

SECURITIES AND EXCHANGE COMMISSION  
(Release No. 34-81913; File No. SR-CHX-2017-04)

October 19, 2017

Self-Regulatory Organizations; Chicago Stock Exchange, Inc.; Notice of Filing of Amendments No. 1 and No. 2 and Order Granting Accelerated Approval of a Proposed Rule Change, as Modified by Amendments No. 1 and No. 2, to Adopt the CHX Liquidity Enhancing Access Delay on a Pilot Basis

I. Introduction

On February 10, 2017, the Chicago Stock Exchange, Inc. (“CHX” or “Exchange”) filed with the Securities and Exchange Commission (“Commission”), pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (“Exchange Act”)<sup>1</sup> and Rule 19b-4 thereunder,<sup>2</sup> a proposed rule change to adopt the CHX Liquidity Enhancing Access Delay (“LEAD”), which would require all new incoming orders, cancel, and cancel/replace messages to be subject to a 350-microsecond intentional access delay except for: (1) orders that would provide liquidity submitted by a LEAD Market Maker (“LEAD MM” or “LMM”), a new class of CHX market maker with heightened quoting and trading obligations (referred to collectively as the “minimum performance standards”); and (2) cancel messages originating from a LEAD MM’s trading account. The proposed rule change was published for comment in the Federal Register on February 21, 2017.<sup>3</sup> On April 3, 2017, the Commission designated a longer period within which to approve the proposed rule change, disapprove the proposed rule change, or institute proceedings to determine whether the proposed rule change should be disapproved.<sup>4</sup> The

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<sup>1</sup> 15 U.S.C. 78s(b)(1).

<sup>2</sup> 17 CFR 240.19b-4.

<sup>3</sup> See Securities Exchange Act Release No. 80041 (February 14, 2017), 82 FR 11252 (“Notice”).

<sup>4</sup> See Securities Exchange Act Release No. 80364, 82 FR 17065 (April 7, 2017).

Commission received eleven comment letters on the proposed rule change, including a response from the Exchange.<sup>5</sup> On May 22, 2017, the Commission instituted proceedings under Section 19(b)(2)(B) of the Exchange Act<sup>6</sup> to determine whether to approve or disapprove the proposed rule change.<sup>7</sup> Thereafter, the Commission received seven more comment letters, including a response from the Exchange.<sup>8</sup> On August 17, 2017, pursuant to Section 19(b)(2) of the

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<sup>5</sup> See letters from: Ryan Hitch, Head of Equities Trading, XR Securities LLC, dated February 24, 2017 (“XR Securities Letter”); Douglas A. Cifu, Chief Executive Officer, Virtu Financial LLC, dated February 27, 2017 (“Virtu Letter”); Joanna Mallers, Secretary, FIA Principal Traders Group, dated March 13, 2017 (“FIA PTG Letter”); Adam Nunes, Head of Business Development, Hudson River Trading LLC, dated March 13, 2017 (“Hudson River Trading Letter”); R.T. Leuchtkafer, dated March 14, 2017 (“Leuchtkafer Letter”); Stephen John Berger, Managing Director, Government & Regulatory Policy, Citadel Securities, dated March 14, 2017 (“Citadel Letter”); Tyler Gellasch, Executive Director, Healthy Markets Association, March 17, 2017 (“Healthy Markets Letter”); Elizabeth K. King, General Counsel and Corporate Secretary, New York Stock Exchange, dated March 20, 2017 (“NYSE Letter”); James G. Ongena, Executive Vice President and General Counsel, CHX, dated March 24, 2017 (“CHX Letter”); Steve Crutchfield, Head of Market Structure, CTC Trading Group, LLC, dated April 4, 2017 (“CTC Trading Letter”); and Theodore R. Lazo, Managing Director and Associate General Counsel, Securities Industry and Financial Markets Association, dated May 17, 2017 (“SIFMA Letter”). All comments on the proposed rule change are available at <https://www.sec.gov/comments/sr-chx-2017-04/chx201704.htm>.

<sup>6</sup> 15 U.S.C. 78s(b)(2)(B).

<sup>7</sup> See Securities Exchange Act Release No. 80740, 82 FR 24412 (May 26, 2017) (“OIP”). In the OIP, the Commission specifically requested comment on thirteen questions. See *id.* at 24416.

<sup>8</sup> See letters from: R. T. Leuchtkafer, dated June 15, 2017 (“Leuchtkafer Letter 2”); Stephen Berger, Managing Director, Government and Regulatory Policy, Citadel Securities, dated June 16, 2017 (“Citadel Letter 2”); Joanna Mallers, Secretary, FIA Principal Traders Group, dated June 16, 2017 (“FIA PTG Letter 2”); James G. Ongena, Executive Vice President, General Counsel, CHX, dated June 30, 2017 (“CHX Letter 2”); R. T. Leuchtkafer, dated July 7, 2017 (“Leuchtkafer Letter 3”); R. T. Leuchtkafer, dated July 10, 2017 (“Leuchtkafer Letter 4”); and R.T. Leuchtkafer, dated October 7, 2017 (“Leuchtkafer Letter 5”).

Exchange Act,<sup>9</sup> the Commission designated a longer period for Commission action on proceedings to determine whether to disapprove the proposed rule change.<sup>10</sup>

On September 19, 2017, the Exchange filed Amendment No. 1 to the proposed rule change. In Amendment No. 1, the Exchange proposed to implement the proposed rule change as a 24-month pilot program, during which time the Exchange would collect and publicly disclose (following the sixth month of the pilot program) the following data: (1) quote quality statistics, designed to provide comparative data regarding the effect of LEAD on market quality, for each security per trading day and for each period of exceptional volatility (“PEV”) range (“PEV Range”), for the six months immediately preceding the implementation of the pilot program and for the duration of the pilot program; (2) matched trade difference statistics, designed to compare the reliability of CHX quotes with and without the LEAD, for each security assigned to a LEAD MM (“LEAD MM Security”) per trading day and per PEV Range, for the duration of the pilot program; (3) volume statistics, designed to measure the impact of LEAD on execution volume in LEAD MM Securities for the duration of the pilot program; (4) variable processing delay statistics, designed to provide comparative data regarding the variable delay<sup>11</sup> between the initial receipt of an order and the time that the order is eligible to be matched by CHX’s matching system for the duration of the pilot program; and (5) effective spread statistics, designed to measure the impact of the LEAD on CHX and national market system (“NMS”) effective

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<sup>9</sup> 15 U.S.C. 78s(b)(2).

<sup>10</sup> See Securities Exchange Act Release No. 81415, 82 FR 40051 (August 23, 2017).

<sup>11</sup> The variable delay does not include the 350-microsecond intentional access delay. The variable delay will depend on factors including, but not limited to, messaging volume and system processing. See Amendment No. 1, infra note 12, at 28.

spreads for the duration of the pilot program.<sup>12</sup> On October 18, 2017, the Exchange filed Amendment No. 2 to the proposed rule change.<sup>13</sup> This order approves the proposed rule change, as modified by Amendments No. 1 and No. 2, on an accelerated basis.

## II. Summary of the Proposal

The Exchange proposes to adopt, on a pilot basis, the LEAD,<sup>14</sup> which would subject all new incoming orders,<sup>15</sup> cancel, and cancel/replace messages to a 350-microsecond intentional access delay, except for: (1) orders that would provide liquidity submitted by a LEAD MM; and (2) cancel messages originating from a LEAD MM's trading account. New incoming orders,

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<sup>12</sup> In Amendment No. 1, the Exchange also supplemented its rationale for the proposed rule change, provided additional discussion related to the market quality enhancements that it believes would be realized from the proposal, corrected certain errors in the examples set forth in the proposal, and corrected a misstatement by the Exchange in one of its comment letters. Amendment No. 1 is available at <https://www.sec.gov/comments/sr-chx-2017-04/chx201704-2583844-161106.pdf>.

<sup>13</sup> In Amendment No. 2, the Exchange: (1) amended the proposal so that the LEAD would apply only during the regular trading session; (2) revised the definition of "Qualified Executions" to measure executions during the regular trading session only; (3) modified its description of its review for compliance with the minimum performance standards to provide that the Exchange would review LEAD MM quoting and trading activity on a monthly basis, and that trading days on which a LEAD MM was prohibited by CHX rules from submitting orders from its trading account would be excluded from such review; (4) modified its description of the data that will be published on its website; (5) modified its description of the PEV data that will be collected; and (6) clarified its description of one of the order origin categories into which the variable processing delay statistics will be divided and amended and added delay ranges for which data will be collected. Amendment No. 2 is available at <https://www.sec.gov/comments/sr-chx-2017-04/chx201704-2643435-161294.pdf>.

<sup>14</sup> For more details regarding the proposal, please refer to the Notice, Amendment No. 1, and Amendment No. 2, supra notes 3, 12, and 13 respectively.

<sup>15</sup> New incoming orders are orders received by the matching system for the first time. The LEAD would not apply to other situations where existing orders or portions thereof are treated as incoming orders, such as: (1) resting orders that are price slid into a new price point pursuant to the CHX only price sliding or limit up-limit down price sliding processes; and (2) unexecuted remainders of routed orders released into the matching system. See Notice, supra note 3, 82 FR at 11252, n.3.

cancel, and cancel/replace messages would be subject to a 350 microsecond delay after initial receipt by the Exchange (“Fixed LEAD Period”), and would only be processed after the Exchange’s matching system<sup>16</sup> has evaluated and processed, if applicable, all messages received by the Exchange during the Fixed LEAD Period. A delayed message would retain its original sequence number and would be delayed only once. The LEAD would be applied to all securities traded on the Exchange during the regular trading session.<sup>17</sup>

The Exchange states that the LEAD is designed to address a lack of resting liquidity in NMS securities on CHX by providing LEAD MMs with a risk management tool that would incentivize LEAD MMs to display larger orders at aggressive prices.<sup>18</sup> To the extent the LEAD would incentivize LEAD MMs to improve the price and size of the prevailing National Best Bid and Offer (“NBBO”), the Exchange asserts that LEAD could reduce transaction costs for retail investors, as wholesale broker-dealers price the majority of the retail orders they handle using the prevailing NBBO, and for institutional investors, as the execution costs for their orders would be reduced if the average NBBO spreads are narrowed.<sup>19</sup>

A LEAD MM would be required to meet the proposed minimum performance standards in return for undelayed access to submit liquidity providing orders and to cancel its resting orders. The proposed minimum performance standards require, in addition to the obligations for

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<sup>16</sup> The matching system is an automated order execution system.

<sup>17</sup> See Amendment No. 2, supra note 13, at 11.

<sup>18</sup> See Amendment No. 1, supra note 12, at 8.

<sup>19</sup> See CHX Letter 2, supra note 8, at 10. Originally, CHX framed the LEAD as a countermeasure to “latency arbitrage,” defined by the Exchange as the practice of exploiting disparities in the price of a security or related securities that are being traded in different markets by taking advantage of the time it takes to access and respond to public information. See Notice, supra note 3, 82 FR at 11252-53. CHX attributes latency arbitrage to a degradation of the quality of its market it observed between January and July 2016. See id. at 11253.

market makers required by the Exchange’s current rules,<sup>20</sup> that: (1) a LEAD MM disseminate throughout the Exchange’s regular trading session (except during auctions) a continuous two-sided quote, with bids and offers being closer to the National Best Bid (“NBB”) and National Best Offer (“NBO”), respectively, than the quotes that market makers are required to post under CHX’s existing rules; (2) a LEAD MM maintain an average monthly NBBO quoting percentage<sup>21</sup> in each of its LEAD MM Securities of at least 10% over the course of a calendar month; (3) a LEAD MM must execute at least 2% of the transactions during the regular trading session, resulting from single-sided orders (excluding auction executions), in each of its LEAD MM Securities on an equally-weighted daily average over the course of a calendar month; and (4) at least 80% of the LEAD MM’s executions during the regular trading session, resulting from single-sided orders (excluding auction executions), in each of its LEAD MM Securities result from its resting orders that originated from its corresponding LEAD MM trading account over the course of a calendar month.<sup>22</sup>

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<sup>20</sup> See CHX Article 16, Rule 4(d).

<sup>21</sup> Proposed CHX Article 16, Rule 4(f)(2) provides that the Exchange will determine: (1) the “Daily NBB Quoting Percentage” by determining the percentage of time the LEAD MM has at least one round lot of displayed interest in an Exchange bid at the NBB during the open trading state of each trading day for a calendar month; (2) the “Daily NBO Quoting Percentage” by determining the percentage of time the LEAD MM has at least one round lot of displayed interest in an Exchange offer at the NBO during the open trading state of each trading day for a calendar month; (3) the “Average Daily NBBO Quoting Percentage” for each trading day by summing the “Daily NBB Quoting Percentage” and the “Daily NBO Quoting Percentage” then dividing such sum by two; and (4) the “Monthly Average NBBO Quoting Percentage” for each security by summing the security’s “Average Daily NBBO Quoting Percentages” for each trading day in a calendar month then dividing the resulting sum by the total number of trading days in such calendar month.

<sup>22</sup> Prior to commencing LEAD market making activities in a security, a LEAD MM must, among other things, establish at least one separately designated LEAD MM trading account through which all and only LEAD market making activities in LEAD MM Securities must originate. See proposed CHX Article 16, Rule 4(f)(3)(B)(i).

CHX also proposes to establish a procedure to designate LEAD MMs in a security. Only a market maker could apply to be a LEAD MM in one or more securities, and market makers must receive written approval from the Exchange to be assigned securities as a LEAD MM.<sup>23</sup> LEAD MMs would be selected by the Exchange based on factors including, but not limited to, experience with making markets in securities, adequacy of capital, willingness to promote the Exchange as a marketplace, issuer preference, operational capacity, support personnel, and history of adherence to Exchange rules and securities laws.<sup>24</sup> Current Article 16, Rules 2(c)-(e) govern market maker withdrawal from assigned securities, and would apply to LEAD MMs and LEAD MM Securities. The Exchange could approve, at its discretion, more than one LEAD MM to be assigned to any LEAD MM Security and limit the number of LEAD MMs assigned to any security.<sup>25</sup>

Pursuant to proposed CHX Article 16, Rule 4(f)(3)(D), the Exchange would review each LEAD MM's quoting and trading activity on a monthly basis to determine whether the LEAD MM has met the minimum performance standards for each of its LEAD MM Securities.<sup>26</sup> A LEAD MM's failure to meet the minimum performance standards during any given month would result in the Exchange: (1) suspending or terminating a LEAD MM's registration as a market maker; or (2) suspending or terminating assignment to a LEAD MM Security.<sup>27</sup> These

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<sup>23</sup> See proposed CHX Article 16, Rule 4(f)(3)(A).

<sup>24</sup> See id.

<sup>25</sup> See proposed CHX Article 16, Rule 4(f)(3)(C).

<sup>26</sup> See proposed CHX Article 16, Rule 4(f)(3)(D). The trading days that a LEAD MM is prohibited by CHX rules from submitting orders will be excluded from such review. See Amendment No. 2, supra note 13, at 12.

<sup>27</sup> See proposed CHX Article 16, Rule 4(f)(3)(D).

proposed provisions would not limit any other power of the Exchange to discipline a LEAD MM pursuant to other CHX rules.

CHX Article 20, Rule 8(h) and proposed CHX Article 16, Rule 4(f) (collectively, the “LEAD Rules”) would be introduced as a pilot program that would end 24 months following the implementation of the LEAD.<sup>28</sup> In connection with the pilot program, the Exchange would collect the following data (collectively, the “Pilot Data”): (1) quote quality statistics for each security per trading day and per PEV Range,<sup>29</sup> for the six months immediately preceding the pilot program date of implementation, and for the duration of the pilot program; (2) matched trade difference statistics, which are designed to provide comparative data regarding how Qualified Orders<sup>30</sup> received by CHX would have been handled if LEAD had not been in effect, for each LEAD MM Security per trading day and per PEV Range, for the duration of the pilot program; (3) volume statistics for each LEAD MM Security per trading day for the duration of the pilot program; (4) comparative data regarding the variable delay between the initial receipt of an order and the time at which the order is eligible to be matched by CHX’s matching system for each LEAD MM Security per trading day for the duration of the pilot program; and (5) statistics

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<sup>28</sup> To adopt the LEAD on a permanent basis, the Exchange would have to file another proposed rule change, and the Commission would have to approve it.

<sup>29</sup> A PEV means a one second interval during which a percentage change in the NBBO midpoint for the security equaled or exceeded two standard deviations (“ $\sigma$ ”) from the mean. Each trading day, the Exchange would calculate a reference mean and standard deviation from consecutive one second time intervals during the regular trading session. Each daily reference mean and standard deviation would be applied to measure PEV on the following trading day. Each PEV would be categorized into one of five PEV Ranges, which are as follows: 2 = PEV greater than or equal to  $2\sigma$  and less than  $3\sigma$ ; 3 = PEV greater than or equal to  $3\sigma$  and less than  $4\sigma$ ; 4 = PEV greater than or equal to  $4\sigma$  and less than  $5\sigma$ ; and 5 = PEV greater than or equal to  $5\sigma$ . See Amendment No. 2, *supra* note 13, at 8.

<sup>30</sup> Generally, “Qualified Orders” are new single-sided orders received by the Exchange during the regular trading session that were delayed.

designed to measure the impact of LEAD on CHX and NMS effective spreads, for each LEAD MM Security per trading day and per PEV Range, for the duration of the pilot program. The Pilot Data is described in more detail below:

1. Daily Quote Quality Statistics

The daily quote quality statistics are designed to show several aspects of CHX and overall market quote quality both pre- and post- implementation of the pilot program. First, the statistics will show the width and the displayed size for both the NBBO and CHX’s BBO during different periods of market volatility. Second, the statistics will display the contribution to the NBBO and CHX’s BBO by the LEAD MM for those different periods of volatility. Finally, the statistics will show the contribution of CHX’s BBO to the overall NBBO. Quote quality statistics are designed to provide comparative data regarding the effect of LEAD on market quality, and would include at a minimum the following data fields (as applicable):

<b>Field #</b>	<b>Field Name</b>	<b>Description</b>
<b>1</b>	<b>Symbol</b>	
<b>1A</b>	<b>Primary Matching Location</b>	C = Chicago (CH2) N = New Jersey (NY4)
<b>2</b>	<b>TradeDate</b>	
<b>2A</b>	<b>PEVRange</b>	Blank = All regular session data 2 = PEV data greater than or equal to $2\sigma$ and less than $3\sigma$ 3 = PEV data greater than or equal to $3\sigma$ and less than $4\sigma$ 4 = PEV data greater than or equal to $4\sigma$ and less than $5\sigma$ 5 = PEV data greater than or equal to $5\sigma$

<b>Field #</b>	<b>Field Name</b>	<b>Description</b>
<b>3</b>	<b>NLMMs</b>	The number of LMMs assigned to this Symbol on this Trade Date.
<b>4A</b>	<b>TimeRegSessScheduled</b>	The total scheduled time of the regular trading session for this Symbol for this TradeDate.
<b>4B</b>	<b>TimeRegSessActual</b>	The total actual time of the regular trading session for this Symbol for this TradeDate. Time during regulatory trading halts is not included in this total.
<b>5</b>	<b>TimeCHXBidPresent</b>	The total time during the regular trading session that CHX has a protected bid.
<b>5L</b>	<b>TimeCHXBidPresentLMM</b>	The total time during the regular trading session that CHX has a protected bid and one or more LMMs are included in the CHX protected bid price.
<b>6</b>	<b>TimeCHXBidMissing</b>	The total time during the regular trading session that CHX does not have a protected bid.
<b>7</b>	<b>TimeCHXBidOnNBB</b>	The total time during the regular trading session that CHX has a protected bid equal to the NBB price.
<b>7L</b>	<b>TimeCHXBidOnNBBLMM</b>	The total time during the regular trading session that CHX has a protected bid equal to the NBB price and one or more LMMs are included in the NBB price.
<b>8</b>	<b>TimeCHXBidNamed</b>	The total time during the regular trading session that CHX has a protected bid equal to the NBB price and CHX is shown as the NBB.

<b>Field #</b>	<b>Field Name</b>	<b>Description</b>
<b>8L</b>	<b>TimeCHXBidNamed</b>	The total time during the regular trading session that CHX has a protected bid equal to the NBB price and CHX is shown as the NBB and one or more LMMs are included in the NBB price.
<b>9</b>	<b>TimeCHXBidAlone</b>	The total time during the regular trading session that CHX has a protected bid that is the only bid at the NBB price.
<b>9L</b>	<b>TimeCHXBidAloneLMM</b>	The total time during the regular trading session that CHX has a protected bid that is the only protected bid at the NBB price and one or more LMMs are included in the NBB price.
<b>10</b>	<b>TimeCHXAskPresent</b>	The total time during the regular trading session that CHX has a protected offer.
<b>10L</b>	<b>TimeCHXAskPresentLMM</b>	The total time during the regular trading session that CHX has a protected offer and one or more LMMs are included in the CHX protected offer.
<b>11</b>	<b>TimeCHXAskMissing</b>	The total time during the regular trading session that CHX does not have a protected offer.
<b>12</b>	<b>TimeCHXAskOnNBO</b>	The total time during the regular trading session that CHX has a protected offer equal to the NBO price.
<b>12L</b>	<b>TimeCHXAskOnNBOLMM</b>	The total time during the regular trading session that CHX has a protected offer equal to the NBO price and one or more LMMs are included in the NBO price.
<b>13</b>	<b>TimeCHXAskNamed</b>	The total time during the regular trading session that CHX has a protected offer equal to the NBO price and CHX is shown as the NBO.

<b>Field #</b>	<b>Field Name</b>	<b>Description</b>
<b>13L</b>	<b>TimeCHXAskNamedLMM</b>	The total time during the regular trading session that CHX has a protected offer equal to the NBO price and CHX is shown as the NBO and one or more LMMs are included in the NBO price.
<b>14</b>	<b>TimeCHXAskAlone</b>	The total time during the regular trading session that CHX has a protected offer that is the only protected offer at the NBO price.
<b>14L</b>	<b>TimeCHXAskAloneLMM</b>	The total time during the regular trading session that CHX has a protected offer that is the only protected offer at the NBO price and one or more LMMs are included in the NBO price.
<b>15</b>	<b>TimeCHXNoQuote</b>	The total time during the regular trading session that CHX has neither a protected bid nor a protected offer.
<b>16</b>	<b>TimeCHXTwoSided</b>	The total time during the regular trading session that CHX has both a protected bid and a protected offer.
<b>17</b>	<b>TimeNBBOUncrossed</b>	The total time during the regular trading session that the NBBO is not crossed.
<b>18</b>	<b>Time-weightedCHXBid Differential</b>	The time-weighted average difference between the CHX protected bid price and the NBB price when a CHX protected bid is present during the regular trading session.
<b>19</b>	<b>Time-weightedCHXBid SizeOnNBB</b>	The time-weighted average CHX protected bid size when the CHX protected bid price equals the NBB price during the regular trading session.

<b>Field #</b>	<b>Field Name</b>	<b>Description</b>
<b>19L</b>	<b>Time-weightedCHXBid SizeOnNBBLMM</b>	The time-weighted average LMM percentage of the CHX protected bid size when the CHX protected bid price equals the NBB price during the regular trading session.
<b>20</b>	<b>Time-weightedCHXBid SizeWhenNamed</b>	The time-weighted average CHX protected bid size when the CHX protected bid price equals the NBB price during the regular trading session.
<b>20L</b>	<b>Time-weightedCHXBid SizeWhenNamed</b>	The time-weighted average LMM percentage of CHX protected bid size when the CHX protected bid price equals the NBB price during the regular trading session.
<b>21</b>	<b>Time-weightedCHXBid SizeWhenAlone</b>	The time-weighted average LMM percentage of CHX protected bid size when the CHX protected bid is the only protected bid at the NBB price during the regular trading session.
<b>21L</b>	<b>Time-weightedCHXBid SizeWhenAloneLMM</b>	The time-weighted average CHX protected bid size when the CHX protected bid is the only protected bid at the NBB price during the regular trading session.
<b>22</b>	<b>Time-weightedCHXPctOfBid SizeWhenOnNBB</b>	The time-weighted average percentage of all protected quotations at the NBB price when the CHX protected bid price equals the NBB price.
<b>23</b>	<b>Time-weightedCHXAsk Differential</b>	The time-weighted average difference between the CHX protected offer price and the NBO price when a CHX protected offer is present during the regular trading session.

<b>Field #</b>	<b>Field Name</b>	<b>Description</b>
24	<b>Time-weightedCHXAsk SizeOnNBO</b>	The time-weighted average CHX protected offer size when the CHX protected offer price equals the NBO price during the regular trading session.
24L	<b>Time-weightedCHXAsk SizeOnNBOLMM</b>	The time-weighted average LMM percentage of CHX protected offer size when the CHX protected offer price equals the NBO price during the regular trading session.
25	<b>Time-weightedCHXAsk SizeWhenNamed</b>	The time-weighted average CHX protected offer size when the CHX protected offer price equals the NBO price during the regular trading session.
25L	<b>Time-weightedCHXAsk SizeWhenNamedLMM</b>	The time-weighted average LMM percentage of CHX protected offer size when the CHX protected offer price equals the NBO price during the regular trading session.
26	<b>Time-weightedCHXAsk SizeWhenAlone</b>	The time-weighted average CHX protected offer size when the CHX protected offer is the only protected offer at the NBO price during the regular trading session.
26L	<b>Time-weightedCHXAsk SizeWhenAloneLMM</b>	The time-weighted average LMM percentage of CHX protected offer size when the CHX protected offer is the only protected offer at the NBO price during the regular trading session.
27	<b>Time-weightedCHXPctOfAsk SizeWhenOnNBO</b>	The time-weighted average percentage of all protected quotation size at the NBO price when CHX protected offer price equals the NBO price.

<b>Field #</b>	<b>Field Name</b>	<b>Description</b>
<b>28</b>	<b>Time-weightedCHX BBOSpread</b>	The time-weighted average difference between the CHX protected bid price and the CHX protected offer price when CHX is displaying a two-sided protected quotation.
<b>29</b>	<b>Time-WeightedNBBOSpread</b>	The time-weighted average difference between the NBB price and the NBO price when a two-sided NBBO exists.

## 2. Matched Trade Difference Statistics

The matched trade difference statistics are designed to show how many shares were executed with the LEAD MM proposal implemented and also, hypothetically, how many shares would have been executed had the LEAD MM proposal not been implemented, which would be accomplished by assuming non-LEAD MM orders were executed immediately. In addition, these metrics are aggregated by specific PEV Range so that one can analyze how these executions vary during different periods of volatility. Each Qualified Order would be categorized into one of the following four groups: (1) Group 1: orders with at least a partial execution upon initial processing by CHX’s matching system that would have had the same number of shares executed with or without LEAD; (2) Group 2: orders with at least a partial execution upon initial processing by the matching system that had fewer executed shares with LEAD than it would have had without LEAD; (3) Group 3: orders with at least a partial execution upon initial processing by the matching system that had more executed shares with LEAD than it would have had without LEAD; and (4) Group 4: orders with no executed shares upon initial processing by the matching system with LEAD.<sup>31</sup>

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<sup>31</sup> See proposed CHX Article 20, Rule 8(h)(5)(A).

Match trade difference statistics would include, at a minimum, the following data fields, as applicable:

<b>Field #</b>	<b>Field Name</b>	<b>Description</b>
<b>1</b>	<b>Symbol</b>	
<b>1A</b>	<b>Primary Matching Location</b>	C = Chicago (CH2) N = New Jersey (NY4)
<b>2</b>	<b>TradeDate</b>	
<b>2A</b>	<b>PEVRange</b>	Blank = All regular session data 2 = PEV data greater than or equal to $2\sigma$ and less than $3\sigma$ 3 = PEV data greater than or equal to $3\sigma$ and less than $4\sigma$ 4 = PEV data greater than or equal to $4\sigma$ and less than $5\sigma$ 5 = PEV data greater than or equal to $5\sigma$
<b>3</b>	<b>InboundTradingAccount</b>	The Trading Account of the inbound order.
<b>3A</b>	<b>NLMMs</b>	The number of LMMs assigned to this Symbol on this Trade Date.
<b>4</b>	<b>CapacityCode</b>	This field would include the following codes: Code    Meaning A        Agency L        LEAD Market Maker M        Market Maker (not LEAD) P        Principal R        Riskless Principal

<b>Field #</b>	<b>Field Name</b>	<b>Description</b>
<b>4A</b>	<b>ExchangeCode</b>	Code    Meaning N      Not from an exchange Y      From an exchange
<b>5</b>	<b>ISOCODE</b>	Code    Meaning N      Not an ISO order Y      An ISO order
<b>6</b>	<b>TimeInForceCode</b>	Code    Meaning 0      DAY or equivalent 3      IOC 4      FOK 9      Other (includes auction)
<b>7</b>	<b>GROUP1_NO</b>	The number of orders (“NO”) in Group 1.
<b>8</b>	<b>GROUP1_NTS</b>	The total number of shares on all orders (“NTS”) in Group 1.
<b>9<sup>32</sup></b>	<b>GROUP1_NSE = GROUP1_NSEW</b>	The total number of shares immediately executed upon initial processing by the Matching System on all orders (“NSE”) in Group 1, which would always be equal to the total number of shares that would have been immediately executed upon initial processing by the Matching System had LEAD not been in effect (“NSEW”).
<b>10</b>	<b>GROUP2_NO</b>	NO in Group 2.
<b>11</b>	<b>GROUP2_NTS</b>	NTS in Group 2.

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<sup>32</sup> NSE and NSEW exclude executions that resulted or would have resulted after initial processing by the matching system, such as when the orders are executed after being ranked on the CHX book. See Amendment No. 1, *supra* note 12, at 27.

<b>Field #</b>	<b>Field Name</b>	<b>Description</b>
<b>12</b>	<b>GROUP2_NSE</b>	NSE in Group 2.
<b>13</b>	<b>GROUP2_NSEW</b>	NSEW on all orders in Group 2.
<b>14</b>	<b>GROUP3_NO</b>	NO in Group 3.
<b>15</b>	<b>GROUP3_NTS</b>	NTS in Group 3.
<b>16</b>	<b>GROUP3_NSE</b>	NSE in Group 3.
<b>17</b>	<b>GROUP3_NSEW</b>	NSEW on all orders in Group 3.
<b>18</b>	<b>GROUP4_NO</b>	NO in Group 4.
<b>19</b>	<b>GROUP4_NTS</b>	NTS in Group 4.
<b>-</b>	<b>GROUP4_NSE</b>	This value would always be zero and not included.
<b>20</b>	<b>GROUP4_NSEW</b>	NSEW on all orders in Group 4.
<b>21</b>	<b>LMMProvideOrderExecutedAheadOfDelayedNonLMMProvideOrder</b>	Frequency at which an LMM provider order ranked on the CHX book executes ahead of a precedent non-LMM order (with the same side and price as the LMM order) that would have been immediately ranked on the CHX book if it had originated from a LEAD MM Trading Account, but was delayed.

### 3. Volume Statistics

The volume statistics are designed to show how the adoption of the LEAD by market makers changes over time as well as how much volume these new market makers execute over time. Generally, this data will concisely indicate CHX's ability to attract new market makers to the LEAD MM program. For each LEAD MM Security, the Exchange would collect the

following: (1) daily number of LEAD MMs assigned; (2) total single-sided volume on CHX; (3) total market wide single-sided volume;<sup>33</sup> (4) total single-sided volume on CHX attributed to LEAD MMs as providers; and (5) the primary matching location for the security.

#### 4. Variable Processing Delay Statistics

The variable processing delay statistics are designed to indicate how variable delays are distributed between orders from LEAD MMs and other market participants. All exchanges experience delays to some degree during periods of high order volume. These statistics will highlight discrepancies in delays experienced by orders from LEAD MMs and other market participants. These statistics would be divided into three order origin categories: (1) orders from CHX participants that are not LEAD MMs; (2) liquidity taking orders from LEAD MMs; and (3) undelayed liquidity providing orders from LEAD MMs. For each order origin category, the Exchange would collect the following: (1) the number of orders with a variable delay less than 50 microseconds, and the average delay time; (2) the number of orders with a variable delay equal to or greater than 50 microseconds but less than 150 microseconds, and the average delay time; (3) the number of orders with a variable delay equal to or greater than 150 microseconds but less than 250 microseconds, and the average delay time; (4) the number of orders with a variable delay equal to or greater than 250 microseconds but less than 350 microseconds, and the average delay time; and (5) the number of orders with a variable delay equal to or greater than 350 microseconds, and the average delay time.<sup>34</sup>

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<sup>33</sup> In calculating total market wide volume, the Exchange will exclude volume attributed to certain non-standard trades. See Amendment No. 1, supra note 12, at 27.

<sup>34</sup> See Amendment No. 2, supra note 13, at 10.

## 5. Effective Spread Statistics

The effective spread statistics are designed to track both the CHX and overall market effective spreads per security for different PEV Ranges prior to and after the implementation of the pilot program. This data should highlight changes in market quality that occur during the pilot program. The effective spread statistics would include, at least, the following data fields, as applicable:

<b>Field #</b>	<b>Field Name</b>	<b>Description</b>
<b>1</b>	<b>Symbol</b>	
<b>1A</b>	<b>Primary Matching Location</b>	C = Chicago (CH2) N = New Jersey (NY4)
<b>2</b>	<b>Date</b>	
<b>2A</b>	<b>PEVRange</b>	Blank = All regular session data 2 = PEV data greater than or equal to $2\sigma$ and less than $3\sigma$ 3 = PEV data greater than or equal to $3\sigma$ and less than $4\sigma$ 4 = PEV data greater than or equal to $4\sigma$ and less than $5\sigma$ 5 = PEV data greater than or equal to $5\sigma$
<b>3</b>	<b>NLMMs</b>	Number of LMMs assigned to symbol
<b>4</b>	<b>TradeSizeBracket</b>	1 = 1 – 499 2 = 500-1999 3 = 2000 – 4999 4 = 5000 – 9999 5 = =10,000 or more

<b>Field #</b>	<b>Field Name</b>	<b>Description</b>
<b>5</b>	<b>CHXNTrades</b>	For Eligible Trades <sup>35</sup> reported by CHX in <b>TradeSizeBracket</b> , the number of Eligible Trades reported.
<b>6</b>	<b>CHXNShares</b>	For Eligible Trades reported by CHX in <b>TradeSizeBracket</b> , number of shares attributed to Eligible Trades reported.
<b>7</b>	<b>SW_CHX_EffectiveSpread</b>	For Eligible Trades reported by CHX in <b>TradeSizeBracket</b> : Share-Weighted ( $2 *  Trade Price - SIP NBBO Midpoint $ )
<b>8</b>	<b>SW_CHX_EffectiveSpreadIndex</b>	For qualified trades reported by CHX in <b>TradeSizeBracket</b> : CHX Effective Spread divided by the SIP NBBO at Participant Trade Report Time
<b>9</b>	<b>NMSNTrades</b>	For Eligible Trades reported by SIP, the number of trades reported.
<b>10</b>	<b>NMSNShares</b>	For Eligible Trades reported by SIP in <b>TradeSizeBracket</b> , the number of shares reported.
<b>11</b>	<b>SW_NMS_EffectiveSpread</b>	For Eligible Trades reported by SIP in <b>TradeSizeBracket</b> : Share-Weighted ( $2 *  Trade Price - SIP NBBO Midpoint $ )

<sup>35</sup> Generally, “Eligible Trades” are executions attributed to single-sided orders received during the regular trading session when a two-sided and uncrossed NBBO disseminated by the relevant Securities Information Processor (“SIP NBBO”) was present. See proposed CHX Article 20, Rule 8(h)(8).

Field #	Field Name	Description
12	<b>SW_NMS_EffectiveSpreadIndex</b>	For Eligible Trades reported by SIP in <b>TradeSizeBracket</b> : NMS Effective Spread divided by the SIP NBBO at Participant Trade Report Time

6. Timeline to Produce Pilot Data

By no later than the end of the second month of the pilot program, the Exchange would provide the Commission with the Pilot Data for the first month of the pilot program.<sup>36</sup> By the end of each month thereafter, the Exchange would provide the Commission with the Pilot Data from the previous month.<sup>37</sup> By no later than the end of the sixth month of the pilot program, the Exchange would publish on its website an anonymized version of the Pilot Data and, by the end of each month thereafter, the Exchange would publish on its website an anonymized version of the Pilot Data, for each prior month of the pilot program.<sup>38</sup> On the first day of the pilot program, the Exchange would publish on the CHX website each LEAD MM Security and the number of LEAD MMs assigned to each security, which would be updated daily during the duration of the pilot program.<sup>39</sup> By no later than the end of the eighteenth month of the pilot program, the Exchange would provide the Commission with an analysis of the Pilot Data, which would be made publicly available.<sup>40</sup>

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<sup>36</sup> See proposed CHX Article 20, Rule 8(h)(3)(B).

<sup>37</sup> See id.

<sup>38</sup> See proposed CHX Article 20, Rule 8(h)(3)(C).

<sup>39</sup> See id.

<sup>40</sup> See proposed CHX Article 20, Rule 8(h)(3)(A).

### III. Discussion and Commission Findings

The Commission has carefully reviewed the proposal and finds that approval of the proposed rule change, as modified by Amendments No. 1 and No. 2, is consistent with the requirements of the Exchange Act and the rules and regulations thereunder applicable to a national securities exchange.<sup>41</sup> In particular, as discussed below, the Commission finds that the proposal is consistent with: (1) Section 6(b)(5) of the Exchange Act,<sup>42</sup> which requires that the rules of a national securities exchange, among other things, be designed to prevent fraudulent and manipulative acts and practices, to promote just and equitable principles of trade, 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; and not be designed to permit unfair discrimination between customers, issuers, brokers, or dealers; (2) Section 6(b)(8) of the Exchange Act,<sup>43</sup> which requires that the rules of a national securities exchange not impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Exchange Act; and (3) Section 11A of the Exchange Act, which articulates Congress' finding that, among other things, it is in the public interest and appropriate for the protection of investors and the maintenance of fair and orderly markets to assure: economically efficient execution of securities transactions; fair competition among brokers and dealers, among exchange markets, and between exchange markets; the availability to brokers, dealers, and investors of information with respect to quotations for and transactions in securities; the practicability of brokers

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<sup>41</sup> In approving the proposed rule change, as modified by Amendments No. 1 and No. 2, the Commission has considered its impact on efficiency, competition, and capital formation. 15 U.S.C. 78c(f). See infra Section III.A.

<sup>42</sup> 15 U.S.C. 78f(b)(5).

<sup>43</sup> 15 U.S.C. 78f(b)(8).

executing investors' orders in the best market; and an opportunity, consistent with the economically efficient execution of securities transactions and the practicability of brokers executing investors' orders in the best market, for investors' orders to be executed without the participation of a dealer.<sup>44</sup>

The Commission received sixteen comment letters from ten commenters on the proposal and two response letters from the Exchange.<sup>45</sup> Two commenters express support for the proposal,<sup>46</sup> and eight commenters express opposition to, or concern regarding, the proposal.<sup>47</sup>

A. Section 6 of the Exchange Act

Section 6(b)(5) of the Exchange Act requires that the rules of a national securities exchange must be, among other things, not designed to permit unfair discrimination between customers, issuers, brokers, or dealers.<sup>48</sup> Certain commenters argue that the proposed rule change would provide an unfair advantage to LEAD MMs over other CHX participants.<sup>49</sup> In particular, commenters argue that by not subjecting LEAD MMs' liquidity providing orders and related cancels to the LEAD, the proposal would unfairly discriminate in favor of the LEAD

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<sup>44</sup> 15 U.S.C. 78k-1(a)(1)(C).

<sup>45</sup> See supra notes 5 and 8.

<sup>46</sup> See Virtu Letter, supra note 5; and CTC Trading Group Letter, supra note 5.

<sup>47</sup> See XR Securities Letter, supra note 5; FIA PTG Letter, supra note 5; Hudson River Trading Letter, supra note 5; Leuchtkafer Letter, supra note 5; Citadel Letter, supra note 5; Healthy Markets Letter, supra note 5; NYSE Letter, supra note 5; and SIFMA Letter, supra note 5.

<sup>48</sup> 15 U.S.C. 78f(b)(5).

<sup>49</sup> See FIA PTG Letter, supra note 5, at 3; XR Securities Letter, supra note 5, at 1; SIFMA Letter, supra note 5, at 2; Leuchtkafer Letter, supra note 5, at 4 (asserting that the LEAD would only benefit market participants who become LEAD MMs and subscribe to the Chicago Mercantile Exchange's ("CME") data feeds); Hudson River Trading Letter, supra note 5, at 2; and Citadel Letter, supra note 5, at 3.

MMs.<sup>50</sup> Two commenters state that the LEAD would unfairly discriminate against market participants that are primarily liquidity takers, such as retail investors or institutions.<sup>51</sup> A commenter argues that the discriminatory nature of the LEAD would harm market participants when they seek to access liquidity provided by a LEAD MM as the LEAD MM may alter its price while incoming orders are being delayed.<sup>52</sup> Another commenter expresses concern that the LEAD would frustrate strategies that involve taking prices across multiple venues by giving extra time to LEAD MMs to pull their quotes in the middle of a multi-venue order.<sup>53</sup>

In addition, certain commenters express concern regarding the discriminatory effects of the LEAD on non-LEAD MM liquidity providers.<sup>54</sup> For example, one commenter asserts that the LEAD would benefit LEAD MMs by making it easier to quote better prices in larger size but would in turn make it more difficult for non-LEAD MM liquidity providers to quote better prices at larger size.<sup>55</sup> Similarly, another commenter argues that the LEAD will prevent non-LEAD

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<sup>50</sup> See FIA PTG Letter, supra note 5, at 2-3; Leuchtkafer Letter, supra note 5, at 4-5; Citadel Letter, supra note 5, at 3-4; Hudson River Trading Letter, supra note 5, at 5-6. See also XR Securities Letter, supra note 5, at 2 (stating that the LEAD would give LEAD MMs an “unfair advantage”); Healthy Markets Letter, supra note 5, at 4 (stating that the proposal would “venture into uncharted discriminatory waters, and offers little explanation or justification”); and SIFMA Letter, supra note 5, at 5 (asserting that any intentional delay should be universally applied to all market participants in a non-discriminatory manner).

<sup>51</sup> See Citadel Letter, supra note 5, at 5-6; Leuchtkafer Letter, supra note 5, at 4.

<sup>52</sup> See Hudson River Trading Letter, supra note 5, at 2.

<sup>53</sup> See FIA PTG Letter, supra note 5, at 3.

<sup>54</sup> See Hudson River Trading Letter, supra note 5, at 1-2; XR Securities Letter, supra note 5, at 3; Citadel Letter, supra note 5, at 3; Leuchtkafer Letter 2, supra note 5, at 8.

<sup>55</sup> See Hudson River Trading Letter, supra note 5, at 1-2.

MM liquidity providers, who the commenter characterize as being not being informationally advantaged by the speed bump, from providing the best possible market they otherwise could.<sup>56</sup>

Two commenters believe that the proposal will incentivize LEAD MMs to enhance displayed liquidity by entering larger orders at better prices.<sup>57</sup> Another commenter states that it believes that this will benefit institutional investors.<sup>58</sup> One commenter states that it believes that the proposal would benefit the public interest and protect investors by encouraging superior displayed liquidity from qualified market makers.<sup>59</sup> In addition, these commenters believe that the proposed minimum performance standards are appropriate given the benefits that LEAD MMs would be afforded.<sup>60</sup> One of those commenters states its belief that market maker incentives should be consistent with the risk inherent with truly affirmative quoting and trading obligations, and asserts that the minimum performance standards meet such standard.<sup>61</sup> That commenter believes that the proposal would appropriately link heightened quoting and trading requirements with the ability to adequately manage the heightened risks of such requirements.<sup>62</sup> Another commenter agrees with CHX that the minimum performance standards are substantial and proportionate to the advantages that LEAD MMs will receive.<sup>63</sup> The commenter states that historically, other national securities exchanges have balanced market maker benefits with responsibilities, and asserts that requiring market makers to comply with substantial quoting

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<sup>56</sup> See XR Securities Letter, supra note 5, at 3.

<sup>57</sup> See Virtu Letter, supra note 5, at 2; and CTC Trading Letter, supra note 5, at 3.

<sup>58</sup> See Virtu Letter, supra note 5, at 2.

<sup>59</sup> See CTC Trading Letter, supra note 5, at 5.

<sup>60</sup> See Virtu Letter, supra note 5, at 2; and CTC Trading Letter, supra note 5, at 4.

<sup>61</sup> See Virtu Letter, supra note 5, at 2.

<sup>62</sup> See id.

<sup>63</sup> See CTC Trading Letter, supra note 5, at 4.

requirements and benefits that are proportionate to their obligations, which it believes the LEAD would provide for, is consistent with the Exchange Act.<sup>64</sup> In addition, that commenter states its views that the LEAD would reduce unfair discrimination by providing an appropriate trade-off between the benefits and responsibilities of LEAD MMs.<sup>65</sup> Other commenters express concern that the minimum performance standards may not be adequate to justify the benefits that LEAD MMs would receive under the proposal.<sup>66</sup> In addition, one commenter suggests that LEAD MMs should have specific responsibilities around the open, close, and in volatile markets.<sup>67</sup>

The Exchange argues that the proposed rule change is not designed to permit unfair discrimination. While the Exchange acknowledges that the LEAD is discriminatory by design,<sup>68</sup> the Exchange asserts that the proposed discrimination is fair because the advantage afforded to LEAD MMs is conditioned upon LEAD MMs satisfying the proposed minimum performance standards,<sup>69</sup> which, according to the Exchange, are substantial and proportionate to the benefits

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<sup>64</sup> See id.

<sup>65</sup> See id. at 3.

<sup>66</sup> See Leuchtkafer Letter, supra note 5, at 4-5; NYSE Letter, supra note 5, at 4-5 (stating that the benefit is “disproportionate” to the proposed standards); Citadel Letter, supra note 5, at 2 (asserting that the minimum performance standards appear to be “largely immaterial in substance” and the benefits of the LEAD would be “entirely disproportionate” to these obligations). Two commenters suggest that CHX should provide data regarding the materiality of the minimum performance standards, how they will improve market quality, and whether CHX market makers already satisfy these criteria. See Citadel Letter, supra note 5, at 3; and Healthy Markets Letter, supra note 5, at 4. Two other commenters express concern that the proposal would be unfairly discriminatory because only firms selected by CHX as LEAD MMs would be given the speed advantage. See XR Securities Letter, supra note 5, at 1; and FIA PTG Letter, supra note 5, at 2. In addition, one commenter raises concern that LEAD MMs would be named based on subjective criteria. See Citadel Letter, supra note 5, at 4.

<sup>67</sup> See Leuchtkafer Letter, supra note 5, at 5.

<sup>68</sup> See, e.g., CHX Letter, supra note 5, at 10-11.

<sup>69</sup> See Notice, supra note 3, 82 FR at 11269.

that the LEAD would confer on LEAD MMs.<sup>70</sup> The Exchange notes that it has little to no resting liquidity in the vast majority of NMS securities traded at CHX, which has resulted in immaterial trading volume in all but a handful of securities.<sup>71</sup> The Exchange states that the LEAD Rules would address this lack of resting liquidity in NMS securities on CHX by providing LEAD MMs with a risk management tool that would incentivize them to display larger orders at aggressive prices.<sup>72</sup> To the extent the LEAD would incentivize LEAD MMs to improve the price and size of the prevailing NBBO, the Exchange argues that LEAD could reduce transaction costs for retail investors, as wholesale broker-dealers price the majority of the retail orders they handle off the prevailing NBBO, and for institutional investors, as the execution costs for their orders would be reduced if the average NBBO spreads are narrowed.<sup>73</sup> The Exchange, therefore, contends that the LEAD would result in meaningful enhancements to market quality in securities that are actively traded at CHX and new aggressive markets in securities that are currently not actively traded at CHX.<sup>74</sup>

Further, the Exchange states that the minimum performance standards are appropriate given the requirements imposed upon and benefits incurred by market makers on other exchanges.<sup>75</sup> Specifically, the Exchange compares the proposed obligations of its LEAD MMs to those of the New York Stock Exchange, LLC (“NYSE”) Designated Market Makers (“DMMs”), which receive execution parity rights in return for minimum performance standards

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<sup>70</sup> See CHX Letter, supra note 5, at 6.

<sup>71</sup> See Amendment No. 1, supra note 12, at 8.

<sup>72</sup> See id.

<sup>73</sup> See CHX Letter 2, supra note 8, at 9-10.

<sup>74</sup> See Amendment No. 1, supra note 12, at 8.

<sup>75</sup> See CHX Letter, supra note 5, at 6.

that CHX states are similar to CHX’s proposed minimum performance standards.<sup>76</sup> The Exchange asserts that, while DMM parity merely encourages DMMs to join the NBBO, the LEAD would incentivize LEAD MMs to improve the price and size of the NBBO by: minimizing the risk that LEAD MMs’ quotes would be “picked off” by latency arbitrageurs; and providing, through CHX’s existing market data revenue rebates program, rebates for quotes that remain on the CHX book for at least one second.<sup>77</sup>

In response to the comments requesting data showing that the minimum performance standards are appropriate,<sup>78</sup> the Exchange presents data<sup>79</sup> that it believes demonstrates that the minimum performance standards would be substantial relative to historical CHX data. The Exchange states that the data shows that the majority of CHX participants would not have passed the proposed minimum performance standards in January 2016 or February 2017 for the securities that trade on CHX,<sup>80</sup> and that the most active SPDR S&P 500 trust exchange-traded fund (“SPY”) liquidity providers in January 2016 would not have met the standards as of February 2017.<sup>81</sup> In addition, CHX believes that the LEAD MM selection criteria, which would allow CHX to consider various factors in assessing the ability of an applicant to meaningfully contribute to market quality as a LEAD MM,<sup>82</sup> are designed to forecast how well an applicant

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<sup>76</sup> See CHX Letter 2, supra note 8, at 6-7.

<sup>77</sup> See id.

<sup>78</sup> See supra note 66.

<sup>79</sup> See CHX Letter 2, supra note 8, at 7-9.

<sup>80</sup> See id.

<sup>81</sup> See id. at 9.

<sup>82</sup> The factors the Exchange may consider in selecting a LEAD MM include, but are not limited to, experience with making markets in securities, adequacy of capital, willingness to promote the Exchange as a marketplace, issuer preference, operational capacity,

would perform as a LEAD MM.<sup>83</sup> CHX notes that the criteria are virtually identical to the criteria under Bats BZX’s rules for its lead market maker program.<sup>84</sup>

With regard to a commenter’s concern that the LEAD would frustrate strategies that involve taking prices across multiple venues, the Exchange asserts that a market participant who currently utilizes sophisticated order routing logic to successfully execute multi-venue orders could modify its logic to account for the 350-microsecond intentional delay at CHX and thereby eliminate any incremental information leakage.<sup>85</sup> In addition, the Exchange believes that 350 microseconds is long enough to minimize the effectiveness of latency arbitrage strategies, yet short enough as to not provide liquidity providers with an unfair advantage, and asserts that the 350 microsecond delay is appropriate both for New York and Chicago data centers.<sup>86</sup>

For the reasons discussed below, the Commission believes that the proposal to implement the LEAD and the minimum performance standards is not designed to permit unfair discrimination under Section 6(b)(5) of the Exchange Act. Liquidity providers that display limit orders are the primary source of public price discovery.<sup>87</sup> The Commission emphasizes the importance of displayed limit orders as they typically set quoted spreads, supply liquidity, and in general establish the public “market” for a stock.<sup>88</sup> To establish the public market for a stock,

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support personnel, and history of adherence to Exchange rules and securities laws. See proposed CHX Article 16, Rule 4(f)(3)(A).

<sup>83</sup> See CHX Letter, supra note 5, at 11-12.

<sup>84</sup> See id.

<sup>85</sup> See id. at 11.

<sup>86</sup> See CHX Letter 2, supra note 8, at 13-14.

<sup>87</sup> Securities Exchange Act Release No. 51808 (June 9, 2005), 70 FR 37496, 37526 (June 29, 2005) (“Regulation NMS Adopting Release”).

<sup>88</sup> See id.

displayed limit orders make the first move by being displayed rather than executed and therefore provide a “free option” for other market participants to trade a stock by submitting marketable orders and taking the liquidity supplied by the displayed limit orders.<sup>89</sup> The Commission notes that the quality of execution for marketable orders, which, in turn, trade with displayed liquidity, depends to a great extent on the quality of markets established by displayed limit orders (i.e., the narrowness of quoted spreads and the available liquidity at various price levels).<sup>90</sup> Accordingly, the quality of execution for marketable orders is directly affected by the willingness of liquidity providers to take the execution risk associated with providing displayed liquidity. To the extent liquidity providers can be incentivized to display better prices or larger size, the market quality for liquidity taking orders should improve.

National securities exchanges have historically discriminated among their members by, among other things, providing various advantages to members that register as market makers and thereby commit to certain undertakings designed to enhance market quality.<sup>91</sup> CHX’s proposal discriminates in favor of LEAD MMs, by not subjecting LEAD MM liquidity providing orders and related cancels to the LEAD, to provide LEAD MMs with a risk management tool that should incentivize LEAD MMs to post larger size and more aggressively-priced quotes on CHX. The proposal also imposes heightened quoting and new transaction obligations on the LEAD MMs to obtain this benefit.<sup>92</sup> LEAD MMs therefore have committed to provide a specific level of liquidity on the Exchange on an ongoing basis, unlike other liquidity providers or other CHX

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<sup>89</sup> See id. at 37526-37527.

<sup>90</sup> See id. at 37526.

<sup>91</sup> See, e.g., NYSE Rule 104 (Dealings and Responsibilities of DMMs).

<sup>92</sup> Presently, liquidity providers on CHX are not obligated to quote or transact at levels consistent with the minimum performance standards as each LEAD MM would be under the proposal.

participants. These obligations will require LEAD MMs to take on greater risk, and they in turn will be provided a tool – the LEAD - to help them more effectively manage that risk. In this way, the difference in benefits is designed to reflect the different obligations of the parties. The Commission therefore believes that these minimum performance standards, particularly the quoting and transaction thresholds, are meaningful obligations that are proportionate to and balanced with the advantages conferred upon LEAD MMs.

The Commission also notes that: (1) the minimum performance standards are quantitative standards that the Exchange can objectively measure to determine whether LEAD MMs are in compliance, which will allow the Exchange to apply them consistently to ensure that similarly situated parties are treated equally; and (2) the LEAD MM selection process is substantially similar to the market maker selection processes previously approved by the Commission and implemented on other national securities exchanges.<sup>93</sup>

With respect to one commenter’s concern that the LEAD would frustrate strategies that involve taking prices across multiple venues,<sup>94</sup> the Commission believes that a market participant could modify its routing strategies to address the 350-microsecond LEAD and eliminate any added risk of information leakage. The Commission notes that, in its second comment letter,<sup>95</sup> the commenter did not refute CHX’s rebuttal.<sup>96</sup>

For these reasons, the Commission finds that the proposed rule change, as modified by Amendments No. 1 and No. 2, is consistent with the requirement of Section 6(b)(5) of the

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<sup>93</sup> Compare proposed CHX Article 16, Rule 4(f)(2) with Bats BZX Rule 11.8(e)(2); NYSE Arca Rule 7.22-E; CBOE Rule 8.83.

<sup>94</sup> See supra note 53 and accompanying text.

<sup>95</sup> See FIA PTG Letter 2, supra note 8.

<sup>96</sup> See supra note 85 and accompanying text.

Exchange Act that the rules of a national securities exchange be not designed to permit unfair discrimination between customers, issuers, brokers, or dealers.

Section 6(b)(8) of the Exchange Act requires that the rules of a national securities exchange not impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Exchange Act. One commenter asserts that the LEAD would unduly burden competition between liquidity providers and firms that access displayed prices on CHX.<sup>97</sup> This commenter states its view that benefits provided to market makers create a disparity that harms competition among market participants and leads to greater intermediation as the benefits are available only to certain intermediaries.<sup>98</sup> This commenter believes that the LEAD may make it easier for LEAD MMs to quote better prices in larger size, but would make it more difficult for non-LEAD MMs to do so.<sup>99</sup> Another commenter expresses concern that the LEAD would alter the competitive balance in the market by benefitting only LEAD MMs, as LEAD MMs would effectively be given extra time to determine whether to remain firm or cancel/modify a displayed quotation in order to avoid unfavorable executions.<sup>100</sup>

The Exchange believes that the LEAD would result in increased competition with liquidity providers of other markets, which furthers a primary goal of Regulation NMS, as such liquidity providers would have to provide enhanced liquidity or risk losing market share to LEAD MMs.<sup>101</sup> The Exchange also responds that the LEAD would not create a new competitive

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<sup>97</sup> See Hudson River Trading Letter, supra note 5, at 8.

<sup>98</sup> See id. at 1. As discussed above, the Commission believes that the discriminatory aspect of the LEAD is fair for the reasons discussed above. See supra Section III.A.

<sup>99</sup> See Hudson River Trading Letter, supra note 5, at 1.

<sup>100</sup> See Citadel Letter, supra note 5, at 4.

<sup>101</sup> See CHX Letter 2, supra note 8, at 15.

balance as much as it would correct a competitive imbalance that serves to discourage displayed liquidity and is in itself an undue burden on competition.<sup>102</sup>

The Commission finds that the LEAD Rules are consistent with Section 6(b)(8) of the Exchange Act because they do not impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Exchange Act. The Commission believes that, while the proposal will provide a benefit to LEAD MMs by not subjecting their liquidity providing orders and related cancels to the LEAD, such benefit is appropriate in exchange for their commitment to provide meaningful liquidity on the Exchange as required by the minimum performance standards. By providing a mechanism for LEAD MMs to update their displayed quotations without delay, the LEAD is designed to incentivize LEAD MMs to improve the price and size of their quotes on CHX thereby improving market quality to the ultimate benefit of liquidity takers. The Commission notes that improvements to CHX's quotations would benefit non-CHX market participants to the extent such quotations result in tightening the NBBO spread, as a number of execution venues price transactions off the NBBO. For these reasons, the Commission believes that the balance between the benefit to LEAD MMs afforded by the LEAD and their obligations under the minimum performance standards appropriately furthers the purposes of the Exchange Act.

One commenter believes that, to assess the proposed rule change's impact on competition, the Exchange should also collect and disclose order book queue metrics.<sup>103</sup> That commenter also asserts that to assess the "anti-competitive effect" of shifting latency arbitrage costs to non-LEAD MM participants, CHX should collect and disclose: (1) the number of times

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<sup>102</sup> See id. at 17.

<sup>103</sup> See Leuchtkafer Letter 5, supra note 8, at 1.

a non-LEAD MM's resting order was executed within 350 microseconds of any LEAD MM's order cancellation at the same price or better, and (2) the number of times any LEAD MM's order was cancelled while any marketable contra sat in the LEAD queue.<sup>104</sup> While the Exchange will not be collecting the statistics that the commenter suggests, the Exchange will be collecting other data that are designed to allow the Exchange and the Commission to assess the impact of the proposal on competition. Specifically, the Exchange will collect and publish matched trade difference statistics. These metrics will measure the volume executed hypothetically without LEAD and the volume executed in reality with LEAD, and will be grouped by different PEV Range values such that analysis can be conducted to determine how much, if at all, this cost increases during periods of excessive volatility. This data will allow the Exchange and the Commission to examine the effect on competition that the commenter suggests by determining the difference between the hypothetical and actual executed volume, and focusing specifically on periods of higher volatility. This difference, combined with type of market participant who provided liquidity, should shed light on how competition has been affected. Also, analysis of this data will allow the Commission to assess and weigh the degree to which latency arbitrage costs are being borne by non-LEAD liquidity providers and if those costs outweigh any of the displayed benefits. With respect to the commenter's suggestion that the Exchange also provide order book queue statistics,<sup>105</sup> it is not sufficiently clear what benefit such statistics would provide.<sup>106</sup>

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<sup>104</sup> See id. at 2.

<sup>105</sup> See supra note 103 and accompanying text.

<sup>106</sup> Under CHX's execution rules, a non-LEAD MM order that was received by the Exchange before a LEAD MM order would have time priority over the LEAD MM order once it is ranked in the Exchange's order book notwithstanding the delay imposed by the

The Commission's views of the proposal's consistency with Sections 6(b)(5) and 6(b)(8) of the Exchange Act are informed by its views that the proposal is appropriately designed to enhance market quality by striking a balance between the new obligations for LEAD MMs and the accompanying benefits. Several commenters discuss the potential impact of the proposal on displayed liquidity and price discovery as well as market quality in general.<sup>107</sup> Two commenters assert that the LEAD would enable liquidity providers to improve displayed liquidity.<sup>108</sup> One commenter states that LEAD MMs will be more inclined to post larger orders at better prices in assigned securities on CHX with confidence that their orders will not be "picked off" by speed arbitrageurs. The commenter believes this will improve displayed liquidity available to institutional investors, and all investors, without limiting the ability of retail and institutional investors to access liquidity.<sup>109</sup> Another commenter states its views that the LEAD will reduce adverse selection risk and incentivize market makers to provide more liquidity, leading to deeper quotes and tighter bid-ask spreads,<sup>110</sup> which would reduce the costs of investors.<sup>111</sup>

Six other commenters express concern that the LEAD could deteriorate the accessibility of quotes and overall market quality.<sup>112</sup> Two commenters predict that, while overall spreads and

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LEAD to reach the Exchange's order book. See CHX Article 20, Rule 8(b). See also Amendment No. 1, supra note 12, at 7-8.

<sup>107</sup> See Virtu Letter, supra note 5, at 2; CTC Trading Letter, supra note 5, at 3; Healthy Markets Letter, supra note 5, at 4-5; XR Securities Letter, supra note 5, at 2; FIA PTG Letter, supra note 5, at 4; SIFMA Letter, supra note 5, at 6; Citadel Letter, supra note 5, at 3; and Hudson River Trading Letter supra note 5, at 6.

<sup>108</sup> See Virtu Letter, supra note 5, at 2; and CTC Trading Letter, supra note 5, at 3.

<sup>109</sup> See Virtu Letter, supra note 5, at 2.

<sup>110</sup> See CTC Trading Letter, supra note 5, at 3.

<sup>111</sup> See id. at 6.

<sup>112</sup> See Healthy Markets Letter, supra note 5, at 4-5; XR Securities Letter, supra note 5, at 2; FIA PTG Letter, supra note 5, at 4; SIFMA Letter, supra note 5, at 6; Citadel Letter,

liquidity may improve, the increased liquidity would be more conditional and less accessible.<sup>113</sup>

In addition, one commenter predicts that spreads made by “real” liquidity providers – as distinguished from “fleeting” quotes submitted by LEAD MMs – would widen.<sup>114</sup> Several commenters express concern about the potential transaction costs that the LEAD could impose on investors.<sup>115</sup>

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supra note 5, at 3; and Hudson River Trading Letter supra note 5, at 6. In addition, as CHX is the only exchange to share quote revenue with its members, three commenters assert that the LEAD would result in unfair allocation of consolidated market data revenue by generating an increase in quoting, but not necessarily trading, on the Exchange. See Hudson River Trading Letter, supra note 5, at 7; Citadel Letter, supra note 5, at 6; and SIFMA Letter, supra note 5, at 7. The Securities Information Processors (“SIPs”) collect fees from subscribers for trade and quote tape data received from trading centers and reporting facilities (collectively “SIP Participants”) and, after deducting the cost of operating each tape, the SIPs allocate profits among the SIP Participants (including CHX) on a quarterly basis. CHX shares with its members a portion of the revenue it receives that is attributed to members’ quote activity. See Securities Exchange Act Release No. 70546 (September 27, 2013), 78 FR 61413 (October 3, 2013) (SR-CHX-2013-18). The Exchange responds that the LEAD would not encourage non-bona fide quote activity for the purpose of earning rebates because quotes cancelled within the 350-microsecond LEAD would not be eligible for market data revenue rebates, and cancellation of such quotes could result in the CHX participant being assessed an order cancellation fee. See CHX Letter, supra note 5, at 10.

<sup>113</sup> See Hudson River Trading Letter, supra note 5, at 6; and Citadel Letter, supra note 5, at 3. Another commenter similarly predicted that the LEAD would result in complex trickle-down impacts on the NBBO including CHX quotes that would not be accessible. See FIA PTG Letter, supra note 5 at 3.

<sup>114</sup> See XR Securities Letter, supra note 5, at 2. See also FIA PTG Letter, supra note 5, at 4 (expressing concern that non-LEAD MMs would be forced to widen their bid/ask spreads across the marketplace).

<sup>115</sup> See FIA PTG Letter, supra note 5, at 4 (stating that LEAD MMs may be forced to widen their bid/ask spreads, which would be costly to investors); Leuchtkafer Letter 2, supra note 8, at 8 (asserting that the LEAD would result to increased transaction costs for retail and institutional investors, who would be exposed to adverse selection); XR Securities Letter, supra note 5, at 1 (asserting that the LEAD is likely to result in higher trading costs for the investing public); Hudson River Trading Letter, supra note 5, at 6 (asserting that providing LEAD MMs the ability to back away from quoted prices and sizes would increase the cost of finding liquidity); SIFMA Letter, supra note 5, at 8 (stating that the proposal could result in increased market complexity and costs); and Citadel Letter 2,

In addition, one commenter believes that the LEAD could result in institutional migration to dark venues, which could reduce market quality over time.<sup>116</sup> The commenter also asserts that the LEAD could result in volatility during stressed trading conditions.<sup>117</sup> In the OIP, the Commission asked about how the proposal would affect price volatility on the Exchange.<sup>118</sup> In response, the Exchange states that, although LEAD MM quotes would likely widen during stressed trading conditions, LEAD MMs would be subject to the minimum performance standards, which may have a mitigating effect on price volatility.<sup>119</sup>

The Exchange asserts that the proposal would provide LEAD MMs with a risk management tool that would encourage LEAD MMs to display larger orders at aggressive prices, which should provide meaningful enhancements to market quality.<sup>120</sup> The Exchange explains that, currently, it has less than one-percent market share in NMS securities and little to no resting liquidity in the vast majority of NMS securities.<sup>121</sup> The Exchange believes that the proposal would enhance market quality across all securities traded on CHX.<sup>122</sup> In particular, CHX believes that the LEAD Rules would significantly enhance market quality for securities that are actively traded on CHX and attract robust markets in securities that are currently not actively

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supra note 5, at 3 (asserting that the LEAD would expose liquidity providers (other than LEAD MMs) to adverse selection, which would raise costs for providing liquidity).

<sup>116</sup> See Leuchtkafer Letter 2, supra note 8, at 9.

<sup>117</sup> See id. at 7-8.

<sup>118</sup> See OIP, supra note 7, 82 FR at 24416.

<sup>119</sup> See CHX Letter 2, supra note 8, at 9. The Exchange also asserts that current circuit breakers, include Limit Up-Limit Down, provide an adequate market-wide remedy for extraordinary market volatility. See id.

<sup>120</sup> See Amendment No. 1, supra note 12, at 8.

<sup>121</sup> See id.

<sup>122</sup> See id.

traded at CHX.<sup>123</sup> In addition, the Exchange asserts that the LEAD would reduce the cost of LEAD MMs providing liquidity, which the Exchange believes would result in more efficient price discovery for retail and institutional investors.<sup>124</sup>

The Exchange also asserts that there is no evidence that the proposal would result in CHX quotes being less accessible to retail or institutional buyers and sellers,<sup>125</sup> and, in fact, the heightened quoting and trading obligations for LEAD MMs would ensure that CHX quotes remain reliable and accessible.<sup>126</sup> The Exchange also states its view that: (1) a market participant that places an order to take liquidity posted on any national securities exchange today may find that the liquidity is not be present by the time the order reaches the exchange's limit

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<sup>123</sup> See id.

<sup>124</sup> See CHX Letter, supra note 5, at 4. With respect to retail customers, the Exchange states that wholesalers base execution price on the NBBO and that a slight narrowing of the average NBBO, which the Exchange predicts will occur because of the LEAD, will favorably affect the pricing that wholesalers provide for retail orders, at the expense of the wholesalers' bottom line. See CHX Letter 2, supra note 8, at 10. The Exchange predicts that, because wholesalers prefer to trade at or inside the NBBO, when the NBBO is narrowed, wholesalers would either have to choose among matching the better price, improving the better price, or routing the customer order to the better price, and the Exchange asserts that any of these outcomes will benefit retail customers. See id. at 15. The Exchange states that institutional order flow is not directed to wholesalers, and some institutional orders are executed during opening and closing auctions. See id. at 10. The LEAD would not impact the cost of those transactions, according to the Exchange. But the Exchange also states that: (1) most institutional orders are broken down into much smaller "child orders," which are executed in the marketplace using a variety of algorithms; (2) in general, execution costs for such child orders would be reduced when average NBBO spreads are narrowed; and therefore (3) to the extent that the LEAD increases competition among orders and narrows the average NBBO spread, institutional order flow would also experience lower execution costs. See id. With respect to an institutional investor's experience taking liquidity, CHX states that institutional investors would have the same experience as any other liquidity taker and that the LEAD would not have a materially negative effect on liquidity takers not engaged in latency arbitrage strategies. See id. at 11.

<sup>125</sup> See CHX Letter, supra note 5, at 4-5.

<sup>126</sup> See Amendment No. 1, supra note 12, at 12.

order book; (2) this has nothing to do with the presence of intentional delays; and therefore (3) the LEAD would not render CHX quotes any more “fleeting” than they are today.<sup>127</sup>

As discussed above, the Commission believes that the LEAD Rules are reasonably designed to incentivize LEAD MMs to post larger size and more aggressively-priced quotes on CHX, which in turn could lead to broader enhancements to market quality by improving the NBBO and increasing quote competition. The extremely short access delay will allow LEAD MMs to adjust their quotations in response to changing market conditions and thereby reduce their exposure to losses from professional traders with micro-second speed advantages. As a result, LEAD MMs should be more inclined to post larger displayed orders at better prices on CHX with greater confidence that they will have an opportunity to update their quotes and therefore avoid an execution at a stale price or size. The reduction in risk in these limited conditions should allow LEAD MMs to provide more liquidity and narrower spreads throughout much of the trading day.

The Commission recognizes that commenters also were concerned that a 350 microsecond delay could reduce access to CHX quotations and thereby detract from market quality in a variety of contexts. The Commission believes, however, that the LEAD is reasonably designed to impact access only to CHX quotations by market participants racing to respond to symmetric information about market conditions, while the potential benefits generated by LEAD MMs posting larger sized and more aggressive quotations should inure

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<sup>127</sup> See CHX Letter 2, supra note 8, at 12. In the OIP, the Commission raised several questions about the impact that the LEAD would have on market quality. In particular, the Commission raised questions about volatility during stressed trading conditions, whether the proposed rule change would increase displayed liquidity on the Exchange, and whether liquidity provided by LEAD MMs would be “fleeting” and how significant such “fleeting” liquidity would be. See OIP, supra note 7, 82 FR at 24416.

throughout most of the trading day. Accordingly, the Commission believes that the LEAD Rules are reasonably designed to improve market quality, particularly for investors who are unlikely to have speed advantages over professional traders.

However, because the Exchange proposes to implement the LEAD Rules on a pilot basis, the Exchange and the Commission will be able to assess the actual impact of the proposal.<sup>128</sup> During the pilot period, CHX will collect and analyze the Pilot Data, which will measure the impact, if any, of the LEAD Rules on market quality, including quote accessibility and quoted and effective spreads, and should allow CHX to quantify any effects on the market. Among other things, the Exchange will collect and publicly disseminate data designed to measure the impact of the LEAD, including whether it: (1) increases the amount and competitiveness of liquidity displayed on CHX; and (2) impacts the accessibility of liquidity posted on CHX.<sup>129</sup> Specifically, the Exchange will collect, distribute, and analyze data measuring quote and execution quality both on CHX and more broadly, separated by levels of volatility. This data should allow the Exchange and Commission to assess not only changes in overall market quality but also changes during the most volatile periods on both the Exchange and the overall market. The Exchange also will collect matched trade difference statistics, which will indicate the number of shares that would have been executed, hypothetically, without the LEAD and the number of shares executed with the LEAD. This data will be aggregated by different levels of volatility. The Commission believes that analyzing the matched trade difference statistics will be insightful in determining if, and to what degree, the LEAD changed the accessibility of CHX quotes during different periods of volatility. Accordingly, the Pilot Data is intended to help

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<sup>128</sup> See proposed CHX Article 20, Rule 8(h)(2).

<sup>129</sup> See proposed CHX Article 20, Rules 8(h)(4), 8(h)(5), and 8(h)(6).

CHX and the Commission assess whether the proposal is having the intended impact on improving market quality.

The Exchange will also collect and provide to the Commission and the public data regarding variable delays experienced by both LEAD MMs and non-LEAD MMs.<sup>130</sup> One commenter asserts that a fixed delay implemented with software could result in variable delays that could be excessive and/or unevenly distributed between market participants, with non-LEAD MMs bearing the bulk of the variable delays.<sup>131</sup> The commenter suggests a variety of different approaches to measure these variable delays.<sup>132</sup> Although CHX asserts that variable delays occur on other markets without intentional access delays,<sup>133</sup> the Exchange will be collecting variable delay statistics to measure this type of delay. The Commission believes that these statistics will provide the necessary information on whether different types of market participants experience differing variable processing delays. Analysis of this data will allow the Exchange to implement any necessary changes to correct for a discrepancy. The Commission emphasizes that CHX would have to file another proposed rule change to continue LEAD after the pilot period. The Commission would consider, among other things, the Pilot Data and

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<sup>130</sup> See proposed CHX Article 20, Rule 8(h)(7) (requiring CHX to collect variable processing delay statistics).

<sup>131</sup> See Leuchtkafer Letter, supra note 5, at 2-4; Leuchtkafer Letter 2, supra note 8, at 6; and Leuchtkafer Letter 4, supra note 8, at 1.

<sup>132</sup> See Leuchtkafer Letter 5, supra note 8, at 1 (asserting that, for every message and for the length of the pilot program, CHX should timestamp every transaction on receipt, on LEAD queue entry and exit (if applicable), and on matching engine processing start to finish). That commenter believes that every message should also be clearly labeled if it was received immediately before, during, or immediately after a PEV and the PEV Range value itself. See Leuchtkafer Letter 5, supra note 8, at 1.

<sup>133</sup> See CHX Letter, supra note 5, at 9.

analyses of that data if, in the future, the Exchange proposed to make permanent the LEAD Rules.

Some commenters assert that the LEAD would impinge upon price discovery across the national market system.<sup>134</sup> Some commenters cite studies showing that an asymmetric delay on TSX Alpha, a Canadian exchange, degraded overall market quality, harmed institutional order routers, and increased effective spreads.<sup>135</sup> In response, the Exchange asserts that the TSX Alpha delay is materially different from LEAD because it is randomized and, unlike CHX, TSX Alpha utilizes a taker-maker model.<sup>136</sup> The Exchange also observes that TSX Alpha does not require its liquidity providers to meet heightened requirements designed to enhance market quality.<sup>137</sup>

The Commission notes that the LEAD proposal differs from TSX Alpha. The delay on TSX Alpha is a longer, randomized delay of 1-3 milliseconds that occurs in a different market with a different pricing structure and regulatory environment. A randomized delay on an

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<sup>134</sup> See XR Securities Letter, supra note 5, at 3; FIA PTG Letter, supra note 5 at 3-4; and Hudson River Trading Letter supra note 5, at 5.

<sup>135</sup> See Hudson River Trading Letter, supra note 5, at 2. See also Healthy Markets Letter, supra note 5, at 5; and SIFMA Letter, supra note 5, at 6. These commenters cite a recent study regarding TSX Alpha: See Chen, Haoming, Foley, Sean, Goldstein, Michael, and Ruf, Thomas, “The Value of a Millisecond: Harnessing Information in Fast, Fragmented Markets,” available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2860359](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2860359). One commenter notes that, while quoted depth increased on TSX Alpha, the exchange did not demonstrate tighter spreads, and the accessibility of quotes significantly degraded. See Hudson River Trading Letter, supra note 5, at 2. In addition, a commenter asserts that the only counterbalance to the negative impact on market quality caused by an asymmetric delay (such as that exhibited due to TSX Alpha) would be coupling it with “robust and rigorous” affirmative obligations for those benefitting from the delay. See Healthy Markets Letter, supra note 5, at 5. The commenter urges the Commission to proceed cautiously, using data-driven analyses, and not within the context of the instant proposal. See id. As discussed, the Commission will review the Pilot Data and analyses of that data.

<sup>136</sup> See CHX Letter, supra note 5, at 8.

<sup>137</sup> See id. at 8-9.

exchange will not allow a smart order router to send child orders to different exchanges such that the orders arrive simultaneously, preventing the sweeping of volume displayed on the NBBO without information leakage. To adjust for the potential of information leakage, a smart order router could be adjusted to avoid the TSX Alpha exchange when sweeping NBBO volume. The possible increase of informed volume on exchanges other than TSX Alpha, could have been a factor in the degradation of market quality on those exchanges. Also, given TSX Alpha's taker-maker pricing structure, market makers on this exchange could attract order flow by only matching the now degraded NBBO. Therefore, given this combination of factors, the effects of TSX Alpha may not be relevant in assessing the potential results of the LEAD on market quality. The Exchange will collect, analyze, and publicly disclose data that should show how the LEAD affects market quality, including the statistics disclosing width, displayed size, and effective spreads during different periods of market volatility.

Section 6(b)(5) of the Exchange Act requires that the rules of a national securities exchange be designed to prevent fraudulent and manipulative activity. A number of commenters question whether the length and means of implementing the delay is consistent with the requirement in Section 6(b)(5) of the Exchange Act that the rules of the exchange be designed to prevent fraudulent and manipulative acts and practices.<sup>138</sup> One commenter states that CHX does not support its conclusion<sup>139</sup> that the Fixed LEAD Period would be too short to introduce any incremental risk of manipulative activity.<sup>140</sup> Another commenter asks CHX to state how long a

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<sup>138</sup> See Healthy Markets Letter, supra note 5, at 5; Leuchtkafer Letter 2, supra note 5, at 6; and FIA PTG Letter, supra note 5, at 2-3.

<sup>139</sup> See infra note 143 and accompanying text.

<sup>140</sup> See FIA PTG Letter, supra note 5, at 2-3.

delay would have to be to permit manipulative practices and what it will do to ensure that its software does not result in delays that would permit such practices.<sup>141</sup>

The Exchange asserts that the LEAD would not introduce incremental risk of manipulative activity.<sup>142</sup> The Exchange believes that the Fixed LEAD Period is too short to provide any actionable advantage to a LEAD MM reacting to information already in its possession or to introduce incremental risk of manipulative activity.<sup>143</sup>

The Commission finds that the proposed rule change, as modified by Amendments No. 1 and No. 2, is consistent with the requirement of Section 6(b)(5) of the Exchange Act that the rules of a national securities exchange be designed to prevent fraudulent and manipulative activity. The Commission previously stated that it does not expect that any de minimis delay will alter the potential for manipulative activity or make it harder to detect and prosecute.<sup>144</sup> The Fixed LEAD Period will be a de minimis delay (as discussed below),<sup>145</sup> and the Commission continues to believe that such a delay will neither increase the potential for manipulative activity nor make it more difficult to detect and prosecute.<sup>146</sup> In addition, the Pilot Data will allow the Exchange and the Commission to assess in a timely fashion whether the LEAD presents any

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<sup>141</sup> See Leuchtkafer Letter, supra note 5, at 4.

<sup>142</sup> See Notice, supra note 3, 82 FR at 11269.

<sup>143</sup> See CHX Letter, supra note 5, at 11.

<sup>144</sup> See Regulation NMS Interpretation, infra note 162, at 40792.

<sup>145</sup> See infra Section III.B.

<sup>146</sup> One commenter asserts that LEAD MMs would make trading decisions with more information than any of their potential counterparties. See XR Securities Letter, supra note 5, at 1. Another commenter asserts that CHX should require LEAD MMs to establish information barriers to prevent such firms from using their advantage on CHX in their other proprietary trading. See Leuchtkafer Letter, supra note 5, at 5. The Commission believes that the operation of the LEAD Rules would not provide LEAD MMs with any unique information and therefore, the Commission believes that it is unnecessary to require LEAD MMs to adopt information barriers.

increased risks of manipulation.<sup>147</sup> Collection of the Pilot Data will also assist the Exchange in discharging its ongoing responsibility to surveil for manipulative activity.

B. Section 11A of the Exchange Act

Section 11A(a)(1) of the Exchange Act articulates Congress' finding that, among other things, it is in the public interest and appropriate for the protection of investors and the maintenance of fair and orderly markets to assure: economically efficient execution of securities transactions; fair competition among brokers and dealers, among exchange markets, and between exchange markets; the availability to brokers, dealers, and investors of information with respect to quotations for and transactions in securities; the practicability of brokers executing investors' orders in the best market; and an opportunity, consistent with the economically efficient execution of securities transactions and the practicability of brokers executing investors' orders in the best market, for investors' orders to be executed without the participation of a dealer.<sup>148</sup>

As discussed below, certain commenters questioned whether the proposed rule change is consistent with Rule 611 of Regulation NMS ("Order Protection Rule")<sup>149</sup> and Rule 602 of

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<sup>147</sup> CHX will start providing the Pilot Data to the Commission by no later than the end of the second month of the pilot program. The Commission believes this timeline is appropriate because it will allow the Exchange sufficient time to properly collect and organize the Pilot Data while still making such data available to the Commission close in time to the start of the pilot program. A commenter asserts that the LEAD could result in delays that are longer than 350 microseconds, and that with the variable delay, the total delay could be long enough to increase risk of manipulative practices. See Leuchtkafer Letter, supra note 5, at 3-4; and Leuchtkafer Letter 2, supra note 5, at 5-6. The Commission believes that the variable processing delay statistics should allow the Exchange to monitor for persistent delays and implement any necessary changes to remove such delays.

<sup>148</sup> 15 U.S.C. 78k-1(a)(1)(C).

<sup>149</sup> 17 CFR 242.611.

Regulation NMS (“Quote Rule”),<sup>150</sup> both of which were adopted pursuant to Section 11A of the Exchange Act.

The Order Protection Rule, among other things, requires trading centers to establish, maintain, and enforce written policies and procedures reasonably designed to prevent the execution of trades at prices inferior to protected quotations displayed by other trading centers.<sup>151</sup> To be protected, a quotation must, among other things, be immediately and automatically accessible and be the best bid or best offer of a national securities exchange.<sup>152</sup> Certain commenters argue that the proposal, which would allow LEAD MMs to post and reprice displayed orders without delay, could hinder the ability of investors to access such displayed quotations on CHX.<sup>153</sup> Several commenters assert that the LEAD would be inconsistent with CHX’s protected quotation status under Regulation NMS.<sup>154</sup> These commenters argue that, if CHX implemented the LEAD, CHX’s displayed quotations would not be immediately accessible and would be inconsistent with the definition of “automated quotation” under Rule 600(b)(3) and, therefore, the LEAD would prevent CHX’s displayed quotations from being considered “protected” under Regulation NMS.<sup>155</sup> More specifically, some commenters assert that by providing LEAD MMs with a structural advantage, the LEAD would frustrate the purposes the

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<sup>150</sup> 17 CFR 242.602.

<sup>151</sup> See Regulation NMS Adopting Release, supra note 87, 70 FR at 37501.

<sup>152</sup> See id. at 37496.

<sup>153</sup> See Citadel Letter, supra note 5, at 5-6; Hudson River Trading Letter, supra note 5, at 6.

<sup>154</sup> See Hudson River Trading Letter, supra note 5, at 3; Citadel Letter, supra note 5, at 6-7; NYSE Letter, supra note 5, at 3-4; and XR Securities Letter, supra note 5, at 1. See also SIFMA Letter, supra note 5, at 3 (suggesting that the Commission should “carefully consider the implications” of market participants routing orders to CHX to access a protected quote when the accessibility of such quote is “questionable”).

<sup>155</sup> See Hudson River Trading Letter, supra note 5, at 3; Citadel Letter, supra note 5, at 6-7; NYSE Letter, supra note 5, at 3-4; and XR Securities Letter, supra note 5, at 1.

Order Protection Rule by impairing fair and efficient access to an exchange's quotations.<sup>156</sup> One commenter distinguishes the LEAD from the delay on the Investors Exchange, LLC ("IEX"), noting that IEX's delay only affected access to non-displayed orders.<sup>157</sup> Another commenter expresses concern that, unlike other examples of permitted discrimination, the LEAD would affect the regulatory mechanics of trading because, in some cases, traders would be required to route orders to the Exchange pursuant to the Order Protection Rule.<sup>158</sup> Similarly, one commenter expresses concern that the regulatory requirement to interact with a LEAD MM's protected quote could prevent investors from achieving optimal executions because the LEAD MMs would have the benefit of making their trading decisions with more information than any of their potential counterparties.<sup>159</sup>

In response, the Exchange asserts that the LEAD is consistent with the Order Protection Rule.<sup>160</sup> CHX notes that Rule 600(b)(3) of Regulation NMS requires that a trading center displaying an automated quotation permit, among other things, an incoming immediate-or-cancel order to immediately and automatically execute against the automated quotation up to its full size; and immediately and automatically cancel any unexecuted portion of the immediate-or-cancel order without routing the order elsewhere.<sup>161</sup> CHX highlights that the Commission

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<sup>156</sup> See FIA PTG Letter, supra note 5, at 2; Hudson River Trading Letter, supra note 5, at 7; Citadel Letter, supra note 5, at 6; NYSE Letter, supra note 5, at 4; XR Securities Letter, supra note 5, at 1; and SIFMA Letter, supra note 5, at 6 (questioning the effect of an access delay coupled with existing geographic or technological latencies on the fair and efficient access to an exchange's protected quotations).

<sup>157</sup> See XR Securities Letter, supra note 5, at 3.

<sup>158</sup> See FIA PTG Letter, supra note 5, at 4.

<sup>159</sup> See XR Securities Letter, supra note 5, at 3.

<sup>160</sup> See CHX Letter, supra note 5, at 13.

<sup>161</sup> See id. See also 17 CFR 242.600(b)(3).

recently issued a final interpretation with respect to the definition of automated quotation under Rule 600(b)(3) of Regulation NMS, which, CHX notes, did not interpret the term “immediate” used in Rule 600(b)(3) by itself to prohibit a trading center from implementing an intentional access delay that is de minimis (i.e., a delay so short as to not frustrate the purposes of the Order Protection Rule by impairing fair and efficient access to an exchange’s quotations).<sup>162</sup> CHX concludes that the Commission’s revised interpretation provides that the term “immediate” precludes any coding of automated systems or other type of intentional device that would delay the action taken with respect to a quotation unless such delay is de minimis.<sup>163</sup> CHX believes that the LEAD would be a de minimis delay so short as not to frustrate the purposes of the Order Protection Rule by impairing fair and efficient access to the Exchange’s quotations.<sup>164</sup>

The Order Protection Rule provides intermarket protection against trade-throughs for “automated” (as opposed to “manual”) quotations of NMS stocks. Under Regulation NMS, an “automated” quotation is one that, among other things, can be executed “immediately and automatically” against an incoming immediate-or-cancel order. This formulation was intended to distinguish and exclude from protection quotations manual markets that produced delays measured in seconds in responding to an incoming order, because delays of that magnitude would impair fair and efficient access to an exchange’s quotations.<sup>165</sup>

As CHX notes, the Commission, in connection with its approval of IEX’s exchange application, interpreted “immediate” in the context of Regulation NMS as not precluding a de

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<sup>162</sup> See CHX Letter, supra note 5, at 13. See also Commission Interpretation Regarding Automated Quotations Under Regulation NMS, Securities Exchange Act Release No. 78102 (June 17, 2016), 81 FR 40785 (June 23, 2016) (“Regulation NMS Interpretation”).

<sup>163</sup> See CHX Letter, supra note 5, at 14.

<sup>164</sup> See id.

<sup>165</sup> See Regulation NMS Interpretation, supra note 162, 81 FR at 40785-86.

de minimis intentional delay – i.e., a delay so short as to not frustrate the purposes of the Order Protection Rule by impairing fair and efficient access to an exchange’s quotations.<sup>166</sup>

Specifically, while acknowledging that even a de minimis access delay may increase the overall latency in accessing a particular protected quotation, the Commission reasoned that, just as the geographic and technological delays do not impair fair and efficient access to an exchange’s quotations or otherwise frustrate the objectives of Rule 611, the addition of a de minimis intentional access delay is consistent with the immediacy requirement of Rule 600(b)(3).<sup>167</sup> In its related interpretative guidance, the Commission’s staff found that “delays of less than a millisecond are at a de minimis level that would not impair fair and efficient access to a quotation, consistent with the goals of Rule 611.”<sup>168</sup>

The Commission believes that the LEAD is consistent with the Order Protection Rule. The Commission notes that its recent interpretation with respect to the definition of automated quotation under Rule 600(b)(3) of Regulation NMS, and the corresponding staff guidance, does not distinguish between intentional delays designed to benefit non-displayed liquidity, as was the case with the IEX delay, or displayed liquidity, as is the case with the LEAD. The

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<sup>166</sup> See id. at 40792.

<sup>167</sup> See id. at 40789, text accompanying n.50.

<sup>168</sup> See Staff Guidance on Automated Quotations under Regulation NMS, Securities and Exchange Commission, June 17, 2016, available at <https://www.sec.gov/divisions/marketreg/automated-quotations-under-regulation-nms.htm> (“Regulation NMS Staff Guidance”). One commenter questions whether 350 microseconds is an appropriate duration for the delay. See Healthy Markets Letter, supra note 5, at 5 (stating that CHX, unlike IEX, failed to explain why it is proposing a delay of 350 microseconds). See also Leuchtkafer Letter, supra note 5, at 2 (stating that the length of the LEAD is based on IEX and the speed arms race, which it describes as “a relative and constantly changing issue,” and questioning whether CHX will change the length of the LEAD if IEX changes its delay or if LEAD MMs speed up or other firms slow down or exit the market). As discussed below, the Fixed LEAD period will be a de minimis delay.

Commission’s staff found that “delays of less than a millisecond are at a de minimis level that would not impair fair and efficient access to a quotation, consistent with the goals of Rule 611.”<sup>169</sup> Accordingly, because the 350 microsecond delay imposed by the LEAD is less than a millisecond, it is de minimis. The Commission’s interpretation recognized “that a de minimis access delay, even if it involves an ‘intentional device’ that delays access to an exchange’s quotation, is compatible with the exchange having an ‘automated quotation’ under Rule 600(b)(3) and thus a ‘protected quotation’ under Rule 611.”<sup>170</sup> Accordingly, the LEAD will not change CHX’s protected quotation status.

Under the firm quote provisions of the Quote Rule, a responsible broker-dealer must execute any order to buy or sell a subject security (other than an odd-lot order) presented to it by another broker-dealer at a price at least as favorable to such buyer or seller as the responsible broker-dealer’s published bid or published offer in any amount up to its published quotation size unless an exception applies.<sup>171</sup> One commenter states its view that the LEAD would be consistent with the Quote Rule because the Exchange is not proposing to notify a LEAD MM that an inbound order that has been delayed may imminently execute, and therefore, should a LEAD MM revise its quote prior to the end of the delay, the inbound order would not have been presented to the LEAD MM.<sup>172</sup> Some commenters assert that the LEAD may be inconsistent with the firm quote provisions of the Quote Rule or the intent behind the Quote Rule because, in their view, it would allow liquidity providers to “back away” from their quotes.<sup>173</sup> These

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<sup>169</sup> See Regulation NMS Staff Guidance, supra note 168.

<sup>170</sup> See Regulation NMS Interpretation, supra note 162, at 40792.

<sup>171</sup> 17 CFR 242.602(b)(2).

<sup>172</sup> See CTC Trading Letter, supra note 5, at 6.

<sup>173</sup> See FIA PTG Letter, supra note 5, at 5; Citadel Letter, supra note 5, at 5; NYSE Letter,

commenters are concerned that the LEAD would allow LEAD MMs to update their quotes to potentially inferior prices while orders to execute against their quotes are being held in the LEAD queue.<sup>174</sup> The Exchange responds that the LEAD would not result in violations of the Quote Rule because orders delayed pursuant to the LEAD would not have been “presented” to LEAD MMs and therefore the duty of a broker or dealer to stand behind its quote would not have yet vested when the LEAD applies.<sup>175</sup>

The Commission notes that the firm quote provisions of the Quote Rule require each responsible broker or dealer to execute an order presented to it at a price at least as favorable as its published bid or published offer in any amount up to its published quotation size.<sup>176</sup> There may be circumstances in which a LEAD MM posts a quote on CHX, a contra-side order is submitted and delayed by the LEAD, and the LEAD MM without any knowledge of the contra-side order modifies or cancels its quote prior to release of the contra-side order from the LEAD queue. In this case, the Commission believes that Quote Rule compliance issues would not be raised because the contra-side order was not yet presented to the LEAD MM. Accordingly, the Commission believes that the LEAD is not inconsistent with the Quote Rule.

#### IV. Solicitation of Comments on Amendments No. 1 and No. 2

Interested persons are invited to submit written data, views, and arguments concerning Amendments No. 1 and No. 2. Comments may be submitted by any of the following methods:

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supra note 5, at 2-3; and Hudson River Trading Letter, supra note 5, at 6 (asserting that “at best, [the LEAD] is designed to circumvent” the Quote Rule).

<sup>174</sup> See FIA PTG Letter, supra note 5, at 5; Hudson River Trading Letter, supra note 5, at 6; Citadel Letter, supra note 5, at 5; NYSE Letter, supra note 5, at 2-3.

<sup>175</sup> See CHX Letter, supra note 5, at 13. One commenter agrees with CHX’s interpretation of the Quote Rule. See CTC Trading Letter, supra note 5, at 6.

<sup>176</sup> 17 CFR 242.602(b)(2).

Electronic comments:

- Use the Commission's Internet comment form (<http://www.sec.gov/rules/sro.shtml>); or
- Send an e-mail to [rule-comments@sec.gov](mailto:rule-comments@sec.gov). Please include File Number SR-CHX-2017-04 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-CHX-2017-04. This file number should be included on the subject line if e-mail 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 (<http://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 10:00 a.m. and 3:00 p.m. Copies of this filing will also be available for inspection and copying at the principal office of the Exchange. All comments received will be posted without change.

Persons submitting comments are cautioned that we do not redact or edit personal identifying information from comment submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR-CHX-2017-04 and should be submitted on or before [insert date 21 days from publication in the Federal Register].

V. Accelerated Approval of Proposed Rule Change, as Modified by Amendments No. 1 and No. 2

The Commission finds good cause to approve the proposed rule change, as modified by Amendments No. 1 and No. 2, prior to the 30th day after the date of publication of notice of Amendments No. 1 and No. 2 in the Federal Register. Neither Amendment No. 1 nor Amendment No. 2 expands the structure of the proposed rule change as it was previously published for notice and comment.<sup>177</sup> Rather, the Exchange circumscribed its proposal to implement the LEAD during the regular trading session on a pilot basis to provide an opportunity to study the impact of the LEAD Rules on the markets and to address comments by further explaining the purpose and the intended impact of the proposal. Accordingly, the Commission finds good cause, pursuant to Section 19(b)(2) of the Exchange Act,<sup>178</sup> to approve the proposed rule change, as modified by Amendments No. 1 and No. 2, on an accelerated basis.

VI. Conclusion

For the foregoing reasons, the Commission finds that the proposed rule change, as modified by Amendments No. 1 and No. 2, is consistent with the Exchange Act and the rules and regulations thereunder applicable to a national securities exchange.

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<sup>177</sup> See supra notes 12 and 13.

<sup>178</sup> 15 U.S.C. 78s(b)(2).

IT IS THEREFORE ORDERED, pursuant to Section 19(b)(2) of the Exchange Act<sup>179</sup> that the proposed rule change (SR-CHX-2017-04), as modified by Amendments No. 1 and No. 2, be, and hereby is, approved on an accelerated basis, subject to a pilot period set to expire twenty-four months after implementation of the pilot program.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.<sup>180</sup>

Eduardo A. Aleman  
Assistant Secretary

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<sup>179</sup> 15 U.S.C. 78s(b)(2).

<sup>180</sup> 17 CFR 200.30-3(a)(12).