result in significant or unexpected changes to the performance of the SMI or the behavior of the SeMi Order. Rather, retraining would help ensure that the SMI continues to perform well in dynamic circumstances, by allowing the models to learn from and incorporate more recent data points and would facilitate improved model performance over time. The Exchange also notes that retraining would build on the models' existing state (i.e., existing data inputs and knowledge base) and would not alter the model's objectives; retraining would result in new behaviors only to the extent that the model had not previously encountered a given scenario, and even then, any new behavior would be consistent with the model's objectives. If the Exchange determines that a retrained model would

not be as successful as an existing model in achieving its objectives based on the metrics defined above, the Exchange will not implement the retrained model in production.

The Exchange will file a subsequent proposed rule change if it seeks to modify the underlying structure of the models underlying the SMI, such as the parameters ***X***, ***G***, and ***g*** used to label unstable windows or new features that could be incorporated into the models, but will not seek Commission approval prior to retraining the models to adjust the weighting of features that have been disclosed as potential inputs for the models or modifications to the value of any of the three identified parameters. The Exchange will also retain copies of each historical iteration of the models as part of its books and records and will make such records available to the Commission upon request. The Exchange will also publish a Trader Update in advance of implementing a retrained version of the SMI models when the Exchange has a reasonable belief that the retrained version(s) would yield results that differ materially from the prior version(s).

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Because of the technology changes associated with this proposed rule change, the Exchange will announce the implementation of this change by Trader Update. Subject to approval of this rule filing, the Exchange is prepared to implement the proposed rule change in 2025.

2. Statutory Basis

The proposed rule change is consistent with Section 6(b) of the Act,[23] in general, and furthers the objectives of Section 6(b)(5),[24] in particular, because it is designed to prevent fraudulent and manipulative acts and practices, to promote just and equitable principles of trade,

[23] 15 U.S.C. 78f(b).

[24] 15 U.S.C. 78f(b)(5).

to foster cooperation and coordination with persons engaged in facilitating transactions in securities, to remove impediments to, and perfect the mechanism of, a free and open market and a national market system and, in general, to protect investors and the public interest.

The Exchange believes that the proposed change to eliminate the DPO and introduce the SeMi Order would remove impediments to, and perfect the mechanism of, a free and open market and a national market system, as well as protect investors and the public interest, by continuing to provide market participants with the benefits of an order type that can exercise discretion to trade with contra-side interest. The SeMi Order will operate in a substantially similar manner to the existing DPO, with the benefit of the SMI to provide price protection to SeMi Orders during periods of market instability. The Exchange also believes that the proposed rule change would remove impediments to, and perfect the mechanism of, a free and open market and a national market system and protect investors and the public interest because the SMI would provide improved functionality as compared to the regression model previously used by the DPO to predict market instability, which used static parameters for all symbols. Specifically, the Exchange believes that the SMI would provide enhanced price protection for SeMi Orders because its fast, lightweight, and transparent models can be seamlessly integrated into Pillar to predict future microsecond-level market stability on a symbol-specific basis. The Exchange believes that SeMi Orders, as proposed, would perfect the mechanism of, a free and open market and a national market system and protect investors and the public interest by relying on the SMI to restrict SeMi Orders from trading during times of predicted high market volatility, thereby avoiding potentially undesirable executions and increasing the potential for price improvement for such orders at the cost of slightly reduced fill rates.

The Exchange further believes that the proposed change to allow SeMi Orders to be designated as Liquidity Providing (an option that was not previously available to DPOs) would remove impediments to, and perfect the mechanism of, a free and open market and a national market system and protect investors and the public interest because it would afford increased flexibility to users of the order type.

The Exchange believes that the proposed change would remove impediments to, and perfect the mechanism of, a free and open market and a national market system and promote just and equitable principles of trade because the SeMi Order and SMI will operate within strict, well-defined, and transparent parameters. Although the SMI models will undergo daily retraining (outside of market hours), such retraining will aim to improve the performance of the SMI in achieving its stated objectives; retraining is not intended to alter the basic design parameters, features, or objectives of the models without prior Commission approval.[25] Moreover, the Exchange will not deploy a retrained model if it fails to achieve performance improvements based on the metrics described above. As noted above, a list of all features that may be incorporated in the models will be publicly available, and the Exchange will publish on its website daily the full list of features used for real-time calculation and available for inclusion in the SMI models. The Exchange will also retain each historical iteration of models employed by the SMI as part of its books and records and make such information available to the Commission upon request. The Exchange will also publish a Trader Update in advance of implementing a retrained version of an SMI model when the Exchange has a reasonable belief that the retrained version(s) would yield results that differ materially from the prior version(s).

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[25] As discussed above, the Exchange will not seek Commission approval prior to allowing the models, as part of its retraining process, to vary the weighting of the features it uses. The Exchange believes this is appropriate because such variance will only occur to the extent that it will improve a model's performance with respect to pre-defined objectives.

The Exchange notes that neither the SMI nor the SeMi Order are designed or intended to further the performance of any participant or any category of participant over others. The Exchange believes the models underlying the SMI are objective and designed to avoid bias and discrimination. Use of the SeMi Order (like use of the DPO) remains voluntary for all market participants. Accordingly, if any market participant feels that the SeMi Order does not meet their needs, they are free to pursue other trading strategies.

B. Self-Regulatory Organization's Statement on Burden on Competition

The Exchange does not believe that the proposed rule change will impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Act. The Exchange believes that the proposed change would promote competition by offering market participants the optional use of an order type designed to protect against potentially undesirable executions by preventing trading during periods of market instability as identified by the SMI.

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received from Members, Participants, or Others

No written comments were solicited or received with respect to the proposed rule change.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Within 45 days of the date of publication of this notice in the Federal Register or within such longer period up to 90 days (i) as the Commission may designate if it finds such longer period to be appropriate and publishes its reasons for so finding or (ii) as to which the Exchange consents, the Commission will:

A. by order approve or disapprove such proposed rule change, or

B. institute proceedings to determine whether the proposed rule change should be disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments:

- Use the Commission's internet comment form (https://www.sec.gov/rules/sro.shtml); or
- Send an email to rule-comments@sec.gov. Please include file number SR-NYSEARCA-2024-112 on the subject line.

Paper Comments:

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street NE, Washington, DC 20549-1090.

All submissions should refer to file number SR-NYSEARCA-2024-112. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's internet website (https://www.sec.gov/rules/sro.shtml). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for website viewing and printing in the Commission's Public Reference Room, 100 F Street NE, Washington, DC 20549, on official business days between the hours of 10 a.m. and 3 p.m. Copies of the filing also will be available for inspection and copying at the principal office

of the Exchange. Do not include personal identifiable information in submissions; you should submit only information that you wish to make available publicly. We may redact in part or withhold entirely from publication submitted material that is obscene or subject to copyright protection. All submissions should refer to file number SR-NYSEARCA-2024-112 and should be submitted on or before [INSERT DATE 21 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[26]

Vanessa A. Countryman,

Secretary.

[26] 17 CFR 200.30-3(a)(12).