

SECURITIES AND EXCHANGE COMMISSION
(Release No. 34-85839; File No. SR-EMERALD-2019-20)

May 10, 2019

Self-Regulatory Organizations; MIAX Emerald, LLC; Notice of Filing and Immediate Effectiveness of a Proposed Rule Change to Adopt System Connectivity Fees

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (“Act”)¹ and Rule 19b-4 thereunder,² notice is hereby given that on April 30, 2019, MIAX Emerald, LLC (“MIAX Emerald” or “Exchange”), filed with the Securities and Exchange Commission (“Commission”) a proposed rule change as described in Items I, II, and III below, which Items have been prepared by the Exchange. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

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

The Exchange is filing a proposal to amend the MIAX Emerald Fee Schedule (the “Fee Schedule”) to adopt the Exchange’s system connectivity fees.

The Exchange initially filed the proposal on March 1, 2019 (SR-EMERALD-2019-11). That filing has been withdrawn and replaced with the current filing (SR-EMERALD-2019-20).

The text of the proposed rule change is available on the Exchange’s website at <http://www.miaxoptions.com/rule-filings/emerald>, at MIAX’s principal office, and at the Commission’s Public Reference Room.

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

In its filing with the Commission, the Exchange included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on

¹ 15 U.S.C. 78s(b)(1).

² 17 CFR 240.19b-4.

the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. The Exchange has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of such statements.

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

1. Purpose

The Exchange proposes to amend the Fee Schedule regarding connectivity to the Exchange. Specifically, the Exchange proposes to amend Sections 5a) and b) of the Fee Schedule to adopt the network connectivity fees for the 1 Gigabit (“Gb”) fiber connection and the 10Gb ultra-low latency (“ULL”) fiber connection, which are charged to both Members³ and non-Members of the Exchange for connectivity to the Exchange’s primary/secondary facility. The Exchange also proposes to adopt network connectivity fees for the 1Gb and 10Gb fiber connections for connectivity to the Exchange’s disaster recovery facility. Each of these connections (with the exception of the 10Gb ULL) are shared connections (collectively, the “Shared Connections”), and thus can be utilized to access the Exchange and both of the Exchange’s affiliates, Miami International Securities Exchange, LLC (“MIAX”) and MIAX PEARL, LLC (“MIAX PEARL”). The 10Gb ULL connection is a dedicated connection (“Dedicated Connection”), which provides network connectivity solely to the trading platforms, market data systems, and test system facilities of MIAX Emerald. These proposed fees are collectively referred to herein as the “Proposed Fees.” The amounts of the Proposed Fees for the Shared Connections are the same amounts that are currently in place at MIAX and MIAX

³ The term “Member” means an individual or organization approved to exercise the trading rights associated with a Trading Permit. Members are deemed “members” under the Exchange Act. See Exchange Rule 100.

PEARL.⁴ While the Exchange is new and only launched trading on March 1, 2019, since: (i) all of the Proposed Fees (except for the fee relating to the 10Gb ULL connection) relate to Shared Connections, and thus are the same amounts as are currently in place at MIAX and MIAX PEARL; (ii) all of the Members of MIAX Emerald are also members of either MIAX and/or MIAX PEARL, and most of those Members already have connectivity to the Exchange via existing Shared Connections (without paying any new incremental connectivity fees), the Exchange is providing similar information to that which was provided in the MIAX and PEARL Fee Filings, including providing detail about the market participants impacted by the Proposed Fees, as well as the costs incurred by the Exchange associated with providing the connectivity alternatives, in order to provide transparency and support relating to the Exchange’s belief that the Proposed Fees are reasonable, equitable, and non-discriminatory, and to provide sufficient information for the Commission to determine that the Proposed Fees are consistent with the Act.

The Exchange initially filed the Proposed Fees on March 1, 2019, designating the Proposed Fees immediately effective.⁵ The First Proposed Rule Change was published for comment in the Federal Register on March 20, 2019.⁶ The First Proposed Rule Change provided information about the market participants impacted by the Proposed Fees, as well as the additional costs incurred by the Exchange associated with providing the connectivity alternatives, in order to provide transparency and support relating to the Exchange’s belief that the Proposed Fees are reasonable, equitable, and non-discriminatory, and to provide sufficient information for the Commission to determine that the Proposed Fees are consistent with the Act.

⁴ See SR-MIAX-2019-23 and SR-PEARL-2019-17 (the “MIAX and PEARL Fee Filings”).

⁵ See Securities Exchange Act Release No. 85316 (March 14, 2019), 84 FR 10350 (March 20, 2019) (SR-EMERALD-2019-11) (the “First Proposed Rule Change”).

⁶ Id.

On March 29, 2019, the Commission issued its Order Disapproving Proposed Rule Changes to Amend the Fee Schedule on the BOX Market LLC Options Facility to Establish BOX Connectivity Fees for Participants and Non-Participants Who Connect to the BOX Network (the “BOX Order”).⁷ In the BOX Order, the Commission highlighted a number of deficiencies it found in three separate rule filings by BOX Exchange LLC (“BOX”) to increase BOX’s connectivity fees that prevented the Commission from finding that BOX’s proposed connectivity fees were consistent with the Act. These deficiencies relate to topics that the Commission believes should be discussed in a connectivity fee filing.

After the BOX Order was issued, the Commission received four comment letters on the First Proposed Rule Change.⁸

The Second SIFMA Letter argued that the Exchange did not provide sufficient information in its First Proposed Rule Change to support a finding that the proposal should be approved by the Commission after further review of the Proposed Fees. Specifically, the Second SIFMA Letter argued that the Exchange’s market data fees and connectivity fees were not constrained by competitive forces, the Exchange’s filing lacked sufficient information regarding cost and competition, and that the Commission should establish a framework for determining

⁷ See Securities Exchange Act Release No. 85459 (March 29, 2019), 84 FR 13363 (April 4, 2019) (SR-BOX-2018-24, SR-BOX-2018-37, and SR-BOX-2019-04).

⁸ See Letter from Joseph W. Ferraro III, SVP & Deputy General Counsel, MIAX, to Vanessa Countryman, Acting Secretary, Commission, dated April 5, 2019 (“MIAX Letter”); Letter from Theodore R. Lazo, Managing Director and Associate General Counsel, SIFMA, to Vanessa Countryman, Acting Secretary, Commission, dated April 10, 2019 (“Second SIFMA Letter”); Letter from John Ramsay, Chief Market Policy Officer, Investors Exchange LLC, to Vanessa Countryman, Acting Secretary, Commission, dated April 10, 2019 (“IEX Letter”); and Letter from Tyler Gellasch, Executive Director, Healthy Markets, to Brent J. Fields, Secretary, Commission, dated April 18, 2019 (“Second Healthy Markets Letter”).

whether fees for exchange products and services are reasonable when those products and services are not constrained by significant competitive forces.

The IEX Letter argued that the Exchange did not provide sufficient information in its First Proposed Rule Change to support a finding that the proposal should be approved by the Commission and that the Commission should extend the time for public comment on the First Proposed Rule Change. Despite the objection to the Proposed Fees, the IEX Letter did find that “MIAX has provided more transparency and analysis in these filings than other exchanges have sought to do for their own fee increases.”⁹ The IEX Letter specifically argued that the Proposed Fees were not constrained by competition, the Exchange should provide data on the Exchange’s actual costs and how those costs relate to the product or service in question, and whether and how MIAX Emerald and its affiliates considered changes to transaction fees as an alternative to offsetting exchange costs.

The Second Healthy Markets Letter did not object to the First Proposed Rule Change and the information provided by the Exchange in support of the Proposed Fees. Specifically, the Second Healthy Markets Letter stated that the First Proposed Rule Change was “remarkably different,” and went on to further state as follows:

The instant MIAX filings -- along with their April 5th supplement -- provide much greater detail regarding users of connectivity, the market for connectivity, and costs than the Initial MIAX Filings. They also appear to address many of the issues raised by the Commission staff’s BOX disapproval order. This third round of MIAX filings suggests that MIAX is operating in good faith to provide what the Commission and staff seek.¹⁰

On April 29, 2019, the Exchange withdrew the First Proposed Rule Change.¹¹ The Exchange is now re-filing the Proposed Fees to squarely and comprehensively address each and

⁹ See IEX Letter, pg. 1.

¹⁰ See Second Healthy Markets Letter, pg. 2.

¹¹ See SR-EMERALD-2019 11.

every topic raised for discussion in the BOX Order, the IEX Letter and the Second SIFMA Letter to ensure that the Proposed Fees are reasonable, equitable, and non-discriminatory, and that the Commission should find that the Proposed Fees are consistent with the Act. The proposed rule change is immediately effective upon filing with the Commission pursuant to Section 19(b)(3)(A) of the Act.

The Exchange proposes to offer to both Members and non-Members various bandwidth alternatives for connectivity to the Exchange, to its primary and secondary facilities, consisting of a 1Gb fiber connection and a 10Gb ULL fiber connection. The 10Gb ULL offering uses an ultra-low latency switch, which provides faster processing of messages sent to it in comparison to the switch used for the other types of connectivity. The Exchange also proposes to offer to both Members and non-Members various bandwidth alternatives for connectivity to the Exchange, to its disaster recovery facility, consisting of a 1Gb fiber connection and a 10Gb connection.

For the Shared Connections, the Exchange's MIAX Express Network Interconnect ("MENI") can be configured to provide Members and non-Members of the Exchange network connectivity to the trading platforms, market data systems, test systems, and disaster recovery facilities of the Exchange and its affiliates, MIAX and MIAX PEARL, via a single, shared connection. Any Member or non-Member can purchase a Shared Connection.

For the Dedicated Connection, the Exchange's MENI is configured to provide Members and non-Members of the Exchange network connectivity to the trading platforms, market data systems, test systems, and disaster recovery facilities of the Exchange. Any Member or non-Member can purchase a Dedicated Connection. The Exchange determined to design its network architecture in a manner that offered 10Gb ULL connections as dedicated connections (as

opposed to shared connections) in order to provide cost saving opportunities for itself and for its Members, by reducing the amount of equipment that the Exchange would have to purchase and to which the Members would have to connect.

For the Shared Connections, Members and non-Members utilizing the MENI to connect to the trading platforms, market data systems, test systems and disaster recovery facilities of the Exchange, MIAX, and MIAX PEARL via a single, shared connection are assessed only one monthly network connectivity fee per connection, regardless of the trading platforms, market data systems, test systems, and disaster recovery facilities accessed via such connection. Thus, since all of the Members of MIAX Emerald are also members of either MIAX and/or MIAX PEARL, and most of those Members already have connectivity to the Exchange via existing Shared Connections, most Members of MIAX Emerald have instant connectivity to the Exchange without paying any new incremental connectivity fees, as more fully-detailed below.

The Exchange proposes to establish the monthly network connectivity fees for such connections for both Members and non-Members. As discussed above, the amounts of the Proposed Fees for the Shared Connections are the same amounts that are currently in place at MIAX and MIAX PEARL. The amount of the Proposed Fee for the Dedicated Connection is offered at a substantial discount to the amount currently in place at MIAX and MIAX PEARL. The reason for the substantial discount is that the Dedicated Connection offers access to only a single market (the Exchange), whereas the 10Gb ULL connection offered by MIAX and MIAX PEARL offers access to two markets (MIAX and MIAX PEARL). The network connectivity fees for connectivity to the Exchange's primary/secondary facility will be as follows: (a) 1,400 for the 1Gb connection; and (b) \$6,000 for the 10Gb ULL connection. The network connectivity

fees for connectivity to the Exchange's disaster recovery facility will be as follows: (a) \$550 for the 1Gb connection; and (b) \$2,750 for the 10Gb connection.

2. Statutory Basis

The Exchange believes that its proposal to amend its Fee Schedule is consistent with Section 6(b) of the Act¹² in general, and furthers the objectives of Section 6(b)(4) of the Act¹³ in particular, in that it provides for the equitable allocation of reasonable dues, fees and other charges among Exchange Members and issuers and other persons using any facility or system which the Exchange operates or controls. The Exchange also believes the proposal furthers the objectives of Section 6(b)(5) of the Act¹⁴ in that it is designed 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 is not designed to permit unfair discrimination between customer, issuers, brokers and dealers.

First, the Exchange believes that its proposal is consistent with Section 6(b)(4) of the Act, in that the Proposed Fees are fair, equitable and not unreasonably discriminatory, because the fees for the connectivity alternatives available on the Exchange, as proposed, are competitive and market-driven. The U.S. options markets are highly competitive (there are currently 16 options markets) and a reliance on competitive markets is an appropriate means to ensure equitable and reasonable prices.

The Exchange acknowledges that there is no regulatory requirement that any market participant connect to the Exchange, or that any participant connect at any specific connection

¹² 15 U.S.C. 78f(b).

¹³ 15 U.S.C. 78f(b)(4).

¹⁴ 15 U.S.C. 78f(b)(5).

speed. The rule structure for options exchanges are, in fact, fundamentally different from those of equities exchanges. In particular, options market participants are not forced to connect to (and purchase market data from) all options exchanges, as shown by the number of Members of MIAX Emerald as compared to the much greater number of members at other options exchanges (as further detailed below). MIAX Emerald is a brand new exchange, having only commenced operations in March 2019. Not only does MIAX Emerald have less than half the number of members as certain other options exchanges, but there are also a number of the Exchange's Members that do not connect directly to MIAX Emerald. Further, of the number of Members that connect directly to MIAX Emerald, many such Members do not purchase market data from MIAX Emerald. There are a number of large market makers and broker-dealers that are members of other options exchanges but not Members of MIAX Emerald. For example, the following are not Members of MIAX Emerald: The D. E. Shaw Group, CTC, XR Trading LLC, Hardcastle Trading AG, Ronin Capital LLC, Belvedere Trading, LLC, Bluefin Trading, and HAP Capital LLC. In addition, of the market makers that are connected to MIAX Emerald, it is the individual needs of the market maker that require whether they need one connection or multiple connections to the Exchange. The Exchange has market maker Members that only purchase one connection and the Exchange has market maker Members that purchase multiple connections. It is all driven by the business needs of the market maker. Market makers that are consolidators that target resting order flow tend to purchase more connectivity than market makers that simply quote all symbols on the Exchange. Even though non-Members purchase and resell 10Gb ULL connections to both Members and non-Members, no market makers currently connect to the Exchange indirectly through such resellers.

SIFMA's argument that all broker-dealers are required to connect to all exchanges is not true in the options markets. The options markets have evolved differently than the equities markets both in terms of market structure and functionality. For example, there are many order types that are available in the equities markets that are not utilized in the options markets, which relate to mid-point pricing and pegged pricing which require connection to the SIPs and each of the equities exchanges in order to properly execute those orders in compliance with best execution obligations. In addition, in the options markets there is a single SIP (OPRA) versus two SIPs in the equities markets, resulting in fewer hops and thus alleviating the need to connect directly to all the options exchanges. Additionally, in the options markets, the linkage routing and trade through protection are handled by the exchanges, not by the individual members. Thus not connecting to an options exchange or disconnecting from an options exchange does not potentially subject a broker-dealer to violate order protection requirements as suggested by SIFMA. Gone are the days when the retail brokerage firms (the Fidelity's, the Schwab's, the eTrade's) were members of the options exchanges – they are not members of MIAX Emerald or its affiliates, MIAX and MIAX PEARL, they do not purchase connectivity to MIAX Emerald, and they do not purchase market data from MIAX Emerald. The Exchange further recognizes that the decision of whether to connect to the Exchange is separate and distinct from the decision of whether and how to trade on the Exchange. The Exchange acknowledges that many firms may choose to connect to the Exchange, but ultimately not trade on it, based on their particular business needs.

To assist prospective Members or firms considering connecting to MIAX Emerald, the Exchange provides information about the Exchange's available connectivity alternatives.¹⁵ The decision of which type of connectivity to purchase, or whether to purchase connectivity at all for a particular exchange, is based on the business needs of the firm. For example, if the firm wants to receive the top-of-market data feed product or depth data feed product, due to the amount/size of data contained in those feeds, such firm would need to purchase a 10Gb ULL connection. The 1Gb connection is too small to support those data feed products. MIAX Emerald notes that there are twelve (12) Members that only purchase the 1Gb connectivity alternative. Thus, while there is a meaningful percentage of purchasers of only 1Gb connections (12 of 33), by definition, those twelve (12) members purchase connectivity that cannot support the top-of-market data feed product or depth data feed product and thus they do not purchase such data feed products. Accordingly, purchasing market data is a business decision/choice, and thus the pricing for it is constrained by competition.

Contrary to SIFMA's argument, there is competition for connectivity to MIAX Emerald and its affiliates. MIAX Emerald competes with eight (8) non-Members, who resell MIAX Emerald connectivity. Those non-Members resell that connectivity to multiple market participants over that same connection, including both Members and non-Members of MIAX Emerald (typically extranets and service bureaus). When connectivity is re-sold by a third-party, MIAX Emerald does not receive any connectivity revenue from that sale. It is entirely between the third-party and the purchaser, thus constraining the ability of MIAX Emerald to set its connectivity pricing as indirect connectivity is a substitute for direct connectivity. In fact, there

¹⁵ See the MIAX Connectivity Guide at https://www.miaxoptions.com/sites/default/files/page-files/MIAX_Connectivity_Guide_v3.6_01142019.pdf.

are currently seven (7) non-Members that purchase 1Gb direct connectivity that are able to access MIAX Emerald, MIAX and MIAX PEARL. Those non-Members resell that connectivity to eight (8) customers, some of whom are agency broker-dealers that have tens of customers of their own. Some of those eight (8) customers also purchase connectivity directly from MIAX Emerald and/or its affiliates, MIAX and MIAX PEARL. Accordingly, indirect connectivity is a viable alternative used by non-Members of MIAX Emerald, constraining the price that MIAX Emerald is able to charge for connectivity to its Exchange.

The Exchange,¹⁶ MIAX,¹⁷ and MIAX PEARL¹⁸ are comprised of 41 distinct members amongst all three exchanges, excluding any additional affiliates of such members that are also members of the Exchange, MIAX, MIAX PEARL, or any combination thereof. Of those 41 distinct members, 28 of those distinct members are Members of MIAX Emerald. (Currently, there are no Members of MIAX Emerald that are not also members of MIAX or MIAX PEARL, or both.) Of those 28 distinct Members of MIAX Emerald, there are 6 Members that have no connectivity to the Exchange. Members are not forced to purchase connectivity to the Exchange, and these Members have elected not to purchase such connectivity. Of note, these same 6 Members also do not have connectivity to either MIAX or MIAX PEARL. These Members either trade indirectly through other Members or non-Members that have connectivity to the Exchange, or do not trade and conduct another type of business on the Exchange. Of the remaining 22 distinct Members of MIAX Emerald, all 22 of those distinct Members already had

¹⁶ The Exchange has 28 distinct Members, excluding affiliated entities. See MIAX Emerald Exchange Member Directory, available at <https://www.miaxoptions.com>.

¹⁷ MIAX has 38 distinct Members, excluding affiliated entities. See MIAX Exchange Member Directory, available at <https://www.miaxoptions.com>.

¹⁸ MIAX PEARL has 36 distinct Members, excluding affiliated entities. See MIAX PEARL Exchange Member Directory, available at <https://www.miaxoptions.com>.

connectivity to the Exchange via existing Shared Connections, thus providing all such 22 MIAX Emerald Members with instant connectivity to the Exchange without paying any new incremental connectivity fees.

Further, of those 22 Members, 14 of such Members elected to purchase additional connectivity to the Exchange, including additional Shared Connections and additional Dedicated Connections. The Exchange made available in advance to all of its prospective Members its proposed connectivity pricing (subject to regulatory clearance), in order for those prospective Members to make an informed decision about whether to become a Member of the Exchange and whether to purchase connectivity to the Exchange. Accordingly, each such Member made the decision to become a Member of the Exchange and to purchase connectivity to the Exchange, knowing in advance the connectivity pricing. And the vast majority of the additional connectivity purchased by those Members were for Dedicated Connections, the most expensive connectivity option.

As a result, of those 22 Members, through existing Shared Connections, newly purchased Shared Connections, and newly purchased Dedicated Connections: 14 Members have 1Gb (primary/secondary) connections; 13 Members have 10Gb ULL (primary/secondary) connections; 3 Members have 10Gb (disaster recovery) connections; and 10 Members have 1Gb (disaster recovery) connections, or some combination of multiple various connections. All such Members with those Shared Connections and Dedicated Connections trade on MIAX Emerald.

The 6 Members who have not purchased any connectivity to the Exchange are still able to trade on the Exchange indirectly through other Members or non-Member service bureaus that are connected. These 6 Members who have not purchased connectivity are not forced or compelled to purchase connectivity, and they retain all of the other benefits of membership with

the Exchange. Accordingly, Members have the choice to purchase connectivity and are not compelled to do so in any way.

In addition, there are 5 non-Member service bureaus that already have connectivity to the Exchange via existing Shared Connections, thus providing all 5 of those non-Member service bureaus with instant connectivity to the Exchange without paying any new incremental connectivity fees. These non-Members freely purchased their connectivity from one of the Exchange's affiliates, either MIAX or MIAX PEARL, in order to offer trading services to other firms and customers, as well as access to the market data services that their connections to the Exchange provide them, but they are not required or compelled to purchase any of the Exchange's connectivity options.

The Exchange believes that the Proposed Fees are fair, equitable and not unreasonably discriminatory because the connectivity pricing is associated with relative usage of the various market participants and does not impose a barrier to entry to smaller participants. Accordingly, the Exchange offers two direct connectivity alternatives and various indirect connectivity (via third-party) alternatives, as described above. MIAX Emerald recognizes that there are various business models and varying sizes of market participants conducting business on the Exchange. The 1Gb direct connectivity alternative is 1/10th the size of the 10Gb ULL direct connectivity alternative. Approximately just less than half of MIAX Emerald, MIAX and MIAX PEARL Members that connect (15 out of 33) purchase 1Gb connections. The 1Gb direct connection can support the sending of orders and the consumption of all market data feed products, other than the top-of-market data feed product or depth data feed product (which require a 10Gb connection). The 1Gb direct connection is generally purchased by market participants that utilize less bandwidth. The market participants that purchase 10Gb ULL direct connections

utilize the most bandwidth, and those are the participants that consume the most resources from the network. Accordingly, the Exchange believes the allocation of the Proposed Fees (\$6,000 for a 10Gb ULL connection versus \$1,400 for a 1Gb connection) are reasonable based on the network resources consumed by the market participants – lowest bandwidth consuming members pay the least, and highest bandwidth consuming members pays the most, particularly since higher bandwidth consumption translates to higher costs to the Exchange. The 10Gb ULL connection offers optimized connectivity for latency sensitive participants. This lower latency is achieved through more advanced network equipment, such as advanced hardware and switching components, which translates to increased costs to the Exchange.

The Exchange launched trading on March 1, 2019. Thus, at the time that the 14 Members who elected to purchase connectivity to the Exchange, the Exchange was untested and unproven, and had 0% market share of the U.S. options industry. For all of 2018, the Exchange’s affiliate, MIAX, had only 4.39% market share of the U.S. options industry in 2018 in Equity/ETF classes according to the OCC.¹⁹ For all of 2018, the Exchange’s affiliate, MIAX PEARL, had only 4.82% market share of the U.S. options industry in Equity/ETF classes according to the OCC.²⁰ The Exchange is not aware of any evidence that a combined market share less than 10% provides the Exchange with anti-competitive pricing power. This, in addition to the fact that not all broker-dealers are required to connect to all options exchanges, supports the Exchange’s conclusion that its pricing is constrained by competition. Certainly, an untested and unproven exchange, with 0% market share, and no rule or requirement that a market participant must join or connect to it, does not have anti-competitive pricing power, with respect

¹⁹ See Exchange Market Share of Equity Products – 2018, The Options Clearing Corporation, available at <https://www.theocc.com/webapps/exchange-volume>.

²⁰ Id.

to setting the pricing for the Dedicated Connections or the Shared Connections. If the Exchange were to attempt to establish unreasonable connectivity pricing, then no market participant would join or connect. Therefore, since 28 distinct Members joined MIAX Emerald and 14 of those distinct Members purchased additional connectivity to the Exchange, all knowing, in advance, the connectivity fees, the Exchange believes the Proposed Fees are reasonable, equitable, and not unfairly discriminatory.

Separately, the Exchange is not aware of any reason why market participants could not simply drop their connections and cease being Members of the Exchange if the Exchange were to establish unreasonable and uncompetitive price increases for its connectivity alternatives. Market participants choose to connect to a particular exchange and because it is a choice, MIAX Emerald must set reasonable connectivity pricing, otherwise prospective members would not connect and existing members would disconnect or connect through a third-party reseller of connectivity. No options market participant is required by rule, regulation, or competitive forces to be a Member of the Exchange. Several market participants choose not to be Members of the Exchange and choose not to access the Exchange, and several market participants are proposing to access the Exchange indirectly through another market participant. To illustrate, the Exchange has only 34 total Members (including all such Members' affiliate Members). However, Cboe Exchange, Inc. ("Cboe") has over 200 members,²¹ Nasdaq ISE, LLC has

²¹ See Form 1/A, filed August 30, 2018 (<https://www.sec.gov/Archives/edgar/vpr/1800/18002831.pdf>); Form 1/A, filed August 30, 2018 (<https://www.sec.gov/Archives/edgar/vpr/1800/18002833.pdf>); Form 1/A, filed July 24, 2018 (<https://www.sec.gov/Archives/edgar/vpr/1800/18002781.pdf>); Form 1/A, filed August 30, 2018 (<https://www.sec.gov/Archives/edgar/data/1473845/999999999718007832/9999999997-18-007832-index.htm>).

approximately 100 members,²² and NYSE American LLC has over 80 members.²³ If all market participants were required to be Members of the Exchange and connect directly to the Exchange, the Exchange would have over 200 Members, in line with Cboe's total membership. But it does not. The Exchange only has 34 Members.

Further, since there are 41 distinct members amongst all three exchanges, and only 28 of those distinct members decided to become Members of MIAX Emerald, there were 13 distinct members that decided not to become Members of MIAX Emerald. This further reinforces the fact that all market participants are not required to be Members of the Exchange and are not required to connect to the Exchange. It is a choice whether to join and it is a choice to connect. Therefore, the Exchange believes that the Proposed Fees are fair, equitable, and non-discriminatory, as the fees are competitive.

With respect to the now MIAX Emerald Members that had Shared Connections in place as of August 1, 2018 (via a previously purchased Shared Connection from MIAX or MIAX PEARL), the Exchange finds it compelling that all of those Members continued to purchase those Shared Connections after August 1, 2018, when MIAX and MIAX PEARL increased the connectivity fees for the Shared Connections to the current amounts proposed by the Exchange herein. In particular, the Exchange believes that the Proposed Fees for the Shared Connections are reasonable because MIAX and MIAX PEARL, which charge the same amount for the Shared Connections, did not lose any Members (or the number of Shared Connections each Member purchased) or non-Member Shared Connections when MIAX and MIAX PEARL proposed to increase the connectivity fees for the Shared Connections on August 1, 2018. For example, with

²² See Form 1/A, filed July 1, 2016 (<https://www.sec.gov/Archives/edgar/vpr/1601/16019243.pdf>).

²³ See <https://www.nyse.com/markets/american-options/membership#directory>.

respect to the Shared Connections maintained by now Members of MIAX Emerald who had Shared Connections in place as of July 2018, 12 Members purchased 1Gb connections. The vast majority of those Members purchased multiple such connections, the number of connections depending on their throughput requirements based on the volume of their quote/order traffic and market data needs associated with their business model. After the fee increase, beginning August 1, 2018, the same 12 Members purchased 1Gb connections. Furthermore, the total number of connections did not decrease from July to August.

Further, with respect to the Shared Connections maintained by now Members of MIAX Emerald who had Shared Connections in place as of July 2018, of those Members and non-Members that bought multiple connections, no firm dropped any connections beginning August 1, 2018, when MIAX and MIAX PEARL increased its fees. Furthermore, the Exchange understands that MIAX and MIAX PEARL did not receive any official comment letters or complaints from any now Members of MIAX Emerald who had Shared Connections in place as of July 2018 regarding the increased fees regarding how the change was unreasonable, unduly burdensome, or would negatively impact their competitiveness amongst other market participants. These facts, coupled with the discussion above, showing that it is not necessary to join and/or connect to all options exchanges, demonstrate that the Exchange's fees are constrained by competition and are reasonable and not contrary to the Law of Demand as SIFMA suggests. Therefore, the Exchange believes that the Proposed Fees are fair, equitable, and non-discriminatory, as the fees are competitive.

The Exchange believes that the Proposed Fees are equitably allocated among Members and non-Members, as evidenced by the fact that the fees are allocated across all connectivity alternatives, and there is not a disproportionate number of Members purchasing any alternative –

14 Members have 1Gb (primary/secondary) connections; 14 Members have 10Gb ULL (primary/secondary) connections; 3 Members have 10Gb (disaster recovery) connections; and 11 Members have 1Gb (disaster recovery) connections, or some combination of multiple various connections.

Second, the Exchange believes that its proposal is consistent with Section 6(b)(4) of the Act because the Proposed Fees allow the Exchange to recover a portion (less than all) of the costs incurred by the Exchange associated with providing and maintaining the necessary hardware and other infrastructure to support this technology. The Exchange believes that it is reasonable and appropriate to establish its fees charged for use of its connectivity at a level that will partially offset the costs to the Exchange associated with maintaining and enhancing a state-of-the-art exchange network infrastructure in the U.S. options industry.

The costs associated with making the network accessible to Exchange Members and non-Members, through the expansion associated with new Shared Connections and Dedicated Connections, as well as the general expansion of a state-of-the-art infrastructure, are extensive, have increased year-over-year in the past two years, and are projected to increase year-over-year in the future. This is due to several factors, including costs associated with maintaining and expanding a team of highly-skilled network engineers, fees charged by the Exchange's third-party data center operator, and costs associated with projects and initiatives designed to improve overall network performance and stability, through the Exchange's research and development ("R&D") efforts.

In order to provide more detail and to quantify the Exchange's costs, the Exchange notes that costs are associated with the infrastructure and headcount to fully-support the advances in infrastructure and expansion of network level services, including customer

monitoring, alerting and reporting. The Exchange incurs technology expenses related to establishing and maintaining Information Security services, enhanced network monitoring and customer reporting, as well as Regulation SCI mandated processes, associated with its network technology. Additionally, the Exchange incurred costs in the expansion/buildout of the network leading up to the launch of operations, and the network maintenance costs continue to increase year-over-year. While some of the expense is fixed, much of the expense is not fixed, and thus increases as the number of connections increase. For example, new 1Gb and 10Gb ULL connections require the purchase of additional hardware to support those connections as well as enhanced monitoring and reporting of customer performance that MIAX Emerald and its affiliates provide. And 10Gb ULL connections require the purchase of specialized, more costly hardware. Further, as the total number of all connections increase, MIAX Emerald and its affiliates need to increase their data center footprint and consume more power, resulting in increased costs charged by their third-party data center provider. Accordingly, cost to MIAX Emerald and its affiliates is not entirely fixed. Just the initial fixed cost buildout of the network infrastructure of MIAX Emerald and its affiliates, including both primary/secondary sites and disaster recovery, was over \$30 million. The current annual operational expense (which relates 100% to the network infrastructure, associated data center processing equipment required to support various connections, network monitoring systems and associated software required to support the various forms of connectivity) is approximately \$8.5 million. This does not include additional indirect expenses that the Exchange incurs that are allocated to the support of network infrastructure of the Exchange. As these operational expenses increase, MIAX Emerald and its affiliates look to offset those costs through increased connectivity fees.

A more detailed breakdown of the operational expense increases, since the initial phases of the buildout of the Exchange over two years ago include the following:, with respect to the network, there has been an approximate 70% increase in technology-related personnel costs in infrastructure, due to expansion of services/support (increase of approximately \$800,000); an approximate 10% increase in datacenter costs due to price increases and footprint expansion (increase of approximately \$500,000); an approximate 5% increase in vendor-supplied dark fiber due to price increases and expanded capabilities (increase of approximately \$25,000); and a 30% increase in market data connectivity fees (increase of approximately \$200,000). Of note, regarding market data connectivity fee cost, this is the cost associated with MIAX Emerald consuming connectivity/content from the equities markets in order to operate the Exchange, causing MIAX Emerald to effectively pay its competitors for this connectivity. There was also significant capital expenditures over this same period to upgrade and enhance the underlying technology components. The Exchange believes that it is reasonable and appropriate to establish its fees charged for use of its connectivity at a level that will partially offset the costs to the Exchange associated with the buildout, maintenance, and enhancement of its network infrastructure.

Further, because the costs of operating a data center are significant and not economically feasible for the Exchange, the Exchange does not operate its own data centers, and instead contracts with a third-party data center provider. The Exchange notes that larger, dominant exchange operators own/operate their data centers, which offers them greater control over their data center costs. Because those exchanges own and operate their data centers as profit centers, the Exchange is subject to additional costs. Connectivity fees, which are charged

for accessing the Exchange's data center network infrastructure, are directly related to the network and offset costs such costs.

Further, the Exchange invests significant resources in network R&D to improve the overall performance and stability of its network. For example, the Exchange has a number of network monitoring tools (some of which were developed in-house, and some of which are licensed from third-parties), that continually monitor, detect, and report network performance, many of which serve as significant value-adds to the Exchange's Members and enable the Exchange to provide a high level of customer service. These tools detect and report performance issues, and thus enable the Exchange to proactively notify a Member (and the SIPs) when the Exchange detects a problem with a Member's connectivity. The Exchange also incurs costs associated with the maintenance and improvement of existing tools and the development of new tools.

Certain recently developed network aggregation and monitoring tools provide the Exchange with the ability to measure network traffic with a much more granular level of variability. This is important as Exchange Members demand a higher level of network determinism and the ability to measure variability in terms of single digit nanoseconds. Also, routine R&D projects to improve the performance of the network's hardware infrastructure result in additional cost. As an example, in the last year, R&D efforts resulted in a performance improvement, requiring the purchase of new equipment to support that improvement, and thus resulting in increased costs in the hundreds of thousands of dollars range. In sum, the costs associated with maintaining and enhancing a state-of-the-art exchange network infrastructure in the U.S. options industry is a significant expense for the Exchange that also increases year-over-year, and thus the Exchange believes that it is reasonable to offset a portion of those costs

through establishing network connectivity fees, as proposed herein. Overall, the Proposed Fees are projected to offset only a portion of the Exchange's network connectivity costs. The Exchange invests in and offers a superior network infrastructure as part of its overall options exchange services offering, resulting in significant costs associated with maintaining this network infrastructure, which are directly tied to the amount of the connectivity fees that must be charged to access it, in order to recover those costs.

The Exchange also believes its proposal to offer 10Gb ULL connections as dedicated connections furthers the objectives of Section 6(b)(5) of the Act²⁴ in that it is designed 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 is not designed to permit unfair discrimination between customer, issuers, brokers and dealers. In particular, for the Dedicated Connection, the Exchange's MENI is configured to provide Members and non-Members of the Exchange network connectivity to the trading platforms, market data systems, test systems, and disaster recovery facilities of the Exchange. Any Member or non-Member can purchase a Dedicated Connection. The Exchange determined to design its network architecture in a manner that offered 10Gb ULL connections as dedicated connections (as opposed to shared connections) in order to provide cost saving opportunities for itself and for its Members, by reducing the amount of equipment that the Exchange would have to purchase and to which the Members would have to connect. A dedicated 10Gb ULL connection does not offer any unfair advantage over a shared 10GB ULL connection, as is being offered solely as a cost-saving measure to the Exchange and its Members.

²⁴ 15 U.S.C. 78f(b)(5).

The Exchange notes that other exchanges have similar connectivity alternatives for their participants, including similar low-latency connectivity. For example, Nasdaq PHLX LLC (“Phlx”), NYSE Arca, Inc. (“Arca”), NYSE American LLC (“NYSE American”) and Nasdaq ISE, LLC (“ISE”) all offer a 1Gb, 10Gb and 10Gb low latency ethernet connectivity alternatives to each of their participants.²⁵ The Exchange further notes that Phlx, ISE, Arca and NYSE American each charge higher rates for such similar connectivity to primary and secondary facilities,²⁶ however the Exchange also notes that the Exchange’s 10Gb ULL connection is dedicated solely to one market (the Exchange) whereas the Exchange believes that other exchanges offer a shared 10Gb ULL connection to multiple markets. While MIAX Emerald’s proposed connectivity fees are substantially lower than the fees charged by Phlx, ISE, Arca and NYSE American, MIAX Emerald believes that it offers significant value to Members over other exchanges in terms of network monitoring and reporting, which MIAX Emerald believes is a competitive advantage, and differentiates its connectivity versus connectivity to other exchanges. Additionally, the Exchange’s proposed connectivity fees to its disaster recovery facility are within the range of the fees charged by other exchanges for similar connectivity alternatives.²⁷

²⁵ See Phlx and ISE Rules, General Equity and Options Rules, General 8, Section 1(b). Phlx and ISE each charge a monthly fee of \$2,500 for each 1Gb connection, \$10,000 for each 10Gb connection and \$15,000 for each 10Gb Ultra connection, which the equivalent of the Exchange’s 10Gb ULL connection. See also NYSE American Fee Schedule, Section V.B, and Arca Fees and Charges, Co-Location Fees. NYSE American and Arca each charge a monthly fee of \$5,000 for each 1Gb circuit, \$14,000 for each 10Gb circuit and \$22,000 for each 10Gb LX circuit, which the equivalent of the Exchange’s 10Gb ULL connection.

²⁶ Id.

²⁷ See Nasdaq ISE, Options Rules, Options 7, Pricing Schedule, Section 11.D. (charging \$3,000 for disaster recovery testing & relocation services); see also Cboe Exchange, Inc. (“Cboe”) Fees Schedule, p. 14, Cboe Command Connectivity Charges (charging a

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

MIAX Emerald does not believe that the proposed rule changes will impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Act. In particular, the Exchange has received no official comment letters or complaints from Members or others who connect to it that its Proposed Fees are negatively impacting or would negatively impact their abilities to compete with other market participants. Further, the Exchange is unaware of any assertion that its Proposed Fees would somehow unduly impair its competition with other options exchanges. To the contrary, if the fees charged are deemed too high by market participants, they can simply disconnect.

While the Exchange recognizes the distinction between connecting to an exchange and trading at the exchange, the Exchange notes that it operates in a highly competitive options market in which market participants can readily connect and trade with venues they desire. In such an environment, the Exchange must continually adjust its fees to remain competitive with other exchanges. The Exchange believes that the proposed changes reflect this competitive environment.

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

Written comments were neither solicited nor received.

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

The foregoing rule change has become effective pursuant to Section 19(b)(3)(A)(ii) of the Act,²⁸ and Rule 19b-4(f)(2)²⁹ thereunder. At any time within 60 days of the filing of the

monthly fee of \$2,000 for a 1Gb disaster recovery network access port and a monthly fee of \$6,000 for a 10Gb disaster recovery network access port).

²⁸ 15 U.S.C. 78s(b)(3)(A)(ii).

proposed rule change, the Commission summarily may temporarily suspend such rule change if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Act. If the Commission takes such action, the Commission shall institute proceedings to determine whether the proposed rule should be approved or disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act.

Comments may be submitted by any of the following methods:

Electronic comments:

- Use the Commission's Internet comment form (<http://www.sec.gov/rules/sro.shtml>); or
- Send an e-mail to rule-comments@sec.gov. Please include File Number SR-EMERALD-2019-20 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-EMERALD-2019-20. 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

²⁹ 17 CFR 240.19b-4(f)(2).

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 the filing also will 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-EMERALD-2019-20 and should be submitted on or before [insert date 21 days from publication in the Federal Register].

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.³⁰

Eduardo A. Aleman
Deputy Secretary

³⁰ 17 CFR 200.30-3(a)(12).