

Required fields are shown with yellow backgrounds and asterisks.

Page 1 of * 101	SECURITIES AND EXCHANGE COMMISSION WASHINGTON, D.C. 20549 Form 19b-4	File No.* SR - 2021 - * 11 Amendment No. (req. for Amendments *)
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Filing by MIAX Emerald, LLC
Pursuant to Rule 19b-4 under the Securities Exchange Act of 1934

Initial * <input checked="" type="checkbox"/>	Amendment * <input type="checkbox"/>	Withdrawal <input type="checkbox"/>	Section 19(b)(2) * <input type="checkbox"/>	Section 19(b)(3)(A) * <input checked="" type="checkbox"/>	Section 19(b)(3)(B) * <input type="checkbox"/>
Pilot <input type="checkbox"/>			Rule		
Extension of Time Period for Commission Action * <input type="checkbox"/>		Date Expires * <input type="text"/>	<input type="checkbox"/> 19b-4(f)(1)	<input type="checkbox"/> 19b-4(f)(4)	
			<input checked="" type="checkbox"/> 19b-4(f)(2)	<input type="checkbox"/> 19b-4(f)(5)	
			<input type="checkbox"/> 19b-4(f)(3)	<input type="checkbox"/> 19b-4(f)(6)	

Notice of proposed change pursuant to the Payment, Clearing, and Settlement Act of 2010	Security-Based Swap Submission pursuant to the Securities Exchange Act of 1934
Section 806(e)(1) * <input type="checkbox"/>	Section 806(e)(2) * <input type="checkbox"/>
	Section 3C(b)(2) * <input type="checkbox"/>

Exhibit 2 Sent As Paper Document <input type="checkbox"/>	Exhibit 3 Sent As Paper Document <input type="checkbox"/>
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Description

Provide a brief description of the action (limit 250 characters, required when Initial is checked *).

Proposal to amend the Fee Schedule to establish port fees, modify certain connectivity fees, and increase the number of available additional limited service ports.

Contact Information

Provide the name, telephone number, and e-mail address of the person on the staff of the self-regulatory organization prepared to respond to questions and comments on the action.

First Name * Michael Last Name * Slade
 Title * Assitant Vice President, Associate Counsel
 E-mail * mslade@miami-holdings.com
 Telephone * (609) 897-8499 Fax

Signature

Pursuant to the requirements of the Securities Exchange Act of 1934,

has duly caused this filing to be signed on its behalf by the undersigned thereunto duly authorized.

(Title *)
 Assistant Vice President, Associate Counsel

Date 03/24/2021
 By Michael Slade
 (Name *)

NOTE: Clicking the button at right will digitally sign and lock this form. A digital signature is as legally binding as a physical signature, and once signed, this form cannot be changed.

mslade@miami-holdings.com

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

For complete Form 19b-4 instructions please refer to the EFFS website.

Form 19b-4 Information *

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The self-regulatory organization must provide all required information, presented in a clear and comprehensible manner, to enable the public to provide meaningful comment on the proposal and for the Commission to determine whether the proposal is consistent with the Act and applicable rules and regulations under the Act.

Exhibit 1 - Notice of Proposed Rule Change *

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The Notice section of this Form 19b-4 must comply with the guidelines for publication in the Federal Register as well as any requirements for electronic filing as published by the Commission (if applicable). The Office of the Federal Register (OFR) offers guidance on Federal Register publication requirements in the Federal Register Document Drafting Handbook, October 1998 Revision. For example, all references to the federal securities laws must include the corresponding cite to the United States Code in a footnote. All references to SEC rules must include the corresponding cite to the Code of Federal Regulations in a footnote. All references to Securities Exchange Act Releases must include the release number, release date, Federal Register cite, Federal Register date, and corresponding file number (e.g., SR-[SRO]-xx-xx). A material failure to comply with these guidelines will result in the proposed rule change being deemed not properly filed. See also Rule 0-3 under the Act (17 CFR 240.0-3)

Exhibit 1A- Notice of Proposed Rule Change, Security-Based Swap Submission, or Advance Notice by Clearing Agencies *

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The Notice section of this Form 19b-4 must comply with the guidelines for publication in the Federal Register as well as any requirements for electronic filing as published by the Commission (if applicable). The Office of the Federal Register (OFR) offers guidance on Federal Register publication requirements in the Federal Register Document Drafting Handbook, October 1998 Revision. For example, all references to the federal securities laws must include the corresponding cite to the United States Code in a footnote. All references to SEC rules must include the corresponding cite to the Code of Federal Regulations in a footnote. All references to Securities Exchange Act Releases must include the release number, release date, Federal Register cite, Federal Register date, and corresponding file number (e.g., SR-[SRO]-xx-xx). A material failure to comply with these guidelines will result in the proposed rule change, security-based swap submission, or advance notice being deemed not properly filed. See also Rule 0-3 under the Act (17 CFR 240.0-3)

Exhibit 2 - Notices, Written Comments, Transcripts, Other Communications

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Exhibit Sent As Paper Document

Copies of notices, written comments, transcripts, other communications. If such documents cannot be filed electronically in accordance with Instruction F, they shall be filed in accordance with Instruction G.

Exhibit 3 - Form, Report, or Questionnaire

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Exhibit Sent As Paper Document

Copies of any form, report, or questionnaire that the self-regulatory organization proposes to use to help implement or operate the proposed rule change, or that is referred to by the proposed rule change.

Exhibit 4 - Marked Copies

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The full text shall be marked, in any convenient manner, to indicate additions to and deletions from the immediately preceding filing. The purpose of Exhibit 4 is to permit the staff to identify immediately the changes made from the text of the rule with which it has been working.

Exhibit 5 - Proposed Rule Text

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The self-regulatory organization may choose to attach as Exhibit 5 proposed changes to rule text in place of providing it in Item I and which may otherwise be more easily readable if provided separately from Form 19b-4. Exhibit 5 shall be considered part of the proposed rule change.

Partial Amendment

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If the self-regulatory organization is amending only part of the text of a lengthy proposed rule change, it may, with the Commission's permission, file only those portions of the text of the proposed rule change in which changes are being made if the filing (i.e. partial amendment) is clearly understandable on its face. Such partial amendment shall be clearly identified and marked to show deletions and additions.

1. Text of the Proposed Rule Change

(a) MIAX Emerald, LLC (“MIAX Emerald” or “Exchange”), pursuant to the provisions of Section 19(b)(1) of the Securities Exchange Act of 1934 (“Act”)¹ and Rule 19b-4 thereunder,² proposes to amend the MIAX Emerald Fee Schedule (the “Fee Schedule”).

A notice of the proposed rule change for publication in the Federal Register is attached hereto as Exhibit 1, and a copy of the applicable section of the proposed Fee Schedule is attached hereto as Exhibit 5.

(b) Not applicable.

(c) Not applicable.

2. Procedures of the Self-Regulatory Organization

The proposed rule change was approved by the Chief Executive Officer of the Exchange or his designee pursuant to authority delegated by the MIAX Emerald Board of Directors on January 28, 2021. Exchange staff will advise the Board of Directors of any action taken pursuant to delegated authority. No other action by the Exchange is necessary for the filing of the proposed rule change.

Questions and comments on the proposed rule change may be directed to Joseph W. Ferraro, Senior Vice President and Deputy General Counsel, at 609-897-8492.

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

a. Purpose

¹ 15 U.S.C. 78s(b)(1).

² 17 CFR 240.19b-4.

The Exchange proposes to amend the Fee Schedule to: (1) adopt Port fees; (2) increase the Exchange's network connectivity fees for its 10 gigabit ("Gb") ultra-low latency ("ULL") fiber connection for Members³ and non-Members (collectively, the "Proposed Access Fees"); and (3) increase the number of Additional Limited Service MIAX Emerald Express Interface ("MEI")⁴ Ports available to Market Makers.⁵

On September 15, 2020, the Exchange issued a Regulatory Circular, which announced, among other things, that the Exchange would adopt Port fees, thereby terminating the Waiver Period⁶ for such fees, and increase the fees for its 10Gb ULL connection for Members and non-

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.

⁴ MIAX Emerald Express Interface is a connection to the MIAX Emerald System that enables Market Makers to submit simple and complex electronic quotes to MIAX Emerald. "Full Service MEI Ports" means a port which provides Market Makers with the ability to send Market Maker simple and complex quotes, eQuotes, and quote purge messages to the MIAX Emerald System. Full Service MEI Ports are also capable of receiving administrative information. Market Makers are limited to two Full Service MEI Ports per Matching Engine. "Limited Service MEI Ports" means a port which provides Market Makers with the ability to send simple and complex eQuotes and quote purge messages only, but not Market Maker Quotes, to the MIAX Emerald System. Limited Service MEI Ports are also capable of receiving administrative information. Market Makers initially receive two Limited Service MEI Ports per Matching Engine. See the Definitions Section of the Fee Schedule.

⁵ "Market Maker" refers to "Lead Market Maker" ("LMM"), "Primary Lead Market Maker" ("PLMM") and "Registered Market Maker" ("RMM"), collectively. See Exchange Rule 100 and the Definitions Section of the Fee Schedule.

⁶ "Waiver Period" means, for each applicable fee, the period of time from the initial effective date of the MIAX Emerald Fee Schedule until such time that the Exchange has an effective fee filing establishing the applicable fee. The Exchange will issue a Regulatory Circular announcing the establishment of an applicable fee that was subject to a Waiver Period at least fifteen (15) days prior to the termination of the Waiver Period and effective date of any such applicable fee. See the Definitions Section of the Fee Schedule.

Members, beginning October 1, 2020.⁷ On January 14, 2021, the Exchange announced that it would offer Market Makers the ability to purchase an additional six Limited Service MEI Ports,⁸ without changing the Limited Service MEI Port fee amount.

The Exchange initially filed its proposal to adopt certain Port fees and increase the fees for its 10Gb ULL connection on October 1, 2020.⁹ The First Proposed Rule Change was published for comment in the Federal Register on October 20, 2020.¹⁰ The Exchange notes that the First Proposed Rule Change did not receive any comment letters. Nonetheless, the Exchange withdrew the First Proposed Rule Change on November 25, 2020¹¹ and resubmitted a replacement proposal.¹² The Second Proposed Rule Change was published for comment in the Federal Register on December 14, 2020.¹³ The Exchange notes that the Second Proposed Rule Change did not receive any comment letters. Nonetheless, the Exchange withdrew the Second

⁷ See MIAX Emerald Regulatory Circular 2020-41 available at https://www.miaxoptions.com/sites/default/files/circular-files/MIAX_Emerald_RC_2020_41.pdf.

⁸ See <https://www.miaxoptions.com/alerts/2021/01/14/miax-emerald-options-announce-support-additional-mei-limited-service-ports>. In a subsequent alert, the Exchange announced that the six Additional Limited Service MEI Ports would be available beginning February 16, 2021, pending filing with the Commission.

⁹ See Securities Exchange Act Release No. 90184 (October 14, 2020), 85 FR 66636 (October 20, 2020) (SR-EMERALD-2020-12) (the “First Proposed Rule Change”).

¹⁰ See *id.*

¹¹ See Comment Letter from Joseph Ferraro, SVP, Deputy General Counsel, the Exchange, dated November 20, 2020, notifying the Commission that the Exchange would withdraw the First Proposed Rule Change.

¹² See Securities Exchange Act Release No. 90600 (December 8, 2020), 85 FR 80831 (December 14, 2020) (SR-EMERALD-2020-17) (the “Second Proposed Rule Change”).

¹³ See *id.*

Proposed Rule Change on January 22, 2021¹⁴ and resubmitted a replacement proposal.¹⁵ The Third Proposed Rule Change was published for comment in the Federal Register on February 5, 2021.¹⁶ The Exchange withdrew the Third Proposed Rule Change on February 16, 2021¹⁷ and resubmitted a replacement proposal, which included the proposal to offer six Additional Limited Service MEI Ports available to Market Makers.¹⁸ On March 24, 2021, the Exchange withdrew the Fourth Proposed Rule Change and resubmitted this proposal to further clarify its expense and revenue projections and to make certain technical corrections.

Port Fees

The Exchange proposes to adopt fees for “Ports”, which are used by Members and non-Members to access the Exchange. MIAX Emerald provides four Port types: (i) the Financial Information Exchange (“FIX”) Port¹⁹, which allows Members to electronically send orders in all products traded on the Exchange; (ii) the MEI Port, which allows Market Makers to submit electronic orders and quotes to the Exchange; (iii) the Clearing Trade Drop Port (“CTD”) Port²⁰,

¹⁴ See Comment Letter from Joseph Ferraro, SVP, Deputy General Counsel, the Exchange, dated January 15, 2021, notifying the Commission that the Exchange would withdraw the Second Proposed Rule Change.

¹⁵ See Securities Exchange Act Release No. 91032 (February 1, 2021), 86 FR 8428 (February 5, 2021) (SR-EMERALD-2021-02) (the “Third Proposed Rule Change”).

¹⁶ See *id.*

¹⁷ See Comment Letter from Joseph Ferraro, SVP, Deputy General Counsel, the Exchange, dated February 16, 2021, notifying the Commission that the Exchange would withdraw the Third Proposed Rule Change.

¹⁸ See Securities Exchange Act Release No. 91200 (February 24, 2021), 86 FR 12221 (March 2, 2021) (SR-EMERALD-2021-07) (the “Fourth Proposed Rule Change”).

¹⁹ “FIX Port” means an interface with MIAX Emerald systems that enables the Port user to submit simple and complex orders electronically to MIAX Emerald. See the Definitions Section of the Fee Schedule.

²⁰ “CTD Port” or “Clearing Trade Drop Port” provides an Exchange Member with a real-time clearing trade updates. The updates include the Member’s clearing trade messages

which provides real-time trade clearing information to the participants to a trade on MIAX Emerald and to the participants' respective clearing firms; and (iv) the FIX Drop Copy ("FXD") Port²¹, which provides a copy of real-time trade execution, correction and cancellation information through a FIX Port to any number of FIX Ports designated by an Electronic Exchange Member ("EEM")²² to receive such messages. The Exchange also proposes to increase the monthly fee for each Additional Limited Service MEI Port per matching engine for Market Makers, as described below.

Since the launch of the Exchange, all Port fees have been waived by the Exchange in order to incentivize market participants to connect to the Exchange, except for Additional Limited Service MEI Ports. However, also at launch, the Exchange introduced the structure of Port fees on its Fee Schedule (without proposing the actual fee amounts), in order to indicate to market participants that Port fees would ultimately apply upon expiration of the Waiver Period.

on a low latency, real-time basis. The trade messages are routed to a Member's connection containing certain information. The information includes, among other things, the following: (i) trade date and time; (ii) symbol information; (iii) trade price/size information; (iv) Member type (for example, and without limitation, Market Maker, Electronic Exchange Member, Broker-Dealer); and (v) Exchange MPID for each side of the transaction, including Clearing Member MPID. See the Definitions Section of the Fee Schedule.

²¹ The FIX Drop Copy ("FXD") Port is a messaging interface that will provide a copy of real-time trade execution, trade correction and trade cancellation information to FXD Port users who subscribe to the service. FXD Port users are those users who are designated by an EEM to receive the information and the information is restricted for use by the EEM. FXD Port Fees will be assessed in any month the Member is credentialed to use the FXD Port in the production environment. See Fee Schedule, Section 5)d)iv).

²² "Electronic Exchange Member" or "EEM" means the holder of a Trading Permit who is not a Market Maker. Electronic Exchange Members are deemed "members" under the Exchange Act. See Exchange Rule 100 and the Definitions Section of the Fee Schedule.

The Exchange now proposes to assess monthly Port fees for Members and non-Members in each month the market participant is credentialed to use a Port in the production environment and based upon the number of credentialed Ports that a user is entitled to use. MIAX Emerald has Primary and Secondary Facilities and a Disaster Recovery Facility. Each type of Port provides access to all Exchange facilities for a single fee. The Exchange notes that, unless otherwise specifically set forth in the Fee Schedule, the Port fees include the information communicated through the Port. That is, unless otherwise specifically set forth in the Fee Schedule, there is no additional charge for the information that is communicated through the Port apart from what the user is assessed for each Port.²³

FIX Port Fees

Since the launch of the Exchange, fees for FIX Ports have been waived for the Waiver Period. The Exchange now proposes to assess a monthly FIX Port fee to Members in each month the Member is credentialed to use a FIX Port in the production environment and based upon the number of credentialed FIX Ports, as follows: \$550 for the first FIX Port; \$350 for FIX Ports two through five; and \$150 for each FIX Port over five.

Below is the proposed table showing the FIX Port fees:

FIX Port Fees	MIAX Emerald Monthly Port Fees Includes Connectivity to the Primary, Secondary and Disaster Recovery Data Centers
1st FIX Port	\$550.00
FIX Ports 2 through 5	\$350.00
Additional FIX Ports over 5	\$150.00

²³ An example of one such exception where there is an additional charge for information that is communicated through a Port is for certain market data products, such as ToM, AIS, and MOR, that are received via a direct connection to the Exchange. See Sections 6a)-c) of the Fee Schedule.

MEI Port Fees

MIAX Emerald offers different options of MEI Ports depending on the services required by Market Makers. Since the launch of the Exchange, fees for MEI Ports have been waived for the Waiver Period. The Exchange now proposes to assess monthly MEI Port Fees to Market Makers based upon the number of classes or class volume accessed by the Market Maker. Market Makers are allocated two (2) Full Service MEI Ports²⁴ and two (2) Limited Service MEI Ports²⁵ per Matching Engine²⁶ to which they connect. The Full Service MEI Ports, Limited Service MEI Ports and the Additional Limited Service MEI Ports all include access to the Exchange's Primary and Secondary data centers and its Disaster Recovery center.

Specifically, the Exchange proposes to adopt MEI Port fees assessable to Market Makers based upon the number of classes or class volume accessed by the Market Maker. The Exchange proposes to adopt the following MEI Port fees: (i) \$5,000 for Market Maker Assignments in up to 5 option classes or up to 10% of option classes by volume; (ii) \$10,000 for Market Maker Assignments in up to 10 option classes or up to 20% of option classes by volume; (iii) \$14,000 for Market Maker Assignments in up to 40 option classes or up to 35% of option classes by volume; (iv) \$17,500 for Market Maker Assignments in up to 100 option classes or up to 50% of option classes by volume; and (v) \$20,500 for Market Maker Assignments in over 100 option

²⁴ See supra note 4.

²⁵ See id.

²⁶ A "matching engine" is a part of the MIAX Emerald electronic system that processes options quotes and trades on a symbol-by-symbol basis. Some matching engines will process option classes with multiple root symbols, and other matching engines will be dedicated to one single option root symbol (for example, options on SPY will be processed by one single matching engine that is dedicated only to SPY). A particular root symbol may only be assigned to a single designated matching engine. A particular root symbol may not be assigned to multiple matching engines. See the Definitions Section of the Fee Schedule.

classes or over 50% of option classes by volume up to all option classes listed on MIA X Emerald.

The Exchange also proposes to adopt new footnote “■” for its MEI Port fees that will apply to the Market Makers who fall within the following MEI Port fee levels, which represent the 4th and 5th levels of the fee table: Market Makers who have (i) Assignments in up to 100 option classes or up to 50% of option classes by volume and (ii) Assignments in over 100 option classes or over 50% of option classes by volume up to all option classes listed on MIA X Emerald. Specifically, the Exchange proposes for these monthly MEI Port tier levels, if the Market Maker’s total monthly executed volume during the relevant month is less than 0.025% of the total monthly executed volume reported by OCC in the customer account type for MIA X Emerald-listed option classes for that month, then the fee will be \$14,500 instead of the fee otherwise applicable to such level.

The purpose of this proposed lower monthly MEI Port fee is to provide a lower fixed cost to those Market Makers who are willing to quote the entire Exchange market (or substantial amount of the Exchange market), as objectively measured by either number of classes assigned or national ADV, but who do not otherwise execute a significant amount of volume on the Exchange. The Exchange believes that, by offering lower fixed costs to Market Makers that execute less volume, the Exchange will retain and attract smaller-scale Market Makers, which are an integral component of the option industry marketplace, but have been decreasing in number in recent years, due to industry consolidation and lower market maker profitability. Since these smaller-scale Market Makers utilize less Exchange capacity due to lower overall volume executed, the Exchange believes it is reasonable and appropriate to offer such Market Makers a lower fixed cost. The Exchange notes that other options exchanges assess certain of

their fees at different rates, based upon a member's participation on that exchange,²⁷ and, as such, this concept is not novel. The proposed changes to the MEI Port fees for Market Makers who fall within the 4th and 5th levels of the fee table are based upon a business determination of current Market Maker assignments and trading volume.

For the calculation of the monthly MEI Port Fees that apply to Market Makers, the number of classes is defined as the greatest number of classes the Market Maker was assigned to quote in on any given day within the calendar month and the class volume percentage is based on the total national average daily volume in classes listed on MIAX Emerald in the prior calendar quarter.²⁸ Newly listed option classes are excluded from the calculation of the monthly MEI Port Fee until the calendar quarter following their listing, at which time the newly listed option classes will be included in both the per class count and the percentage of total national average daily volume. The Exchange proposes to assess Market Makers the monthly MEI Port Fees based on the greatest number of classes listed on MIAX Emerald that the Market Maker was assigned to quote in on any given day within a calendar month and the applicable fee rate that is the lesser of either the per class basis or percentage of total national average daily volume measurement.

²⁷ See, e.g., Cboe BZX Options Exchange ("BZX Options") assesses the Participant Fee, which is a membership fee, according to a member's ADV. See Cboe BZX Options Exchange Fee Schedule under "Membership Fees". The Participant Fee is \$500 if the member ADV is less than 5000 contracts and \$1,000 if the member ADV is equal to or greater than 5000 contracts.

²⁸ The Exchange will use the following formula to calculate the percentage of total national average daily volume that the Market Maker assignment is for purposes of the MEI Port Fee for a given month:

$$\text{Market Maker assignment percentage of national average daily volume} = \frac{\text{[total volume during the prior calendar quarter in a class in which the Market Maker was assigned]}}{\text{[total national volume in classes listed on MIAX in the prior calendar quarter]}}$$

The Exchange charges \$50 per month for each Additional Limited Service MEI Port per matching engine for Market Makers over and above the two (2) Limited Service MEI Ports per matching engine that are allocated with the Full Service MEI Ports. The Full Service MEI Ports, Limited Service MEI Ports and the Additional Limited Service MEI Ports all include access to the Exchange’s Primary and Secondary data centers and its Disaster Recovery center. Currently, footnote “*” in the MEI Port Fee table provides that the fees for Additional Limited Service MEI Ports are not subject to the Waiver Period. Accordingly, in connection with this proposal, the Exchange proposes to delete footnote “*” since the Exchange proposes to begin assessing MEI Port fees, which will no longer be subject to the Waiver Period. The Exchange also proposes to increase the monthly fee from \$50 to \$100 for each Additional Limited Service MEI Port per matching engine for Market Makers over and above the two (2) Limited Service MEI Ports per matching engine that are allocated with the Full Service MEI Ports.

Below is the proposed table showing the MEI Port fees:

Monthly MIAX Emerald MEI Fees	Market Maker Assignments (the lesser of the applicable measurements below)	
	Per Class	% of National Average Daily Volume
\$5,000.00	Up to 5 Classes	Up to 10% of Classes by volume
\$10,000.00	Up to 10 Classes	Up to 20% of Classes by volume
\$14,000.00	Up to 40 Classes	Up to 35% of Classes by volume
\$17,500.00 [■]	Up to 100 Classes	Up to 50% of Classes by volume
\$20,500.00 [■]	Over 100 Classes	Over 50% of Classes by volume up to all Classes listed on MIAX Emerald

- For these Monthly MIAX Emerald MEI Port tier levels, if the Market Maker’s total monthly executed volume during the relevant month is less than 0.025% of the total monthly executed volume reported by OCC in the customer account type for MIAX Emerald-listed option classes for that month, then the fee will be \$14,500 instead of the fee otherwise applicable to such level.

The Exchange also proposes to offer six (6) Additional Limited Service MEI Ports to Market Makers. Currently, Market Makers are limited to six Additional Limited Service MEI

Ports per Matching Engine, for a total of eight per Matching Engine. The Exchange originally provided Limited Service MEI Ports to enhance the MEI Port connectivity available to Market Makers. Limited Service MEI Ports have been well received by Market Makers since the Exchange launched operations in March of 2019. The Exchange now proposes to offer to Market Makers the ability to purchase an additional six (6) Limited Service MEI Ports per Matching Engine over and above the current six (6) Additional Limited Service MEI Ports per Matching Engine that are available for purchase by Market Makers. The Exchange proposes to make a corresponding change to Section 5)d)ii) of the Fee Schedule to specify that Market Makers will now be limited to purchasing twelve (12) Additional Limited Service MEI Ports per Matching Engine, for a total of fourteen (14) per Matching Engine.

The Exchange proposes to increase the number of Additional Limited Service MEI Ports because the Exchange is expanding its network. This network expansion is necessary due to increased customer demand and increased volatility in the marketplace, both of which have translated into increased message traffic rates across the network. Consequently, this network expansion, which increases the number of switches supporting customer-facing systems, is necessary in order to provide sufficient access to new and existing Members, to maintain a sufficient amount of network capacity head-room, and to continue to provide the same level of service across the Exchange's low-latency, high-throughput technology environment. The Exchange notes that its affiliates, Miami International Securities Exchange, LLC ("MIAX") and MIAX Pearl, LLC ("MIAX Pearl"), recently filed similar proposals to increase the number of Additional Limited Service Ports available for purchase due to similar network expansions and

customer demand.²⁹

The Exchange has 6 network switches that support the entire customer base of MIAX Emerald. The Exchange plans to increase this to 12 switches, which will increase the number of available customer ports by 100%. The proposed increase in the number of available customer ports will enable the Exchange to continue to provide sufficient and equal access to the MIAX Emerald System to all Members. Absent the proposed increase in available MEI Ports, the Exchange projects that its current inventory will be depleted and it will lack sufficient capacity to continue to meet Members' access needs.

Purge Port Fees

The Exchange also offers Market Makers the ability to request and be allocated two (2) Purge Ports³⁰ per Matching Engine to which it connects. Purge Ports provide Market Makers with the ability to send quote purge messages to the MIAX Emerald System. Purge Ports are not capable of sending or receiving any other type of messages or information. Since the launch of the Exchange, fees for Purge Ports have been waived for the Waiver Period. The Exchange now proposes to amend its Fee Schedule to adopt fees for Purge Ports. For each month in which the MIAX Emerald Market Maker has been credentialed to use Purge Ports in the production environment and has been assigned to quote in at least one class, the Exchange proposes to

²⁹ See Securities Exchange Act Release Nos. 90811 (December 29, 2020), 86 FR 344 (January 5, 2021) (SR-MIAX-2020-41) and 90812 (December 29, 2020), 86 FR 338 (January 5, 2021) (SR-PEARL-2020-35).

³⁰ "Purge Ports" provide Market Makers with the ability to send quote purge messages to the MIAX Emerald System. Purge Ports are not capable of sending or receiving any other type of messages or information. See the Definitions Section of the Fee Schedule.

assess the MIAX Emerald Market Maker a flat fee \$1,500, regardless of the number of Purge Ports allocated to the MIAX Emerald Market Maker.

CTD Port Fees

The Exchange proposes to assess a CTD Port fee as a monthly fixed amount, not tied to transacted volume of the Member. This fixed fee structure is the same structure in place at Nasdaq PHLX with respect to the proposed CTD Port Fees.³¹ Since the launch of the Exchange, CTD Port Fees have been waived for the Waiver Period. CTD provides Exchange members with real-time clearing trade updates. The updates include the Member's clearing trade messages on a low latency, real-time basis. The trade messages are routed to a Member's connection containing certain information. The information includes, among other things, the following: (i) trade date and time; (ii) symbol information; (iii) trade price/size information; (iv) Member type (for example, and without limitation, Market Maker, Electronic Exchange Member, Broker-Dealer); (v) Exchange Member Participant Identifier ("MPID") for each side of the transaction, including Clearing Member MPID; and (vi) strategy specific information for complex transactions. CTD Port fees will be assessed in any month the Member is credentialed to use the CTD Port in the production environment. The Exchange proposes to assess a CTD Port fee of \$450 per month.

Below is the proposed table for the CTD Port fees:

Description	Monthly Fee
Real-Time CTD Information	\$450.00

FXD Port Fee

³¹ See Nasdaq PHLX Pricing Schedule, Options 7, Section 9, Other Member Fees, B. Port Fees.

The Exchange proposes to assess an FXD Port Fee as a monthly fixed amount, not tied to transacted volume of the Member. This fixed fee structure is the same structure in place at Nasdaq PHLX with respect to FXD Port Fees.³² Since the launch of the Exchange, FXD Port Fees have been waived for the Waiver Period. FXD is a messaging interface that will provide a copy of real-time trade execution, trade correction and trade cancellation information to FXD Port users who subscribe to the service. FXD Port users are those users who are designated by an EEM to receive the information and the information is restricted for use by the EEM. FXD Port fees will be assessed in any month the Member is credentialed to use the FXD Port in the production environment. The Exchange proposes to assess an FXD Port fee of \$500 per month. Below is the proposed table for the FXD Port fees:

Description	MIAX Emerald Monthly Port Fees Includes connectivity to the Primary, Secondary and Disaster Recovery Data Centers
FIX Drop Copy Port	\$500.00

10Gb ULL Connectivity Fee

The Exchange proposes to amend Sections 5a) and b) of the Fee Schedule to increase the monthly network connectivity fees for the 10Gb ULL fiber connection, which is charged to both Members and non-Members of the Exchange for connectivity to the Exchange's primary/secondary facility. The Exchange offers to both Members and non-Members two 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 now proposes

³²

Id.

to increase its monthly network connectivity fee for its 10Gb ULL connection to \$10,000 for Members and non-Members.

* * * * *

MIAX Emerald believes that exchanges, in setting fees of all types, should meet very high standards of transparency to demonstrate why each new fee or fee increase meets the requirements of the Act that fees be reasonable, equitably allocated, not unfairly discriminatory, and not create an undue burden on competition among members and markets. MIAX Emerald believes this high standard is especially important when an exchange imposes various access fees for market participants to access an exchange's marketplace. MIAX Emerald deems Port fees and Connectivity fees to be access fees, and that Ports and Connectivity are inextricably linked components of the network. Accordingly, the Exchange believes that it is reasonable and appropriate that the costs and revenues for both should be considered together, as the services associated with connectivity and ports are linked pieces of the network's infrastructure, both of which are necessary for a market participant to access and use the trading System of the Exchange. Finally, both Connectivity fee and Port fee revenue are consolidated into a single line item ("Access Fees") on the Exchange's financial statements. The Exchange believes that it is important to demonstrate that these fees are based on its costs to provide access to the Exchange's network and reasonable business needs. Accordingly, the Exchange believes the Proposed Access Fees will allow the Exchange to offset expense the Exchange has and will incur, and that the Exchange is providing sufficient transparency (as described below) into how the Exchange determined to charge such fees. Accordingly, the Exchange is providing an analysis of its revenues, costs, and profitability associated with the Proposed Access Fees. This

analysis includes information regarding its methodology for determining the costs and revenues associated with the Proposed Access Fees.

In order to determine the Exchange's costs associated with providing the Proposed Access Fees, the Exchange conducted an extensive cost review in which the Exchange analyzed every expense item in the Exchange's general expense ledger to determine whether each such expense relates to the Proposed Access Fees, and, if such expense did so relate, what portion (or percentage) of such expense actually supports the services included in the Proposed Access Fees. The sum of all such portions of expenses represents the total cost of the Exchange to provide the Proposed Access Fees. For the avoidance of doubt, no expense amount was allocated twice. The Exchange is also providing detailed information regarding the Exchange's cost allocation methodology – namely, information that explains the Exchange's rationale for determining that it was reasonable to allocate certain expenses described in this filing towards the total cost to the Exchange to provide the Proposed Access Fees.

In order to determine the Exchange's projected revenues associated with providing the Proposed Access Fees, the Exchange analyzed the number of Members and non-Members currently utilizing the Exchange's services associated with the Proposed Access Fees, and, utilizing a recent monthly billing cycle representative of the Exchange's monthly revenue, extrapolated annualized revenue on a going-forward basis. The Exchange does not believe it is appropriate to factor into its analysis future revenue growth or decline into its projections for purposes of these calculations, given the uncertainty of such projections due to the continually changing access needs of market participants, discounts that can be achieved through reaching certain tiers, market participant consolidation, etc. Additionally, the Exchange similarly does not factor into its analysis future cost growth or decline.

The Exchange is presenting its revenue and expense associated with the Proposed Access Fees in this filing in a manner that is consistent with how the Exchange presents its revenue and expense in its Audited Unconsolidated Financial Statements. The Exchange's most recent Audited Unconsolidated Financial Statement is for 2019. However, since the revenue and expense associated with the Proposed Access Fees were not in place in 2019 or for the first three quarters of 2020, the Exchange believes its 2019 Audited Unconsolidated Financial Statement is not useful for analyzing the reasonableness of the total annual revenue and costs associated with the Proposed Access Fees. Accordingly, the Exchange believes it is more appropriate to analyze the Proposed Access Fees utilizing a recent monthly billing cycle representative of the Exchange's revenue and costs, as described herein, which utilize the same presentation methodology as set forth in the Exchange's previously-issued Audited Unconsolidated Financial Statements. Based on this analysis, the Exchange believes that the Proposed Access Fees are fair and reasonable because they will not result in excessive pricing or supra-competitive profit when comparing the Exchange's total annual expense associated with providing the services associated with the Proposed Access Fees versus the total projected annual revenue the Exchange will collect for providing those services.

* * * * *

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").³³ On May 21, 2019, the Commission issued the Staff Guidance on

³³ 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).

SRO Rule Filings Relating to Fees.³⁴ On December 20, 2019, the Exchange adopted Connectivity Fees in a filing utilizing a cost-based justification framework that is substantially similar to the cost-based justification framework utilized for the instant Proposed Access Fees.³⁵ Accordingly, the Exchange believes that the Proposed Access Fees are consistent with the Act because they (i) are reasonable, equitably allocated, not unfairly discriminatory, and not an undue burden on competition; (ii) comply with the BOX Order and the Guidance; (iii) are supported by evidence (including comprehensive revenue and cost data and analysis) that they are fair and reasonable because they do not result in excessive pricing or supra-competitive profit; and (iv) utilize a cost-based justification framework that is substantially similar to a framework previously used by the Exchange to establish Connectivity Fees. Accordingly, the Exchange believes 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.

b. Statutory Basis

The Exchange believes that its proposal to amend its Fee Schedule is consistent with Section 6(b) of the Act³⁶ in general, and furthers the objectives of Section 6(b)(4) of the Act³⁷ in particular, in that it provides for the equitable allocation of reasonable dues, fees and other

³⁴ See Staff Guidance on SRO Rule Filings Relating to Fees (May 21, 2019), at <https://www.sec.gov/tm/staff-guidance-sro-rule-filings-fees> (the “Guidance”).

³⁵ See Securities Exchange Act Release No. 87877 (December 31, 2019), 84 FR 738 (January 7, 2020) (SR-EMERALD-2019-39).

³⁶ 15 U.S.C. 78f(b).

³⁷ 15 U.S.C. 78f(b)(4).

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 Act³⁸ 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.

The Exchange launched trading on March 1, 2019. For the month of December 2020, the Exchange had a market share of only approximately 3.58% of the U.S. options industry.³⁹ The Exchange is not aware of any evidence that a market share of approximately 3.6% provides the Exchange with anti-competitive pricing power. If the Exchange were to attempt to establish unreasonable pricing, then no market participant would join or connect, and existing market participants would disconnect.

Separately, the Exchange is not aware of any reason why market participants could not simply drop their connections to an exchange (or not connect to an exchange) if an exchange were to establish prices for its non-transaction fees that, in the determination of such market participant, did not make business or economic sense for such market participant to connect to such exchange. No options market participant is required by rule, regulation, or competitive forces to be a Member of the Exchange. As evidence of the fact that market participants can and

³⁸ 15 U.S.C. 78f(b)(5).

³⁹ See The Options Clearing Corporation (“OCC”) publishes options and futures volume in a variety of formats, including daily and monthly volume by exchange, available here: <https://www.theocc.com/market-data/volume/default.jsp>.

do disconnect from exchanges based on non-transaction fee pricing, R2G Services LLC (“R2G”) filed a comment letter after BOX’s proposed rule changes to increase its connectivity fees (SR-BOX-2018-24, SR-BOX-2018-37, and SR-BOX-2019-04).⁴⁰ The R2G Letter stated, “[w]hen BOX instituted a \$10,000/month price increase for connectivity; we had no choice but to terminate connectivity into them as well as terminate our market data relationship. The cost benefit analysis just didn’t make any sense for us at those new levels.”⁴¹ Since the Exchange issued its notice for the Proposed Access Fees, one Member discontinued the use of the Exchange’s connectivity and port services as a result of the Proposed Access Fees. Accordingly, these examples show that if an exchange sets too high of a fee for connectivity and/or other non-transaction fees for its relevant marketplace, market participants can choose to disconnect from such exchange.

The Exchange believes that its proposal is consistent with Section 6(b)(4) of the Act because the Proposed Access Fees will not result in excessive or supra-competitive profit. The costs associated with providing access to Exchange Members and non-Members, as well as the general expansion of a state-of-the-art infrastructure, are extensive, have increased year-over-year, and are projected to increase year-over-year in the future. In particular, the Exchange has experienced a material increase in its costs in 2020, in connection with a project to make its network environment more transparent and deterministic, based on customer demand. This project will allow the Exchange to enhance its network architecture with the intent of ensuring a best-in-class, transparent and deterministic trading system while maintaining its industry leading

⁴⁰ See Letter from Stefano Durdic, R2G, to Vanessa Countryman, Acting Secretary, Commission, dated March 27, 2019 (the “R2G Letter”).

⁴¹ See id.

latency and throughput capabilities. In order to provide this greater amount of transparency and higher determinism, MIAX Emerald has made significant capital expenditures (“CapEx”), incurred increased ongoing operational expenditures (“OpEx”), and undertaken additional engineering research and development (“R&D”) in the numerous areas. This includes expenditures and R&D in the following areas: (i) implementation of an improved network design to ensure the minimum latency between multicast market data signals disseminated by the Exchange across the extranet switches; (ii) an improvement to the unicast jitter profile to reduce the occurrence of message sequence inversions from Members to the Exchange quoting gateway processors; (iii) introduction of new optical fiber network infrastructure that ensures the optical fiber path for participants within extremely tight tolerances; (iv) introduction of a re-architected and engineered participant quoting gateway that ensures the delivery of messages to the match engine with absolute determinism, eliminating the message processing inversions that can occur with messages received nanoseconds apart; and (v) an improved monitoring platform to better measure the performance of the network and systems at extremely tight tolerances and to provide Members with reporting on the performance of their systems. The CapEx associated with only phase 1 of this project in 2020 was approximately \$1.85 million. This expense does not include the significant increase in employee time and other resources necessary to maintain and service this network, which expense is captured in the operating expense discussed below. This project, which results in a material increase in expense of the Exchange, is a primary driver for the increase in network connectivity fees proposed by the Exchange.

The Exchange believes the proposed increase to the 10Gb ULL connection is an equitable allocation of reasonable fees because 10Gb ULL purchasers: (1) consume the most bandwidth and resources of the network; (2) transact the vast majority of the volume on the

Exchange; and (3) require the high touch network support services provided by the Exchange and its staff, including more costly network monitoring, reporting and support services, resulting in a much higher cost to the Exchange. Further, the Exchange believes the Proposed Access Fees are equitably allocated because of customer demand for an even more transparent and deterministic network, as described above, which has resulted in higher CapEx, increasingly higher OpEx, and increased costs to engineering R&D. The Proposed Access Fees are equitably allocated in this regard because the majority of customer demand is coming from purchasers of the 10Gb ULL connections, which Member and non-Member firms transact the vast majority of volume on the Exchange. Accordingly, the Exchange believes it is reasonable, equitably allocated and not unfairly discriminatory to recoup the majority of its costs associated with the project to make the network more transparent and deterministic from market participants utilizing 10Gb ULL connections on the Exchange.

The Exchange believes that the proposed increase to the 10Gb ULL fees are equitably allocated among users of the network connectivity alternatives, as the users of the 10Gb ULL connections consume the most bandwidth and resources of the network. Specifically, the Exchange notes that these users account for approximately greater than 99% of message traffic over the network, while the users of the 1Gb connections account for approximately less than 1% of message traffic over the network. In the Exchange's experience, users of the 1Gb connections do not have a business need for the high performance network solutions required by 10Gb ULL users. The Exchange's high performance network solutions and supporting infrastructure (including employee support), provides unparalleled system throughput and the capacity to handle approximately 18 million quote messages per second. On an average day, the Exchange handles over approximately 3 billion total messages. Of those, users of the 10Gb ULL

connections generate approximately 3 billion messages, and users of the 1Gb connections generate 500,000 messages. However, in order to achieve a consistent, premium network performance, the Exchange must build out and maintain a network that has the capacity to handle the message rate requirements of its most heavy network consumers. These billions of messages per day consume the Exchange's resources and significantly contribute to the overall network connectivity expense for storage and network transport capabilities. Given this difference in network utilization rate, the Exchange believes that it is reasonable, equitable, and not unfairly discriminatory that the 10Gb ULL users pay for the vast majority of the shared network resources from which all Member and non-Member users benefit, but is designed and maintained from a capacity standpoint to specifically handle the message rate and performance requirements of 10Gb ULL users.

The Exchange also believes that the connectivity fees are equitably allocated amongst users of the network connectivity alternatives, when these fees are viewed in the context of the overall trading volume on the Exchange. To illustrate, the purchasers of the 10Gb ULL connectivity account for approximately 98% of the volume on the Exchange for the month of October 2020. This overall volume percentage (98% of total Exchange volume) is in line with the amount of network connectivity revenue collected from 10Gb ULL purchasers (99% of total Exchange connectivity revenue). For example, utilizing a recent billing cycle, Exchange Members and non-Members that purchased 10Gb ULL connections accounted for approximately 99% of the total network connectivity revenue collected by the Exchange from all connectivity alternatives; and (ii) Members and non-Members that purchased 1Gb connections accounted for approximately 1% of the revenue collected by the Exchange from all connectivity alternatives.

The Exchange further believes that the increased fee for the 10Gb ULL connection is an equitable allocation of reasonable fees as the fees for the various connectivity alternatives are directly related to the actual costs associated with providing the respective connectivity alternatives. That is, the cost to the Exchange of providing a 1Gb network connection is significantly lower than the cost to the Exchange of providing a 10Gb ULL network connection. Pursuant to its extensive cost review described above and in connection with the Exchange's new project to increase transparency and determinism, the Exchange believes that the average cost to provide a 10Gb ULL network connection is approximately 8 times more than the average cost to provide a 1Gb connection. The simple hardware and software component costs alone of a 10Gb ULL connection are not 8 times more than the 1Gb connection. Rather, it is the associated premium-product level network monitoring, reporting, and support services costs that accompany a 10Gb ULL connection which cause it to be 8 times more costly to provide than the 1Gb connection. Accordingly, the Exchange believes it is equitable to allocate those network infrastructure costs that accompany a 10Gb ULL connection to the purchasers of those connections, and not to purchasers of 1Gb connections.

The Exchange differentiates itself by offering a "premium-product" network experience, as an operator of a high performance, ultra-low latency network with unparalleled system throughput, which network can support access to three distinct options markets and multiple competing market-makers having affirmative obligations to continuously quote over 750,000 distinct trading products (per exchange), and the capacity to handle approximately 18 million quote messages per second. The "premium-product" network experience enables users of 10Gb ULL connections to receive the network monitoring and reporting services for those approximately 750,000 distinct trading products. There is a significant, quantifiable amount of

R&D effort, employee compensation and benefits expense, and other expense associated with providing the high touch network monitoring and reporting services that are utilized by the 10Gb ULL connections offered by the Exchange. These value add services are fully-discussed herein, and the actual costs associated with providing these services are the basis for the differentiated amount of the fees for the various connectivity alternatives.

In order to provide more detail and to quantify the Exchange's costs associated with providing access to the Exchange in general, the Exchange notes that there are material costs associated with providing the infrastructure and headcount to fully-support access to the Exchange. The Exchange incurs technology expense 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. While some of the expense is fixed, much of the expense is not fixed, and thus increases as the services associated with the Proposed Access Fees increase. For example, new 10Gb ULL connections and Ports 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. Further, as the total number of all connections and Ports 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, the cost to MIAX Emerald and its affiliates is not fixed. The Exchange believes the Proposed Access Fees are reasonable in order to offset the costs to the Exchange associated with providing access to its network infrastructure.

Further, because the costs of operating its own data center are significant and not economically feasible for the Exchange at this time, the Exchange does not operate its own data

centers, and instead contracts with a third-party data center provider. The Exchange notes that other competing 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. The Proposed Access Fees, charged for accessing the Exchange's data center network infrastructure, are directly related to the network and offset such costs.

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. In fact, the Exchange often receives inquiries from other industry participants regarding the status of networking issues outside of the Exchange's own network environment that are impacting the industry as a whole via the SIPs. This includes inquiries from regulators because the Exchange has a superior, state-of-the-art network that, through its enhanced monitoring and reporting solutions, often detects and identifies industry-wide networking issues ahead of the SIPs. The Exchange also incurs costs associated with the maintenance and improvement of existing tools and the development of new tools.

Additionally, certain Exchange-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. In sum, the costs associated with maintaining and enhancing a state-of-the-art exchange network 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 those costs through the Proposed Access Fees. 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 Proposed Access Fees that must be charged to access it, in order to recover those costs.

The Exchange believes it is reasonable to consider the expense and revenue for ports and connectivity alternatives together because ports and connectivity are inextricably linked components of the network infrastructure, and that both are necessary for a market participant to access the Exchange. The various types of connectivity and port alternatives that the Exchange offers provide a wide array of access alternatives necessary for a market participant to conduct its business using the Exchange, which is a business decision to be made by each particular type of market participant. The different types of connectivity and port alternatives allows Members to conduct their different business strategies – some Members put an emphasis on speed, while others emphasize other strategies, such as redundancy and certainty of execution. The Exchange does not require a Member to have a certain framework for accessing the Exchange, but provides various connectivity and port alternatives for each Member's distinct business lines.

The Exchange offers various types of ports with differing prices because each port accomplishes different tasks, are suited to different types of Members, and consume varying capacity amounts of the network. For instance, MEI ports allow for a higher throughput and can handle much higher quote/order rates than FIX ports. Members that are Market Makers or high frequency trading firms utilize these ports (typically coupled with 10Gb ULL connectivity) because they transact in significantly higher amounts of messages being sent to and from the Exchange, versus FIX port users, who are traditionally customers sending only orders to the Exchange (typically coupled with 1Gb connectivity). The different types of ports cater to the different types of Exchange Memberships and different capabilities of the various Exchange Members. Market Makers have quoting and other obligations that traditional customers do not. Market Makers, therefore, need ports and connections that can handle using far more of the network's capacity for message throughput, risk protections, and the amount of information that has to be assessed. Market Makers account for the vast majority of network capacity utilization and volume executed on the Exchange, as discussed throughout.⁴² Accordingly, the Exchange believes that it is reasonable and appropriate to charge market participants more for MEI ports versus FIX ports and other lower capacity ports.

The Exchange believes that its proposal to increase the number of Additional Limited Service Ports available to Market Makers is consistent with the objectives of Section 6(b)(5) of

⁴² See supra page 25 (discussing how purchasers of the 10Gb ULL connectivity accounted for approximately 98% of the volume on the Exchange for the month of October 2020; 99% of total Exchange connectivity revenue; Members and non-Members that purchased 10Gb ULL connections accounted for approximately 99% of the total network connectivity revenue collected by the Exchange from all connectivity alternatives; and Members and non-Members that purchased 1Gb connections accounted for approximately 1% of the revenue collected by the Exchange from all connectivity alternatives).

the Act⁴³ because the proposed addition of Limited Service MEI Ports will be available to all Market Makers and the current fees for the Additional Limited Service MEI Ports apply equally to all Market Makers regardless of type, and access to the Exchange is offered on terms that are not unfairly discriminatory. The Exchange proposes to increase the number of available Limited Service MEI Ports because the Exchange is expanding its network. This network expansion is necessary due to increased customer demand and increased volatility in the marketplace, both of which have translated into increased message traffic rates across the network. Consequently, this network expansion, which increases the number of switches supporting customer facing systems, is necessary in order to provide sufficient and equal access to new and existing Members, to maintain a sufficient amount of network capacity head-room, and to continue to provide the same level of service across the Exchange's low-latency, high-throughput technology environment.

Currently, the Exchange has 6 network switches that support the entire customer base of MIAX Emerald. The Exchange plans to increase this to 12 switches, which will increase the number of available customer ports by 100%. This increase in the number of available customer ports will enable the Exchange to continue to provide sufficient and equal access to the MIAX Emerald System for all Members. Absent the proposed increase in available MEI Ports, the Exchange projects that its current inventory will be depleted and it will lack sufficient capacity to continue to meet Members' access needs. Further, the Exchange notes the decision of whether to purchase any Additional Limited Service MEI Ports is completely optional and it is a business decision for each Market Maker to determine whether Additional Limited Service MEI Ports are necessary to meet their business requirements.

⁴³ 15 U.S.C. 78f(b)(5).

The Exchange further believes that the availability of the Additional Limited Service MEI Ports is equitable and not unfairly discriminatory because it will enable Market Makers to maintain uninterrupted access to the MIAX Emerald System and consequently enhance the marketplace by helping Market Makers to better manage risk, thus preserving the integrity of the MIAX Emerald markets, all to the benefit of and protection of investors and the public as a whole. The Exchange also believes that its proposal is consistent with Section 6(b)(4) of the Act because only Market Makers that voluntarily purchase Additional Limited Service MEI Ports will be charged the monthly fee per port.

As stated above, the Exchange proposes to expand its network by making available six Additional Limited Service MEI Ports due to increased customer demand and increased volatility in the marketplace, both of which have translated into increased message traffic rates across the network. The cost to expand the network in this manner is greater than the revenue the Exchange anticipates the Additional Limited Service MEI Ports will generate. Specifically, the Exchange estimates it has already incurred a one-time cost of approximately \$175,000 in capital expenditures (“CapEx”) on hardware, software, and other items to expand the network to make available the six Additional Limited Service MEI Ports. This estimated cost also includes expense associated with providing the necessary engineering and support personnel to transition those Market Makers who wish to acquire any number of Additional Limited Service MEI Ports.

The Exchange cannot predict with certainty how many Market Makers will purchase the Additional Limited Service MEI Ports, in what quantity, or if Market Makers will add/drop Limited Service MEI Ports from month to month. However, utilizing a recent monthly billing cycle, the Exchange notes four Market Makers purchased all six of the Additional Limited Service MEI Ports, and two Market Makers purchased two out of six of the Additional Limited

Service MEI Ports, which will be subject to the proposed fee of \$100 per month per Additional Limited Service MEI Port for each Matching Engine. Therefore, utilizing the recent monthly billing cycle, Market Makers purchased 28 total Additional Limited Service MEI Ports. The Exchange has 12 Matching Engines.⁴⁴ Assuming that each Market Maker that purchased the 28 Additional Limited Service MEI Ports connected to all 12 Matching Engines at a rate of \$100 per month, the Exchange projects monthly revenue for the Additional Limited Service MEI Ports of approximately \$33,600 (28 Additional LSPs x 12 Matching Engines x \$100 = \$33,600 per month). On a going-forward basis and assuming no Market Maker drops or adds Additional Limited Service MEI Ports, the Exchange projects to collect an additional \$403,200 in annualized revenue from the Additional Limited Service MEI Ports that are part of this proposal.

The Exchange only has four primary sources of revenue: transaction fees, access fees (of which the Proposed Access Fees constitute the majority), regulatory fees, and market data fees. Accordingly, the Exchange must cover all of its expenses from these four primary sources of revenue.

The Exchange believes that the Proposed Access Fees are fair and reasonable because they will not result in excessive pricing or supra-competitive profit, when comparing the total annual expense that the Exchange projects to incur in connection with providing these services versus the total annual revenue that the Exchange projects to collect in connection with

⁴⁴ The Exchange notes that several Market Makers, including those that purchased the Additional Limited Service MEI Ports, do not connect to all 12 Matching Engines. It is a business decision of each Market Maker whether to purchase one or more types of ports that connect to each Matching Engine.

providing these services. For 2020⁴⁵, the total annual expense for providing the services associated with the Proposed Access Fees for MIAX Emerald is projected to be approximately \$9.3 million. The \$9.3 million in expense includes expense associated with providing all ports and all connectivity alternatives. The Exchange is unable to separate out its expense by connectivity alternative, as all connectivity alternatives are intricately combined in a single network infrastructure. Nevertheless, the Exchange attributes the majority of connectivity expense to the 10Gb ULL connections because the majority of network capacity is used by 10Gb ULL purchasers.⁴⁶ The \$9.3 million in projected total annual expense is comprised of the following, all of which are directly related to the services associated with the Proposed Access Fees: (1) third-party expense, relating to fees paid by MIAX Emerald to third-parties for certain products and services; and (2) internal expense, relating to the internal costs of MIAX Emerald to provide the services associated with the Proposed Access Fees. As noted above, the Exchange believes it is more appropriate to analyze the Proposed Access Fees utilizing its 2020 revenue and costs, which utilize the same presentation methodology as set forth in the Exchange's previously-issued Audited Unconsolidated Financial Statements.⁴⁷ The \$9.3 million in projected total annual expense is directly related to the services associated with the Proposed Access Fees, and not any other product or service offered by the Exchange. It does

⁴⁵ The Exchange has not yet finalized its 2020-year end results.

⁴⁶ See supra note 42.

⁴⁷ For example, the Exchange previously noted that all third-party expense described in its prior fee filing was contained in the information technology and communication costs line item under the section titled "Operating Expenses Incurred Directly or Allocated From Parent," in the Exchange's 2019 Form 1 Amendment containing its financial statements for 2018. See Securities Exchange Act Release No. 87877 (December 31, 2019), 85 FR 738 (January 7, 2020) (SR-EMERALD-2019-39). Accordingly, the third-part expense described in this filing is attributed to the same line item for the Exchange's 2020 Form 1 Amendment, which will be filed in 2021.

not include general costs of operating matching systems and other trading technology, and no expense amount was allocated twice.

As discussed, the Exchange conducted an extensive cost review in which the Exchange analyzed every expense item in the Exchange's general expense ledger (this includes over 150 separate and distinct expense items) to determine whether each such expense relates to the services associated with the Proposed Access Fees, and, if such expense did so relate, what portion (or percentage) of such expense actually supports those services, and thus bears a relationship that is, "in nature and closeness," directly related to those services. The sum of all such portions of expenses represents the total cost of the Exchange to provide services associated with the Proposed Access Fees.

For 2020, total third-party expense, relating to fees paid by MIAX Emerald to third-parties for certain products and services for the Exchange to be able to provide the services associated with the Proposed Access Fees, is projected to be \$1,932,519. This includes, but is not limited to, a portion of the fees paid to: (1) Equinix, for data center services, for the primary, secondary, and disaster recovery locations of the MIAX Emerald trading system infrastructure; (2) Zayo Group Holdings, Inc. ("Zayo") for network services (fiber and bandwidth products and services) linking MIAX Emerald's office locations in Princeton, NJ and Miami, FL to all data center locations; (3) Secure Financial Transaction Infrastructure ("SFTI")⁴⁸, which supports connectivity and feeds for the entire U.S. options industry; (4)

⁴⁸ In fact, on October 22, 2019, the Exchange was notified by SFTI that it is again raising its fees charged to the Exchange by approximately 11%, without having to show that such fee change complies with the Act by being reasonable, equitably allocated, and not unfairly discriminatory. It is unfathomable to the Exchange that, given the critical nature of the infrastructure services provided by SFTI, that its fees are not required to be rule-filed with the Commission pursuant to Section 19(b)(1) of the Act and Rule 19b-4 thereunder. See 15 U.S.C. 78s(b)(1) and 17 CFR 240.19b-4, respectively.

various other services providers (including Thompson Reuters, NYSE, Nasdaq, and Internap), which provide content, connectivity services, and infrastructure services for critical components of options connectivity and network services; and (5) various other hardware and software providers (including Dell and Cisco, which support the production environment in which Members and non-Members connect to the network to trade, receive market data, etc.).

For clarity, only a portion of all fees paid to such third-parties is included in the third-party expense herein, and no expense amount is allocated twice. Accordingly, MIAX Emerald does not allocate its entire information technology and communication costs to the services associated with the Proposed Access Fees.

The Exchange believes it is reasonable to allocate such third-party expense described above towards the total cost to the Exchange to provide the services associated with the Proposed Access Fees. In particular, the Exchange believes it is reasonable to allocate the identified portion of the Equinix expense because Equinix operates the data centers (primary, secondary, and disaster recovery) that host the Exchange's network infrastructure. This includes, among other things, the necessary storage space, which continues to expand and increase in cost, power to operate the network infrastructure, and cooling apparatuses to ensure the Exchange's network infrastructure maintains stability. Without these services from Equinix, the Exchange would not be able to operate and support the network and provide the services associated with the Proposed Access Fees to its Members and non-Members and their customers. The Exchange did not allocate all of the Equinix expense toward the cost of providing the services associated with the Proposed Access Fees, only that portion which the Exchange identified as being specifically mapped to providing the services associated with the Proposed Access Fees, approximately 73% of the total Equinix expense (68% allocated

towards the cost of providing the provision of network connectivity and 5% allocated towards the cost of providing ports). The Exchange believes this allocation is reasonable because it represents the Exchange's actual cost to provide the services associated with the Proposed Access Fees, and not any other service, as supported by its cost review.

The Exchange believes it is reasonable to allocate the identified portion of the Zayo expense because Zayo provides the internet, fiber and bandwidth connections with respect to the network, linking MIAX Emerald with its affiliates, Miami International Securities Exchange, LLC ("MIAX") and MIAX Pearl, LLC ("MIAX Pearl"), as well as the data center and disaster recovery locations. As such, all of the trade data, including the billions of messages each day per exchange, flow through Zayo's infrastructure over the Exchange's network. Without these services from Zayo, the Exchange would not be able to operate and support the network and provide the services associated with the Proposed Access Fees. The Exchange did not allocate all of the Zayo expense toward the cost of providing the services associated with the Proposed Access Fees, only the portion which the Exchange identified as being specifically mapped to providing the Proposed Access Fees, approximately 66% of the total Zayo expense (62% allocated towards the cost of providing the provision of network connectivity and 4% allocated towards the cost of providing ports). The Exchange believes this allocation is reasonable because it represents the Exchange's actual cost to provide the services associated with the Proposed Access Fees, and not any other service, as supported by its cost review.

The Exchange believes it is reasonable to allocate the identified portions of the SFTI expense and various other service providers' (including Thompson Reuters, NYSE, Nasdaq, and Internap) expense because those entities provide connectivity and feeds for the entire U.S.

options industry, as well as the content, connectivity services, and infrastructure services for critical components of the network. Without these services from SFTI and various other service providers, the Exchange would not be able to operate and support the network and provide access to its Members and non-Members and their customers. The Exchange did not allocate all of the SFTI and other service providers' expense toward the cost of providing the services associated with the Proposed Access Fees, only the portions which the Exchange identified as being specifically mapped to providing the services associated with the Proposed Access Fees, approximately 94% of the total SFTI and other service providers' expense (89% allocated towards the cost of providing the provision of network connectivity and 5% allocated towards the cost of providing ports).⁴⁹ The Exchange believes this allocation is reasonable because it represents the Exchange's actual cost to provide the services associated with the Proposed Access Fees.

The Exchange believes it is reasonable to allocate the identified portion of the other hardware and software provider expense because this includes costs for dedicated hardware licenses for switches and servers, as well as dedicated software licenses for security monitoring and reporting across the network. Without this hardware and software, the Exchange would not be able to operate and support the network and provide access to its Members and non-

⁴⁹ The Exchange notes an increase to the SFTI and other service providers' expense percentage contained herein versus the same expense category percentage the Exchange used in its initial filing to adopt connectivity fees. See Securities Exchange Act Release No. 87877 (December 31, 2019), 85 FR 738 (January 7, 2020) (SR-EMERALD-2019-39). This is because at the time the Exchange performed its cost analysis for the initial connectivity fee filing, the Exchange was operational for only part of the year. Since that time, the Exchange has been fully operational, increased market share and number of market participants, and undertaken significant performance upgrades, resulting in increased expense. Accordingly, the Exchange believes it is appropriate to analyze its SFTI and other service providers' expense more in line with its affiliate options exchanges, MIAX and MIAX PEARL.

Members and their customers. The Exchange did not allocate all of the hardware and software provider expense toward the cost of providing the services associated with the Proposed Access Fees, only the portions which the Exchange identified as being specifically mapped to providing the services associated with the Proposed Access Fees, approximately 57% of the total hardware and software provider expense (54% allocated towards the cost of providing the provision of network connectivity and 3% allocated towards the cost of providing ports). The Exchange believes this allocation is reasonable because it represents the Exchange's actual cost to provide the services associated with the Proposed Access Fees.

For 2020, total projected internal expense, relating to the internal costs of MIAX Emerald to provide the services associated with the Proposed Access Fees, is projected to be \$7,367,259. This includes, but is not limited to, costs associated with: (1) employee compensation and benefits for full-time employees that support the services associated with the Proposed Access Fees, including staff in network operations, trading operations, development, system operations, business, as well as staff in general corporate departments (such as legal, regulatory, and finance) that support those employees and functions (including an increase as a result of the higher determinism project); (2) depreciation and amortization of hardware and software used to provide the services associated with the Proposed Access Fees, including equipment, servers, cabling, purchased software and internally developed software used in the production environment to support the network for trading; and (3) occupancy costs for leased office space for staff that provide the services associated with the Proposed Access Fees. The breakdown of these costs is more fully-described below. For clarity, only a portion of all such internal expenses are included in the internal expense herein, and no expense amount is

allocated twice. Accordingly, MIAX Emerald does not allocate its entire costs contained in those items to the services associated with the Proposed Access Fees.

The Exchange believes it is reasonable to allocate such internal expense described above towards the total cost to the Exchange to provide the services associated with the Proposed Access Fees. In particular, MIAX Emerald's employee compensation and benefits expense relating to providing the services associated with the Proposed Access Fees is projected to be \$4,489,924, which is only a portion of the \$9,354,009 total projected expense for employee compensation and benefits. The Exchange believes it is reasonable to allocate the identified portion of such expense because this includes the time spent by employees of several departments, including Technology, Back Office, Systems Operations, Networking, Business Strategy Development (who create the business requirement documents that the Technology staff use to develop network features and enhancements), Trade Operations, Finance (who provide billing and accounting services relating to the network), and Legal (who provide legal services relating to the network, such as rule filings and various license agreements and other contracts). As part of the extensive cost review conducted by the Exchange, the Exchange reviewed the amount of time spent by each employee on matters relating to the provision of services associated with the Proposed Access Fees. Without these employees, the Exchange would not be able to provide the services associated with the Proposed Access Fees to its Members and non-Members and their customers. The Exchange did not allocate all of the employee compensation and benefits expense toward the cost of the services associated with the Proposed Access Fees, only the portions which the Exchange identified as being specifically mapped to providing the services associated with the Proposed Access Fees, approximately 48% of the total employee compensation and benefits expense (39% allocated

towards the cost of providing the provision of network connectivity and 9% allocated towards the cost of providing ports). The Exchange believes this allocation is reasonable because it represents the Exchange's actual cost to provide the services associated with the Proposed Access Fees, and not any other service, as supported by its cost review.

MIAX Emerald's depreciation and amortization expense relating to providing the services associated with the Proposed Access Fees is projected to be \$2,630,687, which is only a portion of the \$3,812,590 total projected expense for depreciation and amortization. The Exchange believes it is reasonable to allocate the identified portion of such expense because such expense includes the actual cost of the computer equipment, such as dedicated servers, computers, laptops, monitors, information security appliances and storage, and network switching infrastructure equipment, including switches and taps that were purchased to operate and support the network and provide the services associated with the Proposed Access Fees. Without this equipment, the Exchange would not be able to operate the network and provide the services associated with the Proposed Access Fees to its Members and non-Members and their customers. The Exchange did not allocate all of the depreciation and amortization expense toward the cost of providing the services associated with the Proposed Access Fees, only the portion which the Exchange identified as being specifically mapped to providing the services associated with the Proposed Access Fees, approximately 69% of the total depreciation and amortization expense, as these services would not be possible without relying on such equipment (65% allocated towards the cost of providing the provision of network connectivity and 4% allocated towards the cost of providing ports). The Exchange believes this allocation is reasonable because it represents the Exchange's actual cost to provide the services associated with the Proposed Access Fees, and not any other service, as supported by its cost review.

MIAX Emerald's occupancy expense relating to providing the services associated with the Proposed Access Fees is projected to be \$246,648, which is only a portion of the \$474,323 total projected expense for occupancy. The Exchange believes it is reasonable to allocate the identified portion of such expense because such expense represents the portion of the Exchange's cost to rent and maintain a physical location for the Exchange's staff who operate and support the network, including providing the services associated with the Proposed Access Fees. This amount consists primarily of rent for the Exchange's Princeton, NJ office, as well as various related costs, such as physical security, property management fees, property taxes, and utilities. The Exchange operates its Network Operations Center ("NOC") and Security Operations Center ("SOC") from its Princeton, New Jersey office location. A centralized office space is required to house the staff that operates and supports the network. The Exchange currently has approximately 150 employees. Approximately two-thirds of the Exchange's staff are in the Technology department, and the majority of those staff have some role in the operation and performance of the services associated with the Proposed Access Fees. Without this office space, the Exchange would not be able to operate and support the network and provide the services associated with the Proposed Access Fees to its Members and non-Members and their customers. Accordingly, the Exchange believes it is reasonable to allocate the identified portion of its occupancy expense because such amount represents the Exchange's actual cost to house the equipment and personnel who operate and support the Exchange's network infrastructure and the services associated with the Proposed Access Fees. The Exchange did not allocate all of the occupancy expense toward the cost of providing the services associated with the Proposed Access Fees, only the portion which the Exchange identified as being specifically mapped to operating and supporting the network, approximately

52% of the total occupancy expense (48% allocated towards the cost of providing the provision of network connectivity and 4% allocated towards the cost of providing ports). The Exchange believes this allocation is reasonable because it represents the Exchange's cost to provide the services associated with the Proposed Access Fees, and not any other service, as supported by its cost review.

The Exchange notes that a material portion of its total overall expense is allocated to the provision of services associated with the Proposed Access Fees. The Exchange believes this is reasonable and in line, as the Exchange operates a technology-based business that differentiates itself from its competitors based on its trading systems that rely on its high performance network, resulting in significant technology expense. Over two-thirds of Exchange staff are technology-related employees. The majority of the Exchange's expense is technology-based. As described above, the Exchange has only four primary sources of fees in to recover its costs, thus the Exchange believes it is reasonable to allocate a material portion of its total overall expense towards the Proposed Access Fees.

The Exchange's monthly projected revenue for the Proposed Access Fees is based on the following projected purchases by Members and non-Members, which is based on a recent billing cycle: (i) 62 10Gb ULL connections; (ii) 14 CTD Ports; (iii) 8 FXD Ports; (iv) 113 FIX Ports; (v) 363 Limited Service MEI Ports; (vi) 37 Full Service MEI Ports;⁵⁰ and (vii) 10 Purge Ports. As described above, the fee charged to each Market Maker for MEI Ports can vary from month to month depending on the number of classes in which the Market Maker was assigned

⁵⁰ The Exchange's projections included 9 firms or their affiliates purchasing Full Service MEI Ports. Of those firms, the Exchange projects that 6 firms will achieve the highest tier in the MEI Port fee table, 2 firms will achieve the lowest tier in the MEI Port fee table, and 1 firm will achieve the middle tier in the MEI Port fee table.

to quote on any given day within the calendar month, and upon certain class volume percentages. The Exchange also provides a further discount for a Market Maker's MEI Port fees if the Market Maker's total monthly executed volume during the relevant month is less than 0.025% of the total monthly executed volume reported by OCC in the customer account type for MIAX Emerald-listed option classes for that month. The Exchange has at least one Member consistently quoting in the highest tier for MEI Port fees, but receiving this discount, resulting in lower revenue for the Exchange. Further, the projected revenue from FIX Port fees is subject to change from month to month depending on the number of FIX Ports purchased.

Accordingly, based on current assumptions and approximations, the Exchange projects total monthly Port revenue (including the Additional Limited Service MEI Port revenue described above and the cancellation of Ports by one Member) of approximately \$268,200 and total 10Gb ULL connectivity revenue of approximately \$620,000 (including the cancellation of one 10Gb ULL connection by one Member). The Exchange notes that the port revenue projections are subject to change depending on the number of classes that Market Makers are quoting in and the tiers achieved. As such, the projection of \$268,200 per month is not a static number and can fluctuate month to month. Further, as noted above, one Member dropped its connections and ports as a direct result of the introduction of the Proposed Access Fees. Accordingly, reflecting that cancellation of approximately \$324,000 per year (\$27,000 total per month in connectivity and port fees), and including the revenue from the proposed Additional Limited Service MEI Ports, the Exchange projects annualized revenue of approximately

\$10,658,400 from all connectivity alternatives and port types.⁵¹ This is broken down as

follows:

- \$268,200/month x 12 months = \$3,218,400/annually for all ports (including the subtraction of one Member who dropped ports, plus the Additional LSPs described above)
- \$620,000/month x 12 months = \$7,440,000/annually for all connectivity (including the subtraction of one Member who dropped its 10Gb ULL connection)
- \$3,218,400 + \$7,440,000 = \$10,658,400/annually for the Proposed Access Fees

Accordingly, based on the facts and circumstances presented, the Exchange believes that its provision of the services associated with the Proposed Access Fees will not result in excessive pricing or supra-competitive profit. As described above, on a going-forward, fully-annualized basis, the Exchange projects that its annualized revenue for providing the services associated with the Proposed Access Fees would be approximately \$10,658,400, based on a recent billing cycle. The Exchange projects that its annualized expense for providing the services associated with the Proposed Access Fees would be approximately \$9.3 million per annum. Accordingly, on a fully-annualized basis, the Exchange believes its total projected revenue for the providing the services associated with the Proposed Access Fees will not result in excessive pricing or supra-competitive profit, as the Exchange will make only a 12.7% profit margin on the Proposed Access Fees (\$10,658,400 – \$9.3 million = \$1,358,400 per annum).

This profit margin does not take into account the cost of the CapEx the Exchange projected to

⁵¹ This revenue projection includes revenue from all connectivity sources, including all 10Gb ULL connections discussed above (after giving effect to the recent cancellation), two 1Gb connections (the Exchange is not increasing fees for 1Gb connections, however, those connections are included in total connectivity revenue in order to have a true comparison between all connectivity revenue and all connectivity expense), and all port types discussed above (after giving effect to the recent cancellation).

spend in 2020 of \$1.85 million on the project to make the Exchange's network more deterministic, or the amounts the Exchange is projected to spend each year on CapEx going forward for that project. This profit margin also does not take into account the cost of the CapEx of \$175,000 for adding the six Additional Limited Service MEI Ports.

For the avoidance of doubt, none of the expenses included herein relating to the services associated with the Proposed Access Fees relate to the provision of any other services offered by MIAX Emerald. Stated differently, no expense amount of the Exchange is allocated twice. The Exchange notes that, with respect to the MIAX Emerald expenses included herein, those expenses only cover the MIAX Emerald market; expenses associated with the Exchange's affiliate exchanges, MIAX and MIAX Pearl, are accounted for separately and are not included within the scope of this filing. Stated differently, no expense amount of the Exchange is also allocated to MIAX or MIAX Pearl.

The Exchange believes it is reasonable, equitable and not unfairly discriminatory to allocate the respective percentages of each expense category described above towards the total cost to the Exchange of operating and supporting the network, including providing the services associated with the Proposed Access Fees because the Exchange performed a line-by-line item analysis of all the expenses of the Exchange, and has determined the expenses that directly relate to operation and support of the network. Further, the Exchange notes that, without the specific third-party and internal items listed above, the Exchange would not be able to operate and support the network, including providing the services associated with the Proposed Access Fees to its Members and non-Members and their customers. Each of these expense items, including physical hardware, software, employee compensation and benefits, occupancy costs, and the depreciation and amortization of equipment, have been identified through a line-by-line

item analysis to be integral to the operation and support of the network. The Proposed Access Fees are intended to recover the Exchange's costs of operating and supporting the network. Accordingly, the Exchange believes that the Proposed Access Fee Increases are fair and reasonable because they do not result in excessive pricing or supra-competitive profit, when comparing the actual network operation and support costs to the Exchange versus the projected annual revenue from the Proposed Access Fees, including the increased amount.

The Exchange also points out that it is not seeking to recoup any of its past costs associated with the provision of any Ports during the Waiver Period. The Exchange currently has 35 Members,⁵² all of whom did not pay Port fees during the Waiver Period from the time these firms all became Members of the Exchange. Further, the majority of firms that are Members of the Exchange's affiliate options exchanges, MIAX and MIAX Pearl, also became Members of those exchanges during similar Waiver Periods for the MIAX and MIAX Pearl Port fees. Accordingly, the Exchange (and MIAX and MIAX Pearl) have assumed approximately 100% of the costs associated with providing Ports for the majority of Member firms of the Exchange, MIAX, and MIAX Pearl during their respective Waiver Periods. Accordingly, the Exchange believes that it is reasonable, equitable, and not unfairly discriminatory to now adopt Port fees that are reasonably related to (and designed to recover) the Exchange's cost associated with the provision of such Ports.

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

The Exchange does not believe that the proposed rule change would place certain market participants at the Exchange at a relative disadvantage compared to other market participants or affect the ability of such market participants to compete.

⁵² See <https://www.miaxoptions.com/exchange-members/emerald>.

Intra-Market Competition

The Exchange believes that the Proposed Access Fees do not place certain market participants at a relative disadvantage to other market participants because the Proposed Access Fees do not favor certain categories of market participants in a manner that would impose a burden on competition; rather, the allocation of the Proposed Access Fees reflects the network resources consumed by the various size of 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.

Inter-Market Competition

The Exchange believes the Proposed Access Fees do not place an undue burden on competition on other SROs that is not necessary or appropriate. In particular, options market participants are not forced to connect to (and purchase market data from) all options exchanges. The Exchange had one of its member firms cancel its membership with the Exchange as a direct result of the Proposed Access Fees. The Exchange also notes that it has far less Members as compared to the much greater number of members at other options exchanges. 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. There are a number of large market makers and broker-dealers that are members of other options exchange but not Members of MIAX Emerald. The Exchange is also unaware of any assertion that its existing fee levels or the Proposed Access 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, as described above.

The Exchange operates in a highly competitive market in which market participants can readily favor one of the 15 competing options venues if they deem fee levels at a particular venue to be excessive. Based on publicly-available information, and excluding index-based options, no single exchange has more than 16% market share. Therefore, no exchange possesses significant pricing power in the execution of multiply-listed equity and ETF options order flow. For the month of December 2020, the Exchange had a market share of approximately 3.58% of executed multiply-listed equity options⁵³ and the Exchange believes that the ever-shifting market share among exchanges from month to month demonstrates that market participants can discontinue or reduce use of certain categories of products, or shift order flow, in response to fee changes. In such an environment, the Exchange must continually adjust its fees and fee waivers to remain competitive with other exchanges and to attract order flow to the Exchange.

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

No written comments were either solicited or received.

6. **Extension of Time Period for Commission Action**

Not applicable.

7. **Basis for Summary Effectiveness Pursuant to Section 19(b)(3) or for Accelerated Effectiveness Pursuant to Section 19(b)(2)**

Pursuant to Section 19(b)(3)(A)(ii) of the Act, and Rule 19b-4(f)(2) thereunder the Exchange has designated this proposal as establishing or changing a due, fee, or other charge imposed on any person, whether or not the person is a member of the self-regulatory organization, which renders the proposed rule change effective upon filing.

⁵³ See supra note 39.

8. Proposed Rule Change Based on Rules of Another Self-Regulatory Organization or of the Commission

The proposed rule change is not based upon the rules of any other exchange.

9. Security-Based Swap Submissions Filed Pursuant to Section 3C of the Act

Not applicable.

10. Advance Notices Filed Pursuant to Section 806(e) of the Payment, Clearing and Settlement Supervision Act

Not applicable.

11. Exhibits

1. Notice of proposed rule for publication in the Federal Register.

5. Applicable section of the MIAX Emerald Fee Schedule.

EXHIBIT 1SECURITIES AND EXCHANGE COMMISSION
(Release No. 34- ; File No. SR-EMERALD-2021-11)

March __, 2021

Self-Regulatory Organizations: Notice of Filing and Immediate Effectiveness of a Proposed Rule Change by MIAX Emerald, LLC to Amend Its Fee Schedule

Pursuant to the provisions of 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 March 24, 2021, 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”).

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 the proposed rule change. The text of these statements may be examined at the places specified

¹ 15 U.S.C. 78s(b)(1).

² 17 CFR 240.19b-4.

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 to: (1) adopt Port fees; (2) increase the Exchange's network connectivity fees for its 10 gigabit ("Gb") ultra-low latency ("ULL") fiber connection for Members³ and non-Members (collectively, the "Proposed Access Fees"); and (3) increase the number of Additional Limited Service MIAX Emerald Express Interface ("MEI")⁴ Ports available to Market Makers.⁵

On September 15, 2020, the Exchange issued a Regulatory Circular, which announced, among other things, that the Exchange would adopt Port fees, thereby terminating the Waiver Period⁶ for such fees, and increase the fees for its 10Gb ULL connection for Members and non-

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.

⁴ MIAX Emerald Express Interface is a connection to the MIAX Emerald System that enables Market Makers to submit simple and complex electronic quotes to MIAX Emerald. "Full Service MEI Ports" means a port which provides Market Makers with the ability to send Market Maker simple and complex quotes, eQuotes, and quote purge messages to the MIAX Emerald System. Full Service MEI Ports are also capable of receiving administrative information. Market Makers are limited to two Full Service MEI Ports per Matching Engine. "Limited Service MEI Ports" means a port which provides Market Makers with the ability to send simple and complex eQuotes and quote purge messages only, but not Market Maker Quotes, to the MIAX Emerald System. Limited Service MEI Ports are also capable of receiving administrative information. Market Makers initially receive two Limited Service MEI Ports per Matching Engine. See the Definitions Section of the Fee Schedule.

⁵ "Market Maker" refers to "Lead Market Maker" ("LMM"), "Primary Lead Market Maker" ("PLMM") and "Registered Market Maker" ("RMM"), collectively. See Exchange Rule 100 and the Definitions Section of the Fee Schedule.

⁶ "Waiver Period" means, for each applicable fee, the period of time from the initial effective date of the MIAX Emerald Fee Schedule until such time that the Exchange has

Members, beginning October 1, 2020.⁷ On January 14, 2021, the Exchange announced that it would offer Market Makers the ability to purchase an additional six Limited Service MEI Ports,⁸ without changing the Limited Service MEI Port fee amount.

The Exchange initially filed its proposal to adopt certain Port fees and increase the fees for its 10Gb ULL connection on October 1, 2020.⁹ The First Proposed Rule Change was published for comment in the Federal Register on October 20, 2020.¹⁰ The Exchange notes that the First Proposed Rule Change did not receive any comment letters. Nonetheless, the Exchange withdrew the First Proposed Rule Change on November 25, 2020¹¹ and resubmitted a replacement proposal.¹² The Second Proposed Rule Change was published for comment in the Federal Register on December 14, 2020.¹³ The Exchange notes that the Second Proposed Rule Change did not receive any comment letters. Nonetheless, the Exchange withdrew the Second

an effective fee filing establishing the applicable fee. The Exchange will issue a Regulatory Circular announcing the establishment of an applicable fee that was subject to a Waiver Period at least fifteen (15) days prior to the termination of the Waiver Period and effective date of any such applicable fee. See the Definitions Section of the Fee Schedule.

⁷ See MIAX Emerald Regulatory Circular 2020-41 available at https://www.miaxoptions.com/sites/default/files/circular-files/MIAX_Emerald_RC_2020_41.pdf.

⁸ See <https://www.miaxoptions.com/alerts/2021/01/14/miax-emerald-options-announce-support-additional-mei-limited-service-ports>. In a subsequent alert, the Exchange announced that the six Additional Limited Service MEI Ports would be available beginning February 16, 2021, pending filing with the Commission.

⁹ See Securities Exchange Act Release No. 90184 (October 14, 2020), 85 FR 66636 (October 20, 2020) (SR-EMERALD-2020-12) (the “First Proposed Rule Change”).

¹⁰ See id.

¹¹ See Comment Letter from Joseph Ferraro, SVP, Deputy General Counsel, the Exchange, dated November 20, 2020, notifying the Commission that the Exchange would withdraw the First Proposed Rule Change.

¹² See Securities Exchange Act Release No. 90600 (December 8, 2020), 85 FR 80831 (December 14, 2020) (SR-EMERALD-2020-17) (the “Second Proposed Rule Change”).

¹³ See id.

Proposed Rule Change on January 22, 2021¹⁴ and resubmitted a replacement proposal.¹⁵ The Third Proposed Rule Change was published for comment in the Federal Register on February 5, 2021.¹⁶ The Exchange withdrew the Third Proposed Rule Change on February 16, 2021¹⁷ and resubmitted a replacement proposal, which included the proposal to offer six Additional Limited Service MEI Ports available to Market Makers.¹⁸ On March 24, 2021, the Exchange withdrew the Fourth Proposed Rule Change and resubmitted this proposal to further clarify its expense and revenue projections and to make certain technical corrections.

Port Fees

The Exchange proposes to adopt fees for “Ports”, which are used by Members and non-Members to access the Exchange. MIAX Emerald provides four Port types: (i) the Financial Information Exchange (“FIX”) Port¹⁹, which allows Members to electronically send orders in all products traded on the Exchange; (ii) the MEI Port, which allows Market Makers to submit electronic orders and quotes to the Exchange; (iii) the Clearing Trade Drop Port (“CTD”) Port²⁰,

¹⁴ See Comment Letter from Joseph Ferraro, SVP, Deputy General Counsel, the Exchange, dated January 15, 2021, notifying the Commission that the Exchange would withdraw the Second Proposed Rule Change.

¹⁵ See Securities Exchange Act Release No. 91032 (February 1, 2021), 86 FR 8428 (February 5, 2021) (SR-EMERALD-2021-02) (the “Third Proposed Rule Change”).

¹⁶ See *id.*

¹⁷ See Comment Letter from Joseph Ferraro, SVP, Deputy General Counsel, the Exchange, dated February 16, 2021, notifying the Commission that the Exchange would withdraw the Third Proposed Rule Change.

¹⁸ See Securities Exchange Act Release No. 91200 (February 24, 2021), 86 FR 12221 (March 2, 2021) (SR-EMERALD-2021-07) (the “Fourth Proposed Rule Change”).

¹⁹ “FIX Port” means an interface with MIAX Emerald systems that enables the Port user to submit simple and complex orders electronically to MIAX Emerald. See the Definitions Section of the Fee Schedule.

²⁰ “CTD Port” or “Clearing Trade Drop Port” provides an Exchange Member with a real-time clearing trade updates. The updates include the Member’s clearing trade messages on a low latency, real-time basis. The trade messages are routed to a Member's connection containing certain information. The information includes, among other

which provides real-time trade clearing information to the participants to a trade on MIAX Emerald and to the participants' respective clearing firms; and (iv) the FIX Drop Copy ("FXD") Port²¹, which provides a copy of real-time trade execution, correction and cancellation information through a FIX Port to any number of FIX Ports designated by an Electronic Exchange Member ("EEM")²² to receive such messages. The Exchange also proposes to increase the monthly fee for each Additional Limited Service MEI Port per matching engine for Market Makers, as described below.

Since the launch of the Exchange, all Port fees have been waived by the Exchange in order to incentivize market participants to connect to the Exchange, except for Additional Limited Service MEI Ports. However, also at launch, the Exchange introduced the structure of Port fees on its Fee Schedule (without proposing the actual fee amounts), in order to indicate to market participants that Port fees would ultimately apply upon expiration of the Waiver Period. The Exchange now proposes to assess monthly Port fees for Members and non-Members in each month the market participant is credentialed to use a Port in the production environment and

things, the following: (i) trade date and time; (ii) symbol information; (iii) trade price/size information; (iv) Member type (for example, and without limitation, Market Maker, Electronic Exchange Member, Broker-Dealer); and (v) Exchange MPID for each side of the transaction, including Clearing Member MPID. See the Definitions Section of the Fee Schedule.

²¹ The FIX Drop Copy ("FXD") Port is a messaging interface that will provide a copy of real-time trade execution, trade correction and trade cancellation information to FXD Port users who subscribe to the service. FXD Port users are those users who are designated by an EEM to receive the information and the information is restricted for use by the EEM. FXD Port Fees will be assessed in any month the Member is credentialed to use the FXD Port in the production environment. See Fee Schedule, Section 5)d)iv).

²² "Electronic Exchange Member" or "EEM" means the holder of a Trading Permit who is not a Market Maker. Electronic Exchange Members are deemed "members" under the Exchange Act. See Exchange Rule 100 and the Definitions Section of the Fee Schedule.

based upon the number of credentialed Ports that a user is entitled to use. MIAX Emerald has Primary and Secondary Facilities and a Disaster Recovery Facility. Each type of Port provides access to all Exchange facilities for a single fee. The Exchange notes that, unless otherwise specifically set forth in the Fee Schedule, the Port fees include the information communicated through the Port. That is, unless otherwise specifically set forth in the Fee Schedule, there is no additional charge for the information that is communicated through the Port apart from what the user is assessed for each Port.²³

FIX Port Fees

Since the launch of the Exchange, fees for FIX Ports have been waived for the Waiver Period. The Exchange now proposes to assess a monthly FIX Port fee to Members in each month the Member is credentialed to use a FIX Port in the production environment and based upon the number of credentialed FIX Ports, as follows: \$550 for the first FIX Port; \$350 for FIX Ports two through five; and \$150 for each FIX Port over five.

Below is the proposed table showing the FIX Port fees:

FIX Port Fees	MIAX Emerald Monthly Port Fees Includes Connectivity to the Primary, Secondary and Disaster Recovery Data Centers
1st FIX Port	\$550.00
FIX Ports 2 through 5	\$350.00
Additional FIX Ports over 5	\$150.00

MEI Port Fees

MIAX Emerald offers different options of MEI Ports depending on the services required by Market Makers. Since the launch of the Exchange, fees for MEI Ports have been waived for

²³ An example of one such exception where there is an additional charge for information that is communicated through a Port is for certain market data products, such as ToM, AIS, and MOR, that are received via a direct connection to the Exchange. See Sections 6a)-c) of the Fee Schedule.

the Waiver Period. The Exchange now proposes to assess monthly MEI Port Fees to Market Makers based upon the number of classes or class volume accessed by the Market Maker.

Market Makers are allocated two (2) Full Service MEI Ports²⁴ and two (2) Limited Service MEI Ports²⁵ per Matching Engine²⁶ to which they connect. The Full Service MEI Ports, Limited Service MEI Ports and the Additional Limited Service MEI Ports all include access to the Exchange's Primary and Secondary data centers and its Disaster Recovery center.

Specifically, the Exchange proposes to adopt MEI Port fees assessable to Market Makers based upon the number of classes or class volume accessed by the Market Maker. The Exchange proposes to adopt the following MEI Port fees: (i) \$5,000 for Market Maker Assignments in up to 5 option classes or up to 10% of option classes by volume; (ii) \$10,000 for Market Maker Assignments in up to 10 option classes or up to 20% of option classes by volume; (iii) \$14,000 for Market Maker Assignments in up to 40 option classes or up to 35% of option classes by volume; (iv) \$17,500 for Market Maker Assignments in up to 100 option classes or up to 50% of option classes by volume; and (v) \$20,500 for Market Maker Assignments in over 100 option classes or over 50% of option classes by volume up to all option classes listed on MIAX Emerald.

²⁴ See supra note 4.

²⁵ See id.

²⁶ A "matching engine" is a part of the MIAX Emerald electronic system that processes options quotes and trades on a symbol-by-symbol basis. Some matching engines will process option classes with multiple root symbols, and other matching engines will be dedicated to one single option root symbol (for example, options on SPY will be processed by one single matching engine that is dedicated only to SPY). A particular root symbol may only be assigned to a single designated matching engine. A particular root symbol may not be assigned to multiple matching engines. See the Definitions Section of the Fee Schedule.

The Exchange also proposes to adopt new footnote “■” for its MEI Port fees that will apply to the Market Makers who fall within the following MEI Port fee levels, which represent the 4th and 5th levels of the fee table: Market Makers who have (i) Assignments in up to 100 option classes or up to 50% of option classes by volume and (ii) Assignments in over 100 option classes or over 50% of option classes by volume up to all option classes listed on MIAX Emerald. Specifically, the Exchange proposes for these monthly MEI Port tier levels, if the Market Maker’s total monthly executed volume during the relevant month is less than 0.025% of the total monthly executed volume reported by OCC in the customer account type for MIAX Emerald-listed option classes for that month, then the fee will be \$14,500 instead of the fee otherwise applicable to such level.

The purpose of this proposed lower monthly MEI Port fee is to provide a lower fixed cost to those Market Makers who are willing to quote the entire Exchange market (or substantial amount of the Exchange market), as objectively measured by either number of classes assigned or national ADV, but who do not otherwise execute a significant amount of volume on the Exchange. The Exchange believes that, by offering lower fixed costs to Market Makers that execute less volume, the Exchange will retain and attract smaller-scale Market Makers, which are an integral component of the option industry marketplace, but have been decreasing in number in recent years, due to industry consolidation and lower market maker profitability. Since these smaller-scale Market Makers utilize less Exchange capacity due to lower overall volume executed, the Exchange believes it is reasonable and appropriate to offer such Market Makers a lower fixed cost. The Exchange notes that other options exchanges assess certain of their fees at different rates, based upon a member’s participation on that exchange,²⁷ and, as

²⁷ See, e.g., Cboe BZX Options Exchange (“BZX Options”) assesses the Participant Fee, which is a membership fee, according to a member’s ADV. See Cboe BZX Options Exchange Fee Schedule under “Membership Fees”. The Participant Fee is \$500 if the

such, this concept is not novel. The proposed changes to the MEI Port fees for Market Makers who fall within the 4th and 5th levels of the fee table are based upon a business determination of current Market Maker assignments and trading volume.

For the calculation of the monthly MEI Port Fees that apply to Market Makers, the number of classes is defined as the greatest number of classes the Market Maker was assigned to quote in on any given day within the calendar month and the class volume percentage is based on the total national average daily volume in classes listed on MIAX Emerald in the prior calendar quarter.²⁸ Newly listed option classes are excluded from the calculation of the monthly MEI Port Fee until the calendar quarter following their listing, at which time the newly listed option classes will be included in both the per class count and the percentage of total national average daily volume. The Exchange proposes to assess Market Makers the monthly MEI Port Fees based on the greatest number of classes listed on MIAX Emerald that the Market Maker was assigned to quote in on any given day within a calendar month and the applicable fee rate that is the lesser of either the per class basis or percentage of total national average daily volume measurement.

The Exchange charges \$50 per month for each Additional Limited Service MEI Port per matching engine for Market Makers over and above the two (2) Limited Service MEI Ports per matching engine that are allocated with the Full Service MEI Ports. The Full Service MEI Ports,

member ADV is less than 5000 contracts and \$1,000 if the member ADV is equal to or greater than 5000 contracts.

²⁸ The Exchange will use the following formula to calculate the percentage of total national average daily volume that the Market Maker assignment is for purposes of the MEI Port Fee for a given month:

Market Maker assignment percentage of national average daily volume = [total volume during the prior calendar quarter in a class in which the Market Maker was assigned] / [total national volume in classes listed on MIAX in the prior calendar quarter].

Limited Service MEI Ports and the Additional Limited Service MEI Ports all include access to the Exchange's Primary and Secondary data centers and its Disaster Recovery center. Currently, footnote "*" in the MEI Port Fee table provides that the fees for Additional Limited Service MEI Ports are not subject to the Waiver Period. Accordingly, in connection with this proposal, the Exchange proposes to delete footnote "*" since the Exchange proposes to begin assessing MEI Port fees, which will no longer be subject to the Waiver Period. The Exchange also proposes to increase the monthly fee from \$50 to \$100 for each Additional Limited Service MEI Port per matching engine for Market Makers over and above the two (2) Limited Service MEI Ports per matching engine that are allocated with the Full Service MEI Ports.

Below is the proposed table showing the MEI Port fees:

Monthly MIAX Emerald MEI Fees	Market Maker Assignments (the lesser of the applicable measurements below)	
	Per Class	% of National Average Daily Volume
\$5,000.00	Up to 5 Classes	Up to 10% of Classes by volume
\$10,000.00	Up to 10 Classes	Up to 20% of Classes by volume
\$14,000.00	Up to 40 Classes	Up to 35% of Classes by volume
\$17,500.00 [■]	Up to 100 Classes	Up to 50% of Classes by volume
\$20,500.00 [■]	Over 100 Classes	Over 50% of Classes by volume up to all Classes listed on MIAX Emerald

- For these Monthly MIAX Emerald MEI Port tier levels, if the Market Maker's total monthly executed volume during the relevant month is less than 0.025% of the total monthly executed volume reported by OCC in the customer account type for MIAX Emerald-listed option classes for that month, then the fee will be \$14,500 instead of the fee otherwise applicable to such level.

The Exchange also proposes to offer six (6) Additional Limited Service MEI Ports to Market Makers. Currently, Market Makers are limited to six Additional Limited Service MEI Ports per Matching Engine, for a total of eight per Matching Engine. The Exchange originally provided Limited Service MEI Ports to enhance the MEI Port connectivity available to Market Makers. Limited Service MEI Ports have been well received by Market Makers since the Exchange launched operations in March of 2019. The Exchange now proposes to offer to

Market Makers the ability to purchase an additional six (6) Limited Service MEI Ports per Matching Engine over and above the current six (6) Additional Limited Service MEI Ports per Matching Engine that are available for purchase by Market Makers. The Exchange proposes to make a corresponding change to Section 5)d)ii) of the Fee Schedule to specify that Market Makers will now be limited to purchasing twelve (12) Additional Limited Service MEI Ports per Matching Engine, for a total of fourteen (14) per Matching Engine.

The Exchange proposes to increase the number of Additional Limited Service MEI Ports because the Exchange is expanding its network. This network expansion is necessary due to increased customer demand and increased volatility in the marketplace, both of which have translated into increased message traffic rates across the network. Consequently, this network expansion, which increases the number of switches supporting customer-facing systems, is necessary in order to provide sufficient access to new and existing Members, to maintain a sufficient amount of network capacity head-room, and to continue to provide the same level of service across the Exchange's low-latency, high-throughput technology environment. The Exchange notes that its affiliates, Miami International Securities Exchange, LLC ("MIAX") and MIAX Pearl, LLC ("MIAX Pearl"), recently filed similar proposals to increase the number of Additional Limited Service Ports available for purchase due to similar network expansions and customer demand.²⁹

The Exchange has 6 network switches that support the entire customer base of MIAX Emerald. The Exchange plans to increase this to 12 switches, which will increase the number of available customer ports by 100%. The proposed increase in the number of available customer

²⁹ See Securities Exchange Act Release Nos. 90811 (December 29, 2020), 86 FR 344 (January 5, 2021) (SR-MIAX-2020-41) and 90812 (December 29, 2020), 86 FR 338 (January 5, 2021) (SR-PEARL-2020-35).

ports will enable the Exchange to continue to provide sufficient and equal access to the MIAX Emerald System to all Members. Absent the proposed increase in available MEI Ports, the Exchange projects that its current inventory will be depleted and it will lack sufficient capacity to continue to meet Members' access needs.

Purge Port Fees

The Exchange also offers Market Makers the ability to request and be allocated two (2) Purge Ports³⁰ per Matching Engine to which it connects. Purge Ports provide Market Makers with the ability to send quote purge messages to the MIAX Emerald System. Purge Ports are not capable of sending or receiving any other type of messages or information. Since the launch of the Exchange, fees for Purge Ports have been waived for the Waiver Period. The Exchange now proposes to amend its Fee Schedule to adopt fees for Purge Ports. For each month in which the MIAX Emerald Market Maker has been credentialed to use Purge Ports in the production environment and has been assigned to quote in at least one class, the Exchange proposes to assess the MIAX Emerald Market Maker a flat fee \$1,500, regardless of the number of Purge Ports allocated to the MIAX Emerald Market Maker.

CTD Port Fees

The Exchange proposes to assess a CTD Port fee as a monthly fixed amount, not tied to transacted volume of the Member. This fixed fee structure is the same structure in place at Nasdaq PHLX with respect to the proposed CTD Port Fees.³¹ Since the launch of the Exchange, CTD Port Fees have been waived for the Waiver Period. CTD provides Exchange members with

³⁰ "Purge Ports" provide Market Makers with the ability to send quote purge messages to the MIAX Emerald System. Purge Ports are not capable of sending or receiving any other type of messages or information. See the Definitions Section of the Fee Schedule.

³¹ See Nasdaq PHLX Pricing Schedule, Options 7, Section 9, Other Member Fees, B. Port Fees.

real-time clearing trade updates. The updates include the Member's clearing trade messages on a low latency, real-time basis. The trade messages are routed to a Member's connection containing certain information. The information includes, among other things, the following: (i) trade date and time; (ii) symbol information; (iii) trade price/size information; (iv) Member type (for example, and without limitation, Market Maker, Electronic Exchange Member, Broker-Dealer); (v) Exchange Member Participant Identifier ("MPID") for each side of the transaction, including Clearing Member MPID; and (vi) strategy specific information for complex transactions. CTD Port fees will be assessed in any month the Member is credentialed to use the CTD Port in the production environment. The Exchange proposes to assess a CTD Port fee of \$450 per month.

Below is the proposed table for the CTD Port fees:

Description	Monthly Fee
Real-Time CTD Information	\$450.00

FXD Port Fee

The Exchange proposes to assess an FXD Port Fee as a monthly fixed amount, not tied to transacted volume of the Member. This fixed fee structure is the same structure in place at Nasdaq PHLX with respect to FXD Port Fees.³² Since the launch of the Exchange, FXD Port Fees have been waived for the Waiver Period. FXD is a messaging interface that will provide a copy of real-time trade execution, trade correction and trade cancellation information to FXD Port users who subscribe to the service. FXD Port users are those users who are designated by an EEM to receive the information and the information is restricted for use by the EEM. FXD Port fees will be assessed in any month the Member is credentialed to use the FXD Port in the production environment. The Exchange proposes to assess an FXD Port fee of \$500 per month. Below is the proposed table for the FXD Port fees:

³²

Id.

Description	MIAX Emerald Monthly Port Fees Includes connectivity to the Primary, Secondary and Disaster Recovery Data Centers
FIX Drop Copy Port	\$500.00

10Gb ULL Connectivity Fee

The Exchange proposes to amend Sections 5a) and b) of the Fee Schedule to increase the monthly network connectivity fees for the 10Gb ULL fiber connection, which is charged to both Members and non-Members of the Exchange for connectivity to the Exchange's primary/secondary facility. The Exchange offers to both Members and non-Members two 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 now proposes to increase its monthly network connectivity fee for its 10Gb ULL connection to \$10,000 for Members and non-Members.

* * * * *

MIAX Emerald believes that exchanges, in setting fees of all types, should meet very high standards of transparency to demonstrate why each new fee or fee increase meets the requirements of the Act that fees be reasonable, equitably allocated, not unfairly discriminatory, and not create an undue burden on competition among members and markets. MIAX Emerald believes this high standard is especially important when an exchange imposes various access fees for market participants to access an exchange's marketplace. MIAX Emerald deems Port fees and Connectivity fees to be access fees, and that Ports and Connectivity are inextricably linked components of the network. Accordingly, the Exchange believes that it is reasonable and appropriate that the costs and revenues for both should be considered together, as the services

associated with connectivity and ports are linked pieces of the network's infrastructure, both of which are necessary for a market participant to access and use the trading System of the Exchange. Finally, both Connectivity fee and Port fee revenue are consolidated into a single line item ("Access Fees") on the Exchange's financial statements. The Exchange believes that it is important to demonstrate that these fees are based on its costs to provide access to the Exchange's network and reasonable business needs. Accordingly, the Exchange believes the Proposed Access Fees will allow the Exchange to offset expense the Exchange has and will incur, and that the Exchange is providing sufficient transparency (as described below) into how the Exchange determined to charge such fees. Accordingly, the Exchange is providing an analysis of its revenues, costs, and profitability associated with the Proposed Access Fees. This analysis includes information regarding its methodology for determining the costs and revenues associated with the Proposed Access Fees.

In order to determine the Exchange's costs associated with providing the Proposed Access Fees, the Exchange conducted an extensive cost review in which the Exchange analyzed every expense item in the Exchange's general expense ledger to determine whether each such expense relates to the Proposed Access Fees, and, if such expense did so relate, what portion (or percentage) of such expense actually supports the services included in the Proposed Access Fees. The sum of all such portions of expenses represents the total cost of the Exchange to provide the Proposed Access Fees. For the avoidance of doubt, no expense amount was allocated twice. The Exchange is also providing detailed information regarding the Exchange's cost allocation methodology – namely, information that explains the Exchange's rationale for determining that it was reasonable to allocate certain expenses described in this filing towards the total cost to the Exchange to provide the Proposed Access Fees.

In order to determine the Exchange's projected revenues associated with providing the Proposed Access Fees, the Exchange analyzed the number of Members and non-Members currently utilizing the Exchange's services associated with the Proposed Access Fees, and, utilizing a recent monthly billing cycle representative of the Exchange's monthly revenue, extrapolated annualized revenue on a going-forward basis. The Exchange does not believe it is appropriate to factor into its analysis future revenue growth or decline into its projections for purposes of these calculations, given the uncertainty of such projections due to the continually changing access needs of market participants, discounts that can be achieved through reaching certain tiers, market participant consolidation, etc. Additionally, the Exchange similarly does not factor into its analysis future cost growth or decline.

The Exchange is presenting its revenue and expense associated with the Proposed Access Fees in this filing in a manner that is consistent with how the Exchange presents its revenue and expense in its Audited Unconsolidated Financial Statements. The Exchange's most recent Audited Unconsolidated Financial Statement is for 2019. However, since the revenue and expense associated with the Proposed Access Fees were not in place in 2019 or for the first three quarters of 2020, the Exchange believes its 2019 Audited Unconsolidated Financial Statement is not useful for analyzing the reasonableness of the total annual revenue and costs associated with the Proposed Access Fees. Accordingly, the Exchange believes it is more appropriate to analyze the Proposed Access Fees utilizing a recent monthly billing cycle representative of the Exchange's revenue and costs, as described herein, which utilize the same presentation methodology as set forth in the Exchange's previously-issued Audited Unconsolidated Financial Statements. Based on this analysis, the Exchange believes that the Proposed Access Fees are fair and reasonable because they will not result in excessive pricing or supra-competitive profit when comparing the Exchange's total annual expense associated with providing the services associated

with the Proposed Access Fees versus the total projected annual revenue the Exchange will collect for providing those services.

* * * * *

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”).³³ On May 21, 2019, the Commission issued the Staff Guidance on SRO Rule Filings Relating to Fees.³⁴ On December 20, 2019, the Exchange adopted Connectivity Fees in a filing utilizing a cost-based justification framework that is substantially similar to the cost-based justification framework utilized for the instant Proposed Access Fees.³⁵ Accordingly, the Exchange believes that the Proposed Access Fees are consistent with the Act because they (i) are reasonable, equitably allocated, not unfairly discriminatory, and not an undue burden on competition; (ii) comply with the BOX Order and the Guidance; (iii) are supported by evidence (including comprehensive revenue and cost data and analysis) that they are fair and reasonable because they do not result in excessive pricing or supra-competitive profit; and (iv) utilize a cost-based justification framework that is substantially similar to a framework previously used by the Exchange to establish Connectivity Fees. Accordingly, the Exchange believes that the Commission should find that the Proposed Fees are consistent with the Act.

³³ 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).

³⁴ See Staff Guidance on SRO Rule Filings Relating to Fees (May 21, 2019), at <https://www.sec.gov/tm/staff-guidance-sro-rule-filings-fees> (the “Guidance”).

³⁵ See Securities Exchange Act Release No. 87877 (December 31, 2019), 84 FR 738 (January 7, 2020) (SR-EMERALD-2019-39).

The proposed rule change is immediately effective upon filing with the Commission pursuant to Section 19(b)(3)(A) of the Act.

2. Statutory Basis

The Exchange believes that its proposal to amend its Fee Schedule is consistent with Section 6(b) of the Act³⁶ in general, and furthers the objectives of Section 6(b)(4) of the Act³⁷ 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 Act³⁸ 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.

The Exchange launched trading on March 1, 2019. For the month of December 2020, the Exchange had a market share of only approximately 3.58% of the U.S. options industry.³⁹ The Exchange is not aware of any evidence that a market share of approximately 3.6% provides the Exchange with anti-competitive pricing power. If the Exchange were to attempt to establish unreasonable pricing, then no market participant would join or connect, and existing market participants would disconnect.

³⁶ 15 U.S.C. 78f(b).

³⁷ 15 U.S.C. 78f(b)(4).

³⁸ 15 U.S.C. 78f(b)(5).

³⁹ See The Options Clearing Corporation (“OCC”) publishes options and futures volume in a variety of formats, including daily and monthly volume by exchange, available here: <https://www.theocc.com/market-data/volume/default.jsp>.

Separately, the Exchange is not aware of any reason why market participants could not simply drop their connections to an exchange (or not connect to an exchange) if an exchange were to establish prices for its non-transaction fees that, in the determination of such market participant, did not make business or economic sense for such market participant to connect to such exchange. No options market participant is required by rule, regulation, or competitive forces to be a Member of the Exchange. As evidence of the fact that market participants can and do disconnect from exchanges based on non-transaction fee pricing, R2G Services LLC (“R2G”) filed a comment letter after BOX’s proposed rule changes to increase its connectivity fees (SR-BOX-2018-24, SR-BOX-2018-37, and SR-BOX-2019-04).⁴⁰ The R2G Letter stated, “[w]hen BOX instituted a \$10,000/month price increase for connectivity; we had no choice but to terminate connectivity into them as well as terminate our market data relationship. The cost benefit analysis just didn’t make any sense for us at those new levels.”⁴¹ Since the Exchange issued its notice for the Proposed Access Fees, one Member discontinued the use of the Exchange’s connectivity and port services as a result of the Proposed Access Fees. Accordingly, these examples show that if an exchange sets too high of a fee for connectivity and/or other non-transaction fees for its relevant marketplace, market participants can choose to disconnect from such exchange.

The Exchange believes that its proposal is consistent with Section 6(b)(4) of the Act because the Proposed Access Fees will not result in excessive or supra-competitive profit. The costs associated with providing access to Exchange Members and non-Members, as well as the general expansion of a state-of-the-art infrastructure, are extensive, have increased year-over-

⁴⁰ See Letter from Stefano Durdic, R2G, to Vanessa Countryman, Acting Secretary, Commission, dated March 27, 2019 (the “R2G Letter”).

⁴¹ See *id.*

year, and are projected to increase year-over-year in the future. In particular, the Exchange has experienced a material increase in its costs in 2020, in connection with a project to make its network environment more transparent and deterministic, based on customer demand. This project will allow the Exchange to enhance its network architecture with the intent of ensuring a best-in-class, transparent and deterministic trading system while maintaining its industry leading latency and throughput capabilities. In order to provide this greater amount of transparency and higher determinism, MIAX Emerald has made significant capital expenditures (“CapEx”), incurred increased ongoing operational expenditures (“OpEx”), and undertaken additional engineering research and development (“R&D”) in the numerous areas. This includes expenditures and R&D in the following areas: (i) implementation of an improved network design to ensure the minimum latency between multicast market data signals disseminated by the Exchange across the extranet switches; (ii) an improvement to the unicast jitter profile to reduce the occurrence of message sequence inversions from Members to the Exchange quoting gateway processors; (iii) introduction of new optical fiber network infrastructure that ensures the optical fiber path for participants within extremely tight tolerances; (iv) introduction of a re-architected and engineered participant quoting gateway that ensures the delivery of messages to the match engine with absolute determinism, eliminating the message processing inversions that can occur with messages received nanoseconds apart; and (v) an improved monitoring platform to better measure the performance of the network and systems at extremely tight tolerances and to provide Members with reporting on the performance of their systems. The CapEx associated with only phase 1 of this project in 2020 was approximately \$1.85 million. This expense does not include the significant increase in employee time and other resources necessary to maintain and service this network, which expense is captured in the operating expense discussed below. This project,

which results in a material increase in expense of the Exchange, is a primary driver for the increase in network connectivity fees proposed by the Exchange.

The Exchange believes the proposed increase to the 10Gb ULL connection is an equitable allocation of reasonable fees because 10Gb ULL purchasers: (1) consume the most bandwidth and resources of the network; (2) transact the vast majority of the volume on the Exchange; and (3) require the high touch network support services provided by the Exchange and its staff, including more costly network monitoring, reporting and support services, resulting in a much higher cost to the Exchange. Further, the Exchange believes the Proposed Access Fees are equitably allocated because of customer demand for an even more transparent and deterministic network, as described above, which has resulted in higher CapEx, increasingly higher OpEx, and increased costs to engineering R&D. The Proposed Access Fees are equitably allocated in this regard because the majority of customer demand is coming from purchasers of the 10Gb ULL connections, which Member and non-Member firms transact the vast majority of volume on the Exchange. Accordingly, the Exchange believes it is reasonable, equitably allocated and not unfairly discriminatory to recoup the majority of its costs associated with the project to make the network more transparent and deterministic from market participants utilizing 10Gb ULL connections on the Exchange.

The Exchange believes that the proposed increase to the 10Gb ULL fees are equitably allocated among users of the network connectivity alternatives, as the users of the 10Gb ULL connections consume the most bandwidth and resources of the network. Specifically, the Exchange notes that these users account for approximately greater than 99% of message traffic over the network, while the users of the 1Gb connections account for approximately less than 1% of message traffic over the network. In the Exchange's experience, users of the 1Gb connections do not have a business need for the high performance network solutions required by 10Gb ULL

users. The Exchange's high performance network solutions and supporting infrastructure (including employee support), provides unparalleled system throughput and the capacity to handle approximately 18 million quote messages per second. On an average day, the Exchange handles over approximately 3 billion total messages. Of those, users of the 10Gb ULL connections generate approximately 3 billion messages, and users of the 1Gb connections generate 500,000 messages. However, in order to achieve a consistent, premium network performance, the Exchange must build out and maintain a network that has the capacity to handle the message rate requirements of its most heavy network consumers. These billions of messages per day consume the Exchange's resources and significantly contribute to the overall network connectivity expense for storage and network transport capabilities. Given this difference in network utilization rate, the Exchange believes that it is reasonable, equitable, and not unfairly discriminatory that the 10Gb ULL users pay for the vast majority of the shared network resources from which all Member and non-Member users benefit, but is designed and maintained from a capacity standpoint to specifically handle the message rate and performance requirements of 10Gb ULL users.

The Exchange also believes that the connectivity fees are equitably allocated amongst users of the network connectivity alternatives, when these fees are viewed in the context of the overall trading volume on the Exchange. To illustrate, the purchasers of the 10Gb ULL connectivity account for approximately 98% of the volume on the Exchange for the month of October 2020. This overall volume percentage (98% of total Exchange volume) is in line with the amount of network connectivity revenue collected from 10Gb ULL purchasers (99% of total Exchange connectivity revenue). For example, utilizing a recent billing cycle, Exchange Members and non-Members that purchased 10Gb ULL connections accounted for approximately 99% of the total network connectivity revenue collected by the Exchange from all connectivity

alternatives; and (ii) Members and non-Members that purchased 1Gb connections accounted for approximately 1% of the revenue collected by the Exchange from all connectivity alternatives.

The Exchange further believes that the increased fee for the 10Gb ULL connection is an equitable allocation of reasonable fees as the fees for the various connectivity alternatives are directly related to the actual costs associated with providing the respective connectivity alternatives. That is, the cost to the Exchange of providing a 1Gb network connection is significantly lower than the cost to the Exchange of providing a 10Gb ULL network connection. Pursuant to its extensive cost review described above and in connection with the Exchange's new project to increase transparency and determinism, the Exchange believes that the average cost to provide a 10Gb ULL network connection is approximately 8 times more than the average cost to provide a 1Gb connection. The simple hardware and software component costs alone of a 10Gb ULL connection are not 8 times more than the 1Gb connection. Rather, it is the associated premium-product level network monitoring, reporting, and support services costs that accompany a 10Gb ULL connection which cause it to be 8 times more costly to provide than the 1Gb connection. Accordingly, the Exchange believes it is equitable to allocate those network infrastructure costs that accompany a 10Gb ULL connection to the purchasers of those connections, and not to purchasers of 1Gb connections.

The Exchange differentiates itself by offering a "premium-product" network experience, as an operator of a high performance, ultra-low latency network with unparalleled system throughput, which network can support access to three distinct options markets and multiple competing market-makers having affirmative obligations to continuously quote over 750,000 distinct trading products (per exchange), and the capacity to handle approximately 18 million quote messages per second. The "premium-product" network experience enables users of 10Gb ULL connections to receive the network monitoring and reporting services for those

approximately 750,000 distinct trading products. There is a significant, quantifiable amount of R&D effort, employee compensation and benefits expense, and other expense associated with providing the high touch network monitoring and reporting services that are utilized by the 10Gb ULL connections offered by the Exchange. These value add services are fully-discussed herein, and the actual costs associated with providing these services are the basis for the differentiated amount of the fees for the various connectivity alternatives.

In order to provide more detail and to quantify the Exchange's costs associated with providing access to the Exchange in general, the Exchange notes that there are material costs associated with providing the infrastructure and headcount to fully-support access to the Exchange. The Exchange incurs technology expense 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. While some of the expense is fixed, much of the expense is not fixed, and thus increases as the services associated with the Proposed Access Fees increase. For example, new 10Gb ULL connections and Ports 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. Further, as the total number of all connections and Ports 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, the cost to MIAX Emerald and its affiliates is not fixed. The Exchange believes the Proposed Access Fees are reasonable in order to offset the costs to the Exchange associated with providing access to its network infrastructure.

Further, because the costs of operating its own data center are significant and not economically feasible for the Exchange at this time, the Exchange does not operate its own data

centers, and instead contracts with a third-party data center provider. The Exchange notes that other competing 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. The Proposed Access Fees, charged for accessing the Exchange's data center network infrastructure, are directly related to the network and offset such costs.

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. In fact, the Exchange often receives inquiries from other industry participants regarding the status of networking issues outside of the Exchange's own network environment that are impacting the industry as a whole via the SIPs. This includes inquiries from regulators because the Exchange has a superior, state-of-the-art network that, through its enhanced monitoring and reporting solutions, often detects and identifies industry-wide networking issues ahead of the SIPs. The Exchange also incurs costs associated with the maintenance and improvement of existing tools and the development of new tools.

Additionally, certain Exchange-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. In sum, the costs associated with maintaining and enhancing a state-of-the-art exchange network 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 those costs through the Proposed Access Fees. 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 Proposed Access Fees that must be charged to access it, in order to recover those costs.

The Exchange believes it is reasonable to consider the expense and revenue for ports and connectivity alternatives together because ports and connectivity are inextricably linked components of the network infrastructure, and that both are necessary for a market participant to access the Exchange. The various types of connectivity and port alternatives that the Exchange offers provide a wide array of access alternatives necessary for a market participant to conduct its business using the Exchange, which is a business decision to be made by each particular type of market participant. The different types of connectivity and port alternatives allows Members to conduct their different business strategies – some Members put an emphasis on speed, while others emphasize other strategies, such as redundancy and certainty of execution. The Exchange does not require a Member to have a certain framework for accessing the Exchange, but provides various connectivity and port alternatives for each Member's distinct business lines.

The Exchange offers various types of ports with differing prices because each port accomplishes different tasks, are suited to different types of Members, and consume varying

capacity amounts of the network. For instance, MEI ports allow for a higher throughput and can handle much higher quote/order rates than FIX ports. Members that are Market Makers or high frequency trading firms utilize these ports (typically coupled with 10Gb ULL connectivity) because they transact in significantly higher amounts of messages being sent to and from the Exchange, versus FIX port users, who are traditionally customers sending only orders to the Exchange (typically coupled with 1Gb connectivity). The different types of ports cater to the different types of Exchange Memberships and different capabilities of the various Exchange Members. Market Makers have quoting and other obligations that traditional customers do not. Market Makers, therefore, need ports and connections that can handle using far more of the network's capacity for message throughput, risk protections, and the amount of information that has to be assessed. Market Makers account for the vast majority of network capacity utilization and volume executed on the Exchange, as discussed throughout.⁴² Accordingly, the Exchange believes that it is reasonable and appropriate to charge market participants more for MEI ports versus FIX ports and other lower capacity ports.

The Exchange believes that its proposal to increase the number of Additional Limited Service Ports available to Market Makers is consistent with the objectives of Section 6(b)(5) of the Act⁴³ because the proposed addition of Limited Service MEI Ports will be available to all Market Makers and the current fees for the Additional Limited Service MEI Ports apply equally

⁴² See supra page 72 (discussing how purchasers of the 10Gb ULL connectivity accounted for approximately 98% of the volume on the Exchange for the month of October 2020; 99% of total Exchange connectivity revenue; Members and non-Members that purchased 10Gb ULL connections accounted for approximately 99% of the total network connectivity revenue collected by the Exchange from all connectivity alternatives; and Members and non-Members that purchased 1Gb connections accounted for approximately 1% of the revenue collected by the Exchange from all connectivity alternatives).

⁴³ 15 U.S.C. 78f(b)(5).

to all Market Makers regardless of type, and access to the Exchange is offered on terms that are not unfairly discriminatory. The Exchange proposes to increase the number of available Limited Service MEI Ports because the Exchange is expanding its network. This network expansion is necessary due to increased customer demand and increased volatility in the marketplace, both of which have translated into increased message traffic rates across the network. Consequently, this network expansion, which increases the number of switches supporting customer facing systems, is necessary in order to provide sufficient and equal access to new and existing Members, to maintain a sufficient amount of network capacity head-room, and to continue to provide the same level of service across the Exchange's low-latency, high-throughput technology environment.

Currently, the Exchange has 6 network switches that support the entire customer base of MIAX Emerald. The Exchange plans to increase this to 12 switches, which will increase the number of available customer ports by 100%. This increase in the number of available customer ports will enable the Exchange to continue to provide sufficient and equal access to the MIAX Emerald System for all Members. Absent the proposed increase in available MEI Ports, the Exchange projects that its current inventory will be depleted and it will lack sufficient capacity to continue to meet Members' access needs. Further, the Exchange notes the decision of whether to purchase any Additional Limited Service MEI Ports is completely optional and it is a business decision for each Market Maker to determine whether Additional Limited Service MEI Ports are necessary to meet their business requirements.

The Exchange further believes that the availability of the Additional Limited Service MEI Ports is equitable and not unfairly discriminatory because it will enable Market Makers to maintain uninterrupted access to the MIAX Emerald System and consequently enhance the marketplace by helping Market Makers to better manage risk, thus preserving the integrity of

the MIAX Emerald markets, all to the benefit of and protection of investors and the public as a whole. The Exchange also believes that its proposal is consistent with Section 6(b)(4) of the Act because only Market Makers that voluntarily purchase Additional Limited Service MEI Ports will be charged the monthly fee per port.

As stated above, the Exchange proposes to expand its network by making available six Additional Limited Service MEI Ports due to increased customer demand and increased volatility in the marketplace, both of which have translated into increased message traffic rates across the network. The cost to expand the network in this manner is greater than the revenue the Exchange anticipates the Additional Limited Service MEI Ports will generate. Specifically, the Exchange estimates it has already incurred a one-time cost of approximately \$175,000 in capital expenditures (“CapEx”) on hardware, software, and other items to expand the network to make available the six Additional Limited Service MEI Ports. This estimated cost also includes expense associated with providing the necessary engineering and support personnel to transition those Market Makers who wish to acquire any number of Additional Limited Service MEI Ports.

The Exchange cannot predict with certainty how many Market Makers will purchase the Additional Limited Service MEI Ports, in what quantity, or if Market Makers will add/drop Limited Service MEI Ports from month to month. However, utilizing a recent monthly billing cycle, the Exchange notes four Market Makers purchased all six of the Additional Limited Service MEI Ports, and two Market Makers purchased two out of six of the Additional Limited Service MEI Ports, which will be subject to the proposed fee of \$100 per month per Additional Limited Service MEI Port for each Matching Engine. Therefore, utilizing the recent monthly billing cycle, Market Makers purchased 28 total Additional Limited Service MEI Ports. The

Exchange has 12 Matching Engines.⁴⁴ Assuming that each Market Maker that purchased the 28 Additional Limited Service MEI Ports connected to all 12 Matching Engines at a rate of \$100 per month, the Exchange projects monthly revenue for the Additional Limited Service MEI Ports of approximately \$33,600 (28 Additional LSPs x 12 Matching Engines x \$100 = \$33,600 per month). On a going-forward basis and assuming no Market Maker drops or adds Additional Limited Service MEI Ports, the Exchange projects to collect an additional \$403,200 in annualized revenue from the Additional Limited Service MEI Ports that are part of this proposal.

The Exchange only has four primary sources of revenue: transaction fees, access fees (of which the Proposed Access Fees constitute the majority), regulatory fees, and market data fees. Accordingly, the Exchange must cover all of its expenses from these four primary sources of revenue.

The Exchange believes that the Proposed Access Fees are fair and reasonable because they will not result in excessive pricing or supra-competitive profit, when comparing the total annual expense that the Exchange projects to incur in connection with providing these services versus the total annual revenue that the Exchange projects to collect in connection with providing these services. For 2020⁴⁵, the total annual expense for providing the services associated with the Proposed Access Fees for MIAX Emerald is projected to be approximately \$9.3 million. The \$9.3 million in expense includes expense associated with providing all ports and all connectivity alternatives. The Exchange is unable to separate out its expense by

⁴⁴ The Exchange notes that several Market Makers, including those that purchased the Additional Limited Service MEI Ports, do not connect to all 12 Matching Engines. It is a business decision of each Market Maker whether to purchase one or more types of ports that connect to each Matching Engine.

⁴⁵ The Exchange has not yet finalized its 2020-year end results.

connectivity alternative, as all connectivity alternatives are intricately combined in a single network infrastructure. Nevertheless, the Exchange attributes the majority of connectivity expense to the 10Gb ULL connections because the majority of network capacity is used by 10Gb ULL purchasers.⁴⁶ The \$9.3 million in projected total annual expense is comprised of the following, all of which are directly related to the services associated with the Proposed Access Fees: (1) third-party expense, relating to fees paid by MIAX Emerald to third-parties for certain products and services; and (2) internal expense, relating to the internal costs of MIAX Emerald to provide the services associated with the Proposed Access Fees. As noted above, the Exchange believes it is more appropriate to analyze the Proposed Access Fees utilizing its 2020 revenue and costs, which utilize the same presentation methodology as set forth in the Exchange's previously-issued Audited Unconsolidated Financial Statements.⁴⁷ The \$9.3 million in projected total annual expense is directly related to the services associated with the Proposed Access Fees, and not any other product or service offered by the Exchange. It does not include general costs of operating matching systems and other trading technology, and no expense amount was allocated twice.

As discussed, the Exchange conducted an extensive cost review in which the Exchange analyzed every expense item in the Exchange's general expense ledger (this includes over 150 separate and distinct expense items) to determine whether each such expense relates to the

⁴⁶ See supra note 42.

⁴⁷ For example, the Exchange previously noted that all third-party expense described in its prior fee filing was contained in the information technology and communication costs line item under the section titled "Operating Expenses Incurred Directly or Allocated From Parent," in the Exchange's 2019 Form 1 Amendment containing its financial statements for 2018. See Securities Exchange Act Release No. 87877 (December 31, 2019), 85 FR 738 (January 7, 2020) (SR-EMERALD-2019-39). Accordingly, the third-party expense described in this filing is attributed to the same line item for the Exchange's 2020 Form 1 Amendment, which will be filed in 2021.

services associated with the Proposed Access Fees, and, if such expense did so relate, what portion (or percentage) of such expense actually supports those services, and thus bears a relationship that is, “in nature and closeness,” directly related to those services. The sum of all such portions of expenses represents the total cost of the Exchange to provide services associated with the Proposed Access Fees.

For 2020, total third-party expense, relating to fees paid by MIAX Emerald to third-parties for certain products and services for the Exchange to be able to provide the services associated with the Proposed Access Fees, is projected to be \$1,932,519. This includes, but is not limited to, a portion of the fees paid to: (1) Equinix, for data center services, for the primary, secondary, and disaster recovery locations of the MIAX Emerald trading system infrastructure; (2) Zayo Group Holdings, Inc. (“Zayo”) for network services (fiber and bandwidth products and services) linking MIAX Emerald’s office locations in Princeton, NJ and Miami, FL to all data center locations; (3) Secure Financial Transaction Infrastructure (“SFTI”)⁴⁸, which supports connectivity and feeds for the entire U.S. options industry; (4) various other services providers (including Thompson Reuters, NYSE, Nasdaq, and Internap), which provide content, connectivity services, and infrastructure services for critical components of options connectivity and network services; and (5) various other hardware and software providers (including Dell and Cisco, which support the production environment in which Members and non-Members connect to the network to trade, receive market data, etc.).

⁴⁸ In fact, on October 22, 2019, the Exchange was notified by SFTI that it is again raising its fees charged to the Exchange by approximately 11%, without having to show that such fee change complies with the Act by being reasonable, equitably allocated, and not unfairly discriminatory. It is unfathomable to the Exchange that, given the critical nature of the infrastructure services provided by SFTI, that its fees are not required to be rule-filed with the Commission pursuant to Section 19(b)(1) of the Act and Rule 19b-4 thereunder. See 15 U.S.C. 78s(b)(1) and 17 CFR 240.19b-4, respectively.

For clarity, only a portion of all fees paid to such third-parties is included in the third-party expense herein, and no expense amount is allocated twice. Accordingly, MIAX Emerald does not allocate its entire information technology and communication costs to the services associated with the Proposed Access Fees.

The Exchange believes it is reasonable to allocate such third-party expense described above towards the total cost to the Exchange to provide the services associated with the Proposed Access Fees. In particular, the Exchange believes it is reasonable to allocate the identified portion of the Equinix expense because Equinix operates the data centers (primary, secondary, and disaster recovery) that host the Exchange's network infrastructure. This includes, among other things, the necessary storage space, which continues to expand and increase in cost, power to operate the network infrastructure, and cooling apparatuses to ensure the Exchange's network infrastructure maintains stability. Without these services from Equinix, the Exchange would not be able to operate and support the network and provide the services associated with the Proposed Access Fees to its Members and non-Members and their customers. The Exchange did not allocate all of the Equinix expense toward the cost of providing the services associated with the Proposed Access Fees, only that portion which the Exchange identified as being specifically mapped to providing the services associated with the Proposed Access Fees, approximately 73% of the total Equinix expense (68% allocated towards the cost of providing the provision of network connectivity and 5% allocated towards the cost of providing ports). The Exchange believes this allocation is reasonable because it represents the Exchange's actual cost to provide the services associated with the Proposed Access Fees, and not any other service, as supported by its cost review.

The Exchange believes it is reasonable to allocate the identified portion of the Zayo expense because Zayo provides the internet, fiber and bandwidth connections with respect to

the network, linking MIAX Emerald with its affiliates, Miami International Securities Exchange, LLC (“MIAX”) and MIAX Pearl, LLC (“MIAX Pearl”), as well as the data center and disaster recovery locations. As such, all of the trade data, including the billions of messages each day per exchange, flow through Zayo’s infrastructure over the Exchange’s network. Without these services from Zayo, the Exchange would not be able to operate and support the network and provide the services associated with the Proposed Access Fees. The Exchange did not allocate all of the Zayo expense toward the cost of providing the services associated with the Proposed Access Fees, only the portion which the Exchange identified as being specifically mapped to providing the Proposed Access Fees, approximately 66% of the total Zayo expense (62% allocated towards the cost of providing the provision of network connectivity and 4% allocated towards the cost of providing ports). The Exchange believes this allocation is reasonable because it represents the Exchange’s actual cost to provide the services associated with the Proposed Access Fees, and not any other service, as supported by its cost review.

The Exchange believes it is reasonable to allocate the identified portions of the SFTI expense and various other service providers’ (including Thompson Reuters, NYSE, Nasdaq, and Internap) expense because those entities provide connectivity and feeds for the entire U.S. options industry, as well as the content, connectivity services, and infrastructure services for critical components of the network. Without these services from SFTI and various other service providers, the Exchange would not be able to operate and support the network and provide access to its Members and non-Members and their customers. The Exchange did not allocate all of the SFTI and other service providers’ expense toward the cost of providing the services associated with the Proposed Access Fees, only the portions which the Exchange identified as being specifically mapped to providing the services associated with the Proposed

Access Fees, approximately 94% of the total SFTI and other service providers' expense (89% allocated towards the cost of providing the provision of network connectivity and 5% allocated towards the cost of providing ports).⁴⁹ The Exchange believes this allocation is reasonable because it represents the Exchange's actual cost to provide the services associated with the Proposed Access Fees.

The Exchange believes it is reasonable to allocate the identified portion of the other hardware and software provider expense because this includes costs for dedicated hardware licenses for switches and servers, as well as dedicated software licenses for security monitoring and reporting across the network. Without this hardware and software, the Exchange would not be able to operate and support the network and provide access to its Members and non-Members and their customers. The Exchange did not allocate all of the hardware and software provider expense toward the cost of providing the services associated with the Proposed Access Fees, only the portions which the Exchange identified as being specifically mapped to providing the services associated with the Proposed Access Fees, approximately 57% of the total hardware and software provider expense (54% allocated towards the cost of providing the provision of network connectivity and 3% allocated towards the cost of providing ports). The

⁴⁹ The Exchange notes an increase to the SFTI and other service providers' expense percentage contained herein versus the same expense category percentage the Exchange used in its initial filing to adopt connectivity fees. See Securities Exchange Act Release No. 87877 (December 31, 2019), 85 FR 738 (January 7, 2020) (SR-EMERALD-2019-39). This is because at the time the Exchange performed its cost analysis for the initial connectivity fee filing, the Exchange was operational for only part of the year. Since that time, the Exchange has been fully operational, increased market share and number of market participants, and undertaken significant performance upgrades, resulting in increased expense. Accordingly, the Exchange believes it is appropriate to analyze its SFTI and other service providers' expense more in line with its affiliate options exchanges, MIAX and MIAX PEARL.

Exchange believes this allocation is reasonable because it represents the Exchange's actual cost to provide the services associated with the Proposed Access Fees.

For 2020, total projected internal expense, relating to the internal costs of MIAX Emerald to provide the services associated with the Proposed Access Fees, is projected to be \$7,367,259. This includes, but is not limited to, costs associated with: (1) employee compensation and benefits for full-time employees that support the services associated with the Proposed Access Fees, including staff in network operations, trading operations, development, system operations, business, as well as staff in general corporate departments (such as legal, regulatory, and finance) that support those employees and functions (including an increase as a result of the higher determinism project); (2) depreciation and amortization of hardware and software used to provide the services associated with the Proposed Access Fees, including equipment, servers, cabling, purchased software and internally developed software used in the production environment to support the network for trading; and (3) occupancy costs for leased office space for staff that provide the services associated with the Proposed Access Fees. The breakdown of these costs is more fully-described below. For clarity, only a portion of all such internal expenses are included in the internal expense herein, and no expense amount is allocated twice. Accordingly, MIAX Emerald does not allocate its entire costs contained in those items to the services associated with the Proposed Access Fees.

The Exchange believes it is reasonable to allocate such internal expense described above towards the total cost to the Exchange to provide the services associated with the Proposed Access Fees. In particular, MIAX Emerald's employee compensation and benefits expense relating to providing the services associated with the Proposed Access Fees is projected to be \$4,489,924, which is only a portion of the \$9,354,009 total projected expense for employee compensation and benefits. The Exchange believes it is reasonable to allocate the

identified portion of such expense because this includes the time spent by employees of several departments, including Technology, Back Office, Systems Operations, Networking, Business Strategy Development (who create the business requirement documents that the Technology staff use to develop network features and enhancements), Trade Operations, Finance (who provide billing and accounting services relating to the network), and Legal (who provide legal services relating to the network, such as rule filings and various license agreements and other contracts). As part of the extensive cost review conducted by the Exchange, the Exchange reviewed the amount of time spent by each employee on matters relating to the provision of services associated with the Proposed Access Fees. Without these employees, the Exchange would not be able to provide the services associated with the Proposed Access Fees to its Members and non-Members and their customers. The Exchange did not allocate all of the employee compensation and benefits expense toward the cost of the services associated with the Proposed Access Fees, only the portions which the Exchange identified as being specifically mapped to providing the services associated with the Proposed Access Fees, approximately 48% of the total employee compensation and benefits expense (39% allocated towards the cost of providing the provision of network connectivity and 9% allocated towards the cost of providing ports). The Exchange believes this allocation is reasonable because it represents the Exchange's actual cost to provide the services associated with the Proposed Access Fees, and not any other service, as supported by its cost review.

MIAX Emerald's depreciation and amortization expense relating to providing the services associated with the Proposed Access Fees is projected to be \$2,630,687, which is only a portion of the \$3,812,590 total projected expense for depreciation and amortization. The Exchange believes it is reasonable to allocate the identified portion of such expense because such expense includes the actual cost of the computer equipment, such as dedicated servers,

computers, laptops, monitors, information security appliances and storage, and network switching infrastructure equipment, including switches and taps that were purchased to operate and support the network and provide the services associated with the Proposed Access Fees. Without this equipment, the Exchange would not be able to operate the network and provide the services associated with the Proposed Access Fees to its Members and non-Members and their customers. The Exchange did not allocate all of the depreciation and amortization expense toward the cost of providing the services associated with the Proposed Access Fees, only the portion which the Exchange identified as being specifically mapped to providing the services associated with the Proposed Access Fees, approximately 69% of the total depreciation and amortization expense, as these services would not be possible without relying on such equipment (65% allocated towards the cost of providing the provision of network connectivity and 4% allocated towards the cost of providing ports). The Exchange believes this allocation is reasonable because it represents the Exchange's actual cost to provide the services associated with the Proposed Access Fees, and not any other service, as supported by its cost review.

MIAX Emerald's occupancy expense relating to providing the services associated with the Proposed Access Fees is projected to be \$246,648, which is only a portion of the \$474,323 total projected expense for occupancy. The Exchange believes it is reasonable to allocate the identified portion of such expense because such expense represents the portion of the Exchange's cost to rent and maintain a physical location for the Exchange's staff who operate and support the network, including providing the services associated with the Proposed Access Fees. This amount consists primarily of rent for the Exchange's Princeton, NJ office, as well as various related costs, such as physical security, property management fees, property taxes, and utilities. The Exchange operates its Network Operations Center ("NOC") and Security Operations Center ("SOC") from its Princeton, New Jersey office location. A centralized

office space is required to house the staff that operates and supports the network. The Exchange currently has approximately 150 employees. Approximately two-thirds of the Exchange's staff are in the Technology department, and the majority of those staff have some role in the operation and performance of the services associated with the Proposed Access Fees. Without this office space, the Exchange would not be able to operate and support the network and provide the services associated with the Proposed Access Fees to its Members and non-Members and their customers. Accordingly, the Exchange believes it is reasonable to allocate the identified portion of its occupancy expense because such amount represents the Exchange's actual cost to house the equipment and personnel who operate and support the Exchange's network infrastructure and the services associated with the Proposed Access Fees. The Exchange did not allocate all of the occupancy expense toward the cost of providing the services associated with the Proposed Access Fees, only the portion which the Exchange identified as being specifically mapped to operating and supporting the network, approximately 52% of the total occupancy expense (48% allocated towards the cost of providing the provision of network connectivity and 4% allocated towards the cost of providing ports). The Exchange believes this allocation is reasonable because it represents the Exchange's cost to provide the services associated with the Proposed Access Fees, and not any other service, as supported by its cost review.

The Exchange notes that a material portion of its total overall expense is allocated to the provision of services associated with the Proposed Access Fees. The Exchange believes this is reasonable and in line, as the Exchange operates a technology-based business that differentiates itself from its competitors based on its trading systems that rely on its high performance network, resulting in significant technology expense. Over two-thirds of Exchange staff are technology-related employees. The majority of the Exchange's expense is technology-based.

As described above, the Exchange has only four primary sources of fees in to recover its costs, thus the Exchange believes it is reasonable to allocate a material portion of its total overall expense towards the Proposed Access Fees.

The Exchange's monthly projected revenue for the Proposed Access Fees is based on the following projected purchases by Members and non-Members, which is based on a recent billing cycle: (i) 62 10Gb ULL connections; (ii) 14 CTD Ports; (iii) 8 FXD Ports; (iv) 113 FIX Ports; (v) 363 Limited Service MEI Ports; (vi) 37 Full Service MEI Ports;⁵⁰ and (vii) 10 Purge Ports. As described above, the fee charged to each Market Maker for MEI Ports can vary from month to month depending on the number of classes in which the Market Maker was assigned to quote on any given day within the calendar month, and upon certain class volume percentages. The Exchange also provides a further discount for a Market Maker's MEI Port fees if the Market Maker's total monthly executed volume during the relevant month is less than 0.025% of the total monthly executed volume reported by OCC in the customer account type for MIAX Emerald-listed option classes for that month. The Exchange has at least one Member consistently quoting in the highest tier for MEI Port fees, but receiving this discount, resulting in lower revenue for the Exchange. Further, the projected revenue from FIX Port fees is subject to change from month to month depending on the number of FIX Ports purchased.

Accordingly, based on current assumptions and approximations, the Exchange projects total monthly Port revenue (including the Additional Limited Service MEI Port revenue described above and the cancellation of Ports by one Member) of approximately \$268,200 and total 10Gb ULL connectivity revenue of approximately \$620,000 (including the cancellation of

⁵⁰ The Exchange's projections included 9 firms or their affiliates purchasing Full Service MEI Ports. Of those firms, the Exchange projects that 6 firms will achieve the highest tier in the MEI Port fee table, 2 firms will achieve the lowest tier in the MEI Port fee table, and 1 firm will achieve the middle tier in the MEI Port fee table.

one 10Gb ULL connection by one Member). The Exchange notes that the port revenue projections are subject to change depending on the number of classes that Market Makers are quoting in and the tiers achieved. As such, the projection of \$268,200 per month is not a static number and can fluctuate month to month. Further, as noted above, one Member dropped its connections and ports as a direct result of the introduction of the Proposed Access Fees. Accordingly, reflecting that cancellation of approximately \$324,000 per year (\$27,000 total per month in connectivity and port fees), and including the revenue from the proposed Additional Limited Service MEI Ports, the Exchange projects annualized revenue of approximately \$10,658,400 from all connectivity alternatives and port types.⁵¹ This is broken down as follows:

- \$268,200/month x 12 months = \$3,218,400/annually for all ports (including the subtraction of one Member who dropped ports, plus the Additional LSPs described above)
- \$620,000/month x 12 months = \$7,440,000/annually for all connectivity (including the subtraction of one Member who dropped its 10Gb ULL connection)
- \$3,218,400 + \$7,440,000 = \$10,658,400/annually for the Proposed Access Fees

Accordingly, based on the facts and circumstances presented, the Exchange believes that its provision of the services associated with the Proposed Access Fees will not result in excessive pricing or supra-competitive profit. As described above, on a going-forward, fully-annualized basis, the Exchange projects that its annualized revenue for providing the services associated with the Proposed Access Fees would be approximately \$10,658,400, based on a

⁵¹ This revenue projection includes revenue from all connectivity sources, including all 10Gb ULL connections discussed above (after giving effect to the recent cancellation), two 1Gb connections (the Exchange is not increasing fees for 1Gb connections, however, those connections are included in total connectivity revenue in order to have a true comparison between all connectivity revenue and all connectivity expense), and all port types discussed above (after giving effect to the recent cancellation).

recent billing cycle. The Exchange projects that its annualized expense for providing the services associated with the Proposed Access Fees would be approximately \$9.3 million per annum. Accordingly, on a fully-annualized basis, the Exchange believes its total projected revenue for the providing the services associated with the Proposed Access Fees will not result in excessive pricing or supra-competitive profit, as the Exchange will make only a 12.7% profit margin on the Proposed Access Fees ($\$10,658,400 - \$9.3 \text{ million} = \$1,358,400$ per annum). This profit margin does not take into account the cost of the CapEx the Exchange projected to spend in 2020 of \$1.85 million on the project to make the Exchange's network more deterministic, or the amounts the Exchange is projected to spend each year on CapEx going forward for that project. This profit margin also does not take into account the cost of the CapEx of \$175,000 for adding the six Additional Limited Service MEI Ports.

For the avoidance of doubt, none of the expenses included herein relating to the services associated with the Proposed Access Fees relate to the provision of any other services offered by MIAX Emerald. Stated differently, no expense amount of the Exchange is allocated twice. The Exchange notes that, with respect to the MIAX Emerald expenses included herein, those expenses only cover the MIAX Emerald market; expenses associated with the Exchange's affiliate exchanges, MIAX and MIAX Pearl, are accounted for separately and are not included within the scope of this filing. Stated differently, no expense amount of the Exchange is also allocated to MIAX or MIAX Pearl.

The Exchange believes it is reasonable, equitable and not unfairly discriminatory to allocate the respective percentages of each expense category described above towards the total cost to the Exchange of operating and supporting the network, including providing the services associated with the Proposed Access Fees because the Exchange performed a line-by-line item analysis of all the expenses of the Exchange, and has determined the expenses that directly

relate to operation and support of the network. Further, the Exchange notes that, without the specific third-party and internal items listed above, the Exchange would not be able to operate and support the network, including providing the services associated with the Proposed Access Fees to its Members and non-Members and their customers. Each of these expense items, including physical hardware, software, employee compensation and benefits, occupancy costs, and the depreciation and amortization of equipment, have been identified through a line-by-line item analysis to be integral to the operation and support of the network. The Proposed Access Fees are intended to recover the Exchange's costs of operating and supporting the network. Accordingly, the Exchange believes that the Proposed Access Fee Increases are fair and reasonable because they do not result in excessive pricing or supra-competitive profit, when comparing the actual network operation and support costs to the Exchange versus the projected annual revenue from the Proposed Access Fees, including the increased amount.

The Exchange also points out that it is not seeking to recoup any of its past costs associated with the provision of any Ports during the Waiver Period. The Exchange currently has 35 Members,⁵² all of whom did not pay Port fees during the Waiver Period from the time these firms all became Members of the Exchange. Further, the majority of firms that are Members of the Exchange's affiliate options exchanges, MIAX and MIAX Pearl, also became Members of those exchanges during similar Waiver Periods for the MIAX and MIAX Pearl Port fees. Accordingly, the Exchange (and MIAX and MIAX Pearl) have assumed approximately 100% of the costs associated with providing Ports for the majority of Member firms of the Exchange, MIAX, and MIAX Pearl during their respective Waiver Periods. Accordingly, the Exchange believes that it is reasonable, equitable, and not unfairly discriminatory to now adopt

⁵² See <https://www.miaxoptions.com/exchange-members/emerald>.

Port fees that are reasonably related to (and designed to recover) the Exchange's cost associated with the provision of such Ports.

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

The Exchange does not believe that the proposed rule change would place certain market participants at the Exchange at a relative disadvantage compared to other market participants or affect the ability of such market participants to compete.

Intra-Market Competition

The Exchange believes that the Proposed Access Fees do not place certain market participants at a relative disadvantage to other market participants because the Proposed Access Fees do not favor certain categories of market participants in a manner that would impose a burden on competition; rather, the allocation of the Proposed Access Fees reflects the network resources consumed by the various size of 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.

Inter-Market Competition

The Exchange believes the Proposed Access Fees do not place an undue burden on competition on other SROs that is not necessary or appropriate. In particular, options market participants are not forced to connect to (and purchase market data from) all options exchanges. The Exchange had one of its member firms cancel its membership with the Exchange as a direct result of the Proposed Access Fees. The Exchange also notes that it has far less Members as compared to the much greater number of members at other options exchanges. 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. There are a number of large market makers and broker-dealers that are members of

other options exchange but not Members of MIAX Emerald. The Exchange is also unaware of any assertion that its existing fee levels or the Proposed Access 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, as described above.

The Exchange operates in a highly competitive market in which market participants can readily favor one of the 15 competing options venues if they deem fee levels at a particular venue to be excessive. Based on publicly-available information, and excluding index-based options, no single exchange has more than 16% market share. Therefore, no exchange possesses significant pricing power in the execution of multiply-listed equity and ETF options order flow. For the month of December 2020, the Exchange had a market share of approximately 3.58% of executed multiply-listed equity options⁵³ and the Exchange believes that the ever-shifting market share among exchanges from month to month demonstrates that market participants can discontinue or reduce use of certain categories of products, or shift order flow, in response to fee changes. In such an environment, the Exchange must continually adjust its fees and fee waivers to remain competitive with other exchanges and to attract order flow to the Exchange.

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,⁵⁴ and Rule 19b-4(f)(2)⁵⁵ thereunder. At any time within 60 days of the filing of the proposed rule change, the Commission summarily may temporarily suspend such rule change if

⁵³ See supra note 39.

⁵⁴ 15 U.S.C. 78s(b)(3)(A)(ii).

⁵⁵ 17 CFR 240.19b-4(f)(2).

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](mailto:to-rule-comments@sec.gov). Please include File Number SR-EMERALD-2021-11 on the subject line.

Paper comments:

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

All submissions should refer to File Number SR-EMERALD-2021-11. 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 Web site (<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 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; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly.

All submissions should refer to File Number SR-EMERALD-2021-11 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.⁵⁶

Vanessa Countryman
Secretary

⁵⁶ 17 CFR 200.30-3(a)(12).

Exhibit 5

New text is underlined;
 Deleted text is in [brackets]

MIAX Emerald Fee Schedule

5) System Connectivity Fees

a) Monthly Member Network Connectivity Fee

Member Network Connectivity Per Month	Primary/Secondary Facility 1 Gigabit Per Connection	Disaster Recovery Facility 1 Gigabit Per Connection	Disaster Recovery Facility 10 Gigabit Per Connection	Primary/Secondary Facility 10 Gigabit ULL Per Connection
Individual Firm	\$1,400.00	\$550.00	\$2,750.00	[\$6,000.00] <u>\$10,000.00</u>

Monthly Member Network Connectivity fees for connectivity with the Primary/Secondary Facility will be assessed in any month the Member is credentialed to use any of the APIs or Market Data feeds via the network connection in the production environment and will be pro-rated when a Member makes a change to the connectivity (by adding or deleting connections) with such pro-rated fees based on the number of trading days that the Member has been credentialed to utilize any of the APIs or Market Data feeds in the production environment through such connection, divided by the total number of trading days in such month multiplied by the applicable monthly rate. Monthly Member Network Connectivity fees for connectivity with the Disaster Recovery Facility will be assessed in each month during which the Member has established connectivity with the Disaster Recovery Facility.

Members utilizing the MENI to connect to the trading platforms, market data systems, test systems, and disaster recovery facilities of the Exchange, MIAX PEARL, and MIAX via a single, Shared connection will only be assessed one Monthly Member Network Connectivity Fee per connection, regardless of the trading platforms, market data systems, test systems, and disaster recovery facilities accessed via such connection.

b) Monthly Non-Member Network Connectivity Fee

Non-Member Network Connectivity Per Month	Primary/Secondary Facility 1 Gigabit Per Connection	Disaster Recovery Facility 1 Gigabit Per Connection	Disaster Recovery Facility 10 Gigabit Per Connection	Primary/Secondary Facility 10 Gigabit ULL Per Connection
Service Bureau/ Extranet Provider and other non-Members	\$1,400.00	\$550.00	\$2,750.00	[\$6,000.00] <u>\$10,000.00</u>

Monthly Non-Member Network Connectivity fees for connectivity with the Primary/Secondary Facility will be assessed in each month the Non-Member has been credentialed to use any of the APIs or Market Data feeds via the network connection in the production environment and will be pro-rated when a Non-Member makes a change to the connectivity (by adding or deleting connections) with such pro-rated fees based on the number of trading days that the Non-Member has been credentialed to utilize any of the APIs or Market Data feeds in the production environment through such connection, divided by the total number of trading days in such month multiplied by the applicable monthly rate. Monthly Non-Member Network Connectivity fees for connectivity with the Disaster Recovery Facility will be assessed in each month during which the Non-Member has established connectivity with the Disaster Recovery Facility.

Non-Members utilizing the MENI to connect to the trading platforms, market data systems, test systems, and disaster recovery facilities of the Exchange, MIAX PEARL, and MIAX via a single, Shared connection will only be assessed one Monthly Non-Member Network Connectivity Fee per connection, regardless of the trading platforms, market data systems, test systems, and disaster recovery facilities accessed via such connection.

c) No change.

d) Port Fees

i) FIX Port Fees

MIAX Emerald will assess monthly Financial Information Exchange (“FIX”) Port Fees on Members in each month the Member is credentialed to use a FIX Port in the production environment and based upon the number of credentialed FIX Ports.

MIAX Emerald Monthly Port Fees	
Includes Connectivity to the Primary, Secondary and Disaster Recovery Data Centers	
FIX Port Fees	
1st FIX Port	[Fee waived for the Waiver Period] <u>\$550.00</u>
FIX Ports 2 through 5	[Fee waived for the Waiver Period] <u>\$350.00</u>
Additional FIX Ports over 5	[Fee waived for the Waiver Period] <u>\$150.00</u>

ii) MEI Port Fees

Monthly MIAX Emerald MEI Fees	Market Maker Assignments	
	(the lesser of the applicable measurements below)	
	Per Class	% of National Average Daily Volume
[Fee waived for the Waiver Period] <u>\$5,000.00[*]</u>	Up to 5 Classes	Up to 10% of Classes by volume
[Fee waived for the Waiver Period] <u>\$10,000.00[*]</u>	Up to 10 Classes	Up to 20% of Classes by volume
[Fee waived for the Waiver Period] <u>\$14,000.00[*]</u>	Up to 40 Classes	Up to 35% of Classes by volume
[Fee waived for the Waiver Period] <u>\$17,500.00[*]</u> [■]	Up to 100 Classes	Up to 50% of Classes by volume

[Fee waived for the Waiver Period] <u>\$20,500.00</u> [*]■	Over 100 Classes	Over 50% of Classes by volume up to all Classes listed on MIAX Emerald
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[* Fees for Additional Limited Service MEI Ports are not subject to the Waiver Period.]

- For these Monthly MIAX Emerald MEI Port tier levels, if the Market Maker's total monthly executed volume during the relevant month is less than 0.025% of the total monthly executed volume reported by OCC in the customer account type for MIAX Emerald-listed option classes for that month, then the fee will be \$14,500.00 instead of the fee otherwise applicable to such level.

MIAX Emerald will assess monthly MIAX Emerald Express Interface (“MEI”) Port Fees on Market Makers in each month the Member has been credentialed to use the MEI Port in the production environment and has been assigned to quote in at least one class. The amount of the monthly MEI Port Fee will be based upon the number of classes in which the Market Maker was assigned to quote on any given day within the calendar month, and upon the class volume percentages set forth in the above table. The class volume percentage is based on the total national average daily volume in classes listed on MIAX Emerald in the prior calendar quarter. Newly listed option classes are excluded from the calculation of the monthly MEI Port Fee until the calendar quarter following their listing, at which time the newly listed option classes will be included in both the per class count and the percentage of total national average daily volume. The Exchange will assess MIAX Emerald Market Makers the monthly MEI Port Fee based on the greatest number of classes listed on MIAX Emerald that the MIAX Emerald Market Maker was assigned to quote in on any given day within a calendar month and the applicable fee rate that is the lesser of either the per class basis or percentage of total national average daily volume measurement.

MEI Port users will be allocated two (2) Full Service MEI Ports and two (2) Limited Service MEI Ports per Matching Engine to which they connect. MEI Port Fees include MEI Ports at the Primary, Secondary and Disaster Recovery data centers. MIAX Emerald Market Makers may request additional Limited Service MEI Ports (“Additional Limited Service MEI Ports”) for which MIAX Emerald will assess MIAX Emerald Market Makers [~~\$50~~] \$100 per month per Additional Limited Service MEI Port for each Matching Engine. Market Makers are limited to [~~six~~] twelve Additional Limited Service MEI Ports per Matching Engine, for a total of [~~eight~~] fourteen per Matching Engine.

A MIAX Emerald Market Maker may request and be allocated two (2) Purge Ports per Matching Engine to which it connects. For each month in which the MIAX Emerald Market Maker has been credentialed to use Purge Ports in the production environment and has been assigned to quote in at least one class, the Exchange will assess the MIAX Emerald Market Maker a flat fee of \$1,500 per month [which will be waived for the Waiver Period], regardless of the number of Purge Ports allocated to the MIAX Emerald Market Maker.

iii) Clearing Trade Drop Port Fees

Description	Monthly Fee
Real-Time CTD Information	[Fee waived for the Waiver Period] <u>\$450.00</u>

Clearing Trade Drop (“CTD”) provides Exchange Members with real-time clearing trade updates. The updates include the Member’s clearing trade messages on a low latency, real-time basis. The trade messages are routed to a Member’s connection containing certain information. The information includes, among other things, the following: (i) trade date and time; (ii) symbol information; (iii) trade price/size information; (iv) Member type (for example,

and without limitation, Market Maker, Electronic Exchange Member, Broker-Dealer); (v) Exchange Member Participant Identifier (“MPID”) for each side of the transaction, including Clearing Member MPID; and (vi) strategy specific information for complex transactions. CTD Port Fees will be assessed in any month the Member is credentialed to use the CTD Port in the production environment.

iv) FIX Drop Copy Port Fees

Description	MIAX Emerald Monthly Port Fees Includes connectivity to the Primary, Secondary and Disaster Recovery Data Centers
FIX Drop Copy Port	[Fee waived for the Waiver Period] <u>\$500.00</u>

The FIX Drop Copy (“FXD”) Port is a messaging interface that will provide a copy of real-time trade execution, trade correction and trade cancellation information to FXD Port users who subscribe to the service. FXD Port users are those users who are designated by an EEM to receive the information and the information is restricted for use by the EEM. FXD Port Fees will be assessed in any month the Member is credentialed to use the FXD Port in the production environment.

e) – f) No change.
