

August 28, 2020

Ms. Vanessa Countryman  
Secretary  
U.S. Securities and Exchange Commission  
100 F Street NE  
Washington DC 20549-1090

Re: Notice of Filing of Partial Amendment No.1 to Proposed Rule Change to Establish a Wireless Fee Schedule Setting Forth Available Wireless Bandwidth Connections and Associated Fees (File Nos. SR-NYSE-2020-05, SR-NYSEAMER-2020-05, SR-NYSEArca-2020-08, SR-NYSECHX-2020-02, SR-NYSESTAT-2020-03); and Notice of Filing of Partial Amendment No. 1 to Proposed Rule Change to Amend the Schedule of Wireless Connectivity Fees and Charges to Add Wireless Connectivity Services (SR-NYSE-2020-11, SR-NYSEAMER-2020-10, SR-NYSEArca-2020-15, SR-NYSECHX-2020-05, SR-NYSESTAT-2020-08)

Dear Ms. Countryman:

McKay Brothers LLC (“McKay”) and its affiliate Quincy Data LLC (“Quincy”) (collectively, the “Firm”)<sup>1</sup> appreciate the opportunity to comment on the proposed amendments by the NYSE Group, Inc. exchanges (collectively “the Exchanges” or each an “Exchange”) to the proposals relating to the wireless connections to third party exchange data centers (the “Wireless Connections”) and the market data products available through those connections (collectively with the Wireless Connections, the “Wireless Services”).<sup>2</sup> The Firm applauds the Exchanges’ efforts in the Amendment Filings to modify the Wireless Services so they do “not benefit from any physical proximity” that is closer to the Exchanges’ Mahwah data center (the “Data Center”) with the goal of operating “in the same manner as competitors do today without a latency subsidy or other advantage provided by the Exchanges.”<sup>3</sup> The Amendment Filings propose substantial progress toward redressing the exclusive geographic latency advantage currently enjoyed by the

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<sup>1</sup> Quincy is a market data distributor that provides equal access to low latency US equities market data that helps subscribers make tighter markets. McKay is a telecommunications service provider, affiliated with Quincy and using various technologies – often wireless – to offer low-latency data transport services, which likewise allow subscribers to manage risk more effectively and make tighter markets. We offer services on a level-playing field basis—meaning we make our best latencies available to all subscribers. We also provide small firm discounts to support greater diversity of market participants with access to low latency market data.

<sup>2</sup> Securities Exchange Act Release Nos. [89453](#), 85 FR 47992 (Aug. 7, 2020) (SR-NYSE-2020-05) (“Wireless Connections Amendment”) and [89458](#), 85 FR 48045 (Aug. 7, 2020) (SR-NYSE-2020-11) (“Wireless Data Amendment”). See also Securities Exchange Act Release Nos. 89454 (Aug. 3, 2020) (SR-NYSEAMER-2020-05); 89459 (Aug. 3, 2020) (SR-NYSEAMER-2020-10); 89455 (Aug. 3, 2020) (SR-NYSEArca-2020-08); 89460 (Aug. 3, 2020) (SR-NYSEArca-2020-15); 89456 (Aug. 3, 2020) (SR-NYSECHX-2020-02); 89461 (Aug. 3, 2020) (SR-NYSECHX-2020-05); 89457 (Aug. 3, 2020) (SR-NYSESTAT-2020-03); and 89462 (Aug. 3, 2020) (SR-NYSESTAT-2020-08) (collectively, the “Amendment Filings”).

<sup>3</sup> Wireless Connections Amendment at 47995 (internal citations omitted). The Exchanges also acknowledged commenters concerns relating to “less obvious and more discreet types of latency advantages” that may arise from the Exchanges’ control over the Data Center. *Id.* at 47994.

Wireless Services at the Data Center and toward leveling the playing field in the provision of wireless connectivity services and market data through such services.

We believe, however, that despite the significant step forward that the Amendment Filings would make, they fall short of achieving a durable level playing field in market access and connectivity that is consistent with the principles of the Securities Exchange Act of 1934 (“Exchange Act”).<sup>4</sup> The long-term goal should be to retire the use of the on-premises pole used by the Wireless Services (“Data Center Pole”) because it is very difficult to correct for the advantages that arise from the exclusive (to one or more select parties) use of a geographically-advantaged means of connectivity in a manner that comprehensively addresses concerns of unfair discrimination and burdens on competition.<sup>5</sup> These concerns would be best addressed by either (a) moving the Wireless Services to commercial poles in the public street right-of-ways, or (b) establishing an alternative pole with ample capacity for all—and with either solution, providing equal fiber lengths to colocation cabinets (or the point of market data distribution in the case of market data services) within the Data Center.<sup>6</sup> All exchanges should abstain from deploying—and Nasdaq Inc. (“Nasdaq”) should remove their existing—structural latency advantages for wireless services.

Notwithstanding our view above of what is ultimately needed from the exchanges to level the level playing at the exchange data centers, we propose herein a number of easy-to-apply changes to the Amendment Filings to more accurately address the Wireless Services’ existing latency advantage and potential circumvention of the proposed objectives, while still allowing the Exchanges to use the Data Center Pole. Part I below describes our view of a level playing field and the need for exchanges to commit to this goal. Part II sets forth our suggested improvements to the Exchanges’ proposed rule text, and Part III describes our persistent concerns with the Exchanges’ stated reasons justifying the exclusive use of the Data Center Pole.

## **I. Exchanges Should Expressly Commit to Level Playing Field**

No market participant or wireless service provider should be afforded a structural advantage arising from an exchange’s direct or indirect control over its data center. Where an exchange believes it has cause for deviating from this policy, the exchange should provide full transparency and adequate justification under the Exchange Act to facilitate public and Commission review. Adopting a level playing field policy over its facilities would reduce or eliminate anti-competitive practices and improve market participants’ choice in wireless services. We believe the Exchanges should affirmatively represent that they will not knowingly provide a latency advantage or other connectivity advantage on the premises of the Data Center to any party. The scope of a level playing field policy should include latency or other advantages of which the Exchanges should reasonably know, and in particular those available to or provided by affiliates to any party, with respect to: (i) outbound market data from the Exchanges, (ii) inbound

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<sup>4</sup> 15 U.S.C. 78f(b)(5) and (8).

<sup>5</sup> Even with the adoption of the changes we recommend to the Amendment Filings proposed rule text, the Wireless Services would continue to enjoy certain advantages over competitors. *See e.g., infra* n.20 and accompanying text.

<sup>6</sup> “Equal lengths to the Data Center” in this context means from each dish on the alternative structure to: (i) each customer colocation cabinet and (ii) to the source of the Exchanges’ market data.

market data from other exchanges received at the Data Center, and (iii) telecom services used to send orders and other critical information between exchange data centers.

An express commitment to establishing a level playing field at the Data Center and taking action to achieve this goal would promote consistency with Exchange Act requirements including (i) just and equitable principles of trade and (ii) removing impediments to and perfecting the mechanism of a free and open market and a national market system.<sup>7</sup> Although not a national securities exchange, the Chicago Mercantile Exchange, Inc. (“CME”) provides co-location services “built around fair and equal access” at its data center in Aurora, IL, in a manner that we believe would promote consistency with the Exchange Act.<sup>8</sup> The CME does not own its data center, but the CME nonetheless facilitated the data center owner’s construction of a tower on the premises of the data center to achieve equal access into CME’s space within the data center.<sup>9</sup> The key characteristics of the CME model are: (i) ample antenna capacity for all demand from market participants; (ii) the tower provides the lowest latency access to co-located parties in the data center; (iii) equidistant connections from each antenna to every collocated customer cabinet in the data center; (iv) uniform pricing and terms for all market participants connecting via the tower, and (v) transparency in architecture, pricing and policy that provides public and regulatory validation that the deployment matches the model’s stated goals.

A commitment to the principle of a level playing field in matters of market access are necessary safeguards as markets continue to evolve. The speed of equity markets has increased dramatically over the past decade and this trend will continue. As a result, small latency advantages will grow in importance to the numerous market participants concerned with trading, providing liquidity, and managing risk. Exchange data centers also vary in structure, making the accounting of potential latency advantages more challenging, absent adoption of a level playing field policy that includes equal access facilities.

Consequently, a principles-based commitment to establishing a level playing field is essential to eliminate latency advantages that presently exist and dampen exchange incentives to create structural advantages in the future. Transparency regarding matters of market access are likewise essential to identifying and addressing structural advantages, as articulated in our previous comment letter.<sup>10</sup> We believe that if the Exchanges are unwilling to commit to the goal of a level playing field, the Commission should consider exercising its rulemaking authority to address these issues.

Creating a durable level playing field from the existing state of the infrastructure at the Data Center, however, takes time. In recognition of this fact, we recommend the changes

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<sup>7</sup> 15 U.S.C. 78f(b)(5). A level playing field policy would also promote the requirements that an exchange’s rules not be unfairly discriminatory and not impose any burden on competition not necessary or appropriate in furtherance of the Exchange Act.

<sup>8</sup> See CME Group, FAQ: Data Center Sale Leaseback, <https://www.cmegroup.com/trading/colocation/faq-data-center-sale-leaseback.html>.

<sup>9</sup> See *id.* (“CME Group will maintain its policy of equidistant cross connects for CME Group Co-Location Services.”).

<sup>10</sup> Letter from Jim Considine, Chief Financial Officer, McKay, to Vanessa Countryman, Secretary, Commission re: File No. SR-NYSE-2020-05 at 12-14 (March 10, 2020) (“McKay Letter I”), <https://www.sec.gov/comments/sr-nyse-2020-05/srnyse202005-6950634-212524.pdf>.

described below to immediately address the Wireless Services' existing latency advantage using the Exchanges' proposed framework that preserves the Wireless Services' continued exclusive use of the Data Center Pole.

## II. Suggested Improvements to Proposed Rules 3.13 and 3.14

The scope of proposed Rules 3.13 and 3.14 (the "Rules") should be amended to account for other potential latency advantages and to improve how latency is measured and equalized. With the goal in mind of working toward the creation of a more level playing field, the proposed Rules should apply to any exclusive latency advantage arising from the Exchanges' or their affiliates' control or rights in the use of the Data Center premises to any party in any manner, not simply affiliates of the Exchange on a specified tower.

Accordingly, we recommend the following changes to the proposed Rules to more effectively address exclusive latency advantages and to allay concerns of potential circumvention of the proposed Rules. We believe that these proposals can be implemented fairly readily (*i.e.*, in one weekend) and would go a long way to addressing the issues that the Exchanges seek to address in the Amendment Filings. Our suggested amendments to the draft text of the Rules is provided in Appendix A.

1. *Account for Other Structures on the Data Center Premises* – The definition of "Data Center Pole" should be amended to account for other existing and potential structures on Data Center premises, such as the roof of the Data Center, which might be used to provide or support the Wireless Services.<sup>11</sup>
2. *Account for Unaffiliated Providers* – The definition of "Data Center Pole" should be amended to include any party or parties—and not just affiliates of the Exchanges—that are provided access to the Data Center Pole to the exclusion of others.<sup>12</sup>
3. *Clarify that the "Data Center Pole" Is a Facility of the Exchange* – The proposed "Data Center Pole" definition should be amended to make clear that it is a "facility" of the Exchanges, as defined in the Exchange Act.<sup>13</sup> At a minimum, it should refer to the "premises" of the Exchanges, consistent with the facility definition rather than simply "within the grounds" of the Data Center.
  - a. While the Exchanges have maintained that the Wireless Services are not facilities of Exchanges, they have not explained or justified why it is appropriate to define

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<sup>11</sup> We similarly suggest that this addition to account for other structures should be made to the proposed definition of "Closest Commercial Pole."

<sup>12</sup> This change would eliminate the necessity of defining the term "ICE Affiliate," under the Rules, which is deleted in Appendix A. Without this change, the Wireless Services' exclusive latency advantage could be transferred to another wireless service provider, and the harm to free and fair competition and market participant choice would remain.

<sup>13</sup> 15 U.S.C. 78c(a)(2).

the “Data Center Pole” in a manner that potentially evades its appropriate categorization as a facility of the Exchanges.<sup>14</sup>

- b. The Data Center Pole is unequivocally on the premises of the Data Center leasehold interest used by the Exchanges to operate as exchanges, and the Exchanges’ and their affiliates exercise full control over who may access it. The use of the Data Center Pole to connect to the Exchanges by any party in any manner should therefore be subject to the protections of the Exchange Act, and the definition of Data Center Pole should eliminate any ambiguity to the contrary.
4. *Equalize Wireless Connections to Customer Cabinets* – Proposed Rule 3.13(b) should be amended to require equalized latency to colocation cabinets in the Data Center. The Exchanges propose to equalize fiber length from the base of each pole (*i.e.*, the Data Center Pole and closest commercial pole) to the “network row in the space used for colocation,” but provide no explanation regarding what exactly this expression means or why the Exchanges have not proposed to equalize latency all the way to the customer cabinets.<sup>15</sup>
5. *Clarify that the Length of the Fiber Connection Is Equalized* – The proposed Rules should be clear that the Exchanges will equalize the length of the Data Center Pole fiber connection relative to the *fiber* length of the connection between the closest commercial pole and the Data Center and not simply the straight-line distance on the surface of the ground.
  - a. The fiber connection from the closest commercial pole is not straight. It includes additional length, traversing horizontal turns, backtracking, and both aerial and underground paths to access the Data Center. If the Exchanges equalized connections based on a geodesic line measurement above ground, the Data Center Pole connection would maintain a meaningful advantage in its fiber length relative to the closest commercial pole.<sup>16</sup>

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<sup>14</sup> See Letter from Elizabeth K. King, Chief Regulatory Officer ICE, General Counsel and Corporate Secretary, NYSE, to Vanessa Countryman, Secretary, Commission re: the Wireless Filings (May 8, 2020), at 8-9 <https://www.sec.gov/comments/sr-nyse-2020-05/srnyse202005-7168807-216593.pdf>. The Exchanges argued that the Wireless Services could not be the “premises” of the Exchanges under the first prong of the “facility” definition (15 U.S.C. 78c(a)(2)) because they are “services” and not premises. However, the relevant question in the case of the definition of “Data Center Pole” is not whether the Wireless Services are or are not (or are in part) a facility of the Exchanges, but rather whether the Data Center Pole is a facility of the Exchanges. Indeed, it would appear to fall within the Merriam Webster definition of “premises” cited by the Exchanges in their comment letter as “building, land, and appurtenances.” *Id.* If the Exchanges contend that the Data Center Pole is not a facility of the Exchanges, such contention requires its own explanation and statutory justification.

<sup>15</sup> In other words, the Exchanges propose to equalize latency to some place short of the actual customer cabinets (*i.e.*, the “network row”), but provide no rationale for why they do not propose to equalize to the actual colocation cabinets. It is unclear if this suggests that customer cross connects to the matching engine are not uniform and underscores the need for transparency. Other data center structures, including CME, equalize latency to co-located customer cabinets.

<sup>16</sup> The Amendment Filings also opens up potential circumvention of the Rules by allowing the Exchanges to create unnecessarily circuitous fiber routes for commercial poles to connect to the Data Center. In accessing Nasdaq from

6. *Account for Over-the-Air Latency Differences by Designating a “Closest Commercial Pole” for each Wireless Services Destination* – The proposed Rules should be amended to account for over-the-air latency differentials between the Data Center Pole and the “closest” commercial pole with respect to each third party data center.
- a. A single “closest” commercial pole may be the closest for a connection to one third party data center but not another—*e.g.*, the closest commercial pole for a connection from the Data Center to Nasdaq (south of the Data Center), may be different than for a connection from the Data Center to the Toronto Stock Exchange (TSX) in Markham, Canada (north of the Data Center). As a result, we believe it is necessary to define the term “Closest Commercial Pole” in a manner that prevents potential circumvention of the intent of the proposed Rules.<sup>17</sup>
  - b. Under the Amendment Filings proposed Rules, the Data Center Pole may still enjoy an over-the-air latency advantage relative to the closest commercial pole(s) for connections to certain third party data centers as illustrated in Appendix B. For example, over-the-air, the Data Center Pole enjoys a 167 foot latency advantage over the closest commercial pole to Nasdaq’s Carteret data center, as detailed in the measurements set forth in Appendix C. In other words, even if the length of the fiber connections of the closest commercial pole and the Data Center Pole are equalized, the Data Center Pole would still maintain this 167 foot proximity advantage.
  - c. To address the possibility of different poles representing the closest commercial pole as well as over-the-air latency differentials, we propose: (1) a definition for “Closest Commercial Pole”<sup>18</sup> and (2) amending the Rules to require that latency be equalized between the Data Center Pole and the “Closest Commercial Pole” based on the sum of (i) the fiber length from each pole into the Data Center; and

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its on-campus tower, for example, customer traffic must pass through a spool of fiber that Nasdaq’s rooftop installations supporting Nasdaq’s wireless services appear to bypass.

<sup>17</sup> Without defining the “Closest Commercial Pole” for each Wireless Services destination, the Exchanges could create a latency subsidy for the Data Center Pole over commercial poles by establishing a commercial pole that is geographically closer to the Data Center, but that has worse latency to one or more third party data centers. For example, assume that the commercial poles in the public right-of-way east of the Data Center are 2000 feet away from the Data Center and that a new commercial pole is built in the public right-of-way north of the Data Center that is 1500 feet away from the Data Center. Despite being geographically closer to the Data Center, the north commercial pole would have worse latency than the east commercial poles in connecting to Nasdaq located south of the data center. The Amendment Filings would equalize latency to the closest commercial pole *wherever located*, meaning that the fiber connection to the Data Center pole would equalize to the north commercial pole (1500 feet away), even though the east commercial poles (2000 feet away) remain the lowest latency connection to Nasdaq and other third party data centers south of the Data Center.

<sup>18</sup> We believe the “Closest Commercial Pole” should be defined as the commercial pole which has the shortest aggregate distance of: (a) the geodesic distance between a third party data center and commercial pole; plus (b) the fiber routing distance to the Data Center’s customer colocation cabinets (or the point where market data is distributed in the case of proposed Rule 3.14).

(ii) any differential (positive or negative) in geodesic distance between the pole and the third party data center.<sup>19</sup>

- d. Implementing these changes would shorten or lengthen the Data Center Pole’s fiber adjustment to each third party data center based on a more fulsome view of the Data Center Pole’s geographic latency advantage rather than just its distance from the Data Center.
- e. Over-the-air latency differentials arise from the location of the Data Center Pole relative to commercial poles and will persist as long as the Wireless Services use an exclusive pole. The differentials are therefore structural in nature and underscore the need for the Wireless Services to ultimately move to a commercial pole to create a durable level playing field.<sup>20</sup>

7. *Prevent Private Conduit Systems into the Data Center that Create Latency Advantages*—The Amendment Filings would leave open the possibility for the Exchanges or their affiliates to establish a pole on private property (*i.e.*, not on the premises of the Data Center and not in the public street right-of-way) adjacent to the Data Center with a geographic latency advantage over commercially available alternatives.

- a. Such a private pole could evade categorization as: (i) a Data Center Pole because it would not be on the premises of the Data Center, and (ii) a commercial pole if the operator does not make available wireless services to others through the private pole.<sup>21</sup>
- b. To address this concern, the proposed Rules should be amended to specify that any fiber connection to the Data Center must enter onto the premises of the Data Center through a public street right-of-way. This will eliminate the possibility of creating a private conduit system into the Data Center that gives a latency subsidy to this private pole. Currently, we understand that the only way to access the Data

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<sup>19</sup> We also propose to define “Third Party Data Center” as “any service access point from which wireless connections to the Data Center are made available via a Data Center Pole.” The purpose of defining this broadly as “any service access point” is to avoid potential circumvention of the rule – *e.g.*, the Wireless Services could connect to a building outside of a third party data center rather than the actual third party data center to fall outside of the proposed Rules.

<sup>20</sup> For example, even if the proposed Rules are amended as we recommend, the Wireless Services would continue to enjoy the best latency to each Third Party Data Center from a single location (the Data Center Pole), while any competing wireless service provider may have to establish a separate presence on the Closest Commercial Pole serving each relevant Third Party Data Center. The central location of the Data Center Pole also insulates the Wireless Services from competition for frequency licenses pursuant to Federal Communications Commission rules applicable to all other wireless service providers.

<sup>21</sup> Even if the private pole met the definition of a Commercial pole by providing wireless services to other market participants, because the private pole would not be located in the public street right of way, other wireless service providers and market participants would not be able to replicate the geographic latency advantage of the private pole without similarly acquiring private property of equivalent geographic distance to the Data Center. This limits investor choice and detracts from a level playing field by allowing a single party to have an exclusive geographic latency advantage. The public street right-of-way is both the standard way of connecting to a data center via fiber and the place where all market participants have equal opportunity to either place their wireless equipment on an existing commercial pole or build their own pole. It is therefore an essential component to creating a durable level playing field.

Center is by connecting to conduit systems on the premises of the Data Center through a public street right-of-way, so we believe this change would largely just codify existing policy.<sup>22</sup>

- c. If this change is not implemented, there will be significant incentives for wireless service providers, including the Exchanges, their affiliates, and their preferred partners, to establish a private pole and new conduit system (not through the public street right of way) into the Data Center to create a latency advantage, which undermines the Exchanges’ stated goals.

### **III. The Exchange Should Be Transparent about the Reasons for the Continued Use of the Private Pole**

In the Amendment Filings, the Exchanges continue to justify the exclusive use of the Data Center Pole “due to space limitations, security concerns, and the interference that would arise between equipment located too closely together.”<sup>23</sup> As discussed in our prior comment letter, these are neither sufficient nor appropriate justifications for the use of exclusive infrastructure, and we remain concerned that allowing these justifications to remain (a) suggests that the Wireless Services could not effectively operate using commercial poles and (b) sets a harmful precedent pursuant to which exchanges may justify the exclusive use of other equipment or services.<sup>24</sup>

We recognize the public’s interest in not unduly disrupting the provision of the Wireless Services. Accordingly, the justification for the continued exclusive use of the Data Center Pole should be acknowledged as an accommodation to avoid undue disruption to the Wireless Services or such other rationale or justification the Exchanges may have. To the extent the Exchanges seek to rely on the justifications of space limitations, interference, and security concerns to support the exclusive use of the Data Center Pole for the Wireless Services, the Exchanges should share with the public what is unique about the Wireless Services that gives rises to these concerns and why the Wireless Services could not be provided using a commercial pole.

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Structural advantages provided to select wireless service providers arising from an exchange’s control of its data center thwart a level playing field and should be eliminated because they inappropriately burden competition and unfairly discriminate against market participants

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<sup>22</sup> In other words, if a geographically closer private pole were built today, it would have to enter the premises of the Data Center via a public street right of way pursuant to informal policy of the Exchanges. Because it would have to enter via a public street right of way, the latency advantage of its geographic proximity would be neutralized. If, however, a private conduit system were to be built to accommodate the private pole, it would have a geographic latency advantage over commercial poles and the Data Center Pole, but fall outside of the definitions under the proposed Rules.

<sup>23</sup> See Amendment Filings at n. 29/30.

<sup>24</sup> See Letter from Jim Considine, Chief Financial Officer, McKay, to Vanessa Countryman, Secretary, Commission re: File No. SR-NYSE-2020-05 (June 12, 2020) (“McKay Letter II”), <https://www.sec.gov/comments/sr-nyse-2020-11/srnyse202011-7309398-218208.pdf>. The Exchange found space to add four additional antennas to the Data Center Pole in March 2019, and there are towers of comparable height that hold significantly more wireless equipment than the Data Center Pole without interference issues or security concerns.



who do not enjoy such structural advantages. As detailed above, while we applaud the Exchanges' notable steps in the right direction, we believe the Exchanges should expressly commit to creating a level playing field and represent that they neither directly nor indirectly advantage one party over others through their control of the Data Center premises, including such advantages of which the Exchanges reasonably should know, such as those provided by its affiliates. More importantly, we believe that other exchanges, and in particular Nasdaq, should make the same level playing field commitment for its premises, and begin working toward that end without delay.

Regarding the proposed rule text in the Amendment Filings, we believe a number of changes are necessary to ensure that the latency advantage enjoyed by the Wireless Services is equalized appropriately and that opportunities to circumvent the Rules are minimized. Maintaining the exclusive use of the Data Center Pole for the Wireless Services preserves advantages and potential gaming opportunities depending on how the Exchanges measure and implement latency equalization. Our suggestions are intended to practicably strengthen the proposed Rules until a durable level playing field can be established.

Thank you for the opportunity to contribute to this important discussion. Please contact us with any questions at (312) 948-9188.

Sincerely,



Jim Considine  
Chief Financial Officer  
McKay Brothers, LLC

cc: The Hon. Jay Clayton, Chairman  
The Hon. Hester M. Peirce, Commissioner  
The Hon. Elad L. Roisman, Commissioner  
The Hon. Allison Herren Lee, Commissioner  
The Hon. Caroline Crenshaw, Commissioner

Mr. Brett Redfearn, Director, Division of Trading and Markets  
Mr. Christian Sabella, Deputy Director, Division of Trading and Markets  
Ms. Elizabeth Baird, Deputy Director, Division of Trading and Markets  
Mr. David S. Shillman, Associate Director, Division of Trading and Markets  
Mr. John Roeser, Associate Director, Division of Trading and Markets

S.P. Kothari, Director, Division of Economic and Risk Analysis

APPENDIX A

**Suggested Changes to the Proposed Rules**

New text is bold underline. Deleted text is bracketed and crossed through. Edits are made to the Exchanges' proposed rule text.

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**Rule 3.13. Data Center Pole Latency Restrictions--Connectivity to Co-Location Space**

(a) For purposes of this rule the terms below are defined as follows:

(1) "Commercial Pole" means a pole **or other structure** (a) on which one or more third parties locate wireless equipment used to offer wireless connectivity to other third parties, and (b) from which a fiber connection extends from third party equipment on the pole to the Data Center.

(2) "Data Center" means the Mahwah, New Jersey data center where the Exchange's matching engine is located, or its successor.

~~{(3) "ICE Affiliate" means Intercontinental Exchange, Inc. ("ICE") and any entity that directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with ICE, where "control" means that one entity possesses, directly or indirectly, voting control of the other entity either through ownership of capital stock or other equity securities or through majority representation on the board of directors or other management body of such entity.}~~

~~{[4]3} "Data Center Pole" means a pole **or other structure** that (a) holds wireless equipment, (b) is located [~~within the grounds~~]**on the premises** of the Data Center, and (c) **the use of which is limited to select persons.** [~~cannot be used by third parties other than third parties with which the Exchange or an ICE Affiliate has an agreement to provide services in the name of the Exchange or an ICE Affiliate.~~]~~

**(4) "Closest Commercial Pole" means, with respect to each Third Party Data Center, the Commercial Pole having the shortest aggregate distance of: (a) geodesic distance between a Third Party Data Center and the Commercial Pole, plus (b) fiber routing distance between the base of the Commercial Pole and each customer cabinet in any space used for co-location.**

**(5) "Third Party Data Center" means any service access point from which wireless connections to the Data Center are made available via a Data Center Pole.**

(b) **For each Third Party Data Center, [T]the length of the fiber connection between the base of the Data Center Pole and [the network row] each customer cabinet in any space used for co-location shall be no less than the sum of (1) the length of the fiber path between the base of the Closest Commercial Pole and each customer cabinet in the space used for co-location, and (2) the geodesic distance of the Closest Commercial**

**Pole to the Third Party Data Center less the geodesic distance of the Data Center Pole to the Third Party Data Center.** [~~in the Data Center shall be no less than the length of the connection between the base of the closest Commercial Pole and the network row in the space used for co-location each member cabinet in the Data Center.~~]

**(c) Any fiber connection into the premises of the Data Center must enter through a public street right-of-way.**

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**Proposed Rule 3.14 Data Center Pole Latency Restrictions--Connectivity to Production of Exchange Market Data**

(a) Same changes as noted above in Rule 3.13(a)(1) – (3) and (5).

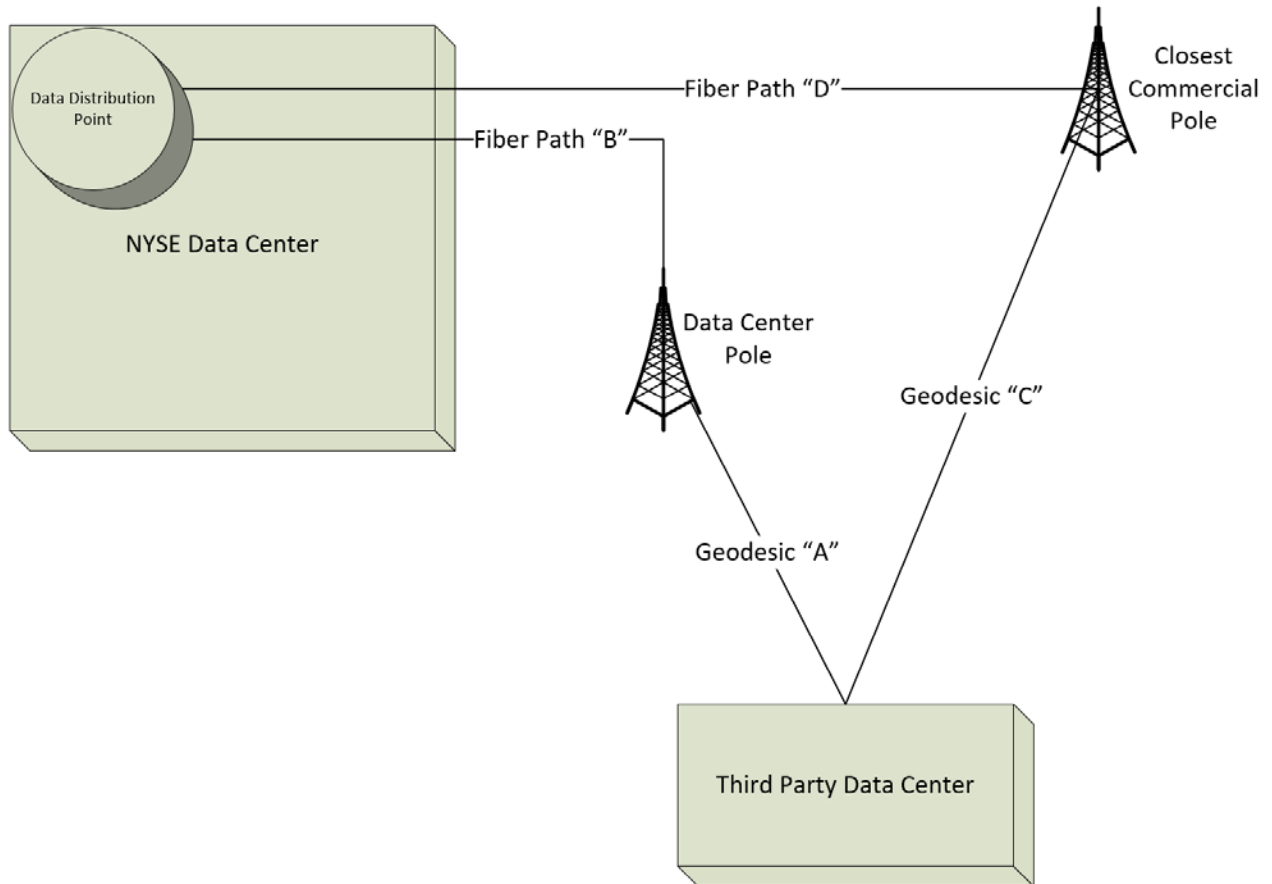
**(4) “Closest Commercial Pole” means, with respect to each Third Party Data Center, the Commercial Pole having the shortest aggregate distance of: (a) geodesic distance between a Third Party Data Center and the Commercial Pole, plus (b) fiber routing distance between the base of the Commercial Pole and the point inside the Data Center where Exchange market data is produced.**

(b) **For each Third Party Data Center,** [~~±~~]the length of the **fiber** connection between the base of the Data Center Pole and the point inside the Data Center where Exchange market data is produced shall be no less than the **sum of (1) the** length of the [~~connection~~] fiber path between the base of the [~~e~~]Closest Commercial Pole and the point inside the Data Center where Exchange market data is produced, **and (2) the geodesic distance of the Closest Commercial Pole to the Third Party Data Center less the geodesic distance of the Data Center Pole to the Third Party Data Center.**

**(c) Any fiber connection into the premises of the Data Center must enter through a public street right-of-way.**

APPENDIX B

Over-the-Air Differences between the Data Center Pole and Commercial Poles



The Amendment Filings compares B with D, as in B must be greater than or equal to D. Given the Data Center Pole's geographically advantaged position, our proposal additionally accounts for the difference of A and C, as in  $B + A$  must be greater than or equal to  $D + C$ .

**APPENDIX C**

**Measurements of Over-the-Air Differences between Certain Third Party Data Centers**

Geodesic Measures (ft)	Data Center Pole	Commercial Pole, (Cross River) <sup>25</sup>	Over-the-Air (Dis)Advantage of Data Center Pole
NY5 (Cboe)	111,238	111,177	(61)
NY11 (Nasdaq)	181,486	181,653	167
Markham (TSX)	1,718,760	1,719,252	492

As an artifact of the geographic placement of the Data Center Pole relative to the commercial poles, the above measurements show that for different potential service access points, there are different advantages or disadvantages – *e.g.*, for wireless services involving NY11 (Nasdaq) and the Data Center Pole, the Data Center Pole should be spooled an additional 167 feet of fiber to account for this difference. However, for wireless services involving NY5 (Cboe), the Data Center Pole should *reduce* its spooled fiber length by 61 feet. For services which involve TSX, the Data Center Pole should be spooled an additional 492 feet relative to the closest commercial pole (if any) that also provides wireless services to TSX.

The additional spooling recommendations are based on the assumption that the fiber involved has an index of refraction near 1, commonly known as “hollow core” fiber.

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<sup>25</sup> We currently understand the Cross River pole to be the closest commercial pole to these third party data centers.