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SECURITIES AND EXCHANGE COMMISSION

17 CFR Parts 240, 242, and 249

Release No. 34-88216; File No. S7-03-20

RIN 3235-AM61

Market Data Infrastructure

AGENCY: Securities and Exchange Commission.

ACTION: Proposed rule.

SUMMARY: The Securities and Exchange Commission ("Commission" or "SEC") is proposing to amend 17 CFR 242, Rules 600 and 603 and to adopt new Rule 614 of Regulation National Market System ("Regulation NMS") under the Securities Exchange Act of 1934 ("Exchange Act") to update the national market system for the collection, consolidation, and dissemination of information with respect to quotations for and transactions in national market system ("NMS") stocks ("NMS information"). Specifically, the Commission proposes to expand the content of NMS information that is required to be collected, consolidated, and disseminated as part of the national market system under Regulation NMS and proposes to amend the method by which such NMS information is collected, calculated, and disseminated by introducing a decentralized consolidation model where competing consolidators replace the exclusive securities information processors.

DATES: Comments should be received on or before **[**INSERT DATE 60 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER**]**.

ADDRESSES: Comments may be submitted by any of the following methods:

Electronic comments:

•Use the Commission's Internet comment form (http://www.sec.gov/rules/proposed.shtml); or

•Send an email to rule-comments@sec.gov. Please include File Number S7-03-20 on the subject line.

Paper comments:

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

All submissions should refer to File Number S7-03-20. This file number should be included on the subject line if email is used. To help us 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/proposed.shtml). Comments are also available for Web site viewing and printing in the Commission's Public Reference Room, 100 F Street, NE, Washington, DC 20549-1090 on official business days between the hours of 10:00 a.m. and 3:00 p.m. All comments received will be posted without change; we do not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly.

Studies, memoranda, or other substantive items may be added by the Commission or staff to the comment file during this rulemaking. A notification of the inclusion in the comment file of any materials will be made available on the Commission's website. To ensure direct electronic receipt of such notifications, sign up through the "Stay Connected" option at www.sec.gov to receive notifications by e-mail.

FOR FURTHER INFORMATION CONTACT: Kelly Riley, Senior Special Counsel, at (202) 551-6772; Ted Uliassi, Senior Special Counsel, at (202) 551-6095; Elizabeth C. Badawy, Senior Accountant, at (202) 551-5612; Leigh Duffy, Special Counsel, at (202) 551-5928; Yvonne Fraticelli, Special Counsel, at (202) 551-5654; Steve Kuan, Special Counsel, at (202) 551-5624; or Joshua Nimmo, Attorney-Advisor, at (202) 551-5452, Division of Trading and Markets, Commission, 100 F Street, NE, Washington, DC 20549.

SUPPLEMENTARY INFORMATION: The Commission is proposing to expand the content of NMS information that is required to be collected, consolidated, and disseminated as part of the national market system under Regulation NMS by proposing several new defined terms under Rule 600 of Regulation NMS, including "consolidated market data," "core data," "regulatory data," "administrative data," and "exchange-specific program data." To implement the decentralized consolidation model, the Commission is proposing to amend Rule 603 under Regulation NMS to remove the requirement that all consolidated information for individual NMS stocks be disseminated through a single plan processor and to require each national securities exchange and national securities association to make available its NMS information in the same manner and using the same methods, including all methods of access and the same format, as the exchange or association makes available any quotation or transaction information for NMS stocks to any person. In addition, the Commission is proposing to add new Rule 614 and a new Form CC to govern the registration and responsibilities of competing consolidators. Further, the Commission is proposing that the effective national market system plan(s) for NMS stocks be amended to reflect the decentralized consolidation model. Finally, the Commission is proposing to amend Regulation SCI to expand the definition of "SCI entities" to include competing consolidators.

In particular, the Commission is proposing: (1) amendments to Rule 600 [17 CFR 242.600] to add new definitions of "administrative data," "auction information," "competing consolidator," "consolidated market data," "core data," "depth of book data," "exchange-specific program data," "primary listing exchange," "regulatory data," "round lot," and "self-aggregator;" (2) amendments to Rule 603 [17 CFR 242.603] to require national securities exchanges and national securities associations to make available NMS information to competing consolidators and self-aggregators and to remove the requirement that all consolidated information for individual NMS stocks be disseminated through a single plan processor; (3) adoption of Rule 614 [17 CFR 242.614] and Form CC to require registration of competing consolidators; (4) that the participants to the effective national market system plan(s) relating to NMS stocks amend such plan(s) to reflect the definition of "consolidated market data" and the implementation of a decentralized consolidation model; (5) amendments to Rule 1000 [17 CFR 242.1000] to include competing consolidators in the definition of "SCI entities;" and (6) conforming changes and updating cross-references in Rule 201(a)(3) [17 CFR 242.201(a)(3)], Rule 201(b)(1)(ii) [17 CFR 242.201(b)(1)(ii)], Rule 201(b)(3) [17 CFR 242.201(b)(3)], Rule 600(b)(43) [17 CFR 242.600(b)(43)], Rule 600(b)(61) [17 CFR 242.600(b)(61)], and Rule 602 [17 CFR 242.602].

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I. Introduction

The widespread availability of NMS information[1] has been an essential element in the success of the U.S. securities markets. Congress recognized the importance of market information to the U.S. securities markets with the enactment of Section 11A of the Exchange Act. Section 11A(a)(2) of the Exchange Act[2] directs the Commission, having due regard for the public interest, the protection of investors, and the maintenance of fair and orderly markets, to use its authority under the Exchange Act to facilitate the establishment of a national market system for securities in accordance with the Congressional findings and objectives set forth in Section 11A(a)(1) of the Exchange Act.[3] Among the findings and objectives in Section 11A(a)(1) are that "[n]ew data processing and communications techniques create the opportunity for more efficient and effective market operations"[4] and "[i]t is in the public interest and appropriate for the protection of investors and the maintenance of fair and orderly markets to

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1 See infra Section II.A for a discussion of the NMS information that is consolidated and disseminated in the U.S. securities markets.

2 15 U.S.C. 78k-1(a)(2).

3 15 U.S.C. 78k-1(a)(1).

4 15 U.S.C. 78k-1(a)(1)(B).

assure . . . the availability to brokers, dealers, and investors of information with respect to quotations for and transactions in securities . . . "[5]

As discussed below, the Commission exercised its authority under Section 11A of the Exchange Act through the adoption of a series of rules that have been incorporated into Regulation NMS. Those rules address both the content of, and the means by which, NMS information is collected, consolidated, and disseminated.[6] In particular, Section 11A(c)(1)(B) of the Exchange Act authorizes the Commission to prescribe rules, as necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Exchange Act, that "assure the prompt, accurate, reliable, and fair collection, processing, distribution, and publication of information with respect to quotations for and transactions in such securities and the fairness and usefulness of the form and content of such information."[7] Among other things, the Commission required the self-regulatory organizations ("SROs") to act jointly pursuant to NMS plans[8] to disseminate, through a single plan processor, a consolidated

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5 15 U.S.C. 78k-1(a)(1)(C). The Senate Report for the enactment of Section 11A stated that "it is critical for those who trade to have access to accurate, up-to-the-second information as to the prices at which transactions in particular securities are taking place (i.e., last sale reports) and the prices at which other traders have expressed their willingness to buy or sell (i.e., quotations)." S. REP. NO. 94-75 at 8 (1975) ("Senate Report"). The Senate Report continued that "[f]or this reason, communications systems designed to provide automated dissemination of last sale and quotation information with respect to securities will form the heart of the national market system." Id. at 6.

6 See 17 CFR 242.601–603; infra Section II.B.

7 See 15 U.S.C. 78k-1(c)(1)(B); Senate Report, supra note 5, at 189 ("Examples of the types of subjects as to which the SEC would have the authority to promulgate rules under these provisions include: the hours of operation of any type or quotation system, trading halts, what and how information is displayed and qualifications for the securities to be included on any tape or within any quotation system.").

8 On January 8, 2020, the Commission issued a notice of proposed order directing the SROs to submit a new, single NMS plan for NMS stocks ("New Consolidated Data Plan"). See Securities Exchange Act Release No. 87906 (Jan. 8, 2020), 85 FR 2164 (Jan.

national best bid and national best offer, along with last sale data, for each NMS stock.[9] While the Commission has periodically revised certain of its NMS rules with the goal of ensuring that the regulatory framework continues to fulfill the goals of Section 11A of the Exchange Act,[10] the Commission has not significantly updated the rules that govern the content and distribution of NMS information since their initial implementation in the late 1970s.

14, 2020) ("Proposed Governance Order"). The existing NMS plans for NMS stocks are: (1) the Consolidated Trade Association ("CTA") Plan; (2) the Consolidated Quotation ("CQ") Plan; and (3) the Nasdaq Unlisted Trading Privileges ("Nasdaq UTP") Plan (collectively the "Equity Data Plans"). See infra note 13 and Section II.A. The Commission is proposing provisions in new Rule 614 that would require the participants to amend the effective national market system plan(s) for NMS stocks. See infra Section IV.B.4. If adopted, the proposed amendments would apply to any effective national market system plan for NMS stocks. In response to the Proposed Governance Order, the NYSE submitted a comment letter that also discussed a number of market structure issues that are addressed in this release (e.g., expanding SIP data content and modernizing SIP data delivery such as through a potential competing consolidator model). See Letter from Elizabeth K. King, Chief Regulatory Officer, ICE, and General Counsel and Corporate Secretary, NYSE, to Vanessa Countryman, Secretary, Commission, 5 (Feb. 5, 2020) ("NYSE Governance Letter"). As with various other comments referenced herein, including, without limitation, comments received in connection with the Roundtable on Market Data and Market Access, see infra note 17, the NYSE Governance Letter was not provided with reference to the specific proposals discussed in this release. To the extent that the NYSE or other commenters wish to modify or supplement their prior comments to reflect the particulars of the proposals discussed herein, the Commission welcomes such comments.

9 See Exchange Act Rule 11Aa3-1 (renumbered and renamed as Exchange Act Rule 601, Dissemination of transaction reports and last sale data with respect to transactions in NMS stocks); Exchange Act Rule 11Ac1-1 (renumbered and renamed as Exchange Act Rule 602, Dissemination of quotations in NMS securities); Exchange Act Rule 11Ac1-2 (renumbered and renamed as Exchange Act Rule 603, Distribution, consolidation, and display of information with respect to quotations for and transactions in NMS stocks.).

10 See, e.g., Securities Exchange Act Release Nos. 51808 (June 9, 2005), 70 FR 37496 (June 29, 2005) ("Regulation NMS Adopting Release"); 84528 (Nov. 2, 2018), 83 FR 58338 (Nov. 19, 2018) (adopting amendments to Rule 606 to require additional disclosures by broker-dealers to customers regarding the handling of their orders).

The widespread availability of timely market information promotes fair and efficient markets and facilitates the ability of brokers and dealers to provide best execution to their customers.[11] The structure of the equity markets has changed dramatically since the Commission adopted the rules now known as Regulation NMS in 2005 and approved the three existing Equity Data Plans under Rule 608[12] of Regulation NMS.[13] In 2005, a substantial amount of trading was conducted on relatively slow manual markets, and for any given stock, concentrated on its listing exchange. Today, the U.S. equity markets have evolved into high-speed, latency-sensitive electronic markets where trading is dispersed among a wide range of competing market centers[14]

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[11] Section 11A(a)(1) of the Exchange Act, 15 U.S.C. 78k-1(a)(1). See also Senate Report supra note 5, at 8; Securities Exchange Act Release No. 42208 (Dec. 9, 1999), 64 FR 70613, 70614 (Dec. 17, 1999) ("Market Information Concept Release"); Concept Release on Equity Market Structure, Securities Exchange Act Release No. 61358 (Jan. 14, 2010), 75 FR 3593, 3600 (Jan. 21, 2010) ("Equity Market Structure Concept Release").

[12] 17 CFR 242.608.

[13] The Equity Data Plans are effective national market system plans as defined in Rule 600(b)(22) for NMS stocks. See Second Restatement of the Plan Submitted to the Securities and Exchange Commission Pursuant to Rule 11Aa3-1 under the Securities Exchange Act of 1934, composite as of Dec. 6, 2019, available at https://www.ctaplan.com/publicdocs/ctaplan/notifications/trader-update/CTA_Plan_Composite_as_of_December_6_2019.pdf; Restatement of Plan Submitted to the Securities and Exchange Commission Pursuant to Rule 11Ac1-1 under the Securities Exchange Act of 1934, composite as of Dec. 6, 2019, available at https://www.ctaplan.com/publicdocs/ctaplan/notifications/trader-update/CQ_Plan_Composite_as_of_December_6_2019.pdf; Joint Self-Regulatory Organization Plan Governing the Collection, Consolidation and Dissemination of Quotation and Transaction Information for Nasdaq-listed Securities Traded on Exchanges on an Unlisted Trading Privilege Basis, available at http://www.utpplan.com/DOC/Nasdaq-UTPPlan_after_46th_Amendment-Excluding_21st_36th_38th_42nd_44th_45th_Amendments.pdf; Proposed Governance Order, supra note 8.

[14] Rule 600(b)(38) defines a market center as "any exchange market maker, OTC market maker, alternative trading system, national securities exchange, or national securities association." 17 CFR 242.600(b)(38).

and even small degrees of latency affect trading strategies.[15] Sophisticated order routing algorithms dependent on low-latency, high-quality market information are widely used to execute securities transactions.[16] Despite the evolution of latency-sensitive markets, the provision of NMS information that is centrally consolidated and disseminated by the Equity Data Plans is meaningfully slower than certain proprietary market data products distributed by the

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15 See Eric Budish, et al., Will the Market Fix the Market? A Theory of Stock Exchange Competition and Innovation, University of Chicago, Becker Friedman Institute for Economics Working Paper No. 2019-72 (May 2019), available at SSRN: https://ssrn.com/abstract=3391461; Andriy Shkilko and Konstantin Sokolov, Every Cloud Has a Silver Lining: Fast Trading, Microwave Connectivity and Trading Costs (Apr. 2019), available at https://ssrn.com/abstract=2848562; Equity Market Structure Concept Release, supra note 11 ("NYSE-listed stocks were traded primarily on the floor of the NYSE in a manual fashion until October 2006. At that time, NYSE began to offer fully automated access to its displayed quotations."). In contrast to NYSE, stocks on the Nasdaq Stock Market LLC ("Nasdaq") traded in a highly automated fashion at many different trading centers following the introduction of SuperMontage in 2002. See Securities Exchange Act Release No. 46429 (Aug. 29, 2002), 67 FR 56862 (Sept. 5, 2002); Steven Quirk, Senior Vice President, Trader Group, TD Ameritrade, Testimony before the U.S. Senate Committee on Homeland Security and Governmental Affairs, Permanent Subcommittee on Investigations, Hearing on "Conflicts of Interest, Investor Loss of Confidence, and High Speed Trading in U.S. Stock Markets" (June 17, 2014), available at https://www.hsgac.senate.gov/imo/media/doc/STMT%20-%20Quirk%20-%20TD%20Ameritrade%20(June%2017%202014).pdf%20 (citing statistics that average execution speed has improved by 90% since 2004—from 7 seconds to 0.7 seconds in 2014). Today, trading speed is measured in microseconds and is moving towards nanoseconds. See, e.g., Vera Sprothen, Trading Tech Accelerates Toward Speed of Light, Wall Street Journal (Aug. 8, 2016), available at https://www.wsj.com/articles/trading-tech-accelerates-toward-speed-of-light-1470559173; Alexander Osipovich, NYSE Aims to Speed Up Trading With Core Tech Upgrade, Wall Street Journal (Aug. 5, 2019), available at https://www.wsj.com/articles/nyse-aims-to-speed-up-trading-with-core-tech-upgrade-11565002800.

16 See, e.g., Equity Market Structure Concept Release, supra note 11; Eric Budish, et al., supra note 15; Andrew Morgan, The impact of high frequency trading on algorithms and smart order routing, Algorithmic Trading & Smart Order Routing, 3d. ed. (2009), available at https://pdfs.semanticscholar.org/ba0b/5e952b27cc48513825cb7e4f6d15803e6973.pdf.

exchanges.[17] Today, the exchanges sell proprietary data products that are fast, low-latency products designed for automated trading systems and include content, such as depth of book[18] and order imbalance information for opening and closing auctions ("proprietary DOB products") that are not provided under the Equity Data Plans.[19] The Commission believes that the content

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17 See infra Section II.A. In addition, as discussed more fully below, on October 25–26, 2018, the Division of Trading and Markets hosted roundtables to gather information on market data and market access. See generally Equity Market Structure Roundtables, Oct. 25–26, 2018: Roundtable on Market Data and Market Access, https://www.sec.gov/spotlight/equity-market-structure-roundtables ("Roundtable"). Transcripts for both days of the Roundtable are available at https://www.sec.gov/spotlight/equity-market-structure-roundtables/roundtable-market-data-market-access-102518-transcript.pdf ("Roundtable Day One Transcript") and https://www.sec.gov/spotlight/equity-market-structure-roundtables/roundtable-market-data-market-access-102618-transcript.pdf ("Roundtable Day Two Transcript"). Panelists at the Roundtable noted that the geographical delays inherent in the nature of a centralized processor results in significant latencies between the Equity Data Plans' feeds and proprietary data feeds that cannot be eliminated in the current infrastructure. Roundtable Day One Transcript at 145 (Simon Emrich, Norges Bank Investment Management) ("And part of that, the most interesting part of the delay for me is really the location of the consolidator, the geographical delay that's introduced, and the data connection element to the consolidator. Right? So from our perspective, the latency of the consolidator itself, the consolidation engine, the improvements that we've made are remarkable over the years. But it just doesn't measure the physical reality of the brokers that we're using."); 148 (Michael Blaugrund, NYSE) ("[T]he method of transmission of that information and the timing of the aggregation of that information into a consolidated feed plays a role. As I think we all acknowledge, the aggregation time has improved dramatically. As we've seen that decline, it highlights the fact that the geographic latency becomes a more meaningful portion of the overall time line."). See also Ivy Schmerken, Speeding Up the SIP Isn't Enough, Say Market Pros at Baruch Conference, InformationWeek: Wall Street & Technology (Oct. 17, 2014), available at http://www.wallstreetandtech.com/infrastructure/speeding-up-the-sip-isnt-enough-say-market-pros-at-baruch-conference/d/d-id/1316724.html ("Since the SIP is slower than proprietary data feeds that firms can obtain directly from exchanges, critics have said that the SIP enables 'latency arbitrage' between high-speed traders using fast data and those trading off of stale quotes from the consolidated feed.").

18 "Depth of book," or "DOB," refers to open buy and sell orders resting on a limit order book at prices away from the top of book (i.e., orders to buy at prices that are below the best bid and orders to sell that are higher than the best offer).

19 See, e.g., Nasdaq, Data Products, available at http://www.nasdaqtrader.com/Trader.aspx?id=DPSpecs (last accessed Jan. 7, 2020)

and operating model under which NMS information is collected, consolidated, and disseminated have not kept pace with technological and market developments and are no longer satisfying the needs of many investors.

Today, the dissemination of NMS information relies upon a centralized consolidation model, where the SROs provide certain NMS information for each NMS stock to an exclusive processor ("exclusive SIP").[20] The exclusive SIP then consolidates this NMS information and

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(describing low-latency DOB data products); NYSE, Real-Time Data, available at https://www.nyse.com/market-data/real-time (last accessed Jan. 7, 2020) (describing low-latency DOB data products); Cboe, Market Data Services: U.S. Equities, available at https://markets.cboe.com/us/equities/market_data_services/ (last accessed Jan. 7, 2020) (describing low-latency DOB data products). Particularly when aggregated, proprietary DOB market data products provide a consolidated view of the market with greater content and lower latency. The exchanges also sell other data products that are limited in content, such as an exchange's top of book ("TOB") quotation information and transaction information, that are designed largely for the non-automated segment of the market (e.g., retail investors and wealth managers) that is less sensitive to latency ("proprietary TOB products"). Examples of such proprietary TOB products include NYSE BBO (https://www.nyse.com/market-data/real-time/bbo), NASDAQ Basic (https://business.nasdaq.com/intel/GIS/nasdaq-basic.html), and Cboe One Feed (https://markets.cboe.com/us/equities/market_data_services/cboe_one). NYSE BBO provides TOB data. Nasdaq Basic and Cboe One's Summary Feed provide TOB and last sale information. Nasdaq Basic also provides Nasdaq Opening and Closing Prices and other information, including Emergency Market Condition event messages, System Status, and trading halt information. Cboe One, however, also offers a Premium Feed that includes DOB data. Each of these products is sold separately by the relevant exchange group. See Letter from Matthew J. Billings, Managing Director, Market Data Strategy, TD Ameritrade, 5–8 (Oct. 24, 2018) ("TD Ameritrade Letter"), available at https://www.sec.gov/comments/4-729/4729-4560068-176205.pdf (stating that the lower cost of exchange TOB products, coupled with costs associated with the process to differentiate between retail professionals and non-professionals imposed by the Equity Data Plans, and associated audit risk, favors retail broker-dealer use of exchange TOB products).

[20] An "exclusive processor" is defined in Section 3(a)(22)(B) of the Exchange Act as "any [SIP] or [SRO] which, directly or indirectly, engages on an exclusive basis on behalf of any national securities exchange or registered securities association, or any national securities exchange or registered securities association which engages on an exclusive basis on its own behalf, in collecting, processing, or preparing for distribution or

makes it available to market participants.[21] Market participants also may independently consolidate NMS information by purchasing individual exchange proprietary market data products[22] and consolidating that information for their own use, or obtain NMS information that has been consolidated by a vendor that provides a data aggregation service. As discussed further below, proprietary DOB products collected through this decentralized consolidation model typically contain enhanced information compared to the market information provided through the Equity Data Plans, such as information about all orders on an individual exchange's order book.[23] Market participants also are able to consolidate and use the data obtained in this manner more quickly than market participants relying on NMS information provided through the Equity Data Plans.

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publication any information with respect to (i) transactions or quotations on or effected or made by means of any facility of such exchange or (ii) quotations distributed or published by means of any electronic system operated or controlled by such association." 15 U.S.C. 78c(a)(22)(B). A securities information processor ("SIP") is defined in Section 3(a)(22)(A) of the Exchange Act as "any person engaged in the business of (i) collecting, processing, or preparing for distribution or publication, or assisting, participating in, or coordinating the distribution or publication of, information with respect to transactions in or quotations for any security (other than an exempted security) or (ii) distributing or publishing (whether by means of a ticker tape, a communications network, a terminal display device, or otherwise) on a current and continuing basis, information with respect to such transactions or quotations." 15 U.S.C. 78c(a)(22)(A). See infra note 42 and accompanying text.

21 See Rule 603(b) of Regulation NMS. Rule 603(b) provides that all information for an individual NMS stock must be disseminated through a single plan processor. 17 CFR 242.603(b). See Rule 600(b)(59), which defines a plan processor as "any self-regulatory organization or securities information processor acting as an exclusive processor in connection with the development, implementation and/or operation of any facility contemplated by an effective national market system plan." 17 CFR 242.600(b)(59).

22 See infra Section II.A (discussing proprietary DOB and proprietary TOB).

23 See supra note 19.

As noted above, Section 11A of the Exchange Act specifically highlights the importance of making information with respect to quotations for and transactions in securities available to brokers, dealers, and investors in a prompt, accurate, reliable, and fair manner and directs the Commission to act in accordance with this finding. Accordingly, the Commission proposes to amend Regulation NMS to better achieve the goal of assuring "the availability to brokers, dealers and investors of information with respect to quotations for and transactions in securities"[24] that is prompt, accurate, reliable, and fair.[25] The Commission preliminarily believes that the proposals described herein would promote fair and efficient markets and would facilitate the best execution of investor orders, and reduce information asymmetries between market participants who currently rely on market data provided through the exclusive SIPs and those who purchase the proprietary market data products offered by the national securities exchanges.[26]

The proposed amendments include two key parts, and the Commission preliminarily believes that the proposals are complementary, but can be independently justified. First, the amendments would update the content of the information with respect to quotations for and transactions in NMS stocks that must be made available under Regulation NMS. In particular,

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24 Section 11A(a)(1)(C)(iii), 15 U.S.C. 78k-1(a)(1)(C)(iii).

25 Section 11A(c)(1)(B), 15 U.S.C. 78k-1(c)(1)(B). Section 11A(c)(1)(B) provides the Commission with the authority to prescribe rules and regulations as necessary or appropriate in the public interest, for the protection of investors or otherwise in furtherance of the purposes of the Exchange Act to "assure the prompt, accurate, reliable, and fair collection, processing, distribution, and publication of information with respect to quotations for and transactions in such securities and the fairness and usefulness of the form and content of such information." Id.

26 See Section 11A(a)(1)(C), 15 U.S.C. 78k-1(a)(1)(C) (stating that it is in the public interest and appropriate for the protection of investors and the maintenance of fair and orderly markets to assure "fair competition among brokers and dealers," "the availability to brokers, dealers, and investors of information with respect to quotations for and transactions in securities," and "the practicability of brokers executing investors' orders in the best market").

the Commission proposes to expand the NMS information that is required to be collected, consolidated, and disseminated under Regulation NMS to include: (1) information about orders in sizes smaller than the current round lot size for certain higher priced stocks;[27] (2) information about certain orders that are outside of the best bid and best offer (i.e., certain depth of book data); and (3) information about orders that are participating in opening, closing, and other auctions. The Commission preliminarily believes that enhancing the content of NMS information in this manner should help ensure that all market participants have ready access to that market information in order to facilitate participation in today's markets.

Second, the amendments introduce a decentralized consolidation model whereby competing consolidators would assume responsibility for the collection, consolidation, and dissemination functions currently performed by the exclusive SIPs.[28] To facilitate this decentralized consolidation model, the Commission proposes that each SRO would be required to make all of its market data that is necessary to generate consolidated market data (as proposed to be defined) directly available to two new categories of entities: (1) competing consolidators and (2) self-aggregators. Competing consolidators would be either SROs or SIPs registered with the Commission pursuant to proposed Rule 614, and would be responsible for collecting, consolidating, and disseminating consolidated market data to the public. Self-aggregators would

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27 See proposed Rule 600(b)(81) (defining "round lot" as 100 shares, 20 shares, 10 shares, 2 shares, or 1 share depending upon the prior calendar month's average closing price for each NMS stock).

28 The Commission is proposing to include competing consolidators in the definition of "SCI entities;" therefore, competing consolidators would be subject to the requirements of Regulation SCI. See Rule 1000(a) of Regulation SCI, 17 CFR 242.1000(a). See Securities Exchange Act Release No. 73639 (Nov. 19, 2014), 79 FR 72252 (Dec. 5, 2014) ("Regulation SCI Adopting Release"). See also infra Section IV.B.2(f).

be brokers or dealers that elect to collect and generate consolidated market data for their own internal use.

Non-SRO competing consolidators would be required to register with the Commission.[29] All competing consolidators, SRO and non-SRO, would be subject to appropriate standards with respect to the promptness, accuracy, reliability, and fairness of their consolidated market data distribution. While self-aggregators would not be subject to a separate registration requirement, as registered broker-dealers, they would be subject to the full broker-dealer regulatory regime.[30] To support this proposed decentralized consolidation model, each SRO would be required to make all of its own data that is necessary to generate consolidated market data available to competing consolidators and self-aggregators directly from its data center, and in the same manner and using the same methods, including all methods of access and the same format, as it makes its proprietary market data products available to any market participant.

Under the proposed structure, the effective national market system plan(s) would continue to serve an important role in the national market system by, among other things, governing the SROs' provision of the data necessary to generate consolidated market data, including setting fees for the provision of such SRO data to competing consolidators and self-aggregators.[31] The Commission preliminarily believes that, by introducing competition and market forces into the collection, consolidation, and dissemination process, the decentralized

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29 As discussed further below, only those entities that are SIPs would be required to register with the Commission pursuant to proposed Rule 614 and proposed Form CC. SROs that wish to act as competing consolidators would not be required to register pursuant to proposed Rule 614 and proposed Form CC but would be required to comply with the competing consolidator obligations set forth in proposed Rule 614(d). See infra Section IV.B.

30 See infra Section IV.B.3.

31 See Proposed Governance Order, supra note 8.

consolidation model would help ensure that consolidated market data is delivered to market participants in a more timely, efficient, and cost-effective manner than the current centralized consolidation model.[32]

II. Current Market Data Infrastructure under Regulation NMS and the Equity Data Plans

A. Consolidated Market Data and Proprietary Data

Today, in accordance with the centralized consolidation model, the SROs act jointly pursuant to the three Equity Data Plans to collect, consolidate, and publicly disseminate real-time, NMS information.[33] For each NMS stock, the SROs are required, pursuant to Regulation NMS and the Equity Data Plans, to provide certain quotation[34] and transaction[35] data to the designated exclusive SIP for each Equity Data Plan.[36] Each exclusive SIP collects, consolidates, and disseminates NMS information to the public on the consolidated tape, described below. The NMS information that is consolidated and made available under the Equity Data Plans generally includes: "(1) the price, size, and exchange of the last sale; (2) each exchange's current highest bid and lowest offer, and the shares available at those prices; and (3) the national best bid and

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32 See infra Section IV.B.

33 See supra note 13.

34 See Rule 602 of Regulation NMS, 17 CFR 242.602.

35 See Rule 601 of Regulation NMS, 17 CFR 242.601.

36 Rule 603(b) of Regulation NMS provides that "the dissemination of all consolidated information for an individual NMS stock" shall be through a single plan processor (i.e., exclusive SIP). 17 CFR 242.603(b).

offer (i.e., the highest bid and lowest offer currently available on any exchange)."[37] In general, these data elements form what historically has commonly been referred to as "core data."

In addition to disseminating core data, the exclusive SIPs collect, calculate, and disseminate certain regulatory data, including information required by the NMS Plan to Address Extraordinary Market Volatility ("LULD Plan"),[38] information relating to regulatory halts and market-wide circuit breakers ("MWCBs"),[39] and information regarding short sale circuit breakers pursuant to Rule 201.[40] The exclusive SIPs also collect and disseminate other NMS stock data and disseminate certain administrative messages.[41] For purposes of this release, these

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37 See In the Matter of the Application of Bloomberg L.P., Securities Exchange Act Release No. 83755 at 3 (July 31, 2018) ("Bloomberg Decision"), available at https://www.sec.gov/litigation/opinions/2018/34-83755.pdf; accord In the Matter of the Application of Sec. Indus. & Fin. Markets Ass'n for Review of Action Taken by Nyse Arca, Inc., & Nasdaq Stock Mkt. LLC, Securities Exchange Act Release No. 84432 (Oct. 16, 2018) ("In the Matter of the Application of SIFMA") (citing NetCoalition v. S.E.C., 615 F.3d 525, 529 (D.C. Cir. 2010)); Securities Exchange Act Release No. 87193 (Oct. 1, 2019), 84 FR 54794, 54795 (Oct. 11, 2019) ("Effective on Filing Proposal").

38 See Securities Exchange Act Release Nos. 85623 (Apr. 11, 2019), 84 FR 16086 (Apr. 17, 2019) (approving LULD Plan on a permanent basis); 67091 (May 31, 2012), 77 FR 33498 (June 6, 2012) (approving LULD Plan, as modified by Amendment No. 1, on a pilot basis); Limit Up Limit Down Plan: Overview, available at http://www.luldplan.com/index.html (last accessed Dec. 16, 2019).

39 See Securities Exchange Act Release No. 67090 (May 31, 2012), 77 FR 33531 (June 6, 2012) (SR-BATS-2011-038; SR-BYX-2011-025; SR-BX-2011-068; SR-CBOE-2011-087; SR-C2-2011-024; SR-CHX-2011-30; SR-EDGA-2011-31; SR-EDGX-2011-30; SR-FINRA-2011-054; SR-ISE-2011-61; SR-NASDAQ-2011-131; SR-NSX-2011-11; SR-NYSE-2011-48; SR-NYSEAmex-2011-73; SR-NYSEArca-2011-68; SR-Phlx-2011-129).

40 See Rule 201(b)(3) of Regulation SHO, 17 CFR 242.201(b)(3).

41 The exclusive SIPs also provide other data regarding NMS stocks pursuant to SRO rules that are described in the Equity Data Plans' technical specifications, such as data relating to retail liquidity programs, market and settlement conditions, and the financial condition of the issuer. In addition, the Nasdaq UTP SIP separately provides Over-the-Counter Bulletin Board ("OTCBB") data, and the CTA Plan allows participants to use the CTA/CQ SIP to disseminate last sale prices for corporate bonds and information about indices.

existing market data elements, together with the historical "core data" described above, are referred to as "SIP data."

The Equity Data Plans set the terms for the operation of the exclusive SIPs.[42] There are two exclusive SIPs, each of which is physically located in a different data center. The exclusive SIP for the CTA and CQ Plans, which covers Tape A (i.e., securities listed on the New York Stock Exchange ("NYSE")) and Tape B (i.e., securities listed on exchanges other than NYSE or Nasdaq),[43] is located in Mahwah, New Jersey ("CTA/CQ SIP"), while the Nasdaq UTP Plan exclusive SIP, which covers Tape C (i.e., Nasdaq-listed securities), is located in Carteret, New Jersey ("Nasdaq UTP SIP"). Tapes A, B, and C are commonly referred to as the "consolidated tapes."

The exchanges' primary data centers are in four different physical locations, namely Mahwah, Carteret, Secaucus, and Weehawken, New Jersey, and they all have back-up data centers in Chicago.[44] Broker-dealers may report transactions effected otherwise than on an

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42 See supra note 20. The exclusive SIPs are the plan processors for the Equity Data Plans. The Securities Industry Automation Corporation ("SIAC"), a wholly owned, indirect subsidiary of Intercontinental Exchange ("ICE"), of which the NYSE is also a subsidiary, is the plan processor for Tapes A and B; Nasdaq is the plan processor for Tape C.

43 Tape B includes securities listed on exchanges other than NYSE or Nasdaq, including Cboe, NYSE Arca, and NYSE American.

44 See NYSE Trader Update: NYSE and NYSE MKT Equity Emergency Procedures and New DR Plans (Sept. 9, 2016), available at https://www.nyse.com/publicdocs/nyse/markets/nyse/NYSE_and_NYSE_MKT_DR_Trader_Update_Final.pdf; UTP Plan Administration Data Policies (Oct. 2018), available at http://www.utpplan.com/DOC/Datapolicies.pdf; NYSE Chicago Disaster Recovery FAQs (July 2019), available at https://www.nyse.com/publicdocs/nyse/markets/nyse-chicago/NYSE_Chicago_Disaster_Recovery_FAQs.pdf; Cboe: US Equities/Options Connectivity Manual, Version 10.0.0 (Oct. 7, 2019), available at https://cdn.cboe.com/resources/membership/US_Equities_Options_Connectivity_Manual.pdf; Securities Exchange Act Release No. 78101 (June 17, 2016), 81 FR 41142, 41154 (June 23, 2016).

exchange (i.e., "over-the-counter" or "OTC") to trade reporting facilities ("TRFs"), which are facilities of FINRA. There are currently three active TRFs: FINRA/Nasdaq TRF in Carteret, FINRA/Nasdaq TRF in Chicago, and FINRA/NYSE TRF in Mahwah.[45]

With this centralized consolidation model, each exchange and FINRA must first transmit its quotation and transaction information[46] from its own data center to the appropriate exclusive SIP's data center for consolidation, at which point SIP data is then further transmitted to market data end-users, which are often located in other data centers. The SROs today typically transmit their market data through fiber optic cables to the exclusive SIPs and, in the case of the CTA/CQ SIP, through infrastructure owned and mandated by the NYSE.[47]

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45 See FINRA, Trade Reporting Facility (TRF), available at https://www.finra.org/filing-reporting/trade-reporting-facility-trf (last accessed Jan. 22, 2020). As of October 2019, the FINRA/Nasdaq TRF in Carteret handled approximately 30% of the share volume in OTC reported transactions. See Cboe Global Markets, U.S. Equities Market Volume Summary (month-to-date), available at https://markets.cboe.com/us/equities/market_share/ (last accessed Oct. 21, 2019).

46 See supra notes 34–35 and accompanying text.

47 The NYSE operates the CTA/CQ SIP and has required that access to the CTA/CQ SIP be through the use of the NYSE's IP local area network. The NYSE represents that this access requirement was mandated due to the IP network's security, resiliency, and redundancy. See Securities Exchange Act Release No. 86865 (Sept. 4, 2019), 84 FR 47592, 47594, n.12 (Sept. 10, 2019) ("NYSE Low-Latency SIP Filing"). See also Consolidated Tape System (CTS) Participant Input Binary Specification, 60, available at https://www.ctaplan.com/publicdocs/ctaplan/notifications/trader-update/CTS_BINARY_INPUT_SPECIFICATION.pdf, and Consolidated Quotation System (CQS) Participant Input Binary Specification, 42, available at https://www.ctaplan.com/publicdocs/ctaplan/notifications/trader-update/CQS_BINARY_INPUT_SPECIFICATION.pdf (both depicting that the participants of those plans use ICE Data Services' Secure Financial Transaction Infrastructure ("SFTI") network to transmit data to those exclusive SIPs). SFTI provides connectivity to the individual ICE and NYSE Group markets including NYSE and NYSE Arca equities. SFTI also provides connectivity to the data center for the CTA and CQ Plans in Mahwah.

In addition to the provision of SIP data pursuant to the Equity Data Plans, the national securities exchanges separately sell their individual proprietary market data products, which include the SIP data elements as well as a variety of additional data elements.[48] As noted above, the proprietary DOB products are generally characterized as fast, low-latency products designed for automated trading systems that include additional content.[49] In addition to SIP data, proprietary DOB products typically include odd-lot quotations; orders at prices above and below the best prices (i.e., depth of book data); and information about orders participating in auctions, including auction order imbalances.[50]

In addition to proprietary DOB products, the exchanges offer a variety of connectivity options, such as co-location at primary data centers, fiber optic connectivity, wireless connectivity, and point-of-presence connectivity at third-party data centers.[51] Typically, the data for proprietary DOB products is transmitted directly from each exchange to the data center of the subscriber, where the subscriber's broker-dealer or vendor (or the subscriber itself) privately may

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48 In adopting Regulation NMS in 2005, the Commission determined not to require that DOB information be included in core data, reasoning that investors who needed DOB information would be able to obtain such information from markets or third-party vendors. See Regulation NMS Adopting Release, supra note 10, at 37567. In making that determination, the Commission stated that this would be "a competition-driven outcome [that] would benefit investors and the markets in general." See id. at 37530.

49 In contrast, proprietary TOB products are generally limited in content, such as the exchange's top of book quotation information and transaction information and are designed largely for the non-automated segment of the market (e.g., retail or non-professional investors and wealth managers that access market data visually). But see CBOE One Feed Specification, CBOE, available at https://cdn.cboe.com/resources/membership/Cboe_US_Equities_Cboe_One_Feed_Specification.pdf (highlighting that CBOE offers a non-automated product with a five-level depth of book option).

50 See, e.g., Nasdaq TotalView and NYSE Integrated.

51 The exchanges have an inherent competitive advantage in the provision of connectivity services within exchange facilities, while connectivity options made available elsewhere, such as point-of-presence connectivity at third-party data centers, are fully competitive.

consolidate such data with the proprietary data of the other exchanges. Furthermore, for many market participants, proprietary data is transmitted using wireless connectivity (often provided by the exchanges), such as microwave or laser technology,[52] that allows faster data transmission than the fiber optic cables that are typically used by the exclusive SIPs for the purposes of transmitting SIP data. The exchanges charge fees for these proprietary data products,[53] as well as for each of their connectivity options for co-location (e.g., physical ports, cross-connects, and field programmable gate array ("FPGA") services) and for communications services providing connectivity between data centers (e.g., microwave and fiber optics). In the context of the Division of Trading and Markets' Roundtable on Market Data and Market Access in October 2018, some market participants commented that, in their view, they need the more content-rich proprietary data feeds and low latency connectivity to provide best execution to their clients and to competitively participate in the markets.[54]

B. NMS Regulatory Framework

The Commission exercised its authority under Section 11A of the Exchange Act to facilitate the collection, consolidation, and dissemination of NMS information primarily by adopting five rules under Regulation NMS.[55]

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52 See, e.g., Nasdaq, Trade Management Services: Wireless Connectivity Suite, available at http://n.nasdaq.com/WirelessConnectivitySuite (last accessed Dec. 16, 2019); ICE Global Network, New Jersey Metro, available at https://www.theice.com/market-data/connectivity-and-feeds/wireless/new-jersey-metro (last accessed Dec. 16, 2019).

53 See, e.g., Letter to Vanessa Countryman, Secretary, Commission, from Robert Toomey, Managing Director and Associate General Counsel, SIFMA, 1–2 (Jan. 13, 2020) (stating that exchange market data products are "complementary" and result in "not only supra-competitive prices, but supra-monopoly prices").

54 See, e.g., Roundtable Day One Transcript at 27 (Doug Cifu, Virtu Financial). See also Sections III.C.1(c), III.C.2(c), and III.C.3(b).

55 See also supra Section I (discussing Section 11A of the Exchange Act).

Rule 601 of Regulation NMS governs the dissemination of transaction reports[56] and last sale data[57] with respect to transactions in NMS stocks. In particular, Rule 601 requires each national securities exchange and association to file a transaction reporting plan with the Commission that, among other things, must specify the manner of collecting, processing, sequencing, making available, and disseminating transaction reports and last sale data.[58]

Rule 602 of Regulation NMS governs the dissemination of quotations in NMS securities. Specifically, under Rule 602 each national securities exchange and association is required to collect, process, and make available certain quotation data to vendors,[59] including the best bid, best offer,[60] quotation sizes,[61] and aggregate quotation sizes.[62]

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56 Rule 600(b)(84) defines a transaction report as "a report containing the price and volume associated with a transaction involving the purchase or sale of one or more round lots of a security." 17 CFR 242.600(b)(84).

57 Rule 600(b)(34) defines last sale data as "any price or volume data associated with a transaction." 17 CFR 242.600(b)(34).

58 17 CFR 242.601(a)(2).

59 Rule 600(b)(87) defines a vendor as "any securities information processor engaged in the business of disseminating transaction reports, last sale data, or quotations with respect to NMS securities to brokers, dealers, or investors on a real-time or other current and continuing basis, whether through an electronic communications network, moving ticker, or interrogation device." 17 CFR 242.600(b)(87).

60 Rule 600(b)(8) defines best bid and best offer as "the highest priced bid and the lowest priced offer." 17 CFR 242.600(b)(8).

61 Under Rule 600(b)(67), quotation size, "when used with respect to a responsible broker's or dealer's bid or offer for an NMS security, means: (i) [t]he number of shares (or units of trading) of that security which such responsible broker or dealer has specified, for purposes of dissemination to vendors, that it is willing to buy at the bid price or sell at the offer price comprising its bid or offer, as either principle or agent; or (ii) [i]n the event such responsible broker or dealer has not so specified, a normal unit of trading for that NMS security." 17 CFR 242.600(b)(67).

62 Rule 600(b)(2) defines aggregate quotation size as "the sum of the quotation sizes of all responsible brokers or dealers who have communicated on any national securities exchange bids or offers for an NMS security at the same price." 17 CFR 242.600(b)(2).

Rule 603 of Regulation NMS governs the distribution, consolidation, and display of information with respect to quotations for and transactions in NMS stocks. Specifically, Rule 603(a)(1) requires any exclusive processor,[63] or any broker or dealer with respect to information for which it is the exclusive source, that distributes information with respect to quotations for or transactions in an NMS stock to a securities information processor[64] to do so on terms that are fair and reasonable. Rule 603(a)(2) requires any national securities exchange, national securities association, broker, or dealer that distributes information with respect to quotations for or transactions in an NMS stock to a securities information processor, broker, dealer, or other persons to do so on terms that are not unreasonably discriminatory.[65]

Rule 603(b) requires each national securities exchange and association to act jointly pursuant to one or more NMS plans to disseminate consolidated information, including an NBBO,[66] on quotations for and transactions in NMS stocks.[67] Further, the rule states that such plan or plans shall provide for the dissemination of all consolidated information for an individual NMS stock through a single plan processor.

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63 See supra note 20.

64 Id.

65 See 17 CFR 242.603(a)(2). Proprietary data cannot be made available sooner than current core data is transmitted to the exclusive SIPs. See Regulation NMS Adopting Release, supra note 10, at 37567 ("[I]ndependently distributed data could not be made available on a more timely basis than core data is made available to a Network processor. Stated another way, adopted Rule 603(a) prohibits an SRO or broker-dealer from transmitting data to a vendor or user any sooner than it transmits the data to a Network processor.").

66 Rule 600(b)(43) defines national best bid and national best offer ("NBBO") as "with respect to quotations for an NMS security, the best bid and best offer for such security that are calculated and disseminated on a current and continuing basis by a plan processor pursuant to an effective national market system plan . . ." 17 CFR 242.600(b)(43).

67 17 CFR 242.603(b).

Rule 608 of Regulation NMS governs the procedures for the filing and Commission approval of NMS plans and plan amendments. The Commission approved the Equity Data Plans under Rule 608. Finally, Rule 609 of Regulation NMS governs the registration of exclusive SIPs.

C. Other Regulatory Data

As noted above, certain regulatory data is required—pursuant to Commission and exchange rules and NMS plans—to be generated by primary listing exchanges and the exclusive SIPs and included in the current SIP data. The availability of this data is critical to allowing market participants to understand when and where permissible trading may occur.

1. Regulation SHO

Rule 201(b)(1)(i) of Regulation SHO[68] requires a trading center[69] to establish, maintain, and enforce written policies and procedures reasonably designed to prevent the execution or display of a short sale order of a covered security[70] at a price that is less than or equal to the current national best bid,[71] if the price of that covered security decreases by 10% or more from the covered security's closing price, as determined by the listing market[72] for the covered

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68 17 CFR 242.201(b)(1)(i).

69 Rule 201(a)(9) states the term trading center shall have the same meaning as in 242.600(b)(82). 17 CFR 242.201(a)(9).

70 Rule 201(a)(1) states the term covered security shall mean any NMS stock as defined in 242.600(b)(48). 17 CFR 242.201(a)(1).

71 Rule 201(a)(4) states the term national best bid shall have the same meaning as in 242.600(b)(43). 17 CFR 242.201(a)(4).

72 Rule 201(a)(3) states the term listing market shall have the same meaning as the term "listing market" as defined in the effective transaction reporting plan for the covered security. Rule 201(a)(2) states the term effective transaction reporting plan for a covered security shall have the same meaning as in 242.600(b)(23). 17 CFR 242.201(a)(2)–(3).

security as of the end of regular trading hours[73] on the prior day (the "Short Sale Circuit Breaker"). The rule requires that the trading center impose the Short Sale Circuit Breaker for the remainder of the day and the following day when a national best bid for the covered security is calculated and disseminated on a current and continuing basis by a "plan processor"[74] pursuant to an effective national market system plan.[75]

Rule 201(b)(3) of Regulation SHO provides that the determination regarding whether the Short Sale Circuit Breaker has been triggered shall be made by the listing market for the covered security, and, if the Short Sale Circuit Breaker has been triggered, the listing market shall immediately notify the "single plan processor" (i.e., the exclusive SIP responsible for

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73 Rule 201(a)(7) states the term regular trading hours shall have the same meaning as in 242.600(b)(68). 17 CFR 242.201(a)(7).

74 Rule 201(a)(6) states the term plan processor shall have the same meaning as in 242.600(b)(59). 17 CFR 242.201(a)(6).

75 Rule 201(c) provides an exception for a broker-dealer that has adopted and enforces its own such policies and procedures. More specifically, if such broker-dealer identifies a short sale order as being at a price above the current national best bid at the time of submission, such broker-dealer may mark the order as "short exempt." However, such broker-dealer must establish, maintain, and enforce written policies and procedures reasonably designed to prevent incorrect identification of orders for purposes of the "short exempt" exception. Policies and procedures designed to create the appearance of technical compliance with Rule 201 but which otherwise are designed to circumvent, or assist others in circumventing, the Rule, would not be compliant. For example, any arrangement between market participants in which the execution price appears to be compliant with the Short Sale Circuit Breaker, but also includes a post-trade payment (i.e., fee, commission, or other payment) that effectively renders the execution price non-compliant with the Short Sale Circuit Breaker, would not be consistent with the Rule's requirements. Further, in the Adopting Release for Rule 201, the Commission stated that, "any conduct by trading centers, or other market participants, that facilitates short sales in violation of Rule 201 could also lead to liability for aiding and abetting or causing a violation of Regulation SHO, as well as potential liability under the anti-fraud and anti-manipulation provisions of the Federal securities laws, including Sections 9(a), 10(b), and 15(c) of the Exchange Act, and Rule 10b–5 thereunder." Securities Exchange Act Release No. 61595 (Feb. 26, 2010), 75 FR 11232, 11260 (Mar. 10, 2010).

consolidation of information for the covered security pursuant to Section 242.603(b)). The exclusive SIP must then disseminate this information.

2. Limit-Up Limit-Down Plan

The LULD Plan[76] sets forth procedures that provide for market-wide limit up-limit down ("LULD") requirements to prevent trades in individual NMS stocks from occurring outside of specified price bands and reduce the negative impacts of extraordinary volatility in NMS stocks caused by momentary gaps in liquidity or erroneous trades. These price bands are coupled with the provision of trading pauses to accommodate more fundamental price moves.

Under the LULD Plan, the applicable exclusive SIP for an NMS stock is required to perform certain key functions, including: (1) calculating the applicable price bands,[77] (2) disseminating flags identifying quotes that are not executable,[78] (3) disseminating flags

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76 See Securities Exchange Act Release Nos. 85623, supra note 38; 67091, supra note 38.

77 During regular trading hours for an NMS stock, the exclusive SIP for that stock uses a reference price, which it also calculates, to calculate and disseminate to the public a lower and upper price band. The reference price for each NMS stock equals the arithmetic mean price of eligible reported transactions for the NMS stock over the immediately preceding five-minute period (see LULD Plan Section V(A)(1)) and must remain in effect for at least 30 seconds. See LULD Plan Section V(A)(2). The exclusive SIP calculates a pro-forma reference price on a continuous basis during regular trading hours, and when that price has moved by 1% or more from the reference price currently in effect, the pro-forma reference price becomes the reference price, and the plan processor disseminates new price bands based on the new reference price. See LULD Plan Section V(A)(2). The price bands for an NMS stock are calculated by applying the appropriate percentage parameter for the stock, specified by the LULD Plan, to the stock's reference price, with the lower price band as a percentage parameter below the reference price and the upper price band as a percentage parameter above the reference price. See LULD Plan Section V(A)(1).

78 When a national best bid is below the lower price band or a national best offer is above the upper price band for an NMS stock, the exclusive SIP is required to disseminate the national best bid or national best offer with an appropriate flag identifying it as non-executable. See LULD Plan Section VI(A)(2).

identifying quotes that are in a "limit state,"[79] (4) disseminating trading pause messages received from the primary listing exchanges,[80] and (5) disseminating reopening auction information from the primary listing exchanges.[81]

3. Market-Wide Circuit Breakers

All of the equity exchanges and FINRA have adopted uniform rules, on a pilot basis, relating to MWCBs.[82] The purpose of an MWCB is to address extraordinary market-wide volatility by halting trading across the markets when price declines reach certain specified levels.[83] These levels are reached when the S&P 500 Index declines a specified percentage from the prior day's closing price. Currently, there are three thresholds: 7% (Level 1), 13% (Level 2),

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79 When a national best bid is equal to the lower price band or a national best offer is equal to the upper price band for an NMS stock, the exclusive SIP is required to distribute the national best bid or national best offer with an appropriate flag identifying it as a "Limit State Quotation." See id.; LULD Plan Section VI(B)(2).

80 If trading for an NMS stock does not exit a limit state within 15 seconds of entry during regular trading hours, then the primary listing exchange is required to declare a trading pause in that NMS stock and notify the exclusive SIP. See LULD Plan Section VII(A)(1). The exclusive SIP is required to disseminate trading pause information to the public. See LULD Plan Section VII(A)(3).

81 Five minutes after declaring a trading pause for an NMS stock, if the primary listing exchange has not declared a regulatory halt, the primary listing exchange is required to attempt to reopen trading using its established reopening procedures. The exclusive SIP publishes the following information that the primary listing exchange provides to the exclusive SIP in connection with such reopening: auction reference price; auction collars; and number of extensions to the reopening auction. See LULD Plan Section VII(B)(1). In addition, the applicable exclusive SIP for an NMS stock is required to receive and disseminate to the public information from primary listing exchanges regarding their inability to reopen trading due to a systems or technology issue. Specifically, the primary listing exchange is required to notify the exclusive SIP if it is unable to reopen trading in an NMS stock due to a systems or technology issue and if it has not declared a regulatory halt. The exclusive SIP is required to disseminate this information to the public. See LULD Plan Section VII(B)(2).

82 See supra note 39.

83 Id.

and 20% (Level 3). A Level 1 or Level 2 market decline after 9:30 a.m. ET and before 3:25 p.m. ET would halt the equity and options markets for 15 minutes, while Level 1 and 2 declines at or after 3:25 p.m. ET would not halt trading. A Level 3 market decline at any time during the trading day would halt equity and options trading until the primary listing exchange opens the next trading day.

The primary listing exchanges and the exclusive SIPs work together to implement the MWCB rules. The CTA/CQ SIP monitors the S&P 500 Index throughout the trading day and would send a message to the primary listing exchanges and the Nasdaq UTP SIP in the event a Level 1, Level 2, or Level 3 circuit breaker was triggered. Upon receipt of such a message, the applicable primary listing exchange would impose a regulatory halt by sending the appropriate message to the applicable exclusive SIP, which would then disseminate the regulatory halt message to market participants. Trade resumption messages would be generated at the appropriate time by the primary listing exchange and similarly disseminated to market participants through the applicable exclusive SIP.

4. Odd-Lot Transaction Reports and Aggregated Odd-Lot Orders

As discussed further below, while Regulation NMS only requires NMS stock quotation and transaction data in round lots to be reported to the exclusive SIPs, SRO rules and the Equity Data Plans include some odd-lot information in the SIP data.[84] Pursuant to exchange rules, odd-lot quotations that, when aggregated, equal or exceed a round lot are reported to the exclusive

[84] See infra Section III.C.1.

SIPs as round lots.[85] Moreover, the Equity Data Plans were amended in 2013 to include odd-lot transaction reports in the SIP data.[86]

III. Proposed Enhancements to NMS Information

A. Introduction

The Commission is proposing to expand the content of the NMS information that would be required to be collected, consolidated, and disseminated under the rules of the national market system to better meet the needs of today's investors and other market participants. Specifically, the Commission proposes to amend Regulation NMS by introducing, in Rule 600, new defined terms for "consolidated market data," "core data," "regulatory data," "administrative data," "exchange-specific program data," "round lot," "depth of book data," and "auction information" and by amending the current definitions of "national best bid and national best offer" and "protected bid or protected offer." The Commission preliminarily believes that these amendments will enhance the availability and usefulness of the NMS information that is required to be provided under the rules of the national market system for a wide variety of market participants. The Commission also preliminarily believes that expanding the content of NMS information would help to reduce information asymmetries between market participants who rely upon current SIP data and those who purchase proprietary data feeds from the national securities exchanges.[87]

The Commission's objectives in expanding and modernizing the content of NMS information that would be collected, consolidated, and disseminated under the rules of the

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85 See infra notes 159–160 and accompanying text.

86 See infra notes 160–161 and accompanying text.

87 See supra note 26.

national market system reflect that different market participants and different trading applications have different needs for NMS information. For example, the needs of some retail investors that visually consume NMS information (e.g., humans looking at quotes on a screen) differ from those of institutional trading systems that electronically consume NMS information (e.g., algorithmic trading systems or smart order routers ("SORs").[88] This proposal to expand and modernize the content of NMS information is not intended solely to meet the needs of a narrow segment of the NMS information market; rather, the proposal is intended to address the needs of a broad cross-section of market participants.[89] The Commission intends for the NMS information to promote both fair and efficient markets, be useful to a broad cross-section of market participants, reduce information asymmetries, and facilitate best execution.[90]

B. Proposed Definition of "Consolidated Market Data"

The Commission is proposing to amend Rule 600(b) to add a definition of "consolidated market data" that would include information that is currently disseminated by the exclusive SIPs as well as additional new information. Specifically, under proposed Rule 600(b)(19), consolidated market data would be defined as the following data, consolidated across all national securities exchanges and national securities associations: (1) core data; (2) regulatory data; (3) administrative data; (4) exchange-specific program data; and (5) additional regulatory,

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88 SORs employ the use of algorithms (e.g., by broker-dealers on behalf of a client) designed to optimally send parts of an order (child orders) to various market centers (e.g., exchange and ATSs) so as to optimally access market liquidity while minimizing execution costs.

89 This proposal is also not designed to expand the content of NMS information to meet all needs of all market participants; the proprietary data market, which includes information that is not included in the proposed definition of core data, is expected to continue to fulfill additional needs beyond those that are met by the proposed definition of core data.

90 While this proposal is intended to facilitate best execution, the Commission is not specifying minimum data elements needed to achieve best execution.

administrative, or exchange-specific program data elements defined as such pursuant to the effective national market system plan or plans required under Rule 603(b).

As discussed below, the Commission proposes to add definitions of the terms "core data," "regulatory data," "administrative data," and "exchange-specific program data." The proposed definition of core data would include those data elements that are currently considered core data[91] as well as reflect additional information that would be required to be collected, consolidated, and disseminated under Regulation NMS, including certain depth of book, odd-lot, and auction information, which would improve the usefulness of core data for market participants. The proposed definition of regulatory data would specify certain regulatory messages that must be provided under Regulation NMS, which would facilitate compliance with Commission, NMS plan, or SRO requirements. The proposed definition of administrative data would refer to the administrative or technical messages that are currently required by the Equity Data Plans, or their technical specifications, and would facilitate the efficient utilization of proposed consolidated market data. The proposed definition of "exchange-specific program data" would include information currently included in SIP data related to retail liquidity programs that certain exchanges have established, as well as information related to new programs that individual exchanges may develop in the future,[92] but only if the effective national market system plan or plans required under Rule 603(b) are amended to include data elements related to any such new programs in consolidated market data.[93]

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91 See supra note 37 and accompanying text.

92 Any new exchange programs would have to be filed with the Commission pursuant to Section 19(b) of the Exchange Act, 15 U.S.C. 78s(b), and Rule 19b-4 thereunder, 17 CFR 240.19b-4.

93 See infra Section III.F.

Finally, the Commission proposes to include a provision that would allow for additional regulatory, administrative, or exchange-specific program data elements[94] to be included within "consolidated market data" pursuant to amendments to the effective national market system plan(s).[95] The Commission preliminarily believes that this provision would help to ensure that additional information in these specific categories may be proposed to be included in consolidated market data in the future in response to market and regulatory developments and that such additional information would be required to be made available by the SROs to competing consolidators and self-aggregators, and as a result, competing consolidators would be required to, among other things, calculate and generate consolidated market data that includes this additional information. The Commission preliminarily believes that new administrative, regulatory, and exchange-specific program data elements may emerge from time to time, and that the proposed definition of consolidated market data should provide flexibility for such data elements to be included by NMS plan amendment. This provision would also maintain the

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94 Amendments to the proposed definition of core data would only be able to be made by the Commission. To the extent that there are changes in the national market system, such as, in the provision of trading services, that suggest that the definition of core data should be updated, the Commission could exercise its authority to propose amendments to the proposed definition. See, e.g., Section 11A(c)(1)(B) of the Exchange Act which provides that the Commission shall prescribe rules as necessary or appropriate in the public interest, for the protection of investors or otherwise to assure the prompt, accurate, reliable, and fair collection, processing, distribution, and publication of information with respect to NMS information and the fairness and usefulness of the form and content of such information.

95 Pursuant to Rule 608(a)(1), any two or more SROs, acting jointly, may propose an amendment to an NMS plan. 17 CFR 242.608(a)(1). The Equity Data Plans also have provisions regarding the proposal of amendments to the Plans, which currently require a vote of the Plans' operating committee. See CTA Plan, supra note 13, at Section IV(b)(i); CQ Plan supra note 13, at Section IV.(c)(i) of the CQ Plan; Nasdaq UTP Plan, supra note 13, at Sections IV.C.1.a. and XVI.

current practice whereby SIP data of this type can be expanded through the NMS plan amendment process.

National market system plans and amendments thereto must be filed with, and typically are not effective unless they are approved by, the Commission under Rule 608 of Regulation NMS.[96] Pursuant to Rule 608(b), the Commission would publish for comment an amendment to add new consolidated market data elements, and thereafter, the Commission would evaluate any such proposed amendment and approve it if the Commission finds the amendment is "necessary or appropriate in the public interest, for the protection of investors and the maintenance of fair and orderly markets, to remove impediments to, and perfect the mechanisms of, a national market system, or otherwise in furtherance of the purposes of the [Exchange] Act."[97]

The Commission preliminarily believes that the proposed definition of consolidated market data, as well as the other definitions included therein, would, by expanding the NMS information that is required to be provided under the rules of the national market system, support more informed trading and investment decisions by market participants in today's markets and

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96 A proposed NMS plan amendment may be put into effect upon filing if designated by the sponsors as: "(i) Establishing or changing a fee or other charge collected on behalf of all of the sponsors and/or participants in connection with access to, or use of, any facility contemplated by the plan or amendment (including changes in any provision with respect to distribution of any net proceeds from such fees or other charges to the sponsors and/or participants); (ii) Concerned solely with the administration of the plan, or involving the governing or constituent documents relating to any person (other than a self-regulatory organization) authorized to implement or administer such plan on behalf of its sponsors; or (iii) Involving solely technical or ministerial matters." 17 CFR 242.608(b)(3). As stated above, the Commission has proposed amendments to this provision. Effective on Filing Proposal, supra note 37 (proposing to rescind the provision of Rule 608 that allows a proposed amendment to an effective national market system plan(s) to become effective upon filing if the proposed amendment establishes or changes a fee or other charge).

97 17 CFR 242.608(b)(2).

facilitate the best execution of customer orders by the full range of broker-dealers.[98] In addition, the proposed definition would be referenced in the amendments to Rule 603(b) and proposed Rule 614, both of which propose to implement the decentralized consolidation model.[99]

The Commission requests comment on the proposed definition of consolidated market data under proposed Rule 600(b)(19). Throughout this release, we request comment from the points of view of all interested parties. With regard to any comments, we note that such comments are of greatest assistance to our rulemaking initiative if accompanied by supporting data and analysis of the issues addressed in those comments.

In particular, the Commission solicits comment on the following:

1. Do commenters believe that the Commission should adopt a definition of consolidated market data? Why or why not? Should the Commission take an alternative approach? Why or why not?

2. Does the proposed definition of consolidated market data capture the market data that would be useful to market participants for trading and regulatory compliance purposes? Please explain. Does the proposed definition of consolidated market data include any market data that should not be included? Please explain. The Commission is seeking input from commenters on whether the proposed definition of consolidated market data should include additional market data or whether the definition should otherwise be modified.

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98 As discussed below, the Commission is not requiring broker-dealers to subscribe to or utilize every component of proposed consolidated market data to meet their regulatory obligations. See infra notes 306–309 and accompanying text.

99 See infra Sections IV.B.1 and IV.B.2(e)(ii).

3. Should the definition of consolidated market data be set forth in an effective national market system plan(s) instead of, or in addition to, Rule 600(b)? Please explain. Do commenters have views on the most appropriate process through which the content of proposed consolidated market data should be expanded or modified? Do commenters believe that the proposed definition of consolidated market data should include a provision stating that additional regulatory, administrative, or exchange-specific program data elements can be defined pursuant to the effective national market system plan or plans required under Section 242.603(b)? Please explain. Should the proposed definition of core data be able to be amended through the effective national market system plan process (for example, should the term "core data" be included in proposed Rule 600(b)(19)(v))? Why or why not? Do commenters believe that any data elements should not require an amendment to the effective national market system plan(s) to be added to consolidated market data? Please explain and describe what process would be appropriate for adding any such data elements.

C. Proposed Definition of "Core Data"

Regulation NMS does not currently define core data. Rather, today, core data generally refers to the price, size, and exchange of the last sale; each exchange's highest bid and lowest offer ("BBO") and the number of shares available at those prices; and the NBBO.[100]

The core data that is provided today by the exclusive SIPs is of considerable utility to some market participants for certain purposes.[101] However, it is of limited use to other market

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[100] See supra note 37 and accompanying text.

[101] For example, current core data includes the NBBO, which is useful to market participants for informational purposes and to inform trading and investment decisions. See, e.g., Roundtable Day One Transcript at 57 (Doug Cifu, Virtu Financial) (". . . the SIP is an

participants for other purposes (e.g., as the primary data source for automated trading systems) because of its limited content. The Commission preliminarily believes that the content of current core data has not kept pace with market developments. For example, decimalization in 2001 improved prices and narrowed spreads but also reduced the size of the top of book liquidity that is displayed and disseminated as part of current core data.[102] Further, individual odd-lot quotations, especially for stocks with share prices that have risen substantially,[103] have become more important to market participants as odd-lot quotations can represent significant amounts of liquidity that are not reflected in current core data.[104] Finally, an increasing proportion of total trading volume is executed during opening and closing auctions, which are significant liquidity events every trading day, but important information about auctions is not included within current core data provided by the exclusive SIPs.[105]

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eyeball product."); Roundtable Day One Transcript at 65 (Mehmet Kinak, T. Rowe Price) ("So the SIP for us is kind of what we look at. Obviously, investment decisions are probably made by eyeballs and looking at the SIP itself from either our Bloomberg or FactSet terminals."). It is also used as a back-up for automated trading systems that otherwise rely on proprietary data feeds from the exchanges and to support less sophisticated automated trading systems. See, e.g., Roundtable Day One Transcript at 140 (Mark Skalabrin, Redline Trading Solutions) ("the SIP . . . has been relegated to a backup feed, really. It's a fail-over to the real feed you need to do the job.").

102 See infra notes 276–279.

103 See infra note 162.

104 As explained below, odd-lot quotations are only reflected in SIP data to the extent that they are aggregated into round lots pursuant to exchange rules. See infra notes 157–158 and accompanying text.

105 See infra notes 330–332.

Because the content of current core data does not reflect these important market developments,[106] many market participants state that they are unable to rely solely on SIP data to trade competitively and provide best execution to customer orders in today's markets.[107] The Commission preliminarily believes that the data that is required to be collected, consolidated, and disseminated under the rules of the national market system is no longer fulfilling the goals of Section 11A of the Exchange Act.[108] The Commission is proposing a definition of core data that would incorporate the information that is currently provided in SIP data as well as additional information, including quotation data for smaller-sized orders for higher-priced stocks, certain depth of book data, and additional auction information.[109] As explained below, the Commission preliminarily believes that each of the new elements of core data, as proposed, would enhance the usefulness of the content of the NMS information that is collected, consolidated, and disseminated under the rules of the national market system.[110]

The Commission is proposing to define core data in Rule 600(b) to include all of the elements that currently are referred to as core data,[111] as well as the following data elements that are not currently provided by the exclusive SIPs: (1) quotation data for smaller-sized orders for higher-priced stocks (pursuant to a new definition of "round lot"), (2) data on certain quotations

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106 As discussed below, the existing centralized consolidation model for collecting, consolidating, and disseminating SIP data also has not kept pace with the needs of today's investors and market participants. See infra Section IV.A.

107 See several of the Roundtable comments summarized below in Sections III.C.1, III.C.2, and III.C.3.

108 See supra notes 2–5 and accompanying text.

109 See infra Sections III.C.1–III.C.3 for detailed discussions of the proposed definitions of "round lot," "depth of book data," and "auction information."

110 Section 11A(c)(1)(B) of the Exchange Act, 15 U.S.C. 78k-1(c)(1)(B).

111 See supra note 37 and accompanying text.

below the best bid or above the best offer (pursuant to a new definition of "depth of book data"), and (3) information about orders participating in auctions (pursuant to a new definition of "auction information"). As discussed below, certain OTCBB and corporate bond and index data that are currently provided by the exclusive SIPs would not be included in the proposed definition of core data.[112] Further, as noted above, the proposed term core data is reflected in the proposed definition of consolidated market data, which is referenced in proposed Rule 603(b) and proposed Rule 614.[113]

Specifically, under proposed Rule 600(b)(20), core data would be defined as the following information with respect to quotations for and transactions in NMS stocks: (1) quotation sizes; (2) aggregate quotation sizes; (3) best bid and best offer; (4) national best bid and national best offer; (5) protected bid and protected offer; (6) transaction reports; (7) last sale data; (8) odd-lot transaction data disseminated pursuant to the effective national market system plan or plans required under Rule 603(b) as of [date of Commission approval of this proposal]; (9) depth of book data; and (10) auction information. For purposes of the calculation and dissemination of core data by competing consolidators, and the calculation of core data by self-aggregators, the best bid and best offer, national best bid and national best offer, and depth of book data would include odd-lots that when aggregated are equal to or greater than a round lot, with such aggregation occurring across multiple prices and disseminated at the least aggressive

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112 See infra notes 122–127 and accompanying text.

113 As explained below, pursuant to Rule 603(b), as proposed to be amended, national securities exchanges and associations would be required to make available to competing consolidators and self-aggregators, as proposed to be defined, all data necessary to generate consolidated market data. See infra Section IV.B.1. Competing consolidators would be required to calculate and generate consolidated market data and make it available to subscribers. See proposed Rule 614(d).

price.[114] Protected quotations, however, would only include odd-lots at a single price that when aggregated are equal to or greater than 100 shares.[115]

Some of the components of the proposed definition of core data—namely, quotation sizes, aggregate quotation sizes, BBO, NBBO, protected quotations, transaction reports, last sale data, and odd-lot transaction data[116]—are already defined in Regulation NMS or are currently included in SIP data.[117] The Commission preliminarily believes that these data elements continue to be necessary and useful for informed market participation. This baseline information

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114 See infra notes 157–158 and accompanying text (discussing odd-lot aggregation).

115 Id. A protected quotation is defined as "a protected bid or a protected offer." See Rule 600(b)(62) of Regulation NMS, 17 CFR 242.600(b)(62). A protected bid or protected offer is defined as "a quotation in an NMS stock that: (i) [i]s displayed by an automated trading center; (ii) [i]s disseminated pursuant to an effective national market system plan; and (iii) [i]s an automated quotation that is the best bid or best offer of a national securities exchange, the best bid or best offer of The Nasdaq Stock Market, Inc., or the best bid or best offer of a national securities association other than the best bid or best offer of The Nasdaq Stock Market, Inc." See Rule 600(b)(61) of Regulation NMS, 17 CFR 242.600(b)(61).

116 See infra notes 159–161 and accompanying text (discussing the addition of odd-lot transaction data to SIP data through NMS plan amendments approved in 2013).

117 As discussed below, some of these proposed data elements—namely, the BBO and NBBO—will be derived from smaller sized quotations as a result of the Commission's proposed definition of round lot, and the Commission is proposing amendments to the definitions of protected bid and protected offer and national best bid and offer to accommodate its proposed amendments to expand consolidated market data and implement a decentralized consolidation model with competing consolidators and self-aggregators.

In addition, today, the exclusive SIPs collect, consolidate, and disseminate protected quotations, which in almost all cases, are the best bid or best offer of a trading center. Accordingly, the NBBO today reflects protected quotations. As discussed below, the Commission is proposing to amend the definition of "protected bid or protected offer" to require that protected bids and protected offers be at least 100 shares. In addition, the Commission is proposing a new round lot size definition, which would be less than 100 shares for higher-priced NMS stocks. See infra Section III.C.1(d)(i). Accordingly, if adopted, there would be an increase in instances where the best bid or best offer and the NBBO would not be protected quotations. See infra Section III.C.1(d)(ii).

about the best quotations and recent transactions across the national market system provides the foundation of transparency and price discovery in the U.S. securities markets, and the Commission preliminarily believes investors and other market participants need it today to make informed trading and investment decisions.[118] Therefore, the Commission preliminarily believes that these data elements should be included in the definition of core data as proposed.

As discussed in detail below, the Commission is proposing to include certain depth of book data and auction information in the proposed definition of core data. Because of the dispersion of liquidity to prices away from the best bids and best offers[119] and the increasing proportion of orders that are executed during auctions,[120] the Commission preliminarily believes that market participants need depth of book data and auction information to fully participate in the markets and the information would facilitate best execution.[121] The Commission preliminarily believes that the proposed depth of book data and auction information would enhance the usefulness of proposed core data.

As discussed above, SIP data currently includes certain data that would not be included in the definition of core data under the Commission's proposed definition.[122] Currently, Nasdaq UTP Plan Level 1 subscribers can obtain OTCBB quotation and transaction feeds for unlisted

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118 See supra note 101.

119 See infra notes 276–279 and accompanying text.

120 See infra notes 330, 348 and accompanying text.

121 See infra Sections III.C.2(d) and III.C.3(c).

122 In addition, because this data does not fall under the proposed definitions of regulatory data or administrative data, it would not be part of proposed "consolidated market data" either.

stocks.[123] Similarly, the CTA Plan permits the dissemination of "concurrent use" data relating to corporate bonds and indexes.[124] This information would not be included in the proposed definitions of core data or consolidated market data. OTCBB stocks, corporate bonds, and indices are not NMS securities as defined in Regulation NMS[125] and, therefore, the Regulation NMS rules related to the collection, consolidation, and dissemination of information regarding NMS securities, and the NMS plan(s) required under Rule 603(b) for NMS stocks,[126] do not apply. Accordingly, this information is not included in the proposed definition of core data.[127]

However, the Commission's proposed definitions of core data and consolidated market data would not prohibit the independent provision of other types of market data by the SROs, and, as discussed below, under the decentralized consolidation model, competing consolidators would be permitted to collect data from the SROs and offer data products to subscribers that go beyond what is proposed to be defined as core data or consolidated market data. Therefore, the

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123 See Nasdaq UTP DataFeed Approval Request, available at http://www.utpplan.com/datafeed_approval (last accessed Sept. 8, 2019); supra note 41.

124 See CTA Plan, supra note 13, at Section XIII; supra note 41.

125 "NMS security" is defined as "any security or class of securities for which transaction reports are collected, processed, and made available pursuant to an effective transaction reporting plan, or an effective national market system plan for reporting transactions in listed options." 17 CFR 242.600(b)(47). "Effective transaction reporting plan" is defined as "any transaction reporting plan approved by the Commission pursuant to § 242.601." 17 CFR 242.600(b)(23). Rule 601 requires a transaction reporting plan to be filed and approved pursuant to Rule 608 and to specify "[t]he listed equity and Nasdaq securities or classes of such securities for which transaction reports shall be required by the plan." 17 CFR 242.601(a)(2). Therefore, OTCBB securities are not NMS securities.

126 "NMS stock" is defined as "any NMS security other than an option." 17 CFR 242.600(b)(48). See also 17 CFR 242.600(b)(47) (defining NMS security).

127 One commenter suggested that this "extraneous" data should be removed from the exclusive SIPs. See Nasdaq, Total Markets: A Blueprint for a Better Tomorrow, 18 ("Nasdaq Total Markets Report"), available at https://www.nasdaq.com/docs/Nasdaq_TotalMarkets_2019_2.pdf.

exclusion of OTCBB and concurrent use data from the proposed definitions of core data and consolidated market data does not preclude the provision of this data to market participants who wish to receive it.

Finally, the proposed definition of core data requires that the BBO, NBBO, and the proposed depth of book data include odd-lots that when aggregated are equal to or greater than a round lot, and that such aggregation would occur across multiple prices and be disseminated at the least aggressive price of all such aggregated odd-lots. Several national securities exchanges today have rules that provide for a similar odd-lot aggregation procedure for purposes of providing quotation data to the exclusive SIPs.[128] Although not currently required by Regulation NMS, odd-lot aggregation increases the amount of quotation data that is included in SIP data and provides transparency into trading interest would not otherwise have been represented in such data. The Commission preliminarily believes that this information is important and should uniformly be included in the proposed core data disseminated to investors and market participants.[129] In addition, for similar reasons, the Commission proposes to include odd-lots

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128 See infra note 157 and accompanying text.

129 As discussed below, SROs may make the data necessary to generate consolidated market data available to competing consolidators and self-aggregators through their existing proprietary data products. See infra Section IV.B.1. Accordingly, any odd-lot quotations that are aggregated in an SRO's existing proprietary data products would be required to be aggregated in a manner consistent with the method set forth in the proposed definition of core data. See also proposed Rule 603(b). However, self-aggregators would only be required to aggregate odd-lots as prescribed in Rule 600(b)(20) to the extent that generating a particular component of proposed core data is necessary for that self-aggregator to comply with applicable regulatory requirements. For example, to the extent that a self-aggregator's activities require the self-aggregator to generate the NBBO, the self-aggregator shall do so as described in Rule 600(b)(20).

that, when aggregated, form a round lot for purposes of the new proposed definition of depth of book data.[130]

The Commission preliminarily believes, however, that the proposed definition of core data should require a different procedure with respect to the aggregation of odd-lots for purposes of protected quotations.[131] For the reasons discussed below, the scope of Rule 611 would not be extended to protected quotations of less than 100 shares.[132] The Commission preliminarily believes that aggregating odd-lots across multiple price points for purposes of determining protected quotations would effectively extend trade-through protection to quotes of less than 100 shares at different prices.[133] Therefore, the proposed definition of core data provides that, for purposes of the calculation and dissemination of proposed core data by competing consolidators, and the calculation of proposed core data by self-aggregators, protected quotations would only include odd-lots at a single price that, when aggregated, are equal to or greater than 100 shares. However, the Commission is seeking comment on whether and how odd-lots should be aggregated and the specific proposed core data elements to which such aggregation should apply.

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130 Today, odd-lots are only aggregated into round lots for purposes of providing an exchange's best bids and offers to the exclusive SIPs. See infra note 157.

131 See supra note 115 for the definition of "protected quotation." Odd-lot quotations are not protected quotations under Rule 611. However, as explained below, many exchanges, pursuant to their own rules, aggregate odd-lots across multiple price points into round lots for purposes of providing protected quotations to the exclusive SIPs. See infra notes 157–158 and accompanying text. Although not required by Rule 611 or contemplated upon adoption of Regulation NMS, this has become the prevailing practice. The odd-lot aggregation methodology set forth in the Commission's proposed definition of core data would modify this practice. See infra Section VI.C.1(c)(i).

132 See infra Section III.C.1(d)(ii).

133 See infra Section III.C.1(d)(ii) for a discussion of the proposed changes to protected bid and protected offer.

The Commission requests comment on the proposed amendment to Rule 600(b)(20) to introduce a definition of core data. In particular, the Commission solicits comment on the following:

4. Do commenters believe Rule 600 should be amended to include a definition of core data? Why or why not?

5. Do commenters believe that the Commission's proposed definition of core data captures the key components of information with respect to quotations for and transactions in NMS stocks that are useful for participating in today's markets? Are there any other useful market data elements that should be included in the proposed definition? Does the proposed definition include any elements that are not useful for trading? Please explain.

6. Do commenters believe that there is sufficient demand for OTCBB, concurrent use, or other data currently provided by the exclusive SIPs that would not fall within the proposed definition of core data such that an independent market for the provision of this data would develop? Why or why not? Would the SROs or other entities that currently disseminate this data through the exclusive SIPs provide it through other means (i.e., to competing consolidators or directly to interested market participants)? Please explain.

7. The Commission is proposing to include protected quotations in the proposed definition of core data. Do commenters believe that there is a need for a "national protected best bid or offer" analogous to the NBBO that would represent a snapshot of the single best protected bid and single best protected offer from among all the protected bids and offers of each SRO? Would this be a useful metric for competing consolidators to calculate and disseminate for market participants for either routing or regulatory

compliance (e.g., the order execution disclosures required under Rule 605) purposes? Would firms that intend to self-aggregate produce such a metric on their own? Please explain.

1. Round Lot Size

Today, SIP data includes quotation information in round lots and transaction information in both round lots and odd-lots. Market participants interested in quotation data for individual odd-lot orders must purchase it from exchange proprietary feeds. As share prices for many widely-held stocks have risen, individual odd-lot orders now often represent economically significant trading opportunities at prices that are better than the prices of displayed and disseminated round lots.[134] Accordingly, information about individual odd-lot orders has gained increased importance with investors and market participants, and some have suggested that odd-lot orders should be included in SIP data.[135]

The Commission is proposing to include certain information about quotations that are currently defined as odd-lots[136] in proposed core data by introducing a tiered definition of the term "round lot." As proposed, the definition of round lot would assign different round lot sizes to individual NMS stocks depending upon their stock price. The Commission preliminarily believes this would improve the usefulness of proposed consolidated market data, promote fair competition,[137] and, like the addition of odd-lot transaction data to SIP data, would provide

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134 See infra note 166 and accompanying text, and infra text accompanying notes 166–170 for staff analysis of odd-lot activity for the top 500 securities by dollar volume.

135 See infra notes 170–177.

136 Rule 600(b)(51) defines odd-lot as "an order for the purchase or sale of an NMS stock in an amount less than a round lot."

137 See 15 U.S.C. 78k-1(a)(1)(C)(ii) ("The Congress finds that . . . [i]t is in the public interest and appropriate for the protection of investors and the maintenance of fair and orderly

important information to investors and other market participants that would enhance transparency and price discovery.[138] Moreover, since odd-lot quotes often represent opportunities to trade at prices that are superior to the prices disseminated by the Equity Data Plans,[139] the inclusion of more of these quotes in proposed core data would facilitate the best execution analyses of broker-dealers who do not subscribe to proprietary data feeds that include all odd-lot information.[140] Further, it would facilitate the ability of investors to use proposed core data to verify that their broker-dealers are providing best execution by providing investors with additional information on the pricing of smaller-sized orders.

(a) Regulatory Background

Round lot, though not defined in the Exchange Act or Regulation NMS, typically refers to orders or quotes for 100 shares or multiples thereof. Exchange rules typically define a round lot as 100 shares, but they also allow the exchange discretion to define it otherwise.[141] The

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markets to assure . . . fair competition among brokers and dealers, among exchange markets, and between exchange markets and markets other than exchange markets.”).

138 See infra notes 159–160 and accompanying text.

139 See infra notes 166–170 and accompanying text.

140 Statements made by market participants suggest that a significant number of broker-dealers do not subscribe to all proprietary market data products. See Roundtable Day One Transcript at 178 (James Brooks, ICE Data Services) (“[R]oughly half of the global investment banks take the most comprehensive New York Stock Exchange order-by-order feed, the other half do not.”); Roundtable Day One Transcript at 181 (Michael Friedman, Trillium Management) (“[T]he big fish . . . are the major consumers of depth-of-book data. I think there was some evidence . . . that there were only 50 to 100 firms, period who buy all of the depth-of-book feeds.”).

141 See, e.g., NYSE Rule 55 (“Securities traded on the Exchange shall be quoted in round lots (generally 100 shares), except that in the case of certain stocks designated by the Exchange the round lot shall be such lesser number of shares as may be determined by the Exchange, with respect to each stock so designated.”); Nasdaq Rule 5005(a)(39) (“‘Round Lot’ or ‘Normal Unit of Trading’ means 100 shares of a security unless, with respect to a particular security, Nasdaq determines that a normal unit of trading shall

technical specifications for the Equity Data Plans provide similar definitions. For example, the CTA Plan defines round lot as "[t]ypically 100 shares of stock or any number of shares that is a multiple of 100 (i.e., 100, 600, 1,600, etc.)."[142] The exclusive SIP feeds also disseminate quotation and transaction information for stocks that have a round lot size of 10 or 1.[143]

Regulation NMS defines "odd-lot" as "an order for the purchase or sale of an NMS stock in an amount less than a round lot."[144] Exchange definitions of odd-lot are similar, as is the definition of odd-lot in the technical specifications for the CTA Plan.[145]

Despite the absence of a round lot definition, other key defined terms in Regulation NMS—such as "bid or offer," "best bid and best offer," and "quotation"—refer, directly or indirectly, to round lot. The effect of these references to round lot is that odd-lot quotation

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constitute other than 100 shares."). According to NYSE Trade and Quote ("TAQ") Data, as of August 2019, twelve stocks, all of which are listed on NYSE or NYSE American, had a round lot size other than 100. Ten stocks had a round lot of ten and two stocks had a round lot of one.

142 Consolidated Tape System, Multicast Output Binary Specification, 85 (May 8, 2018), available at https://www.ctaplan.com/publicdocs/ctaplan/notifications/trader-update/CTS_BINARY_OUTPUT_SPECIFICATION.pdf. The technical specifications for the Nasdaq UTP Plan note that "[f]or most NASDAQ issues, the round lot size is 100 shares." UTP Data Feed Services Specification, 22, available at http://www.utpplan.com/DOC/UtpBinaryOutputSpec.pdf (last accessed Jan. 7, 2020).

143 See supra note 141.

144 17 CFR 242.600(b)(51).

145 See, e.g., Cboe BZX Rule 11.10 ("One hundred (100) shares shall constitute a 'round lot,' any amount less than 100 shares shall constitute an 'odd lot,' and any amount greater than 100 shares that is not a multiple of a round lot shall constitute a 'mixed lot.'"); Consolidated Tape System, Multicast Output Binary Specification, 84 (May 8, 2018), available at https://www.ctaplan.com/publicdocs/ctaplan/notifications/trader-update/CTS_BINARY_OUTPUT_SPECIFICATION.pdf (defining "odd lot" as "[a]n order amount for a security that is less than the normal unit of trading for that particular asset. Odd lots are considered to be anything less than the standard units of trade of 1, 10 or 100 shares.").

information is not currently collected or disseminated under Regulation NMS.[146] For example, Rule 601 refers to "transaction reports,"[147] the definition of which refers to round lot.[148] Rule 602 refers to "bids" and "offers,"[149] the definition of which also refer to round lot.[150] Rule 603 refers to a "national best bid and national best offer,"[151] which ultimately refers back to round lot.[152] Rules 610 (access to quotations)[153] and 611 (order protection rule)[154] do not apply to odd-lot orders. Rule 604 (display of customer limit orders) also refers to bids and offers[155] and specifically excludes odd-lot orders.[156]

Several exchanges, however, pursuant to their own rules, aggregate odd-lot orders into round lots and report such aggregated odd-lot orders as quotation information to the exclusive SIPs. Exchange rules specify how the aggregation process works in different terms and with

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146 The Commission's proposal to add a definition of round lot will result in the inclusion of additional quotation data for smaller-sized orders in proposed core data, and, as discussed below in Section III.C.1(d)(i), will also affect the firm quote requirements of Rule 602(b), the customer limit order display requirements of Rule 604, the order execution disclosures required under Rule 605, the requirements under Rule 610(c) regarding fees for accessing quotations, and the Short Sale Circuit Breaker requirements of Rule 201. As discussed below in Section III.C.1(d)(ii), the Commission is also proposing certain amendments to the definition of "protected bid or protected offer" so that the scope of the order protection requirements of Rule 611 and the locked and crossed market prevention requirements of Rule 610(c) are not extended to the proposed smaller round lot sizes.

147 See Rule 601, 17 CFR 242.601.

148 See Rule 600(b)(84), 17 CFR 242.600(b)(84).

149 See Rule 602, 17 CFR 242.602.

150 See Rule 600(b)(9), 17 CFR 242.600(b)(9).

151 See Rule 603, 17 CFR 242.603.

152 See Rule 600(b)(43), 17 CFR 242.600(b)(43); Rule 600(b)(9), 17 CFR 242.600(b)(9).

153 See Rule 610, 17 CFR 242.610.

154 See Rule 611, 17 CFR 242.611.

155 See Rule 604, 17 CFR 242.604.

156 See Rule 604(b)(3), 17 CFR 242.604(b)(3).

different levels of specificity,[157] but many exchanges aggregate odd-lots across multiple prices and provide them to the exclusive SIPs at the least aggressive price if the combined odd-lot interest is equal to or greater than a round lot.[158]

In 2013, the participants to the Equity Data Plans filed proposed amendments to the Plans to add odd-lot transactions to SIP data.[159] In support of the proposed amendments, the participants to the Equity Data Plans noted that "odd-lot transactions account for a not

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157 See, e.g., NYSE Rule 7.36 ("The best-ranked non-marketable displayed Limit Order(s) to buy and the best ranked non-marketable displayed Limit Order(s) to sell in the Exchange Book and the aggregate displayed size of such orders associated with such prices will be collected and made available to quotation vendors for dissemination pursuant to the requirements of Rule 602 of Regulation NMS under the Exchange Act. If non-marketable odd-lot sized orders at multiple price levels can be aggregated to equal at least a round lot, such odd-lot sized orders will be displayed as the best ranked displayed orders to sell (buy) at the least aggressive price at which such odd-lot sized orders can be aggregated to equal at least a round lot."); Nasdaq Rule 4756 ("Pursuant to Rule 602 of Regulation NMS under the Exchange Act, Nasdaq will transmit for display to the appropriate network processor for each System Security: (i) the highest price to buy wherein the aggregate size of all displayed buy interest in the System greater than or equal to that price is one round lot or greater; (ii) the aggregate size of all displayed buy interest in the System greater than or equal to the price in (i), rounded down to the nearest round lot; (iii) the lowest price to sell wherein the aggregate size of all displayed sell interest in the System less than or equal to that price is one round lot or greater; and (iv) the aggregate size of all displayed sell interest in the System less than or equal to the price in (iii), rounded down to the nearest round lot."); Cboe BZX Rule 11.9(c)(2) ("Odd Lot Orders are only eligible to be Protected Quotations if aggregated to form a round lot."); supra Section III.C for a discussion of odd-lot aggregation. As noted above, the proposed definition of core data sets forth a methodology for odd-lot aggregation for the components of core data. Any odd-lot quotations that are aggregated in an SRO's existing proprietary data products would be required to be aggregated in a manner consistent with the method set forth in the proposed definition of core data. See supra note 129.

158 See id. For example, if there are three sell orders on an exchange for a particular NMS stock—30 shares at $10.08, 20 shares at $10.09, and 50 shares at $10.10—the exchange will post 100 shares at $10.10 as a protected round lot quote to the exclusive SIP. See infra Section VI.C.1(c)(i).

159 Odd-lot transaction data that is required to be collected, consolidated, and disseminated pursuant to the Equity Data Plans would be included in the proposed definition of consolidated market data pursuant to proposed Rule 600(b)(20)(viii).

insignificant percentage of trading volume, [and] the Participants have determined that including odd-lot transactions on the consolidated tape . . . would add post-trade transparency to the marketplace."[160] In approving the amendments, the Commission agreed that "odd-lot transactions comprise a noteworthy percentage of total trading volume," and stated that "including odd-lot transactions on the consolidated tape will enhance post-trade transparency, as well as price discovery, and consequently would further the goals of the [Exchange] Act," and that "information about odd-lot transactions would provide important information to investors and other market participants and therefore represents a positive development in the provision of market data."[161]

(b) Market Evolution

In recent years, the share prices of some of the most widely-held stocks have increased substantially.[162] As a result of higher share prices, odd-lot orders in many securities have a high dollar, or notional, value. Because SIP data does not currently include odd-lot quotation information except to the extent that cumulative odd-lot interest equals or exceeds a round lot, the best quote reflected in proprietary data products, especially for many high-priced stocks, may be an odd-lot order that is at a price that is better than the best bid or best offer that is disseminated by the exclusive SIPs. Indeed, as discussed below, an analysis of odd-lot

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160 Securities Exchange Act Release Nos. 70793 (Oct. 31, 2013), 78 FR 66788 (Nov. 6, 2013) (order approving Amendment No. 30 to the UTP Plan to require odd-lot transactions to be reported to consolidated tape); 70794 (Oct. 31, 2013), 78 FR 66789 (Nov. 6, 2013) (order approving Eighteenth Substantive Amendment to the Second Restatement of the CTA Plan to require odd-lot transactions to be reported to consolidated tape).

161 Id. at 66789–66790.

162 For example, between 2004 and 2019, the average price of a stock in the Dow Jones Industrial Average nearly quadrupled.

transaction data and comments made in connection with the Roundtable indicate that odd-lot orders are frequently priced better than the quotation prices that are disseminated by the exclusive SIPs, yet these orders are not seen by investors or market participants that rely solely on SIP data.[163]

The importance of increasing the transparency of odd-lot quotation information is supported by odd-lot quotation and transaction data. First, odd-lot transactions make up a significant proportion of transaction volume in NMS stocks, including exchange-traded products ("ETPs"). Based on data from the SEC's MIDAS analytics tool,[164] the daily exchange odd-lot rate (i.e., the number of exchange odd-lot trades as a proportion of the number of all exchange trades) for all corporate stocks ranged from approximately 29% to 42% of trades and the daily exchange odd-lot rate for all ETPs ranged from 14% to 20% of trades in 2018. More recently, in June 2019, the daily exchange odd-lot rate for all corporate stocks exceeded 50% several times (and exceeded 65% several times for the top decile by price) and reached almost 30% for all ETPs in the same period.[165] Exchange odd-lot volume as a proportion of total exchange-traded

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163 See Roundtable Day Two Transcript at 66 (Paul O'Donnell, Morgan Stanley) ("We all know that, for high-price stocks, there is a market inside the NBBO"); Roundtable Day One Transcript at 116 (Michael Blaugrund, NYSE) (recommending the inclusion in core data of odd-lots priced better than the BBO); Healthy Markets Association Letter II; staff odd-lot analysis, infra (observing that 43% of odd-lot transactions in September of 2019 occurred at prices better than the NBBO).

164 Staff accessed consolidated data from the Equity Data Plans and exchange depth of book data, both of which staff receive through the SEC's MIDAS platform. See Market Data Analytics System ("MIDAS"), available at https://www.sec.gov/marketstructure/midas.html. This data is commercially available.

165 Id. See also Alexander Osipovich, Tiny 'Odd-Lot' Trades Reach Record Share of U.S. Stock Market, Wall Street Journal (Oct. 23, 2019) ("The share of trades in odd-lot sizes hit a record 48.9% on Oct. 7 and has stayed above 40% ever since, according to the NYSE data, which cover all U.S. equity trades, not just those on the Big Board.").

volume also rose in June 2019, reaching approximately 15% for all corporate stocks (and over 30% for the top decile by price) and approximately 4% for all ETPs.[166]

Staff examined odd-lot trade and message volume, duration on the inside,[167] order-book distribution, and quoted spreads for the top 500 securities by dollar volume during the week of September 10–14, 2018, using the exclusive SIP trades, exclusive SIP quotes, off-exchange data from FINRA's TRFs, and all of the exchanges' proprietary data feeds. Staff found that a significant portion of quotation and trading activity occurs in odd-lots, particularly for frequently traded, high-priced securities.[168]

Staff compared the bid-ask spread when using exclusive SIP quotation information (which is in round lots) vs. quotation information in the proprietary feeds (which includes odd-lots). On average, the measure of bid-ask spread, an important metric in understanding market liquidity and quote competition, widens (i.e., degrades) significantly when calculated using only round lots relative to the odd-lot quotations displayed on proprietary feeds. In addition, as average stock share prices rose, bid-ask spreads based only on round lots generally widened by a greater amount than did spreads based on round lots and odd-lots. During the period staff analyzed, for the 500 most frequently traded securities by dollar volume, the average bid-ask spread of the 50 securities with the highest share prices decreased (improved or tightened) by $.05970 when calculated using the proprietary feeds relative to the exclusive SIP feed. Bid-ask spreads for the 50 securities with the lowest share prices showed less improvement when using

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166 See supra note 164.

167 Duration on the inside is the percent of the day the aggregate size at the best price (bid, offer, or both) is less than 100 shares based on the exchange proprietary data feeds.

168 For example, staff observed that over 86% of the trades that occurred in the two largest securities by market capitalization that have share prices greater than $1,000 occurred in odd-lot share amounts.

the proprietary feeds relative to the exclusive SIP feed, decreasing (or tightening) on average by $.00017.

Staff also evaluated the frequency of trades in odd-lot sizes for the top 500 securities by dollar volume and found that frequently traded, high priced securities are likely to have a substantial portion of executions occur in odd-lot sizes. More than 25 percent of the on-exchange share volume of the 50 securities with the highest share prices occurred in odd-lot sizes. In comparison, less than 2% of the on-exchange share volume of the 50 securities with the lowest share prices occurred in odd-lot sizes.

In addition, as noted above,[169] statements made by Roundtable panelists and commenters suggest that odd-lot orders can reflect prices that are better than the quotation prices that are disseminated by the exclusive SIPs. These observations are consistent with staff observations of odd-lot transaction pricing reflected in recent trading data. During the month of September 2019, a substantial proportion of odd-lot trades occurred at prices that are better than the prevailing NBBO. Specifically, approximately 51% of all trades executed on exchange and approximately 14% of all volume executed on exchange in corporate stocks (3,930 unique symbols) occurred in odd-lot sizes (i.e., less than 100 shares), and 43% of those odd-lot transactions (representing approximately 39% of all odd-lot volume) occurred at a price better than the NBBO.

(c) Roundtable Discussion, Comments, and Alternative Proposals

In connection with the Roundtable, one commenter presented data showing increased odd-lot trading and quoting rates over the last several years, as well as the existence of quotes on

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169 See supra note 163.

proprietary feeds that are at prices better than the NBBO disseminated by the exclusive SIPs.[170] Several panelists at the Roundtable were supportive of adding odd-lot quotation information to SIP data.[171] One panelist who supported adding odd-lot orders to SIP data noted that the application of order protection under Rule 611 to odd-lot quotes would need to be considered and added that he would likely be in favor of applying Rule 611 to odd-lot quotes.[172] Finally, one panelist emphasized the importance of odd-lot quotation data to market participants, stating that content that exists only in the proprietary feeds—such as odd-lots—is needed to make effective decisions in trading applications and to fill client orders effectively.[173]

In addition, several comment letters submitted in connection with the Roundtable

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170 Letter to Brent J. Fields, Secretary, Commission, from Tyler Gellasch, Executive Director, Healthy Markets Association, 5–11 (Mar. 5, 2019) ("Healthy Markets Association Letter II"). See also Letter to Brent J. Fields, Secretary, Commission, from Rich Steiner, Head of Client Advocacy and Market Innovation, RBC Capital Markets, LLC (Oct. 25, 2019) ("RBC Letter") (stating that internal research suggested exclusive SIPs should display odd-lot quotes).

171 See Roundtable Day One Transcript at 98–99 (Stacey Cunningham, NYSE); Roundtable Day One Transcript at 116–17 (Michael Blaugrund, NYSE); Roundtable Day Two Transcript at 72 (Michael Blaugrund, NYSE) (recommending expanding consolidated market data to include odd-lot orders priced better than the BBO); Roundtable Day One Transcript at 157–59 (Oliver Albers, Nasdaq) (stating that over 50% of the notional value of Nasdaq-listed names is in high priced stocks); Roundtable Day One Transcript at 226–27 (Chris Isaacson, Cboe); Roundtable Day Two Transcript at 73 (Prof. Robert Bartlett, UC Berkeley) (stating that including odd-lots in the trade data has been incredibly useful and including it in the quote data would be also helpful).

172 See Roundtable Day One Transcript at 226–27 (Chris Isaacson, Cboe). In addition, another panelist suggested that revisiting Rule 611 for odd-lots has merit. See Roundtable Day One Transcript at 231–32 (Vlad Khandros, UBS). See also Robert Battalio, et al., Unrecognized Odd Lot Liquidity Supply: A Hidden Trading Cost for High Priced Stocks, The Journal of Trading (Winter 2017), available at https://jot.pm-research.com/content/iijtrade/12/1/35.full.pdf ("[T]he exclusion of odd lot orders from the protected NBBO quote produces cases in which trades fill at prices worse than available opposite-side trading interests.").

173 See Roundtable Day One Transcript at 127–28 (Mark Skalabrin, Redline Trading Solutions).

supported adding odd-lot quotation information to SIP data or otherwise highlighted negative consequences of its exclusion from SIP data.[174] One commenter stated that the Commission should consider rulemaking to expand SIP data to include odd-lot information during which the Commission could gather data and determine whether odd-lots are valuable for price discovery for all securities.[175] Commenters asserted that having to purchase "relatively basic data such as odd-lots" through exchange proprietary offerings goes against one of the main purposes of the national market system: enabling investors' orders to be executed without the participation of a dealer.[176] Another commenter provided data showing that proprietary feeds that include odd-lot quotes reflect superior pricing compared to the SIP data disseminated by the Equity Data Plans and indicated its support for adding odd-lot quotes to SIP data.[177] Similarly, another commenter stated that as stock prices overall have risen and average trade sizes have fallen, odd-lots are becoming more important in the trading process, and the commenter presented data showing that stock price has a meaningful impact on odd-lot frequency and trade size and that high-priced

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174 See Letter to Brent J. Fields, Secretary, Commission, from NYSE Group, 6, 13 (Oct. 24, 2018) ("NYSE Group Letter") (stating that "[o]dd-lot quoting, particularly in high-priced securities, has become more prevalent in today's markets and its exclusion from SIP feeds seems anachronistic"; recommending that core data be expanded to include "the best bid and offer of any quantity"; and stating that "Main Street would benefit if the prices disseminated by the SIPs included odd-lot quotes"); Letter to Vanessa Countryman, Acting Secretary, Commission, from Theodore R. Lazo, Managing Director and Associate General Counsel, SIFMA (Sept. 18, 2019) ("SIFMA Letter II"); Letter to Brent J. Fields, Secretary, Commission, from Richard H. Baker, President and CEO, Global Head of Government Affairs Managed Funds Association and Jirí Król, Deputy CEO, Global Head of Government Affairs, AIMA, 3–4 (Dec. 20, 2018) ("MFA and AIMA Letter"); Healthy Markets Association Letter II.

175 See SIFMA Letter II at 3.

176 See MFA and AIMA Letter at 3–4.

177 See Healthy Markets Association Letter II.

stocks frequently trade in smaller quantities.[178]

Some Roundtable panelists, however, pointed out complications that might arise from the addition of more odd-lot information to the SIP data. One panelist stated that an issue with adding odd-lot quotations to the Equity Data Plans is that they are not protected quotations under Rule 611, so, in the view of the panelist, there would be uncertainty as to whether a broker-dealer has to access odd-lot quotations to meet regulatory obligations. This panelist added that there will need to be clarity as to how odd-lots are reported to the exclusive SIPs and represented in the consolidated tapes (e.g., whether 50 shares at $10 and 100 shares at $10 will be shown separately or as 150 shares at $10).[179] Another panelist stated that caution should be exercised in adding odd-lots to SIP data to avoid overwhelming market participants with information. This panelist suggested that a "price level metric," such as including odd-lot orders with a value in excess of a specified price, might make sense.[180]

On October 2, 2019, the Equity Data Plans published an "initial proposal" for public comment regarding the addition of odd-lot quotes to the Equity Data Plans for dissemination by the respective exclusive SIPs.[181] Under this proposal, the addition of odd-lot quotes would not

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178 See RBC Letter at 1–2 (highlighting that approximately 50% of all odd-lot trades in stocks priced between $50 and $250 are in 20 shares or less).

179 See Roundtable Day One Transcript at 159–60 (Adam Inzirillo, BAML) (stating that the different display options could result in a change from current practices).

180 See Roundtable Day One Transcript at 160–61 (Matt Billings, TD Ameritrade).

181 See CTA Plan and UTP Plan, Odd Lots Initial Proposal ("SIP Odd Lot Initial Proposals"), available at http://www.utpplan.com/DOC/Odd_Lots_Proposal.pdf, https://ctaplan.com/publicdocs/CTA_Odd_Lots_Proposal.pdf; CTA Plan and UTP Plan Operating Committees, SIP Operating Committees Seek Comment on Proposal to Add Odd Lot Quotes to SIP Data Feeds (Oct. 2, 2019) ("SIP Odd Lots Proposal Press Release"), available at https://www.globenewswire.com/news-release/2019/10/02/1924016/0/en/SIP-Operating-Committees-Seek-Comment-on-Proposal-to-Add-Odd-Lot-Quotes-to-SIP-Data-Feeds.html; Letter from Robert Books,

change how the NBBO is calculated, nor would such quotes be "protected quotations"[182] under Regulation NMS. Rather, the odd-lot quote data would be "ancillary" data available to exclusive SIP customers.[183] Each exchange would send its top of book odd-lot quotes to the exclusive SIPs in the same form in which it currently sends its top of book round lot quotes.[184] An "odd-lot best bid and offer" would be calculated in the same manner as the round lot NBBO, but would not be disseminated when it is worse than the NBBO.[185]

Additionally, on January 21, 2020, Cboe Global Markets, Inc. ("Cboe") published a report detailing its recommendations for U.S. equity market structure.[186] In the report, Cboe recommended that top of book odd-lot quotations be included in the exclusive SIP feeds.[187] Furthermore, Cboe recommended redefining round lot with lower numbers for higher priced securities.[188]

(d) Commission Discussion and Proposal

(i) Proposed Definition of Round Lot

Chairman, UTP and CTA Operating Committees, to industry members and investors, 1 (Jan. 6, 2020) ("CTA and UTP Annual Letter"), available at https://forefrontcomms.com/wp-content/uploads/2020/01/2020-Annual-Letter_FINAL_.pdf. The SIP Odd Lot Initial Proposals are the subject of continuing consideration by the operating committees. Comments are available at https://www.ctaplan.com/oddlots.

182 See supra note 115.

183 See SIP Odd Lot Initial Proposals, supra note 181, at 1.

184 See id.

185 See id.

186 Cboe, Cboe's Vision: Equity Market Structure Reform (Jan. 21, 2020) ("Cboe Report"), available at http://www.cboe.com/aboutcboe/government-relations/pdf/cboes-vision-equity-market-structure-reform-2020.pdf.

187 See id. at 3.

188 See id. at 2–3.

Data on odd-lot trading and quoting activity evaluated by staff,[189] and the remarks and comments of market participants, suggest that SIP data omits a substantial amount of economically significant trading interest. Furthermore, bid-ask spreads calculated using round lot orders do not include some odd-lot quotations that may be at prices better than round lot orders, particularly for higher priced securities.[190] The Commission is concerned that information about significant trading interest in odd-lot orders is only available to market participants who have purchased proprietary market data products from exchanges and remains unavailable to those that rely solely on SIP data. This creates a potentially significant information asymmetry between SIP data and proprietary data.[191] Further, the Commission is concerned about the view expressed by some market participants that achieving best execution may be difficult for broker-dealers that rely solely on SIP data.

The Commission preliminarily believes that, to address these and other concerns, certain odd-lot quotation data should be required to be disseminated as part of proposed core data so that it is made more readily available to investors and market participants. The Commission is proposing that this be accomplished by defining the term "round lot" to include certain orders that currently are defined as "odd-lots." Given the prevalence of odd-lot quoting and trading,

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189 See supra Section III.C.1(b) (discussing staff odd-lot analysis).

190 Id.

191 Specifically, larger or better resourced broker-dealers may be more capable of paying the fees for multiple proprietary data feeds to obtain odd-lot quotations from several markets and consolidating these feeds to create a more complete picture of the market. See infra Sections VI.B.2(c), VI.B.3(a), and VI.B.3(b). In addition, the proposed definition of round lot would help ensure that market participants, including retail investors, would receive information on smaller-sized orders in higher-priced stocks in a context in which a trading or order routing decision can be implemented and would receive more informative order execution quality information. See infra Section III.C.1(d)(i) (discussing the effect of the proposed definition of round lot on Rules 603(c) and 605).

particularly in higher-priced stocks, the absence of odd-lot quotation data significantly reduces the comprehensiveness and usefulness of SIP data.

The Commission preliminarily believes that the inclusion of odd-lot quotations in proposed core data should be reasonably calibrated. The Commission is preliminarily concerned that including all odd-lot quotations could, as some Roundtable commenters suggested,[192] burden systems, increase complexity, and degrade the usefulness of information in a manner that may not be warranted by the relative benefits of the additional information to investors and market participants.[193]

Accordingly, under proposed Rule 600(b)(81) of Regulation NMS, a "round lot" would be defined as: (1) for any NMS stock for which the prior calendar month's average closing price on the primary listing exchange[194] was $50.00 or less per share, an order for the purchase or sale of an NMS stock of 100 shares; (2) for any NMS stock for which the prior calendar month's average closing price on the primary listing exchange was $50.01 to $100.00 per share, an order

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192 See supra note 180 and accompanying text.

193 See infra note 195. Further, attempting to access orders of insignificant notional value—the share price multiplied by the number of shares in the order—could result in a situation where the benefit associated with accessing additional liquidity may be offset by the cost associated with signaling to other market participants the presence of a large incoming order. See Securities Exchange Act Release No. 78309 (July 13, 2016), 81 FR 49432, 49440 (July 27, 2016) ("[S]ophisticated market participants closely monitor order and execution activity throughout the markets, looking for patterns that signal the existence of a large institutional order, so that they can use that information to their trading advantage. . . Indeed, institutional customers have expressed concern that excessive routing of their orders may increase the risk of information leakage without a commensurate benefit to execution quality."). By limiting the quotation information that is added to the proposed core data to orders of $1,000 dollars notional value or more, as explained below, the proposed definition of round lot will increase transparency into smaller-sized orders while reducing the likelihood of information leakage.

194 The IPO price would be used in lieu of the prior calendar month's average closing price on the primary listing exchange for newly issued stocks. See proposed Rule 600(b)(81).

for the purchase or sale of an NMS stock of 20 shares; (3) for any NMS stock for which the prior calendar month's average closing price on the primary listing exchange was $100.01 to $500.00 per share, an order for the purchase or sale of an NMS stock of 10 shares; (4) for any NMS stock for which the prior calendar month's average closing price on the primary listing exchange was $500.01 to $1,000.00 per share, an order for the purchase or sale of an NMS stock of 2 shares; and (5) for any NMS stock for which the prior calendar month's average closing price on the primary listing exchange was $1,000.01 or more per share, an order for the purchase or sale of an NMS stock of 1 share.

Table 1, below, shows the number of NMS stocks that would be in each proposed round lot tier based on monthly average closing prices in September of 2019, as well as the percent of overall average daily volume ("ADV") and notional value ("$ADV") of each price group:

Table 1

Stock Price Group	Number of Stocks in Stock Price Group	Percent of ADV, by Price Group	Percent of $ADV, by Price Group
$0.00 - $50.00	7,188	75.02%	31.70%
$50.01 - $100.00	1,094	13.64%	21.06%
$100.01 - $500.00	575	11.20%	43.40%
$500.01 - $1,000.00	14	0.05%	0.64%
$1,000.01 +	15	0.09%	3.19%

The Commission's proposed definition of round lot attempts to balance the benefits of adding more quotation data regarding smaller-sized orders to proposed core data against the concerns raised by some Roundtable panelists and commenters that adding all odd-lot quotes to

proposed core data could increase its complexity and undermine its usefulness.[195] The proposed definition, in effect, limits the quotation data that would be added to proposed core data to quotations that represent a notional value of at least $1,000, which the Commission preliminarily believes to be meaningful order size for today's market participants.[196]

A round lot is a standard unit of trading that traditionally has reflected an order of meaningful size to market participants. Given the per share price increases of certain securities, and the large number of orders in sub-100 share sizes in today's market,[197] the Commission preliminarily believes that the current round lot size of 100 shares no longer captures many orders of meaningful size. The number of shares in an order, on its own, has become a less accurate way of distinguishing orders of meaningful size from those of de minimis size. For example, a 100-share order for an $11 stock and a 10 share order for a $110 stock both have a notional value of $1,100, but, under exchange rules and NMS plans, only the former may be a round lot currently. The Commission preliminarily believes that defining round lots based on a dollar value would better reflect orders of meaningful size.[198]

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195 The proposed definition of round lot only includes a subset of all odd-lot quotation data, namely, orders with a notional value of at least $1,000. This would limit the number of data messages that would be provided to market participants when compared to providing all odd-lot quotation data. The Commission preliminarily believes that the proposed definition would address concerns regarding additional complexity and degradation of the usefulness of the data. See infra Section VI.C.1(b)(i).

196 See infra Section VI.C.1.

197 See supra notes 163–169 and accompanying text.

198 Commenters to the SIP Odd Lot Initial Proposals have suggested defining round lots based on share price. See Letter to SIP Operating Committees from Hubert De Jesus, Managing Director, Global Head of Market Structure and Electronic Trading, Blackrock, and Joanne Medero, Managing Director, Global Public Policy Group, Blackrock, regarding Odd Lots Proposal, 2 (Dec. 3, 2019), available at https://www.theice.com/publicdocs/BlackRock_Odd_Lot_Proposal_December_3_2019.pdf ("The sizing of round lots provides an intuitive mechanism for expanding odd lot

Furthermore, higher odd-lot trading rates are associated with higher-priced stocks,[199] and, according to data provided in connection with the Roundtable, odd-lot transaction sizes go down as share price goes up.[200] The proposed tiered, price-based round lot definition is intended to reflect these market dynamics. More specifically, a significant odd-lot transaction market—measured by odd-lot trade frequency—emerges at approximately a $50 share price, and 50% of the odd-lots traded in stocks priced between $50 and $250 are 20 shares or less.[201] This corresponds, approximately, with the proposed 20 share round lot category for stocks priced between $50.01 and $100.00 per share. Moreover, according to data provided in connection with the Roundtable, 20, 10, 2, and 1 share odd-lot trade sizes are among the most common, with approximately 2.8%, 5.1%, 5.3%, and 11.7%, of odd-lot executions, respectively.[202] The proposed definition of round lot is intended to broadly reflect these key data points in the context of a relatively simple, intuitive framework for establishing round lot sizes and associated price thresholds.

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coverage because its designation as the normal unit of trading is embedded in exchange rulebooks and market regulations. . . . BlackRock believes that a data-driven redefinition of round lots to scale lot size relative to security price would improve transparency and promote fairer and more efficient markets."); Letter from Benjamin Connault, Economist, IEX Group, Inc., and Lucy Malcolm, Associate General Counsel, IEX Group, Inc., to Operating Committees, regarding Odd Lots Proposal and Round Lot Proposal, 2 (Nov. 18, 2019), available at https://www.theice.com/publicdocs/IEX_Letter_re-CTA-UTP_Odd-Lots_Proposal_20191118.pdf ("IEX strongly supports reducing the round lot size for higher-priced securities.").

199 See supra Section III.C.1(b) (stating that the daily exchange odd-lot rate for the top decile of corporate stocks by price exceeds the rate for all corporate stocks).

200 See RBC Letter at 5.

201 Id.

202 Deutsche Bank, Global Equities, There's More to Odd Lots than High-Priced Stocks (June 25, 2019).

Moreover, a significant portion of the odd-lot transactions that occur at a price better than the NBBO[203] would be captured by the proposed definition of round lot. Specifically, of the odd-lot transactions executing at a price better than the NBBO during all of the trading days in September 2019, approximately 38% of such transactions and 61% of the odd-lot volume were in sizes that would be round lots under proposed Rule 600(b)(81). For example, for those stocks with an average prior calendar month's closing price on the primary listing exchange equal to or greater than $500.01 and less than $1,000, approximately 77% of all trades (99% of volume) in sizes less than 100 shares that occurred at a price better than the prevailing NBBO had a transaction size of 2 shares or more. Table 2 and Table 3, below, show the portion of odd-lot trades and volume, respectively, executed a price better than the prevailing NBBO that would be defined as round lots under the proposal:

Table 2

Stock Price Group	Proposed Round Lot Definition	Portion of all trades less than 100 shares, at a price better than the prevailing NBBO, occurring in a quantity that would be defined as a round lot under the proposal
$0.00 - $50.00	100 shares	0%
$50.01 - $100.00	20 shares	46%
$100.01 - $500.00	10 shares	59%
$500.01 - $1000.00	2 shares	77%
$1,000.01 or more	1 share	100%

Table 3

Stock Price Group	Proposed Round Lot Definition	Portion of all volume transacted in a quantity less than 100 shares, at a price better than the prevailing NBBO, occurring in a quantity that would be

203 See supra Section III.C.1(b).

		defined as a round lot under the proposal
$0.00-$50.00	100 Shares	0%
$50.01-$100.00	20 Shares	89%
$100.01-$500.00	10 Shares	95%
$500.01-$1000.00	2 Shares	99%
$1,000.01 or more	1 Share	100%

The proposed definition of round lot requires the round lot size of an NMS stock to be based on the prior calendar month's average closing price on the primary listing exchange for that stock (or the IPO price if the prior calendar month's average closing price on the primary listing exchange is not available).[204] The Commission preliminarily believes that the prior calendar month's average closing price on the primary listing exchange is a reasonable metric to assess an NMS stock's share price for purposes of determining the applicable round lot size. The daily closing price is a widely followed indicator of a stock's value that is often used to measure performance over time.[205] Moreover, using a monthly average (rather than, e.g., each trading day's closing price or a weekly average), would help ensure that round lot sizes are based on current pricing information, while preventing short-term price fluctuations from impacting the round lot size, thereby avoiding unnecessary complexity and cost.

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204 Specifically, the prior calendar month's average closing price on the primary listing exchange would be the mean of the daily closing prices on the primary listing exchange for all trading days in the prior calendar month. For each NMS stock, the prior calendar month's average closing price on the primary listing exchange would only need to be computed at the beginning of each calendar month and would be in effect for the rest of the month (i.e., it would not be a "rolling" average requiring computation more frequently than once per calendar month).

205 See Christopher Ting, Which Daily Price Is Less Noisy?, Financial Management 35, no. 3 (2006): 81-95 (describing daily closing price as a popular reference price, including for fund managers to compute net asset values).

The proposed definition of round lot would impact other terms that are currently defined in Regulation NMS, as well as the proposed definition of core data (and its included terms), so that quotation information in the proposed round lot sizes would be included in the proposed definition of core data. Specifically, the definition of "bid or offer"[206] is based on round lots, and the definition of "bid or offer" is reflected in the definition of "best bid and best offer."[207] Similarly, the definition of "best bid and best offer" is reflected in the definition of "national best bid and national best offer."[208] Therefore, the addition of the proposed definition of round lot would impact the calculation of the NBBO by requiring that it be calculated based upon the BBOs in the new round lot sizes. In addition, the proposed definition of depth of book data refers to "quotation size," which refers to "bid or offer," so the quotation data at the price levels that are proposed to be included in depth of book data would include quotations in the new proposed round lot sizes.[209]

The proposed definition of "round lot" would also affect Rules 602, 603, 604, 605, 606, and 610 of Regulation NMS. Rule 602 governs the dissemination of quotations in NMS securities. Specifically, Rule 602(a), among other things, requires SROs to have procedures to collect and make available certain quotation information from their members and make available

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206 See 17 CFR 242.600(b)(9).

207 See 17 CFR 242.600(b)(8).

208 See 17 CFR 242.600(b)(43).

209 Similarly, since "transaction report" is defined as "a report containing the price and volume associated with a transaction involving the purchase or sale of one or more round lots of a security," core data, as proposed, would include transaction reports based on the new proposed round lot sizes. The Equity Data Plans already collect and disseminate all odd-lot transaction reports and last sale data. See supra notes 160–161 and accompanying text. Accordingly, under proposed Rule 600(b)(19)(iv), which incorporates data elements required by the NMS plan(s) into the proposed consolidated market data, the SROs would continue to be required to provide all odd-lot transaction reports and last sale data as part of the proposed consolidated market data.

their best bids and offers to vendors. As a result of the proposed definition of "round lot," the SROs would be required to collect and make available quotations in the smaller round lot sizes depending on the price of the NMS stock. The Commission preliminarily believes the bids and offers collected and made available under Rule 602(a) should be in the proposed round lot sizes. As discussed above, the Commission preliminarily believes that the proposed round lot sizes represent orders of meaningful size to market participants and should be collected, consolidated, and disseminated in proposed core data. To effectively implement this, exchanges must be required to collect and make available quotations in these sizes under Rule 602(a).

In addition, Rule 602(b) provides that each "responsible broker or dealer" shall communicate to its SROs its best bids and offers and quotation sizes for a "subject security."[210] Thereafter, each responsible broker or dealer is obligated to execute an order to buy or sell a subject security, other than an odd-lot order, that is presented to that responsible broker or dealer at a price at least as favorable to such buyer or seller as the responsible broker's or dealer's

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210 "Subject security" means "(i) With respect to a national securities exchange: (A) Any exchange-traded security other than a security for which the executed volume of such exchange, during the most recent calendar quarter, comprised one percent or less of the aggregate trading volume for such security as reported pursuant to an effective transaction reporting plan or effective national market system plan; and (B) Any other NMS security for which such exchange has in effect an election, pursuant to 242.602(a)(5)(i), to collect, process, and make available to a vendor bids, offers, quotation sizes, and aggregate quotation sizes communicated on such exchange; and (ii) With respect to a member of a national securities association: (A) Any exchange-traded security for which such member acts in the capacity of an OTC market maker unless the executed volume of such member, during the most recent calendar quarter, comprised one percent or less of the aggregate trading volume for such security as reported pursuant to an effective transaction reporting plan or effective national market system plan; and (B) Any other NMS security for which such member acts in the capacity of an OTC market maker and has in effect an election, pursuant to 242.602(a)(5)(ii), to communicate to its association bids, offers, and quotation sizes for the purpose of making such bids, offers, and quotation sizes available to a vendor." 17 CFR 242.600(b)(77).

"published bid or published offer."[211] In other words, the responsible broker or dealer must be firm for its "published bid or published offer."[212] As a result of the proposed definition of round lot, responsible brokers or dealers will be required to communicate bids and offers in the proposed round lot sizes and be firm for such bids and offers. The Commission preliminarily believes that the proposed round lot definition should apply to the obligations of responsible brokers or dealers under Rule 602(b). As explained above, the Commission preliminarily believes that the proposed round lot sizes better reflect orders of meaningful size in today's markets. The Commission also preliminarily believes that the objectives of Rule 602(b) of ensuring that broker-dealers disseminate their best quotes, and are firm for such quotes, would be furthered by applying the proposed definition of round lots such that those obligations would apply to quotes of meaningful size.

Rule 603(c) governs the display of information with respect to quotations for and transactions in NMS stocks. Specifically, Rule 603(c)(1) states that no securities information processor, broker, or dealer shall provide, in a context in which a trading or order routing decision can be implemented, a display of any information with respect to quotations for or transactions in an NMS stock without also providing, in an equivalent manner, a consolidated

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211 See Rule 602(b)(2), 17 CFR 242.602(b)(2); Regulation NMS Adopting Release, supra note 10, at 37538. "Published bid and published offer means the bid or offer of a responsible broker or dealer for an NMS security communicated by it to its national securities exchange or association pursuant to § 242.602 and displayed by a vendor on a terminal or other display device at the time an order is presented for execution to such responsible broker or dealer." 17 CFR 242.600(b)(64).

212 17 CFR 242.602(b)(2). See also Rule 600(b)(64) which defines "published bid and published offer." 17 CFR 242.600(b)(64).

display—i.e., the NBBO and consolidated last sale information[213]—for such stock.[214] As a result of the proposed definition of "round lot," a securities information processor, broker, or dealer would be required to provide a consolidated display that reflects smaller-sized orders in higher-priced stocks. As discussed above, the Commission preliminarily believes that the proposed round lot sizes represent orders of meaningful size to market participants. The Commission also preliminarily believes that the objective of Rule 603(c) of ensuring that market participants receive basic quotation and transaction information in a context in which a trading or order routing decision can be implemented would be furthered to the extent that such information is based on orders of meaningful size such as round lots as proposed to be defined in this proposal.

Rule 604, which governs the display of customer limit orders for NMS stocks, would also be affected by the proposed definition of round lot. Rule 604(a)(1) requires each member of a national securities exchange that is registered with that exchange as a specialist, or is authorized by that exchange to perform functions substantially similar to those of a specialist, to publish immediately a bid or offer that reflects: (i) the price and the full size of each customer limit order held by the specialist that is at a price that would improve the bid or offer of such specialist in such security; and (ii) the full size of each customer limit order held by the specialist that is priced equal to the bid or offer of such specialist for such security, is priced equal to the national best bid or national best offer, and represents more than a de minimis change in relation to the size associated with the specialist's bid or offer. Rule 604(a)(2) imposes similar requirements on

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213 Rule 600(b)(14) defines "consolidated display" as "(i) The prices, sizes, and market identifications of the national best bid and national best offer for a security; and (ii) Consolidated last sale information for a security." 17 CFR 242.600(b)(14).

214 Rule 603(c)(2) further states that this provision does not apply to a display of information on the trading floor or through the facilities of a national securities exchange or to a display in connection with the operation of a market linkage system implemented in accordance with an effective national market system plan. 17 CFR 242.603(c)(2).

OTC market makers with respect to their customer limit orders. The requirements of Rule 604 do not apply to customer limit orders that, among other things, are odd-lots.[215]

Under the proposed definition of round lot, a specialist or OTC market maker would have to include customer limit orders in the new round lot sizes within its published bids and offers. Rule 604 currently applies to round lots and the Commission preliminarily believes that Rule 604 should continue to use round lots, as proposed to be defined, as the measure for customer limit orders that must be reflected in a specialist or OTC market maker's published bid or offer. The Commission preliminarily believes that the objectives of Rule 604 of ensuring that customers have the ability to effectively seek price improvement through the dissemination of their limit orders by specialists or OTC market makers would be furthered by applying the proposed definition of round lot such that those obligations would apply to customer limit orders of meaningful size. Therefore, the Commission preliminarily believes that the customer limit order display requirements of Rule 604 should apply to orders in the new proposed round lot sizes.

Rule 605, which governs the disclosure of order execution quality information, would also be affected by the proposed definition of round lot because of the effect on the definition of NBBO. Rule 605 requires market centers to publish monthly reports containing execution statistics[216] for certain NMS stock orders, including, but not limited to, the "average realized spread,"[217] "average effective spread,"[218] data on shares "executed with price improvement,"[219]

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215 See 17 CFR 242.604(b)(3).

216 Among other things, these reports must be "categorized by order size," which means "dividing orders into separate categories for sizes from 100 to 499 shares, from 500 to 1999 shares, from 2000 to 4999 shares, and 5000 or greater shares." 17 CFR 242.600(b)(11).

217 Rule 600(b)(7) defines "average realized spread" as "the share-weighted average of realized spreads for order executions calculated, for buy orders, as double the amount of difference between the execution price and the midpoint of the national best bid and

and data on shares "executed outside the quote."[220] The calculations of average realized spread and average effective spread rely on the mid-point of the NBBO. Similarly, the benchmark for price improvement statistics, as reflected in the definitions of "executed at the quote,"[221] "executed with price improvement,"[222] and "executed outside the quote,"[223] is the NBBO. As discussed above, since the NBBO will be based on the proposed round lot sizes, any Rule 605 execution quality statistics that rely on the NBBO as a benchmark would be affected by the

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national best offer five minutes after the time of order execution and, for sell orders, as double the amount of difference between the midpoint of the national best bid and national best offer five minutes after the time of order execution and the execution price; provided, however, that the midpoint of the final national best bid and national best offer disseminated for regular trading hours shall be used to calculate a realized spread if it is disseminated less than five minutes after the time of order execution." 17 CFR 242.600(b)(7).

218 Rule 600(b)(6) defines "average effective spread" as "the share-weighted average of effective spreads for order executions calculated, for buy orders, as double the amount of difference between the execution price and the midpoint of the national best bid and national best offer at the time of order receipt and, for sell orders, as double the amount of difference between the midpoint of the national best bid and national best offer at the time of order receipt and the execution price." 17 CFR 242.600(b)(6).

219 Rule 600(b)(29) defines "executed with price improvement" as "for buy orders, execution at a price lower than the national best offer at the time of order receipt and, for sell orders, execution at a price higher than the national best bid at the time of order receipt." 17 CFR 242.600(b)(29).

220 Rule 600(b)(28) defines "executed outside the quote" as "for buy orders, execution at a price higher than the national best offer at the time of order receipt and, for sell orders, execution at a price lower than the national best bid at the time of order receipt." 17 CFR 242.600(b)(28).

221 Rule 600(b)(27) defines "executed at the quote" as "for buy orders, execution at a price equal to the national best offer at the time of order receipt and, for sell orders, execution at a price equal to the national best bid at the time of order receipt." 17 CFR 242.600(b)(27).

222 Supra note 219.

223 Supra note 220.

proposed definition of round lot on the NBBO.[224] The Commission preliminarily believes that order execution disclosures required under Rule 605 should be based on the NBBO that reflects the new proposed round lot sizes. The NBBO is currently based on round lots, and the proposed definition of round lot would allow additional orders of meaningful size to determine the NBBO. As a result, the execution quality and price improvement statistics required under Rule 605 would be based upon an updated NBBO that the Commission preliminarily believes is a more meaningful benchmark for these statistics. Therefore, the Commission preliminarily believes that the NBBO, as modified by the proposed definition of round lot, should continue to be used as a basis for the statistics required under Rule 605.[225]

Rule 606, which requires broker-dealers to provide disclosure of information regarding the handling of the broker-dealers' customers' orders,[226] would also be affected by the proposed definition of round lot because of the effect on the definition of actionable indication of

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224 See supra Section III.C.1(d)(i) (discussing the impact of the proposed definition of round lot on other Regulation NMS defined terms, such as the NBBO). As discussed above, the Commission preliminarily believes that actual execution quality for retail investors will be improved as a result of the inclusion of odd-lot quotes in core data as a result of the better pricing that is often reflected in odd-lots.

225 The NBBO used for purposes of Rule 605 would be calculated by competing consolidators and self-aggregators using the proposed round lot sizes. See supra Section III.C.1(d)(i). Under the proposal, each competing consolidator and self-aggregator would be required to calculate an NBBO consistent with the requirements set forth in the NBBO definition found in Rule 600(b)(50). See proposed Rule 614(d)(2). Accordingly, even though each competing consolidator and self-aggregator would be calculating its own NBBO, the calculation methodology for the NBBO would be consistent. Because the NBBO would be calculated in a consistent manner, Rule 605 reports should still provide uniform comparisons of execution quality.

226 Broker-dealers who engage in outsourced routing activity are exempt from the requirement to comply with Rule 606(b)(3) until April 1, 2020. See Securities Exchange Act Release No. 86874 (Sept. 4, 2019), 84 FR 47625 (Sept. 10, 2019).

interest.[227] Specifically, Rule 606(b)(3) requires every broker-dealer, upon a request of a customer who places a not held order, to provide the customer with a standardized set of individualized disclosures concerning the broker-dealer's handling of the orders. The disclosures include, among other things, not held orders exposed by the broker-dealer through actionable indications of interest, and the venue(s) to which the actionable indications of interest were exposed, provided that the identity of such venue(s) may be anonymized if the venue is a customer of the broker-dealer. Rule 600(b)(1) defines an actionable indication of interest as any indication of interest that explicitly or implicitly conveys all of the following information with respect to any order available at the venue sending the indication of interest: (i) symbol; (ii) side (buy or sell); (iii) a price that is equal to or better than the national best bid for buy orders and the national best offer for sell orders; and (iv) a size that is at least equal to one round lot.[228] As a result of the proposed definition of round lot, there could be more actionable indications of interest in higher priced securities. The Commission preliminarily believes that applying the proposed round lot definition to actionable indications of interest would further the objectives of Rule 606 regarding the disclosure of order handling information—to make it easier for investors to evaluate how their brokers handle orders and make more informed decisions about brokers, and help investors to better understand how broker-dealers route and handle orders and assess the impact of broker-dealer routing decisions on order execution quality.

In addition, Rule 610, which governs access to quotations, would be affected by the proposed definition of round lot. Specifically, Rule 610(c) prohibits trading centers from imposing fees for the execution of an order against a protected quotation or any other quotation

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227 See 17 CFR 242.600(b)(1). See also Securities Exchange Act Release No. 84528 (Nov. 2, 2018), 83 FR 58338 (Nov. 19, 2018) ("Rule 606 Adopting Release").

228 See id.

that is the best bid or offer of an SRO if the fees exceed certain limits ($0.003 per share for quotes of $1.00 or more and 0.3% of the quotation price per share for quotes less than $1.00). As the Commission explained in adopting Regulation NMS, "the purpose of the fee limitation is to ensure the fairness and accuracy of displayed quotations by establishing an outer limit on the cost of accessing such quotations," and Rule 610 "thereby assures order routers that displayed prices are, within a limited range, true prices."[229] As a result of the proposed definition of round lot, these fee limitations would apply to quotes in the smaller round lot sizes because they would apply to quotations that are the "best bid or offer" of an SRO. Rule 610(c) currently applies to quotations in round lots and the Commission preliminarily believes that Rule 610(c) should apply to quotations in the new proposed round lot sizes. The Commission preliminarily believes that applying the fee limitations of Rule 610(c) to orders of meaningful size, as reflected in the proposed definition of round lot, would further that rule's objectives of ensuring the accuracy of displayed quotations by establishing an outer limit on the cost of accessing them.

Finally, Rule 201 of Regulation SHO requires, among other things, that trading centers have written policies and procedures reasonably designed to prevent the execution or display of a short sale order of a covered security at a price that is less than or equal to the current national best bid if the price of that covered security decreases by 10% or more from the covered security's closing price as determined by the listing market for the covered security as of the end of regular trading hours on the prior day.[230] As a result of the proposed definition of round lot, the national best bid would include orders in the proposed round lot sizes. The Commission preliminarily believes that the objectives of Rule 201 of restricting destabilizing short sale orders

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229 See Regulation NMS Adopting Release, supra note 10, at 37502.

230 17 CFR 242.201(b)(1)(i).

in rapidly declining markets would be furthered by applying the proposed definition of round lot such that bids of meaningful size would be included within this restriction.[231]

The Commission requests comment on the proposed definition of round lot in proposed Rule 600(b)(81) and the inclusion of additional quotation information for higher priced shares in proposed core data that would result from this proposed definition. In particular, the Commission solicits comment on the following:

8. Should odd-lot quotation data that is not currently reflected in SIP data be incorporated into core data, as proposed, and, if so, what is the best way to do so?

9. Should core data, as proposed, include quotation information for smaller sized orders in higher priced stocks? Why or why not? Does adding this quotation information enhance the usefulness of core data, as proposed? Please explain. What kinds of market participants would use this information? For what purposes? Would the inclusion of this information have any negative or unintended consequences, such as "information overload" effects? Please explain.

10. Do commenters believe the Commission's proposed definition of round lot is an effective way to incorporate this additional quotation information into core data, as proposed? Why or why not? What effect would the proposed definition have on systems capacity? Please explain and provide data. Would the proposed definition affect market complexity? Please explain. Do commenters believe that the proposed definition of

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231 Securities Exchange Act Release No. 61595, supra note 75. The Commission also preliminarily believes that instituting a different round lot size for purposes of Rule 201 would introduce unnecessary complexity into the markets. In particular, excessive order routing complexity may be introduced if order routers are allowed to execute a short sale order against certain bids (i.e., smaller round lots that are priced better than the 100-share national best bid) but not allowed to execute a short sale order against other bids (i.e., a 100-share bid).

round lot appropriately balances the benefits of providing additional quotation data to investors and other market participants against potential costs such as additional system burdens or increased data complexity? If not, please explain how this balance could be more appropriately achieved. Specifically, please provide details on the quantity of additional data or the increase in message traffic that would be represented by the Commission's proposal and any alternative proposals.

11. Are there alternative approaches, such as requiring all or a subset of odd-lot quotations to be included in the proposed definition of core data, or directly requiring all quotes over a certain notional value to be included in the proposed definition of core data (rather than indirectly as in the proposed definition of "round lot")? Please describe any alternative approaches. What would be the advantages and disadvantages of any alternative approaches?

12. Would the Commission's proposed definition of round lot capture a significant portion of the odd-lot quotation activity that is currently not included in SIP data? Is the definition appropriately tailored to capture the odd-lot quotation information that would be useful to market participants? If not, please identify and discuss alternative approaches that might be more appropriate. For example, do commenters believe round lot sizes and price intervals different from those in the proposed definition would capture more useful odd-lot quotation data? Please include data to support any suggested alternative sizes or price intervals. Please also discuss any issues related to increased order routing complexity or compliance with Commission rules that might result from the proposed definition of "round lot."

13. Do commenters believe that odd-lot quotes should be aggregated into the new round lot sizes at multiple price levels for the purposes of calculating and disseminating the NBBO in the proposed definition of core data? Why or why not? What are commenters' views on the specific odd-lot aggregation methodology set forth in the proposed definition of core data?

14. Do commenters agree with the Commission's proposal to require odd-lot aggregation for purposes of protected quotations only at a single price level? Please explain. Should odd-lots be aggregated only at a single price level for purposes of determining the protected bid and offer for stocks valued at $50.00 or less based on the prior calendar month's average closing price on the primary listing exchange even though the round lot for this price tier remains 100 shares (i.e., both the best bid and offer and protected bid and offer must be 100-shares in this price tier)? Should a multiple price level aggregation methodology for determining protected quotations apply to stocks valued at $50.00 or less? Would there be any costs or negative effects of having different odd-lot aggregation methodologies for stocks at different price levels?

15. Is a price-based metric for determining round lot size an appropriate metric for determining the proposed round lot tiers? Are the proposed tiered round lot sizes appropriate? Why or why not? Should the tiers be set at different intervals? Should there be more or fewer tiers? For example, should the round lot size be one share for any NMS stock for which the prior calendar month's average closing price on the primary listing exchange was $500.01 or greater? Why or why not? Are the round lot sizes appropriate for the share prices? If not, what is the appropriate round lot size? Please provide empirical support for any suggested alternatives.

16. Do commenters believe that a significant number of broker-dealers do not currently subscribe to proprietary market data products, including proprietary market data products that include odd-lot quotations? If so, how many and what type of broker-dealers (e.g., executing broker-dealers, introducing broker-dealers, small broker-dealers, large broker-dealers)? Are there specific types of proprietary market data products to which any such broker-dealers do not subscribe? If so, which types of proprietary market data products? Do any such broker-dealers subscribe to proprietary data products from some exchanges but not others?

17. Do commenters have views on the odd-lot proposal released by the operating committees of the Equity Data Plans?[232] What are the advantages and disadvantages of the proposal by the Equity Data Plans as compared to the Commission's proposed definition of round lot?

18. Each of the proposed tiers represent a notional value of over $1,000. Is this an appropriate threshold? Should it be higher or lower? Please explain and submit data to support your analysis.

19. Do commenters believe that the prior calendar month's average closing price on the primary listing exchange (or IPO price if the prior calendar month's average closing price is not available) is an effective way to assess the price of a stock for purposes of determining its round lot size? Why or why not? Do commenters believe it would be costly, difficult, or problematic for market participants to adjust procedures and systems to take into account new round lot sizes based on the prior calendar monthly average closing price on the primary listing exchange, or to account for a particular stock's

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232 See supra notes 181–185.

potentially different round lot size every month? Are there alternative time periods over which a stock's price for purposes of assigning a round lot size should be measured or alternative methods for measuring a stock's price that the Commission should consider? When should a stock whose price changes from one tier to another be assigned to a new round lot size and for how long should it remain in that round lot size? Would stocks priced near the thresholds that differentiate the round lot tiers be affected by frequent shifts between round lot sizes? Please explain.

20. During the month following the IPO of a newly listed stock, should a minimum number of trading days be required to elapse before the stock's round lot size is determined? If so, should the average daily closing price on the primary listing exchange (or some other metric) over the course of that number of trading days be used to calculate the stock's price for purposes of determining its round lot size? If so, how would the stock's round lot size be determined in the interim?

21. Do commenters have views on how monthly average closing price should be determined for stocks that are not traded every day? Should the closing price of the most recent trading day on which there was a trade be used each intervening day until the stock is traded again?

22. Do commenters believe that the impacts of the proposed definition of round lot on the Commission rules described above are appropriate? Why or why not? Will any SRO rules be affected? Please explain. Specifically, please describe any effect of the proposed definition of round lot on market maker quoting obligations under SRO rules.

23. Should the proposed definition of round lot apply to Rules 602 and 604? Do commenters believe the applicability of the proposed smaller round lot sizes to these

rules will help foster more displayed quotations of small orders? Do commenters believe this will result in a significant tightening of quoted spreads?

24. Should the Commission amend Rule 605 in light of the proposed round lot definition? Specifically, since the disclosures required by Rule 605 must be "categorized by order size,"[233] which currently begins at 100 shares, should the definition of "categorized by order size" be amended to require the relevant execution information to be provided for sub-100 share orders, such as orders in the proposed round lot sizes? Do commenters believe this would negatively or positively affect the execution quality statistics provided pursuant to Rule 605? More broadly, do commenters believe the proposed definition of round lot would improve the actual prices provided to retail investors (as distinct from the Rule 605 execution quality statistics)?

25. Should the proposed definition of round lot apply to Rule 610(c)? Specifically, should the fee limits under Rule 610(c) apply to quotations in the proposed new round lot sizes? Would exchanges or other trading centers increase access fees for the smaller round lots if Rule 610(c) were limited to 100-share protected quotations? Why or why not? Do commenters believe that market forces would provide sufficient control over access fees for quotations in the smaller round lots? Why or why not? Should Rule 610(c) be limited to the Commission's definition of protected bid or protected offer, as amended? What would be the benefits and costs of each approach?

26. Should the proposed definition of round lot apply to Rule 201 of Regulation SHO? Would the scope of Rule 201 be expanded as a result of the proposed definition of round lot in a way that would unnecessarily restrict the ability of market participants to

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233 See supra note 216.

sell short? Will additional or excessive order routing complexity result from the application of Rule 201 to quotations in the proposed smaller round lot sizes? Should "protected bid," as proposed to be amended, rather than the national best bid be used as the reference price for determining which short sales are required to be prevented under Rule 201? What would be the benefits and costs of each approach?

27. Do commenters believe that the proposed definition of round lot would have any effect on an exchange's official closing prices? Would the proposed definition of round lot have any effect on the pricing practices of mutual funds and other investment companies, including the calculation of net asset value or trading in portfolio securities? Please explain the potential costs and benefits of any such effects.

28. Do commenters believe that the proposed definition of round lot would affect the proportion of on-exchange or off-exchange liquidity? Please explain.

(ii) Proposed Amendments to the Definition of Protected Bid or Protected Offer

Rule 611 requires trading centers to have policies and procedures that are reasonably designed to prevent trade-throughs on that trading center of protected bids or protected offers in NMS stocks, subject to specified exceptions.[234] Rule 611 currently applies only to round lots.[235] If the definition of protected bid or protected offer were left unmodified, the Commission's

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234 Rule 611(a)(1). See also supra notes 115, 182. Rule 600(b)(81) defines "trade-through" as "the purchase or sale of an NMS stock during regular trading hours, either as principal or agent, at a price that is lower than a protected bid or higher than a protected offer." 17 CFR 242.600(b)(81).

235 Specifically, Rule 611 applies to "protected quotations" which means "protected bid[s] or []protected offer[s]." 17 CFR 242.600(b)(62). "Protected bid or protected offer," as defined in Rule 600(b)(61), refers to "a quotation," defined in Rule 600(b)(66), which in turn refers to "a bid or an offer," defined in Rule 600(b)(9), which, as noted above, applies to round lots.

proposed definition of round lot would result in an expansion of Rule 611 by requiring the protection of quotations in the new smaller round lot sizes.

Whether Rule 611 should be modified or repealed has been the subject of much debate in recent years.[236] Rule 611 was controversial when adopted,[237] with many commenters either opposing the rule entirely or advocating for exceptions, such as for block trades or for those

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236 For example, in its April 2017 memorandum discussing Rules 610 and 611 under the Exchange Act, the Equity Market Structure Advisory Committee ("EMSAC") Regulation NMS Subcommittee ("Subcommittee") stated that the industry largely remained divided in its view on both the success and the continued need for the trade-through and the locked and crossed markets provisions of Regulation NMS. See Memorandum to EMSAC from the Subcommittee (Apr. 3, 2017), available at https://www.sec.gov/spotlight/emsac/emaac-regulation-nms-subcommittee-discussion-framework-040317.pdf. In the memorandum, the Subcommittee recommended, among other things, that the Commission consider repealing Rule 611 on a pilot basis, with the goals of reducing excess complexity in the marketplace (as demonstrated by venue fragmentation, order types, and routing complexity); testing the hypothesis that Rule 611 has not created an incentive for posting visible liquidity; and opening the markets to competition and innovation over a longer time horizon, which the Subcommittee believed is currently constrained due to the proscriptive nature of Regulation NMS. The Subcommittee noted several arguments supporting the removal of Rule 611, including the apparent failure of Regulation NMS to increase the display of limit orders in the marketplace and the increase in dark liquidity, smaller trade sizes, and "small" venues; the de minimis benefit from decreased trade-through rates, coupled with a relatively high cost of trade-through compliance and the creation of new venues, complex order types, and a need to focus on speed and other market complexities as a requirement to manage queue priority; the fact that competition among market centers is largely based on price and speed; and the difficulty of setting the NBBO in active stocks without the use of sophisticated price-sliding order types and intermarket sweep orders. The Subcommittee also identified several arguments in support of retaining Rule 611, including concerns, especially among individual investors, of losing the best execution backstop of the trade-through rule; the concern that individual investors' non-marketable orders would lose trade-through protection; and a concern regarding the amount of effort that could be required to further monitor order routing behavior by agents in the absence of a trade-through rule. The Subcommittee also expressed the view that Rule 611 is too prescriptive as a best execution rule and that concerns about best execution could be addressed more effectively through enhanced guidance and procedures.

237 See Regulation NMS Adopting Release, supra note 10, dissenting opinion.

wishing to opt out of the Rule's protections.[238] In the years since, Rule 611 has continued to be the subject of much debate, with some arguing that the rule has negatively impacted equity market structure, others taking the position that any benefits were achieved early on when the Rule induced widespread automated quotations and connectivity, and yet others expressing the view that the Rule continues to play an important role in supporting best execution and retail investor confidence.[239] Recently, a Subcommittee of the Commission's Equity Market Structure Advisory Committee advocated that the EMSAC recommend that the Commission consider repealing Rule 611 on a pilot basis to test its impact.[240]

In light of the concerns about the existing scope of Rule 611, the Commission preliminarily believes that Rule 611 should not be extended to smaller-sized quotations reflected in the proposed definition of round lot. Moreover, the Commission preliminarily believes that extending Rule 611 to the proposed new round lots is not necessary in light of market developments since the adoption of Regulation NMS in 2005. While a substantial amount of

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238 See Regulation NMS Adopting Release, supra note 10, at 37505–37506, 37516, 37524–37526.

239 See Memorandum to EMSAC from the Subcommittee, supra note 236; Letter from Theodore R. Lazo, Managing Director and Associate General Counsel, SIFMA to Brent J. Fields, Secretary, SEC, 5–7 (Mar. 29, 2017), available at https://www.sec.gov/comments/s7-21-16/s72116-1674693-149275.pdf (recommending that the SEC consider (1) eliminating Rule 611 and relying on the duty of best execution to maintain intermarket price protection, or (2) modifications to Rule 611 to add volume thresholds for protected quote status and a block exception); Letter from William R. Harts, CEO, Modern Markets Initiative, to Brent J. Fields, Secretary, SEC (Dec. 9, 2016), available at https://www.sec.gov/comments/s7-21-16/s72116-9.pdf (recommending that the SEC review Rule 611 to assess whether it should be modified in light of the costs of compliance).

240 See Memorandum to EMSAC from the Subcommittee, supra note 236.

trading in 2005 was conducted on relatively slow manual markets,[241] and was concentrated for any given stock on its listing exchanges,[242] nearly all trading now occurs on fast, electronic markets (where even small degrees of latency affect trading strategies) and is dispersed among a wide range of competing market centers.[243] In a market environment characterized by fast, electronic trading across multiple venues, order routing and execution strategies have become highly automated and increasingly sophisticated at obtaining the best prices throughout the

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241 See Equity Market Structure Concept Release, supra note 11, 75 FR at 3594 ("NYSE-listed stocks were traded primarily on the floor of the NYSE in a manual fashion until October 2006. At that time, NYSE began to offer fully automated access to its displayed quotations."). In contrast to NYSE, stocks listed on Nasdaq traded in a highly automated fashion at many different trading centers following the introduction of SuperMontage in 2002. See Securities Exchange Act Release No. 46429, supra note 15; Steven Quirk, Senior Vice President, Trader Group, TD Ameritrade, Testimony before the U.S. Senate Committee on Homeland Security and Governmental Affairs, Permanent Subcommittee on Investigations, Hearing on "Conflicts of Interest, Investor Loss of Confidence, and High Speed Trading in U.S. Stock Markets" (June 17, 2014), available at https://www.hsgac.senate.gov/imo/media/doc/STMT%20-%20Quirk%20-%20TD%20Ameritrade%20(June%2017%202014).pdf%20 (citing statistics that average execution speed has improved by 90% since 2004—from 7 seconds to 0.7 seconds in 2014). Today, trading speed is measured in microseconds and is moving towards nanoseconds. See, e.g., Vera Sprothen, Trading Tech Accelerates Toward Speed of Light, Wall Street Journal (Aug. 8, 2016), available at https://www.wsj.com/articles/trading-tech-accelerates-toward-speed-of-light-1470559173; Alexander Osipovich, NYSE Aims to Speed Up Trading With Core Tech Upgrade, Wall Street Journal (Aug. 5, 2019), available at https://www.wsj.com/articles/nyse-aims-to-speed-up-trading-with-core-tech-upgrade-11565002800.

242 See Securities Exchange Act Release No. 59039 (Dec. 2, 2008), 73 FR 74770, 74782 (Dec. 9, 2008) (File No. SR-NYSEArca-2006-21) (NYSE's reported market share of trading in NYSE-listed stocks declined from 79.1% in January 2005 to 30.6% in June 2008.); Equity Market Structure Concept Release, supra note 11.

243 See Equity Market Structure Concept Release, supra note 11, 75 FR at 3598 ("The registered exchanges all have adopted highly automated trading systems that can offer extremely high-speed, or 'low-latency,' order responses and executions.").

national market system.[244] In addition, best execution obligations apply to odd-lot orders[245] and would apply to bids and offers in the proposed round lot sizes. The Commission preliminarily believes that these market developments and improvements in trading and order routing technology, in combination with their pursuit of best execution, would provide sufficient incentives for market participants to engage with meaningfully sized orders[246] even in the absence of an expanded order protection mandate under Rule 611.[247] Further, the additional pre-trade transparency that would be provided to these orders by their inclusion in proposed core data should encourage market participants to access this liquidity, as many market participants that access similar data through proprietary feeds are already doing today.[248] Moreover, as

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244 See Equity Market Structure Concept Release, supra note 11, at 3594, 3598; Paul G. Mahoney and Gabriel Rauterberg, The Regulation of Trading Markets: A Survey and Evaluation, University of Virginia School of Law, Law and Economics Research Paper Series 2017-07, at 6 (Apr. 2017) ("Brokers overwhelmingly place orders and trade through [NYSE's] electronic trading system . . . all markets have come to rely more and more on using software to match buy and sell orders automatically.").

245 See Securities Exchange Act Release No. 37619A (Sept. 6, 1996) 61 FR 48290, 48305 and 48323 (Sept. 12, 1996) ("Order Execution Obligations Release") ("The market maker still will have best execution obligations with respect to the remaining odd-lot portion of the customer limit order.").

246 See supra notes 196-198 and accompanying text (explaining that the proposed definition of round lot is intended to reflect orders of meaningful size for today's market participants).

247 Moreover, the Commission is aware that many market participants today already utilize proprietary data feeds that include odd-lots and, therefore, already have visibility into odd-lot quotations priced better than the NBBO. Accordingly, since these market participants already see and trade with quotations that are priced better than protected quotations and have best execution obligations, the greater transparency into smaller-sized orders that the Commission is proposing is not dissimilar from the trading environment that exists today for many market participants. See also supra note 90.

248 See supra Section III.C.1(b) (stating that, during the month of September 2019, approximately 51% of all trades executed on exchange and approximately 14% of all volume executed on exchange in corporate stocks occurred in odd-lot sizes and 43% of those odd-lot transactions (representing approximately 39% of all odd-lot volume) occurred at a price better than the NBBO); supra Tables 2 and 3 (showing the portion of

discussed above, the execution quality and price improvement statistics required under Rule 605 would be based upon an NBBO that reflects the new proposed round lot sizes, and would provide investors, including retail investors, with higher-quality information about their order executions.

Thus, the Commission is proposing to amend the definition of "protected bid or protected offer" in Rule 600(b)(61) by requiring automated quotations that are the best bid or offer of a national securities exchange or national securities association to be "of at least 100 shares" in order to qualify as a protected bid or protected offer. The proposed addition of this language will preserve the existing scope of Rule 611 for the vast majority of NMS stocks.[249]

As noted above, exchange rules generally permit the exchange to assign a round lot size other than 100 shares.[250] As of market close on August 8, 2019, 12 stocks had a round lot size other than 100 shares,[251] and because they are round lots, they are protected quotations to the

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all trades and volume less than 100 shares, at a price better than the prevailing NBBO, occurring in a quantity that would be defined as a round lot under the proposal).

249 But see infra notes 250–252 and accompanying text (discussing stocks that currently have non-100 share round lot sizes). In addition, the proposed amendments to the definition of protected bid or protected offer would also provide clarity to market participants as to whether quotations in the new round lot sizes are protected quotations for purposes of Rule 611, which is responsive to comments made by some Roundtable panelists regarding uncertainty as to whether additional odd-lot quotation information would be protected under Rule 611. See supra note 179 and accompanying text.

250 See supra note 141.

251 Of the 12 stocks that had non-100 share round lot sizes, ten had a round lot of ten, and two had a round lot of one. Seven are common stocks, and five are preferred stocks. Prices of these stocks ranged from about $27 to over $300,000. See supra note 141 and accompanying text. Currently, each of these stocks is thinly-traded. For example, during the third quarter of 2019, each of these stocks had: an average daily share volume below 40,000, with most trading only hundreds of shares a day; an average trade count of less than 3,200, with some trading only dozens of times per day; and an average daily dollar

extent that they satisfy the other requirements in the definition.[252] Therefore, Rule 611 currently applies to orders of those stocks in their non-100 share round lot sizes. The proposed amendment to the definition of protected bid and protected offer would mean that the smaller round lot orders in these 12 stocks would no longer be protected quotations, and therefore they would no longer be subject to Rule 611. The Commission preliminarily believes that the rule should be consistently applied to protected quotations of 100 shares or more (or quotations of fewer than 100 shares that can be aggregated at a single price into 100 shares or more). The Commission preliminarily believes that a single test for the applicability of the protected quotation definition, without special exceptions for certain stocks, would be simpler, would facilitate compliance with Rule 611, and would set consistent expectations among market participants. Further, the Commission preliminarily believes that competition among broker-dealers, improvements in trading and order routing technology,[253] and the continued applicability of best execution requirements to sub-100 share orders of these stocks would provide sufficient

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volume of less than $130 million, with most trading on average less than $1 million per day.

252 A "protected bid or protected offer" is defined as a "quotation in an NMS stock that (i) is displayed by an automated trading center; (ii) is disseminated pursuant to an effective NMS plan; and (iii) is an automated quotation that is the best bid or best offer of a national securities exchange . . . or national securities association." Rule 600(b)(61), 17 CFR 242.600(b)(61). "Protected quotation means a protected bid or protected offer." Rule 600(b)(62), 17 CFR 242.600(b)(62). As explained above, "protected quotations" must be round lots, and exchange rules permit round lot sizes other than 100, so quotes in these stocks in their non-100 round lot sizes are "protected quotes." See supra notes 141, 235. Similarly, other rules in Regulation NMS that apply to round lots as a result of references to "bid or offer" or other defined terms that directly or indirectly reference "round lot," such as Rules 602, 603, 604, and 605, also apply to 1 or 10 share round lot quotes of these stocks.

253 See supra notes 241–244 and accompanying text.

incentives for the attainment of high-quality executions of such orders even in the absence of trade-through protection pursuant to Rule 611.[254]

The Commission is also proposing to delete the references to "The Nasdaq Stock Market, Inc." in the definition of protected bid or protected offer. Since the Nasdaq Stock Market is now a national securities exchange, that language is redundant.

Finally, the locked and crossed markets restrictions of Rule 610 are based on the term "protected quotation." Specifically, Rule 610(d) requires each national securities exchange and national securities association to establish, maintain, and enforce rules that, among other things, require its members to reasonably avoid displaying quotations that lock or cross any protected quotation in an NMS stock and that prohibit its members from engaging in a pattern or practice of displaying quotations that lock or cross any protected quotation in an NMS stock, absent an applicable exception. Under the proposed amendments to the definition of protected bid or protected offer, "protected quotation" will refer to displayed, automated quotations that are the best bids or offers of at least 100 shares of a national securities exchange or association. As a result, quotations in the new, smaller proposed round lot sizes would not be subject to Rule 610(d) and could be locked or crossed.[255]

As with Rule 611, the locked and crossed markets provisions of Rule 610 continue to be the subject of much debate, with some arguing that they create additional market complexity without a clear benefit.[256] Recently, a Subcommittee of the Commission's EMSAC advocated

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254 See supra note 245.

255 For example, pursuant to the proposed definitions of round lot and protected bid or offer, a 20 share buy order for a stock that had an average monthly closing price of between $50.01 and $100.00 could be locked or crossed.

256 See Memorandum to EMSAC from the Subcommittee, supra note 236; Letter from Joanna Mallers, Secretary, FIA Principal Trading Group, to Brent J. Fields, Secretary,

that the EMSAC recommend that the Commission consider repealing the locked and crossed markets provisions of Rule 610 on a pilot basis to test its impact, in conjunction with an access fee pilot.[257] In light of the concerns about the existing scope of the locked and crossed markets provisions of Rule 610, the Commission preliminarily believes that such provisions should not be extended to smaller sized quotations reflected in the proposed definition of round lot. In addition, the Commission preliminarily believes that market forces, such as the economic incentives of market participants to obtain the best price and resolve locked or crossed markets, as well as improvements in trading and order routing technology,[258] are sufficient to mitigate excessive locking or crossing of quotations in the new round lot sizes and to resolve such locked or crossed markets efficiently.

The Commission requests comment on the proposed amendments to the definition of protected bid or protected offer in proposed Rule 600(b)(69). In particular, the Commission solicits comment on the following:

29. Do commenters believe that the Commission's proposed amendments to the definition of protected bid or protected offer are an effective way to continue to require order protection for 100 share orders but not for smaller orders, or would an alternative be better? Please explain.

SEC, 2–3 (Mar. 13, 2017), available at https://www.sec.gov/comments/s7-21-16/s72116-1686170-149597.pdf (recommending the Commission review Rule 610(d) in light of increased complexity associated with restrictions on locking and crossing quotations); Letter from William R. Harts, CEO, Modern Markets Initiative, to Brent J. Fields, Secretary, SEC (Dec. 9, 2016), available at https://www.sec.gov/comments/s7-21-16/s72116-9.pdf (recommending the Commission review the prohibition on locking or crossing quotations in light of the unnecessary complexity and investor confusion).

[257] See Memorandum to EMSAC from the Subcommittee, supra note 236.

[258] See supra notes 241–244 and accompanying text.

30. Do commenters believe that the definition of NBBO should reflect the proposed round lot sizes or should it remain consistent with the 100-share protected quotation? Why or why not?

31. Do commenters believe that Rule 611 should be extended to orders in the smaller round lot sizes set forth in the proposed definition of round lot? Why or why not? If Rule 611 were to be extended to the proposed smaller round lot sizes, would there be any negative or unintended consequences? Please explain in detail.

32. Do commenters believe it would be costly for market participants to adjust procedures and systems to comply with Rule 611 and prevent trade-throughs at the smaller round lot sizes? Please describe the necessary changes and any consequent costs in detail.

33. Do commenters believe it would be costly for market participants to adjust procedures and systems to comply with Rule 611 and prevent trade-throughs at 100 share order sizes when the new round lot size may be smaller? Please describe the necessary changes and any consequent costs in detail. Please also discuss how this differs meaningfully from today, if at all, for market participants that are currently using proprietary data feeds that include odd-lot information.

34. Do commenters believe that the best execution obligation, combined with the greater transparency that the Commission is proposing for smaller-sized orders in higher-priced stocks, is sufficient, in the absence of the order protection rule, for market participants to engage with the liquidity represented by orders in the proposed round lot sizes to obtain the best execution for smaller-sized customer orders?

35. Should the Commission maintain the applicability of Rule 611 to the small number of stocks[259] that currently have a round lot other than 100? Why or why not?

36. Do commenters agree with the proposal not to extend Rule 610's locking and crossing requirements to orders with the proposed smaller-round lot sizes? If not, why not? Do commenters have views or data on the frequency with which smaller-sized orders would be locked or crossed? Please explain. Would it be costly to apply locking and crossing prevention mechanisms to the new round lot sizes? Please explain.

(iii) Proposed Amendments to the Definition of National Best Bid and National Best Offer

Today, the NBBO is calculated by the exclusive SIPs and disseminated over the consolidated tapes.[260] The NBBO is defined in Rule 600(b)(43) as the best bid and best offer[261] for an NMS security[262] that is calculated and disseminated on a current and continuous basis by the exclusive SIPs. The definition further provides that if two or more market centers transmit identical bids or offers for an NMS security, the best bid or best offer shall be determined by ranking all identical bids or offers first by size (giving the highest ranking to the bid or offer associated with the largest size) and then by time (giving the highest ranking to the bid or offer

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259 See supra note 141.

260 In addition, market participants that purchase exchange proprietary feeds may calculate their own NBBOs for their internal purposes.

261 As discussed above, the best bid or best offer for an NMS stock of an exchange may contain multiple prices that are better than the best bid or best offer to the extent that an exchange aggregates better priced odd-lots and provides them to the exclusive SIPs at the least aggressive price that forms a round lot.

262 The definition of NMS security is broader than NMS stock and includes "any security or class of securities for which transaction reports are collected, processed, and made available pursuant to an effective transaction reporting plan, or an effective national market system plan for reporting transactions in listed options." 17 CFR 242.600(47).

received first in time). Accordingly, the NBBO reflects one market center that is the best bid and one market center that is the best offer across all market centers.

As noted above, the proposed round lot definition would affect the calculation of the NBBO by requiring that the best bids and offers transmitted by the SROs to be in the new round lot sizes.[263] Accordingly, the proposed definition of round lot, if adopted, would result in an NBBO that reflects the smaller round lot sizes.

The proposed definition of round lot does not necessitate changes to the definition of NBBO. However, as discussed further below, the Commission is proposing a decentralized consolidation model where competing consolidators and self-aggregators would replace the exclusive SIPs. Therefore, the Commission is proposing amendments to the definition of NBBO to reflect that competing consolidators and self-aggregators, rather than the exclusive SIPs, would be calculating the NBBO in the proposed decentralized consolidation model. In addition, to accommodate this proposed decentralized consolidation model, the Commission is proposing to bifurcate the NBBO definition between NMS stocks and other NMS securities (i.e., listed options) to reflect that the proposed decentralized consolidation would apply only with regard to NMS stocks, and therefore the exclusive SIP for options would continue to be responsible for calculating and disseminating the NBBO in listed options.[264] The proposed changes to the definition of NBBO would not impact the manner in which the NBBO is calculated for NMS stocks or listed options.

Specifically, the NBBO for an NMS stock would be the best bid and best offer for such stock that is calculated and disseminated on a current and continuing basis by a competing

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263 See supra Section III.C.1(d)(i).

264 The competing consolidator model described herein addresses the current market data infrastructure for NMS stocks and not the exclusive SIP for options. See infra note 417.

consolidator or calculated by a self-aggregator.[265] The Commission is proposing to remove references to a plan processor for NMS stocks because under the proposed decentralized consolidation model, there would not be plan processors. Further, competing consolidators and self-aggregators would have to calculate the NBBO in the same manner as it is calculated by the exclusive SIPs today, including the method currently set forth in the definition of NBBO for determining the best bid or offer in the event that two or more market centers transmit identical bid or offer prices.

The Commission requests comment on the proposed amendments to the definition of national best bid and national best offer in proposed Rule 600(b)(50). In particular, the Commission solicits comment on the following:

37. What are commenters' views on the proposed amendments to the definition of national best bid and national best offer? Do the proposed amendments make appropriate adjustments to the definition to accommodate the proposed introduction of a consolidated market data distribution model with competing consolidators and self-aggregators? Are any additional amendments needed, whether to the definition of NBBO or to other provisions? Please be specific.

2. Depth of Book Data

Core data currently lacks quotation information in NMS stocks beyond the best round lot quotes of each SRO, commonly referred to as the "top of book." However, as regulatory changes and market developments, such as decimalization, have increased the significance of information on quotes away from the best prices,[266] some have suggested that core data be

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265 See infra notes 499-502 and accompanying text.

266 See infra notes 276–277 and accompanying text.

expanded to include certain depth of book data (i.e., quotations and aggregate size at prices outside the BBO).[267]

The Commission is proposing to define core data to include certain "depth of book data." Specifically, depth of book data would be defined to include aggregated quotes at each price between the best bid (and best offer) and the protected bid (and protected offer) (if different), as well as the five price levels above the protected offer and below the protected bid.[268] The Commission preliminarily believes this approach would approximate the level of liquidity information available to market participants at the best bid or offer prior to decimalization and enable market participants to use proposed core data to trade in a more informed and effective manner.[269]

(a) Regulatory Background

Regulation NMS and the Equity Data Plans neither require nor prohibit the collection, consolidation, or dissemination of depth of book data. Rule 602 requires that national securities exchanges and associations make available their best bids and best offers, which are defined in

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267 See, e.g., Roundtable Day One Transcript at 120 (Jeff Brown, Charles Schwab) ("So our recommendation for this panel and for this day is that the SEC move to impose . . . depth of book on the SIP."). Suggestions for enhancing core data, however, have failed to garner the support by participants to the Equity Data Plans necessary for action. See infra Section III.C.2(c); supra note 164 and accompanying text; supra Section II.A (discussing the distinction between the exclusive SIPs and proprietary DOB data feeds and market participants' views regarding their ability to use core data to be competitive in today's markets and provide best execution to their customers). See also, e.g., NYSE Sharing Data-Driven Insights – Stock Quotes and Trade Data: One Size Doesn't Fit All (Aug. 22, 2019), available at https://www.nyse.com/equities-insights#20190822 (proposing to replace the exclusive SIP feeds with three tiered levels of service, including certain DOB data, based on the needs of specific types of investors).

268 See supra Section III.C.1(d).

269 Id. See also infra notes 310–313 and accompanying text (describing how depth of book data can be used to optimize order placement and to provide directional signals regarding near-term market movements.).

Rule 600(b)(8) as the highest priced bid and lowest priced offer. Similarly, Rule 603(b) requires the dissemination of an NBBO, and the definition of NBBO in Rule 600(b)(43) refers to best bids and best offers. Market participants that want depth of book data for trading must rely upon the proprietary feeds offered by the exchanges, which include varying degrees of depth of book data.[270]

In adopting Regulation NMS, the Commission considered the scope of quotations to which trade-through protection should apply under Rule 611. The Commission decided to apply Rule 611 to protected quotations[271] but not to depth of book quotations.[272] Similarly, the Commission determined not to require that depth of book quotations be included in core data, reasoning that investors who needed depth of book data would be able to obtain that data from markets or third-party vendors.[273] However, the Commission acknowledged that depth of book data is important to investors and updated former Exchange Act Rule 11Ac1–2 (redesignated as Rule 603) to address the independent dissemination of depth of book and other market data by

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270 For example, CBOE One Premium offers five levels of aggregated depth while NYSE XDP Integrated, Nasdaq Total View, and CBOE Depth offer complete depth of book.

271 See supra note 115.

272 Specifically, the Commission considered a "Voluntary Depth Alternative" under which, in addition to protecting the best bids and offers of each SRO (the Market BBO Alternative), depth of book quotations that markets voluntarily disseminate in the consolidated quotations stream would be protected as well. See Regulation NMS Adopting Release, supra note 10, at 37529. The Commission decided to adopt the Market BBO Alternative, explaining that it would represent a major step toward achieving the objectives of intermarket price protection but with fewer of the costs and drawbacks associated with the Voluntary Depth Alternative. The Commission noted that the Market BBO Alternative will promote best execution for retail investors on an order-by-order basis, given that most retail investors justifiably expect that their orders will be executed at the NBBO and that the Market BBO Alternative would not require an expansion of the data disseminated through the exclusive SIP Plans. Id. at 37530.

273 See Regulation NMS Adopting Release, supra note 10, at 37567. In making that determination, the Commission stated that this would be "a competition-driven outcome [that] would benefit investors and the markets in general." See id. at 37530.

the exchanges.[274] After the adoption of Regulation NMS in 2005, exchanges began to sell their proprietary data products separately from the core data required by Rule 603(b) of Regulation NMS.[275]

(b) Market Evolution

The decimalization of securities pricing in 2001, and the resulting shift away from the larger fractional quoting and trading increments,[276] had significant implications for the amount of liquidity available at the top of book, the transparency of order book liquidity, and the need for market participants to obtain depth of book information. With the larger quoting and trading increments associated with fractional quoting, such as one-sixteenth of a dollar, trading interest was distributed across fewer price points and more liquidity (i.e., aggregate order interest) was concentrated at the top of book. For example, as the Commission noted in adopting Regulation NMS, "depth-of-book quotations have become increasingly important as decimal trading has spread displayed depth across a greater number of price points."[277]

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274 See Regulation NMS Adopting Release, supra note 10, at 37565; 17 CFR 242.603(a)(2) (an exchange "that distributes information with respect to quotations for or transactions in an NMS stock to a securities information processor, broker, dealer, or other persons shall do so on terms that are not unreasonably discriminatory"). While the pre-Regulation NMS rules did not prohibit the independent distribution of quotes by individual SROs, Rule 603(a) was intended to impose "uniform standards" to such distribution (i.e., the "fair and reasonable" and "not unreasonably discriminatory" standards). See Regulation NMS Adopting Release, supra note 10, at 37569. Prior to Regulation NMS, however, SROs and their members were prohibited from disseminating their trade reports independently. Id. at 37589.

275 See supra note 19 and accompanying text.

276 See Securities Exchange Act Release No. 42914 (June 8, 2000), 65 FR 38010 (June 19, 2000) (directing the National Association of Securities Dealers and the national securities exchanges to act jointly in developing a plan to convert their quotations in equity securities and options from fractions to decimals).

277 Regulation NMS Adopting Release, supra note 10, at 37592; see also Securities Exchange Act Release No. 50870 (Dec. 16, 2004), 69 FR 77424 (Dec. 27, 2004) ("the

Since the implementation of decimalization, market participants have raised concerns about reduced price transparency and difficulty executing large transactions at the best prices due to lower concentrations of trading interest at the top of book.[278] In the Report to Congress on Decimalization, required under Section 106 of the Jumpstart Our Business Startups Act, Commission staff noted academic literature that found that quoted depth, on average, declined after decimalization.[279]

(c) Comments and Roundtable Discussion

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initiation of trading in penny increments in 2001 transformed the equity markets. The number of quotation updates increased, and the quoted size at any particular price level dropped").

278 See, e.g., Regulation NMS Adopting Release, supra note 10, at 37529 (noting a comment from the Consumer Federation of America concerning "complaints that decimal pricing has reduced price transparency because of the relatively thin volume of trading interest displayed in the best bid and offer"); Letter from Craig S. Tyle, General Counsel, Investment Company Institute, to Jonathan G. Katz, Secretary, Commission (Nov. 20, 2001), available at https://www.sec.gov/rules/concept/s71401/tyle1.htm#P41_3920 ("As we have previously noted, the reduction in quoted market depth as the minimum quoting increment has narrowed to a penny has adversely affected institutional investors' ability to execute large orders. . . Preliminary data has shown that, post-decimalization, it has become more difficult for large institutional orders to be filled entirely at the inside.").

279 Report to Congress on Decimalization, 10–11 (July 2012), available at https://www.sec.gov/news/studies/2012/decimalization-072012.pdf. Cumulative depth at competitive prices did not change, however. Id. See also Phil MacKintosh, What is Liquidity? (Dec. 12, 2019), available at https://www.nasdaq.com/articles/what-is-liquidity-2019-12-12 (stating that while smaller quantity of the NBBO and smaller average trade sizes may suggest falling liquidity, depth of book liquidity suggests that overall liquidity is stronger than ever before); Citadel Securities Market Lens - Has Market Structure Evolution Made Equities Less Liquid (Sep. 2019), available at https://s3.amazonaws.com/citadel-wordpress-prd102/wp-content/uploads/sites/2/2019/09/27211934/Market-Lens-Has-Market-Structure-Evolution-Made-Equities-Less-Liquid.pdf (analyzing full depth of displayed liquidity from the exchanges' proprietary data feeds and finding that liquidity remained stable over the past eight years).

These developments have led market participants to call for depth of book data to be distributed through the Equity Data Plans. In connection with the Roundtable, several panelists and commenters recommended adding depth of book data to SIP data or otherwise emphasized their views about the importance of depth of book data.[280] One panelist stated that the exclusive SIPs could be upgraded and made "relevant again" by adding depth of book data, which would benefit retail investors by giving them information on which direction a stock may be moving and what type of order they may need to use.[281] Another panelist stated that both his firm and the brokers it employs cannot rely solely on SIP data, as they believe they need depth of book data to have a full view of the market and to trade competitively, particularly with respect to large orders.[282] One commenter stated that the Commission should require depth of book data to be included in SIP data and recommended adding at least five levels of depth.[283]

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280 See Roundtable Day Two Transcript at 245 (Tyler Gellasch, Healthy Markets) (stating that the exclusive SIPs should include depth of book data (as well as auction imbalance data and odd-lot quote data)); Roundtable Day One Transcript at 228–29 (Joseph Wald, Clearpool Group) (explaining that the lack of depth of book and auction data on the exclusive SIP feeds needs to be addressed); Letter to Brent J. Fields, Secretary, Commission, from Joe Wald, Chief Executive Officer, The Clearpool Group (Oct. 23, 2018) ("Clearpool Group Letter") ("We believe that certain information currently provided through proprietary data feeds, for example, imbalance data and order depth-of-book information, should be considered core data and provided to all market participants through the SIP."); MFA and AIMA Letter at 6 (stating that its members "purchase proprietary market data (e.g., depth-of-book and imbalance data) from exchanges for a variety of reasons, including strategy implementation, risk-analysis, best-execution, less latency than other sources and to fulfill fiduciary obligations.").

281 See Roundtable Day One Transcript at 119–120 (Jeff Brown, Charles Schwab).

282 See Roundtable Day One Transcript at 136, 165–66 (Simon Emrich, Norges Bank Investment Management).

283 See SIFMA Letter II at 2 (stating that retail firms generally use one level of depth for order routing and institutional firms generally use up to five levels of depth (sometimes as much as ten) and that the Commission should balance the need for more comprehensive information with the additional cost and potential increase in latency from

Some panelists and commenters went further, suggesting that depth of book data (or data provided on the exchange proprietary feeds more generally) is needed to fulfill best execution obligations.[284] One panelist stated that paying for full depth of book data from each exchange is essential to effective order routing and to fulfilling best execution obligations, noting that if his firm did not get depth of book—top of book and many levels away—it could not provide best execution to its clients.[285] Another commenter noted that broker-dealers do not have the option to forgo buying proprietary data because SIP data has less content and is slower, and that, even if the Commission provided a safe harbor that best execution requirements may be satisfied by relying on SIP data, buying proprietary data would still be necessary from a business perspective.[286]

However, some panelists were reluctant to embrace the idea of adding depth of book data to SIP data and pointed out possible negative impacts from doing so. One panelist representing a

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including additional quotes, as well as adjust the exclusive SIP subscriber fee model to account for firms that do not need depth of book data).

284 See Roundtable Day One Transcript at 192–193 (Jamil Nazarali, Citadel Securities) (stating that proprietary feeds are required for best execution); Roundtable Day One Transcript at 48 (Prof. Hal Scott, Committee on Capital Markets Regulation) (making a similar statement); Roundtable Day Two Transcript at 58–59 (Prof. Robert Bartlett, UC Berkeley) (making a similar statement); MFA and AIMA Letter at 3–4 (stating that broker-dealers that do not have depth of book information will be challenged to provide best execution).

285 See Roundtable Day One Transcript at 27, 57–58, 73 (Doug Cifu, Virtu Financial); Letter to Brent J. Fields, Secretary, Commission, from Douglas A. Cifu, Chief Executive Officer, Virtu Financial Inc., 4 (Oct. 23, 2018) ("Virtu Letter I") ("Simply put, Virtu could not fulfill its obligations to its myriad of retail customers and institutional clients without full depth of book market data feeds and robust exchange connectivity features that the SIP feeds alone do not offer.").

286 See Letter to Brent J. Fields, Secretary, Commission, from Mehmet Kinak, Global Head of Systematic Trading and Market Structure, and Jonathan D. Siegel, Vice President - Senior Legal Counsel, T. Rowe Price, 2 (Jan. 10, 2019) ("T. Rowe Price Letter").

retail brokerage firm stated that depth may be important for active traders and that his firm has platforms that incorporate it but added that depth is less important for retail investors who trade infrequently and that some of his firm's platforms do not incorporate it.[287] This panelist also stated that there could be technological challenges and latency implications (i.e., added latency associated with the need to process additional message traffic) to adding depth of book data to SIP data.[288] Furthermore, several panelists noted that adding depth of book data to the SIP data, particularly on an order-by-order basis, could be confusing, but some suggested that the data could be aggregated at certain price levels or otherwise simplified.[289]

In addition, some commenters stated that depth of book data is unnecessary for best execution and not useful for retail investors and other market participants.[290] In an article submitted to the comment file for the Roundtable, one commenter expressed the view that depth

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287 See Roundtable Day One Transcript at 162–163 (Matt Billings, TD Ameritrade).

288 Id.; see also Roundtable Day Two Transcript at 74 (Michael Blaugrund, NYSE).

289 See Roundtable Day One Transcript at 227 (Chris Isaacson, Cboe) (stating that he would not go as far as to add depth of book data to the consolidated market data, stating that doing so could potentially cause confusion, and emphasizing the difference between the plan processors and non-SIPs); Roundtable Day One Transcript at 230 (Ronan Ryan, IEX) (stating that adding depth data could be confusing, but suggesting that perhaps there could be simpler alternatives, such as an aggregated size at each price level rather than order-by-order); Roundtable Day One Transcript at 232 (Michael Friedman, Trillium Management) (suggesting that perhaps some abbreviated version of depth rather than full depth of book could be added to the consolidated market data); Roundtable Day Two Transcript at 70 (Adam Nunes, Hudson River Trading) (cautioning against trying to force every market's depth of book into a single feed).

290 See Letter to Brent J. Fields, Secretary, Commission, from Thomas Wittman, Executive Vice President, Head of Global Trading and Market Services and CEO, Nasdaq Stock Exchange, 11 (Oct. 25, 2018) ("Wittman Letter") ("Main Street investors do not need the exchanges' proprietary depth-of-book data offerings, and the fact that some firms choose to purchase them has no adverse consequence to the Main Street investor. Nearly 97% of trades occur at or within the NBBO, reflecting that most customers do not require any sort of depth-of-book data."); NYSE Group Letter at 13 ("NYSE Group believes that the Commission's prior conclusion that retail investors do not need depth-of-book data has not changed.").

of book data is not helpful for many types of market participants, citing a 2014 statistic that only 3.3% of all trades take place outside the NBBO, where depth of book information would be particularly useful. The commenter also noted that the Commission has stated that depth of book data is not necessary for a broker to comply with its best execution obligations.[291]

(d) Commission Discussion and Proposal

Decimalization led to a dispersion of quoted volume away from the top of book.[292] Consequently, the top of book (or NBBO) currently shown in SIP data has become less informative, and some market participants have come to view depth of book data as essential both to their efforts to trade competitively and to provide best execution to customer orders.[293] The Commission preliminarily believes that: (1) the lack of depth of book information in SIP data creates a significant information asymmetry between SIP data and proprietary data; and (2) the availability of the additional information could help enhance the best execution analyses of market participants who currently rely solely on SIP data.

Accordingly, the Commission preliminarily believes that core data, as proposed, should include certain depth of book data, including aggregated orders at each price between the best bid and best offer and the protected bid and protected offer (if different), as well as several price levels above and below the protected bid and protected offer. The Commission believes that the number of additional price levels should strike an appropriate balance by significantly enhancing the utility of proposed core data for a wide range of market participants, without risking the

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291 See Letter to Brent J. Fields, Secretary, Commission, from Charles M. Jones, Robert W. Lear Professor of Finance and Economics, Columbia Business School, 15–16 (Oct. 21, 2018) ("Jones Letter") (citing Securities Exchange Act Release No. 59039, supra note 242).

292 See supra Section III.C.2(b).

293 See supra notes 278, 280–286 and accompanying text.

excessive message traffic[294] or complexity that might result from the inclusion of full depth of book information in proposed core data. The Commission preliminarily believes that this balance is appropriately struck at five price levels (below and above the protected bid and protected offer) as this would approximate the level of liquidity available to market participants at the best bid or offer prior to decimalization.[295] The Commission is seeking comment on whether and to what extent depth of book data should be included in the proposed definition of core data.

Specifically, under proposed Rule 600(b)(25), "depth of book data" would be defined as all quotation sizes at each national securities exchange, aggregated at each price at which there is a bid or offer[296] that is lower than the best bid down to the protected bid and higher than the best offer up to the protected offer; and all quotation sizes at each national securities exchange, aggregated at each of the next five prices at which there is a bid that is lower than the protected bid and offer that is higher than the protected offer.

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294 As discussed below, aggregated quotation sizes at the price levels between the best quotes and protected quotes and the five levels above and below the protected quotes, particularly for the most liquid stocks, represent only a subset of all depth of book price levels at which there are quotations and could hence be represented in fewer messages.

295 Prior to decimalization, when stocks were quoted in sixteenths of a dollar ($0.0625), there were five one cent increments between each permissible quoting increment. For example, market participants could bid $20.0625 or bid $20.125 but not $20.07, $20.08, $20.09, $20.10, $20.11. Decimalization permitted quoting at these intermediate, one-cent price levels, spreading quotation volume to these price levels. As a result of the Commission's proposal to define depth of book data to include aggregated quotation sizes at the five levels above and below the protected quotations, the proposed core data would provide transparency into the quotation interest that is comparable to the information that was available at the top of the book prior to decimalization.

296 See supra Section III.C.1(d)(i) for a discussion of the proposed definition of round lot and its effect on the terms bid and offer. As discussed above, bids and offers would reflect the proposed round lot sizes. See also Section III.C; supra note 128 and accompanying text for a discussion of proposed odd-lot aggregation.

Although the Commission determined not to add depth of book data to core data in adopting Regulation NMS,[297] the Commission recognizes that the market data needs of market participants continuously evolve. Demand for more content-rich exchange proprietary feeds has increased substantially in the years since the adoption of Regulation NMS, indicating a growing need by market participants for additional data, including depth of book data,[298] in the increasingly fast, electronic, and dispersed markets that have developed since 2005.[299] The Commission preliminarily believes that enriching the content of the data that is made available to investors and market participants by including depth of book data, as defined, in the proposed core data would promote fairer markets by reducing the information asymmetry between market participants who subscribe to the exchanges' proprietary depth products and those who rely on SIP data. In addition, the Commission preliminarily believes that many market participants would find depth of book data useful for trading in a more informed and effective manner in today's markets.

As proposed, core data would include the best bids and offers and the protected quotes of each exchange, which market participants need to comply with legal and regulatory requirements, such as the duty of best execution and Rule 611. The Commission preliminarily believes that information on any trading interest between the best bids or offers and the protected quotes, if they are different, would be of keen interest to market participants. Therefore, the

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297 See supra note 48.

298 See supra note 275, 277–278 and accompanying text.

299 See supra notes 241–244 and accompanying text; infra notes 310–313 and accompanying text (discussing how depth of book data is used in order placement and other trading decisions).

Commission is proposing to include aggregated quotation sizes at each price where there is a bid or offer in that range in the definition of depth of book data.

However, the Commission preliminarily believes that not all individual quotations away from the best prices should be added to proposed core data. While there may be some market participants that need total visibility into exchange order books, the Commission does not believe, at this time, that complete depth of book data should be required to be made available as proposed core data. The addition of complete, order-by-order depth of book data to proposed core data would represent an enormous volume of information, which could increase latencies in the provision of proposed core data and introduce complexity that might impair the usability of such data for many subscribers. The Commission's proposed definition of depth of book data is intended to incorporate into core data additional quotation information that would be useful to a broad array of market participants for trading[300] and to thereby further the goals of the national market system.[301] The Commission is not supplanting the proprietary depth offerings of the exchanges that contain additional content and that may be more appropriate for certain market participants or more specialized use cases.

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300 Section 11A(c)(1)(B) of the Exchange Act, 15 U.S.C. 78k-1(c)(1)(B) (stating that the Commission shall prescribe rules to "assure . . . the fairness and usefulness of the form and content of" information with respect to quotations for or transactions in securities).

301 See, e.g., 15 U.S.C. 78k-1(a)(1)(C) ("The Congress finds that . . . [i]t is in the public interest and appropriate for the protection of investors and the maintenance of fair and orderly markets to assure— (i) economically efficient execution of securities transactions; (ii) fair competition among brokers and dealers, among exchange markets, and between exchange markets and markets other than exchange markets; (iii) the availability to brokers, dealers, and investors of information with respect to quotations for and transactions in securities; (iv) the practicability of brokers executing investors' orders in the best market; and (v) an opportunity . . . for investors' orders to be executed without the participation of a dealer.").

The Commission recognizes that market participants have diverse market data needs. The discussions at the Roundtable and the comments received, however, suggest that many market participants need more than the best bids, best offers, and the NBBO disseminated by the exclusive SIPs in order to trade competitively and to optimize the placement of customer orders.[302] As noted above, the Commission's proposed definition of depth of book data seeks to approximate the quotes that market participants were able to access on the exclusive SIPs prior to decimalization, which the Commission preliminarily believes would significantly enhance the usefulness of proposed core data. The Commission preliminarily believes that its proposed definition of depth of book data strikes a balance between enhancing the usefulness of core data for the many market participants that cannot rely entirely on SIP data, and limiting the amount of data disseminated to limit complexity and the processing demand on systems for market participants that do not need full depth of book visibility.[303] The proposed definition of depth of book seeks to balance the needs of different market participants, while reducing the information asymmetries that exist today in the provision of SIP data and proprietary data.

Staff believes that there is a substantial amount of quotation volume several levels below the best bid and above the best offer. For example, staff reviewed depth of book quotations for

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302 See supra text accompanying notes 280–286.

303 As discussed above, the inclusion of a limited number of price levels in the proposed definition of depth of book data means that fewer data messages would be required than would be the case if full depth of book was proposed. See supra note 294. Accordingly, the proposal would place lower processing demands on systems than if full depth of book data were included in the definition of depth of book data. Similarly, commenters have recommended the addition of five levels of depth to core data, emphasizing the importance of "balanc[ing] the need for more comprehensive information with the additional cost and potential increase in latency from including additional quotes." See supra note 283; SIFMA Letter II at 2. The Commission is soliciting comment on the extent of depth of book data that best strikes this balance, specifically by seeking quantitative data from market participants regarding any complexity or processing implications associated with the proposed definition of depth of book data.

corporate stocks using data from July 19, 2019. This analysis revealed that for this day, indeed, there was substantial quotation volume several levels below the best bid (the ask side was not examined). During active parts of the trading day, there is quotation interest at every $0.01 increment at least ten levels out for the most liquid stocks; for the least liquid stocks, there is a large gap between the best bid and the next highest bid, and large gaps are generally also present between the next several bid levels. This is consistent with the Commission's proposal to define the depth of book price levels as the first five levels "at which there is a bid or offer," rather than alternatives such as a fixed $0.05 band around the best quotes, since the former would capture much of the depth of book quotation information for less liquid stocks.[304] In addition, the staff review found a significant percentage of the total notional value of all depth of book quotations for both liquid and illiquid stocks falls within the first five price levels. The Commission preliminarily believes that requiring aggregated quotation information at the first five price levels above and below the protected quote range is a reasonable way to delineate the trading interest that would be useful to a variety of market participants to support more effective quoting and trading. On the other hand, while quotations at price levels further away from the best bid and offer may be relevant for market participants handling very large orders or orders in highly illiquid securities for which liquidity at the top of the book and the next five price levels is not

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[304] Moreover, because a "bid or offer" is defined in terms of "round lot," the proposed definition of round lot in effect would establish a minimum size requirement for depth price levels so that, for example, a small number of one share orders at an away price for a stock whose prior calendar month's average closing price on the primary listing exchange was under $50 would not count as one of the price levels. The Commission acknowledges that the inclusion of price levels "at which there is a bid or offer" in the proposed definition of depth of book data could include quotations beyond what would have been available at the top of the book prior to decimalization for less liquid stocks, but believes that this approach would approximate the level of liquidity available at the top of the book prior to decimalization for more liquid stocks.

sufficient to fully execute the order, the Commission preliminarily believes that liquidity at price levels further away is less likely to provide relevant or immediately actionable information to many market participants.[305]

While some market participants have stated that depth of book data is necessary to fulfill their best execution obligations, other commenters disagreed and pointed out that the Commission previously stated that depth of book data is not necessary for best execution.[306] Several factors are considered in determining whether a broker-dealer has "use[d] reasonable diligence to ascertain the best market"[307] for a customer order and fulfilled its best execution obligations.[308] The Commission is not stating that a broker-dealer must always use all proposed depth of book data, under all circumstances, to provide best execution to its customers. However, the Commission preliminarily believes that the expanded set of proposed core data, including the proposed depth of book data, provides additional information that in many circumstances would be useful to a broker-dealer's best execution analysis.[309]

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305 See SIFMA Letter II at 2 (stating that SIFMA members that are retail firms generally use one level of depth for order routing, while SIFMA members that are institutional firms generally use up to five levels of depth, and sometimes as much as ten.).

306 See supra notes 284–291 and accompanying text.

307 FINRA Rule 5310.

308 See Kurz v. Fidelity Management & Research Co., 556 F.3d 639, 640 (7th Cir. 2009) (describing the "duty of best execution" as "getting the optimal combination of price, speed, and liquidity for a securities trade"); Geman v. SEC, 334 F.3d 1183, 1186 (10th Cir. 2003) (noting that "the duty of best execution requires that a broker-dealer seek to obtain for its customer orders the most favorable terms reasonably available under the circumstances" (quoting Newton v. Merrill, Lynch, Pierce, Fenner & Smith, Inc., 135 F.3d 266, 270 (3d Cir. 1998))).

309 See Order Execution Obligations Release, supra note 245.

Where liquidity is distributed over multiple price points and less liquidity is available at the top of book,[310] depth of book data is of increased importance to market participants for a number of reasons. Depth of book data can assist SORs and electronic trading systems with the optimal placement of orders across markets. For example, the Commission preliminarily believes that the proposed depth of book data would better inform traders on how to optimally place liquidity taking orders (i.e., marketable orders that execute against the liquidity of resting limit orders) that are larger than the displayed best bid or best offer.[311] In addition, the Commission preliminarily believes that proposed depth of book data would assist market participants in determining how best to use liquidity providing orders (i.e., non-marketable orders that will be posted on an exchange's order book without immediately executing) at prices away from the best bid or offer by providing insight into the length of order book queues.[312]

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310 See supra notes 276–277.

311 For example, if a liquidity taking order is larger than the displayed liquidity at the top of book and seeks to access liquidity at additional price level(s), then information about liquidity at other price levels is valuable in determining where to send an oversized order when trading in a market ecosystem with multiple exchanges. See, e.g., Shmuel Baruch, Who Benefits from an Open Limit-Order Book?, Journal of Business, Vol. 78, No. 4, 1267–1306 (July 2005), available at https://www.jstor.org/stable/10.1086/430860 (presenting some theoretical results showing that liquidity takers benefit more from an open limit order book).

312 For example, if a market participant using a particular trading strategy wishes to post orders passively at multiple price levels, depth of book information is valuable in determining the order book queue length (and therefore the ability to achieve beneficial queue priority) at different market centers. Further, depth of book data can assist market participants' trading strategies achieve better queue placement across market centers. See Roundtable Day One Transcript at 169 (Adam Inzirillo, BAML) ("So depth of book is important to understand where you are potentially in the queue when you aggregate yourself across the overall market center."); Exegy, Checklist for Ensuring Best Execution with Historical Trade Performance Analysis (Dec. 6, 2018), available at https://www.exegy.com/2018/12/checklist-best-execution-trade-performance-analysis/ ("Liquidity can be valuable for executing large volume orders because the orders can be executed with minimal impact to market price. However, very high liquidity can also cause price volatility at a given exchange or time interval that produces slippage. Queue

Finally, the Commission preliminarily believes that the proposed depth of book data would provide market participants with directional signals to help inform them about near-term market movements based upon aggregate market imbalance information.[313]

Several Roundtable panelists and commenters raised potential concerns regarding the addition of depth of book data.[314] The Commission preliminarily believes its proposed definition of depth of book data, and its proposal to introduce a definition of core data and a decentralized consolidation model for the dissemination of proposed consolidated market data more broadly, are responsive to these concerns. With respect to the view that depth of book data could be confusing or not of interest to all investors, the Commission is not mandating the consumption of five levels of depth data by all market data subscribers. While, as discussed below, competing

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position and message volume are two valuable indicators of this liquidity. A long depth of book or high message volume may signal to traders to re-route an order to a different exchange. However, without a planned strategy for routing an order, slipping may arise.”).

313 See, e.g., Álvaro Cartea, et al., Enhancing Trading Strategies with Order Book Signals (Oct. 1, 2015), available at http://www.smallake.kr/wp-content/uploads/2015/11/SSRN-id2668277.pdf (“[O]ur measure of [volume] imbalance [in the limit order book] acts as a strong predictor of the rate of incoming [market orders] as well as the direction and magnitude of price movements following a [market order].”); Charles Cao, et al., The Information Content of an Open Limit-Order Book, Journal of Futures Markets Vol. 29, No. 1, 16-41 (2009), available at http://www.pbcsf.tsinghua.edu.cn/research/caoquanwei/paper/10.The%20Information%20Content%20of%20an%20Open%20Limit%20Order%20Book.pdf (“[T]he authors find that the order book beyond the first step is modestly informative and that price discovery measures suggest that the contribution of the order book beyond the best bid and offer is approximately 22%”); Ke Xu, Martin D. Gould, and Sam D. Howison, Multi-Level Order-Flow Imbalance in a Limit Order Book, Mathematical Institute, University of Oxford (Oct. 29, 2019) (“[W]e find that including net order flow deeper into the limit order book improves the goodness-of-fit of the multi-level order-flow imbalance regressions for all of the stocks in our sample, with an improvement of about 65–75% for large-tick stocks and about 15–30% for small-tick stocks. We argue that in many practical applications, improvements of this magnitude are economically meaningful.”).

314 See supra notes 287–289 and accompanying text.

consolidators must calculate and generate consolidated market data, as proposed, including depth of book data, and offer it to subscribers, competing consolidators would not be prohibited from developing and providing top of book only or customized depth of book products to customers who desire such products.[315] The effective national market system plan(s) could offer a variety of proposed consolidated market data products geared toward particular categories of end-users, and certain exchanges, recently, have suggested possible approaches for doing so.[316] With respect to the view that including depth of book data could present technical challenges and have latency ramifications, the Commission preliminarily believes the proposal to add five levels of aggregated depth from each exchange, rather than all order-by-order depth, is responsive to these concerns.[317] Restricting depth of book data to the aggregate depth at each price level would limit the number of messages included within proposed core data, making the technological changes required more manageable and mitigating latency concerns. Indeed, the Commission's proposed approach aligns with some of these commenters' suggestions that simpler and more abbreviated versions of depth of book data might be more workable.[318]

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315 See supra Section III.A (explaining that different market participants and different trading applications have different needs for NMS information, that the proposal to expand and modernize the content of NMS information is intended to address the needs of a broad cross-section of market participants, and that the Commission is not specifying minimum data elements needed to achieve best execution).

316 See, e.g., NYSE Equities Insights, Stock Quotes and Trade Data: One Size Doesn't Fit All (Aug. 22, 2019), available at https://www.nyse.com/equities-insights (proposing enhancing the exclusive SIPs by offering depth of book, odd-lot quotes, and primary auction imbalance information in three new tiers of service, each of which would have different levels of data content); infra Section IV.B.4.

317 Today, there are a number of private data vendors that have developed software and infrastructure solutions for consolidating several of the most voluminous depth of book data feeds across equity markets and are providing consolidated depth of book products, which suggest that technical challenges and latency concerns can be addressed.

318 See supra note 289 and accompanying text.

In addition, some commenters cited statistics on the high proportion (97%) of trades that execute at or within the NBBO in support of their views that depth of book data is not necessary for retail investors or other market participants.[319] The Commission preliminarily believes that, even if these figures are accurate for the current market, they do not, on their own, persuade the Commission that it should not propose to add depth of book data to core data. The commenters, for example, do not specify whether or not the broker-dealers handling the orders at issue had access to proprietary DOB products for their automated trading systems; if they did, depth of book data may have been contributing to the observed high at-or-within-the-NBBO execution rates. For example, as discussed above, depth of book data can indicate the direction a stock price may be moving, which some market participants factor into the prices at which they place limit orders.[320] Furthermore, in response to the comments that retail investors do not need depth of book data, the Commission preliminarily believes that there are different types of retail investors that have different market data needs and preferences. Some retail investors may not need depth of book information but other, more sophisticated retail investors may find depth of book data useful, as one Roundtable panelist from a retail firm stated.[321] Further, while competing consolidators would have to offer proposed consolidated market data to end-users, they also would be permitted to develop products for their customers that could be customized to

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319 See supra notes 290–291 and accompanying text.

320 Similarly, depth of book data can provide insight into the length of order book queues on different exchanges and therefore the prices at which limit orders can attain queue priority, helping market participants pursue trading strategies involving the placement of liquidity-providing orders that will not execute until the NBBO changes. See supra note 312 and accompanying text.

321 See supra note 281 and accompanying text. In addition, another Roundtable panelist whose firm handles the orders of retail customers indicated that his firm needs depth of book data to fulfill its obligations to its retail customers. See supra note 285.

their customers' needs.[322] Therefore, a competing consolidator could develop a consolidated market data product that does not contain proposed depth of book data if there is demand.[323] The Commission's proposal aims to provide broker-dealers and other market participants with improved access to meaningful depth of book information, so it can be used to improve order placement or other trading decisions and thereby potentially improve execution quality for investors.

Finally, the proposed definition of core data specifies that odd-lot quotations at the relevant price levels between the national best bid or offer and the protected quotation, and at the five price levels above and below the protected quotation that can be aggregated into at least a round lot, would be included in depth of book data. As discussed above, the Commission preliminarily believes that its proposed definition of round lot reflects trading interest of meaningful size to market participants. The Commission further preliminarily believes that trading interest that is of less than meaningful size (i.e., an odd-lot size), that together with other odd-lots aggregates into a round lot, similarly represents trading interest of meaningful size and should be displayed at the most conservative price at which such trading interest could be accessed.[324]

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322 See infra Section IV.B.1.

323 Competing consolidators would be required to calculate and generate consolidated market data, including depth of book data as set forth in the Commission's proposed definition, and to offer such data to subscribers. See proposed Rule 614(d)(1)–(3). As explained above, the Commission believes that the proposed depth of book data would support the needs of some market participants. See supra notes 301–305. However, some market participants may not need the depth of book data specified in the proposed definition. As proposed, market participants would be able to choose the components of consolidated market data that meet their needs, consistent with regulatory requirements, and purchase such data from competing consolidators.

324 See supra notes 129–130, 157 and accompanying text. To the extent that an SRO provides proprietary data products for the purposes of making consolidated market data

The Commission requests comment on the proposed inclusion of depth of book data in the proposed definition of core data and the definition of depth of book data in proposed Rule 600(b)(25). In particular the Commission solicits comment on the following:

38. Should depth of book data be included in the proposed definition of core data? Why or why not? Do commenters believe the proposed definition of depth of book data would have any negative or unintended consequences? Why or why not?

39. Do commenters believe that the Commission's proposed definition of depth of book data captures the appropriate level of depth data that should be included in the proposed definition of core data? Why or why not? Should the Commission include more or fewer levels of depth or otherwise revise the definition to capture the key depth information that would be useful to market participants? For example, should the Commission require depth only within a $0.05 band of the protected bid and offer rather than the first five price levels at which there is interest?

40. Does the proposed definition of depth of book data adequately balance the need for more information against potential increases in complexity and processing demand that might result from the addition of such depth of book data? If not, where is this balance most appropriately struck in terms of the extent of depth of book data that should be included in the proposed definition of core data? Particularly, what processing demands would be associated with including varying levels of depth of book data? Please consider the proposed five levels of depth of book as well as any other possible

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available to competing consolidators and self-aggregators, any odd-lot quotations that are aggregated in an SRO's existing proprietary data products would be required to be aggregated in a manner consistent with the method set forth in the proposed definition of core data. See proposed Rule 600(b)(20).

depth of book alternatives. Please provide quantitative data and analyses to support your comments.

41. Do commenters believe that the "at which there is a bid or offer" language in the Commission's proposed definition of depth of book data establishes an appropriate minimum size threshold (i.e., the existence of at least a round lot of aggregated interest) for inclusion as one of the five price levels? Why or why not? Are there alternative ways to set such a threshold, such as price levels where the volume of interest equals a certain percentage of the volume at the best price?

42. Do commenters believe that odd-lot quotes at the depth price levels that aggregate into at least a round lot should be included in the proposed definition of core data? Why or why not?

43. The proposed definition of depth of book data refers to depth of book quotations on each national securities exchange, as FINRA's Alternative Display Facility ("ADF") currently does not have quotations submitted to it. Should the proposed definition be formulated to include the depth of book quotations of national securities associations as well to account for the possibility of OTC quotes being reported to the ADF in the future? Why or why not?

3. Auction Information

Even as the proportion of trades executing in auctions has risen, little auction information is currently included in today's SIP data.[325] The Commission is proposing to include auction information, including auction order imbalance and other auction data generated by the

[325] See infra notes 333–334 and accompanying text.

exchanges during an auction, in the proposed definition of core data.[326] The Commission preliminarily believes that including auction information, as described below, in the proposed definition of core data would promote the goals of the national market system[327] by conveying important information about orders participating in auctions and helping market participants to participate in auctions in a more informed and effective manner.

(a) Background

Auctions are held pursuant to exchange rules at specified periods during the trading day (i.e., at the open, at the close, or during the day to reopen a stock that has been halted) when continuous trading is not occurring. During an auction, buy and sell orders generally interact at the single price, within limits, that maximizes the trading volume that can be executed. For example, a closing auction generally is held at the end of regular trading hours on the primary listing exchange pursuant to a process set forth in the primary listing exchange's rules to determine a security's official closing price. Typically, market-on-close orders, limit-on-close orders, and orders resting on the primary listing exchange's order book at the time a closing auction begins may participate in a closing auction. However, the rules of a primary listing exchange may also allow other specified order types, such as closing offset orders and D-orders

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326 See proposed Rule 600(b)(5). The definition of auction information in proposed Rule 600(b)(5) is "all information specified by national securities exchange rules or effective national market system plans that is generated by a national securities exchange leading up to and during an auction, including opening, reopening, and closing auctions, and disseminated during the time periods and at the time intervals provided in such rules and plans." Accordingly, the proposed definition would include auction information that may be developed in the future and added to an SRO's rules that are approved by the Commission pursuant to Rule 19b-4, 17 CFR 240-19b-4.

327 See, e.g., 15 U.S.C. 78k-1(a)(1)(C) ("The Congress finds that . . . [i]t is in the public interest and appropriate for the protection of investors and the maintenance of fair and orderly markets to assure . . . the availability to brokers, dealers, and investors of information with respect to quotations for and transactions in securities . . . [and] the practicability of brokers executing investors' orders in the best market.").

on NYSE or imbalance-only close orders on Nasdaq, to participate in a closing auction.[328] The opening auctions, which generally are held at the start of regular trading hours, also use specialized order types as specified in the rules of the primary listing market.[329]

Auctions conducted by the exchanges, especially opening and closing auctions, have become increasingly important liquidity events in recent years and represent a significant proportion of overall trading volume.[330] One factor that may be driving the higher concentration

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328 See, e.g., NYSE Rule 7.31(d)(4) (A Discretionary Order, or "D Order," is a "Limit Order that may trade at an undisplayed discretionary price"); NYSE Rule 13(c)(1) (A Closing Offset, or "CO," Order is "[a] day Limit Order to buy or sell as part of the closing transaction where the eligibility to participate in the closing transaction is contingent upon: (i) an imbalance in the security on the opposite side of the market from the CO Order; (ii) after taking into account all other types of interest eligible for executing at the closing price, there is still an imbalance in the security on the opposite side of the market from the CO Order; and (iii) the limit price of the CO Order being at or within the price of the closing transaction."); NYSE Rule 123C; Nasdaq Rule 4702(b)(13)(A) ("An 'Imbalance Only Order' or 'IO Order' is an Order entered with a price that may be executed only in the Nasdaq Closing Cross and only against [market-on-close] Orders or [limit-on-close] Orders.").

329 See, e.g., NYSE Open and Closing Auctions, available at https://www.nyse.com/publicdocs/nyse/markets/nyse/NYSE_Opening_and_Closing_Auctions_Fact_Sheet.pdf (last accessed Nov. 25, 2019); Nasdaq Opening and Closing Crosses, available at http://www.nasdaqtrader.com/Trader.aspx?id=OpenClose (last accessed Nov. 25, 2019).

330 See, e.g., Rosenblatt Securities, Closing Time: How End-of-Day Auctions are Taking Over US Equity Trading (Jan. 17, 2019) (stating that the percentage of consolidated volume in the executed at the close increased from 4.6% in 2013 to 8.4% in 2018); Financial Times, The 30 Minutes that Have an Outsized Role in US Stock Trading (Apr. 24, 2018), available at https://www.ft.com/content/9e1f05b4-43e7-11e8-803a-295c97e6fd0b ("The first and last half-hour of the US trading day now accounts for 39.6 per cent of all volumes, up from 31.5 per cent a decade ago, according to Credit Suisse data. A decade ago about 16 per cent of all trading happened in the final 30 minutes, but that rose to more than 20 per cent in 2012, and almost 25 per cent this year. The closing auction alone—when most ETFs do their rebalancing—now accounts for 8.2 per cent of volumes in 2018, up from 3 per cent in 2007"); Greenwich Associates, Stock Trading Volumes Gravitate to Open and Closing Auctions (Feb. 2, 2017), https://www.greenwich.com/press-release/stock-trading-volumes-gravitate-open-and-closing-auctions (stating that "[o]n average across both NYSE and Nasdaq listed securities, closing auctions now represent 5.5% of average daily volume, up from just

of trading in closing auctions is the growth of passive, index-tracking investment strategies through mutual funds, ETFs, and similar products.[331] Since passive strategies and ETFs often track the performance of a benchmark index, and the closing price used in the benchmark index calculation is often set during the closing auction, participation in closing auctions has become increasingly important.[332]

To participate efficiently in auctions conducted by the exchanges, market participants seek information about orders that are participating in the auctions. This includes information about auction order imbalances, which reflect the extent to which auction buy orders exceed auction sell orders (or vice-versa) and are generally provided at periodic intervals leading up to the auction. In addition, primary listing exchanges provide information about the indicative price for the auction based on auction orders received at that time.

3.6% in 2011. Over the same period, average open auction volume increased from 1.1% to 1.25%").

331 See, e.g., Securities Exchange Act Release No. 75165 (June 12, 2015); 80 FR 34729, 34729–30 (June 17, 2015) ("[F]rom 2006 to 2013, the total number of ETPs [exchange-traded products] listed and traded as of year-end rose by an average of 160 per year, with a net increase of more than 200 in both 2007 and 2011. . . The total market capitalization of ETPs has also grown substantially, nearly doubling since the end of 2009. Much of this growth has been in index-based ETPs. As of December 31, 2014, there were 1,664 U.S.-listed ETPs, and they had an aggregate market capitalization of just over $2 trillion. Trading in these ETPs makes up a significant portion of secondary-market equities trading. For example, during 2014, trading in U.S.-listed ETPs made up about 16.7% of U.S. equity trading by share volume and 25.7% of U.S. equity trading by dollar volume.").

332 See Greenwich Associates, Webinar: Trading the Auctions (Apr. 5, 2017), available at https://business.nasdaq.com/media/Trading-the-Auctions-Webinar-April-2017-17_tcm5044-46070.pdf ("As passive strategies and ETFs aim to track the performance of a benchmark index, they rely heavily on the closing auction, as it determines the closing price used in the benchmark index price calculation. Growth in passive investing and ETFs will thereby make the auction process ever more important."); see also, e.g., Nasdaq Rule 4754 ("The Nasdaq Closing Cross price will be the Nasdaq Official Closing Price for stocks that participate in the Nasdaq Closing Cross.").

Today, only limited auction-related information is included in SIP data.[333] Some NYSE auction data is disseminated through the CTA/CQ SIP,[334] but this reflects only a small subset of the auction-related information that the primary listing exchanges generate. No auction information generated by the other primary listing exchanges, including Nasdaq, NYSE Arca, and Cboe BZX, is distributed through the exclusive SIPs.

By contrast, the primary listing exchanges provide a wide range of auction-related

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333 The LULD Plan requires the primary listing exchanges to provide the exclusive SIPs with certain auction information for dissemination related to reopening auctions after LULD trading pauses: auction reference price, auction collars, and number of extensions to the reopening auction. See LULD Plan, supra note 38, at VII.B.1. The reopening auction data in proprietary products contains this data plus additional data. For example, NYSE's Integrated feed includes, among other data elements, a paired quantity (number of shares paired at the reference price), total imbalance quantity (number of shares not matched at the reference price), and the side of any imbalance (buy or sell). See NYSE XDP Integrated Feed Client Specification (Jan. 29, 2018). Nasdaq's Total View feed includes similar information for auctions that occur after halts or pauses. See Nasdaq TotalView-ITCH 5.0 Specifications.

334 For example, in 1998, the Commission approved a NYSE proposal to allow the exchange to disseminate via the CTA/CQ SIP market-on-close ("MOC") and limit-on-close ("LOC") imbalance information in the final minutes of each trading day. See Securities Exchange Act Release No. 40094 (June 15, 1998), 63 FR 33975 (June 22, 1998). The proposal provided for mandatory dissemination of all MOC and LOC imbalances of 50,000 shares or more at 3:40 PM. Dissemination of imbalances of less than 50,000 shares could be made at the discretion of a floor official. The Commission stated its belief that the dissemination of such additional information through the plan processor would "increase the amount of accurate market information available to the public" and may "increase public awareness of MOC/LOC order imbalances," potentially resulting in less market volatility. See id. at 33977–78; NYSE Rule 123C (providing that information regarding any disparity between MOC and marketable LOC interest to buy and MOC and marketable LOC interest to sell, measured at 3:50 p.m., of 50,000 shares or more shall be published on the consolidated tape; publication of imbalances in amounts less than 50,000 shares may also be published with the prior approval of a Floor Official or other qualified ICE employee). In addition, pre-opening indications, including the security and the price range within which the opening price is anticipated to occur, are published via the plan processors under certain conditions. See NYSE Rule 15.

information through their proprietary data products.[335] For example, NYSE provides opening auction information, such as opening order imbalance information and indicative pricing information, only through its proprietary market data products.[336] In addition, with respect to closing auctions, NYSE disseminates order imbalance information approximately every five seconds between 3:50 p.m. and 4:00 p.m., which consists of real-time imbalances between marketable closing orders to buy and marketable closing orders to sell, along with the indicative price at which the auction would occur at that time. This information is available only through NYSE's proprietary market data products.[337] Similarly, Nasdaq,[338] NYSE Arca,[339] and Cboe

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335 The auction-related information disseminated through exchange proprietary feeds includes: the "reference" or "indicative match" prices at which the largest potential auction would occur, imbalance side (buy or sell), number of shares of buy and sell orders at the indicative match price and reference price, paired quantity (number of shares matched at the indicative match price and reference price), execution quantity (number of shares executed at the indicative match price and reference price), imbalance quantity (number of shares not matched at the indicative match price and reference price), market order imbalance quantity (number of shares of market orders not matched at the indicative match price and reference price), far price (hypothetical auction-clearing price for cross orders only), near price (hypothetical auction-clearing price for cross orders and continuous orders), price variation indicator (absolute value of the percent of deviation of the near price to the nearest current reference price), continuous book clearing price, closing only clearing price, upper collar, lower collar, freeze status, and number of times halt period extended. See, e.g., Nasdaq Rule 4754; Nasdaq TotalView-ITCH 5.0 Specifications; NYSE Rule 15; NYSE XDP Integrated Feed Client Specification.

336 See NYSE Rule 15.

337 See NYSE Rule 123C (describing the dissemination of information regarding imbalances that accumulate prior to the closing transaction, including information on disparities between MOC and marketable LOC interest to buy and MOC and marketable LOC interest to sell, a data field indicating the price at which closing-only interest (e.g., MOC, LOC, and other auction-only orders) may be executed in full, and, beginning at 3:55 pm, certain floor-broker quotes containing pegging instructions eligible to participate in the closing transaction).

338 During the five minutes prior to the Nasdaq closing auction (also referred to as the closing cross) at 4:00 pm, Nasdaq disseminates an "Order Imbalance Indicator" every second. The Nasdaq closing cross is an auction process in which Nasdaq's closing book and continuous book are brought together to create a single closing price. See Nasdaq

BZX[340] provide auction information that is available only through each exchange's proprietary market data products.

As noted above, proprietary feeds also include additional information in connection with reopening auctions after trading halts that goes beyond the LULD information that primary listing exchanges are required to report to the exclusive SIP.[341]

(b) Comments and Roundtable Discussion

In connection with the Roundtable, several panelists and commenters supported the addition of auction information to SIP data.[342] For example, one commenter stated that the

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Opening and Closing Crosses FAQs, available at https://www.nasdaqtrader.com/content/ProductsServices/Trading/Crosses/openclose_faqs.pdf (last accessed Jan. 7, 2020).) The Order Imbalance Indicator includes a reference price at which the maximum number of shares can be matched, the number of shares that can be matched at the reference price, the number of shares that cannot be matched at the reference price (i.e., the imbalance), the buy/sell direction of any imbalance, and a variety of indicative prices such as the "far price," a hypothetical auction-clearing price for cross orders, and "near price," a hypothetical auction-clearing price for cross orders as well as continuous orders. See Nasdaq Rule 4754; Nasdaq TotalView-ITCH 5.0 Specifications.

339 NYSE Arca disseminates "Auction Imbalance Information" via proprietary data feeds, specifically the NYSE Arca Order Imbalance feed and NYSE Arca Integrated feed. See NYSE Arca Rule 7.35-E(a)(4)(C); NYSE Arca Trading Information: Auctions Overview, available at https://www.nyse.com/markets/nyse-arca/trading-info (last accessed Jan. 7, 2020). Auction Imbalance Information includes "if applicable, the Total Imbalance, Market Imbalance, Indicative Match Price, Matched Volume, Auction Reference Price, Auction Collar, Book Clearing Price, Far Clearing Price, Imbalance Freeze Indicator, and Auction Indicator." NYSE Arca Rule 7.35-E(a)(4).

340 Cboe BZX disseminates, via the Bats Auction Feed, Closing Match Process Information (the total size of all buy and sell orders matched at the close) for Non-BZX-Listed Securities and "information regarding the current status of price and size information related to auctions conducted by the Exchange." See Cboe BZX Rules 11.22(i), 11.28(c).

341 See supra note 333.

342 See Roundtable Day One Transcript at 98 (Stacey Cunningham, NYSE); Roundtable Day One Transcript at 98 (Chris Concannon, CBOE); Roundtable Day One Transcript at 116 (Michael Blaugrund, NYSE); Roundtable Day Two Transcript at 124 (John Ramsay, IEX); Roundtable Day Two Transcript at 245–46 (Tyler Gellasch, Healthy Markets);

Commission should require the inclusion of auction order imbalance information in SIP data and expressed the view that doing so should not materially increase the operating costs of the exclusive SIP.[343]

Similarly, other panelists and commenters emphasized the importance of auction information, including for achieving best execution.[344] One panelist indicated that auctions are becoming more important and that institutional investors use auction imbalance data to trade.[345] Another panelist stated that auction imbalance information is important for retail investors, particularly high-net worth individuals, because the amount of the imbalance may be significant to a trading decision.[346]

However, one panelist (Nasdaq) opposed adding auction information to the exclusive SIP. The panelist indicated that Nasdaq views its crossing process as its intellectual property,

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NYSE Group Letter at 6, 13 (stating "information about auction imbalances is now automated and yet is available only via proprietary data feeds" and "NYSE Group believes that Main Street could also benefit if auction imbalance information were included in the core data disseminated by the SIPs" and recommending the expansion of the definition of core data to include auction imbalance information).

343 See SIFMA Letter II at 2 ("At minimum, auction imbalance information shall include matched quantity, imbalance size, near price, far price, paired shares and imbalance shares.").

344 See Roundtable Day One Transcript at 228–29 (Joseph Wald, Clearpool Group) (stating that the lack of auction information (and depth of book data) on the exclusive SIPs needs to be addressed); Clearpool Letter ("We believe that certain information currently provided through proprietary data feeds, for example, imbalance data and order depth of book information, should be considered core data and provided to all market participants through the SIP."); MFA and AIMA Letter at 6 (stating that that its members purchase proprietary market data (e.g., depth of book and imbalance data) from exchanges for a variety of reasons, including strategy implementation, risk-analysis, best execution, less latency than other sources, and to fulfill fiduciary obligations).

345 See Roundtable Day Two Transcript at 68 (Paul O'Donnell, Morgan Stanley).

346 See Roundtable Day One Transcript at 159–60 (Adam Inzirillo, BAML).

retail investors do not use the imbalance information, and auction data is already widely available to retail investors and retail online brokers.[347]

(c) Commission Discussion and Proposal

Auctions have become an increasingly significant part of the trading day, accounting for approximately 7% of daily equity trading volume.[348] Auctions, especially the opening and the closing auctions, are important for the implementation of passive investment strategies, as detailed above, and generate prices that are used for a variety of market purposes, including setting benchmark prices for index rebalances and for mutual fund pricing. Reopening auctions also play a crucial role in connection with security-specific or market-wide events, helping to assure the resumption of orderly trading following a limit up-limit down or other regulatory halt.[349] Auction information, including auction order imbalance and other auction data, is important for effective participation in these significant market events.

However, the content of SIP data has not been updated to reflect the growing importance of auctions, and today most auction-related information is available only through exchange

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347 See Roundtable Day One Transcript at 157–59 (Oliver Albers, Nasdaq).

348 This figure is based on data available on Cboe's website from November of 2019. See Cboe: U.S. Equities Market Volume Summary, available at https://markets.cboe.com/us/equities/market_share/ (last accessed Nov. 26, 2019); Rosenblatt Securities, supra note 330 (stating that closing auction volume amounted to 8.4% of consolidated volume); Greenwich Associates, Stock Trading Volumes Gravitate to Open and Closing Auctions (Feb. 2, 2017), available at https://www.greenwich.com/press-release/stock-trading-volumes-gravitate-open-and-closing-auctions (stating that average opening auction volume in 2017 was 1.25% of average daily volume).

349 For example, on Aug. 24, 2015, LULD halts were triggered in 471 securities. More than half (55%) of the impacted securities triggered more than one halt, and over one quarter (26%) of the impacted securities were halted 4 or more times. See Staff of the Office of Analytics and Research, Division of Trading and Markets, Equity Market Volatility on Aug. 24, 2015, at 68 (Dec. 2015).

proprietary data products.[350] This exacerbates the information asymmetries between SIP data and proprietary data[351] and has raised concerns among market participants as to whether SIP data is sufficient to provide best execution to customer orders during auctions.[352] Moreover, lack of full reopening auction information in SIP data may inhibit widespread participation in reopening auctions following limit-up-limit-down halts or other volatility events and may impede efficient price discovery during these critical periods.[353]

As discussed above, market participants rely upon auction information for effective participation in opening, closing, and reopening auctions.[354] Accordingly, the Commission preliminarily believes that full auction-related information should be included in the proposed definition of core data. Specifically, under proposed Rule 600(b)(5) of Regulation NMS,

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350 See supra notes 333–341.

351 See infra note 358 and accompanying text (explaining that auction data that would support more informed participation in auctions is not available publicly or to retail investors).

352 See supra note 344.

353 See supra note 333 (comparing the LULD information available through the exclusive SIP feeds with the more extensive reopening auction information available through proprietary market data products).

354 Market participants use auction information in making a variety of trading decisions. See Markets Media, Auction Imbalance Data Affects Traders (Feb. 7, 2017), available at https://www.marketsmedia.com/auction-imbalance-data-affects-traders (stating that "70% of traders said real-time imbalance data can influence how their firm trades in the auction or continuous market" and explaining that large orders can be executed in auctions with less price impact). For example, market participants use auction imbalance information to predict closing volume, which is "an important factor in the optimal scheduling of algorithmic trading." See Global Trading, Closing Volume Discovery (Sept. 23, 2019), available at https://www.fixglobal.com/home/closing-volume-discovery/. Since actual daily closing volume can vary widely, it is difficult for market participants to manage order placement logic for orders that are being submitted to auctions. Id. Auction imbalance messages published by the primary listing exchanges through proprietary market data products help market participants more accurately predict closing volume. Id.

"auction information" would be defined as all information specified by national securities exchange rules or effective national market system plans that is generated by a national securities exchange leading up to and during an auction, including opening, reopening, and closing auctions, and disseminated during the time periods and at the time intervals provided in such rules and plans.

The elements of proposed auction information would be established by individual exchange rules or effective national market system plans (e.g., the LULD Plan). The individual exchanges have established their own auction information elements that are relevant to their individual auction processes, and effective national market system plans have also established information requirements related to certain auctions (e.g., reopenings after LULD trading pauses).[355] The Commission preliminarily believes that each individual exchange and relevant plan should be able to design and develop its individual auctions and the data elements that would be useful to market participants that participate in such auctions. Further, by tying the proposed definition to the rules of the exchanges and effective national market system plans, the proposed definition could evolve over time as such exchanges or plans develop new data elements in the future. Any additional data element set forth in an exchange's rules or plan(s) would be subject to Commission consideration pursuant to Section 19(b) of the Exchange Act and Rule 19b-4 or Rule 608, respectively.

The Commission preliminarily believes that the proposed definition of auction information would promote more informed and effective trading in auctions. For example, information regarding the size and side of order imbalances can indicate the direction a stock's price might move and inform decisions on where to price an auction order and what order type to

[355] See, e.g., LULD Plan, supra note 38, Section VII(B)(1).

use. Including auction information in core data, as proposed, would facilitate a broader distribution of this information to a greater number and variety of market participants. The Commission preliminarily believes that this would help to promote more informed trading for a greater number of market participants, which could also facilitate price formation, and improve execution quality for more traders and investors. While some market participants may not need the proposed auction information, based on the growth of auctions and the importance a variety of market participants have ascribed to information about orders participating in auctions, the Commission preliminarily believes that many market participants, including some retail investors, would use this information to participate in auctions in a more informed and effective manner.[356]

Some Roundtable panelists objected to the inclusion of auction information in core data. For example, as previously noted, Nasdaq asserted that its crossing process is its intellectual property and that auction data is already widely available to retail investors on Nasdaq's website and through other data vendors.[357] Although some auction-related information may be available on Nasdaq's website, the Commission preliminarily believes that meaningful auction information, such as the real-time imbalance data that would support decisions regarding order type selection and order pricing during auctions, is available only through Nasdaq's proprietary

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356 See supra notes 342–346 and accompanying text. Moreover, as noted above, see supra note 323, competing consolidators will be required to calculate and generate consolidated market data, including the auction information set forth in the Commission's proposed definition, and to offer this information to subscribers. See proposed Rule 614(d)(1)–(3). However, market participants may require more or less auction information than specified in the proposed definition, and can choose auction information products offered by competing consolidators that are more tailored to their specific needs.

357 See supra note 347 and accompanying text.

market data products.[358] In addition, the Commission's proposal would not require the disclosure of any specific details about the operation of Nasdaq's crossing process that would appropriate or compromise Nasdaq's intellectual property. The proposed definition of auction information would require the dissemination of information about orders participating in auctions;[359] the proposed definition would not require the dissemination of information about the technology or processes used to hold an auction. Further, the proposed definition of auction information is based on information currently disseminated by Nasdaq.

The Commission requests comment on the inclusion of auction information in the proposed definition of core data as well as the proposed definition of auction information in proposed Rule 600(b)(5). In particular, the Commission solicits comment on the following:

44. Do commenters believe that auction information should be included in the proposed definition of core data? Why or why not? What kinds of market participants will use this information? For what purposes? What are the advantages or disadvantages of including auction information in proposed core data as opposed to proprietary data?

45. Do commenters believe that the lack of auction information in current SIP data creates significant information asymmetries between users of current SIP data and users of proprietary data products? Do commenters believe that current SIP data is sufficient to

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358 See Nasdaq Opening and Closing Crosses, http://www.nasdaqtrader.com/Trader.aspx?id=OpenClose (last accessed Jan. 7, 2020) (providing share volume in the Nasdaq crossing network but noting that imbalance data is available by subscription only); supra note 338.

359 See Section 11A(c)(1)(C) of the Exchange Act, stating that the Commission shall assure the usefulness of the form and content of information with respect to quotations for and transactions in securities. 15 U.S.C. 78k–1(c)(1)(C). The Senate Report stated that the Commission would have the authority under Section 11A to promulgate rules as to what information and how such information is displayed on any tape or within any quotation system. See Senate Report, supra note 5, at 10.

meet the needs of some market participants even though it does not include auction information? Please explain.

46. Does the lack of auction information in current SIP data create impediments to achieving best execution when participating in auctions? Do market participants believe that it is possible to participate in auctions without the auction information? Please explain.

47. What are commenters' views on the Commission's proposed definition of auction information? Does it capture the full range of auction-related information that market participants need for informed trading in auctions? Does it include any information that is not necessary or useful for informed trading in auctions? Should the Commission delineate specific data elements in the definition of auction information as opposed to defining auction information in terms of the auction information that is currently generated pursuant to exchange rules or effective national market system plans?

48. Should the proposed definition of auction information include information on orders participating in non-auction matching processes, such as Cboe's market close order, that are related to auctions occurring on other exchanges? Why or why not?

D. Proposed Definition of "Regulatory Data"

As discussed above,[360] the existing Equity Data Plans disseminate data elements related to a number of regulatory requirements, such as Regulation SHO, LULD, and MWCB requirements, and other information provided by the primary listing exchanges, such as official opening and closing prices. To ensure that this information is included in the proposed definition of consolidated market data, the Commission is proposing to amend Rule 600 to add a definition

[360] See supra Section II.C.

of "regulatory data." Specifically, under proposed Rule 600(b)(77) of Regulation NMS, regulatory data would be defined as: (1) information required to be collected or calculated by the primary listing exchange for an NMS stock and provided to competing consolidators and self-aggregators pursuant to the effective national market system plan or plans required under Rule 603(b), including, at a minimum: (A) information regarding Short Sale Circuit Breakers pursuant to Rule 201 of Regulation SHO; (B) information regarding Price Bands required pursuant to the LULD Plan; (C) information relating to regulatory halts or trading pauses (news dissemination/pending, LULD, and MWCBs) and reopenings or resumptions; (D) the official opening and closing prices of the primary listing exchange; and (E) an indicator of the applicable round lot size; and (2) information required to be collected or calculated by the national securities exchange or national securities association on which an NMS stock is traded and provided to competing consolidators and self-aggregators pursuant to the effective national market system plan(s) required under Rule 603(b), including, at a minimum: (A) whenever such national securities exchange or national securities association receives a bid (offer) below (above) an NMS stock's lower (upper) LULD price band, an appropriate regulatory data flag identifying the bid (offer) as non-executable; and (B) other regulatory messages including sub-penny execution and trade-though exempt indicators. For purposes of paragraph (1)(C), the primary listing exchange that has the largest proportion of companies included in the S&P 500 Index shall monitor the S&P 500 Index throughout the trading day, determine whether a Level 1, Level 2, or Level 3 decline, as defined in self-regulatory organization rules related to Market-Wide Circuit Breakers, has occurred, and immediately inform the other primary listing

exchanges of all such declines (so that the primary listing exchange can initiate trading halts, if necessary).[361]

The primary listing exchange is an SCI entity under Regulation Systems Compliance and Integrity ("Regulation SCI").[362] An SCI entity includes any national securities exchange other than an exchange that is notice registered with the Commission pursuant to 15 U.S.C. 78f(g) or a limited purpose national securities association registered with the Commission pursuant to 15 U.S.C. 78*o*-3(k).[363] Under Regulation SCI, any SCI system of, or operated by or on behalf of, the primary listing exchange that directly supports functionality relating to trading halts, would be a "critical SCI system." An "SCI system" means all computer, network, electronic, technical, automated, or similar systems of, or operated by or on behalf of, an SCI entity that, with respect to securities, directly support trading, clearance and settlement, order routing, market data, market regulation, or market surveillance.[364] A "critical SCI system" means any SCI systems of, or operated by or on behalf of, an SCI entity that: (1) Directly support the functionality relating to (i) Clearance and settlement systems of clearing agencies; (ii) Openings, reopenings, and closings on the primary listing market; (iii) Trading Halts; (iv) Initial public offerings; (v) The provision of consolidated market data; or (vi) Exclusively-listed securities; or (2) Provides functionality to the securities markets for which the availability of alternatives is significantly

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361 Because, under the proposed decentralized consolidation model, primary listing exchanges would perform some of the functions that the exclusive SIPs perform today (such as monitoring the S&P 500 Index), each SRO would have to collect all elements of consolidated market data. SROs would not be required to obtain regulatory data or other consolidated market data from competing consolidators; SROs could choose to obtain such data directly from other SROs.

362 17 CFR 242.1000 et seq.

363 See Rule 1000 of Regulation SCI, 17 CFR 242.1000.

364 See Rule 1000 of Regulation SCI, 17 CFR 242.1000.

limited or nonexistent and without which there would be a material impact on fair and orderly markets.[365] Accordingly, with respect to any SCI systems used to determine whether LULD or MWCB trading halts have been triggered, and to notify other SROs of such halts, Regulation SCI requires the primary listing exchange to have reasonably designed business continuity and disaster recovery plans that include maintaining backup and recovery capabilities sufficiently resilient and geographically diverse and that are reasonably designed to achieve two-hour resumption of such systems following a wide-scale disruption.[366]

Market participants use this regulatory data to meet their regulatory obligations and to be informed of trading halts, price bands, or other market conditions that may affect their trading activity. Accordingly, the Commission preliminarily believes that this information should be included in the proposed definition of consolidated market data.

1. Regulation SHO

In pertinent part, Rule 201(b) requires a trading center, including a listing market, to establish, maintain, and enforce certain written policies and procedures that are reasonably designed to prevent the execution or display of a short sale order of a covered security if the Short Sale Circuit Breaker has been triggered and further requires that such trading center,

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365 Id.

366 See Rule 1001(a)(2)(v), 17 CFR 242.1001(a)(2)(v). As the Commission stated when it adopted Regulation SCI, "[i]n the event a trading halt is necessary, it is essential that the systems responsible for communicating the trading halt—typically maintained by the primary listing market—are robust and reliable so that the trading halt is effective across the U.S. securities markets. Thus, systems which communicate information regarding trading halts provide an essential service in the U.S. markets and, should a systems issue occur affecting the ability of an SCI entity to provide such notifications, the fair and orderly functioning of the securities markets may be significantly impacted." See Regulation SCI Adopting Release, supra note 28, at 72278.

including a listing market, regularly surveil to ascertain the effectiveness of those policies and procedures and take prompt action to remedy any deficiencies.

Under the proposed definition of regulatory data, the primary listing exchange for an NMS stock (i.e., a covered security under Rule 201 of Regulation SHO)[367] would make the determination[368] regarding whether a Short Sale Circuit Breaker has been triggered.[369] The Commission proposes to amend the process required under Rule 201 in two ways. First, if the Short Sale Circuit Breaker has been triggered, the listing market would be required to immediately notify competing consolidators and self-aggregators (rather than a single plan processor as is currently the case). Competing consolidators would then be required to consolidate and disseminate this information to their subscribers. Second, under the proposed decentralized consolidation model with competing consolidators and self-aggregators, the listing market would have the option of obtaining proposed consolidated market data from one or more competing consolidators (rather than from a single plan processor as is currently the case) or, if aggregating consolidated market data itself, to make determinations as to whether a Short Sale Circuit Breaker has been triggered.

Due to the changes proposed herein (i.e., a listing market would now have the ability to choose from one or more competing consolidators for proposed consolidated market data, or to aggregate proposed consolidated market data on its own), the Commission preliminarily believes

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367 A "covered security" is defined in Rule 201(a)(1) of Regulation SHO as any NMS stock as defined in Rule 600(b)(48). 17 CFR 242.201(a)(1).

368 17 CFR 242.201(b)(3).

369 Id. This is consistent with the current requirements under Rule 201(b)(3). Rule 201(b)(3) refers to the "listing market" as defined in Rule 201(a)(3). As discussed below, the Commission proposes to amend the definition of "listing market" to refer to the proposed definition of "primary listing exchange" in proposed Rule 600(b)(67).

that a trading center, including a listing market, should consider updating its written policies and procedures required under Rule 201(b) to address the source of core data that it uses in making its determination regarding whether the Short Sale Circuit Breaker has been triggered and any changes to that source of core data, including the underlying reason for such change. The Commission preliminarily believes that these types of updates to such written policies and procedures would assist a listing market in ensuring consistency in making its determination regarding whether the Short Sale Circuit Breaker has been triggered and avoiding any appearance of "gaming" or "cherry-picking" of core data in making that determination.

Moreover, the Commission is proposing certain conforming amendments in Rule 201 to harmonize that rule with the Commission's proposal. Currently, Rule 201(a) defines "listing market" by reference to the listing market as defined in the effective transaction reporting plan for the covered security.[370] Since primary listing exchanges will be required to collect and calculate regulatory data, the Commission is proposing to introduce a definition of "primary listing exchange" in Rule 600(b)(67) to provide greater clarity with respect to the responsibilities regarding regulatory data. Specifically, under proposed Rule 600(b)(67), primary listing exchange would be defined as, for each NMS stock, the national securities exchange identified as the primary listing exchange in the effective national market system plan or plans required under Rule 603(b).

The Commission preliminarily believes that it is appropriate for the effective national market system plan(s) to determine which exchange is the primary listing exchange for each NMS stock and that the proposed definition would ensure that primary listing exchanges are clearly identified. The Commission also preliminarily believes that the definition of listing

[370] 17 CFR 242.201(a)(3).

market in Rule 201(a)(3) should be amended so that it cross-references this proposed definition of primary listing exchange, so as to facilitate the consistent identification of primary listing exchanges across Regulation SHO and Regulation NMS and to avoid potentially duplicative or confusing definitions in the Commission's rules.

Similarly, Rule 201(b)(1)(ii) requires Short Sale Circuit Breakers to be applied "the remainder of the day and the following day when a national best bid for the covered security is calculated and disseminated on a current and continuing basis by a plan processor pursuant to an effective national market system plan."[371] The Commission is proposing to update this provision by removing the reference to the plan processor to reflect the proposed decentralized consolidation model. In addition, Rule 201(b)(3) requires listing markets to immediately notify "the single plan processor responsible for consolidation of information for the covered security pursuant to Rule 603(b)"[372] when a Short Sale Circuit Breaker has been triggered. Again, as a result of the proposed decentralized consolidation model, this reference to a single plan processor is proposed to be removed and replaced by a requirement for the listing market to immediately make such information available as provided in Rule 603(b) (i.e., to competing consolidators and self-aggregators).

2. Limit Up-Limit Down Plan

Currently, the exclusive SIPs calculate and disseminate certain LULD data pursuant to the terms of the LULD Plan.[373] Specifically, the exclusive SIPs calculate the price bands and reference prices and disseminate limit state flags identifying quotes that are non-executable,

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371 17 CFR 242.201(b)(1)(ii).

372 17 CFR 242.201(b)(3).

373 See supra Section II.C.2.

trading pause messages, and reopening information. To ensure that this important LULD information continues to be calculated and disseminated as part of proposed consolidated market data, the Commission is proposing several new provisions. First, the Commission is proposing that the primary listing exchanges be required to calculate and disseminate the price bands and reference prices for the LULD Plan as part of proposed regulatory data. As discussed below, the existing exclusive SIPs would be replaced by the proposed decentralized consolidation model with competing consolidators and self-aggregators, and, therefore, the obligation to calculate and disseminate LULD data would need to be shifted to another entity. Primary listing exchanges have a direct relationship with their listed companies and are responsible for imposing market-wide "news pending" and other regulatory halts. Further, under the LULD Plan, the primary listing exchanges currently have substantial obligations with regard to imposing and communicating LULD trading pauses, as well as with respect to the reopening of trading.[374] The Commission therefore believes that the primary listing exchanges would be well-situated to perform these calculations as part of proposed regulatory data.

The LULD Plan is an important mechanism in the national market system. The Commission preliminarily believes that having multiple entities (e.g., competing consolidators and self-aggregators) calculating reference prices and price bands could complicate and potentially undermine the purposes of the LULD Plan and create confusion during periods of market volatility. Accordingly, the Commission believes that the LULD reference prices and price bands should continue to be calculated and disseminated by a single entity—the primary listing exchange. The Commission's proposal to continue to have a single entity calculate and disseminate LULD information as part of proposed consolidated market data and, as discussed

[374] See supra Section II.C.2.

below, to monitor the S&P 500 Index throughout the trading day and send notification messages to the primary listing exchanges regarding MWCBs, is not inconsistent with the proposed decentralized consolidation model under which multiple competing consolidators would calculate and disseminate consolidated market data, including the NBBO. With broker-dealers aggregating various proprietary market data products today, the potential for "multiple NBBOs" already exists, whereas LULD information is currently calculated and disseminated by a single entity (i.e., the exclusive SIPs) and notifications to primary listing exchanges regarding MWCBs triggered by S&P 500 Index declines are also sent by a single entity (i.e., SIAC).

In addition, under the proposed definition of regulatory data, all national securities exchanges or national securities associations that receive a quote for an NMS stock that is outside of the price bands under the LULD Plan would be required to attach the appropriate regulatory flag signifying that the quote is non-executable and to provide the quote and appropriate flag as part of its regulatory data to competing consolidators and self-aggregators. The Commission preliminarily believes that each national securities exchange or national securities association is in the best position to perform the function of attaching a flag to its own quote. The Commission preliminarily believes that assigning the responsibility to identify quotes as non-executable to parties other than the SRO disseminating the quote could add latency and complexity to the process and increase the risk of error.

3. Market-Wide Circuit Breakers

Today, SIAC (the CTA/CQ SIP) monitors the S&P 500 Index to determine whether a Level 1, Level 2, or Level 3 decline has occurred and is responsible for sending messages to the

primary listing exchanges informing them of such declines.[375] Under the proposed decentralized consolidation model, there would no longer be an exclusive SIP to perform this function. Accordingly, the proposed definition of regulatory data identifies a specific primary listing exchange to monitor the S&P 500 Index throughout the trading day, determine whether a Level 1, Level 2, or Level 3 decline, as defined in SRO rules related to MWCB, has occurred, and immediately inform the other primary listing exchanges of all such declines. Specifically, the primary listing exchange that has the largest proportion of companies included in the S&P 500 Index would be required to conduct this monitoring and notification function.[376] As discussed above, the Commission preliminarily believes that these responsibilities should continue to be carried out by a single entity so that messages regarding the occurrence of Level 1, Level 2, or Level 3 declines are distributed to primary listing exchanges simultaneously from the same source, to avoid the complexity and confusion that might result if such messages were distributed from multiple parties during periods of market volatility. The Commission preliminarily believes that it is appropriate to allocate these functions to the primary listing exchange that has the largest proportion of companies included in the S&P 500 Index because a significant proportion of the monitoring would be related to its own listings.

In addition, under the proposed definition of regulatory data, each primary listing exchange would be responsible for providing certain information required under the MWCB rules to competing consolidators and self-aggregators. Specifically, each primary listing

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375 By contrast, rather than the exclusive SIP notifying the primary listing exchange, under LULD, if trading for an NMS stock does not exit a limit state within 15 seconds of entry during regular trading hours, then the primary listing exchange is required to declare a trading pause in that NMS stock and notify the exclusive SIP.

376 NYSE currently lists the largest proportion of companies in the S&P 500 Index. If this changes, NYSE and the other primary listing exchange would need to coordinate to ensure that these monitoring and notification responsibilities are transitioned effectively.

exchange would be required to provide MWCB trading halt and resumption messages to competing consolidators and self-aggregators, just as they do with the exclusive SIPs today.

4. Other Regulatory Data

Official opening and closing prices are closely tracked data elements used by market participants for a variety of purposes. The primary listing exchanges currently determine the official opening and closing prices for their listed stocks[377] and provide these data elements to the exclusive SIPs. In addition to Regulation SHO, LULD, and MWCB information, the proposed definition of regulatory data will also require primary listing exchanges to provide the official opening and closing prices for the NMS stocks they list to competing consolidators and self-aggregators. The Commission preliminarily believes that the primary listing exchanges, because they determine the official opening and closing prices for their listed stocks and have direct and immediate access to this information, are best situated to provide official opening and closing prices in their listed securities to competing consolidators and self-aggregators under the decentralized consolidation model so that this important information is included in the proposed consolidated market data made available to market participants.

In addition, the proposed definition of regulatory data would require the primary listing exchange for each NMS stock to calculate and make available to competing consolidators and self-aggregators an indicator of the applicable round lot size. As discussed above, the proposed definition of round lot would allocate stocks into five round lot categories based on each stock's average closing price on the primary listing exchange over the prior calendar month. The Commission preliminarily believes that such an indicator would help market participants

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377 See, e.g., NYSE Rule 123C(1)(e)(i) (Closing Procedures); NYSE Rule 123D(a) (Openings); Nasdaq Rule 4754(b)(4) (Nasdaq Closing Cross); Nasdaq Rule 4752(d) (Opening Process).

ascertain the applicable round lot size for each NMS stock on an ongoing basis.[378] Due to the primary listing exchanges' direct and immediate access to the official opening and closing prices of their listed stocks, the primary listing exchanges would be well-situated to calculate the monthly average closing price, the metric that will be used to allocate NMS stocks into round lot sizes under the proposed definition of round lot; assign a round lot size of 100, 20, 10, 2, or 1, as applicable; and include an indicator of the applicable round lot size in the data they make available to competing consolidators and self-aggregators.

The proposed definition of regulatory data would also require an exchange or association on which an NMS stock is traded to provide other data pertaining to regulatory requirements, including sub-penny execution indicators and trade-though exempt indicators. Additional regulatory messages such as these are included in the technical specifications of the Equity Data Plans. The Commission preliminarily believes that all of these regulatory messages provide important information to the market and facilitate compliance with regulatory requirements. Therefore, the Commission preliminarily believes that such regulatory messages should be included in the proposed definition of consolidated market data.

Finally, as discussed above,[379] as the markets continue to evolve, there may be a need to reflect new regulatory data elements in proposed consolidated market data. Accordingly, the Commission is proposing that the definition of regulatory data include a provision (as set forth in proposed consolidated market data) that would allow the definition of regulatory data to be amended to include additional regulatory data elements pursuant to amendments to effective

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378 Among other reasons, market participants would need to be aware of the applicable round lot size under the proposed amendments because several Commission rules would apply to round lot orders. See supra Section III.C.1(d)(i) (discussing the impact of the proposed definition of round lot on Rules 602, 603, 604, and 605 of Regulation NMS).

379 See supra Section III.B.

national market system plan(s). As discussed above, amendments to effective national market system plans must be filed with, and approved by, the Commission pursuant to Rule 608(b).

The Commission requests comment on the proposed definition of regulatory data in proposed Rule 600(b)(77). In particular, the Commission solicits comment on the following:

49. Do commenters believe that the elements of proposed regulatory data enumerated in proposed Rule 600(b)(77) reflect the elements that are necessary for trading in compliance with Commission rules, Equity Data Plans, or SRO rules? Why or why not? Should any additional data elements be included? Is there any significant regulatory information that is currently included in SIP data, including pursuant to the technical specifications to the Equity Data Plans, which is not captured by the proposed definition of regulatory data? If so, should such elements be included in the proposed definition of regulatory data? Please describe.

50. Should any of the proposed elements of regulatory data be excluded? Please explain.

51. Do commenters believe that the primary listing exchange should be responsible for calculating regulatory data, as defined? Why or why not? Would any of those responsibilities be more effectively allocated to competing consolidators? Do commenters believe another party should perform these calculations? Would the proposed definition of regulatory data impose any additional costs on primary listing exchanges?

52. In the context of the Short Sale Circuit Breaker, what benefits and/or challenges do commenters believe will result from the proposed change to a competing consolidator/self-aggregator model? Do primary listing exchanges anticipate utilizing a

consistent source of core data in making their determination regarding whether a Short Sale Circuit Breaker has been triggered? Or multiple sources? Please describe.

53. Will updating the primary listing exchange's existing Rule 201 written policies and procedures, as discussed above, present any operational (or other) challenges? If yes, please describe.

54. Would a round lot size indicator be useful to market participants and investors? Why or why not?

55. Do commenters believe that the primary listing exchange that has the largest proportion of companies included in the S&P 500 Index should be required to perform the MWCB-related functions described in the proposed definition of regulatory data? Why or why not? Should the primary listing market be determined by weighting the companies included in the S&P 500 Index? Why or why not? Do commenters believe that at least one other market should calculate this information as a backup contingency? Are there alternative approaches to the assignment of the S&P 500 Index monitoring and notification function? Would it be more appropriate to assign this function to another party? If so, please explain how any such other party could appropriately perform this function.

56. Do commenters believe that each national securities exchange and national securities association receiving a quote outside the price bands under the LULD Plan should be required to flag each quote as non-executable? Why or why not? Are there alternative approaches to the assignment of the non-executable quote flagging function? Would it be more appropriate to assign this function to another party? If so, please explain how any such other party could appropriately perform this function.

E. Proposed Definition of "Administrative Data"

In addition to current core data and current regulatory data, SIP data today includes additional technical information. Much of this information is enumerated in the technical specifications of the Equity Data Plans and described as "administrative" or "control" messages. Examples of administrative messages include market center and issue symbol identifiers.[380] Examples of control messages include messages regarding the beginning and end of trading sessions.[381] The Commission preliminarily believes that administrative messages can facilitate the efficient and accurate use of consolidated market data by market participants and should be included in the proposed definition of consolidated market data. Further, the Commission preliminarily believes that this information is useful to market participants and should continue to be widely available. The proposed definition is intended to capture administrative information that is currently provided in SIP data.[382] In order to capture this type of information, under proposed Rule 600(b)(2), "administrative data" would be defined as administrative, control, and other technical messages made available by national securities exchanges and national securities associations pursuant to the effective national market system plan or plans required under Section 242.603(b) or the technical specifications thereto as of [date of Commission approval of this proposal].

The Commission preliminarily believes that administrative data, as proposed to be defined and as currently exists, provides additional context for market participants to understand,

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380 See, e.g., UTP Data Feed Services Specification, supra note 142, at 20.

381 Id. at 33.

382 As discussed above, administrative data elements could be added to consolidated market data pursuant to amendments to the effective national market system plan or plans required under Section 242.603(b). See supra Section III.B.

and efficiently and accurately use, the proposed core and regulatory data to support their trading activities. For example, issue symbol and market center identifiers provide basic information necessary to understand to which stock the price and size information represented in core data relates and the specific exchange on which this interest is available, which informs decisions about where orders in such stocks should be directed. As such, this information should continue to be included in the proposed definition of consolidated market data. Moreover, the Commission preliminarily believes that SROs would be well-situated to provide administrative data messages, which relate to SRO-specific details such as the market-center identifiers or the beginning and ending of trading sessions, because SROs have direct and immediate access to this information and could efficiently integrate it into the data feeds that they will utilize to make available the data necessary for competing consolidators and self-aggregators to generate core and regulatory data.

The Commission requests comment on the proposed amendment to Rule 600(b)(2) to introduce a definition of administrative data. In particular, the Commission solicits comment on the following:

57. Do commenters believe that the Commission should propose a definition of administrative data? Why or why not? Should the Commission take an alternative approach? Why or why not?

58. Do commenters believe that the proposed definition of administrative data captures the market data that would be necessary or useful to market participants? Please explain. Does the proposed definition of administrative data include any market data that should not be included? Please explain.

59. Do commenters believe that each national securities exchange and national securities association should make available administrative data? Should any of the elements be provided by the primary listing exchange? Are there specific administrative data elements that should be consistent across all SROs? Are there any administrative data elements that competing consolidators or some other party, as opposed to national securities exchanges and national securities associations, should be required to generate or provide for inclusion in proposed consolidated market data? Please explain.

60. Do commenters believe that there are administrative data elements that should not require an NMS Plan amendment for inclusion in consolidated market data? For example, are there administrative data elements that are provided solely in the course of providing or utilizing other consolidated market data elements, such as core or regulatory data? Please explain. What procedural mechanism would be appropriate for including any such data elements in consolidated market data? How could any such data elements be distinguished from those which would require an NMS Plan amendment to be added to consolidated market data?

F. Proposed Definition of "Exchange-Specific Program Data"

In addition to current core data, regulatory data, and administrative data, current SIP data includes information related to individual exchange retail liquidity programs, which offer opportunities for retail orders to receive price improvement.[383] The Commission preliminarily

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383 See, e.g., CQS Binary Input Specifications (July 17, 2019), at 37 (describing a "retail interest indicator" as follows: "[w]hen Retail Price Improvement (RPI) interest is priced better than the Protected Best Bid or Offer (PBBO) by a minimum of $0.001, an indication of interest on the Bid, Offer, or both the Bid and Offer will identify that interest will be eligible to interact with incoming Retail Order interest."); supra note 47; NYSE Rule 107C; Securities Exchange Act Release No. 67347 (July 3, 2012), 77 FR

believes that existing retail liquidity programs and, in certain cases, other exchange-specific program information should continue to be included in proposed consolidated market data and is therefore proposing to define "exchange-specific program data" to include this information. Under proposed Rule 600(b)(32), exchange-specific program data, which would be included in the proposed definition of consolidated market data, would be defined as (i) information related to retail liquidity programs specified by the rules of national securities exchanges and disseminated pursuant to the effective national market system plan or plans required under Section 242.603(b) as of [date of Commission approval of this proposal] and (ii) other exchange-specific information with respect to quotations for or transactions in NMS stocks as specified by the effective national market system plan or plans required under Section 242.603(b).

Proposed Rule 600(b)(32)(i) pertains to information related to existing exchange retail liquidity programs that is currently disseminated pursuant to the Equity Data Plans. The dissemination of retail liquidity identifiers in the current SIP data encourages market participants to submit orders to, or otherwise participate in, such programs that the Commission has approved

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40673 (July 10, 2012) (NYSE Retail Liquidity Program Approval Order); CBOE BYX Rule 11.24; Securities Exchange Act Release No. 68303 (Nov. 27, 2012), 77 FR 71652 (Dec. 3, 2012) (CBOE BYX Retail Pilot Program Approval Order); Nasdaq BX Rule 4780; Securities Exchange Act Release No. 73702 (Nov. 28, 2014), 79 FR 72049 (Dec. 4, 2014) (NASDAQ BX Retail Pilot Program Approval Order). For example, NYSE's retail liquidity program defines a class of market participants known as Retail Liquidity Providers who may provide potential price improvement, in the form of a non-displayed order that is priced better than NYSE's best protected bid or offer called a Retail Price Improvement Order. See NYSE Rule 107C; NYSE Retail Liquidity Program Approval Order. Other NYSE members are allowed, but not required, to submit Retail Price Improvement Orders. Id. When there is a Retail Price Improvement Order in a particular security, NYSE disseminates an indicator, which is included in the SIP data, known as the Retail Liquidity Identifier, indicating that such interest exists. In response, a class of market participants known as Retail Member Organizations can submit a special type of order, called a Retail Order, to the exchange. A Retail Order would interact, to the extent possible, with available contra-side Retail Price Improvement Orders. Id.

as consistent with the Exchange Act, including the dissemination of the related retail liquidity program information as SIP data.[384] The proposed definition of exchange-specific program information would help ensure that the retail liquidity program information that is currently included in SIP data would be included in consolidated market data.

In addition, to the extent that an exchange, at its own discretion, determines to develop a new exchange-specific program in the future, proposed Rule 600(b)(32)(ii) would permit data elements related to any such program to be included in consolidated market data pursuant to the national market system plan or plans required under Section 242.603(b) or amendments thereto that are approved by the Commission. The Commission preliminarily believes that, to the extent that (i) exchanges develop new programs in the future,[385] and (ii) the broad dissemination of information about such programs as part of consolidated market data would facilitate participation in such programs, an amendment to the effective national market system plan(s) could be filed with the Commission under Rule 608 of Regulation NMS to include such information in consolidated market data. Accordingly, the Commission preliminarily believes that this information is useful and should be included in the definition of consolidated market data as proposed.

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384 See NYSE Retail Liquidity Program Approval Order, supra note 383 (stating that "the Retail Liquidity Identifier will be disseminated through the consolidated public market data stream, and thus be widely viewable by market participants, and that members of the Exchanges that would not otherwise participate as Retail Liquidity Providers would be able to participate in the Program by submitting Retail Price Improvement Orders").

385 See supra note 92 and accompanying text. Currently, the only exchange-specific program data disseminated pursuant to the Equity Data Plans relates to retail liquidity programs.

The Commission requests comment on the proposed amendment to Rule 600(b)(32) to introduce a definition of exchange-specific program data. In particular, the Commission solicits comment on the following:

61. Do commenters believe that the proposed exchange-specific program data should be included in proposed consolidated market data? Why or why not?

62. Do commenters believe that information related to retail liquidity programs currently established pursuant to exchange rules should be included in the proposed definition of exchange-specific program data? Why or why not? Do commenters believe that the inclusion of data elements related to these programs in current SIP data is useful for trading or investment decisions? Please explain.

63. Do commenters believe that the proposed definition of exchange-specific program data should permit data elements related to new exchange-specific programs that may be established to be included in consolidated market data pursuant to amendments to the effective national market system plan or plans required under Section 242.603(b)? Why or why not?

IV. Need for and Proposed Enhancements to Provision of Consolidated Market Data

The Commission is proposing to replace the existing centralized, exclusive consolidation model for SIP data[386] with a decentralized, competitive consolidation model. The Commission preliminarily believes this model would foster competition in the consolidation and dissemination of proposed consolidated market data, better serve the needs of market participants and investors, and help mitigate the influence of certain conflicts of interest inherent in the

[386] See supra Sections I and II.A.

existing exclusive SIP model.[387] The Commission also preliminarily believes that the proposed approach would modernize the infrastructure of the national market system by eliminating the existing, outdated centralized architecture for data consolidation and fostering the use of more competitive technologies for the collection, consolidation, and dissemination of proposed consolidated market data. Together, these would reduce latency differentials that currently exist between SIP data and proprietary data. Furthermore, the Commission preliminarily believes that this model will address concerns about the significant costs that accompany the exclusive[388] structure that currently exists for the aggregation and dissemination of SIP data.

A. Existing Centralized Consolidation Model

Today, SIP data is collected, consolidated, and disseminated to investors and market participants through a centralized consolidation model with an exclusive SIP for each NMS stock centrally collecting market data transmitted from the dispersed SRO data centers and then redistributing consolidated SIP data to end-users. Each exchange and FINRA is required to transmit its own data for each NMS stock to the appropriate exclusive SIP.[389] As provided under Rule 603(b), the exclusive SIPs do not compete with each other in the collection, consolidation, or dissemination of SIP data.[390]

For many years, this centralized consolidation model served investors well by providing an accurate, reliable, and fair stream of SIP data that was considered prompt relative to the

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387 These conflicts of interest are discussed in Section VI.A.2 infra.

388 See Bloomberg Decision, supra note 37, at 3, 4. See also infra note 439.

389 See supra note 42 and accompanying text.

390 See supra note 21. The Senate Report stated that an exclusive processor of market information is, "in effect, a public utility, and thus it must function in a manner which is absolutely neutral with respect to all market centers, all market makers, and all private firms." See Senate Report, supra note 5, at 7.

prevailing technological standards of the time. Technological advances as well as the order routing and trading strategies that developed in response to the adoption of Regulation NMS have greatly increased the speed and automation of both markets and common trading strategies. These changes, along with the provisions adopted in Regulation NMS that allow for the sale of proprietary data products,[391] have created incentives for exchanges to develop enhanced proprietary data products that they sell to the same market participants that are subscribers to the SIP data, and to offer connectivity products and services (e.g., co-location, fiber connectivity, and wireless connectivity) that provide low-latency access to the proprietary data products. Further, as the markets evolved and depth of book data became more important for some market participants, the exchanges continued to improve their proprietary data feeds without similarly improving the exclusive SIPs to reflect this market evolution. The content and latency differentials between SIP data and the proprietary market data products disseminated directly by the exchanges have become increasingly material.[392]

There are widespread and significant concerns about the current method of disseminating SIP data and its associated latencies.[393] The centralized consolidation model of the Equity Data Plans and the exclusive SIPs suffers from three specific sources of latency disadvantage: (a) geographic latency, (b) aggregation or consolidation latency, and (c) transmission or communication latency.

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391 See Regulation NMS Adopting Release, supra note 10, at 37567.

392 See infra Section VI.B.2(b).

393 See, e.g., Letter to Brent J. Fields, Secretary, Commission, from Tyler Gellasch, Executive Director, Healthy Markets Association, 6 (Oct. 23, 2018) ("Healthy Markets Association Letter I") ("SIP data feeds are still persistently slower and offer less information than is available through the private data feeds and connectivity offerings sold by the exchanges.").

Geographic latency, as used herein, refers to the time it takes for data to travel from one physical location to another, which must also take into account that data does not always travel between two locations in a straight line. Greater distances usually equate to greater geographic latency, though geographic latency is also affected by the mode of data transmission, as discussed below. The Commission understands that geographic latency is typically the most significant component of the additional latency that SIP data feeds experience compared to proprietary data feeds.[394] Because each exclusive SIP must collect data from geographically-dispersed SRO data centers, consolidate the data, and then disseminate it from its location to end-users, which are often in other locations, this hub-and-spoke form of centralized consolidation creates additional latency.[395] For example, information about quotes and trades on Nasdaq for NYSE-listed securities incurs latency as it travels from Nasdaq's data center in Carteret approximately 34.5 miles to the CTA/CQ SIP in Mahwah, and then back to Carteret.[396]

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394 See, e.g., Letter to Brent J. Fields, Secretary, Commission, from Michael Blaugrund, Head of Transactions, New York Stock Exchange, 1 (Oct. 24, 2018) ("Blaugrund Letter") (stating that, as "processing time approaches zero, it is clear that the time required for trade and quote data to travel from Participant datacenter -> SIP datacenter -> Recipient datacenter, or 'geographic latency,' is a larger portion of the total latency.").

395 One commenter has stated "[w]hile it is true that the latencies of the SIPs are slightly greater than those of direct exchange feeds, it is important to remember that the SIPs are a consolidation of all market data feeds, not a single feed. Therefore, the SIPs must first aggregate data from multiple exchanges located in geographically disparate data centers before processing and transmitting it to the market, which means their feeds will always be, by definition, slightly slower than the data a user can receive directly from an exchange." See Statement from the SIP Operating Committees Adding to SEC Commissioner Jackson's Recent Comments (Sept. 24, 2018), available at https://www.nyse.com/publicdocs/ctaplan/notifications/trader-update/Media_Statement_from_SIP_Operating_Committees_Chair_Emily_Kasparov.pdf ; Nasdaq, Total Markets Report, supra note 127, at 20.

396 See Roundtable Day One Transcript at 127 (Mark Skalabrin, Redline Trading Solutions) (stating that customers cannot be competitive using SIP data due to geographic latency, explaining "[i]f you're sitting at Secaucus and you get a direct feed tick from BATS, it shows up in a few microseconds from when they publish it. That same tick for the SIP

Aggregation or consolidation latency, as used herein, refers to the amount of time an exclusive SIP takes to aggregate the multiple sources of SRO market data into SIP data and includes calculation of the NBBO. This latency reflects the time interval between when an exclusive SIP receives data from an SRO and when it disseminates SIP data to the end-user. For years, market participants have claimed that the exclusive SIP aggregation speeds have remained measurably slower and uncompetitive with private market offerings.[397] For example, in the second quarter of 2010, the average aggregation latency[398] for the Tapes A and B quotes and

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for Nasdaq-listed symbols goes to Carteret, for NYSE-listed symbols they go to Mahwah and they come back again. The real numbers are, for one, about 350 microseconds and the other about close to a millisecond in latency for those to show up for someone using the SIP to get the BATS tick. So this is just an architectural – an obsolete architecture, really, for an automated trading system in today's world . . . you can't be competitive with those kind of latencies compared to just getting it directly from the exchange.").

397 See Joel Hasbrouck, Price Discovery in High Resolution, New York University (Aug. 9, 2019 draft) ("The first analysis examines the extent to which the conventional source of market data (the consolidated tape) accurately reflects the prices observed by agents who subscribe (at additional cost) to direct exchange feeds. At a one-second resolution, the information share of the direct feeds is indistinguishable from that of the consolidated tape. At resolutions of 100 and 10 microseconds, however, the direct feeds are totally dominant, and the consolidated share approaches zero."); Elaine Wah and Michael P. Wellman, Latency Arbitrage, Market Fragmentation, and Efficiency: A Two-Market Model, University of Michigan (2013) ("Given order information from exchanges, the SIP takes some finite time, say [X] milliseconds, to compute and disseminate the NBBO. A computationally advantaged trader who can process the order stream in less than [X] milliseconds can simply out-compute the SIP to derive NBBO*, a projection of the future NBBO that will be seen by the public. By anticipating future NBBO, an HFT algorithm can capitalize on cross-market disparities before they are reflected in the public price quote, in effect jumping ahead of incoming orders to pocket a small but sure profit."); Herbert Lash, Potential Profit from U.S. "Latency Arbitrage" Trading May Be $3 Billion – Study, Reuters (Feb. 25, 2016).

398 Average latency is only one latency metric. Another metric for the use of evaluating the performance of the exclusive SIP is latency at the 99th percentile, which means that 99% of exclusive SIP latency observations for a given period were below that value. The 99th percentile is often reflective of periods of peak message traffic. These outlier periods tend to be among the more important trading periods during the day, and exclusive SIP latencies have tended to lag in performance during these periods. For example, in the

trades feeds exceeded 6,000 microseconds, and the Tape C feeds exceeded 5,500 microseconds.[399] In recent years, the Equity Data Plans operating committees have made some improvements to aspects of the exclusive SIPs and related infrastructure, including to address aggregation latency.[400] For example, as of the second quarter of 2019, Tapes A and B reduced average quote feed aggregation latency to 69 microseconds and trade feed aggregation latency to 139 microseconds.[401] As another example, Tape C reduced its average quote feed aggregation latency to an average of 16.9 microseconds for quotes and 17.5 microseconds for trades in the

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second quarter of 2019, the latency measurement at the 99th percentile for Tapes A and B trades was 648 milliseconds, which is over 4 times slower than the average latency. See CTA, Key Operating Metrics of Tape A&B U.S. Equities Securities Information Processor (CTA SIP), available at https://www.ctaplan.com/publicdocs/CTAPLAN_Processor_Metrics_2Q2019.pdf (last accessed Jan. 22, 2020).

399 Id.; see also UTP Q4 2016 – Dec. Tape C Quote and Trade Metrics, available at http://www.utpplan.com/DOC/UTP_Website_Statistics_-_Q4_2016_-_December.pdf (last accessed Jan. 22, 2020).

400 One commenter stated, "In the last three years, the SIP Operating Committees have invested in the technology that powers them, increasing resiliency and redundancy while reducing latency . . ." See Statement from the SIP Operating Committees Adding to SEC Commissioner Jackson's Recent Comments, supra note 395. Following the Nasdaq UTP SIP Outage—and a meeting between the equities and options exchanges, FINRA, DTCC, the Options Clearing Corporation, and the then-Chair of the Commission—the Equity Data Plans' operating committees discussed with Commission staff the operating committees' plans for the exclusive SIPs "designed to improve operational resiliency, strengthen interoperability standards and disaster recovery capabilities, enhance governance, accountability, and establish a clear testing framework for the industry." See Self-Regulatory Organizations Response to SEC for Strengthening Critical Market Infrastructure (Nov. 12, 2013), available at https://ir.theice.com/press/press-releases/all-categories/2013/11-12-2013; NYSE Group Letter, at 3 ("[E]xchanges have invested significantly in the operation of the [SIPs], resulting in improved resilience and reduced latency, all while managing increased volumes."); infra Section VI.B.

401 See CTA, Key Operating Metrics of Tape A&B U.S. Equities Securities Information Processor (CTA SIP), available at https://www.ctaplan.com/publicdocs/CTAPLAN_Processor_Metrics_2Q2019.pdf (last accessed Jan. 22, 2020).

second quarter of 2019.[402] As shown by these latency statistics, however, aggregation latency for the CTA/CQ SIP data continues to be meaningfully greater than that of Nasdaq UTP SIP data, despite these improvements.[403]

Transmission latency, as used herein, refers to the time interval between when data is sent (e.g., from an exchange) and when it is received (e.g., at an exclusive SIP and/or at the data center of the subscriber), and the transmission latency between two fixed points is determined by the transmission communications technology through which the data is conveyed. Transmission latency will also vary depending on the geographic distance between where the data is sent and where it is received. There are several options currently used for transmitting market data, such as fiber optics, which typically are used by the exclusive SIPs for receipt and dissemination of SIP data, and wireless microwave connections, which the exchanges offer as an alternative for their proprietary data feeds but not for SIP data. Fiber optics use light to transmit data through glass fiber cables. Wireless microwave connections (including extremely high frequency

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402 See UTP Q3 2019 – July Tape C Quote and Trade Metrics, available at http://www.utpplan.com/DOC/UTP_Website_Statistics_Q3-2019-July.pdf (last accessed Jan. 22, 2020). Nasdaq has stated that the Nasdaq UTP SIP is "faster at processing quote and trade messages than any Nasdaq-owned exchange trading system" with an average SIP processing time of 16 microseconds, compared to 25 microseconds "from entry of an order on the Nasdaq stock market until the associated quotation or execution or execution message is transmitted on the exchange's proprietary TotalView data feed." See Wittman Letter at 9. These latencies are perceived to be at or near competitive market standards. See also Roundtable Day One Transcript at 106 (statement of Oliver Albers, Nasdaq) ("There have been vast improvements in SIP data in recent years, even as SIP revenue to exchanges has fallen. The Nasdaq UTP SIP has an average latency of just 16 millionths of a second . . .The Nasdaq UTP SIP can also handle 10 billion messages per day, 20 times more than a decade ago, and significant cybersecurity and fraud prevention investments by Nasdaq and other operators have increased the overall market efficiency and resiliency.").

403 See Nasdaq Total Markets Report, supra note 127, at 19, n.19 (stating that the CTA/CQ SIP "currently operates with over 100 microseconds of latency, which is not up to the standard that investors have come to expect in the modern markets.").

millimeter waves) transmit data through the air via towers in line of sight of one another and are commonly used to transmit market data today. Fiber optics are generally more reliable than wireless networks since the data signal is less affected by weather;[404] however, fiber tends to suffer greater latency because of its dependence on geography: the cables often cannot be laid in the most direct manner, adding distance for the signal to travel. Light also travels slower through fiber than microwaves travel through the air. Laser transmission, a more recent addition to high speed market data transmission, is another wireless mode of transmission that is known to be faster than microwaves but less susceptible to weather conditions.[405]

The modes of transmission for SIP data are typically slower than the modes of transmission used for proprietary data. For example, proprietary data products offered by the exchanges often rely on low-latency wireless connections,[406] whereas the Equity Data Plans rely

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404 See Andriy Shkilko and Konstantin Sokolov, Every Cloud Has a Silver Lining: Fast Trading, Microwave Connectivity and Trading Costs (Apr. 2019), available at https://ssrn.com/abstract=2848562.

405 See Reuters, Lasers, Microwave Deployed in High-Speed Trading Arms Race (May 1, 2013), available at https://www.reuters.com/article/us-highfrequency-microwave/lasers-microwavedeployed-in-high-speed-trading-arms-race-idUSBRE9400L920130501; ExtremeTech, New Laser Network between NYSE and Nasdaq Will Allow High-Frequency Traders to Make Even More Money (Feb. 14, 2014), available at https://www.extremetech.com/extreme/176551-new-laser-network-between-nyse-andnasdaq-will-allow-high-frequency-traders-to-make-even-more-money; "The World's First Laser Network for Transporting Equities Market Data between Nasdaq and BATS/DirectEdge is Now Live and Operational" (July 22, 2015), available at https://anovanetworks.com/the-worlds-first-laser-network-for-transporting-equities-market-data-between-nasdaq-batsdirectedge-is-now-live-operational/; ICE Global Network: New Jersey Metro, available at https://www.theice.com/market-data/connectivity-and-feeds/wireless/new-jersey-metro (last accessed Jan. 22, 2020).

406 Some of these services are solely offered by exchanges within the facility of an exchange (e.g., co-location connectivity at NYSE's data center in Mahwah and Nasdaq's co-location at its data center in Carteret) and some are offered by both exchanges and other third party providers (e.g., fiber and wireless connectivity between data centers). See, e.g., Nasdaq Trade Management Services – Wireless Connectivity Suite, available at http://n.nasdaq.com/WirelessConnectivitySuite (last accessed on Jan. 22, 2020)

on fiber optics for connectivity.[407] Additionally, the NYSE, as the operator of the CTA/CQ SIP, has required that access to the CTA/CQ SIP be through the use of the NYSE's IP local area network. Recently, the NYSE submitted a proposed rule change to amend its prices related to co-location services to provide access to NMS feeds. The NYSE stated in that proposed rule change that the operating committee of the CTA and CQ Plans instituted this access requirement because of the IP network's security, resiliency, and redundancy.[408] The NYSE stated that the IP network is not a low-latency network, so "the requirement to use the IP network to access the NMS feeds introduces a layer of latency."[409] The NYSE stated that it is in the process of

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(describing low-latency wireless network technology to deliver market data); ICE Global Network - Wireless, available at https://www.theice.com/market-data/connectivity-and-feeds/wireless (last accessed on Jan. 22, 2020) (describing low-latency wireless connectivity options between trading hubs).

407 See Roundtable Day One Transcript at 99 (Stacey Cunningham, NYSE) ("[i]n the short term, we could use wireless technology to deliver SIP and overcome some of the geographic latencies."); at 156–157 (Oliver Albers, Nasdaq) (stating that Nasdaq could consider permitting microwave transmission from the exchanges to the Nasdaq UTP SIP); ICE Global Network & Colocation: Technical Specifications (Oct. 2019), available at https://www.nyse.com/publicdocs/data/IGN_Colo_US_Technical_Specifications.pdf.

408 See NYSE Low-Latency SIP Filing, supra note 47. NYSE currently assesses the following colocation fees for access to the IP network: (1) for a 1 gb circuit, $2,500 per connection initial charge plus $2,500 monthly per connection; (2) for 10 gb circuit, $10,000 per connection initial charge plus $11,000 monthly per connection; and (3) for a 40 gb circuit, $10,000 per connection initial charge plus $18,000 monthly per connection. See NYSE Price List 2020, available at https://www.nyse.com/publicdocs/nyse/markets/nyse/NYSE_Price_List.pdf (last accessed Jan. 22, 2020).

409 See NYSE Low-Latency SIP Filing, supra note 47, at 47594. The filing defines "NMS feeds" to include the data streams of the Consolidated Tape System, the Consolidated Quote System, and the Options Price Reporting Authority ("OPRA").

building a low-latency network alternative to connect to the CTA/CQ SIP that would result in a one-way latency reduction of over 140 microseconds.[410]

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410 Id. The Commission understands this to mean that, currently, each of the CTA/CQ Plan participants must transmit its data through connectivity options that have a round-trip latency of at least 280 microseconds [140 microsecond one-way latency) * 2 = 280 microsecond round-trip latency]. The Commission believes that this is in addition to the transmission latency that is in the published CTA average aggregation latency metrics of between 69 microseconds for the quote feed and 139 microseconds for the trade feed. See CTA, Key Operating Metrics of Tape A&B U.S. Equities Securities Information Processor (CTA SIP), supra note 398 (regarding the second quarter of 2019). The round-trip latency of 280 microseconds would increase the 2Q19 realized CTA aggregation latency to 349 microseconds (from 69 microseconds) for the quotes feed and 419 microseconds (from 139 microseconds) for the trade feed. At the same time, the Commission understands that NYSE, which owns the CTA/CQ SIP, offers non-SIP proprietary data transmission to end-users via faster microwave networks. See, e.g., ICE Global Network: Chicago – New Jersey, available at https://www.theice.com/market-data/connectivity-and-feeds/wireless/chicago-to-new-jersey (last accessed Jan. 22, 2020) (describing ICE's microwave route between the Chicago metro trading hub to Nasdaq's data center in Carteret, NJ); ICE Global Network: New Jersey Metro, available at https://www.theice.com/market-data/connectivity-and-feeds/wireless/new-jersey-metro (last accessed Jan. 22, 2020) (describing ICE's laser and millimeter wave route between ICE's Mahwah data center and the Carteret and Secaucus data centers. The Commission has instituted proceedings to allow for additional analysis and input concerning proposed fees in connection with the NYSE Low-Latency SIP Filing. See Securities Exchange Act Release No. 87699 (Dec. 9, 2019), 84 FR 68239 (Dec. 13, 2019). In addition, the CTA and OPRA recently made changes that permit access to the NMS feeds with an expected reduction in latency. "The NMS Network uses low-latency network switches and optimized topology to minimize latency, which [CTA and OPRA] expects will result in one-way latency, across all network hops, of approximately 5us, including fiber latency. This is a substantial improvement over the current inbound one-way latency of approximately 144us over [Secure Financial Transaction Infrastructure]." See NMS Network Customer FAQs, at 3 (2019), available at https://www.ctaplan.com/publicdocs/ctaplan/notifications/trader-update/NMS_Network_FAQ.pdf (last accessed Jan. 22, 2020); CTA and UTP Annual Letter, supra note 181, at 1 ("In its continuing effort to reduce latency and improve resiliency, the CTA will be making two improvements to the CTA/CQ feeds this year. First, subscribers will be able to connect to a new, dedicated, low latency NMS network to access CTA/CQ feeds. Subject to SEC approval, this should be available in the first quarter of 2020. Second, the CTA will complete its migration to NYSE's new Pillar technology, which will provide substantial latency reductions for the CTA/CQ feeds. CTA anticipates that it will launch the new technology in the summer of 2020.").

Over the past several years, market participants have increasingly raised concerns about these various forms of latency and how they affect their ability to participate competitively in today's markets and provide best execution to their customers. Market participants have argued that as significant investments have been made in the proprietary data environment, the Equity Data Plans, which are operated by the SROs, have not made—or have been slow to make—the investments necessary to address most of these concerns.[411] As a result, the latency differentials, in their various forms, between SIP data and proprietary data are significant enough that market participants believe they affect their ability to trade competitively and to provide best execution to customer orders.[412]

Proprietary data products often rely on low latency wireless connections, and the data is transmitted directly from each exchange to the data center of the subscriber without first having to travel to a centralized consolidation location as is the case with the exclusive SIPs. In

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411 See Letter from Theodore R. Lazo, Managing Director and Associate General Counsel, SIFMA, to Mary Jo White, Chair, Commission, 8–9 (Oct. 24, 2014), available at https://www.sec.gov/comments/s7-02-10/s70210-422.pdf; Letter from John Ramsay, Chief Market Policy Officer, Investors Exchange LLC, to Vanessa Countryman, Secretary, Commission (Sept. 24, 2019) ("Ramsay Letter II") (attachment to letter), available at https://www.sec.gov/comments/4-729/4729-6190352-192448.pdf; Proposed Governance Order, supra note 8.

412 See, e.g., Roundtable Day One Transcript at 64 (Brad Katsuyama, IEX) ("[a]nyone who cares or is, you know, making machine-level decisions cannot use the SIP just from a speed standpoint . . . [b]ut if full information and speed become important, which it is for the majority of large players maintaining their own electronic trading platform, then I would not say the SIP serves much of a purpose to them."); at 66 (Mehmet Kinak, T. Rowe Price ("[t]his is a best execution obligation. We are obligated to try and produce best execution on every single order that we have. If our brokers are not aligned in that manner to use the most direct, the fastest, the most robust feeds they can get their hands on, then we will trade with someone else."); T. Rowe Price Letter at 2 (explaining that broker-dealers must purchase proprietary data because SIP data is slow and not as expansive as proprietary data and that even if the Commission provided a safe harbor permitting broker-dealers to fulfill their best execution requirements by relying on SIP data, broker-dealers believe that they have an obligation to obtain the "more robust, faster" proprietary data feeds).

addition, new entities have entered the market data space by providing specialized market data products for subscribers using proprietary data feeds. In essence, the provision of proprietary data to market participants via a decentralized consolidation model has developed in a competitive environment that has enhanced content and reduced latency for market participants; however, improvements to latency occurred more slowly and to a lesser extent with the exclusive SIPs.[413] The concurrent existence of both the exclusive, centralized consolidation model for SIP data and the decentralized consolidation model for enhanced proprietary data has resulted in a two-tiered market data environment, where those participants that can reasonably afford and choose to pay for the proprietary feeds receive other content rich data faster than those who do not, such as smaller market participants that face higher barriers to entry from data and other exchange fees.[414] The Commission is concerned about this disparity and its effect on investors. Accordingly, the Commission is proposing to address the latency differentials and reduce the asymmetries that exist within this two-tiered environment.

B. Proposed Decentralized Consolidation Model

To enhance the speed and quality of the collection, consolidation, and dissemination of the proposed consolidated market data, the Commission is proposing a decentralized consolidation model with competing consolidators[415] and self-aggregators[416] to replace the existing centralized consolidation model which relies on the exclusive SIPs.[417]

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413 See supra note 411 and accompanying text.

414 See infra note 418.

415 See infra Section IV.B.2.

416 See infra Section IV.B.3.

417 The Commission is taking an incremental approach to addressing market data infrastructure issues and is at this time addressing only the market data infrastructure issues of NMS stocks. The market data needs of options market participants and equities

The Commission preliminarily believes that a decentralized consolidation model with competing consolidators and self-aggregators would benefit market participants because it would significantly reduce the geographic, aggregation, and transmission latency differentials that exist between SIP data and proprietary data that have increasingly reduced the utility of SIP data and disadvantaged, in particular, smaller market participants.[418] Specifically, as discussed above, the Commission preliminarily believes that the decentralized consolidation model would reduce geographic latency by facilitating the ability of proposed consolidated market data to be delivered to subscribers more directly, without going to a separate location to be consolidated by

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market participants are different, as are the market structures for options and equities more broadly. The Commission's proposal to expand the content of consolidated market data and introduce a decentralized consolidation model for its distribution to market participants has been designed for NMS stocks. The Commission may in the future consider the market data infrastructure of listed options. See also Proposed Governance Order, supra note 8.

418 See infra Section VI.C.2(c). Roundtable panelists stated that broker-dealers do not have the option to forgo buying the proprietary data in meeting their clients' needs because the SIPs are slower and not as expansive. See Roundtable Day One Transcript at 65–66 (Mehmet Kinak, T. Rowe Price); T. Rowe Price Letter at 2; Roundtable Day Two Transcript at 245 (Tyler Gellasch, Healthy Markets) (asking how a small firm can be competitive when it has to spend $50,000 per month to connect to one exchange group's proprietary data feeds), at 280–281 (describing market data as a mandatory "tax" on doing business that imposes a disproportionately large burden on small brokers). But see Robert P. Bartlett, III and Justin McCrary, How Rigged Are Stock Markets? Evidence from Microsecond Timestamps (2017) ("Bartlett and McCrary"), available at https://www.law.berkeley.edu/wp-content/uploads/2019/10/bartlett_mccrary_latency2017.pdf ("[O]ur analysis suggests SIP reporting latencies generate remarkably little scope for exploiting the informational asymmetries available to subscribers to exchanges' direct data fees."). Bartlett and McCrary, however, cautioned that their "results should not be over-interpreted" and noted that their results "do not rule out other types of latency arbitrage that might be prevalent in the current environment." Roundtable respondents supported the view that a competing consolidator model would reduce the speed differential between current SIP data and proprietary data. See, e.g., Roundtable Day One Transcript at 49–50 (Prof. Hal Scott, Harvard University); SIFMA Letter II.

the exclusive SIPs.[419] In addition, the proposed decentralized consolidation model likely would reduce geographic latency by allowing consolidation to occur at the data center where a data end-user is located instead of occurring only at the CTA/CQ SIP and the Nasdaq UTP SIP data centers. This arrangement would permit competing consolidators to receive data from each exchange directly at the point of consolidation and latency-sensitive data end-users to receive proposed consolidated market data at the same location if they so desired.[420] This would eliminate the geographic latency necessarily encountered when a latency-sensitive data end-user receives consolidated data from an exclusive SIP that is in a separate data center and that exclusive SIP is consolidating data from exchanges that are located in other data centers.

In addition, the Commission preliminarily believes that the introduction of competitive forces will lead to improvements in the use of more competitive, low latency aggregation and transmission technologies for consolidated market data. Specifically, competition should incentivize competing consolidators to minimize the amount of time it takes to aggregate SRO data into proposed consolidated market data.[421] In addition, competition could incentivize competing consolidators to reduce transmission latency by offering superior connectivity options that are faster than fiber optics, such as microwave, laser, or other wireless means of

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419 As noted above, the current Equity Data Plan architecture requires SRO data to be sent from an SRO's data center to the exclusive SIP (typically in a separate data center in a different geographic location) for consolidation, prior to then being transmitted from the plan processor's data center to market data users (again, typically in a separate data center in a different geographic location) once the data is consolidated. See supra notes 395–396 and accompanying text.

420 If a competing consolidator chooses not to consolidate data at the data center of its users, the Commission believes the users would still benefit from reduced aggregation and transmission latencies resulting from the proposed decentralized consolidation model. See infra notes 421–422 and accompanying text.

421 The Commission is proposing to require each competing consolidator to publish on its website its latency statistics on a monthly basis. See infra Section IV.B.2(e)(ii).

connectivity.[422] Competing consolidators and self-aggregators would not be restricted to the transmission methods mandated by the Equity Data Plans[423] and would compete based on the efficiency of their aggregation of raw SRO data to generate proposed consolidated market data. By introducing competitive forces into the collection, consolidation, and dissemination of proposed consolidated market data, the Commission preliminarily believes such data could be delivered to market participants with improved efficiencies and latencies comparable to proprietary market data products.

To implement this model, the Commission proposes to: (1) amend Rule 600 to introduce definitions of competing consolidator and self-aggregator; (2) amend Rule 603(b) to require the SROs to provide their NMS information to competing consolidators and self-aggregators in the same manner the SROs make available this information to any person and to remove the requirement that there be only one plan processor for each NMS stock; and (3) adopt new Rule 614 to require the registration of competing consolidators and establish the obligations with which they must comply and a new Form CC for competing consolidator registration. In addition, the Commission is proposing to amend Regulation SCI to expand the definition of "SCI entities" to include competing consolidators because they would be sources of proposed consolidated market data, and therefore would "play a significant role in the U.S. securities markets and/or have the potential to impact investors, the overall market, or the trading of individual securities."[424] As discussed below, the Commission preliminarily believes that if a competing consolidator's consolidated market data feed became unavailable or otherwise

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422 See infra Section VI.C.2(c).

423 As noted above, the NYSE and Nasdaq offer faster wireless connectivity to their data centers and other data centers. See supra Section IV.A.

424 See Regulation SCI Adopting Release, supra note 28, at 72258.

unreliable, it could have a significant impact on the trading of securities, and could interfere with the maintenance of fair and orderly markets.[425] Accordingly, this change would subject competing consolidators to the requirements of Regulation SCI. Under this new proposed decentralized consolidation model, the SROs would be required to provide their NMS information to competing consolidators and self-aggregators and the existing exclusive SIP model would cease.

The Commission preliminarily believes that the implementation of a decentralized consolidation model with competing consolidators and self-aggregators will fundamentally improve the way consolidated market data, as proposed, is provided in the U.S. Among other things, this model should materially reduce information asymmetries for those market participants who rely exclusively on the exclusive SIP feed and facilitate the ability to achieve best execution for those broker-dealers who rely exclusively on the SIP feed. Finally, the Commission believes that the introduction of competition into the collection, consolidation, and dissemination of the proposed consolidated market data should help ensure that such data continues to be provided in an accurate, reliable, prompt, and fair manner[426] as the market evolves in the future.

1. Access to Data

The Commission is proposing to amend Rule 603(b) of Regulation NMS to reflect the decentralized consolidation model by requiring each SRO to provide its NMS information, including all data necessary to generate proposed consolidated market data, to all competing

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425 See infra Section IV.B.2(f).

426 See 15 U.S.C. 78k-1(c)(1)(B).

consolidators and self-aggregators[427] in the same manner and using the same methods, including all methods of access[428] and data formats, as such SRO makes available any information to any other person.[429]

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427 The proposal does not include a requirement that the SROs provide a standardized format for the data because the Commission preliminarily believes that imposing a standardized format would increase costs and burdens on the SROs and that competing consolidators and self-aggregators would be able to handle data received in multiple formats, as determined by each SRO, as is the case today for proprietary data. The Commission is proposing to require each SRO to offer the same access or transmission options and the same formats offered for proprietary data to proposed consolidated market data. See proposed amendment to Rule 603(b).

428 For example, the same access options available to proprietary feeds, including, but not limited to transmission medium (i.e., fiber optics or wireless), multicast communication, colocation options, physical port, logical port, bandwidth, and FPGA, would be required to be made available for proposed consolidated market data feeds. Further, any enhancements to proprietary feed methods of access should similarly be made to consolidated market feeds.

429 Four commenters supported this approach. One commenter stated that for a new consolidator model to be competitive, the consolidators would have to have the right to buy data from exchanges on non-discriminatory terms. See Ramsay Letter II (attachment to letter). Another commenter stated that the economic terms of co-located competing consolidators at an exchange data center should be equivalent to those offered to the exchange's trading members. This commenter also suggested that any exchange that operates a competing consolidator in its data center should have policies and procedures to ensure that competing consolidators in the same data center have equal access to the exchange's feeds at equal latencies. This commenter also supported the provision of direct market data feeds by exchanges to competing consolidators. See Letter to Brent J. Fields, Secretary, Commission, from Melissa MacGregor, Managing Director and Associate General Counsel, and Theodore R. Lazo, Managing Director and Associate General Counsel, SIFMA, dated Oct. 24, 2018 ("SIFMA Letter") (attachment to letter). The third commenter stated that all market data distributors should receive the same market data at the same time and at the same cost, which may require exchange proprietary data feeds to be delayed to match the data receipt time of affiliated or third-party SIPs. The commenter said that exchanges, affiliates, and third parties then would be able to compete to provide market data to recipients. See Letter to Jay Clayton, Chairman, Commission, from Tyler Gellasch, Executive Director, Healthy Markets Association, 3 (Jan. 3, 2020) ("Healthy Markets Association Letter III"). The fourth commenter suggested that the Commission update its interpretations for Rule 603(a) to emphasize "the synchronized availability of data between SIP and exchanges' proprietary products to satisfy the fair and reasonable, as well as non-discriminatory principles." See Letter to Vanessa Countryman, Secretary, Commission, from Kelvin To, Founder and

Under the Commission's proposed approach, competing consolidators and self-aggregators would have to collect, and the SROs would provide, all of each SRO's market data that is necessary to generate consolidated market data as proposed,[430] and the competing consolidators and self-aggregators would aggregate the SROs' market data to generate the proposed consolidated market data. For exchange data, an exchange could leverage its existing offerings and infrastructure and make available to competing consolidators and self-aggregators its current proprietary data products that contain data elements that are specified in the proposed definition of consolidated market data,[431] or an exchange could develop a new market data product that contains only the data elements that are specified in the proposed definition of consolidated market data. Competing consolidators and self-aggregators could choose to purchase products that include only the proposed consolidated market data elements or products that contain elements of both proposed consolidated market data and other proprietary data. However, all SROs must offer market data, and access to such data, to those competing

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President, Data Boiler Technologies, LLC, 8 (Dec. 6, 2019) ("Data Boiler Letter"). The Commission believes that its proposed amendment to Rule 603(b), as discussed below, would achieve this result by requiring the same manner and methods, including all methods of access and the same format for competing consolidators, self-aggregators and subscribers of proprietary data.

430 One commenter advocated that each exchange provide a single data feed to market participants. The commenter said that a single data feed "would better serve market participants from the standpoint of equality and fairness." See T. Rowe Price Letter at 3. The proposed rule does not require the SROs to provide a single feed. The Commission preliminarily believes that the SROs should be able to utilize their current data feeds to make available the data necessary to generate proposed consolidated market data. This would reduce the costs and burdens of implementing the proposed amendments to Rule 603(b).

431 For example, an exchange could make available a current proprietary DOB product that contains elements of proposed core data to competing consolidators and self-aggregators for purposes of Rule 603(b).

consolidators or self-aggregators that elect to purchase only data that would be necessary to create consolidated market data, as required under the proposed rule amendments.

The proposed decentralized consolidation model and the proposed consolidated market data definition do not preclude the exchanges from continuing to sell proprietary data. If an exchange provided its proprietary data products to a competing consolidator or self-aggregator and a competing consolidator or self-aggregator developed a product, or otherwise used data, that exceeded the scope of proposed consolidated market data (e.g., full depth of book data), the competing consolidator or self-aggregator would be charged separately for the proprietary data use pursuant to the individual exchange fee schedules.[432] Self-aggregators and competing consolidators that limit their use of exchange data to proposed consolidated market data elements would be charged only for proposed consolidated market data pursuant to the effective national market system plan(s) fee schedules.[433] As noted above, under the proposed decentralized consolidation model, SROs must make available market data to competing consolidators or self-aggregators that elect only to purchase data necessary for the proposed consolidated market data.[434]

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432 Fees for market data that is outside of the proposed definition of consolidated market data (i.e., proprietary data products, and access to such proprietary data products) would be subject to the rule filing process pursuant to Section 19(b) and Rule 19b-4. As discussed above, competing consolidators would be able to develop products for their subscribers based on subscriber demand. See supra notes 322–323 and accompanying text.

433 Fees for proposed consolidated market data would be subject to the NMS plan process pursuant to Rule 608 of Regulation NMS. See infra Section IV.B.4 for a discussion of the effective national market system plan(s).

434 Vendors would still be able to operate in the decentralized consolidation model. Vendors would be able to receive proprietary market data directly from the SROs as they do today or they would be able to receive consolidated market data from a competing consolidator in a manner that is similar to how they receive SIP data today without being required to register as a competing consolidator. However, if a vendor wished to receive directly from the SROs information with respect to quotations for and transactions in NMS stocks

Currently, the exclusive SIPs are subject to Exchange Act Section 11A(c)(1)(C) (as implemented by Rule 603(a)(1)), which requires that exclusive processors (which include the exclusive SIPs and SROs when they distribute their own data) must assure that all securities information processors may obtain on fair and reasonable terms information with respect to quotations for and transactions in securities, which includes consolidated market data.[435] Section 11A(c)(1)(D), in turn (as implemented by Rule 603(a)(2)), requires that the SROs provide such data to broker-dealers and others on terms that are not unreasonably discriminatory. As we have noted, competing consolidators will be securities information processors and thus Exchange Act Section 11(A)(c)(1)(C) will continue to apply. Similarly, self-aggregators are broker-dealers and thus Exchange Act Section 11A(c)(1)(D) will continue to apply.

The Commission seeks to ensure that consolidated market data is widely available for reasonable fees.[436] In discharging its statutorily mandated review function, the Commission must assess the proposed fees and determine whether they are fair and reasonable, and not unreasonably discriminatory.[437] The Commission must have "sufficient information before it to

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at the prices established by the effective national market system plan(s) and generate consolidated market data for dissemination, such vendor would be required to register as a competing consolidator. Thus, only competing consolidators and self-aggregators would be able to directly receive the NMS information that is necessary to generate consolidated market data from the SROs at the prices established by the effective national market system plan(s). Id.

435 15 U.S.C. 78k-1(c). See also Rule 603(a)(1)–(2) of Regulation NMS, 17 CFR 242.603(a)(1)–(2).

436 Bloomberg Decision, supra note 37, at 4, n.12 (citing Regulation NMS Adopting Release, supra note 10, at 37560) ("In the Proposing Release, the Commission emphasized that one of its primary goals with respect to market data is to assure reasonable fees that promote the wide public availability of consolidated market data.").

437 See 15 U.S.C. 78k-1(c); see also Rules 603(a)(1)-(2), 608 of Regulation NMS, 17 CFR 242.603(a)(1)-(2), 608; Bloomberg Decision, supra note 37, at 11-12.

satisfy its statutorily mandated review function"—that the fees meet the statutory standard.[438] The Commission has previously stated that fees for consolidated SIP data can be shown to be fair and reasonable if they are reasonably related to costs.[439]

The exchanges would be able to offer different access options (e.g., with different latencies, throughput capacities, and data-feed protocols) to market data customers, but any access options available to proprietary data customers must also be available to competing consolidators and self-aggregators for the purpose of collecting and consolidating proposed

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438 Bloomberg Decision, supra note 37 at 15; cf. Rule of Practice 700, 17 CFR 201.700 (providing that the burden of demonstrating that a proposed rule change satisfies statutory standards is on the self-regulatory organization that proposed the rule change).

439 In the Market Information Concept Release, the Commission stated "the fees charged by a monopolistic provider (such as the exclusive processors of market information) need to be tied to some type of cost-based standard in order to preclude excessive profits if fees are too high or underfunding or subsidization if fees are too low. The Commission therefore believes that the total amount of market information revenues should remain reasonably related to the cost of market information." See Market Information Concept Release, supra note 11, at 70627. The Commission later explained that because core data must be purchased, their fees are less sensitive to competitive forces. See Securities Exchange Act Release No. 59039 (Dec. 2, 2008), 73 FR 74770, 74782 (Dec. 9, 2008) (File No. SR-NYSEArca-2006-21). A reasonable relation to costs has since been the principal method discussed by the Commission for assessing the fairness and reasonableness of such fees for core data, with the recognition that "[t]his does not preclude the Commission from considering in the future the appropriateness of another guideline to assess the fairness and reasonableness of core data fees in a manner consistent with the Exchange Act." See Bloomberg Decision, supra note 37, at 15 & nn.63. Although this proposal introduces competition into the dissemination of consolidated market data, the mandatory nature of the provision of consolidated market data by the SROs has not changed. The "principal method we have discussed for assessing the fairness and reasonableness of core data fees has stated that core data fees should bear at least some relationship to costs; past Commission statements have contemplated various approaches for how that relationship might be assessed. This is because distributors of core data have an effective monopoly over such data, and accordingly competitive market forces are not operating to impose sufficient constraints to promote core data fees' fairness and reasonableness." See Bloomberg Decision, supra note 37, at 15 (footnotes and citations omitted).

consolidated market data.[440] Proposed Rule 603(b) would require exchanges to provide all forms of access used for proprietary data to all competing consolidators and self-aggregators for the collection of the data necessary to generate proposed consolidated market data. The Commission is proposing to require that an exchange offer the same form of access, such as fiber optics, wireless, or other forms, in the same manner and using the same methods, including all methods of access and the same format, as the exchange offers for its proprietary data. For instance, if an exchange has more than one form of transmission for its proprietary data, then the exchange must offer the competing consolidators and self-aggregators those types of transmission for proposed consolidated market data. The proposed rule would not require an exchange to offer new forms of access, but if an exchange did offer any new forms of access for proprietary data, it would have to offer them for proposed consolidated market data as well. Different forms of access affect the delivery of data. For example, as discussed above, fiber connections have latencies that wireless connections do not. If an exchange provided its proprietary market data via wireless connections and proposed consolidated market data only via fiber connections, the latencies that exist today would continue. Accordingly, the Commission preliminarily believes that the SROs should be required to provide proposed consolidated market data in the same manner and using the same methods, including all methods of access and the same format as they provide for proprietary data.

The Commission understands that different market participants have different access needs. The Commission is not mandating a specific connectivity option or limiting options for market participants but believes that all connectivity options, including co-location, must be

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440 See Rule 603(a) of Regulation NMS, 17 CFR 242.603(a). Access fees would be set forth in each individual SRO's fee schedules.

available to all market participants whether they are purchasing proposed consolidated market data or proprietary data. In addition, the access requirement under Rule 603(b) would require that the exchanges provide their NMS information, including all data necessary to generate consolidated market data, at one data dissemination location co-located near each exchange's matching engine. This requirement would allow competing consolidators and self-aggregators to receive data at that location at the same speeds, and with the same access options, as the exchange offers its market data. Different colocation options within a data center could raise concerns about whether that exchange is providing the same manner of access to its data as proposed to be required under Rule 603(b). Further, the exchanges would not be permitted to provide their NMS information necessary to generate consolidated market data in a faster manner to any affiliate exchange, a subsidiary or other affiliate that operates as a competing consolidator or a subsidiary or affiliate that competes in the provision of proprietary data.

Furthermore, proposed Rule 603(b) would require that all access options be provided in a latency-neutralized manner such that all participants within the exchange's data center—such as proprietary data subscribers, competing consolidators, and self-aggregators—would receive the data at the same time, regardless of their location or status within the data center.[441] For example, exchanges could adopt equal cable length protocols (i.e., where cable lengths from network equipment to customer cabinets are harmonized for equal access) to ensure that all of the exchange's data center connections provide market data simultaneously. The proposed decentralized consolidation approach would require the SROs to use the same latency-

441 See also Rule 603(a) of Regulation NMS, 17 CFR 242.603(a); supra note 440 and accompanying text.

neutralization processes for competing consolidators and self-aggregators as they offer to subscribers of proprietary data.

The Commission is also proposing to remove the requirement in Rule 603(b) that "all consolidated information for an individual NMS stock [be disseminated] through a single plan processor."[442] While this requirement is necessary for the centralized consolidation model, it would be inconsistent with the proposed decentralized consolidation model, which would allow multiple competing consolidators to disseminate proposed consolidated market data in individual NMS stocks and would permit self-aggregators to collect and generate proposed consolidated market data for individual NMS stocks for their own internal uses.

The Commission preliminarily believes that the proposed amendments to Rule 603(b) would be consistent with the goals of Section 11A of the Exchange Act by helping to ensure the prompt, accurate, reliable, and fair collection, processing, distribution, and publication of NMS information, as well as the fairness and usefulness of such data.[443]

The Commission requests comment on the proposed amendments to Rule 603(b) of Regulation NMS. In particular the Commission solicits comment on the following:

64. Should the SROs be required to provide all of their market data with respect to NMS stocks to competing consolidators and self-aggregators? Should the SROs charge fees based on the use of the data, e.g., fees for proposed consolidated market data set by

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442 17 CFR 242.603(b).

443 See Section 11A(c)(1)(B) of the Exchange Act, 15 U.S.C. 78k-1(c)(1)(B). Section 11A(c)(1)(B) of the Exchange Act authorizes the Commission to prescribe rules, as necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Exchange Act, that assure the prompt, accurate, reliable, and fair collection, processing, distribution, and publication of quotation and transaction information, as well as the fairness and usefulness of the form and content of such data. Id.

the effective national market system plan(s) and fees for proprietary data set by individual SROs? Should the SROs only be required to provide the market data that is necessary to generate and calculate proposed consolidated market data? Or, should the determination as to how best to provide the market data that is necessary to generate and calculate proposed consolidated market data be left to the discretion of SROs? What are the benefits and costs of each of these potential approaches?

65. Should the SROs be required to offer both proposed consolidated market data and proprietary data to competing consolidators from the same platform and using the same technology infrastructure at an exchange data center for both products?

66. Should the SROs be required to offer both proposed consolidated market data and proprietary data to competing consolidators from the same platform and using the same SRO infrastructure where the pricing model for the different products is based on data use as opposed to being based upon distinct data feeds?

67. Should the SROs be permitted to process their market data before providing it to competing consolidators and self-aggregators? For example, should the SROs be permitted to aggregate odd-lots before providing data to competing consolidators and self-aggregators? If so, why and to what extent? Should such processing only be allowed to the extent that it does not result in any latency differential between processed and unprocessed data? Alternatively, should such processing be required to facilitate ease of use for certain customers?

68. Should exchanges be required to permit co-location of competing consolidators and self-aggregators within their data centers? If so, should the fees charged for such colocation be subject to the effective national market system plan(s) for NMS stocks?

69. Should all data disseminated by the SROs to competing consolidators and self-aggregators be in the same format (e.g., aggregated vs. message-by-message depth of book)? Please explain the expected benefits and costs of allowing for multiple formats for data dissemination.

70. Should the SROs make historical data freely available to market participants at a specified location and in a specified format? Why or why not?

71. Is there anything different about having competing consolidators or changing the content of consolidated market data that should affect the analysis of the fairness and reasonableness of fees for data distributed pursuant to an NMS plan, or how the NMS plan participants demonstrate the fairness and reasonableness of those fees? If so, please explain why.

72. Do commenters believe that the Commission should also require the SROs to provide a connectivity option solely for access to the NMS information necessary to generate proposed consolidated market data?

2. Competing Consolidators

As noted above, currently Rule 603(b) requires all consolidated information for an individual NMS stock to be disseminated through a single plan processor.[444] While the Commission has issued a proposed order that would direct the SROs to develop a single "New Consolidated Data Plan" with a new governance structure,[445] the Commission now proposes to update and modernize the manner in which NMS information is collected, consolidated, and disseminated. The Commission is proposing to amend Regulation NMS to introduce

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444 Rule 603(b) of Regulation NMS, 17 CFR 242.603(b). See also supra Section II.B.

445 See Proposed Governance Order, supra note 8.

competitive forces as one of several means to update and modernize the provision of proposed consolidated market data. Competing consolidators would replace the existing exclusive SIPs and would collect NMS information from each of the SROs.[446] Thereafter, competing consolidators would calculate, consolidate, and disseminate the data as consolidated market data, as proposed to be defined.[447] The Commission preliminarily believes that the proposed amendments to Regulation NMS to introduce competing consolidators should help to ensure the "prompt, accurate, reliable, and fair collection, processing, distribution, and publication of information with respect to quotations for and transactions in such securities and the fairness and usefulness of the form and content of such information."[448] Further, the Commission preliminarily believes that these new market data providers could help to effectively address the latency concerns related to the exclusive SIPs, as well as the cost concerns that have been raised regarding the need to buy both SIP data from the Equity Data Plans as well as proprietary data from the exchanges, and add resilience to the collection, consolidation and distribution of consolidated market data by having redundant systems perform these functions rather than an exclusive SIP.

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446 The existing exclusive SIPs would be required to continue their operations until such time as the Commission considers and approves an NMS plan amendment that would effectuate a cessation of their operations. See infra Section IV.B.6. Should the existing exclusive SIPs choose to become competing consolidators, proposed Rule 614(a) mandates a registration process for securities information processors that wish to become competing consolidators. See infra Section IV.B.2(e). If the existing exclusive SIPs choose to cease operations, the SROs would be required to amend the effective national market system plan(s) for NMS stocks to reflect this change.

447 As discussed in Section IV.B.2(f), infra, because competing consolidators would be the sources of proposed consolidated market data, the Commission is proposing to define them as "SCI entities," and thus subject to the requirements of Regulation SCI. The Commission proposes to amend Rule 1000 of Regulation SCI to effect this change. See proposed amendment to Rule 1000 of Regulation SCI. See also 17 CFR 242.1000.

448 15 U.S.C 78k-1(c)(1)(B).

(a) Previous Consideration of Competing Consolidators under Regulation NMS

The Commission previously considered introducing competitive forces to the dissemination of SIP data when it proposed and adopted Regulation NMS. Specifically, the Commission discussed a competing consolidator model[449] that, as described, would have retained the consolidated display requirement of the predecessor to Rule 603(c) of Regulation NMS but would have eliminated the Equity Data Plans and the two exclusive SIPs.[450] Under the competing consolidator model that was being considered, each SRO would be allowed to establish its own fees, enter into and administer its own market data contracts, and provide its own data distribution facility.[451] Competing consolidators would purchase data from the individual SROs, consolidate it, and distribute it to investors and other data users.[452]

At that time, however, the Commission noted several drawbacks to that competing consolidator model,[453] including: (1) a lack of uniform data distribution to the public, (2) the potential for an increase in processing costs due to multiple consolidators performing tasks previously performed by a single processor, and (3) the risk that the fees for core data, as then

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449 The competing consolidator model was recommended by the Advisory Committee on Market Information ("Advisory Committee on Market Information"), which had been formed to consider market data issues. See Report of the Advisory Committee on Market Information: A Blueprint for Responsible Change (Sept. 14, 2001), available at https://www.sec.gov/divisions/marketreg/marketinfo/finalreport.htm.

450 See Securities Exchange Act Release No. 49325 (Feb. 26, 2004), 69 FR 11126 (Mar. 9, 2004) ("Regulation NMS Proposing Release"), at 11177–11178; Regulation NMS Adopting Release, supra note 10, at 37558–37559.

451 See Regulation NMS Proposing Release, supra note 450, at 11177; Regulation NMS Adopting Release, supra note 10, at 37559.

452 Id.

453 See Regulation NMS Proposing Release, supra note 450, at 11178.

contemplated, could increase because payment of every SRO's fees would be mandatory, thereby affording little room for competitive forces to influence the level of fees.[454]

When addressing its concerns about a potential loss of data uniformity, the Commission explained that a report issued by the Advisory Committee on Market Information, which prompted consideration of a competing consolidator model in the Regulation NMS Proposing and Adopting Releases,[455] noted four types of quality problems that could arise from the competing consolidator model relating to: (1) sequencing of information, (2) validation tolerances, (3) capacity, and (4) data protocols and formats.[456] With respect to information sequencing, the report stated that the competing consolidator model would impose a risk that market data messages would be processed in different sequences by different consolidators due to the use of differing hardware, software, or communications platforms to process market data. On validation tolerances, the report stated that standards would need to be established for competing consolidators to verify the consistency of information (such as the NBBO), since the plan processors currently check all market center messages to verify that they utilize correct message structures. The report stated that competing consolidators must have sufficient capacity (for example, specifying network capacity, input, output line, system, internal system threading, storage and memory capacity, and database size) to process the information from all reporting market centers, explaining that if capacity is lacking, messages will be delayed to data recipients.

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454 Id. The Commission stated that it would have to review every SRO's market data fees and get involved in multiple market data fee disputes.

455 See supra notes 449–450.

456 See supra note 449. See infra text accompanying notes 503–509, 513–515 for a discussion of the risks. The Advisory Committee on Market Information report stated that these risks would be manageable and recommended allowing the private sector to establish technical standards for competing consolidators rather than the Commission. See supra note 449, at Section VII.C.2.b(iv).

Finally, with respect to data protocols and formats, the report said that the use of different protocols, message formats, and technologies by different consolidators could make the market data system more cumbersome and prone to error. The report noted that exclusive SIPs currently receive market center information using standard input formats and disseminate consolidated data using standard output formats.[457]

Ultimately, the Commission concluded that investors and other data users would bear the most risk in switching to a competing consolidator model, while the SROs would benefit by being able to charge higher fees for lower quality information;[458] therefore, the Commission decided not to propose the competing consolidator model for adoption.[459]

In the Regulation NMS Adopting Release, the Commission focused its discussion on the extent to which the competing consolidator model would subject the level of market data fees to competitive forces.[460] The Commission stated that market participants would need to purchase data from the SROs and expressed concern that "the overall level of fees would not be reduced unless one or more of the SROs or Nasdaq was willing to accept a significantly lower amount of revenue than they are currently allocated by the Plans."[461] The Commission believed that it was

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457 See supra note 449, at Section VII.C.2.b.

458 The Commission stated that the four types of data quality problems identified by the Advisory Committee could be limited in severity, but remained concerned that the introduction of competing consolidators would compromise data quality. See Regulation NMS Proposing Release, supra note 450, at 11178.

459 See Regulation NMS Proposing Release, supra note 450, at 11178. In the Regulation NMS Adopting Release, the Commission questioned the extent to which market data fees, which would be charged per SRO, would be subject to competition. See Regulation NMS Adopting Release, supra note 10, at 37559.

460 Id. While the Commission did not propose a competing consolidator model, it received comments on the model described in the Regulation NMS Proposing Release.

461 Id.

"unlikely that any SRO or Nasdaq would voluntarily propose to lower just its own fees." Rather, the Commission stated that some SROs, "particularly those with dominant market shares whose information is most vital to investors," might propose higher fees to increase their revenues.[462]

(b) Comments and Roundtable Discussion

The current market data infrastructure, with the Equity Data Plans providing SIP data and the exchanges providing proprietary data products, has led some market participants to suggest that a competing consolidator model be considered again as a means to address the latency and cost differentials that exist between the two data categories.[463]

Several panelists and commenters at the Roundtable discussed a competing consolidator model. One panelist presented a competing consolidator model and noted that it would introduce competition in the provision of market data by allowing competing consolidators to compete against each other for subscribers.[464] This panelist also stated that market forces would drive consolidators' "micro-decisions" regarding the technology that they would use to provide data.[465] The panelist also suggested that competing consolidators should be "authorized" and be

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462 Id.

463 The Treasury Capital Markets Report ("Treasury Report"), which was published one year prior to the Roundtable and referenced by Roundtable respondents, recommended that the Commission amend Regulation NMS to permit competing consolidators as alternatives to the exclusive SIPs as a means to provide faster consolidation and distribution of a wider breadth of market data, at a lower cost than provided by the exclusive SIPs. The Treasury Report suggested that competing consolidators be allowed to purchase proprietary data feeds from exchanges on a non-discriminatory basis. See U.S. Department of the Treasury, A Financial System that Creates Economic Opportunities – Capital Markets, 64 (Oct. 2, 2017). Other alternatives to the current centralized consolidation model are discussed below. See infra Section IV.C.

464 See Roundtable Day Two Transcript at 25 (Paul O'Donnell, Morgan Stanley).

465 Id. at 26.

Regulation SCI-compliant.[466] The panelist expressed confidence that a competitive market would produce a more reliable solution than the current centralized consolidation model.[467]

One panelist explained that the exclusive SIPs represent a single point of failure for the equity markets and that competing consolidators could improve the speed and quality of SIP data while also reducing their costs.[468] Another panelist said that his clients have expressed interest in competitive SIPs.[469] One panelist suggested a competing consolidator model wherein entities would consolidate messages from individual exchange members. The panelist acknowledged that this approach would likely result in latency issues, but suggested that such a consolidated feed could possibly be leveraged from work being done on reporting to the consolidated audit trail.[470]

Several comment letters submitted in connection with the Roundtable expressed support for a competing consolidator model.[471] One commenter stressed the importance to investors of competition by stating that competition would result in the reduction of the latency differential between the exclusive SIPs and proprietary data feeds, resilience through the use of multiple

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466 Id. at 25.

467 Id.

468 See Roundtable Day One Transcript at 49–50 (Prof. Hal Scott, Harvard University). This panelist also suggested that the SIPs should include proprietary data and also permit competing consolidators to do the same.

469 See Roundtable Day Two Transcript at 43 (Jarred Yuster, PICO).

470 See Roundtable Day One Transcript at 182–184 (Michael Friedman, Trillium Trading).

471 See T. Rowe Price Letter, Letter to Brent J. Fields, Secretary, Commission, from Marcy Pike, SVP, Enterprise Infrastructure, and Krista Ryan, VP, Associate General Counsel, Fidelity Investments (Oct. 26, 2018) ("Fidelity Letter"); SIFMA Letter; SIFMA Letter II; Ramsay Letter II.

consolidators, and lower market data costs.[472] Another commenter stated that competing consolidators would compete on "speed, reliability, and price to the benefit of traders and investors alike"[473] and that competing consolidators would provide "the benefit of expanded access to high-quality, low-cost market data."[474] Another commenter noted the Treasury Report, which was published in 2017,[475] recommended that the Commission recognize that markets for SIP data and proprietary data feeds are not fully competitive and consider amending Regulation NMS to enable competing consolidators as an alternative to the exclusive SIPs.[476] This commenter recommended that if competing consolidators are permitted, regulators should examine why a broker-dealer chooses a particular consolidator over others and should monitor how much exchanges decide to charge consolidators for market data.[477]

Several commenters suggested details on the types of entities that could be competing consolidators and the functions they could perform.[478] For example, one commenter suggested that a competing consolidator could be any commercial entity meeting minimum standards,

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472 See SIFMA Letter II at 3. In addition to the use of competing consolidators, this commenter suggested that the Commission require the exclusive SIPs to compete with each other. See also T. Rowe Price Letter at 3. This commenter believed that competition among organizations eligible to serve as exclusive SIPs, either through a periodic bidding process or the ability of multiple firms to simultaneously serve as exclusive SIPs and compete to provide the best overall combination of fees, services, and reliability would be beneficial.

473 See Ramsay Letter II; Fidelity Letter at 10 (noting that competition may reduce the cost of consolidated market data).

474 See Ramsay Letter II.

475 See supra note 463.

476 See Fidelity Letter at 10.

477 Id.

478 See SIFMA Letter; Ramsay Letter II.

which may include exchanges or other financial technology vendors,[479] and another suggested that they could be private companies that, unlike the existing exclusive SIPs, could operate in any location and would obtain and sell data comparable to proprietary data feeds.[480] One commenter suggested a list of functionality that competing consolidators could provide, such as direct exchange feed data from all tapes, quote and trade feeds, regulatory messages, and the market status of all contributing markets.[481]

Several panelists, in particular representatives of exchanges operating the current exclusive SIPs, expressed concern with a competing consolidator model. One panelist suggested that the interest in competing consolidators arises from a perception that competing consolidators will make market data less costly.[482] The panelist said that the cost to produce market data is not a competing consolidator's cost and that this realization may make such a model less attractive to potential users of competing consolidators.[483] Another panelist said that a competing consolidator model could result in multiple NBBOs prevailing at the same nanosecond, which would provide a broker with a choice regarding the price at which it filled a customer's order.[484] The panelist believed that this discretion in choosing an NBBO could result in uncertainty regarding whether the broker had executed a customer's order at a price that was in the customer's interest or the broker's own interest.[485] One panelist stated that there is value in

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479 See SIFMA Letter.

480 See Ramsay Letter II.

481 See SIFMA Letter (attachment to the letter). This commenter also stated that depth of book should be considered but stated that it should possibly be sold separately.

482 See Roundtable Day Two Transcript at 46–47 (Michael Blaugrund, NYSE).

483 Id.

484 See Roundtable Day Two Transcript at 61 (Prof. Robert Bartlett, U.C. Berkeley).

485 Id.

understanding what the NBBO is when there are competing SIPs and asked whether this model would introduce benchmark reference price arbitrage.[486] The panelist suggested that a conflict could arise if a broker-dealer executes customer orders and also manages the price against which such trades are benchmarked, i.e., by calculating the NBBO.[487]

Several comment letters expressed skepticism about the benefits of a competing consolidator model. One commenter said that making radical market structure changes could undermine the NBBO and that adding multiple competing SIPs would create operational, legal, and regulatory complexities as well as unintended consequences, and may not solve concerns about geographic latency.[488] Further, this commenter advocated that having a single source of best quote and trade data creates confidence in the U.S. markets because investors can be assured that orders will automatically route to the venue with the best quoted price on the exclusive SIP feed.[489]

One commenter said that competition would result in multiple NBBOs that would confuse the market. Further, the commenter stated that competition would not "curb rent-

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486 See Roundtable Day One Transcript at 151–152 (Oliver Albers, Nasdaq); Bartlett and McCrary, supra note 418 (examining the incidence of exclusive SIP latency arbitrage strategies using timestamp data from the two SIPs and concluding that trading surrounding exclusive SIP priced trades showed little evidence that fast traders initiate liquidity taking orders to pick off stale quotes).

487 See Roundtable Day One Transcript at 151–152 (Oliver Albers, Nasdaq).

488 See Wittman Letter at 14; Letter to Brent J. Fields, Secretary, Commission, from Oliver Albers, SVP, Head of Global Partnerships, Nasdaq, 3 (Oct. 24, 2018) ("Albers Letter"); Blaugrund Letter at 2. The Wittman and Albers Letters were submitted on behalf of Nasdaq. The Blaugrund Letter was submitted on behalf of NYSE.

489 See Albers Letter at 3.

seeking behaviors, nor promote fairness."[490] This commenter suggested that the Commission mandate a type of encryption instead of introducing competition, explaining that encrypting market data would allow proprietary and exclusive SIP feeds to be made available "securely in synchronized time."[491]

Another commenter urged the Commission to do a cost benefit analysis of efforts to decentralize the exclusive SIP architecture and recommended introducing additional instances of existing technology (i.e., a distributed SIP model) as the best approach to reducing geographic latency.[492] This commenter added that a competing consolidator approach would create complexity that would undermine the purposes of Regulation NMS to keep costs low for investors.[493]

Finally, one commenter opined that competing SIPs would not solve the problem of the exchanges' control over market data access.[494] This commenter asked why a technology firm would become a competing SIP when it cannot control the cost of the market data it must purchase.[495]

(c) Commission Discussion

The Commission is proposing a decentralized consolidation model with competing consolidators and self-aggregators who would collect data from the SROs, and calculate,

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490 See Data Boiler Letter at 4. This commenter also suggested that the Commission amend interpretations of Rule 603(a) of Regulation NMS to emphasize "synchronized availability of data between SIP and exchanges' proprietary products." Id. at 8.

491 Id. at 2, 8.

492 See NYSE Group Letter at 6; Blaugrund Letter at 4. The Blaugrund Letter was submitted on behalf of NYSE.

493 See Blaugrund Letter at 2.

494 See Healthy Markets Association Letter I at 38.

495 Id.

consolidate, and disseminate proposed consolidated market data to investors and market participants.[496] As discussed below, the Commission preliminarily believes that competing consolidators should be required to disclose publicly certain information about their organization, operations, and products, as well as regularly publish certain performance statistics on, for example, capacity, system availability, and latency to demonstrate their operational capability and to provide transparency into the performance of their systems.[497] In addition, the Commission preliminarily believes that competing consolidators should have written policies and procedures to assure the prompt, accurate, and reliable delivery of consolidated market data.

The Commission preliminarily believes that the competing consolidator proposal would reduce latency, bolster the resilience of the market data infrastructure, and permit the market data infrastructure to more readily adapt to changes in technology to better fit the needs of market participants. The Commission also preliminarily believes that market forces could help to ensure that the proposed consolidated market data is reliable, accurate, and prompt. To attract and maintain its subscriber base, a competing consolidator would have to ensure that it provides consolidated market data, as proposed, with minimal latency, but also reliably and accurately, and in a cost-effective manner. A competing consolidator that does not adequately perform would risk losing customers to another competing consolidator. Competition should also incentivize competing consolidators to evolve and adapt to the needs of the marketplace. If a new technology would result in better provision of data, a competing consolidator likely would

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496 See infra Section IV.B.2(e)(ii) for a discussion of proposed Rule 614, which would require competing consolidators that are SIPs to register with the Commission and comply with specified responsibilities.

497 One Roundtable respondent supported publication of operational capabilities and performance metrics by competing consolidators. See SIFMA Letter (attachment to letter).

adopt that technology to expand its client base. Finally, the introduction of multiple competing consolidators may bring additional resilience to the collection, consolidation, and distribution of consolidated market data, as there would be redundant systems performing these functions rather than one exclusive SIP creating a single point of failure.[498]

In proposing this competing consolidator model, the Commission considered the concerns it described when it previously evaluated a different competing consolidator model in connection with the adoption of Regulation NMS.[499] The Commission preliminarily believes that the proposed competing consolidator model should not raise the same concerns due to the differences between the two models and the manner in which market participants handle market data today.

First, to address the Commission's prior concern about a lack of data uniformity resulting from the use of multiple competing consolidators,[500] the Commission is proposing requirements governing how consolidated market data is collected, calculated, generated, and made available.[501] The Commission acknowledges that the introduction of multiple entities generating consolidated market data would result in multiple versions of consolidated market data.

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498 The single point of failure problem was most recently evidenced on August 12, 2019, when the CTA/CQ SIP experienced multiple system issues and was unable to effectively fail over to its backup system. Among other impacts, final closing prices for many symbols were not able to be published by the CTA until after 8:00 p.m. See CTA, CTA Processing Issue on August 12, 2019: CTA Participant Trade Files – Revised Notice, Alert (Aug. 28, 2019), available at https://www.ctaplan.com/alerts#110000144324. Several Roundtable respondents noted the additional reliability through the redundancy that multiple consolidators would provide. See Roundtable Day One Transcript at 49–50 (Prof. Hal Scott, Harvard University); Roundtable Day Two Transcript at 77 (Paul O'Donnell, Morgan Stanley); Ramsay Letter II.

499 See supra notes 453–454.

500 See supra note 453.

501 See proposed Rules 614(d)(1)–(3).

However, market participants currently consolidate proprietary data feeds, generate their own consolidated data, and calculate their own NBBO.[502] The proposal would require competing consolidators and self-aggregators to calculate consolidated market data, including the NBBO, in a consistent manner as set forth in the proposed definitions in Rule 600 of Regulation NMS, which the Commission preliminarily believes would help ensure continuity and consistency in how proposed consolidated market data, including the NBBO, is calculated.

Further, on the Advisory Committee on Market Information's validation tolerance concerns from 2001,[503] the report had stated that standards should be created to ensure the consistency of information, such as the NBBO and market center message formatting.[504] The report also stated that differences in the protocols and formats used by competing consolidators could make the market data system cumbersome or prone to error.[505] As noted above, the proposal would require competing consolidators and self-aggregators to calculate consolidated market data, including the NBBO, in a consistent manner in accordance with the proposed

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502 See Roundtable Day One Transcript at 128 (Mark Skalabrin, Redline Trading Solutions) (explaining that his firm builds an NBBO for its customers that use proprietary data feeds), at 141 ("[E]ffectively today, people have to form the NBBO at their own location. Even a dark pool does that that's just trying to match at the best bid and offer. If they use the SIP NBBO, their customers would be subject to latency harm, because it's too old to use at their location after it's merged to really get effective performance."). Although the Commission does not know the exact number of market participants that currently consolidate proprietary data feeds, generate their own consolidated data, and calculate their own NBBO, Nasdaq has stated that approximately 100 firms purchase all depth of book data from every exchange. See In the Matter of the Application of SIFMA, supra note 37, at 29 (citing an assertion from Nasdaq that 100 firms purchase all depth of book data from every exchange). The Commission acknowledges that not all of these market participants consolidate the proprietary data feeds and solicits comment on the number of market participants that do.

503 See supra text accompanying notes 455–457.

504 Id.

505 Id.

definitions in Rule 600 of Regulation NMS. Further, the Commission preliminarily believes that competing consolidators would likely establish their own standards for verifying information for consistency because they would be the entities responsible, pursuant to proposed Rule 614(d)(2), for calculating and generating consolidated market data based on this information.[506] In addition, as the entities responsible for generating consolidated market data, competing consolidators would likely be incentivized by competition to disseminate data using a protocol or format that results in data that is readily usable by their subscribers. As market participants are currently able to ingest market data from different sources, such as the exclusive SIPs and proprietary data feeds, the Commission preliminarily believes that differences in the protocols or formats used by competing consolidators would not likely introduce a new challenge to the market. Rather than impose technical standards, the Commission preliminarily believes that competing consolidators would be in the best position to develop standards with respect to data consistency and generation, as appropriate, because they would be directly responsible for the quality of their product that is in compliance with Rule 614(d)(2), and would be incentivized through competition to create standards to ensure the integrity of their consolidated market data.

With respect to the Advisory Committee on Market Information's previous concerns about capacity,[507] the Commission is proposing to require each competing consolidator to publish on its website its capacity statistics on a monthly basis so that market participants can evaluate whether a competing consolidator has sufficient capacity to process information.[508] The Commission is also proposing to require each competing consolidator to establish, maintain, and

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506 See proposed Rule 614(d)(2).

507 See supra text accompanying notes 455–457.

508 See infra Section IV.B.2(e)(ii).

enforce written policies and procedures reasonably designed to ensure that its systems have levels of capacity to maintain operational capability and assure the prompt, accurate, and reliable delivery of consolidated market data.[509]

The Commission was previously concerned about an increase in processing costs due to multiple consolidators[510] performing the tasks performed by an exclusive SIP. As noted above, the Commission preliminarily believes that the introduction of competition should help to ensure that proposed consolidated market data is disseminated in a cost-effective manner.[511]

Finally, the Commission was previously concerned about the risk that fees for core data would increase because payment to each SRO would be mandatory. The previous competing consolidator model would have eliminated the Equity Data Plans and contemplated that each individual exchange would have developed its own pricing scheme for its individual data. As discussed below, in contrast, under the proposed decentralized consolidation model, the SROs would continue to develop jointly the fees associated with the provision of the proposed consolidated market data through an effective national market system plan(s) for NMS stocks.[512] These fees would be subject to Commission oversight under Rule 608.

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509 Id.

510 The Commission preliminarily estimates that there could be up to twelve competing consolidators. This estimate includes the CTA/CQ SIP and the Nasdaq UTP SIP. See infra Section V.C.

511 See also, e.g., Roundtable Day One Transcript at 49–50 (Prof. Hal Scott, Harvard University) ("[C]ompetition among consolidators of SIP data . . . could improve the speed and quality of consolidated sources of market data while also reducing their costs."); Treasury Report, supra note 463, at 64 ("The competing consolidators would aim to provide faster consolidation and distribution, improved breadth of data, and lower cost than the SIPs.").

512 See infra Section IV.B.4; Proposed Governance Order, supra note 8; Effective on Filing Proposal, supra note 37 (a proposal to amend Regulation NMS to rescind a provision that allows a proposed amendment to an effective national market system plan(s) to become

The use of competing consolidators may introduce sequencing risk, a concern raised by the Advisory Committee on Market Information[513] as well as the Commission when it dismissed a competing consolidator model in proposing Regulation NMS.[514] Having multiple competing consolidators using different technology could result in messages being processed in different sequences. The outcome would be the loss of a single reference for consolidated market data, which could negatively impact the reconstruction of the markets at a given point in time. However, the Commission believes that the proposal would mitigate the effects of sequencing risk by mandating that the effective national market system plan(s) require the application of timestamps to all consolidated market data by the SROs when they send market data to competing consolidators as well as requiring competing consolidators to apply timestamps to consolidated market data. Accordingly, no matter the differences in message processing across the competing consolidators, the sequencing of market data based on SRO timestamps should be able to be reconstructed.[515]

The Commission believes that there are a number of existing firms that would be well-positioned to become competing consolidators. First, trading technology firms that today provide proprietary data aggregation services for their subscribers may decide to register as

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effective upon filing if the proposed amendment establishes or changes a fee or other charge).

513 See supra text accompanying notes 455–457.

514 See Regulation NMS Proposing Release, supra note 450, at 11178.

515 The Commission further notes that the NBBOs currently calculated by the exclusive SIPs at different data centers may vary due to geographic and other forms of latency, and therefore, the proposed competing consolidator model does not introduce a new issue in this regard. However, under the proposed competing consolidator model, NBBOs created at other data centers where the exclusive SIPs currently do not have a point of presence (e.g., NY4 in Secaucus) could be more accurate for those market participants that are located in such data center.

competing consolidators in order to potentially expand their subscriber base and to be eligible for the pricing for data content used to create proposed consolidated market data.[516] In addition, the existing exclusive SIPs, CTA/CQ and Nasdaq UTP, could consider becoming competing consolidators, as they have extensive experience in this area and may choose to remain in the market data consolidation business. Similarly, SROs have experience collecting and processing market data and may wish to act as competing consolidators. The Commission preliminarily believes that the creation of a competing consolidator market would open up the potential for other entrants, as well. For example, various market participants that are currently self-aggregating and have the technology to consolidate core data may decide to enter the competing consolidator business given the potential market opportunity. Finally, other entities have been interested in performing as plan processors. For example, there were competing bids to be the Nasdaq UTP SIP in 2014,[517] and in 2013 and 2019 for OPRA. The bidding firms (or similar types of firms) may decide to enter the market as competing consolidators.

The Commission preliminarily believes that sufficient incentives exist to attract a number of entities to register as competing consolidators and for a competitive market to develop. For one thing, the proposed definition of core data will incorporate additional elements such as quotation data in smaller size increments, depth of book data, and auction information, all of

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516 The Commission does not know the number of aggregators in operation today, but assumes that certain market data vendors in the following list currently perform that function. See Nasdaq: Market Data Vendors, available at http://www.nasdaqtrader.com/Trader.aspx?id=MarketDataVendorsList&StartAlphabet=A&EndAlphabet=ZZZ (last accessed Dec. 17, 2019).

517 Bidders included Nasdaq, Thesys Technologies LLC, CenturyLink, and a unit of exchange operator Miami International Holdings Inc. See Herbert Lash, Nasdaq Wins Bid to Manage Key Data Processor for Stock Trading, Reuters (Nov. 5, 2014), available at https://www.reuters.com/article/us-exchanges-stocktrading-nasdaq-omx-idUSKBN0IQ00220141106.

which market participants have recommended as necessary or useful. Therefore, there seems to be demand for the key product—i.e., consolidated market data as proposed—that competing consolidators will be producing and selling. Moreover, the proposed competing consolidator registration regime and responsibilities outlined below—while designed to collect relevant information about competing consolidators and to require competing consolidator performance data, data quality issues, and system issues to be made publicly available—are intended to be a relatively streamlined process that would impose appropriate burdens on entities likely to register as competing consolidators.

Several Roundtable panelists and commenters raised potential issues about a competing consolidator model, in particular, about uncertainties regarding control over market data access, the costs of obtaining market data from the various SROs, and operational complexities associated with the model, such as the introduction of multiple NBBOs.[518] However, the Commission preliminarily believes that some of these issues would be addressed by the proposal and the others would not be novel or insurmountable. On control over market data access, Rule 603 and the proposed amendments to Rule 603(b) would require that the SROs directly make available to competing consolidators and self-aggregators NMS information, including all data necessary to generate consolidated market data, on terms that are fair and reasonable and not unreasonably discriminatory. With respect to the costs of market data, the SRO fees associated with consolidated market data would be subject to Equity Data Plan requirements and the fees

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518 See Roundtable Day One Transcript at 151–152 (Oliver Albers, Nasdaq); Roundtable Day Two Transcript at 46–47 (Michael Blaugrund, NYSE), at 61 (Prof. Robert Bartlett, U.C. Berkeley); Wittman Letter at 14; Albers Letter at 3; Blaugrund Letter, at 2; Healthy Markets Association Letter I, at 38; Data Boiler Letter at 4, 8.

must be fair and reasonable.[519] Finally, with respect to the concerns regarding the complexities associated with a competing consolidator model, many of the functions of competing consolidators are performed today by market participants, such as the consolidation of proprietary data feeds and calculation of NBBOs.[520]

Finally, a Roundtable panelist suggested that multiple NBBOs could raise concerns about broker-dealers executing customer orders at prices that are in the broker's own interest, rather than the customers' interest, and questioned whether a competing consolidator model would introduce benchmark reference price arbitrage.[521] A broker-dealer must provide best execution to its customers' orders.[522] However, the existence of multiple NBBOs, which occurs today, does not impact a broker's best execution obligations. Further, the panelist questioned whether there would be conflicts for broker-dealers that execute customer trades as well as manage the price against which the trades are benchmarked (i.e., by calculating the NBBO). Broker-dealers today purchase market data from the SIP as well as proprietary data feeds and calculate NBBOs. Accordingly, the Commission is not persuaded by concerns about the introduction of multiple NBBOs because multiple NBBOs already exist.

(d) Proposed Definition of Competing Consolidator in Rule 600(b)

The Commission is proposing to introduce a definition of competing consolidator in Rule 600(b). Specifically, under proposed Rule 600(b)(16) of Regulation NMS, a competing consolidator would be defined as a securities information processor required to be registered

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519 See supra note 439.

520 For example, multiple NBBOs exist today because many broker-dealers independently calculate it for themselves.

521 See Roundtable Day One Transcript at 151–152 (Oliver Albers, Nasdaq); Roundtable Day Two Transcript at 61 (Prof. Robert Bartlett, U.C. Berkeley); Data Boiler Letter at 4.

522 See supra note 308.

pursuant to Rule 614 or a national securities exchange or national securities association that receives information with respect to quotations for and transactions in NMS stocks and generates consolidated market data for dissemination to any person.

The Commission requests comment on the proposed amendment to Rule 600(b) to introduce a definition of "competing consolidator." In particular, the Commission solicits comment on the following:

73. Is a decentralized consolidation model with competing consolidators and self-aggregators a viable and/or appropriate model for the collection, consolidation, and dissemination of consolidated market data? Are there any other viable and/or appropriate alternatives?

74. Do commenters believe that the definition of competing consolidator accurately captures the requisite functions necessary for collecting, consolidating, and disseminating consolidated market data? Do commenters believe that there would be sufficient interest in entities that would become competing consolidators?

75. Do commenters believe that competing consolidators would provide the necessary competition to lower the processing time and distribution speeds for consolidated market data, as proposed to be defined, as well as reduce the overall costs of proposed consolidated market data?

76. Do commenters believe that concerns identified by the Commission regarding the competing consolidator model considered in the Regulation NMS Proposing and Adopting Releases would be sufficiently addressed with the proposed decentralized consolidation model with competing consolidators and self-aggregators proposed in this release? If not, how should these concerns be addressed?

77. Will the change to a proposed competing consolidator/self-aggregator model present any specific operational and/or regulatory challenges to market participants? Are the challenges evenly distributed amongst market participants or would one set of market participants bear more of any burden? If so, please describe.

78. The Commission solicits commenters' views regarding the various concerns raised by Roundtable respondents about the competing consolidator model. In particular, do commenters have any concerns about competing consolidators calculating independent NBBOs? Please explain. Do commenters have concerns about multiple versions of consolidated market data, as proposed? Please explain. If there are such concerns, please also explain how these concerns would vary from the multiple different forms of aggregation that exist today among broker-dealers either self-aggregating proprietary data feeds or utilizing vendors to do so on their behalf.

(e) Proposed Rule 614

The Commission preliminarily believes that SIPs that wish to act as competing consolidators should be required to register with the Commission[523] and be required to publicly disclose certain information about their organization, operations, and products. The proposed disclosure framework is similar to the disclosures currently required under Form SIP, with differences tailored to the proposed regulatory structure that would apply to competing

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523 As explained further below, SROs are excluded from the definition of SIP under Section 3(a)(22)(A) of the Exchange Act. 15 U.S.C. 78c(a)(22)(A). SROs that wish to act as competing consolidators would therefore not be required to register with the Commission on proposed Form CC, which, as explained below, is the form that SIPs would use to register as competing consolidators. See infra Section IV.B.2(e)(iii). However, SROs that wish to act as competing consolidators would be subject to the other requirements of proposed Rule 614, including the responsibilities of competing consolidators enumerated in proposed Rule 614(d), such as the monthly publication of performance metrics. See infra Section IV.B.2(e)(ii).

consolidators. As described more fully below, a competing consolidator would be required to register with the Commission on proposed Form CC and to amend its Form CC (i) prior to the implementation of a material change to the competing consolidator's pricing, connectivity, or products offered (a "Material Amendment"); and (ii) no later than 30 calendar days after the end of each calendar year to correct information that has become inaccurate or incomplete for any reason and to provide an Annual Report as required under Form CC (each a "Form CC Amendment").[524] A competing consolidator would be required to publish notice of its cessation of operations on Form CC at least 30 business days prior to the date it ceases to operate as a competing consolidator.[525] The Commission would make public on its website each effective initial Form CC, order of ineffective initial Form CC, Form CC Amendment, and notice of cessation.[526]

The Commission also preliminarily believes that competing consolidators should be subject to certain obligations and should regularly publish certain performance statistics on a monthly basis on their respective websites pursuant to proposed Rules 614(d)(5) and (6).[527] These disclosures are similar to disclosures currently made by the exclusive SIPs.

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524 See proposed Rules 614(a)(1)(i) and (a)(2)(i) and (ii).

525 See proposed Rule 614(a)(3).

526 See proposed Rule 614(b)(2). The Commission would publish an effective initial Form CC upon effectiveness and would publish a Form CC Amendment no later than 30 calendar days from the date of filing. See proposed Rule 614(b)(2)(iii).

527 See infra Section IV.B.2(e)(ii) for a discussion of the obligations and performance statistics. The information that the Commission is proposing that competing consolidators publish is based upon information that is currently collected or produced by the CTA/CQ SIP and the Nasdaq UTP SIP, either for public or internal distribution.

These requirements, together with the operational transparency proposed in new Form CC for those SIPs that register as competing consolidators,[528] should help to ensure that consolidated market data, as proposed to be defined, is provided in a prompt, accurate, and reliable manner and that all competing consolidators disclose the same information to allow for easier comparison and evaluation. Specifically, these requirements should allow market participants to effectively evaluate competing consolidators and foster competition among competing consolidators, which should result in high levels of performance in the provision of proposed consolidated market data. In addition, these requirements should facilitate Commission oversight of competing consolidators and help to ensure the resiliency of their systems.

(i) Section 11A(b) of the Exchange Act

Section 11A(b)(1) of the Exchange Act[529] provides that a SIP not acting as the "exclusive processor"[530] of any information with respect to quotations for or transactions in securities is exempt from the requirement to register with the Commission as a SIP unless the Commission, by rule or order, determines that the registration of such SIP "is necessary or appropriate in the public interest, for the protection of investors, or for the achievement of the purposes of [Section 11A]." A SIP that proposes to act as a competing consolidator would not engage on an exclusive basis on behalf of any national securities exchange or registered securities association in collecting, processing, or preparing for distribution or publication any information with respect to quotations for or transactions in securities; therefore, such a proposed competing consolidator

528 See infra Section IV.B.2(e)(iii) for a discussion of proposed Form CC.

529 15 U.S.C. 78k-1(b)(1).

530 See supra note 20.

would not fall under the statutory definition of "exclusive processor." However, under the proposed rules, competing consolidators would play a vital role in the national market system by collecting, consolidating, and disseminating proposed consolidated market data. Because the availability of prompt, accurate, and reliable consolidated market data, as proposed, is essential to investors and other market participants, the Commission preliminarily believes that it is necessary and appropriate in the public interest and for the protection of investors to require each SIP that wishes to act as a competing consolidator to register with the Commission as a SIP pursuant to proposed Rule 614. Section 11A(b)(1) provides the Commission with authority to require the registration of a SIP not acting as an exclusive processor by rule or order. The Commission is exercising this authority by proposing Rule 614 to establish the process by which SIPs that wish to act as competing consolidators would be required to register with the Commission.

The registration process for exclusive SIPs under Section 11A requires the Commission to publish notice of an exclusive SIP's application for registration and, within 90 days of publication of notice of the application, by order grant the application or institute proceedings to determine whether the registration should be denied.[531] At the conclusion of the proceedings, the Commission must, by order, grant or deny the registration.[532] Section 11A(b)(1) of the Exchange Act also authorizes the Commission, by rule or by order, upon its own motion or by application, to conditionally or unconditionally exempt any SIP or class of SIPs from any provision of Section 11A or the rules or regulations thereunder if the Commission finds that such exemption is consistent with the public interest, the protection of investors, and the purposes of

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531 See Section 11A(b)(3), 15 U.S.C. 78k-1(b)(3).

532 See Section 11A(b)(3)(B), 15 U.S.C. 78k-1(b)(3)(B).

Section 11A, including the maintenance of fair and orderly markets in securities and the removal of impediments to and perfection of the mechanisms of a national market system. The Commission preliminarily believes that it is consistent with the public interest, the protection of investors, and the purposes of Section 11A to use its authority under Section 11A(b)(1) to exempt SIPs that wish to act as competing consolidators from the registration process established in Section 11A(b)(3) of the Exchange Act and to allow such competing consolidators to register pursuant to a process that is more streamlined and limited than the process described in Section 11A(b)(3). The process specified in Section 11A(b)(3) of the Exchange Act was developed for exclusive SIPs and reflects the heightened need to review and analyze exclusive processors. In contrast, SIPs that do not act as an exclusive SIP are exempt from registration unless the Commission "finds that the registration of such securities information processor is necessary or appropriate in the public interest, for the protection of investors, or for the achievement of the purposes of [Section 11A]." The Commission preliminarily believes that the proposed registration process would provide the Commission with the information necessary to oversee competing consolidators and help ensure that relevant information regarding such competing consolidators is available to the Commission and to the public, while providing a streamlined registration process designed to encourage entities to register as competing consolidators.

The registration process proposed in new Rule 614 requires any person, other than an SRO,[533] that chooses to become a competing consolidator to file with the Commission proposed Form CC.[534] The Commission would review the initial Form CC and such filing would become

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533 See supra note 523.

534 See infra Sections IV.B.2(e)(ii) and IV.B.2(e)(iii) for a discussion of the registration process for competing consolidators under proposed Rule 614.

effective, unless declared ineffective by the Commission by order.[535] The Commission would make public on its website each effective initial Form CC and any order of ineffective initial Form CC, amendment to Form CC and notice of cessation, if applicable. The registration process proposed in new Rule 614 would not require the publication for notice and comment of an application for registration as a competing consolidator, nor would it require Commission approval of such an application. However, the Commission preliminarily believes that it is consistent with the public interest, the protection of investors, and the purposes of Section 11A to establish a relatively streamlined registration process based on disclosure for those SIPs that wish to act as competing consolidators. The Commission preliminarily believes that a relatively streamlined registration process would impose minimal burdens on entities likely to register as competing consolidators.

In addition, the Commission preliminarily believes that it is consistent with the public interest, the protection of investors, and the purposes of Section 11A to use its exemptive authority under Section 11A(b)(1) of the Exchange Act to exempt those SIPs that act as competing consolidators from Section 11A(b)(5) of the Exchange Act,[536] which requires a registered SIP to notify the Commission if the SIP prohibits or limits any person with respect to access to its services. Section 11A(b)(5) allows any person aggrieved by a prohibition or

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535 Proposed Rule 614(a)(1)(iii) provides that the Commission may, by order, declare an initial Form CC ineffective no later than 90 calendar days from the date of filing with the Commission.

536 Section 11A(b)(5) of the Exchange Act, 15 U.S.C. 78k-1(b)(5), requires a SIP promptly to notify the Commission if the registered SIP prohibits or limits any person in respect of access to services offered, directly or indirectly, by the registered SIP. The notice must be in the form and contain the information required by the Commission. Any prohibition or limitation on access to services with respect to which a registered SIP is required to file notice is subject to review by the Commission on its own motion, or upon application by any person aggrieved by the prohibition or limitation.

limitation of such access to the SIP's services to petition the Commission to review the prohibition or limitation of access. Exclusive SIPs, by definition, engage on an exclusive basis in collecting, processing, or preparing data. In contrast, the proposed competing consolidators would not engage in collecting, processing, or preparing data on an exclusive basis. Therefore, the Commission preliminarily believes that the protections of Section 11A(b)(5) of the Exchange Act, including the ability of an aggrieved person to petition the Commission for review of a SIP's prohibition or limitation of access to the SIP's services, are not necessary for the SIPs that register as competing consolidators. The Commission preliminarily believes that competitive forces would reduce the likelihood that a subscriber would not be able to access consolidated market data as proposed because a subscriber should be able to obtain such data from another competing consolidator. Accordingly, the Commission preliminarily believes that it would be consistent with the protection of investors and the public interest to exempt competing consolidators from Section 11A(b)(5) of the Exchange Act.

The Commission requests comment on the proposal to establish a registration process for SIPs that wish to act as competing consolidators and to exempt such competing consolidators from Section 11A(b)(5) of the Exchange Act. In particular, the Commission solicits comment on the following:

79. Do commenters agree that the SIPs that wish to act as proposed competing consolidators should be required to register with the Commission? Do commenters agree that such competing consolidators should be subject to the proposed registration requirements in proposed Rule 614, rather than the registration requirements set forth in Section 11A(b) of the Exchange Act? Why or why not?

80. Do commenters believe that the Commission should establish a registration process for competing consolidators different from the registration process in proposed Rule 614? If so, please describe. Should competing consolidator registration be subject to Commission approval and/or additional or different regulation? Why or why not? If so, please describe.

81. Do commenters believe that competition and market forces would be sufficient to support the proposed registration regime for SIPs that wish to act as competing consolidators? Why or why not?

82. Do commenters agree that the Commission should exempt SIPs that register as competing consolidators from Section 11A(b)(5) of the Exchange Act? Why or why not?

83. Do commenters believe that competition and market forces are sufficient to ensure that market participants would have access to consolidated market data as proposed? Why or why not?

(ii) Description of Proposed Rule 614

Proposed Rule 614(a)(1)(i) would prohibit any person, other than an SRO,[537] from (i) receiving directly from a national securities exchange or national securities association

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537 As noted above, SROs are excluded from the definition of SIP in Section 3(a)(22)(A) of the Exchange Act and therefore would not be required to register as a competing consolidator pursuant to proposed Rules 614(a)–(c) and proposed Form CC. However, SROs are regulated entities, and an SRO competing consolidator would be required to provide information equivalent to that required by proposed Form CC. For example, national securities exchanges must file information about their control persons, officers, and directors, and affiliates on Form 1 that is similar to the disclosures required under Exhibits A–D of proposed Form CC. See Form 1 Instructions, at Exhibits C, J, and K, available at https://www.sec.gov/files/form1.pdf (last accessed Jan. 8, 2020). In addition, SRO competing consolidators would be required to file with the Commission all proposed rule changes pursuant to Section 19(b) of the Exchange Act and Rule 19b-4 thereunder to begin operations as a competing consolidator, including rule changes

information with respect to quotations for and transactions in NMS stocks; and (ii) generating the proposed consolidated market data for dissemination to any person (i.e., acting as a competing consolidator by disseminating data to external parties) unless that person files with the Commission an initial Form CC and the initial Form CC has become effective pursuant to proposed Rule 614(a)(1)(v).[538] The Commission preliminarily believes that a SIP that wishes to act as a competing consolidator should not be permitted to commence operations until the Commission has had the opportunity to review such competing consolidator's initial Form CC. The Commission's review of initial Form CC would help to ensure that a SIP that wishes to register as a competing consolidator makes disclosures that comply with the requirements of proposed Rule 614 and that a consistent level of information, and consistent disclosures, are made available to market participants to evaluate such competing consolidators.

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related to the SRO competing consolidator's operations, disclosures regarding consolidated market data products, and all fees related to consolidated market data products. The other requirements of proposed Rule 614—specifically, the responsibilities of competing consolidators enumerated in proposed Rule 614(d), as described below, including the monthly performance metrics and other information required under proposed Rules 614(d)(5) and (d)(6)—would apply to any competing consolidator, including any SRO that acts as a competing consolidator. An SRO, however, would have a choice of the manner in which—and the regulatory regime that would apply to—its competing consolidator business: an SRO could operate a competing consolidator as a facility of the SRO, which would be subject to the rule filing requirements of Section 19(b) of the Exchange Act and Rule 19b-4 thereunder, or the SRO could operate a competing consolidator in a separate affiliated entity, not as a facility, which, like other competing consolidators, would be subject to the proposed registration requirements under proposed Rule 614.

538 In contrast, a self-aggregator would be defined as any broker-dealer that receives information with respect to quotations for and transactions in NMS stocks and generates consolidated market data solely for internal use, and therefore would not be a competing consolidator. See infra Section IV.B.3. If a self-aggregator disseminated consolidated market data to any person, it would be acting as a competing consolidator and would be required to register pursuant to proposed Rule 614 and comply with the requirements applicable to competing consolidators.

Proposed Rule 614(a)(1)(ii) would require any reports required under new Rule 614 to be filed electronically on Form CC, include all of the information as prescribed in Form CC and the instructions to Form CC, and contain an electronic signature.[539] The electronic signature requirement is consistent with the intention of the Commission to receive documents that can be readily accessed and processed electronically.

The proposed rule contemplates the use of an online filing system through which competing consolidators would file a completed Form CC. The system, known as the electronic form filing system ("EFFS") is currently used by SROs to submit Form 19b-4 filings and by SCI entities to submit Form SCI filings.[540] Other methods of electronic filing of Form CC could include the use of secure file transfer through specialized electronic mailbox or through the Electronic, Data Gathering, Analysis and Retrieval ("EDGAR") system, or directly through SEC.GOV via a simple HTML form. Based on the widespread use and availability of the Internet, the Commission believes that filing Form CC in an electronic format would be less burdensome and a more efficient filing process for competing consolidators and the Commission because it is likely to be less expensive and cumbersome than mailing and filing paper forms with the Commission.

In addition, proposed Rule 614(a)(1)(ii) would establish a uniform manner in which the Commission would receive, and competing consolidators would provide, reports made pursuant to proposed Rule 614. The standardization would make it easier and more efficient for the

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539 This proposed requirement is consistent with electronic reporting standards set forth in other Commission rules under the Exchange Act, such as Rule 17a-25 (Electronic Submission of Securities Transaction Information by Exchange Members, Brokers, and Dealers). See 17 CFR 240.17a-25.

540 See Securities Exchange Act Release No. 50486 (Oct. 4, 2004), 69 FR 60287 (Oct. 8, 2004) (adopting the EFFS for use in filing Form 19b-4).

Commission to promptly review and analyze the information that competing consolidators provide.

Proposed Rule 614(a)(1)(iii) would provide that the Commission may, by order, declare an initial Form CC filed by a competing consolidator ineffective no later than 90 calendar days from filing with the Commission.[541] The Commission preliminarily believes that 90 calendar days would provide the Commission with adequate time to carry out its oversight functions with respect to its review of an initial Form CC, including its responsibilities to protect investors and maintain fair, orderly, and efficient markets.

Proposed Rule 614(a)(1)(iv) would require a competing consolidator to withdraw an initial Form CC that has not become effective if any information disclosed in the initial Form CC is or becomes inaccurate or incomplete. The competing consolidator would be able to refile an initial Form CC pursuant to proposed Rule 614(a)(1). The Commission preliminarily believes that it would be appropriate to require an initial Form CC to be withdrawn if any information in the form is or becomes inaccurate or incomplete to assure that the Commission's review is based on accurate and complete information and to assure that the Commission has adequate time to review an accurate and complete initial Form CC.

Proposed Rule 614(a)(1)(v)(A) would provide that an initial Form CC would become effective, unless declared ineffective, no later than the expiration of the review period provided in paragraph (a)(1)(iii) and upon publication of the initial Form CC pursuant to proposed Rule 614(b)(2)(i).

Proposed Rule 614(a)(1)(v)(B) would provide that the Commission would declare ineffective an initial Form CC if it finds, after notice and opportunity for hearing, that such

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541 See also proposed Rule 614(a)(1)(iv)(B).

action is necessary or appropriate in the public interest and is consistent with the protection of investors. The Commission also preliminarily believes that it would be necessary and appropriate in the public interest, and consistent with the protection of investors, to declare ineffective an initial Form CC if it finds, after notice and opportunity for hearing, that one or more disclosures reveal non-compliance with federal securities laws or the rules or regulations thereunder. The Commission also would make such a declaration if it finds, for example, that one or more disclosures on the initial Form CC were materially deficient with respect to their accuracy, currency, or completeness. The Commission preliminarily believes that market participants would use the Form CC disclosure to understand and evaluate the operations of a competing consolidator and to help determine whether to subscribe to a competing consolidator. A disclosure on Form CC that is materially deficient with respect to its completeness or comprehensibility could mislead market participants or impede their ability to evaluate a competing consolidator. In addition, the Commission intends to use the information disclosed on an initial Form CC to exercise oversight over competing consolidators. Given these potential uses, the Commission believes that it is important that an initial Form CC contain disclosures that are accurate, current, and complete. During its review, the Commission and its staff may provide comments to the applicant and may request that the applicant supplement information in its initial Form CC or revise its disclosures on its initial Form CC.[542]

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542 The responsibility for accurate, current, and complete disclosures on proposed Form CC would lie with the competing consolidator. The Commission's review of an initial Form CC would focus on an evaluation of the completeness and accuracy of the disclosures and compliance with federal securities laws. The Commission's evaluation regarding compliance with federal securities laws would involve a review of the Form CC disclosures for apparent non-compliance with federal securities laws, or other rules or regulations thereunder, and would focus on the disclosures made on the Form CC.

If the Commission declares an initial Form CC ineffective, the applicant would be prohibited from operating as a competing consolidator. An initial Form CC declared ineffective would not prevent the competing consolidator from subsequently filing a new Form CC that attempted to address any disclosure deficiencies or other issues that caused the initial Form CC to be declared ineffective.

The Commission requests comment on proposed Rule 614(a)(1), which establishes filing requirements for an initial Form CC and a Commission review period for determining whether a filed initial Form CC should be declared ineffective. In particular, the Commission solicits comment on the following:

84. Do commenters believe that the proposed electronic filing requirement is appropriate? Are there methods other than EFFS that would be appropriate? If so, please describe. Is EFFS an efficient system for filing proposed Form CC? Would another system be more efficient? If so, please specify and describe the rationale for using a different system.

85. Should the Commission adopt the proposal that an initial Form CC will become effective by operation of rule without the Commission issuing an order declaring effective the initial Form CC? Do commenters believe that publishing an initial Form CC on the Commission's website, without a Commission order declaring an initial Form CC effective, would provide sufficient notice that an initial Form CC has become effective? Why or why not? Please support your arguments.

86. Should the Commission require the existing exclusive SIPs to file an initial Form CC before they may become competing consolidators if they decide to act as competing consolidators? Why or why not? Please support your arguments.

87. Do commenters believe that the process to declare a Form CC ineffective is appropriate? Why or why not?

88. Do commenters believe that an SRO seeking to operate a competing consolidator would establish the competing consolidator within the SRO or in a separate affiliated entity? What do commenters believe would be the advantages and disadvantages of each form of operation? Do commenters believe that an SRO competing consolidator would have any advantages over a competing consolidator registered pursuant to proposed Rules 614(a)-(c) and proposed Form CC?

89. If an SRO decides to act as a competing consolidator, should it be required to file a specific notice of its intent to operate as a competing consolidator in addition to, or in lieu of, a Form 19b-4 with the Commission? Would a Form 19b-4 filing by itself provide sufficient notice that an SRO intends to act as a competing consolidator? Please explain.

The Commission is proposing Rule 614(a)(2) to provide the requirements for amending an effective Form CC. Under proposed Rule 614(b)(2)(iii), the Commission will make public any Form CC Amendment, as described below, no later than 30 calendar days from the date of its filing with the Commission. Proposed Form CC is similar to Form SIP and the information required to be filed on proposed Form CC is designed to enable market participants to make informed decisions when selecting a competing consolidator and to facilitate Commission oversight of competing consolidators. As described more fully below,[543] proposed Form CC would require information concerning, among other things: the legal name and legal status of the competing consolidator; the owners, directors, officers, and governors of the competing consolidator, or persons performing similar functions; whether the competing consolidator is a

[543] See infra Section IV.B.2(e)(iii).

broker-dealer or an affiliate of a broker-dealer and a description of the organizational structure of the competing consolidator; contact information for an employee of the competing consolidator prepared to respond to questions regarding Form CC; a description of each consolidated market data service or function, including connectivity and delivery options for subscribers, and a description of all procedures utilized for the collection, processing, distribution, publication and retention of information with respect to quotations for, and transactions in, securities; a description of all market data products with respect to consolidated data, or a subset thereof, that the competing consolidator provides to subscribers; a description of fees and charges for use of the competing consolidator with respect to consolidated market data, including the types, range, and structure of the competing consolidator's fees and differentiation among the types of subscribers; a description of any co-location and related services, the terms and conditions for co-location, connectivity, and related services, including connectivity and throughput options offered, and a description of any other means besides co-location and related services to increase the speed of communication, including a summary of the terms and conditions for its use; and a narrative description, or the functional specifications, of each consolidated market data service or function, including connectivity and delivery options for the subscribers.

The Commission is proposing Rule 614(a)(2)(i) to require a competing consolidator to amend an effective Form CC in accordance with the instructions therein: (i) prior to the date of implementation of a material change to the pricing, connectivity, or products offered; and (ii) no later than 30 calendar days after the end of each calendar year to correct information, whether material or immaterial, that has become inaccurate or incomplete for any reason ("Annual Report"). The Commission preliminarily believes that a change to a competing consolidator's pricing, connectivity, or products offered would be material if there is a substantial likelihood

that a reasonable market participant would consider the change important when evaluating the competing consolidator as a provider of market data.[544]

The Commission preliminarily believes that the proposal to amend an effective Form CC prior to implementing a Material Amendment would provide market participants with information concerning changes to significant aspects of the competing consolidator's services, which would assist market participants in evaluating, or re-evaluating, the competing consolidator as a provider of market data. The Commission preliminarily believes that requiring a competing consolidator to amend an effective Form CC no later than 30 calendar days after the end of each calendar year to correct any other information that has become inaccurate or incomplete for any reason would help to ensure that market participants have accurate and current information regarding competing consolidators. The Commission preliminarily believes that providing a mechanism for competing consolidators to disclose changes to their operations or to update information that does not constitute a Material Amendment (e.g., a change in the organizational structure of the competing consolidator, its officers or directors, or its affiliated entities) no later than 30 calendar days after the end of each calendar year would tailor the reporting burden on competing consolidators to the degree of significance of the change in a manner that does not compromise the ability of market participants to obtain information about the competing consolidator's operations.

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544 See Securities Exchange Act Release No. 833633 (July 18, 2018), 83 FR 38768 (Aug. 7, 2018) (Regulation of NMS Stock Alternative Trading Systems) (stating that a change to the operations of an NMS Stock ATS, or the disclosures regarding the activities of the broker-dealer operator of the NMS Stock ATS and its affiliates, would be material if there is a substantial likelihood that a reasonable market participant would consider the change important when evaluating the NMS Stock ATS as a potential trading venue).

The Commission believes that market participants would use information regarding a competing consolidator's organization, operational capability, market data products, fees, and co-location and related services to determine whether to subscribe, or continue subscribing, to a competing consolidator. In addition, this information would assist market participants in evaluating which products and services of the competing consolidator would be most useful to them. The information in proposed Form CC is also designed to ensure that the Commission has specified information regarding entities acting as competing consolidators, to facilitate the Commission's oversight of competing consolidators and help to ensure the resiliency of a competing consolidator's systems. Given these intended uses, the Commission believes that it is important for a competing consolidator to maintain an accurate, current, and complete Form CC.

The Commission requests comment on proposed Rule 614(a)(2), which establishes filing requirements for Form CC Amendments. In particular, the Commission solicits comment on the following:

90. In addition to material changes to a competing consolidator's pricing, connectivity, or products, what should be a Material Amendment?

91. Do commenters believe that a competing consolidator should be required to file a Material Amendment within a specified time prior to implementing the change that constitutes a Material Amendment? Why or why not? Please support your arguments. Is 30 days an appropriate amount of time for a Material Amendment to be filed?

92. Do commenters believe that a competing consolidator should be required to file an Annual Report? Why or why not? Proposed Rule 614(a)(3) would require a competing consolidator to provide notice of its cessation of operations on Form CC at least 30 business days before the date the competing consolidator ceases to operate as a

competing consolidator. The notice of cessation would cause the Form CC to become ineffective on the date designated by the competing consolidator. This requirement would provide notice to the public and the Commission that the competing consolidator intends to cease operations. The Commission preliminarily believes that this notice would provide market participants with time to find and select an alternative provider of market data.

The Commission requests comment on proposed Rule 614(a)(3), which establishes filing requirements for a Form CC notice of cessation. In particular, the Commission solicits comment on the following:

93. Should the Commission require a competing consolidator to give notice that it intends to cease operations 30 business days or more before ceasing operations as a competing consolidator? If not, why not? Is 30 business days an appropriate time for providing notice of an intention to cease operations? If not, what time period would be appropriate?

In proposed Rule 614(b), the Commission is proposing to make public all Form CC reports filed by competing consolidators and other information. Under proposed Rule 614(b)(1), every Form CC filed pursuant to Rule 304 shall constitute a "report" within the meaning of Sections 11A, 17(a), 18(a), and 32(a), and any other applicable provisions of the Exchange Act. Because proposed Form CC is a report that is required to be filed under the Exchange Act, it would be unlawful for any person to willfully or knowingly make, or cause to be made, a false or misleading statement with respect to any material fact in Form CC. Under proposed Rule 614(b)(2), the Commission would make public via posting on the Commission's website each: (i) effective initial Form CC; (ii) order of ineffective Form CC; (iii) filed Form CC Amendment;

and (iv) notice of cessation. Under the proposed rule, the Commission would publish each Form CC Material Amendment and Annual Report on its website no later than 30 days after the competing consolidator filed the amendment.

The Commission preliminarily believes that making each Form CC filing public via public posting on the Commission's website would provide market participants with important information about the operations of a competing consolidator and facilitate the Commission's oversight of competing consolidators. The Commission preliminarily believes that this information should be easily accessible to all market participants so that market participants may better evaluate a competing consolidator as a potential provider of market data. Additionally, the Commission preliminarily believes that the publication of Material Amendments and Annual Reports would provide market participants with information necessary to evaluate, or re-evaluate, a competing consolidator as a provider of market data, facilitate the Commission's oversight of competing consolidators, and help to ensure the continued resiliency of a competing consolidator's systems.

The Commission requests comment on proposed Rule 614(b), which would establish public disclosure requirements for Form CC filings. In particular, the Commission solicits comment on the following:

94. Do commenters believe that the Commission should post on its website each effective initial Form CC, each notice of ineffectiveness of a Form CC, each Form CC Amendment, and each notice of cessation? Why or why not? Please support your arguments. Do commenters believe a competitive marketplace would provide competing consolidators with incentives to disclose sufficient information in the normal course of business? Why or why not?

The Commission preliminarily believes that it would be helpful for a competing consolidator to make market participants aware that the competing consolidator's filings are publicly posted on the Commission's website. Therefore, proposed Rule 614(c) would require each competing consolidator to post on its website a direct URL hyperlink to the Commission's website that contains the documents enumerated in proposed Rule 614(b)(2), which includes the competing consolidator's Form CC filings. The Commission preliminarily believes that this requirement would make it easier for market participants to review a competing consolidator's Form CC filings by providing an additional means for market participants to locate Form CC filings that are posted on the Commission's website.

The Commission requests comment on proposed Rule 614(c), which would require each competing consolidator to provide a direct URL hyperlink to the Commission's website that contains the documents identified in proposed Rule 614(b)(2). In particular, the Commission solicits comment on the following:

95. Do commenters believe that proposed Rule 614(c) should require each competing consolidator to provide a direct URL hyperlink to the Commission's website that contains the documents identified in proposed Rule 614(b)(2). Why or why not? Please support your arguments.

Under the proposed decentralized consolidation model, competing consolidators would be required to perform many of the obligations currently performed by the existing exclusive SIPs. Proposed Rule 614(d) establishes the responsibilities applicable to competing consolidators, which also includes the disclosure of information that would facilitate the Commission's oversight of competing consolidators and assist market participants in choosing and evaluating competing consolidators. Proposed Rule 614(d)(1) would require each competing

consolidator to collect from each national securities exchange and national securities association, either directly or indirectly, the information with respect to quotations for and transactions in NMS stocks as provided in Rule 603(b), which would include all data necessary to generate the proposed consolidated market data. Proposed Rule 614(d)(2) would require each competing consolidator to calculate and generate consolidated market data, as defined in proposed Rule 600(b)(16), from the information collected in proposed Rule 614(d)(1). Proposed Rule 614(d)(3) would require competing consolidators to make the proposed consolidated market data available to subscribers on a consolidated basis and on terms that are not unreasonably discriminatory, with the timestamps required by proposed Rule 614(d)(4) and Rule 614(e)(1)(ii), as discussed below.

As noted above, competing consolidators would be required under proposed Rule 614(d)(2) to calculate and generate proposed consolidated market data and make proposed consolidated market data available to subscribers. Accordingly, all competing consolidators would be required to develop a consolidated market data product that contains all of the data elements provided under the proposed definition of consolidated market data. In addition, competing consolidators could develop other market data products that contain only a subset of consolidated market data elements (e.g., a TOB product) and could develop market data products that contain elements that go beyond the elements required under the proposed definition of consolidated market data (e.g., a full DOB product). The Commission recognizes that market participants have varying needs with respect to market data, and the proposed rules would permit a competing consolidator to offer additional market data products to meet these needs so long as

the competing consolidator complies with proposed Rules 614(d)(2) and (d)(3) by providing a consolidated market data product.[545]

The Commission preliminarily believes that the proposed provisions are both necessary and appropriate because they reflect the main obligations of competing consolidators, which are to collect, calculate, and disseminate consolidated market data, as proposed. In addition, the use of a competing consolidator at a specific data center would likely be more accurate and useful in assessing the trading activity of a trading participant in that same data center. As proposed, competing consolidators would be the only entities providing proposed consolidated market data to market participants. Accordingly, the terms by which they provide proposed consolidated market data to their subscribers must not be unreasonably discriminatory.[546]

The Commission requests comment on proposed Rules 614(d)(1)-(3). In particular, the Commission solicits comment on the following:

96. Do these provisions reflect the main obligations of competing consolidators? Should there be any other obligations?

97. Competing consolidators would be required to generate proposed consolidated market data, which would include the calculation of an NBBO consistent with the process outlined in the definition of NBBO in Rule 600(b)(42). Do commenters believe that the definition of NBBO would ensure the calculation of consistent NBBOs by competing consolidators?

98. Do commenters believe that competing consolidators should be required to develop a consolidated market data product that contains all of the data elements

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545 See supra Section III.A.

546 See 15 U.S.C. 78k-1(c)(1)(D).

provided under the proposed definition of consolidated market data? Why or why not? Could there be some competing consolidators that only offer a subset of the proposed consolidated market data? Please explain.

Proposed Rule 614(d)(4) would require each competing consolidator to timestamp the information collected in proposed Rule 614(d)(1): (i) upon receipt from each national securities exchange and national securities association at the exchange's or association's data center; (ii) upon receipt of such information at its aggregation mechanism; and (iii) upon dissemination of consolidated market data to customers. The Commission understands that the existing SIPs similarly timestamp information in accordance with proposed Rule 614(d)(4)(i) and (iii). The Commission preliminarily believes that the proposed rule is appropriate because it would allow subscribers to ascertain a competing consolidator's realized latency (i.e., how quickly the competing consolidator can receive data from the exchanges, transmit that data between the exchange's data center and its aggregation center, and aggregate and disseminate proposed consolidated market data to subscribers). This information provides transparency that should help subscribers evaluate a potential competing consolidator or determine whether an existing competing consolidator continues to meet their needs.[547]

The Commission is also proposing several rules, described below, that would require public disclosure of metrics and other information concerning the performance and operations of a competing consolidator. The information that the Commission is proposing that competing consolidators publish is based upon information that is currently produced by the CTA/CQ SIP

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547 If a competing consolidator uses a vendor to transmit data between the SRO data center and the competing consolidator's data center, the competing consolidator retains responsibility for collecting all of the timestamps described in proposed Rule 614(d)(4).

and the Nasdaq UTP SIP, either for public or internal distribution.[548] Because this information is useful to current users of the exclusive SIPs and participants of the Equity Data Plans, the Commission preliminarily believes that it should be made publicly available[549] by competing consolidators. The Commission preliminarily believes that public disclosure and accessibility of this information would help market participants to evaluate the merits of a competing consolidator by providing transparency into the services and performance, and resiliency of each competing consolidator, and could also lower search costs for market participants and enhance competition. In addition, the Commission preliminarily believes that the public disclosure of this information—particularly the system availability and network delay statistics and data quality and system issues—would help to ensure that competing consolidators have a demonstrated ability to provide consolidated market data in a stable and resilient manner.

Proposed Rule 614(d)(5) would require each competing consolidator to publish prominently on its website, within 15 calendar days after the end of each month, certain

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548 The exclusive SIPs currently publish to their respective websites monthly processor metrics that provide the following information: system availability, message rate and capacity statistics, and the following latency statistics from the point of receipt by the SIP to dissemination from the SIP: average latency and 10th, 90th and 99th percentile latency. See CTA Metrics, available at https://www.ctaplan.com/metrics; UTP Metrics, available at http://www.utpplan.com/metrics. Additionally, the exclusive SIPs post on their websites any system alerts and the Nasdaq UTP Plan posts vendor alerts as well. See CTA Alerts, available at https://www.ctaplan.com/alerts; UTP-SIP System Alerts, available at http://www.utpplan.com/system_alerts; UTP Vendor Alerts, available at http://www.utpplan.com/vendor_alerts. Further, the exclusive SIPs publish on their websites charts detailing realized latency from the inception of a Participant matching engine event through the point of dissemination from the exclusive SIP. See CTA Latency Charts, available at https://www.ctaplan.com/latency-charts; UTP Realized Latency Charting, available at http://www.utpplan.com/latency_charts.

549 Rule 600(b)(37) of Regulation NMS defines "make publicly available" as "posting on an Internet Web site that is free and readily accessible to the public, furnishing a written copy to customers on request without charge, and notifying customers at least annually in writing that a written copy will be furnished on request." See 17 CFR 242.600(b)(37).

performance metrics. All information posted pursuant to proposed Rule 614(d)(5) must be publicly posted in downloadable files and must remain free and accessible (without any encumbrances or restrictions) by the general public on the website for a period of not less than three years from the initial date of posting. The Commission preliminarily believes that the availability of this information on a website (without any encumbrances or restrictions) would assist market participants in comparing competing consolidators and evaluating their performance over time.[550] In particular, proposed Rule 614(d)(5) would provide that the performance metrics include: (i) capacity statistics (such as system tested capacity, system output capacity, total transaction capacity, and total transaction peak capacity); (ii) message rate and total statistics (such as peak output rates on the following bases: 1-millisecond, 10-millisecond, 100-millisecond, 500-millisecond, 1-second, and 5-second); (iii) system availability statistics (for example, whether system up-time has been 100% for the month and cumulative amount of outage time); (iv) network delay statistics (for example, today under a TCP-IP network, network delay statistics would include quote and trade zero window size events, quote and trade TCP retransmit events, and quote and trade message total); and (v) latency statistics (with distribution statistics up to the 99.99th percentile) for (1) when a national securities exchange or national securities association sends an inbound message to a competing consolidator network and when the competing consolidator network receives the inbound message;[551] (2) when the competing consolidator network receives the inbound message and when the competing consolidator network sends the corresponding consolidated message to a

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550 A competing consolidator that ceases operations would not be required to maintain the information posted pursuant to proposed Rule 614(d)(5) after the competing consolidator files its notice of cessation and its Form CC becomes ineffective, as provided in proposed Rule 614(a)(3).

551 The Commission believes that the SIPs do not currently produce this latency statistic.

subscriber; and (3) when a national securities exchange or national securities association sends an inbound message to a competing consolidator network and when the competing consolidator network sends the corresponding consolidated message to a subscriber.

Additionally, proposed Rule 614(d)(6) would require each competing consolidator to publish prominently on its website, within 15 calendar days after the end of each month, information on: (i) data quality issues (such as delayed message publication, publication of duplicative messages, and message inaccuracies); (ii) system issues (such as processing, connectivity, and hardware problems); (iii) any clock synchronization protocol utilized; (iv) for the clocks used to generate the timestamps described in Rule 614(d)(4), clock drift averages and peaks and number of instances of clock drift greater than 100 microseconds;[552] and (v) vendor alerts (such as holiday reminders and testing dates). All information posted pursuant to proposed Rule 614(d)(6) must be publicly posted and must remain free and accessible (without any encumbrances or restrictions) by the general public on the website for a period of not less than three years from the initial date of posting.

The Commission requests comment on proposed Rules 614(d)(4)-(d)(6). In particular, the Commission solicits comment on the following:

99. Do commenters believe that separate timestamps should be required as described in Rule 614(d)(4)? Are these the relevant instances for timestamps? Should any other timestamps be adopted? Should any of the proposed timestamps not be required?

100. Do commenters believe that the information required to be published pursuant to proposed Rule 614(d)(5) and proposed Rule 614(d)(6) is appropriate for competing

[552] The Commission believes that the SIPs do not currently produce this information.

consolidators? Should any further information be published? Is any information proposed to be published unnecessary?

101. Do commenters believe that the frequency of publication of the information required to be published pursuant to proposed Rule 614(d)(5) and proposed Rule 614(d)(6) is sufficient? Is it too onerous?

102. Do commenters believe that requiring each competing consolidator to publish the data required by proposed Rule 614(d)(5) and proposed Rule 614(d)(6) on its respective website is appropriate? Would commenters prefer that the competing consolidators instead file the data with the Commission for publication on the Commission's website?

103. Do commenters believes that any of the information required to be published on the competing consolidator's website should not be required to be made publicly available? Please explain. If so, should this information be required to be provided to subscribers? Should any information proposed to be made publicly available not be made publicly available due to competitive concerns? If so, please identify the information and provide an explanation.

104. Do commenters believe a requirement for the competing consolidators to publish historical performance data should be included in proposed Rule 614(d)(5) and proposed Rule 614(d)(6)? If yes, for what time periods should historical data be required to be published?

The Commission is proposing several rules that would require competing consolidators to provide and maintain information for regulatory purposes. Proposed Rule 614(d)(7) would require each competing consolidator to keep and preserve at least one copy of all documents, including all correspondence, memoranda, papers, books, notices, accounts, and such other

records as shall be made or received by it in the course of its business as such and in the conduct of its business.[553] The proposed rule would require competing consolidators to keep these documents for a period of no less than five years, the first two years in an easily accessible place. Proposed Rule 614(d)(8) would require each competing consolidator to, upon request of any representative of the Commission, promptly furnish to the possession of such representative copies of any documents required to be kept and preserved by it.[554] These requirements would facilitate the Commission's oversight of competing consolidators and the national market system.

The Commission requests comment on proposed Rules 614(d)(7) and (d)(8). In particular, the Commission solicits comment on the following:

105. Do commenters believe that the documents required to be kept and preserved by proposed Rule 614(d)(7) are appropriate for competing consolidators? If not, please explain. Are there any other documents that should be kept and preserved by competing consolidators?

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553 See Section 17(a)(1) of the Exchange Act, 15 U.S.C. 78q(a)(1).

554 In this context, "promptly" or "prompt" means making reasonable efforts to produce records that are requested by the staff during an examination without delay. The Commission believes that in many cases a competing consolidator could, and therefore will be required to, furnish records immediately or within a few hours of a request. The Commission expects that only in unusual circumstances would a competing consolidator be permitted to delay furnishing records for more than 24 hours. Accord Regulation Crowdfunding, Securities Act Release No. 9974, Securities Exchange Act Release No. 76324 (Oct. 30, 2015), 80 FR 71387, 71473 n. 1122 (Nov. 15, 2015) (similarly interpreting the term "promptly" in the context of Regulation Crowdfunding Rule 404(e)); Security Based Swap Data Repository Registration, Duties, and Core Principles, Securities Exchange Act Release No. 74246 (Feb. 11, 2015), 80 FR 14438, 14500, n. 846 (March 19, 2015) (similarly interpreting the term "promptly" in the context of Exchange Act Rule 13n–7(b)(3)); Registration of Municipal Advisors, Securities Exchange Act Release No. 70462 (Sept. 20, 2013), 78 FR 67468, 67578–67579 n. 1347 (Nov. 12, 2013) (similarly interpreting the term "prompt" in the context of Exchange Act Rule 15Ba1-8(d)).

106. Do commenters believe that the recordkeeping time periods required by proposed Rule 614(d)(7) are appropriate for competing consolidators? If not, what would be more appropriate recordkeeping time periods?

107. Do commenters believe that proposed Rule 614(d)(8), which requires competing consolidators to provide copies of any documents required to be kept and preserved to any representative of the Commission upon request, is appropriate for competing consolidators? If not, please explain.

The Commission is proposing to define "business day" for purposes of proposed Rule 614 to comport with provisions contained in Rule 19b-4 and to specify the conditions under which filings required pursuant to Rule 614 are deemed to have been made on a particular business day. Specifically, the Commission proposes to define "business day" in the same manner in which it is defined in Rule 19b-4(b)(2).[555] The Commission preliminarily believes that these provisions providing a date-of-filings standard would facilitate the ability of competing consolidators to comply with the requirements of Rule 614 and facilitate the ability of the Commission to effectively receive, review, and make public the filings required under proposed Rule 614.

The Commission requests comment on proposed Rules 614(a)(4)(i) and (a)(4)(ii). In particular, the Commission solicits comment on the following:

108. Do commenters believe that the definition of business day in proposed Rule 614(a)(4)(i) is appropriate? Why or why not? Would any alternative definition of business day be preferable? Please explain.

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555 See Rule 19b-4(b)(2), 17 CFR 240.19b-4(b)(2).

109. Do commenters believe that the standards set forth in proposed Rule 614(a)(4)(ii) regarding when a filing or publication requirement is deemed to have occurred on a particular business day are appropriate? Why or why not? Would any alternative standards be preferable? Please explain.

(iii) Proposed New Form CC

Proposed new Form CC includes a set of instructions for its completion and submission. These instructions are attached to this release, together with proposed Form CC. Proposed Form CC would require competing consolidators[556] to provide information and/or reports in narrative form by attaching specified exhibits. The proposed form would require a competing consolidator to indicate the purpose for which it is filing the form (i.e., initial report, material amendment, annual amendment, or notice of cessation), and to provide information in four categories: (1) general information, along with contact information; (2) business organization; (3) operational capability; and (4) services and fees. The Commission preliminarily believes that it is necessary to obtain the information requested in proposed Form CC to enable the Commission to determine whether to declare a Form CC ineffective. Specifically, the Commission believes that the requested information would assist the Commission in understanding the competing consolidator's overall business structure, technological reliability, and services offered. In addition, Form CC would help to provide for consistent disclosures among competing consolidators.

General Information: Proposed Form CC would require a competing consolidator to provide its legal name and "DBA" (doing business as), if applicable, its address, website URL,

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556 As explained above, only non-exclusive SIP competing consolidators, and not SRO competing consolidators, would be required to register on Form CC.

legal status (e.g., corporation, partnership, and sole proprietorship), and, except in the case of a sole proprietorship, the date of formation and state or country in which it was formed. The Commission preliminarily believes that this basic information is necessary for the Commission to evaluate a competing consolidator. Proposed Form CC also would require the competing consolidator to indicate (1) whether it is registered as a broker-dealer or affiliated with a registered broker-dealer and (2) whether it is a successor to a previously registered competing consolidator and, if so, the date of succession and the name and address of the predecessor registrant. The Commission preliminarily believes that this would provide basic identifying information about the competing consolidator and assist the Commission in its review of Form CC.

Business Organization: Proposed Form CC would require each competing consolidator to provide information regarding its business organization, including: (1) in Exhibit A, information regarding any person who owns 10 percent or more of the competing consolidator's stock or who, either directly or indirectly, through agreement or otherwise, in any other manner, may control or direct the competing consolidator's management or policies, including the full name and title of any such person and a copy of the agreement, or if there is no written agreement, a description of the agreement or basis upon which such person may exercise such control or direction; (2) in Exhibit B, a list of the officers, directors, governors, or persons performing similar functions of the competing consolidator; (3) in Exhibit C, a narrative or graphic description of the competing consolidator's organizational structure; and (4) in Exhibit D, a list of all affiliates of the competing consolidator and the general nature of the affiliations. The Commission preliminarily believes that obtaining this information would assist the Commission in understanding the competing consolidator's overall business structure,

governance arrangements, and operations, all of which would assist the Commission in its review of Form CC. If the competing consolidator is a broker-dealer, or is affiliated with a broker-dealer, proposed Form CC would permit the competing consolidator to attach its, or its affiliate's, Schedule A of Form BD, relating to direct owners and executive officers, and Schedule B of Form BD, relating to indirect owners. Alternatively, in lieu of filing Exhibits A and B to proposed Form CC, or providing Schedules A and B of Form BD, proposed Form CC would permit a competing consolidator to provide a URL address where the information requested under Exhibits A and B to proposed Form CC are available. The Commission preliminarily believes that this information would help the Commission and market participants understand the persons and entities that directly and indirectly own the broker-dealer, thereby enabling the Commission and market participants to better understand potential conflicts of interest that may arise for a competing consolidator that is a broker-dealer or is affiliated with a broker-dealer.

Operational Capability: Proposed Form CC would require each competing consolidator to provide a description of each proposed consolidated market data service or function, including connectivity and delivery options for subscribers, and a description of all procedures utilized for the collection, processing, distribution, publication, and retention of information with respect to quotations for, and transactions in, securities. The Commission further believes, preliminarily, that this information could assist the Commission in overseeing competing consolidators and assist market participants in assessing whether to become a subscriber of a certain competing consolidator. Competing consolidators could serve an important role in the national market system by calculating and generating consolidated market

data, as proposed, and, accordingly, it is important for the competing consolidator to provide the requested information relating to its operational capability.

Services and Fees: Proposed Form CC would further require a competing consolidator to provide information regarding access to its competing consolidator services, including: (1) a description of all market data products with respect to proposed consolidated market data or any subset of proposed consolidated market data that are provided to subscribers; (2) a description of any fees or charges for use of the competing consolidator with respect to proposed consolidated market data or any subset of proposed consolidated market data, including the types of fees (e.g., subscription and connectivity), the structure of the fee (e.g., fixed and variable), variables that affect the fees (e.g., data center costs, aggregation costs, and transmission costs), pricing differentiation among the types of subscribers, and range of fees (high and low); (3) a description of any co-location, connectivity, and related services, and the terms and conditions for co-location and related services, including connectivity and throughput options offered; and (4) a description of any other means besides co-location and related services to increase the speed of communication, including a summary of the terms and conditions for its use. The Commission preliminarily believes that this information would assist market participants in determining whether to become a subscriber of a competing consolidator by requiring the availability to all market participants of information regarding the services offered by the competing consolidator and the fees it charges for services and proposed consolidated market data. The availability of this information would also help to assure that all subscribers and potential subscribers have the same information about the services that the competing consolidator offers.

Contact Information: In addition to the foregoing, proposed Form CC would require a competing consolidator to provide Commission staff with point of contact information for a

person(s) prepared to respond to questions regarding Form CC, including the name, title, telephone number, and email address of such person. Proposed Form CC also would require an electronic signature to help ensure the authenticity of the Form CC submission. The Commission preliminarily believes these proposed requirements would expedite communications between Commission staff and a competing consolidator and help to ensure that only personnel authorized by the competing consolidator are submitting required filings and responding to questions from Commission staff regarding Form CC.

The Commission requests comment on proposed Form CC. In particular, the Commission solicits comment on the following:

110. Are the instructions in proposed Form CC sufficiently clear? If not, identify any instructions that should be clarified, and, if possible, offer alternatives.

111. Should the Commission implement an electronic filing system for receipt of Form CC, and, if so, what particular features should be incorporated into the system? Are there any burdens associated with the electronic filing of proposed Form CC that the Commission should consider?

112. Is the requested information relating to a competing consolidator's operational capability appropriate? If not, identify any items that are not appropriate, explain why, and, if possible, offer alternatives.

113. Is the requested information relating to access to a competing consolidator's services appropriate? If not, identify any items that are not appropriate, explain why, and, if possible, offer alternatives.

114. Do commenters believe that competing consolidators will bundle their products and/or services? If so, should this be disclosed on Form CC?

115. Should the Commission require any additional information on Form CC? If so, what information and why?

116. Are there any items on proposed Form CC that the Commission should not request? If so, which items and why?

(f) Amendments to Regulation SCI

The Commission adopted Regulation SCI in November 2014 to strengthen the technology infrastructure of the U.S. securities markets.[557] Regulation SCI is designed to reduce the occurrence of systems issues in the U.S. securities markets, improve resiliency when systems problems occur, and enhance the Commission's oversight of securities market technology infrastructure. The key market participants that are currently subject to Regulation SCI are called "SCI entities" and include certain SROs (including stock and options exchanges, registered clearing agencies, FINRA and the Municipal Securities Regulatory Board) ("SCI SROs"); alternative trading systems that trade NMS and non-NMS stocks exceeding specified volume thresholds ("SCI ATSs"); the exclusive SIPs ("plan processors"); and certain exempt clearing agencies.[558] Regulation SCI, among other things, requires these SCI entities to establish, maintain, and enforce written policies and procedures reasonably designed to ensure that their key automated systems have levels of capacity, integrity, resiliency, availability, and security adequate to maintain their operational capability and promote the maintenance of fair and orderly markets, and that such systems operate in accordance with the Exchange Act and the

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557 See Regulation SCI Adopting Release, supra note 28, at 72252–56 for a discussion of the background of Regulation SCI.

558 See Rule 1000 of Regulation SCI, 17 CFR 242.1000. Because self-aggregators would be broker-dealers, see infra Section IV.B.3, they would be subject to existing broker-dealer risk control and supervisory obligations. See, e.g., 17 CFR 240.15c3-5, FINRA Rule 3110, FINRA Rule 4370, FINRA Rule 4380.

rules and regulations thereunder and the entities' rules and governing documents, as applicable.[559] Broadly speaking, Regulation SCI also requires SCI entities to take appropriate corrective action when systems issues occur; provide certain notifications and reports to the Commission regarding systems problems and systems changes; inform members and participants about systems issues; conduct business continuity and disaster recovery testing and penetration testing; conduct annual reviews of their automated systems; and make and keep certain books and records.[560]

Regulation SCI applies primarily to the systems of, or operated on behalf of, SCI entities that directly support any one of six key securities market functions – trading, clearance and settlement, order routing, market data, market regulation, and market surveillance ("SCI systems").[561] With respect to security, Regulation SCI also applies to systems that, if breached, would be reasonably likely to pose a security threat to SCI systems ("indirect SCI systems").[562] In addition, certain systems that raise concerns about single points of failure (defined as "critical SCI systems") are subject to certain heightened requirements.[563]

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559 See Rule 1001 of Regulation SCI, 17 CFR 242.1001, which is also discussed further below.

560 See Rules 1002-1007 of Regulation SCI, 17 CFR 242.1001-1007, which are also discussed further below.

561 See Rule 1000 of Regulation SCI, 17 CFR 242.1000.

562 Id.

563 Id. Subparagraph (1) of the definition of "critical SCI systems" in Rule 1000 of Regulation SCI specifically enumerates certain systems to be within its scope, including those that "directly support functionality relating to: (i) clearance and settlement systems of clearing agencies; (ii) openings, reopenings, and closings on the primary listing market; (iii) trading halts;(iv) initial public offerings; (v) the provision of consolidated market data; or (vi) exclusively-listed securities . . .".

When adopting Regulation SCI, the Commission included within the scope of Regulation SCI those entities "that play a significant role in the U.S. securities markets and/or have the potential to impact investors, the overall market, or the trading of individual securities."[564] The Commission identified by function the key market participants it believed were integral to ensuring the stability, integrity, and resiliency of securities market infrastructure.[565] As discussed below, "plan processors" are currently among those entities that are subject to Regulation SCI. Under Regulation SCI, "plan processors" have the meaning set forth in Regulation NMS.[566] Thus, currently, the exclusive SIPs, or plan processors of the Equity Data Plans and the OPRA Plan, are subject to Regulation SCI.[567] The Commission included plan processors within the scope of Regulation SCI because the Commission believed that such entities, because they are exclusive processors and providers of key market data pursuant to a national market system plan, are central features of the national market system and serve an important role within the national market system in operating and maintaining computer and communications facilities for the receipt, processing, validating, and dissemination of quotation and/or last sale price information.[568]

The Commission preliminarily believes that competing consolidators, because they would be sources of consolidated market data, even if not exclusive sources of such data, would

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564 See Regulation SCI Adopting Release, supra note 28, at 72258.

565 Id. at 72254.

566 See Rule 600(b)(59) of Regulation NMS, 17 CFR 242.600(b)(59).

567 See also Regulation SCI Adopting Release, supra note 28, at 72270–71, n. 196 (discussing how the term "plan processor" applies to the CTA, CQ, Nasdaq UTP, and OPRA plans).

568 See also id. at 72271. The Commission also stated how systems issues affecting SIPs highlighted their importance within the national market system. See id. at n. 199 (discussing the impact of two systems issues involving SIPs).

similarly serve an important role in the national market system, and therefore should be subject to the requirements of Regulation SCI. When adopting Regulation SCI, the Commission explained that Regulation SCI would apply not only to exclusive providers of consolidated market data, but also to the market data systems of SCI SROs, stating, "both consolidated and proprietary market data systems are widely used and relied upon by a broad array of market participants, including institutional investors, to make trading decisions, and [] if a consolidated or a proprietary market data feed became unavailable or otherwise unreliable, it could have a significant impact on the trading of the securities to which it pertains, and could interfere with the maintenance of fair and orderly markets."[569] The Commission preliminarily believes that if a consolidated market data feed of a competing consolidator became unavailable or otherwise unreliable, it could have a significant impact on the trading of NMS stocks and/or the market participants subscribing to its data feeds, and could possibly interfere with the maintenance of fair and orderly markets. A systems issue could occur at a competing consolidator (e.g., a systems disruption that prevented the competing consolidator from disseminating consolidated market data to its subscribers, a systems intrusion that impacted the quality of the data being disseminated, or another cybersecurity incident, such that certain market participants or the securities markets broadly could be significantly impacted until such time that the issue was resolved at the competing consolidator, or the end user (or its market data vendor, if applicable) was able to implement any backup arrangements with an alternative competing consolidator. As detailed further below, the Commission is requesting comment on whether all of the obligations set forth in Regulation SCI should apply to competing consolidators, or whether only certain requirements should be imposed, such as those requiring written policies and procedures,

[569] See Regulation SCI Adopting Release, supra note 28, at 72275.

notification of systems problems, business continuity and disaster recovery testing (including testing with participants/subscribers of a competing consolidator), and penetration testing.

In addition, the Commission is proposing to revise the definition of "critical SCI system," to take account of competing consolidators, which, as proposed, would not be exclusive providers of consolidated market data. Currently, subparagraph (1)(v) of the definition of "critical SCI systems" includes those SCI systems of, or operated on behalf of, an SCI entity that directly support functionality relating to "the provision of consolidated market data." The Commission is proposing to revise this subparagraph to apply to those systems that directly support functionality relating to "the provision of market data by a plan processor." The proposed revised language in subparagraph (1)(v) is intended to identify as critical SCI systems only those market data systems that perform an exclusive market data dissemination function pursuant to an NMS plan. Accordingly, the scope of "critical SCI systems" would still capture single points of failure within the national market system. Under the current consolidation model, because the exclusive SIPs represent such single points of failure, they are all subject to heightened requirements as "critical SCI systems." However, because the competing consolidator model is designed to result in multiple viable sources of consolidated market data, and would not be initiated until a transition period was complete,[570] the Commission preliminarily believes that including systems of such competing consolidators within the scope of "critical SCI systems" would not be necessary. With multiple competing consolidators operating in the national market system, the systems of competing consolidators would be subject to the standard (i.e., as SCI systems that are not critical SCI systems) requirements of

570 See infra Section IV.B.6.

Regulation SCI, whereas the proposed revised definition of "critical SCI systems" would address single point of failure concerns.

Because the competing consolidator model would not apply with respect to trading in options, the definition of "critical SCI systems" must still account for the systems of OPRA's plan processor, whose systems would continue to be "critical SCI systems." In addition, to avoid confusion with the term "consolidated market data"—which is proposed to be defined to include (1) core data, (2) regulatory data, (3) administrative data, (4) exchange-specific program data, and (5) additional regulatory, administrative, or exchange-specific program data elements defined as such pursuant to the effective national market system plan(s) required under Rule 603(b)[571]—the Commission is proposing to replace that phrase within the definition of "critical SCI systems" with "market data."[572]

Thus, under this proposal, the definition of "SCI entities" would be expanded to include "competing consolidators," which would be defined to have the same meaning as the definition of "competing consolidators" set forth in proposed Rule 600(b)(16) of Regulation NMS.[573] Competing consolidators would be subject to the requirements of Regulation SCI, as described below.

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571 See proposed Rule 600(b)(19) of Regulation NMS. See also supra Section III.B.

572 See proposed amendment to Rule 1000 of Regulation SCI.

573 See proposed amendment to Rule 1000 of Regulation SCI. As discussed above, competing consolidators would not fall within the definition of "plan processors" under Regulation SCI. See supra notes 566–567 and accompanying text. In addition to revising Rule 1000 of Regulation SCI to define "competing consolidators" and include them within the definition of "SCI entity," corresponding changes would be made to Form SCI and the General Instructions to Form SCI to include references to "competing consolidators." See infra note 595 and accompanying text (discussing Form SCI and Rule 1006 of Regulation SCI).

Rule 1001(a) of Regulation SCI requires SCI entities to have policies and procedures reasonably designed to ensure that their SCI systems and, for purposes of security standards, indirect SCI systems, have levels of capacity, integrity, resiliency, availability, and security adequate to maintain their operational capability and promote the maintenance of fair and orderly markets, and includes certain minimum requirements for those policies and procedures relating to capacity planning, stress tests, systems development and testing methodology, the identification of vulnerabilities, business continuity and disaster recovery plans (including geographic diversity and resumption goals), and monitoring.[574] Of particular note for competing consolidators is Rule 1001(a)(2)(vi), which requires that an SCI entity's policies and procedures include standards "that result in such systems being designed, developed, tested, maintained, operated, and surveilled in a manner that facilitates the successful collection, processing, and dissemination of market data."[575] Rule 1001(a)(3) of Regulation SCI requires that SCI entities periodically review the effectiveness of these policies and procedures, and take prompt action to remedy any deficiencies.[576] Rule 1001(a)(4) of Regulation SCI provides that, for purposes of the provisions of Rule 1001(a), an SCI entity's policies and procedures will be deemed to be reasonably designed if they are consistent with current SCI industry standards, which shall be comprised of information technology practices that are widely available to information technology professionals in the financial sector and issued by an authoritative body that is a U.S. governmental entity or agency, association of U.S. governmental entities or agencies, or widely

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574 Rule 1001(a) of Regulation SCI, 17 CFR 242.1001(a).

575 Rule 1001(a)(2)(vi) of Regulation SCI, 17 CFR 242.1001(a)(2)(vi).

576 Rule 1001(a)(3) of Regulation SCI, 17 CFR 242.1001(a)(3).

recognized organization;[577] however, Rule 1001(a)(4) of Regulation SCI also makes clear that compliance with such "current SCI industry standards" are not the exclusive means to comply with these requirements.

Rule 1001(b) of Regulation SCI requires that each SCI entity establish, maintain, and enforce written policies and procedures reasonably designed to ensure that its SCI systems operate in a manner that complies with the Act and the rules and regulations thereunder and the entity's rules and governing documents, as applicable, and specifies certain minimum requirements for such policies and procedures.[578] Rule 1001(b)(3) of Regulation SCI requires that SCI entities periodically review the effectiveness of these policies and procedures, and take prompt action to remedy any deficiencies.[579] Rule 1001(b)(4) of Regulation SCI provides individuals with a safe harbor from liability under Rule 1001(b) if certain conditions are met.[580]

Rule 1001(c) of Regulation SCI requires SCI entities to establish, maintain, and enforce reasonably designed written policies and procedures that include the criteria for identifying responsible SCI personnel, the designation and documentation of responsible SCI personnel, and

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577 Rule 1001(a)(4) of Regulation SCI, 17 CFR 242.1001(a)(4). We note that concurrent with the Commission's adoption of Regulation SCI, Commission staff issued staff guidance on current SCI industry standards as referenced in Regulation SCI. The staff guidance listed examples of publications in nine domains describing processes, guidelines, frameworks, or standards an SCI entity could look to in developing reasonable policies and procedures to comply with Rule 1001(a) of Regulation SCI. See "Staff Guidance on Current SCI Industry Standards," November 19, 2014, available at: https://www.sec.gov/rules/final/2014/staff-guidance-current-sci-industry-standards.pdf. The domains included: application controls; capacity planning; computer operations and production environment controls; contingency planning; information security and networking; audit; outsourcing; physical security; and systems development methodology.

578 Rule 1001(b)(1)-(2) of Regulation SCI, 17 CFR 242.1001(b)(1)-(2).

579 Rule 1001(b)(3) of Regulation SCI, 17 CFR 242.1001(b)(3).

580 Rule 1001(b)(4) of Regulation SCI, 17 CFR 242.1001(b)(4).

escalation procedures to quickly inform responsible SCI personnel of potential SCI events.[581] Rule 1000 of Regulation SCI defines "responsible SCI personnel" to mean, "for a particular SCI system or indirect SCI system impacted by an SCI event, such senior manager(s) of the SCI entity having responsibility for such system, and their designee(s)."[582] Rule 1000 also defines "SCI event" to mean an event at an SCI entity that constitutes a system disruption, a systems compliance issue, or a systems intrusion.[583] Rule 1001(c)(2) of Regulation SCI requires that SCI entities periodically review the effectiveness of these policies and procedures, and take prompt action to remedy any deficiencies.[584]

Under Rule 1002 of Regulation SCI, SCI entities have certain obligations related to SCI events. Specifically, when any responsible SCI personnel has a reasonable basis to conclude that an SCI event has occurred, an SCI entity must begin to take appropriate corrective action which must include, at a minimum, mitigating potential harm to investors and market integrity resulting from the SCI event and devoting adequate resources to remedy the SCI event as soon as reasonably practicable.[585] Rule 1002(b) provides the framework for notifying the Commission of SCI events including, among other things, to: immediately notify the Commission of the event; provide a written notification within 24 hours that includes a description of the SCI event

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581 Rule 1001(c) of Regulation SCI, 17 CFR 242.1001(c).

582 Rule 1000 of Regulation SCI, 17 CFR 242.1000.

583 A "systems disruption" means an event in an SCI entity's SCI systems that disrupts, or significantly degrades, the normal operation of an SCI system. A "systems compliance issue" means "an event at an SCI entity that has caused any SCI system of such entity to operate in a manner that does not comply with the Act and the rules and regulations thereunder or the entity's rules or governing documents, as applicable." A "systems intrusion" means any unauthorized entry into the SCI systems or indirect SCI systems of an SCI entity." See Rule 1000 of Regulation SCI, 17 CFR 242.1000.

584 Rule 1001(c)(2) of Regulation SCI, 17 CFR 242.1001(c)(2).

585 See Rule 1002(a) of Regulation SCI, 17 CFR 242.1002(a).

and the system(s) affected, with other information required to the extent available at the time; provide regular updates regarding the SCI event until the event is resolved; and submit a final detailed written report regarding the SCI event.[586] Rule 1002(c) of Regulation SCI also requires that SCI entities disseminate information to their members or participants regarding SCI events.[587] These information dissemination requirements are scaled based on the nature and severity of an event. Specifically, for "major SCI events," SCI entities are required to promptly disseminate certain information about the event to all of its members or participants. For SCI events that are not "major SCI events," SCI entities must, promptly after any responsible SCI personnel has a reasonable basis to conclude that an SCI has occurred, disseminate certain information to those SCI entity members and participants reasonably estimated to have been affected by the event. In addition, dissemination of information to members or participants is permitted to be delayed for systems intrusions if such dissemination would likely compromise the security of the SCI entity's systems or an investigation of the intrusion.[588]

Rule 1003(a) of Regulation SCI requires SCI entities to provide reports to the Commission relating to system changes, including a report each quarter describing completed,

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586 See Rule 1002(b) of Regulation SCI, 17 CFR 242.1002(b). For any SCI event that "has had, or the SCI entity reasonably estimates would have, no or a de minimis impact on the SCI entity's operations or on market participants," Rule 1002(b)(5) provides an exception to the general Commission notification requirements under Rule 1002(b). Instead, an SCI entity must make, keep, and preserve records relating to all such SCI events, and submit a quarterly report to the Commission regarding any such events that are systems disruptions or systems intrusions.

587 See Rule 1002(c) of Regulation SCI, 17 CFR 242.1002(c).

588 See Rule 1002(c)(2) of Regulation SCI, 17 CFR 242.1002(c)(2). In addition, the information dissemination requirements of Rule 1002(c) do not apply to SCI events to the extent they relate to market regulation or market surveillance systems, or to any SCI event that has had, or the SCI entity reasonably estimates would have, no or a de minimis impact on the SCI entity's operations or on market participants. See Rule 1002(c)(4) of Regulation SCI, 17 CFR 242.1002(c)(4).

ongoing, and planned material changes to their SCI systems and the security of indirect SCI systems, during the prior, current, and subsequent calendar quarters, including the dates or expected dates of commencement and completion.[589] Rule 1003(b) of Regulation SCI also requires that an SCI entity conduct an "SCI review" not less than once each calendar year.[590] "SCI review" is defined in Rule 1000 of Regulation SCI to mean a review, following established procedures and standards, that is performed by objective personnel having appropriate experience to conduct reviews of SCI systems and indirect SCI systems, and which review contains: a risk assessment with respect to such systems of an SCI entity; and an assessment of internal control design and effectiveness of its SCI systems and indirect SCI systems to include logical and physical security controls, development processes, and information technology governance, consistent with industry standards.[591] Rule 1003(b)(2)-(3) SCI entities are also required to submit a report of the SCI review to their senior management, and must also submit the report and any response by senior management to the report, to their board of directors as well as the Commission.[592]

Rule 1004 of Regulation SCI sets forth the requirements for testing an SCI entity's business continuity and disaster recovery plans with its members or participants. This rule requires that, with respect to an SCI entity's business continuity and disaster recovery plan,

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589 See Rule 1003(a) of Regulation SCI, 17 CFR 242.1003(a).

590 See Rule 1003(b) of Regulation SCI, 17 CFR 242.1003(b).

591 See Rule 1000 of Regulation SCI, 17 CFR 242.1000. In addition, Rule 1003(b)(1) of Regulation SCI states that penetration test reviews of an SCI entity's network, firewalls, and production systems must be conducted at a frequency of not less than once every three years, and assessments of SCI systems directly supporting market regulation or market surveillance must be conducted at a frequency based upon the risk assessment conducted as part of the SCI review, but in no case less than once every three years. See Rule 1003(b)(1)(i)-(ii) of Regulation SCI, 17 CFR 242.1003(b)(1)(i)-(ii).

592 See Rule 1003(b)(2)-(3) of Regulation SCI, 17 CFR 242.1003(b)(2)-(3).

including its backup systems, each SCI entity shall: (a) establish standards for the designation of those members or participants that the SCI entity reasonably determines are, taken as a whole, the minimum necessary for the maintenance of fair and orderly markets in the event of the activation of such plans;[593] (b) designate members or participants pursuant to the standards established and require participation by such designated members or participants in scheduled functional and performance testing of the operation of such plans, in the manner and frequency specified by the SCI entity, provided that such frequency shall not be less than once every 12 months; and (c) coordinate the testing of such plans on an industry- or sector-wide basis with other SCI entities.

Rule 1005(b) of Regulation SCI relates to the recordkeeping requirements of competing consolidators related to compliance with Regulation SCI.[594] Rule 1006 of Regulation SCI provides for certain requirements relating to the electronic filing, on Form SCI, of any notification, review, description, analysis, or report to the Commission required to be submitted under Regulation SCI.[595] Finally, Rule 1007 of Regulation SCI contains requirements relating to a written undertaking when records required to be filed or kept by an SCI entity under

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593 See Rule 1004 of Regulation SCI, 17 CFR 242.1004. For a competing consolidator, its designated members or participants generally would include the national securities exchanges that receive its consolidated market data, as well as its other significant subscribers for such data (including, but not limited, to major market data vendors that widely redistribute such data).

594 See Rule 1005 of Regulation SCI, 17 CFR 242.1005. Rule 1005(a) relates to recordkeeping provisions for SCI SROs, whereas Rule 1005(b) relates to the recordkeeping provision for SCI entities other than SCI SROs.

595 See Rule 1006 of Regulation SCI, 17 CFR 242.1006.

Regulation SCI are prepared or maintained by a service bureau or other recordkeeping service on behalf of the SCI entity.[596]

The Commission requests comment on the proposed inclusion of competing consolidators in Regulation SCI and the related revisions to Rule 1000 of Regulation SCI. In particular, the Commission solicits comment on the following:

117. Do commenters believe that Regulation SCI should apply to competing consolidators? If so, do commenters believe that the proposed revisions to Rule 1000 of Regulation SCI are appropriate? Why or why not? Is there a potential for a systems issue at a competing consolidator to have an adverse impact on the maintenance of fair and orderly markets? If so, what do commenters believe would be the most effective way to mitigate that potential?

118. Do commenters believe that competing consolidators could play a significant role in the U.S. securities markets such that they should be defined as SCI entities? Why or why not? What do commenters believe are the risks related to subscribers associated with systems issues at a competing consolidator? What impact would a systems issue have on the trading of securities and the maintenance of fair and orderly markets? Do commenters believe that all requirements set forth in Regulation SCI should apply to competing consolidators? Why or why not?

119. Unlike other types of SCI entities, ATSs are only subject to Regulation SCI if they meet certain volume thresholds set forth in the definition of "SCI ATS." Do commenters similarly believe there is a threshold size, or a threshold for significant market share, at which Regulation SCI should apply to a competing consolidator? For

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596 See Rule 1007 of Regulation SCI, 17 CFR 242.1007.

example, the definition of SCI ATSs contains a two-pronged volume threshold test measured over a "four out of six-month" period to determine whether an alternative trading system is subject to Regulation SCI. Would a similar test be appropriate for competing consolidators? If so, what do commenters believe would be an appropriate measurement that should be used for such a test? For example, in the definition of SCI ATS, the NMS stock volume threshold test for inclusion of an alternative trading system in Regulation SCI is one percent (1%) or more of overall volume in NMS stocks during at least four of the preceding six calendar months. Would it, for example, be appropriate for the Commission to apply Regulation SCI to competing consolidators that had one percent (1%) or more of total subscribers of consolidated market data during at least four of the preceding six calendar months? Or, would a different threshold (such as five, ten, or twenty percent) be more appropriate? Why or why not? Please describe. Do commenters believe that another measurement (other than total subscribers of consolidated market data) be more appropriate? If so, what do commenters believe that measurement should be? Please describe.

120. Do commenters believe that only certain provisions of Regulation SCI should apply to competing consolidators? For example, should competing consolidators only be subject to certain aspects of Regulation SCI, such as the policies and procedures required by Rule 1001 of Regulation SCI; the requirement to provide notification of SCI events and to take corrective action as required by Rule 1002 of Regulation SCI; the requirement to conduct SCI reviews as required by Rule 1003 of Regulation SCI; the requirement to perform disaster recovery testing as required by Rule 1004 of Regulation SCI; the requirements related to recordkeeping, as required by Rule 1005 of Regulation SCI; the

requirements relating to electronic filing on Form SCI pursuant to Rule 1006 of Regulation SCI; and the requirements relating to service bureaus, as required by Rule 1007 of Regulation SCI? If so, which provisions should apply? Do commenters believe that different or unique requirements should apply to the systems of competing consolidators? What should they be and why?

121. In what instances, if at all, should the systems of competing consolidators be defined as "critical SCI systems"? Please describe.

122. Which subscribers or types of subscribers should competing consolidators consider as "designated members or participants" that should be required to participate in the annual mandatory business continuity and disaster recovery testing? Please describe.

123. Do commenters believe that requiring competing consolidators to be defined as SCI entities would deter parties from registering as competing consolidators? Why or why not?

124. Do commenters believe that competing consolidators should not be defined as SCI entities but should be required to comply with provisions comparable to provisions of Regulation SCI? Why or why not?

125. If commenters believe that competing consolidators should not be defined as SCI entities but should be required to comply with provisions comparable to provisions of Regulation SCI, what provisions should apply? Should competing consolidators be required to have business continuity and disaster plans, to designate subscribers that the competing consolidator determines are necessary for the maintenance of fair and orderly markets in the event of the activation of such plans, to mandate such subscribers' participation in scheduled functional and performance testing of the operation of such

plans not less than once every 12 months, and to coordinate testing of such plans on an industry- or sector-wide basis with SCI entities, or otherwise be required to participate in coordinated testing scheduled by SCI entities? Why or why not?

126. Do commenters believe that existing proprietary market data aggregation firms that wish to register as competing consolidators would establish separate legal entities for that purpose? Why or why not?

3. Self-Aggregators

Currently, some broker-dealers effectively act as self-aggregators by purchasing proprietary data products from the exchanges, consolidating that information (either independently or with the use of vendor services and/or hardware), and calculating the NBBO for their own use. Broker-dealers may self-aggregate to eliminate various forms of latency[597] or to access the additional content provided by proprietary data feeds in a consolidated form. This self-aggregated consolidated data may be used for SORs, algorithmic trading systems, alternative trading systems ("ATSs"), visual display, or other uses. While broker-dealers raised concerns about the costs associated with proprietary data products, some have developed these self-aggregation solutions as a means to address the latency and content issues that are present with the exclusive SIPs themselves.[598] The Commission preliminarily believes that broker-dealers should be permitted to continue to self-aggregate consolidated market data as proposed to be

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597 See supra Section IV.A for a discussion of geographic, aggregation, and transmission latencies.

598 See, e.g., Roundtable Day One Transcript at 198–199 (Joseph Wald, Clearpool) ("Clearpool and other broker-dealers are compelled to purchase exchanges' proprietary data feeds, both to provide competitive execution services to our clients and to meet our best execution obligations due to the content of the information contained in the proprietary data feeds as well as the latency differences between them, which are major and important considerations for brokers.").

defined under the proposed decentralized consolidation model. The Commission is concerned that eliminating the ability of broker-dealers to self-aggregate proposed consolidated market data for their own use would be unnecessarily disruptive to the current market data infrastructure landscape.

Accordingly, the Commission proposes to amend Rule 600(b) to add a definition of a self-aggregator. The Commission proposes to define a self-aggregator as "a broker or dealer that receives information with respect to quotations for and transactions in NMS stocks, including all data necessary to generate consolidated market data, and generates consolidated market data solely for internal use. A self-aggregator may not make consolidated market data, or any subset of consolidated market data, available to any other person." In particular, a self-aggregator would collect the NMS information necessary to generate proposed consolidated market data that it needs to trade for its own account or to execute transactions for its customers. A self-aggregator would generate the proposed consolidated market data that it needs for its business, such as calculating current protected bids and offers from each trading center for purposes of Rule 611 and the current best bids and offers from each trading center for achieving and analyzing best execution.[599] The proposed definition would prohibit self-aggregators from disseminating proposed consolidated market data to any person, including a customer or any affiliated entity, as such action would not be for the internal use of a self-aggregator and would be akin to the actions of a competing consolidator, and thus would require registration as a competing consolidator.

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599 A self-aggregator also would receive from the primary listing exchanges regulatory data (as defined as proposed consolidated market data), which would be necessary for meeting regulatory obligations, such as monitoring Short Sale Circuit Breakers and LULD price bands. See supra Section III.D.

Like competing consolidators, a self-aggregator would collect all information with respect to quotations for and transactions in NMS stocks directly from each SRO, but importantly, self-aggregators would not be permitted to re-distribute or re-disseminate proposed consolidated market data to any person, including to any affiliates or subsidiaries. A self-aggregator that re-distributed or re-disseminated proposed consolidated market data, or any subset of proposed consolidated market data, would be performing the functions of a competing consolidator and, accordingly, would be required to register as a competing consolidator. Self-aggregators would establish connectivity to the SROs directly or through the use of a service provider and would either use their own proprietary technology or that of a third party vendor to perform aggregation and any other functions necessary for generating proposed consolidated market data. A vendor providing hardware, software, and/or other services for the purposes of self-aggregation would not be a competing consolidator unless it collected and aggregated proposed consolidated market data in a standardized format within its own facility (e.g., not that of a broker-dealer customer) and resold that configuration of proposed consolidated market data to a customer.

As discussed above, pursuant to Rule 603(b), self-aggregators would receive access from the SROs, either directly or via the use of a vendor, to the data necessary to generate proposed consolidated market data in the same manner and using same methods as other persons, including competing consolidators.[600] A self-aggregator that limits its use of exchange data to the creation of proposed consolidated market data would be charged only for proposed consolidated market data pursuant to the effective national market system plan(s) fee

[600] See supra Section IV.B.1.

schedules.[601] A self-aggregator that uses an exchange's proprietary data (e.g., full depth of book data) could be charged separately for the proprietary data use pursuant to the individual exchange's fee schedule.[602]

(a) Roundtable Discussion and Comments

Roundtable participants discussed self-aggregation. One panelist described a variation of the self-aggregation alternative that he referred to as the "one feed-one speed" model.[603] The panelist suggested that consolidated market data should be made available in a similar manner and using the same framework as the exchanges use to make available their direct proprietary data feeds.[604]

The Commission received one comment letter that supported consideration of a self-aggregation model. The commenter believed that this approach would further the principles of transparency and fairness and "level the playing field for industry participants."[605]

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601 See infra Section IV.B.4 for a discussion of the effective national market system plan(s). This would apply to proposed consolidated market data provided through an exchange's proprietary data product.

602 SRO fees for market data other than the proposed consolidated market data would be subject to the rule filing process pursuant to Section 19(b) and Rule 19b-4.

603 See Roundtable Day Two Transcript at 27–29 (Adam Nunes, Hudson River Trading).

604 Id. This panelist also published a note that described the ability of firms and vendors to receive data directly from the exchanges. See Adam Nunes, MMI Member Guest Editorial: Speed up the SIP, Modern Markets Initiative (Dec. 22, 2015), available at https://www.modernmarketsinitiative.org/archive/2018/11/14/mmi-member-guest-editorial-speed-up-the-sip. In this note, the panelist described a model in which (1) firms would order the SIP data as they do today, by contacting their vendor or the SIP administrator; (2) the firm/vendor connecting to the SIP would get a connection to each exchange to listen to their data where the data is produced (rather than getting the data from a central location); and (3) the firm would receive and process the data similarly to how it handles direct market data feeds.

605 See Letter to Brent J. Fields, Secretary, Commission, from Kirsten Wegner, Chief Executive Officer, Modern Markets Initiative, 5–6 (Oct. 18, 2018) ("Modern Markets Initiative Letter"). One commenter advocated that each exchange should provide a single

In contrast, the Commission received one comment letter that expressed criticism of a self-aggregation model. The commenter urged against government intervention requiring all market participants to use the same connectivity and the same data, explaining that different customers need different products and that the government should not limit choices "in this radical manner."[606] The commenter also stated that adding multiple consolidators or competing SIPs to the model would magnify risks.[607]

(b) Commission Discussion

The Commission preliminarily believes that the proposed decentralized consolidation model should allow broker-dealers to continue to self-aggregate by collecting and calculating consolidated market data, as proposed, solely for their internal use, in a manner that would allow access to proposed consolidated market data on fair and reasonable terms and without the inefficiencies and added latencies associated with the existing exclusive SIP model.

The proposed decentralized consolidation model is designed to increase, rather than limit, market participants' choices with respect to data products and connectivity. Accordingly, the Commission preliminarily believes that broker-dealers should be able to choose to self-aggregate consolidated market data for their own internal purposes in a similar manner as they may do today with proprietary data. Under the proposed rules, competing consolidators and self-

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data feed to market participants (instead of a SIP data feed and proprietary data feeds). The commenter said that a single data feed "would better serve market participants from the standpoint of equality and fairness." However, the commenter also noted that investors would benefit from competition among organizations able to operate as SIPs, either through a bidding process for a centralized SIP or the ability of multiple SIPs to operate (i.e., a competing consolidator model). See T. Rowe Price Letter at 3.

606 See Wittman Letter at 15.

607 Id. at 16.

aggregators would be able to select the transmission services that meet the needs of their client or their individual needs, respectively, rather than be restricted to transmission services mandated by the Equity Data Plans. In addition, the proposed rules would allow competing consolidators and self-aggregators to choose to receive exchange data products that include only proposed consolidated market data elements or products that contain both proposed and non-proposed consolidated market data elements (e.g., existing proprietary data products).

As discussed more fully above, the proposed rules would permit the exchanges to offer different connectivity options (e.g., with different latencies, throughput capacities, and data-feed protocols) to market data customers but would require that any options provided to proprietary data customers be available to competing consolidators and self-aggregators in the same manner and using the same methods, including all methods of access and the same format, for the purpose of collecting and consolidating proposed consolidated market data.

Self-aggregators may have a minor latency advantage over market participants that decide to utilize a competing consolidator for their consolidated market data, due to the fact that self-aggregators will be collecting and consolidating this data for themselves rather than relying on a competing consolidator to do so, and therefore would eliminate a potential latency cost that comes with an extra hop within a given data center. The Commission, however, preliminarily believes that the addition of competitive forces with the introduction of competing consolidators should minimize these inherent latencies.[608]

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608 Some have argued that speed-based competition in modern markets—in particular, the speed advantages of high-frequency traders and practices such as "latency arbitrage"—impose costs on investors and other market participants. See, e.g., Matteo Aquilina, et al., Quantifying the High-Frequency Trading "Arms Race": A Simple New Methodology and Estimates, Financial Conduct Authority (Jan. 2020), available at https://www.fca.org.uk/publication/occasional-papers/occasional-paper-

The Commission has not proposed a separate registration requirement for self-aggregators, nor has it proposed to impose the obligations of competing consolidators on self-aggregators. Because self-aggregators will be broker-dealers who are subject to broker-dealer registration requirements, the Commission preliminarily believes that imposing an additional registration requirement and the competing consolidator obligations on self-aggregators would be unnecessary and could result in undue costs and burdens. Further, self-aggregators would be required to calculate and generate proposed consolidated market data, or a component of proposed consolidated market data, to the extent that such information is necessary for the self-aggregator to comply with applicable regulatory requirements. For example, to the extent that a self-aggregator's activities require that self-aggregator to generate the NBBO, the self-aggregator would be required to do so consistent with proposed Rule 600(b)(50). Any self-aggregator that disseminates to any person—including to an affiliate or subsidiary of the self-aggregator—or makes public the proposed consolidated market data, or any subset of the proposed consolidated market data, would be required to register as a competing consolidator.[609]

50.pdf?mod=article_inline. But see Bartlett and McCrary, supra note 418. As discussed above, the Commission preliminarily believes that the proposed decentralized consolidation model would reduce latency in the distribution of proposed consolidated market data and speed-based information asymmetries between market participants. See supra Section IV.B.

609 A self-aggregator that provides a software product to other broker-dealers for purposes of allowing such other broker-dealers to self-aggregate SRO data to generate proposed consolidated market data within such other broker-dealers' facilities would not be a competing consolidator because the self-aggregator itself would not be generating consolidated market data for dissemination to such broker-dealers. However, if an entity uses its own software product to aggregate SRO data to generate proposed consolidated market data within the self-aggregator's facilities and thereafter redistributes or disseminates proposed consolidated market data to other broker-dealers or market participants, such entity would be a competing consolidator because it would be generating and disseminating consolidated market data to others.

The Commission requests comment on the proposed amendment to Rule 600(b)(82) to introduce a definition of "self-aggregator." In particular, the Commission solicits comment on the following:

127. Is the definition of self-aggregator as "a broker or dealer that receives information with respect to quotations for and transactions in NMS stocks, including all information necessary to generate consolidated market data, and generates consolidated market data solely for internal use" too broad or narrow? Should other entities be included in the definition? Please identify such entities and explain.

128. Are the distinctions between self-aggregators and competing consolidators sufficiently clear? Should any additional clarification be provided to fully distinguish between a vendor that provides self-aggregation services to multiple broker-dealers and competing consolidators that provide aggregated data to multiple broker-dealers? If so, please describe what additional clarification should be provided.

129. Should self-aggregators be subject to a registration requirement? Why or why not?

130. Self-aggregators may have a minor latency advantage over competing consolidators. Please provide comment on this potential latency advantage. Would the latency advantage be material? Are there methods to neutralize any latency advantage between self-aggregators and competing consolidators? If so, should they be instituted?

131. Should self-aggregators be permitted to disseminate proposed consolidated market data to their affiliates and subsidiaries without being required to register as a competing consolidator? Why or why not? Does the restriction on not providing

consolidated market data or a subset thereof to customers or affiliates reflect a significant departure from current practices? Please explain.

132. Should any market participants aside from broker-dealers be included in the proposed definition of self-aggregator? Please explain.

4. Amendment to the Effective National Market System Plan(s) for NMS Stocks

An integral part of the national market system is the use of NMS plans. Section 11A(a)(3)(B) of the Exchange Act reflects their importance by providing the Commission the authority to require the SROs, by order, "to act jointly . . . in planning, developing, operating, or regulating a national market system (or a subsystem thereof)." The Equity Data Plans, which are the effective national market system plans for NMS stocks,[610] historically have played an important role in developing, operating, and governing the national market system.[611] The proposed decentralized consolidation model would fundamentally change the national market system and the role of the Equity Data Plans.[612] Under the decentralized consolidation model, the effective national market system plan(s) for NMS stocks, would continue to play an important but modified role in the national market system.[613] Therefore, the Commission is proposing in Rule 614(e) that an amendment to the effective national market system plan(s) be filed with the Commission to conform the plan(s) to the decentralized consolidation model, to address the application of timestamps by the SROs, to require annual assessments of competing consolidators' performance, and to develop a list of the primary listing market for each NMS

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610 See Proposed Governance Order, supra note 8.

611 See supra Section II.A.

612 Id.

613 Pursuant to the proposed amendments to Rule 603(b), proposed consolidated market data would be collected, consolidated, and disseminated pursuant to an effective national market system plan.

stock, as discussed below. Proposed Rule 614(e) would require the participants to the effective national market system plan(s) for NMS stocks to submit an amendment pursuant to Rule 608 to conform the plan(s) to the proposed decentralized consolidation model within 60 calendar days from the effective date of Rule 614.

As discussed above, today, the Equity Data Plans operate the exclusive SIPs for the collection, consolidation, and dissemination of SIP data.[614] In the decentralized consolidation model, the effective national market system plan(s) for NMS stocks would no longer be responsible for collecting, consolidating, and disseminating consolidated market data and would no longer operate an exclusive SIP.[615] Instead, the participants of the effective national market system plan(s) for NMS stocks would develop and file with the Commission the fees for SRO data content required to be made available by each SRO to competing consolidators and self-aggregators for the creation of proposed consolidated market data, including fees for SRO market data products that contain all of the components of proposed consolidated market data as well as the fees for market data products that contain only a subset of the components of proposed consolidated market data.[616] The effective national market system plan(s) would also

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614 See supra Section II.A.

615 The Commission preliminarily believes that the operators of the existing exclusive SIPs may choose to become competing consolidators. See infra Section IV.B.6.

616 For example, the operating committee of the effective national market system plan(s) could develop different pricing for a TOB product that includes only certain SRO data content used to create proposed consolidated market data. See supra note 316 and accompanying text. See also NYSE Sharing Data-Driven Insights – Stock Quotes and Trade Data: One Size Doesn't Fit All (Aug. 22, 2019), available at https://www.nyse.com/equities-insights#20190822 (proposing to replace the exclusive SIP feeds with three tiered levels of service, including certain DOB data, based on the needs of specific types of investors). Nothing in this proposal would prevent the operating committee of the effective national market system plan(s) from structuring the sale of data in a similar manner.

collect fees for the SRO data content used to create the proposed consolidated market data;[617] and allocate the revenues among the SRO participants. The effective national market system plan(s) would also oversee plan accounts and plan audits for purposes of billing, among other things.[618]

Rule 614(e)(1) would direct the participants to file with the Commission an amendment to the effective national market system plan(s) for NMS stocks in order to conform the plan(s) to reflect the proposed consolidated market data and proposed decentralized consolidation model. The Commission preliminarily believes that to conform to the proposed decentralized consolidation model, the effective national market system plan(s) for NMS stocks would need to be amended to reflect the fees for the proposed consolidated market data. The proposed new fees would need to reflect the following: (i) that proposed consolidated market data includes the content described above, including depth of book data, auction information, and additional information on orders of sizes smaller than 100 shares; (ii) that the effective national market system plan(s) for NMS stocks is no longer operating an exclusive SIP and is no longer performing aggregation and other operational functions; and (iii) that the SROs are no longer responsible for the connectivity and transmission services required for providing data to the exclusive SIPs from the SROs' data centers since the exclusive SIPs will no longer be operated by the effective national market system plan(s) for NMS stocks.[619] The proposed new fees for

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617 See supra Section IV.B.1.

618 The effective national market system plan(s) for NMS stocks would review the performance of competing consolidators. See infra discussion on proposed Rule 614(e)(1)(iii).

619 As noted above, pursuant to proposed Rule 603(b), each SRO must provide its NMS information, including all data necessary to generate proposed consolidated market data, to all competing consolidators and self-aggregators in the same manner and using the same methods, including all methods of access and the same format, as such SRO makes

consolidated market data must be fair and reasonable and not unfairly discriminatory.[620] The proposed fees must be submitted by the participants of the effective national market system plan(s) for NMS stocks pursuant to Rule 608 under the Exchange Act. In addition, to conform the effective national market system plan(s) for NMS stocks to the proposed decentralized consolidation model, the amendment to the plan(s) generally should include a harmonized approach to data billing protocols, including with respect to any unified multiple installations, single users ("MISU") policy.[621]

Proposed Rule 614(e)(1)(ii) would require the participants to file a proposed amendment to the effective national market system plan(s) for NMS stocks to address the application of timestamps by the SRO participants on proposed consolidated market data, including the time the proposed consolidated market data was generated by the SRO participant and the time the SRO participant made the proposed consolidated market data available to competing consolidators and self-aggregators. Timestamping should provide incentives for the SROs to generate and disseminate proposed consolidated market data as quickly as possible. Further, the Commission preliminarily believes that the application of timestamps will be an important part

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available any information to any other person. The competing consolidators and self-aggregators will be responsible for establishing the connectivity and transmission services they use to connect to the SROs.

620 See Rule 603(a) of Regulation NMS, 17 CFR 242.603(a).

621 MISU policies seek to ensure that a single device fee is applied to a data user that receives consolidated market data on multiple display devices. See, e.g., CTA, CTA Multiple Installations for Single Users (MISU) Policy (Apr. 2016), available at https://www.ctaplan.com/publicdocs/ctaplan/notifications/trader-update/Policy%20-%20MISU%20with%20FAQ.pdf. MISU policies would need to be conformed in the proposed decentralized consolidation model to reflect that consolidated market data users may seek to receive through more than one competing consolidator and/or access through multiple devices.

of market participants' ability to measure latency and to seek to ensure accurate sequencing of data in the new national market system, and therefore the application of timestamps should be consistent and reliable.[622] The Commission understands that the SROs currently submit timestamped data under the SIP plans[623] and the National Market System Plan Governing the Consolidated Audit Trail ("CAT NMS Plan").[624]

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622 SRO timestamps would also assist market participants in their ability to assess latencies in the provision of proposed consolidated market data. Under proposed Rule 614(d)(3), competing consolidators would have to make available consolidated market data that includes timestamps assigned by the SROs as well as competing consolidators. See supra Section IV.B.2(e)(ii) and the discussion of proposed Rule 614(d)(4).

623 See, e.g., CTA Plan, supra note 13, at Section VI.(c); Nasdaq UTP Plan, supra note 13, at Section VIII.

624 See CAT NMS Plan at Sections 6.3(d), 6.8. As required by Rule 613, the CAT NMS Plan was filed with the Commission by the national securities exchanges and national securities associations, who include BATS Exchange, Inc. (n/k/a Cboe BZX Exchange, Inc.), BATS-Y Exchange, Inc. (n/k/a Cboe BYX Exchange, Inc.), BOX Exchange LLC, C2 Options Exchange, Incorporated (n/k/a Cboe C2 Exchange, Inc.), Chicago Board Options Exchange, Incorporated (n/k/a Cboe Exchange, Inc.), Chicago Stock Exchange, Inc. (n/k/a NYSE Chicago, Inc.), EDGA Exchange, Inc. (n/k/a Cboe EDGA Exchange, Inc.), EDGX Exchange, Inc. (n/k/a Cboe EDGX Exchange, Inc.), Financial Industry Regulatory Authority, Inc. ("FINRA"), International Securities Exchange, LLC (n/k/a Nasdaq ISE, LLC), ISE Gemini, LLC (n/k/a Nasdaq GEMX, LLC), Miami International Securities Exchange LLC, NASDAQ OMX BX, Inc. (n/k/a Nasdaq BX, Inc.), NASDAQ OMX PHLX LLC (n/k/a Nasdaq PHLX LLC), The Nasdaq Stock Market LLC, National Stock Exchange, Inc. (n/k/a NYSE National, Inc.), New York Stock Exchange LLC, NYSE MKT LLC, and NYSE Arca, Inc. See 17 CFR 242.613; Securities Exchange Act Release No. 78318 (Nov. 15, 2016), 81 FR 84696, (Nov. 23, 2016) ("CAT NMS Plan Approval Order"). The CAT NMS Plan is Exhibit A to the CAT NMS Plan Approval Order. See CAT NMS Plan Approval Order, at 84943–85034. In approving the CAT NMS Plan, the Commission added ISE Mercury, LLC (n/k/a Nasdaq MRX, LLC) and Investors' Exchange LLC as Participants to the CAT NMS Plan. See id. at 84728. On January 30, 2017 and March 1, 2019, the Commission noticed for immediate effectiveness amendments to the CAT NMS Plan to add MIAX PEARL, LLC and MIAX Emerald, LLC, respectively, as Participants. See Securities Exchange Act Release Nos. 79898 (Jan. 30, 2017), 82 FR 9250 (Feb. 3, 2017), and 85230 (Mar. 1, 2019), 84 FR 8356 (Mar. 7, 2019). On November 27, 2019, the Commission noticed for immediate effectiveness amendments to the CAT NMS Plan to add Long-Term Stock Exchange, Inc. as a Participant. See Securities Exchange Act Release No. 87595 (Nov. 22, 2019), 84 FR 65447 (Nov. 27, 2019). The CAT NMS Plan functions as the limited liability

Proposed Rule 614(e)(1)(iii) would require the participants to file a proposed amendment to the effective national market system plan(s) for NMS stocks to reflect that the participants would need to conduct an annual assessment of the overall performance of competing consolidators, including speed, reliability, and cost of data provision and provide the Commission with a report of such assessment on an annual basis. As noted above, the Equity Data Plans play an important role in governing the operation of the national market system. The Commission preliminarily believes that the effective national market system plan(s) for NMS stocks should continue in this important role by monitoring the overall performance of competing consolidators to seek to ensure that the decentralized consolidation model is operating soundly. To aid the Commission's monitoring, the Commission is requiring the effective national market system plan(s) for NMS stocks to provide assessments in key factors of competing consolidators, including: speed of the competing consolidators in receiving, calculating, and disseminating proposed consolidated market data; the reliability of the transmission of proposed consolidated market data; and a detailed cost analysis of the provision of proposed consolidated market data. The effective national market system plan(s) would base their assessments on publicly available information about the competing consolidators, including the information that each competing consolidator would be required to make available under

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company agreement of the jointly owned limited liability company formed under Delaware state law through which the Participants conduct the activities of the CAT (the "Company"). Each Participant is a member of the Company and jointly owns the Company on an equal basis. The Participants submitted to the Commission a proposed amendment to the CAT NMS Plan on August 29, 2019, which they designated as effective on filing. Under the amendment, the limited liability company agreement of a new limited liability company named Consolidated Audit Trail, LLC serves as the CAT NMS Plan, replacing in its entirety the CAT NMS Plan. See Securities Exchange Act Release No. 87149 (Sept. 27, 2019), 84 FR 52905 (Oct. 3, 2019).

proposed Rule 614.

Finally, proposed Rule 614(e)(1)(iv) would require the participants to file an amendment to the effective national market system plan(s) for NMS stocks to include a list that identifies the primary listing exchange for each NMS stock. As discussed above, primary listing exchanges will be required to collect, calculate, and provide the data included in the proposed definition of "regulatory data" to competing consolidators and self-aggregators. Moreover, the Commission is proposing to define "primary listing exchange" in proposed Rule 600(b)(67) as "for each NMS stock, the national securities exchange identified as the primary listing exchange in the effective national market system plan or plans required under §242.603(b)." The effective national market system plan(s) for NMS stocks must accordingly be amended to include this list so that the primary listing exchange for each NMS stock—and the responsibilities regarding the collection, calculation, and provision of regulatory data—are clear. The Commission preliminarily believes that information regarding the primary listing exchange for each NMS stock is readily accessible and that the operating committee of the effective national market system plan(s) for NMS stock, which will have representation from each primary listing exchange, is well-situated to include such a list in a plan amendment.

The Commission requests comment on proposed Rule 614(e). In particular, the Commission solicits comment on the following:

133. Do the proposed amendments to the effective national market system plan(s) for NMS stocks reflect an appropriate role for the NMS plan(s) under the proposed decentralized consolidation model?

134. Should the rule include other provisions that should be included in an amendment to the effective national market system plan(s) for NMS stocks? Please describe.

135. Should the rule require an amendment to the effective national market system plan(s) for NMS stocks to include plan provisions related to the development by competing consolidators of non-core market data products (i.e., a full depth of book product)? Why or why not?

136. Should the rule require an amendment to the effective national market system plan(s) to require the operating committee of such plan(s) to develop latency statistics based on the SRO timestamps and make them publicly available?

137. Do commenters believe that the proposed timestamps are sufficiently comprehensive? Should the Commission require other timestamps to be added by the SROs, or should any of the proposed requirements for the timestamps be pared down or removed? Please explain.

138. Should the rule require an amendment to the effective national market system plan(s) for NMS stocks to specify a method for synchronizing clocks on the various systems and networks utilized in the provision of proposed consolidated market data? If yes, what is the appropriate method or protocol (e.g., Precision Time Protocol vs. Network Time Protocol)? Or should the requirement for clock synchronization be performance based (i.e., accurate to less than one microsecond)? If so, what is the appropriate standard for maximum allowable clock drift? Please explain. Should the SROs be required to publish clock drift statistics?

139. Do commenters believe that there are other measures to assess the performance of competing consolidators that should be included in the annual report? Please explain.

140. Do commenters believe that a portion of the assessment or the full assessment should be made public? Do commenters believe that a portion of the annual report or the

full annual report to the Commission should be made public? Why or why not? Please explain.

141. Do commenters believe that the operating committee for the effective national market system plan(s) for NMS stocks should conduct an assessment and provide the Commission with a report more frequently than annually, or at all? Please describe any alternative frequency and the rationale.

142. Do commenters believe that a similar report should be generated for self-aggregators? If so, please explain. Should self-aggregators be required to publish any performance statistics publicly or to the Commission?

143. Do commenters believe that the effective national market system plan(s) for NMS stocks should be amended to include a list that identifies the primary listing exchange for each NMS stock? Please explain. Are there alternative ways to ensure that the primary listing exchange for each NMS stock is clearly identified? Please explain.

144. Do commenters believe that the effective national market system plan(s) for NMS stocks should include fees for different types of proposed consolidated market data products, such as products that contain only a subset of proposed core data elements (e.g., a TOB product)? If so, what products should be included?

5. Effects on the National Market System Plan Governing the Consolidated Audit Trail

The CAT NMS Plan requires the Central Repository[625] to "collect (from a SIP[626] or pursuant to an NMS Plan[627]) and retain on a current and continuing basis . . . all data, including

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625 The CAT NMS Plan defines "Central Repository" as "the repository responsible for the receipt, consolidation, and retention of all information reported to the CAT pursuant to SEC Rule 613 and this Agreement." CAT NMS Plan, supra note 624, at Section 1.1.

the following (collectively, 'SIP Data')."[628] The Commission preliminarily believes that this provision of the CAT NMS Plan will be affected by the proposed decentralized consolidation model and the proposed definition of consolidated market data. Rule 603(b), as proposed to be amended, would require the national securities exchanges and associations to distribute consolidated market data "pursuant to one or more effective national market system plans." Under Section 6.5(a)(ii) of the CAT NMS Plan, the Central Repository must collect and retain "all data" from "a SIP or pursuant to an NMS Plan," so the Central Repository would be required to collect and retain consolidated market data.

Because proposed consolidated market data would include information beyond the data that is currently disseminated by the exclusive SIPs, such as smaller-sized orders in higher-priced stocks pursuant to the proposed definition of round lot, proposed depth of book data, and proposed auction information, the scope of the consolidated data collected and retained by the CAT Central Repository would be expanded. In addition, the Central Repository may have to obtain the data from a different source. The Commission preliminarily believes that having the Central Repository collect an expanded set of data from a different source and retain this data in

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626 The CAT NMS Plan defines "Securities Information Processor" or "SIP" as having "the same meaning provided in Section 3(a)(22)(A) of the Exchange Act." Id. at Section 1.1.

627 The CAT NMS Plan defines "NMS Plan" as having "the same meaning as 'National Market System Plan' provided in SEC Rule 613(a)(1) and SEC Rule 600(b)(43)." Id. at Section 1.1.

628 Id. at Section 6.5(a)(ii). Section 6.5(a)(ii) specifically enumerates the following "SIP Data" elements: "(A) information, including the size and quote condition, on quotes including the National Best Bid and National Best Offer for each NMS Security; (B) Last Sale Reports and transaction reports reported pursuant to an effective transaction reporting plan filed with the SEC pursuant to, and meeting the requirements of, SEC Rules 601 and 608; (C) trading halts, Limit Up/Limit Down price bands, and Limit Up/Limit Down indicators; and (D) summary data or reports described in the specifications for each of the SIPs and disseminated by the respective SIP." Id.

the Central Repository are appropriate to further the objectives of CAT by enabling regulators to use the expanded set of data "solely for surveillance and regulatory purposes."[629]

The Commission requests comment on the effects of the proposed decentralized consolidation model and the proposed definition of consolidated market data on the CAT. In particular, the Commission solicits comment on the following:

145. Do commenters believe that CAT should receive consolidated market data from one competing consolidator, all competing consolidators, or some specific subset of competing consolidators? Please explain.

146. Do commenters believe the selection by the CAT of a competing consolidator could have a competitive impact on other competing consolidators? Please explain.

6. Transition Period

A transition period would be necessary to implement the decentralized consolidation model. While SROs would be permitted to make the data necessary to generate consolidated market data, as proposed to be defined, available to competing consolidators and self-aggregators using their existing data feeds, SROs may also choose to provide this data through new, separate feeds,[630] which would require development time. Furthermore, the proposed requirements related to the provision by SROs of regulatory data to competing consolidators and self-aggregators would require SROs to make adjustments to their data collection and processing systems and procedures to integrate the proposed regulatory data elements into new or existing data feeds.[631] In addition, firms intending to act as competing consolidators or self-aggregators

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629 See CAT NMS Plan, supra note 624, at Section 6.5(g); infra Section VI.C.4(c).

630 See supra Section IV.B.1.

631 See supra Section III.D.

will need to register, develop or modify systems, establish pricing, and make other preparations needed to function as competing consolidators or self-aggregators. Finally, market participants would be expected to need some period of time for implementation and testing of any new data feeds. As these changes are being implemented, market participants will continue to need a consistent and reliable source of consolidated market data.

Accordingly, the Commission preliminarily believes that the existing exclusive SIPs should continue their operations until such time as the Commission considers and approves an NMS plan amendment that would effectuate a cessation of their operations as exclusive SIPs. In considering and approving such an NMS plan amendment, the Commission preliminarily believes that it would need to consider the operational readiness of competing consolidators and self-aggregators to determine whether market participants are fully able to receive proposed consolidated market data in a manner that is sufficiently prompt, accurate, and reliable.[632] The Commission preliminarily believes that sufficient operational readiness would only be achieved once consolidated market data generated under the decentralized consolidation model is demonstrably capable of supporting the various needs of users of consolidated market data, including needs for visual display, trading activities, and compliance with regulatory obligations, such as under Rules 603(c) and Rule 611 under Regulation NMS and best execution. In determining whether to approve an NMS plan amendment to effectuate the cessation of the operations of the existing exclusive SIPs and whether it meets the standards set forth in Rule 608(b)(2),[633] the Commission would consider the state of the market and the general readiness of

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632 Section 11A(c)(1)(B) of the Exchange Act, 15 U.S.C. 78k-1(c)(1)(B).

633 See 17 CFR 242.608(b)(2) (providing that the Commission shall approve an NMS plan amendment "if it finds that such plan or amendment is necessary or appropriate in the public interest, for the protection of investors and the maintenance of fair and orderly

the competing consolidator infrastructure. Examples of some of the things that the Commission could consider include, among other things: the status of registration, testing, and operational capabilities of multiple competing consolidators, self-aggregators, and market participants; capabilities of competing consolidators to provide monthly performance metrics and other data required to be published pursuant to proposed Rule 614(d)(5)–(6);[634] and the consolidated market data products offered by competing consolidators. The Commission preliminarily believes that consideration of these and other factors should help to ensure that market participants have effective and continuous access to proposed consolidated market data and other market data products during the transition period and prior to the cessation of operations of the existing exclusive SIPs.

The Commission anticipates that the operators of the existing exclusive SIPs may choose to become competing consolidators and that they too may need to make additional investments and operational changes during this transition period to provide a competitive competing consolidator service.[635] The Commission preliminarily believes that the existing exclusive SIPs should have the ability to pursue such development while continuing concurrent operations of existing SIPs. Given their experience operating the exclusive SIPs, the exclusive SIP operators would likely be able to enter the competing consolidator business from a competitively strong position relative to other potential competing consolidators.

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markets, to remove impediments to, and perfect the mechanisms of, a national market system, or otherwise in furtherance of the purposes of the Act.”).

634 See supra Section IV.B.2(b).

635 The exclusive SIPs may choose to utilize existing proprietary data feeds for the provision of consolidated market data. They may also choose to develop a business to support self-aggregation by broker-dealers.

The Commission requests comment on the proposed transition period to implement the decentralized consolidation model. In particular, the Commission solicits comment on the following:

147. What period of time should be expected for SROs to make any changes necessary to provide the data necessary to generate proposed consolidated market data to competing consolidators and self-aggregators?

148. What period of time should be expected for broker-dealers to make any changes necessary, including testing, to utilize the new data feeds in a manner that is not disruptive to their trading practices and their ability to meet their regulatory obligations?

149. What other factors should be taken into consideration to allow for a smooth transition from a centralized, exclusive SIP model to a competitive, decentralized consolidation model?

150. What should the Commission take into consideration in determining whether the availability of proposed consolidated market data from competing consolidators, or any other aspect of the development or implementation of the proposed decentralized consolidation model, is sufficient to allow for the cessation of the existing exclusive SIPs?

151. Should the Commission require the operation of a certain number of competing consolidators before allowing the exclusive SIPs to cease operations? Why or why not? If so, how many competing consolidators should be operational before allowing exclusive SIPs to cease operations? Please explain.

152. How long do commenters think such an implementation period should be? Please explain your answer.

C. Alternatives to the Centralized Consolidation Model

Several alternative approaches to the centralized consolidation model were suggested by Roundtable respondents and separately by several exchanges. These suggestions include the distributed SIP model, a single SIP for all exchange-listed securities, and a low-latency dedicated connection to existing exclusive SIP feeds.

1. Distributed SIP Alternative

A distributed SIP alternative has been suggested as one possible means to reduce geographic latency.[636] Specifically, under a distributed SIP alternative, each exclusive SIP would place an additional processor in other major data centers, where the additional processor would separately aggregate and disseminate consolidated market data for its respective tape. The SROs would submit their quotations and trade information directly to each instance of the exclusive SIP in each data center, and each exclusive SIP instance would consolidate and disseminate its respective consolidated market data feeds to subscribers at those data centers, thereby eliminating geographic latency. Under the distributed SIP alternative, consolidated market data would not have to travel from an exchange at one location to an exclusive SIP at a second location for consolidation and dissemination prior to traveling yet again to a subscriber that may be at a third location.[637]

(a) Comments and Roundtable Discussion

The distributed SIP model was suggested and discussed at the Roundtable by certain panelists and commenters. One panelist who presented on the distributed SIP model argued that

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636 See supra notes 492–493 and accompanying text; Cboe Report, supra note 186, at 3–4 (recommending the creation of distributed SIPs in different geographic locations).

637 One commenter noted that the distributed SIP alternative could address the issue of geographic latency. See SIFMA Letter II at 3.

it would be the least burdensome approach for the industry to reduce delays,[638] explaining that firms could consume data under the current structure without having to make any changes if they did not have sub-millisecond latency concerns, while those firms for which geographic latency is critical could choose to consume data at the nearest SIP instance.[639]

Two other panelists expressed interest in considering the distributed SIP model.[640] One panelist said that the distributed SIP model could address the latencies of the current centralized consolidation model.[641] Another panelist suggested that a distributed SIP model with enhanced content, such as auction imbalance and depth of book information, would be useful[642] and that even a fiber optics connection could be sufficient for a distributed SIP model since the consolidated market data would no longer have to travel throughout the various data centers for collection and distribution.[643]

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638 See Roundtable Day Two Transcript at 17 (Michael Blaugrund, NYSE).

639 See Roundtable Day Two Transcript at 18 (Michael Blaugrund, NYSE). This panelist also believed that the distributed SIP model would not require changes to Rule 603(b) of Regulation NMS, which requires the dissemination of consolidated information for an individual NMS stock through a single plan processor. The panelist stated that the existing SIPs would remain under the distributed SIP model, only with additional processors. See Roundtable Day Two Transcript at 19–20 (Michael Blaugrund, NYSE).

640 See, e.g., Roundtable Day One Transcript at 227–228 (Chris Issacson, Cboe) ("[W]e're open to discussion about distributed SIPs."); at 98–99 (Stacey Cunningham, NYSE) (". . . there is debate the NYSE brought to the SIP Committee a long time ago to talk about the nature of a distributed SIP and that is something we should explore."); Roundtable Day Two Transcript at 17 (Michael Blaugrund, NYSE) (". . . we think that a distributed SIP implementation of the existing processors would be the simplest, least costly approach for the industry to minimize delays when consolidated data and single market proprietary data are received in distant data centers.").

641 See Roundtable Day One Transcript at 231–232 (Vlad Khandros, UBS).

642 See Roundtable Day One Transcript at 225 (Ronan Ryan, IEX).

643 See Roundtable Day One Transcript at 229–230 (Ronan Ryan, IEX). This is a reference to the understanding that a distributed SIP model would solve for geographic latency.

Three panelists were skeptical about the value of the distributed SIP model. One panelist described the distributed SIP model as better than the current SIP system, "but just less worse than direct feeds,"[644] and said what is desired instead is an exclusive SIP that is as fast as the direct feeds.[645] Another panelist said that, with the distributed SIP model, determining the appropriate instance of the SIP locations would be complicated.[646]

One commenter submitted two comment letters that discussed the distributed SIP model. One letter urged the Commission to do a cost benefit analysis of efforts to decentralize the SIP architecture and recommended introducing additional instances of existing technology as the best approach to reducing geographic latency.[647] The other letter noted questions about which SIP location would be responsible for regulatory messages, such as for LULD and MWCBs, and whether the costs for the industry to connect to this infrastructure would outweigh the benefits.[648]

Another commenter stated that the distributed SIP alternative would introduce new and expensive operational complexities, legal and regulatory questions, and possible unintended consequences. This commenter also questioned whether the distributed SIP alternative would resolve concerns regarding geographic latency and noted that the NBBO could differ among the distributed SIPs, leading to operational and compliance questions.[649]

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644 See Roundtable Day Two Transcript at 27 (Adam Nunes, Hudson River Trading).

645 Id.

646 See Roundtable Day One Transcript at 151–152 (Oliver Albers, Nasdaq).

647 See Blaugrund Letter at 4. The Blaugrund Letter was submitted on behalf of NYSE.

648 See NYSE Group Letter at 10.

649 See Albers Letter at 3; Wittman Letter at 14. The Albers and Wittman Letters were submitted on behalf of Nasdaq. The commenter also believed that significant advances in clock synchronization techniques would be necessary. See Wittman Letter at 14. This commenter later expressed support for the distributed SIP model, stating that the approach could reduce data transmission time for some market participants between 400

(b) Commission Discussion

The Commission preliminarily believes that a distributed SIP model could address the geographic latencies that exist in the current centralized consolidation model but is concerned that the distributed SIP model has certain fundamental shortcomings that make it a less desirable option compared to the proposed competitive, decentralized consolidation model. In particular, the distributed SIP model does not allow for the introduction of competitive forces and continues to allow for one exclusive SIP to have exclusive rights for the dissemination of market data for the NMS stocks on a given consolidated tape. Because the distributed SIP model does not introduce competitive forces, it is less likely to adequately address the broader array of latencies and competitive product and service offerings.

In addition, insofar as the distributed SIP model does not allow for the provision of all three consolidated tapes to be consolidated and disseminated from a single entity, it retains the inefficiencies that would not apply to a competing consolidator model, such as the need for end-users to obtain data from multiple SIPs.[650]

As a result, the Commission preliminarily believes that, since the distributed SIP model could result in significant additional costs and complexity and would not be likely to competitively address all forms of content and latency differentials, the Commission

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and 750 microseconds. See Nasdaq Total Markets Report, supra note 127, at 19–20; Remarks by Tal Cohen, Nasdaq, Meeting of the Securities and Exchange Commission Investor Advisory Committee, at 50 ("[R]ecognizing the industry's desire for a distributed SIP, we support this in concept to ensure geographic latency concerns are addressed.").

650 Since 2017, a distributed SIP subcommittee created by the CTA and Nasdaq UTP Plan operating committees has considered and continues to consider implementation of a distributed SIP model to address geographic latencies. See CTA and UTP Annual Letter, supra note 181, at 1–2.

preliminarily believes that the distributed SIP model is not the optimal solution for the provision of consolidated market data.

The Commission requests comment on the distributed SIP alternative. In particular, the Commission solicits comment on the following:

153. Is the distributed SIP alternative a viable or superior alternative to the proposed competing consolidator and self-aggregator model? If so, please describe the benefits of the distributed SIP model and why that model is the preferred alternative.

2. Single SIP Alternative

Another suggestion to modify the centralized consolidation model to address latency concerns was to combine the exclusive SIPs into a single exclusive SIP for all exchange-listed securities.[651] Comments noted that such a change would permit the harmonization of exclusive SIP infrastructure[652] and narrow the latency difference between the exclusive SIPs and proprietary data feeds.[653] One commenter thought this alternative would be a low cost alternative.[654]

In light of the fact that the Nasdaq UTP SIP has less latency that the CTA/CQ SIP, within the current exclusive and centralized exclusive SIP model, this solution has certain merits. It could allow for an upgrade to existing processor technology for the CTA/CQ SIP, which continues to lag the performance of the Nasdaq UTP SIP. It could also eliminate certain

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651 See Nasdaq Total Markets Report, supra note 127, at 21; SIFMA Letter II at 3. This suggestion would apply the centralized consolidation structure.

652 See Nasdaq Total Markets Report, supra note 127, at 21.

653 See SIFMA Letter II at 3. The commenter did not elaborate on how this model could address latency issues. This commenter, however, noted that the use of competing consolidators would best resolve the latency issues because competition would provide the incentives for improvements.

654 Id.

inefficiencies in having two separate exclusive SIPs for SIP data. Potentially having a single administrator and exclusive SIP could ease these burdens and introduce benefits such as a less complex infrastructure and greater standardization.

However, this alternative has certain key shortcomings. For one thing, it does not attempt to introduce competitive forces, and, therefore, as with the distributed SIP alternative, would not necessarily be expected to fully address all forms of latency in a competitive data environment. Further, it does not attempt to address geographic latency, which, as noted, is believed to be the most significant source of latency undermining the viability of the current centralized exclusive SIP model.

The Commission requests comment on these alternative approaches to the current centralized consolidation model. In particular, the Commission solicits comment on the following:

154. Is the single exclusive SIP alternative a viable alternative to addressing the concerns with the current centralized consolidation model? If so, please describe the operation of the single exclusive SIP alternative and how it would address the latency and cost concerns arising from the centralized consolidation model. Are there any other viable alternatives?

155. Do commenters believe that the single centralized exclusive SIP model could be a viable solution despite the fact that it would not introduce competitive forces into the provision of consolidated data and would not address geographic latency? If so, please describe any factors that make this solution as good as or better than the proposed decentralized model.

V. Paperwork Reduction Act

Certain provisions of the proposed rules and proposed rule amendments contain "collection of information requirements" within the meaning of the Paperwork Reduction Act of 1995 ("PRA").[655] The Commission is submitting these collections of information to the Office of Management and Budget ("OMB") for review in accordance with 44 U.S.C. 3507(d) and 5 CFR 1320.11. The title of the new collection of information is "Market Data Infrastructure and Form CC." Further, the title of the existing collection of information for Regulation SCI is "Regulation SCI, Form SCI," OMB Control No. 3235-0703.[656] An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the agency displays a currently valid control number.

A. Summary of Collection of Information

The proposed rules and rule amendments would include a collection of information within the meaning of the PRA for competing consolidators who would be required to comply with the provisions of Rule 614 and file a Form CC with the Commission. In addition, SROs would be required to collect information that they would then have to provide to competing consolidators and self-aggregators for the purposes to generating proposed consolidated market data. Finally, the SROs would be required to amend the effective national market system plan(s) required under Rule 603(b).

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655 44 U.S.C. 3501 et seq.

656 As discussed below, the proposed modifications to Regulation SCI contain "collection of information requirements" within the meaning of the PRA. See infra Section V.G. Further, as discussed above, the proposed definition of round lot would affect Rule 606(b)(3) by requiring actionable indications of interest to be in the proposed round lot sizes and included in 606(b)(3) reports. The Commission preliminarily believes that the PRA estimates set forth in the Rule 606 Adopting Release would cover the collection of actionable indications of interest in the proposed round lot sizes because there should only be minor systems updates to reflect the new round lot sizes. See Rule 606 Adopting Release, supra note 227.

1. Registration Requirements and Form CC

Proposed Rule 614(a)(1)(i) would require each competing consolidator to register with the Commission by filing Form CC electronically in accordance with the instructions contained on the form.[657] To file a form CC, a competing consolidator would need to access the Commission's EFFS, a secure website operated by the Commission. Each competing consolidator would have to submit an application and register each individual who would access the EFFS system on behalf of the competing consolidator. Proposed Rule 614(a)(1)(ii) would require any reports required under proposed Rule 614 to be filed electronically on Form CC, include all of the information as prescribed in Form CC and contain an electronic signature. Proposed Rule 614(a)(1)(iv) would require a competing consolidator to withdraw an initial Form CC during its review by the Commission if information on the initial Form CC is or becomes inaccurate or incomplete. Under proposed Rule 614(a)(2)(i), a competing consolidator would be required to amend an effective Form CC in accordance with the instructions therein: (i) prior to the implementation of a material change to pricing, connectivity or products offered; and (ii) no later than 30 calendar days after the end of each calendar year to correct information that has become inaccurate or incomplete for any reason. Proposed Rule 614(a)(3) would require a competing consolidator to provide notice of its cessation of operations on Form CC at least 30 business days before the date the competing consolidator ceases to operate as a competing consolidator.

2. Competing Consolidator Duties and Data Collection

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657 As explained above, SROs that wish to act as competing consolidators would not be required to register with the Commission on Form CC. See supra note 537.

Proposed Rules 614(d)(1)-(4) would require each competing consolidator to: (1) collect from each national securities exchange and national securities association, either directly or indirectly, the information with respect to quotations for and transactions in NMS stocks as provided in Rule 603(b); (2) calculate and generate consolidated market data as defined in proposed Rule 600(b)(19) from the information collected pursuant proposed Rule 614(d)(1); (3) make consolidated market data, as defined in proposed Rule 600(b)(19), and as timestamped as required by proposed Rule 614(d)(4) and including the SRO data generation timestamp required to be provided by the SROs by proposed Rule 614(e)(1)(ii), available to subscribers on a consolidated basis on terms that are not unreasonably discriminatory; and (4) timestamp the information collected pursuant to proposed Rule 614(d)(1): (i) upon receipt from each national securities exchange and national securities association; (ii) upon receipt of such information at its aggregation mechanism; and (iii) upon dissemination of consolidated market data, as defined in proposed Rule 600(b)(19), to customers. Proposed Rule 614(c) would require each competing consolidator to make public on its website a direct URL hyperlink to the Commission's website that contains each effective initial Form CC, as amended, order of ineffective initial Form CC, and Form CC amendment to an effective Form CC.

3. Recordkeeping

Proposed Rule 614(d)(7) would require each competing consolidator to keep and preserve at least one copy of all documents, including all correspondence, memoranda, papers, books, notices, accounts and such other records as shall be made or received by it in the course of its business as such and in the conduct of its business. The proposed rule would require competing consolidators to keep these documents for a period of no less than five years, the first two years in an easily accessible place. Proposed Rule 614(d)(8) would require each competing

consolidator, upon request of any representative of the Commission, to promptly furnish to such representative copies of any documents required to be kept and preserved by it.

4. Reports and Reviews

Proposed Rule 614(d)(5) would require each competing consolidator, within 15 calendar days after the end of each month, to publish prominently on its website monthly performance metrics, as defined by the effective national market system plan(s) for NMS stocks, that shall include at least the following: (i) capacity statistics; (ii) message rate and total statistics; (iii) system availability; (iv) network delay statistics; (v) latency statistics for the following, with distribution statistics up to the 99.99th percentile: (A) when a national securities exchange or national securities association sends an inbound message to a competing consolidator network and when the competing consolidator network receives the inbound message; (B) when the competing consolidator network receives the inbound message and when the competing consolidator network sends the corresponding consolidated message to a subscriber; and (C) when a national securities exchange or national securities association sends an inbound message to a competing consolidator network and when the competing consolidator network sends the corresponding consolidated message to a subscriber. All information posted pursuant to proposed Rule 614(d)(5) must be publicly posted in downloadable files and must remain free and accessible (without any encumbrances or restrictions) by the general public on the website for a period of not less than three years from the initial date of posting.

Proposed Rule 614(d)(6) would require a competing consolidator, within 15 calendar days after the end of each month, to publish prominently on its website the following information: (i) data quality issues; (ii) system issues; (iii) any clock synchronization protocol utilized; (iv) for the clocks used to generate the timestamps described in proposed Rule

614(d)(4), the clock drift averages and peaks, and the number of instances of clock drift greater than 100 microseconds; and (v) vendor alerts. All information posted pursuant to proposed Rule 614(d)(6) must be publicly posted and must remain free and accessible (without any encumbrances or restrictions) by the general public on the website for a period of not less than three years from the initial date of posting.

5. Amendment to the Effective National Market System Plan(s) for NMS Stocks

As detailed above, proposed Rule 614(e)(1) would direct the participants to the effective national market system plan(s) for NMS stocks to submit an amendment to such plan(s) within 60 days of the effectiveness of the proposed rule that would address several articulated provisions. In particular, proposed Rule 614(e)(1)(i) would require that the amendment conform the plan(s) to reflect the provision of market data that is necessary to generate consolidated market data, as defined in proposed Rule 600(b)(19), by the SRO participants to competing consolidators and self-aggregators, and the role that the plan(s) would have in developing fees for consolidated market data and defining the monthly performance metrics that competing consolidators would be required to publish.[658] Proposed Rule 614(e)(1)(ii) would require that the participants to the effective national market system plan(s) for NMS stocks file an amendment that contains provisions regarding the application of timestamps by the SRO participants on all consolidated market data, as defined in proposed Rule 600(b)(19), and that such time stamps be attached at the time the data was generated by the SRO and the time that the SRO made the proposed consolidated market data available to competing consolidators and self-aggregators. The participants to the effective national market system plan(s) for NMS stocks would be required to file an amendment that includes provisions relating to assessments of competing

[658] See proposed Rule 614(d)(6).

consolidator performance that would include the speed, reliability and cost of data provision and the provision of an annual report of such assessment to the Commission. Finally, participants to the effective national market system plan(s) for NMS stocks would be required to file an amendment to identify the primary listing market for each NMS stock.

Proposed Rule 614(e) would impose paperwork burdens on the participants to the effective national market system plan(s) for NMS stocks. First, requiring the submission of an amendment or amendments to the effective national market system plan(s) for NMS stocks would impose a paperwork burden on the participants of such plan(s) associated with preparing and filing the amendment or amendments. Second, defining the monthly performance metrics for competing consolidators would impose a paperwork burden on the participants of the plan(s). Third, developing the requirements for the application of timestamps by the SROs would impose a paperwork burden on the SRO participants of such plans. Fourth, requiring the provision of an annual report to the Commission assessing competing consolidator performance would impose a paperwork burden on the participants of the effective national market system plan(s) for NMS stocks. Finally, developing and maintaining a list of the primary listing market for each NMS stock would impose a paperwork burden on the participants of the effective national market system plan(s) for NMS stocks.

6. Collection and Dissemination of Information by National Securities Exchanges and National Securities Associations

The proposed amendment to Rule 603(b) would require every national securities exchange on which an NMS stock is traded and national securities association to make available to all competing consolidators and self-aggregators all information with respect to quotations for and transactions in NMS stocks, including all data necessary to generate consolidated market data, in the same manner and using the same methods, including all methods of access and using

the same format, as such exchange or association makes available any information with respect to quotations for and transactions in NMS stocks to any person. SROs would be required to collect the information necessary to generate proposed consolidated market data, which would be required to be made available under proposed Rule 603(b). As proposed, the primary listing exchange would have to collect and make available pursuant to Rule 603(b) information required under Rule 201 of Regulation SHO. Moreover, the proposal would require the primary listing exchange with the largest proportion of stocks includes in the S&P 500 Index to monitor the index throughout the trading day. The collection of information may require system changes by the SROs.

B. Proposed Use of Information

1. Registration Requirements and Form CC

As discussed above, proposed Form CC, Rules 614(a)(1) and 614(a)(2) would generally require competing consolidators to register on Form CC and make amendments to an effective Form CC prior to implementing a material change to the pricing, connectivity or products offered and annually to correct information that has become inaccurate or incomplete for any reason. The information collected in Form CC would be used to help assure that a competing consolidator's disclosures comply with the requirements of proposed Rule 614 and so that specified information would be made publicly available and could be used to evaluate competing consolidators. The information required under proposed Rule 614(a)(1) also would be used by the Commission to determine whether to declare ineffective an initial Form CC filed by a competing consolidator.

Proposed Rule 614(a)(3) would require a competing consolidator to provide notice of its cessation of operations on Form CC at least 30 business days prior to the date the competing

consolidator will cease to operate as a competing consolidator. This information would be used by the Commission to monitor and oversee competing consolidators and would provide notice to the public that the competing consolidator intends to cease operations.

2. Competing Consolidator Duties and Data Collection

Under the proposed decentralized consolidation model, proposed Rules 614(d)(1)-(d)(3) would require the competing consolidators to collect from the SROs quotation and transaction information for NMS stocks, calculate and generate consolidated market data, as proposed, from this information, and make such consolidated market data available on terms that are not unreasonably discriminatory to subscribers. The information that would be collected under these provisions is a critical element of the U.S. national market system, and the availability of this information would promote fair and efficient markets and facilitate the ability of brokers and dealers to trade more effectively and to provide best execution to their customers.

Proposed Rule 614(d)(4) would require competing consolidators to timestamp the information with respect to quotations and transactions in NMS stocks that they collect from the SROs pursuant to proposed Rule 614(d)(1) upon receipt, upon receipt by the aggregation mechanism, and upon dissemination to subscribers. This information would be used by subscribers to determine a competing consolidator's realized latency and should assist subscribers in choosing a competing consolidator or in deciding whether the chosen competing consolidator continues to meet their latency needs.

Proposed Rule 614(c) would require each competing consolidator to make public on its website a direct URL hyperlink to the Commission's website that contains each effective initial Form CC, order of ineffective initial Form CC, and amendments to effective Form CCs. These

proposed requirements will help to assure that information regarding competing consolidators is readily available.

3. Recordkeeping

Proposed Rule 614(d)(7) would require each competing consolidator to keep and preserve at least one copy of all documents made or received by it in the course of its business and in the conduct of its business. These documents must be kept for a period of no less than five years, the first two years in an easily accessible place. Proposed Rule 614(d)(8) would require each competing consolidator to promptly furnish these documents to any representative of the Commission upon request. This information would facilitate the Commission's oversight of competing consolidators.

4. Reports and Reviews

Proposed Rules 614(d)(5) and (d)(6) would require the monthly publication, on a competing consolidator's website, of metrics and other information concerning the competing consolidator's performance and operations. This information would include, among other things, latency statistics, system availability, data quality problems, and clock drift information. The information must be publicly posted and must remain free and accessible (without any encumbrances or restrictions) by the general public on the website for a period of not less than three years from the initial date of posting. These proposed rules would provide transparency with respect to the services and performance of a competing consolidator, which would allow market participants to evaluate the merits of a competing consolidator.

5. Amendment to the Effective National Market System Plan(s) for NMS Stocks

As discussed above, the effective national market system plan(s) for NMS stocks would need to be updated and would be required to include specified new provisions. Accordingly, the

participants would be required to file an amendment or amendments to the plans to reflect the new role and functions of the plan(s). For example, the proposed amendment would need to reflect that the plan(s) is (are) no longer operating the exclusive SIPs. In addition, the amendment would reflect the new fees for consolidated market data as well as the approach to billing protocols, including an MISU policy. In addition, the participants to the plan(s) would need to file an amendment to define the monthly performance metrics of competing consolidators. The information that would be collected pursuant to the proposed plan(s) amendment would inform market participants of the proposed operation of the effective national market system plan(s) for NMS stocks and facilitate the Commission's ability to oversee the national market system for NMS stocks. The information that would be collected pursuant to the proposed plan(s) amendment would also inform competing consolidators of the monthly performance metrics that they would be required to develop. The amendment or amendments would be published for public comment.

(a) Proposed Application of Timestamps (Rule 614(e)(1)(iii))

As noted above, timestamps are used extensively in reporting market data elements. Timestamps are used to properly sequence events and are necessary for the elements of consolidated market data, as proposed. Timestamps also help to measure latencies with the provision of proposed consolidated market data. The lack of timestamps would impair the usefulness of the data and would impair market participants' ability to measure the latencies involved with the provision of proposed consolidated market data. Accordingly, the Commission preliminarily believes that the timestamp information that would be collected pursuant to the effective national market system plan(s) would be used by competing

consolidators and self-aggregators to properly sequence core data elements and measure latencies relating to the collection, calculation and generation of core data.[659]

(b) Proposed Annual Report (Rule 614(a)(2)(ii))

The proposed assessment of competing consolidators' performance and the proposed annual report would be used by the Commission to analyze and oversee the operation of the effective national market system plan(s) for the provision of proposed consolidated market data in NMS stocks. The annual report would contain useful information for measuring the promptness, accuracy and reliability of the competing consolidator model. As noted above, the provision of consolidated market data is a necessary part of the national market system and the annual report would be useful in assessing its operation.

(c) Proposed List of Primary Listing Markets (Rule 614(e)(1)(iv))

The proposed list of the primary listing market for each NMS stock would be used by the Commission to oversee the development and provision of proposed regulatory data. In addition, the list would be used by primary listing exchanges to identify which primary listing exchange is responsible for making Short Sale Circuit Breaker information available pursuant to Rule 201(b)(3) is clearly identified.

6. Collection and Dissemination of Information by National Securities Exchanges and National Securities Associations

As discussed above, the proposed amendment to Rule 603(b) would require every national securities exchange on which an NMS stock is traded and national securities association to make available to all competing consolidators and self-aggregators all information with

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659 In addition, the proposed timestamps would be used by competing consolidators to generate the monthly performance metrics pursuant to proposed Rule 614(d)(5).

respect to quotations for and transactions in NMS stocks, including all data necessary to generate consolidated market data, as proposed, in the same manner and using the same methods, including all methods of access and using the same format, as such exchange or association makes available any information with respect to quotations for and transactions in NMS stocks to any person. In addition, as proposed, the primary listing exchange would have to collect and make available pursuant to Rule 603(b) information required under Rule 201 of Regulation SHO. Moreover, the primary listing exchange with the largest proportion of stocks included in the S&P 500 Index would need to monitor the index throughout the trading day. Therefore, to comply with this provision, the SROs would have to collect all elements of consolidated market data. The competing consolidators would consolidate, process, and sell to their customers these data regarding NMS stock quotations and transactions. The data will also be used by self-aggregators to trade and provide services to their customers.

C. Respondents

The collection of information in the proposed changes to Rule 603(b) would apply to the sixteen national securities exchanges (that are equity securities exchanges) and the one national securities association (Financial Industry Regulatory Authority, Inc.) that are registered with the Commission. The amendment to the effective national market system plan(s) for NMS stocks would apply to these sixteen national securities exchanges and the one national securities association (Financial Industry Regulatory Authority, Inc.) that are registered with the Commission and that are participants in the effective national market system plan(s) for NMS stocks.[660] In addition, the proposed information collections regarding registration requirements

[660] Currently, these national securities exchanges are: Cboe BYX Exchange, Inc., Cboe BZX Exchange, Inc., Cboe EDGA Exchange, Inc., Cboe EDGX Exchange, Inc., Cboe

and Form CC, competing consolidator duties and data collection, recordkeeping, reports and reviews, and policies and procedures as contemplated in proposed Rule 614 would apply to those entities that register under the process in proposed Rule 614 to become competing consolidators. The Commission preliminarily estimates that there would initially be 12 persons who decide to perform the functions of a competing consolidator that would have to comply with the proposed information collections.

D. Total Annual Reporting and Recordkeeping Burden

1. Registration Requirements and Form CC

(a) Initial Burden and Costs

As discussed above, proposed Rule 614(a)(1) would require competing consolidators to register with the Commission by filing electronically new Form CC in accordance with the instructions to the Form CC. For purposes of the PRA, the Commission preliminarily estimates that it will take 200 hours to complete the initial Form CC with the information required, including all exhibits to Form CC. The Commission based this estimate on the number of hours necessary to complete Form SIP because Form CC was generally based on Form SIP and incorporated many of the provisions of Form SIP.[661] In addition, the Commission estimates that

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Exchange, Inc., Investors Exchange LLC, Long-Term Stock Exchange, Inc., Nasdaq BX, Inc., Nasdaq ISE, LLC, Nasdaq PHLX LLC, Nasdaq Stock Market LLC, New York Stock Exchange LLC, NYSE American LLC, NYSE Arca, Inc., NYSE Chicago, Inc., and NYSE National, Inc. The primary listing exchanges responsible for making Short Sale Circuit Breaker information available pursuant to Rule 201(b)(3) would be identified in the effective national market system plan(s).

661 The Commission estimated that completing Form SIP, which includes 20 exhibits, would take 400 hours. See Securities Exchange Act Release No. 63347 (Nov. 19, 2010), 75 FR 77306 (Dec. 10, 2010) ("The Commission calculated in 2008 that Form SIP takes 400 hours to complete."). Proposed Form CC includes 9 exhibits, so the Commission preliminarily estimates that completing proposed Form CC would take 200 hours.

each competing consolidator would initially designate two individuals to access EFFS, with each application to access EFFS taking 0.15 hours for a total of 0.3 hours per competing consolidator. Therefore, the Commission estimates that it would take 200.3 hours to complete the Form CC and gain access to EFFS.

As noted above, the Commission preliminarily estimates that 12 respondents would be subject to this burden, however, as noted above, SROs are not required to file Form CC.[662] Therefore, there would be 8 respondents (the Commission preliminarily estimates that 4 SROs would also act as competing consolidators). Accordingly, the Commission estimates that the one-time initial registration burden for all competing consolidators is approximately 1,602.4 burden hours.[663] The Commission estimates that competing consolidators will, as a general matter, prepare Form CC internally and not use external service providers to complete the form. It is likely that Form CC would be prepared by an attorney, and, with approximately 1,602.4 burden hours for all competing consolidators, the total cost to register all competing consolidators would be $748,320.80.[664] In addition, the Commission estimates that each respondent would designate two individuals to sign the Form CC. An individual signing the

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662 See supra note 537.

663 The hour figure is based on 200.3 hours x an estimated 8 competing consolidators. The Commission preliminarily believes that additional competing consolidators may register from time to time and would be subject to a similar one-time initial registration burden.

664 The Commission based this estimate on the $467 hourly rate as of May 2019 for an assistant general counsel x 200.3 hours x 8 respondents. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead. Burden estimates may vary to the extent that competing consolidators utilize external service providers or outside counsel. The Commission preliminarily believes that competing consolidators would use in-house counsel and not use external service providers or outside counsel to file the Form CC.

Form CC must obtain a digital ID, at the cost of approximately $25 each year. Therefore, each respondent would expend approximately $50 annually to obtain digital IDs for the individuals with access to EFFS for the purposes of signing the Form CC[665] or approximately $400 for all respondents.[666]

As discussed below, the Commission believes that amendments to Form CC represent the ongoing annual burdens of Form CC and proposed Rule 614(a)(2). The Commission preliminarily estimates that competing consolidators may file two amendments—one Material Amendment and one Annual Report—during its first year after the effectiveness of its Form CC. As discussed below, the ongoing annual burden for complying with these amendment requirements will be approximately 6.0 burden hours for each competing consolidator per amendment[667] (for a total of $2,802), and approximately 48 burden hours for all competing consolidators per amendment (for a total of $22,416).[668] Therefore, the Commission preliminarily estimates that each respondent will have an average annual burden of 12.0 hours (for a total of $5,604) for a total estimated average annual burden of 96 hours (for a total of

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665 $25 per digital ID x 2 individuals = $50 per respondent.

666 $50 per respondent x 8 total respondents = $400.

667 When Form SDR was adopted in 2015, the Commission estimated the hour burden for amendments to be roughly 3% of the initial burden. Securities Exchange Act Release No. 74246, supra note 554, at 14522. In that release, the initial burden was calculated to be 400 hours per respondent and 12 hours per respondent for amendments. The Commission believes that a similar ratio will apply to filers of Form CC because filers of Form SDR, like filers of Form CC, are required to file amendments annually as well as when certain information on Form SDR becomes inaccurate. Form SDR: General Instructions for Preparing and Filing Form SDR, available at https://www.sec.gov/about/forms/formsdr.pdf (last accessed Jan. 8, 2020). Thus, the Commission estimates that the annual burden of filing one amendment on Form CC will be 3% of the 200 hour initial burden, or 6 hours.

668 See supra note 664.

$44,832).[669] As with the initial Form CC, the Commission believes the competing consolidators will conduct this work internally.

(b) Ongoing Burden and Costs

As discussed above, proposed Rule 614(a)(2) would require competing consolidators to amend Form CC prior to the implementation of material changes to pricing, connectivity, or products offered as well as annually to correct information that has become inaccurate or incomplete for any reason. On an ongoing basis, each competing consolidator may add one individual to access the EFFS system for amendments, adding 0.15 hours per competing consolidator.[670] The Commission believes that these amendments represent the ongoing annual burdens of Form CC and proposed Rule 614(a)(2). The Commission preliminarily estimates that the ongoing annual burden for complying with these amendment requirements will be approximately 6.15 burden hours for each competing consolidator per amendment[671] (for a total of $2,872.05), and approximately 49.2 burden hours for all competing consolidators per amendment (for a total of $22,976.40).[672]

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669 See id.

670 For example, a competing consolidator may have to add an individual to access EFFS to account for staffing changes.

671 When Form SDR was adopted in 2015, the Commission estimated the hour burden for amendments to be roughly 3% of the initial burden. Securities Exchange Act Release No. 74246, supra note 554, at 14522. In that release, the initial burden was calculated to be 400 hours per respondent and 12 hours per respondent for amendments. The Commission believes that a similar ratio will apply to filers of Form CC because filers of Form SDR, like filers of Form CC, are required to file amendments annually as well as when certain information on Form SDR becomes inaccurate. Form SDR: General Instructions for Preparing and Filing Form SDR, available at https://www.sec.gov/about/forms/formsdr.pdf (last accessed Jan. 8, 2020). Thus, the Commission estimates that the annual burden of filing one amendment on Form CC will be 3% of the 200 hour initial burden, or 6 hours.

672 See supra note 664.

The Commission preliminarily believes that one Material Amendment would be a reasonable estimate for the number of such amendments per year. Thus, the Commission preliminarily estimates that respondents will be required to file on average a total of two amendments per year, one Material Amendment plus one Annual Report. Therefore, the Commission preliminarily estimates that each respondent will have an average annual burden of 12.3 hours (for a total of $5,744.10) for a total estimated average annual burden of 98.4 hours (for a total of $45,952.80).[673] As with the initial Form CC, the Commission believes the competing consolidators will conduct this work internally. Further, as noted above, an individual signing the Form CC must obtain a digital ID, at the cost of approximately $25 each year. Therefore, each respondent would expend approximately $25 annually to obtain digital IDs for the individuals with access to EFFS for the purposes of signing the Form CC or approximately $200 for all respondents. Thus, the Commission preliminary estimates that each respondent will have an average annual cost of $5,769.10 ($5,744.10 + $25) and a total estimated annual cost of $46,152.80 ($5,769.10 * 8).

As discussed above, proposed Rule 614(a)(3) would permit a competing consolidator to cease acting as a competing consolidator by filing an amendment to Form CC 30 business days before the proposed cessation of acting as a competing consolidator. The Commission preliminarily believes that a competing consolidator's notice of cessation of acting as a competing consolidator on Form CC will be substantially similar to its most recently filed Form CC. The Form CC being filed in this circumstance will therefore already be substantially complete and as a result, the burden will not be as great as the burden of filing an application for registration on Form CC. Rather, the Commission preliminarily believes that the burden of filing

[673] See id.

a notice of cessation of acting as a competing consolidator on Form CC will be akin to filing an amendment on Form CC. Thus, the Commission estimates that the one-time burden of filing Form CC to notice cessation of acting as a competing consolidator will be approximately 2 burden hours (for a total of $934).[674]

2. Competing Consolidator Duties and Data Collection

As discussed above, proposed Rules 614(d)(1)-(d)(3) would require the competing consolidators to collect from the SROs quotation and transaction information for NMS stocks, calculate and generate proposed consolidated market data from this information, and make proposed consolidated market data available to subscribers on a consolidated basis on terms that are not unreasonably discriminatory. Proposed Rule 614(d)(4) would require competing consolidators to timestamp the information with respect to quotations and transactions in NMS stocks that they collect from the SROs pursuant to proposed Rule 614(d)(1) upon receipt, upon receipt by the aggregation mechanism, and upon dissemination to subscribers. The Commission preliminarily believes that five types of entities may register to become competing consolidators and would have to build systems, or modify existing systems, that comply with Rules 614(d)(1)-(d)(4): (1) market data aggregation firms, (2) broker-dealers that currently aggregate market data for internal uses, (3) the existing exclusive SIPs (CTA/CQ and Nasdaq UTP SIPs), (4) entities that would be entering the market data aggregation business for the first time ("new entrants"), and (5) SROs. The Commission preliminarily estimates that, apart from the SRO category, two respondents from each category may register to become a competing consolidator; the

674 See id. The Commission preliminarily estimates that no competing consolidators would cease operation in the first three years of the rule's effectiveness.

Commission preliminarily believes that four SROs may register to become competing consolidators.[675]

(a) Initial Burden Hours and Costs for Market Data Aggregation Firms

There are a number of technology firms that provide proprietary market data aggregation services. The Commission preliminarily believes that some of these firms may choose to become competing consolidators because they currently collect, consolidate and disseminate market data to their customers, much like competing consolidators would. The systems used by these firms already collect, consolidate and disseminate more extensive proprietary market data than the data that is provided by the exclusive SIPs. Therefore, the Commission preliminarily believes that firms providing proprietary market data aggregation services would not have to extensively modify their systems to comply with Rules 614(d)(1)-(d)(4). For example, the Commission preliminarily believes that each market data aggregation firm would incur burden hours to expand their bandwidth to receive information that is not currently disseminated in the exchange proprietary market data feeds, such as the proposed regulatory data and administrative data, and may incur external costs to purchase hardware to receive such added information.

The Commission preliminarily believes that each market data aggregation firm that chooses to become a competing consolidator would incur initial burden hours to upgrade its systems to comply with Rules 614(d)(1)-(d)(4) in order to collect, consolidate and disseminate the proposed consolidated market data. The Commission also preliminarily believes that each market data aggregation firm would incur initial external costs associated with such upgrades, including co-location fees at the exchange data centers and the cost of market data.

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675 The Commission preliminarily believes that these SROs may be a national securities association and equities national securities exchanges that do not currently operate an exclusive SIP.

The Commission preliminarily believes that each market data aggregation firm would incur 900 initial burden hours[676] and $206,250 in external costs[677] to modify its systems to comply with Rules 614(d)(1)-(d)(4). Additionally, the Commission estimates that an existing market data aggregator would incur initial external costs of $14,000 to purchase market data from the SROs,[678] and an additional initial external cost of $194,000 to co-locate at four exchange data centers,[679] for a total initial external cost of $414,250 per existing market data aggregator,[680] and an aggregate estimate of 1,800 initial burden hours[681] and $828,500 in initial external costs.[682] The Commission solicits comment on the accuracy of this information.

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676 The Commission estimates the monetized initial burden for this requirement to be $293,750. Based on discussions with a market participant, the Commission reached the following estimates: [(Sr. Programmer at $332/hour for 350 hours) + (Sr. Systems Analyst at $285/hour for 300 hours) + (Compliance Manager at $310/hour for 100 hours) + (Director of Compliance at $489/hour for 50 hours) + (Compliance Attorney at $366/hour for 100 hours)] = 6 months (900 burden hours) to upgrade existing systems to comply with Rules 614(d)(1)-(d)(4). The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead.

677 This estimate is based on discussions with a market participant and the Commission's understanding of hardware costs.

678 The Commission is using the monthly market data access and redistribution fees currently charged by the CTA/CQ SIP and Nasdaq UTP SIP as the basis of this estimate ($14,000).

679 This estimate is based on an estimated $48,500 in initial co-location fees as calculated from NYSE Price List 2020, multiplied by four exchange data centers. The Commission preliminarily believes that the market data aggregators would already be co-located at the four exchange data centers, which may lower this estimate. See NYSE Price List 2020, supra note 408.

680 $414,250 = [($206,250 in initial external costs to modify systems to comply with Rules 614(d)(1)-(d)(4)) + ($14,000 for the first month of market data costs) + ($194,000 in initial co-location costs at four exchange data centers)].

681 The Commission estimates the monetized initial burden for this requirement to be $587,500. Based on discussions with a market participant, the Commission reached the

(b) Initial Burden Hours and Costs for Broker-Dealers that Aggregate Market Data

The Commission preliminarily believes that some broker-dealers that currently aggregate market data for their own internal uses may choose to become competing consolidators. The systems used by such broker-dealers already collect and consolidate the proprietary feeds from the exchanges, which contain more extensive data than the data provided by the exclusive SIPs. Therefore, Commission preliminarily believes that these firms may not have to extensively modify their systems to comply with Rules 614(d)(1)-(d)(4). For example, the Commission preliminarily believes that each broker-dealer would incur burden hours to expand their bandwidth to receive information that is not currently disseminated in the exchange proprietary market data feeds, such as data from the OTC market, the proposed regulatory data and administrative data and may incur external costs to purchase hardware to receive such added information. In addition, these broker-dealers would incur burden hours to disseminate proposed consolidated market data to subscribers. The Commission estimates that the initial burden hour and external costs estimates for these broker-dealers to modify their systems to comply with Rules 614(d)(1)-(d)(4) would be similar to market data aggregation firms because, for both types

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following estimates: [(Sr. Programmer at $332/hour for 350 hours) + (Sr. Systems Analyst at $285/hour for 300 hours) + (Compliance Manager at $310/hour for 100 hours) + (Director of Compliance at $489/hour for 50 hours) + (Compliance Attorney at $366/hour for 100 hours)] x [(2 market data aggregation firms)] = 1,800 initial burden hours across the market data aggregation firms.

682 The Commission preliminarily estimates that the market data aggregation firms would incur the following initial external costs: [($206,250 to modify systems to comply with Rules 614(d)(1)-(d)(4)) + ($14,000 to purchase market data) + ($194,000 to co-locate within four exchange data centers)] x [(2 market data aggregation firms)] = $828,500.

of respondents, the scope of the systems changes and costs associated with becoming competing consolidators would be comparable.

The Commission preliminarily believes that each broker-dealer that aggregates market data for internal uses that chooses to become a competing consolidator would incur burden hours to upgrade its systems to comply with Rules 614(d)(1)-(d)(4) in order to collect, consolidate, and disseminate the proposed consolidated market data. The Commission also preliminarily believes that each broker-dealer would also incur initial external costs associated with such upgrades, including co-location fees at the exchange data centers and the cost of market data.

The Commission preliminarily believes that each broker-dealer would incur 900 initial burden hours[683] and $206,250 in external costs[684] to modify its systems to comply with Rules 614(d)(1)-(d)(4). Additionally, the Commission estimates that a broker-dealer would incur initial external costs of $14,000 to purchase market data from the SROs,[685] and an additional initial external cost of $194,000 to co-locate itself at four exchange data centers,[686] for a total initial external cost of $414,250 per broker-dealer,[687] and an aggregate estimate of 1,800 initial burden hours[688] and $828,500 in initial external costs.[689] The Commission solicits comment on the accuracy of this information.

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683 The Commission estimates the monetized initial burden for this requirement to be $293,750. Based on discussions with a market participant, the Commission reached the following estimates: [(Sr. Programmer at $332/hour for 350 hours) + (Sr. Systems Analyst at $285/hour for 300 hours) + (Compliance Manager at $310/hour for 100 hours) + (Director of Compliance at $489/hour for 50 hours) + (Compliance Attorney at $366/hour for 100 hours)] = 6 months (900 burden hours) to upgrade existing systems to comply with Rules 614(d)(1)-(d)(4). The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for a 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead.

684 This estimate is based on discussions with a market participant and the Commission's understanding of hardware costs.

685 The Commission is using the monthly market data access and redistribution fees currently charged by the CTA/CQ SIP and Nasdaq UTP SIP as the basis of this estimate ($14,000).

686 This estimate is based on an estimated $48,500 in initial co-location fees as calculated from NYSE Price List 2020, multiplied by four exchange data centers. See NYSE Price List 2020, supra note 408.

687 $414,250 = [($206,250 in initial external costs to modify systems to comply with Rules 614(d)(1)-(d)(4)) + ($14,000 for the first month of market data costs) + ($194,000 in initial co-location costs at four exchange data centers)].

688 The Commission estimates the monetized initial burden for this requirement to be $587,500. Based on discussions with a market participant, the Commission reached the following estimates: [(Sr. Programmer at $332/hour for 350 hours) + (Sr. Systems Analyst at $285/hour for 300 hours) + (Compliance Manager at $310/hour for 100 hours)

(c) Initial Implementation Burden Hours and Costs for the Exclusive SIPs

The Commission preliminarily believes that the CTA/CQ SIP and the Nasdaq UTP SIP could choose to become competing consolidators due to their years of experience in collecting, consolidating and disseminating market data. The systems used by the exclusive SIPs already collect, consolidate and disseminate SIP data. Therefore, the Commission preliminarily believes that the exclusive SIPs would not have to build entirely new systems to comply with Rules 614(d)(1)-(d)(4). For example, each exclusive SIP would incur burden hours and external costs to expand their bandwidth and connections to consume and disseminate proposed consolidated market data as well as to transmit it, and to program feed handlers to receive and normalize the different formats of the data feeds developed by the exchanges.[690] Further, each exclusive SIP would expend external costs on purchasing proposed consolidated market data and on colocation fees at the exchange data centers.

However, the exclusive SIPs may have to make a greater scope of changes to become competing consolidators than market data aggregation firms. For this reason, the Commission has estimated initial burden hour and external cost estimates that are higher than those estimated for market data aggregation firms.

+ (Director of Compliance at $489/hour for 50 hours) + (Compliance Attorney at $366/hour for 100 hours)] x [(2 broker-dealers)] = 1,800 initial burden hours across the broker-dealers.

689 The Commission preliminarily estimates that broker-dealers would incur the following initial external costs: [($206,250 to modify systems to comply with Rules 614(d)(1)-(d)(4)) + ($14,000 to purchase market data) + ($194,000 to co-locate within four exchange data centers) x (2 broker-dealers)] = $828,500.

690 Feed handlers receive market data and make it usable to customers.

The Commission preliminarily believes that each exclusive SIP would incur burden hours to upgrade their systems to comply with Rules 614(d)(1)-(d)(4) to collect, consolidate and disseminate the proposed consolidated market data. The Commission also preliminarily believes that each exclusive SIP would also incur external costs associated with such upgrades, including co-location fees at the exchange data centers and the cost of market data. The Commission preliminarily believes that each exclusive SIP would incur 1,800 initial burden hours[691] and $412,500 in external costs[692] to modify its systems to comply with Rules 614(d)(1)-(d)(4). Additionally, the Commission estimates that an exclusive SIP would incur initial external costs of $14,000 to purchase market data from the SROs,[693] and an additional initial external cost of

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691 Based on discussions with a market participant, the Commission reached the following estimates for a market data aggregation firm: [(Sr. Programmer at $332/hour for 350 hours) + (Sr. Systems Analyst at $285/hour for 300 hours) + (Compliance Manager at $310/hour for 100 hours) + (Director of Compliance at $489/hour for 50 hours) + (Compliance Attorney at $366/hour for 100 hours)] = 6 months (900 burden hours) to upgrade existing systems to comply with Rules 614(d)(1)-(d)(4). The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for a 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead. As noted above, the Commission has increased this initial burden hour estimate for the exclusive SIPs. Therefore, the Commission preliminarily estimates that each exclusive SIP will incur 1,800 initial burden hours to upgrade its existing systems to comply with Rules 614(d)(1)-(d)(4) (or $587,500, as monetized).

692 As noted above, the Commission estimates the initial external cost estimates to comply with Rules 614(d)(1)-(d)(4) will be higher for exclusive SIPs than for market data aggregation firms. Therefore, the Commission preliminarily estimates that each existing SIP will incur $412,500 in initial external costs to modify its systems to comply with Rules 614(d)(1)-(d)(4).

693 The Commission is using the monthly market data access and redistribution fees currently charged by the CTA/CQ SIP and Nasdaq UTP SIP as the basis of this estimate ($14,000).

$194,000 to co-locate itself at four exchange data centers,[694] for a total initial external cost of $620,500 per existing SIP,[695] and an aggregate estimate of 3,600 initial burden hours[696] and $1,241,000 in initial external costs.[697] The Commission solicits comment on the accuracy of this information.

(d) Initial Implementation Burden Hours and Costs for New Entrants

The Commission anticipates that firms without prior experience in the business of collecting, consolidating and disseminating market data may choose to become competing consolidators and would have to build systems to comply with Rules 614(d)(1)-(d)(4). Because these systems would be completely new, the Commission preliminarily believes that these new entrants will incur substantially higher initial burden hours and external costs to build a system that complies with Rules 614(d)(1)-(d)(4) than the other entities described above. For this

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694 This estimate is based on an estimated $48,500 in initial co-location fees as calculated from NYSE Price List 2020, multiplied by four exchange data centers. See NYSE Price List 2020, supra note 408.

695 The Commission preliminarily estimates that each existing SIP would incur the following initial external costs: [($412,500 to modify systems to comply with Rules 614(d)(1)-(d)(4)) + ($14,000 to purchase market data) + ($194,000 to co-locate within four exchange data centers)] = $620,500.

696 Based on discussions with a market participant, the Commission reached the following estimates for a market data aggregation firm: [(Sr. Programmer at $332/hour for 350 hours) + (Sr. Systems Analyst at $285/hour for 300 hours) + (Compliance Manager at $310/hour for 100 hours) + (Director of Compliance at $489/hour for 50 hours) + (Compliance Attorney at $366/hour for 100 hours)] = 900 initial burden hours across the market data aggregation firms. As noted above, the Commission has increased this initial burden hour estimate to apply to the exclusive SIPs. Therefore, the Commission preliminarily estimates that each exclusive SIP will incur 1,800 initial burden hours to upgrade its existing systems to comply with Rules 614(d)(1)-(d)(4) (or $587,500, as monetized). The aggregate initial burden hour estimate for two exclusive SIPs would be [(1,800 initial burden hours) x (2 existing SIPs)] = 3,600 initial burden hours.

697 The Commission preliminarily estimates that the exclusive SIPs would incur the following initial external costs: [($412,500 to modify systems to comply with Rules 614(d)(1)-(d)(4)) + ($14,000 to purchase market data) + ($194,000 to co-locate within four exchange data centers)] x [(2 exclusive SIPs)] = $1,241,000.

reason, the Commission has estimated initial burden hour and external cost estimates for new entrants that are higher than those estimated for the other potential entities that may choose to become competing consolidators. The Commission preliminarily believes that each new entrant would incur initial burden hours to comply with Rules 614(d)(1)-(d)(4) to build a system that collects, consolidates, and disseminates the proposed consolidated market data. The Commission also preliminarily believes that each new entrant would incur associated external costs, including co-location fees at the exchange data centers and the cost of market data. The Commission preliminarily believes that each new entrant would incur 3,600 initial burden hours[698] and $825,000 in external costs[699] to build systems to comply with Rules 614(d)(1)-(d)(4). Additionally, the Commission estimates that a new entrant would incur initial external costs of $14,000 to purchase market data from the SROs,[700] and an additional initial external cost

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698 Based on discussions with a market participant, the Commission reached the following estimates for a market data aggregation firm: [(Sr. Programmer at $332/hour for 350 hours) + (Sr. Systems Analyst at $285/hour for 300 hours) + (Compliance Manager at $310/hour for 100 hours) + (Director of Compliance at $489/hour for 50 hours) + (Compliance Attorney at $366/hour for 100 hours)] = 6 months (900 burden hours) to upgrade existing systems to comply with Rules 614(d)(1)-(d)(4). The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead. As noted above, the Commission has increased this initial burden hour estimate to apply to the new entrants. Therefore, the Commission preliminarily estimates that each new entrant will incur 3,600 initial burden hours to build systems to comply with Rules 614(d)(1)-(d)(4) (or $1,175,000, as monetized).

699 As noted above, the Commission has increased its initial external cost estimates for market data aggregation firms to apply to new entrants. Therefore, the Commission preliminarily estimates that each new entrant will incur $825,000 in initial external costs to build systems to comply with Rules 614(d)(1)-(d)(4).

700 The Commission is using the monthly market data access and redistribution fees currently charged by the CTA/CQ SIP and Nasdaq UTP SIP as the basis of this estimate ($14,000).

of $194,000 to co-locate itself at four exchange data centers,[701] for a total initial external cost of $1,033,000 per new entrant,[702] and an aggregate estimate of 7,200 initial burden hours[703] and $2,066,000 in initial external costs.[704] The Commission solicits comment on the accuracy of this information.

(e) Initial Implementation Burden Hours and Costs for SROs

The Commission anticipates that SROs may choose to become competing consolidators and would have to build new systems to comply with Rules 614(d)(1)-(d)(4). Although these SROs may be able to leverage existing systems in developing a system compliant with Rules 614(d)(1)-(d)(4), the Commission preliminarily believes that these SROs would likely have to build new systems and thus will incur initial burden hours to comply with Rules 614(d)(1)-(d)(4) that are similar to new entrants. The Commission preliminarily believes that each SRO would

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701 This estimate is based on an estimated $48,500 in initial co-location fees as calculated from NYSE Price List 2020, multiplied by four exchange data centers. See NYSE Price List 2020, supra note 408.

702 The Commission preliminarily estimates that each new entrant would incur the following initial external costs: [($825,000 to build systems to comply with Rules 614(d)(1)-(d)(4)) + ($14,000 to purchase market data) + ($194,000 to co-locate within four exchange data centers)] = $1,033,000.

703 Based on discussions with a market participant, the Commission reached the following estimates for a market data aggregation firm: [(Sr. Programmer at $332/hour for 350 hours) + (Sr. Systems Analyst at $285/hour for 300 hours) + (Compliance Manager at $310/hour for 100 hours) + (Director of Compliance at $489/hour for 50 hours) + (Compliance Attorney at $366/hour for 100 hours)] = 900 initial burden hours. As noted above, the Commission has increased the per market data aggregation firm initial burden hour estimate to apply to the new entrants. Therefore, the Commission preliminarily estimates that each existing SIP will incur 3,600 initial burden hours to upgrade its existing systems to comply with Rules 614(d)(1)-(d)(4) (or $1,175,000, as monetized). [(3,600 burden hours) x (2 new entrants] = 7,200 hours (or $2,350,000 as monetized).

704 The Commission preliminarily estimates that each new entrant would incur the following initial external costs: [($825,000 to build systems to comply with Rules 614(d)(1)-(d)(4)) + ($14,000 to purchase market data) + ($194,000 to co-locate within four exchange data centers) x (2 new entrants)] = $1,033,000. [($1,033,000 in initial external costs) x (2 new entrants)] = $2,066,000.

incur initial burden hours to comply with Rules 614(d)(1)-(d)(4) to build a system that collects, consolidates, and disseminates the proposed consolidated market data. The Commission also preliminarily believes that each SRO would incur associated external costs, including co-location fees at the exchange data centers and the cost of market data. The Commission preliminarily believes that each SRO would incur 3,600 initial burden hours[705] and $825,000 in external costs[706] to build systems to comply with Rules 614(d)(1)-(d)(4). Additionally, the Commission estimates that an SRO would incur initial external costs of $14,000 to purchase market data from the SROs,[707] and an additional initial external cost of $194,000 to co-locate itself at four exchange data centers,[708] for a total initial external cost of $1,033,000 per new entrant,[709] and an

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705 Based on discussions with a market participant, the Commission reached the following estimates for a market data aggregation firm: [(Sr. Programmer at $332/hour for 350 hours) + (Sr. Systems Analyst at $285/hour for 300 hours) + (Compliance Manager at $310/hour for 100 hours) + (Director of Compliance at $489/hour for 50 hours) + (Compliance Attorney at $366/hour for 100 hours)] = 6 months (900 burden hours) to upgrade existing systems to comply with Rules 614(d)(1)-(d)(4). The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead. As it did for its new entrant estimates, the Commission has increased this initial burden hour estimate to apply to the SROs. Therefore, the Commission preliminarily estimates that each new entrant will incur 3,600 initial burden hours to build systems to comply with Rules 614(d)(1)-(d)(4) (or $1,175,000, as monetized).

706 As it did for its new entrant estimates, the Commission has increased its initial external cost estimates for market data aggregation firms to apply to the SROs. Therefore, the Commission preliminarily estimates that each SRO will incur $825,000 in initial external costs to build systems to comply with Rules 614(d)(1)-(d)(4).

707 The Commission is using the monthly market data access and redistribution fees currently charged by the CTA/CQ SIP and Nasdaq UTP SIP as the basis of this estimate ($14,000).

708 This estimate is based on an estimated $48,500 in initial co-location fees as calculated from NYSE Price List 2020, multiplied by four exchange data centers. See NYSE Price List 2020, supra note 408.

aggregate estimate of 14,400 initial burden hours[710] and $4,132,000 in initial external costs.[711] The Commission solicits comment on the accuracy of this information.

(f) Ongoing Burden Hours and Costs for Market Data Aggregation Firms, Broker-Dealers that Aggregate Market Data, Exclusive SIPs, New Entrants, and SROs

The Commission preliminarily believes that once a competing consolidator's system has been built, the entities that have become competing consolidators (originally, the existing market data aggregation firms, broker-dealers that aggregate market data, exclusive SIPs, new entrants, and SROs) will incur annual ongoing burden hours and external costs to operate and maintain their systems to comply with Rules 614(d)(1)-(d)(4). The Commission also preliminarily believes that these annual ongoing burdens should be similar across the competing consolidators because such systems would likely be similar in nature. Therefore, the burden hours and costs

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709 The Commission preliminarily estimates that each SRO would incur the following initial external costs: [($825,000 to build systems to comply with Rules 614(d)(1)-(d)(4)) + ($14,000 to purchase market data) + ($194,000 to co-locate within four exchange data centers)] = $1,033,000.

710 Based on discussions with a market participant, the Commission reached the following estimates for a market data aggregation firm: [(Sr. Programmer at $332/hour for 350 hours) + (Sr. Systems Analyst at $285/hour for 300 hours) + (Compliance Manager at $310/hour for 100 hours) + (Director of Compliance at $489/hour for 50 hours) + (Compliance Attorney at $366/hour for 100 hours)] = 900 initial burden hours. As it did for its new entrant estimates, the Commission has increased the per market data aggregation firm initial burden hour estimate to apply to the SROs. Therefore, the Commission preliminarily estimates that each SRO will incur 3,600 initial burden hours to upgrade its existing systems to comply with Rules 614(d)(1)-(d)(4) (or $1,175,000, as monetized). [(3,600 burden hours) x (4 new entrants] = 14,400 hours (or $4,700,000 as monetized).

711 The Commission preliminarily estimates that each SRO would incur the following initial external costs: [($825,000 to build systems to comply with Rules 614(d)(1)-(d)(4)) + ($14,000 to purchase market data) + ($194,000 to co-locate within four exchange data centers)] = $1,033,000. [($1,033,000 in initial external costs) x (4 new entrants)] = $4,132,000.

associated with operating and maintain a competing consolidator system should be comparable across competing consolidators. The Commission is therefore applying the same annual ongoing burden hour and external cost estimates across the five types of entities that the Commission anticipates may choose to become competing consolidators.

The Commission preliminarily believes that entities choosing to become competing consolidators would incur annual ongoing burden hours and external costs to operate and maintain their modified systems to comply with Rules 614(d)(1)-(d)(4). The Commission preliminarily believes that each entity would incur 540 annual ongoing burden hours[712] and $123,725 in annual ongoing external costs[713] to operate and maintain its systems to comply with Rules 614(d)(1)-(d)(4).

Additionally, the Commission estimates that each entity would incur annual ongoing external costs of $168,000 to purchase market data from the SROs,[714] and an additional annual

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712 The Commission preliminarily believes that once a competing consolidator's infrastructure is in place, the burden of operating and maintaining the infrastructure will be less than the burdens associated with establishing the infrastructure. The Commission estimates the monetized initial burden for this requirement to be $176,250. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Sr. Programmer at $332 for 210 hours) + (Sr. Systems Analyst at $285 for 180 hours) + (Compliance Manager at $310 for 60 hours) + (Director of Compliance at $489 for 30 hours) + (Compliance Attorney at $366 for 60 hours)] = 540 burden hours per entity and $176,250.

713 This estimate is based on the initial external cost estimate for a market data aggregation firm to modify its systems to comply with Rules 614(d)(1)-(d)(4), but reduced because the Commission preliminarily believes that once a competing consolidator's infrastructure is in place, the burden of operating and maintaining the infrastructure will be less than the burdens associated with establishing the infrastructure.

714 The Commission is using the monthly market data access and redistribution fees currently charged by the CTA/CQ SIP and Nasdaq UTP SIP as the basis of this estimate ($14,000), multiplied by 12 months.

ongoing external cost of $4,602,720 to co-locate itself at four exchange data centers,[715] for a total annual ongoing external cost of $4,894,445 per entity.[716] Because the Commission preliminarily believes that there will be two entities per category of potential competing consolidators for existing market data aggregators, broker-dealers that currently aggregate market data, exclusive SIPs and new entrants, for each of these categories, the aggregate estimates would amount to estimate of 1,080 annual ongoing burden hours[717] and $9,797,530 in annual ongoing external costs.[718]

Since the Commission preliminarily believes that there may be four SROs that will choose to become competing consolidators, it is estimating that these SROs will incur an

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715 This estimate is based on an estimated $95,890 in monthly co-location fees as calculated from NYSE Price List 2020, multiplied by four exchange data centers over 12 months. The Commission preliminarily believes that the market data aggregators would already be co-located at the four exchange data centers, which may lower this estimate for this category of respondent. See NYSE Price List 2020, supra note 408.

716 $4,894,445 = [($123,725 to operate and maintain systems to comply with Rules 614(d)(1)-(d)(4)) + ($168,000 in monthly market data fees over 12 months) + ($4,602,720 to co-locate within four exchange data centers over 12 months)].

717 The Commission estimates the monetized annual ongoing burden for this requirement to be $352,500. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Sr. Programmer at $332 for 210 hours) + (Sr. Systems Analyst at $285 for 180 hours) + (Compliance Manager at $310 for 60 hours) + (Director of Compliance at $489 for 30 hours) + (Compliance Attorney at $366 for 60 hours)] x [(2 market data aggregation firms/broker-dealers that currently aggregate market data/existing SIPs/new entrants)] = 1,080 annual ongoing burden hours and $352,500.

718 The Commission preliminarily estimates that the market data aggregation firms/broker-dealers that currently aggregate market data for their own usage/exclusive SIPs/new entrants would incur the following aggregate annual ongoing external costs: [($123,725 to operate and maintain systems to comply with Rules 614(d)(1)-(d)(4)) + ($168,000 in monthly market data fees over 12 months) + ($4,602,720 to co-locate within four exchange data centers over 12 months)] x [(2 entities)] = $9,788,890.

aggregate estimate of 2,160 annual ongoing burden hours[719] and $19,577,780 in annual ongoing external costs.[720] The Commission solicits comment on the accuracy of this information.

(g) Initial Burden and Costs for Proposed Rule 614(c)

As discussed above, proposed Rule 614(c) would require each competing consolidator to make public on its website a direct URL hyperlink to the Commission's website that contains each effective initial Form CC, order of ineffective initial Form CC, and amendments to effective Form CCs. The Commission preliminarily estimates an initial burden of 0.5 hours per competing consolidator to publicly post the Commission's direct URL hyperlink to its website upon filing of the initial Form CC,[721] for an aggregate initial burden of approximately six hours

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719 The Commission estimates the monetized initial burden for this requirement to be $353,500. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Sr. Programmer at $332 for 210 hours) + (Sr. Systems Analyst at $285 for 180 hours) + (Compliance Manager at $310 for 60 hours) + (Director of Compliance at $489 for 30 hours) + (Compliance Attorney at $366 for 60 hours)] x [(4 SROs)] = 2,160 annual ongoing burden hours across the SROs and $705,000.

720 The Commission preliminarily estimates that the SROs would incur the following initial external costs: [($123,725 to operate and maintain systems to comply with Rules 614(d)(1)-(d)(4)) + ($168,000 in monthly market data fees over 12 months) + ($4,602,720 to co-locate within four exchange data centers over 12 months)] x [(4 SROs)] = $19,577,780 across the SROs.

721 The Commission bases this estimate on a full-time Programmer Analyst spending approximately 0.5 hours to publicly post the URL hyperlink per competing consolidator. The Commission estimates the monetized initial burden for this requirement to be $120.50. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: Programmer Analyst at $241 for 0.5 hours = 0.5 initial burden hours per competing consolidator and $120.50.

for the competing consolidators to publicly post the direct URL hyperlink to the Commission's website on their own respective websites.[722]

(h) Ongoing Burden and Costs for Proposed Rule 614(c)

The Commission preliminarily believes that each competing consolidator would check the Commission's website whenever it submits amendments to effective Form CCs to ensure that the Commission's direct URL hyperlink that the competing consolidator has posted to its own website remains valid. The Commission preliminarily believes that a competing consolidator will file two amendments per year, so the Commission preliminarily estimates that each competing consolidator will incur an ongoing burden of 0.25 hours per amendment, or 0.5 hours per year, to ensure that it has posted the correct direct URL hyperlink to the Commission's website on its own website,[723] for an aggregate annual burden of approximately six hours for the competing consolidators to do so.[724]

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722 The Commission estimates the monetized initial aggregate burden for this requirement to be $1,446. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Programmer Analyst at $241 for 0.5 hours) x (12 competing consolidators)] = 6 initial burden hours across the competing consolidators and $1,446.

723 The Commission bases this estimate on a full-time Programmer Analyst spending approximately 0.25 hours to check the Commission's website when the competing consolidator submits an amendment to effective Form CCs to ensure that the Commission's direct URL hyperlink that the competing consolidator has posted to its own website remains valid. Since the Commission preliminarily believes that a competing consolidator would file two amendments per year, the Commission preliminarily estimates that each competing consolidator would incur a burden of 0.5 hours per year. [(0.25 hours) x (2 amendments per year)] = 0.5 hours per year to check the URL hyperlink. The Commission estimates the monetized annual burden for this requirement to be $120.50. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and

3. Recordkeeping

(a) Initial Burden and Costs

Proposed Rule 614(d)(7) would require each competing consolidator to keep and preserve at least one copy of all documents made or received by it in the course of its business and in the conduct of its business. These documents must be kept for a period of no less than five years, the first two years in an easily accessible place. Proposed Rule 614(d)(8) would require each competing consolidator to promptly furnish these documents to any representative of the Commission upon request. Based on the Commission's experience with recordkeeping costs and consistent with prior burden estimates for similar provisions,[725] the Commission preliminarily estimates that this requirement will create an initial burden of 40 hours (for a total cost of $8,720),[726] for a total initial burden of 480 hours for all respondents (for a total cost of $104,640).

(b) Ongoing Burden and Costs

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overhead: Programmer Analyst at $241 for 0.5 hours = 0.5 annual burden hours per competing consolidator and $120.50.

724 The Commission estimates the monetized aggregate annual burden for this requirement to be $1,446.00. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Programmer Analyst at $241 for 0.5 hours) x (12 competing consolidators)] = 6 annual burden hours across the competing consolidators and $1,446.00.

725 See Securities Exchange Act Release No. 74246, supra note 554, at 14541.

726 The Commission based this estimate on the $218 hourly rate as of May 2019 for a paralegal x 40 hours. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead.

The Commission preliminarily believes that the ongoing annual burden of recordkeeping in accordance with proposed Rules 614(d)(7) and 614(d)(8) would be 20 hours per respondent (for a total cost of $4,360) and a total ongoing annual burden of 240 hours for all respondents (for a total cost of $52,320).

4. Reports and Reviews

(a) Initial Burden and Costs

The Commission preliminarily believes that the average one-time, initial burden to program systems to produce the monthly reports required by proposed Rules 614(d)(5) and (d)(6), including keeping the information publicly posted and free and accessible (in downloadable files under Rule 614(d)(5)), would be 246 hours per competing consolidator (for a total cost of $80,507)[727] and $800 in external costs.[728] The Commission estimates that the total

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727 This figure is based on the estimated initial paperwork burden for Rule 606(a), which requires each broker or dealer to make publicly available on a website a quarterly report on its routing of non-directed orders in NMS stocks that are submitted on a held basis and of non-directed orders that are customer orders in NMS securities. See Disclosure of Order Handling Information, Securities Exchange Act Release No. 84528, supra note 10. For purposes of this proposal, the Commission is converting the 10 hour estimate for a quarterly report to an estimate for a monthly report. Additionally, the Commission is adding the burden of posting the required information to the website. The Commission estimates the monetized initial burden for this requirement to be $80,507. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Sr. Programmer at $332 per hour for 160 hours) + (Sr. Database Administrator at $342 per hour for 20 hours) + (Sr. Business Analyst at $275 per hour for 20 hours) + (Attorney at $417 per hour for 4 hours) + (Sr. Operations Manager at $366 per hour for 20 hours) + (Systems Analyst at $263 per hour for 16 hours) + ($308.50 blended rate for Sr. Systems Analyst and Sr. Programmer for 6 hours)] = 246 initial burden hours per competing consolidator and $80,507.

728 The Commission estimates that each competing consolidator would incur an initial external cost of $800 for an external website developer to create the website.

initial burden would be 2,952 hours (for a total cost of $966,804)[729] and a total initial external cost of $9,600.[730]

(b) Ongoing Burden and Costs

The Commission estimates that each competing consolidator would incur an average burden of 11 hours to prepare and make publicly available a monthly report in the format required by proposed Rules 614(d)(5) and (d)(6) (for a total cost of $3,768.50), or a burden of 132 hours per year (for a total cost of $45,222).[731] Once a report is posted on an internet website,

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729 The Commission estimates the monetized initial aggregate burden for this requirement to be $966,804. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Sr. Programmer at $332 per hour for 160 hours) + (Sr. Database Administrator at $342 per hour for 20 hours) + (Sr. Business Analyst at $275 per hour for 20 hours) + (Attorney at $417 per hour for 4 hours) + (Sr. Operations Manager at $366 per hour for 20 hours) + (Systems Analyst at $263 per hour for 16 hours) + ($308.50 blended rate for Sr. Systems Analyst and Sr. Programmer for 6 hours)] x [(12 competing consolidators)] = 2,952 initial aggregate burden hours across the competing consolidators and $966,804.

730 $9,600 = ($800 for an external website developer to create the website) x (12 competing consolidators).

731 This figure is based on the estimated ongoing paperwork burden for Rule 606(a), which requires each broker or dealer to make publicly available on a website a report on a quarterly basis. In the Paperwork Reduction Act discussion for Rule 606(a), the Commission established that the average annual burden for a broker-dealer to comply with Rules 606(a)(1)(i)–(iii) would be 10 hours. See supra note 727, at 58388. For purposes of this proposal, the Commission is converting the 10 hour estimate for a quarterly report to an estimate for a monthly report. Additionally, the Commission is adding the burden of updating the website. The Commission estimates the monetized annual burden for this requirement to be $3,768.50. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Sr. Business Analyst at $275 per hour for 5 hours) + (Attorney at $417 per hour for 5 hours) + ($308.50 blended rate for Sr. Systems Analyst and Sr. Programmer for 1 hour)] x [(12 months)] = 132 initial burden hours per competing consolidator and $45,222.

the Commission does not estimate that there would be an additional burden to allow the report to remain posted for the period of time specified in the rules. The total burden per year for all competing consolidators to comply with the monthly reporting requirement in proposed Rules 614(d)(5) and (d)(6) is estimated to be 1,584 hours (for a total cost of $542,664).[732]

5. Amendment to the Effective National Market System Plan(s) for NMS Stocks

As discussed above, the proposed rule would require an amendment to the effective national market system plan(s) for NMS stocks from the 16 national securities exchanges and one national securities association respondents who are participants in the effective national market system plan(s). The Commission preliminarily estimates that it would take the participants to the effective national market system plan(s) approximately 420 hours to prepare the amendment. This preliminary estimate includes 210 hours for a respondent to comply with the timestamps required by the proposed rule, including a review and any applicable change of the respondent's technical systems and rules. Each SRO already employs some form of timestamping, and the Commission does not necessarily expect that the burden to comply with the timestamp requirement would be particularly burdensome.[733] The preliminary estimate also includes 105 hours for the participants to compose the form of annual report on competing

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732 The Commission estimates the monetized annual aggregate burden for this requirement to be $542,664. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Sr. Business Analyst at $275 per hour for 5 hours) + (Attorney at $417 per hour for 5 hours) + ($308.50 blended rate for Sr. Systems Analyst and Sr. Programmer for 1 hour)] x [(12 competing consolidators)] x [(12 months)] = 1,584 aggregate burden hours across the competing consolidators and $542,664.

733 Currently, under the Equity Data Plans, the SROs attach timestamps to quotation information and transaction information provided to the exclusive SIPs. See, e.g., Nasdaq UTP Plan, supra note 13, at Section VIII; CQ Plan, supra note 13, at Section VI; CTA Plan, supra note 13, at Section VI.

consolidator performance. Finally, the preliminary estimate includes 20 hours the participants to compile and confirm the primary listing exchange for each NMS stock. The initial burden hours for all respondents would be 420 hours x 17 (for a total cost of $2,977,380).[734]

6. Collection and Dissemination of Information by National Securities Exchanges and National Securities Associations

As discussed above, the proposed amendment to Rule 603(b) would require every national securities exchange on which an NMS stock is traded and national securities association to make available to all competing consolidators and self-aggregators all information with respect to quotations for and transactions in NMS stocks, including all data necessary to generate consolidated market data, in the same manner and using the same methods, including all methods of access and using the same formats, as such exchange or association makes available any information with respect to quotations for and transactions in NMS stocks to any person. Accordingly, the SROs would be required to collect the information necessary to generate proposed consolidated market data, which would be required to be made available under proposed Rule 603(b). The respondents to this collection of information are the 16 national securities exchanges and the one national securities association who are participants in the effective national market system plan(s). The new data elements of proposed consolidated market data that the national securities exchanges and national securities associations must make available include auction information, depth of book data, round lot data, regulatory data (including LULD price bands), and administrative data. The Commission understands that the

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[734] The Commission estimates the monetized burden for this requirement to be $130,860. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Attorney at $417 for (420 x17) hours)].

national securities exchanges and national securities associations currently collect and/or calculate all data necessary to generate proposed consolidated market data.[735] Therefore, the Commission believes that the proposed amendments to 603(b) would impose minimal initial and ongoing burdens on these respondents, including any changes to their systems, because they already collect and provide the data necessary to generate proposed consolidated market data, including regulatory data, to the exclusive SIPs and to subscribers of their proprietary data feeds.

(a) Initial Burden and Costs

The Commission preliminarily estimates, in order to collect the information necessary to generate consolidated market data as required by proposed Rule 603(b), that a national securities exchange on which an NMS stock is traded or national securities association will require an average of 220[736] initial burden hours of legal, compliance, information technology, and business operations personnel time to prepare and implement such a system (for a total cost per exchange of $70,865).[737]

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735 For example, the primary listing exchanges currently calculate LULD price bands and related information to generate synthetic LULD price bands. See Nasdaq, Equity Trader Alert #2016 – 79: NASDAQ Announces Improved Protections for Equity Markets Coming Out of Halts ("Leaky Bands") (Apr. 12, 2016), available at https://www.nasdaqtrader.com/TraderNews.aspx?id=ETA2016-79; NYSE, Trader Update: NYSE and NYSE MKT: Enhanced Limit Up Limit Down Procedures (Aug. 1, 2016), available at https://www.nyse.com/trader-update/history#110000029205; Securities Exchange Act Release No. 34-78435 (July 28, 2016), 81 FR 51239 (Aug. 3, 2016) (SR-FINRA-2016-028).

736 The Commission based its estimate on the burden hour estimate provided in connection with the adoption of Regulation SHO because the requirements are similar to what a national securities exchange or national securities association would need to do to comply with proposed Rule 603(b). See Commission, Supporting Statement for the Paperwork Reduction Act Information Collection Submission for Rule 201 and Rule 200(g) of Regulation SHO (Sept. 5, 2019).

737 The Commission estimates the monetized initial burden for this requirement to be $70,865. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified

(b) Ongoing Burden and Costs

The Commission estimates that each national securities exchange on which an NMS stock is traded and national securities association would incur an annual average burden on an ongoing basis of 396 hours to collect the information necessary to generate proposed consolidated market data required by proposed Rule 603(b) (for a total cost per exchange of $128,064).[738]

E. Collection of Information is Mandatory

The collection of information discussed above would be a mandatory collection of information.

F. Confidentiality

1. Registration Requirements and Form CC

As discussed above, under proposed Rule 614(b)(2), the Commission would make public via posting on the Commission's website each: (i) effective initial Form CC, as amended; (ii) order of ineffectiveness of a Form CC; (iii) filed Form CC Amendment; and (iv) notice of cessation.

2. Competing Consolidator Duties and Data Collection and Maintenance

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by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Compliance Manager at $310 for 105 hours) + (Attorney at $417 for 70 hours) + (Sr. Systems Analyst at $285 for 20 hours) + (Operations Specialist at $137 for 25 hours)] = 220 initial burden hours and $70,865.

738 The Commission estimates the monetized ongoing, annual burden for this requirement to be $128,064. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Compliance Manager at $310 for 192 hours) + (Attorney at $417 for 48 hours) + (Sr. Systems Analyst at $285 for 96 hours)] = 336 initial burden hours and $128,064.

The collection of information regarding competing consolidator duties and data collection and maintenance relates to the proposed consolidated market data that competing consolidators will collect, calculate, and provide to subscribers.

3. Recordkeeping

The collection of information relating to recordkeeping would be available to the Commission and its staff, and to other regulators.

4. Reports and Reviews

The collection of information regarding reports and reviews relates to information that would be published on competing consolidator websites.

5. Amendment to the Effective National Market System Plan(s) for NMS Stocks

Amendments to the effective national market system plan(s) for NMS stocks would be required to be filed with the Commission pursuant to Rule 608. Once filed, the Commission would publish the amendments for public comment. Finally, the annual report of competing consolidator performance would be submitted to the Commission.

6. Collection and Dissemination of Information by National Securities Exchanges and National Securities Associations

As discussed above, the proposed amendment to Rule 603(b) would require national securities exchanges and national securities associations to collect and provide information to the competing consolidators and self-aggregators, not to the Commission. Therefore, no assurances of confidentiality are necessary because the information will be made available to the public for a fee from the competing consolidators.

G. Revisions to Current Regulation SCI Burden Estimates

As described above, the Commission is proposing to expand the definition of "SCI entities" under Regulation SCI to include "competing consolidators," which would be defined to have the same meaning as set forth in the proposed amendments to Rule 600(b)(16) of Regulation NMS.[739] Thus, under the proposal, competing consolidators would be subject to the requirements of Regulation SCI.

The rules under Regulation SCI impose "collection of information" requirements within the meaning of the PRA.[740] Rule 1001(a) of Regulation SCI requires each SCI entity to establish, maintain, and enforce written policies and procedures for systems capacity, integrity, resiliency, availability, and security. Rule 1001(b) requires each SCI entity to establish, maintain, and enforce written policies and procedures to ensure that its SCI systems operate in a manner that complies with the Exchange Act, the rules and regulations thereunder, and the SCI entity's rules and governing documents, as applicable. Rule 1001(c) requires each SCI entity to establish, maintain, and enforce written policies and procedures for the identification, designation, and documentation of responsible SCI personnel and escalation procedures. Rule 1002(a) requires each SCI entity to begin to take appropriate corrective action upon any responsible SCI personnel having a reasonable basis to conclude that an SCI event has occurred. Rule 1002(b) requires each SCI entity to notify the Commission of certain SCI events. Rule 1002(c) requires each SCI entity, with certain exceptions, to disseminate information about SCI events to affected members or participants, and disseminate information about major SCI events to all members or participants. Rule 1003(a) requires each SCI entity to notify the Commission

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739 See proposed amendment to Rule 1000 of Regulation SCI.

740 For a complete analysis of Regulation SCI under the PRA, see SCI Adopting Release, supra note 28, at 18141; and Proposed Collection; Comment Request; Extension: Regulation SCI, Form SCI; SEC File No. 270-653, OMB Control No. 3235-0703, 83 FR 34179 ("2018 PRA Extension").

of material systems changes quarterly. Rule 1003(b) requires each SCI entity to conduct annual SCI reviews. Rule 1004 requires each SCI entity to designate certain members or participants for participation in functional and performance testing of the SCI entity's business continuity and disaster recovery plans, and to coordinate such testing with other SCI entities. Rules 1005 and 1007 set forth recordkeeping requirements for SCI entities. Rule 1006 requires, with certain exceptions, that each SCI entity electronically file required notifications, reviews, descriptions, analysis, or reports to the Commission on Form SCI.[741]

In 2018, there were an estimated 42 entities that met the definition of SCI entity and were subject to the collection of information requirements of Regulation SCI ("respondents").[742] At that time, an estimate of approximately 2 entities would become SCI entities each year, one of which would be an SRO. Accordingly, under these estimates, over the following three years, there would be an average of approximately 44 SCI entities each year.[743]

As discussed above, the Commission preliminarily estimates that, under the current proposal, there could be 12 competing consolidators that would be subject to Regulation SCI as SCI entities.[744] As discussed below, some of these entities may already be SCI entities and subject to the requirements of Regulation SCI. While the Commission estimates that the number of respondents would increase as a result of this proposal, the Commission preliminarily believes that its prior paperwork burden estimates per entity under Regulation SCI generally would be

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741 For further details regarding the requirements of Regulation SCI, see Regulation SCI Adopting Release, supra note 28. See also "Responses to Frequently Asked Questions Concerning Regulation SCI," September 2, 2015 (updated August 21, 2019), available at: https://www.sec.gov/divisions/marketreg/regulation-sci-faq.shtml.

742 See 2018 PRA Extension, supra note 740, at 34180.

743 Id.

744 See supra Section V.C.

applicable to these new competing consolidators because they would be subject to the same requirements and burdens as other SCI entities.[745] At the same time, the Commission preliminarily believes that burden estimates also should take into account the extent to which the entities that may register to become competing consolidators already comply with the requirements of Regulation SCI.

In particular, the Commission preliminarily believes that 2 of the estimated 12 competing consolidators may be the existing exclusive SIPs, which are currently subject to Regulation SCI as plan processors. Because these entities are responsible for collecting, consolidating, and disseminating proposed consolidated market data to market participants and thus would be operating a substantially similar business and performing a similar function in their role as competing consolidators, the Commission preliminarily believes that the current ongoing burden estimates for existing SCI entities would be applicable and there would be no material change in the estimated paperwork burdens for these entities under Regulation SCI.[746]

As stated above, the Commission also preliminarily believes that 4 of the entities that may register to become competing consolidators may be either: (i) an SRO currently subject to Regulation SCI; or (ii) an entity affiliated with an SCI SRO, formerly subject to Regulation SCI. The burden estimates for SCI entity respondents include both initial burdens for new SCI entities

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745 See 2018 PRA Extension, supra note 740. As discussed below, the Commission believes that 6 of the 12 entities estimated to register as competing consolidators are currently SCI entities. Thus, the Commission preliminarily estimates that, if the proposal were adopted, there would be an average of approximately 50 SCI entities each year.

746 Id. The burden estimates for SCI entity respondents included initial burdens for new SCI entities and ongoing burdens for all SCI entities. For the reasons discussed herein, the Commission preliminarily believes that the initial paperwork burdens for new SCI entities would not be applicable to these entities.

and ongoing burdens for all SCI entities.[747] Because these SRO entities that would become competing consolidators are current SCI entities and are already required to implement the requirements of Regulation SCI with regard to SCI systems that they operate in their role as SCI SROs, the Commission preliminarily believes that these entities would not have initial burdens equivalent to those estimated for new SCI entities. At the same time, as discussed above, the Commission preliminarily believes that these SROs may be a national securities association and/or equities national securities exchanges that do not currently operate an exclusive SIP. Because these entities would be entering an entirely new business and performing a new function with new SCI systems, unlike the current exclusive SIPs who may register to become competing consolidators discussed above, the Commission preliminarily believes that these SRO entities would have some initial burden that would be a percentage of that which entirely new SCI entities have. In particular, the Commission preliminarily estimates that the initial burdens for existing SCI SROs who register as competing consolidators would be 50 percent of the estimated initial burdens for entirely new SCI entities. For example, the Commission believes that such SCI SROs would need to develop and draft the policies and procedures required by Rule 1001(a) for new SCI systems utilized in their role as competing consolidators, but unlike completely new SCI entities, SCI SROs would already have existing Rule 1001(a) policies and procedures in place for other types of SCI systems that they could utilize as a model and modify as needed for new SCI systems.[748] The Commission also believes that the estimated ongoing paperwork burden estimates for all SCI entities would be applicable to these entities as well.[749]

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747 Id.

748 As an example, the estimate of an initial recordkeeping burden was 694 hours per new respondent to comply with the policies and procedures requirement of Rule 1001(a). Id. at 34180. The Commission preliminarily estimates that, for an SCI SRO who registers as

The Commission preliminarily believes that the remaining 6 estimated competing consolidators may be entities that are not currently subject to Regulation SCI. As discussed above, the Commission believes that these 6 entities may be market data aggregation firms, broker-dealers that currently aggregate market data for internal uses, and entities that would be entering the market data aggregation business for the first time.[750] Accordingly, the Commission preliminarily believes that these entities would have the same estimated initial paperwork burdens as those estimated for new SCI entities and the same ongoing paperwork burdens as all other SCI entities.[751]

H. Request for Comments

Pursuant to 44 U.S.C. 3506(c)(2)(B), the Commission solicits comments to:

156. Evaluate whether the proposed collections of information are necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility;

157. Evaluate the accuracy of our estimates of the burden of the proposed collection of information;

158. Determine whether there are ways to enhance the quality, utility, and clarity of the information to be collected;

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a competing consolidator, the initial burden for Rule 1001(a) would be 50 percent of this estimated amount, or 347 hours.

749 The ongoing paperwork burden estimates in the PRA Extension do not distinguish between different categories of SCI entities, but rather provides an average for all SCI entities.

750 See supra Section V.D.2.

751 See 2018 PRA Extension, supra note 740.

159. Evaluate whether there are ways to minimize the burden of collection of information on those who are to respond, including through the use of automated collection techniques or other forms of information technology; and

160. Evaluate whether the proposed amendments would have any effects on any other collection of information not previously identified in this section.

Persons submitting comments on the collection of information requirements should direct them to the Office of Management and Budget, Attention: Desk Officer for the Securities and Exchange Commission, Office of Information and Regulatory Affairs, Washington, DC 20503, and should also send a copy of their comments to Vanessa Countryman, Secretary, Securities and Exchange Commission, 100 F Street NE, Washington, DC 20549-1090, with reference to File Number S7-03-20. Requests for materials submitted to OMB by the Commission with regard to this collection of information should be in writing, with reference to File Number S7-03-20 and be submitted to the Securities and Exchange Commission, Office of FOIA/PA Services, 100 F Street NE, Washington, DC 20549-2736. As OMB is required to make a decision concerning the collection of information between 30 and 60 days after publication, a comment to OMB is best assured of having its full effect if OMB receives it within 30 days of publication.

VI. Economic Analysis

A. Introduction and Market Failures

1. Introduction

Section 3(f) of the Exchange Act requires the Commission, whenever it engages in rulemaking and is required to consider or determine whether an action is necessary or appropriate in the public interest, to consider, in addition to the protection of investors, whether

the action would promote efficiency, competition, and capital formation.[752] In addition, Section 23(a)(2) of the Exchange Act requires the Commission, when making rules under the Exchange Act, to consider the impact such rules would have on competition.[753] Exchange Act Section 23(a)(2) prohibits the Commission from adopting any rule that would impose a burden on competition not necessary or appropriate in furtherance of the purposes of the Exchange Act.

Wherever possible, the Commission has quantified the likely economic effects of the proposed amendments. The Commission is providing both a qualitative assessment and quantified estimates of the potential economic effects of the proposed amendments where feasible. The Commission has incorporated data and other information provided by commenters to assist it in the analysis of the economic effects of the proposed amendments. However, as explained in more detail below, because the Commission does not have, and in certain cases does not believe it can reasonably obtain data that may inform the Commission on certain economic effects, the Commission is unable to quantify certain economic effects. Further, even in cases where the Commission has some data, it is not practicable due to the number and type of assumptions necessary to quantify certain economic effects, which render any such quantification unreliable. Our inability to quantify certain costs, benefits, and effects does not imply that such costs, benefits, or effects are less significant. The Commission requests that commenters provide relevant data and information to assist the Commission in analyzing the economic consequences of the proposed amendments.

In general, the Commission preliminarily believes that the proposed amendments would result in benefits by enhancing the consolidated market data content, reducing the latency of

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752 15 U.S.C. 78c(f).

753 15 U.S.C. 78w(a)(2).

consolidated market data, and improving the dissemination of consolidated market data. This would reduce information asymmetries that exist between market participants who subscribe to proprietary DOB and other proprietary products and market participants who only subscribe to SIP data, and could allow some market participants who subscribe to the more expensive proprietary DOB products to replace them with potentially cheaper consolidated market data feeds. Improvements to the content and latency of consolidated market data from the proposed amendments could also help market participants that currently rely on SIP data to make more informed trading decisions, which would facilitate their ability to trade competitively and improve their execution quality, and would facilitate best execution.

The Commission preliminarily believes there are three main benefits from the expanded content of consolidated market data, which as noted above includes proposed "core data." First, the expanded content of consolidated market data could allow market participants that currently only subscribe to SIP data to get additional content from expanded consolidated market data and to experience increased gains from trade by allowing them to take advantage of trading opportunities they may not have been aware of due to the lack of information in existing SIP data.[754] Second, the expanded content of consolidated market data could also allow these market participants to improve their order routing and order execution capabilities, potentially lowering investor transaction costs. Finally, the expanded consolidated market data content and associated changes in how the NBBO and protected quotes are calculated could result in a narrower NBBO and wider protected quote in some stocks. A narrower NBBO and changes in protected quotes

[754] Here and throughout, the phrase "gains from trade" is meant to refer to a situation in which two market participants would each be better off if they exchanged their respective property. It captures the idea of a potential welfare benefit that could be realized if trade was allowed and possible. Generally in this proposal the relevant property will be securities and cash.

could affect price improvement that trading venues, including ATSs, exchanges, and internalizers, could offer.

The Commission preliminarily believes that there are costs to expanding the content of consolidated market data, including costs to new competing consolidators related to upgrading existing infrastructure in order to handle the dissemination of the increased message traffic; upgrading software and trading systems that consume consolidated market data; costs to market participants receiving consolidated market data from technological investments required to handle increased content and message traffic; as well as other costs. Expanding consolidated market data would also result in transfers among various market participants, including transfers from the current beneficiaries of asymmetric information associated with the uneven distribution of market data to market participants who currently do not have access to the additional information contained in proprietary DOB products and other proprietary products. There could also be costs to SROs associated with the dissemination of consolidated market data.

With respect to the introduction of the decentralized consolidation model, the Commission has several reasons to believe that it is likely that a sufficient number of firms would be willing to enter the space of competing consolidators so that the market would be competitive. Under this assumption, the potential economic benefits of the proposed decentralized consolidation model would include a reduction in the latency differential that exists between SIP data and proprietary data feeds (as measured at the location of market participants using the data) and potential improvements in innovation and efficiency in the consolidated market data delivery space. Moreover, the fees for proposed consolidated market data could be lower than fees that market participants pay for similar depth of book data today because today market participants would need to subscribe to both the exclusive SIPs and proprietary data feeds

to receive the same content that would be included in proposed consolidated market data. However, the Commission recognizes that there is uncertainty in the fees for proposed consolidated market data because they would depend on the structure of fees ultimately proposed for data content by an effective national market system plan(s) and on the ultimate fee structure of competing consolidators.[755] The Commission also recognizes uncertainty in the fees that subscribers choosing to receive a subset of consolidated market data would pay under the proposed rule and that these subscribers could pay higher or lower fees than they do today for equivalent data.

At the same time, the introduction of the decentralized consolidation model would impose direct costs on SROs, the existing exclusive SIPs, and potential competing consolidators. It would also impose indirect costs on the existing exclusive SIPs and market participants. The direct costs for potential competing consolidators (such as SROs, exclusive SIPs, and current market data aggregators) would include registration and compliance costs and implementation and incremental infrastructure costs. The Commission, however, preliminarily believes that many of the potential competing consolidators have currently already invested in this infrastructure for the existing business services that they provide (e.g., proprietary data aggregation services). The indirect costs to the existing exclusive SIPs would be a potential loss in revenue to competing consolidators from no longer being the exclusive distributors of consolidated market data. The indirect costs for market participants would include implementation costs and potential effects on prices that market participants would pay for the proposed consolidated market data. However, new fees for the data content of consolidated

755 See infra Section VI.C.2(b).

market data would need to be proposed by the effective NMS plan(s) for NMS stocks and filed with the Commission.

The Commission preliminarily believes that there are a number of economic effects that are only possible as a result of expanding consolidated market data and the introduction of the decentralized consolidation model. These changes would lead to the benefits of less expensive alternatives to proprietary DOB products for market participants; potential new entrants into the broker-dealer, market making, and other latency sensitive trading businesses; expansion of business opportunities for market data aggregators; improved regulatory oversight from the Consolidated Audit Trail; and enhancements to the quality of service data vendors are able to provide. Further, as noted above, the Commission preliminarily believes that the proposal would facilitate best execution and reduce information asymmetries. These changes could also result in a number of costs including costs to market participants in the form of lower revenues for SROs; higher costs for the implementation of the Consolidated Audit Trail; potentially higher costs for certain market data vendors; as well as other costs. Some of these benefits and costs would result from transfers among various market participants.

2. Market Failures

The Commission is proposing to amend Rules 600 and 603 and to adopt new Rule 614 of Regulation NMS under the Exchange Act to increase the availability and improve the dissemination of information regarding quotations for and transactions in NMS stocks to market participants. First, the Commission proposes to define terms “consolidated market data,” “core data,” “regulatory data,” and “administrative data,” and to enhance the content of core data to include certain odd-lot quote information, certain depth of book data, and information on orders participating in auctions. Second, the Commission proposes to introduce a decentralized

consolidation model whereby competing consolidators and self-aggregators would assume responsibility for the collection, consolidation, and dissemination functions currently performed by the exclusive SIPs.[756]

As discussed above,[757] currently, some market participants have stated their view that they are unable to rely solely on SIP data to trade competitively in today's markets. One reason is that SIP data does not currently include some important data elements such as odd-lot quotations (except, as explained above,[758] to the extent that odd-lots quotations are aggregated into round lots pursuant to exchange rules), depth of book data, and information about orders participating in auctions.[759] Exchanges directly sell these additional data elements to market participants and market data aggregation firms as part of proprietary DOB data products at significant premiums to SIP products.[760] Another reason some market participants have raised concerns about SIP data is that there is a substantial latency differential between market data provided via the exclusive SIPs and proprietary data products delivered by the exchanges directly to market participants or to market data aggregators as part of proprietary data feeds.[761] The latency and content disparity between SIP data feeds and proprietary DOB data products has the effect of increasing the market participants' demand for proprietary products to the extent market participants view acquiring such products as a competitive necessity.

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756 See supra Sections III, IV.

757 Id.

758 See supra Section III.C.1(a).

759 As explained above, only limited auction-related information is currently included in SIP data. See supra Section III.C.3(a).

760 See infra Section VI.B.2(a).

761 See infra Section VI.B.2(b).

The Commission understands that there is an inherent conflict of interest in that the exchanges, as voting members of the Equity Data Plan operating committees, may not be incentivized to improve the content or latency of SIP data.[762] Many of the exchanges have actively pursued commercial interests that do not necessarily further the regulatory objective to "preserve the integrity and affordability of the consolidated data stream,"[763] which is necessary to ensure that there is a "comprehensive, accurate, and reliable source of information for the prices and volume of any NMS stock at any time during the trading day."[764] One example of this divergence of interest has been the development by certain exchanges of proprietary data products with reduced latency and expanded content (i.e., proprietary DOB products), without the exchanges, in their role as participants to the Equity Data Plans, similarly enhancing the data products offered by the Equity Data Plans.[765] These proprietary DOB products have evolved to be considered competitive necessities by many market participants and are offered at significant premiums to exclusive SIP products.[766] Another example of the divergence between commercial interests and regulatory goals has been the development by certain exchanges of limited TOB data products, which are offered at a discount compared to the SIP data and marketed to a more price-sensitive segment of the market, without corresponding development by the exclusive SIPs of a less expensive SIP product for the price-sensitive segment of the market.[767] The exchanges have continued to develop and enhance their proprietary market data businesses—which

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762 See supra Section IV.A; supra note 267 (describing an exchange-led initiative to enhance the SIPs).

763 See Regulation NMS Adopting Release, supra note 10, at 37503.

764 See Equity Market Structure Concept Release, supra note 11, at 3600.

765 See Proposed Governance Order, supra note 8, at Section II.B.1.

766 See id.

767 See id.; supra note 25.

generate revenue that, unlike SIP data revenues, do not have to be shared with the other SROs—while remaining fully responsible for the governance and operation of the Equity Data Plans, including content, infrastructure, and pricing, as well as data consolidation and dissemination.[768] At the same time, the operation of the Equity Data Plans has not kept pace with the efforts of the exchanges to expand the content of and to employ technology to reduce the latency and increase the throughput of certain proprietary data products.

The Commission preliminarily believes that there are two additional factors related to the Equity Data Plan processors that may impede improvements to the dissemination of SIP data. First, pursuant to Regulation NMS, each exclusive SIP has exclusive rights to collect trade and quotation data related to NMS stocks from multiple SROs and then aggregate and disseminate market data to market participants.[769] This structure may further impede improvements in the dissemination of SIP data[770] because Equity Data Plan participants that govern exclusive SIPs do not have incentives to innovate due to the lack of competition in dissemination of SIP data.

Second, the exclusive SIPs are either SROs themselves or affiliates of SROs.[771] This gives them a dual role in that they serve as both existing plan processors and as entities selling directly their own proprietary market data products that can reach market participants faster than SIP data, or as affiliates of entities that do so. As discussed above, this may create an additional conflict of interest that could provide incentives making the Equity Data Plan participants that oversee the Equity Data Plans reluctant to improve the content and latency of the SIP data,

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768 See Proposed Governance Order, supra note 8, at Section II.B.1.

769 See supra note 21 and accompanying text.

770 See infra Section VI.B.2(b).

771 See supra note 42.

because a divergence in the usefulness of SIP data provided by the exclusive SIPs as compared to the proprietary data feeds increases the value of the proprietary market data products.

B. Baseline

The Commission has assessed the likely economic effects of the proposed amendments, including benefits, costs, and effects on efficiency, competition, and capital formation, against a baseline that consists of the existing regulatory process for collecting, consolidating, and disseminating market data, and the structure of the markets for SIP data products and for connectivity and trading services.

1. Current Regulatory Process for Equity Data Plans and SIP Data

As discussed above,[772] the current regulatory framework for SIP data relies upon a centralized consolidation model, whereby the SROs provide certain quotation and transaction information for each NMS stock to a single exclusive SIP, which then consolidates this data and makes it available to market participants.[773] This SIP data includes what historically has commonly been referred to as core data, as well as certain regulatory data related to Commission and SRO rules and NMS plan requirements.[774]

As discussed in more detail below,[775] SIP data currently includes transaction information for both round lot and odd-lot sized transactions as well as quotation information for round lot top of book quotes for each SRO. Additionally, several exchanges, pursuant to their own rules, aggregate odd-lot orders into round lots and report such aggregated odd-lot orders as quotation

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772 See supra Section II.A.

773 Id.

774 Id.

775 See infra Section VI.B.2(a); supra Section III.C.1.

information to the exclusive SIPs.[776] Thus, SIP data lacks information on odd-lot quotations at prices better than the best bid and offer and on depth of book quotations (i.e., limit orders resting at exchanges at prices outside of the bid and offer). Additionally, only limited auction-related information is included in SIP data.[777]

Currently, the operating committees of the Equity Data Plans, which are governed exclusively by the SROs,[778] select the exclusive SIPs to consolidate and disseminate market data to market participants. The selection process for the exclusive SIPs is organized through a bidding process, and once selected, an exclusive SIP has exclusive rights to consolidate and disseminate market data for a given Equity Data Plan.[779] Currently, SIAC (a NYSE affiliate) is the exclusive SIP for the CTA and CQ Plans, and Nasdaq is the exclusive SIP for the UTP Plan.

As explained above, each exclusive SIP is physically located in a different data center.[780] The exchanges' primary data centers are also located in different locations. Each exchange and FINRA must transmit its quotation and transaction information from its own data center to the appropriate exclusive SIP's data center for consolidation, at which point SIP data is then further transmitted to market data end-users, which are often located in other data centers. The exclusive SIPs do not compete with each other in the collection, consolidation, or dissemination

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776 See supra Section III.C.1(a).

777 See supra Section III.C.3.

778 Under the Proposed Governance Order, the operating committee of the New Consolidated Data Plan would include non-SRO members. See Proposed Governance Order, supra note 8.

779 The Nasdaq UTP Plan contains the description of its approach to the selection and evaluation of the processor. See Nasdaq UTP Plan, supra note 13, at 10. The CTA/CQ Plan does not contain a similar provision. See CTA Plan, supra note 13; CQ Plan, supra note 13. Historically, exchanges or exchange affiliates had always been selected to be plan processors.

780 See supra Section II.A; supra note 43.

of SIP data. As discussed in more detail below,[781] the dispersed physical locations of exclusive SIPs and SROs contribute to increased latency in delivering SIP data to market participants.

2. Current Process for Collecting, Consolidating, and Disseminating Market Data

As discussed above,[782] in addition to the provision of SIP data pursuant to the Equity Data Plans, the national securities exchanges separately sell their individual proprietary market data products directly to market participants via proprietary data feeds. Proprietary data feeds may include SIP data elements and a variety of additional data elements and can vary in content from proprietary top of book products to proprietary depth of book products.[783] In addition, in connection with proprietary data feed products, the exchanges offer various connectivity services (e.g., co-location at primary data centers, fiber optic connectivity, wireless connectivity, and point-of-presence connectivity at third-party data centers), which may result in higher speed transmissions.[784] Typically, proprietary data is transmitted directly from each exchange to the data center of the subscriber, where the subscriber's broker-dealer or vendor (or the subscriber itself) privately consolidates such data with the proprietary data of the other exchanges. This section describes the current content of SIP data and proprietary data feeds, current process of data dissemination, and current process for costs of generating SIP data and proprietary data feeds.

(a) Current Content of SIP Data and Proprietary Data Feeds

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781 See infra Section VI.B.2(a); supra Section IV.A.

782 See supra Section II.A.

783 See supra Section III.C.2.

784 See supra note 51 and accompanying text; supra Section IV.A.

As discussed above,[785] today SIP data does not include some of the content that certain market participants rely on when handling customer orders and trading. The Commission preliminarily believes that while a large portion of retail investors rely solely on SIP data for trading decisions,[786] a certain portion of market participants do not rely solely on SIP data to trade competitively in today's markets and instead purchase proprietary data from SROs to supplement or even replace SIP data.[787] In particular, the Commission understands that approximately 50 to 100 firms purchase all of the DOB proprietary feeds from the exchanges and do not rely on the SIP data for their trading.[788] Conversely, the number of users of the SIP data is much larger (in the millions),[789] suggesting that many users rely on the exclusive SIPs alone.

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785 See supra Section III.C.

786 In response to a question about the need for Nasdaq's other market data products since the exclusive SIPs consolidate all market data, Nasdaq has stated: "[t]here are a minority of market participants who want data that go 'deeper' than SIP data, such as pending buy and sell interest at different price levels. For these customers of market data, Nasdaq and other firms offer proprietary products that include so-called 'depth of book' and related auction data from our exchanges." See Nasdaq, Revenues Trend Down for U.S. Stock Market Data Backbone (Mar. 14, 2018), available at https://www.nasdaq.com/articles/revenues-trend-down-us-stock-market-data-backbone-2018-03-14.

787 The Commission preliminarily believes that when market participants purchase proprietary data feeds to replace SIP data, they also almost always purchase SIP data as a back-up system to proprietary data. See also supra note 101.

788 See supra note 140.

789 As of the fourth quarter of 2018, there were approximately 2-3 million non-professional and approximately 0.3 million professional use cases across the UTP and CTA/CQ SIPs. Additionally, there were approximately 300 non-display vendor use cases at each of the exclusive SIPs. The Commission understands that there is an overlap in subscribers across the exclusive SIPs. See, e.g., CTA Plan, Q3 2019 CTA Tape A & B Quarterly Population Metrics, available at https://www.ctaplan.com/publicdocs/CTAPLAN_Population_Metrics_3Q2019.pdf; Nasdaq UTP Plan, Q3 2019 UTP Quarterly Population Metrics, available at http://www.utpplan.com/DOC/UTP_2019_Q3_Stats_with_Processor_Stats.pdf.

This creates significant information asymmetries between market participants who rely solely on SIP data and market participants who also rely on proprietary data feeds.

As described in Section II.A above, SIP data consists of certain quotation[790] and transaction data[791] that the SROs are required to provide to the exclusive SIPs for consolidation and dissemination to the public on the consolidated tapes. Specifically, the SIP data includes: (1) an NBBO;[792] (2) the best bids and best offers from each SRO;[793] and (3) information on trades such as prices and sizes. The SIP data also includes certain regulatory data, such as information required by the LULD Plan,[794] information relating to regulatory halts and MWCBs,[795] information regarding short sale circuit breakers,[796] and other data, such as data relating to retail liquidity programs, market and settlement conditions, the financial condition of the issuer, OTCBB data, last sale prices for corporate bonds, and information about indices.[797]

The exchanges separately sell their individual market data directly to market participants via proprietary data feeds. For example, the exchanges have developed proprietary DOB products that provide greater content (e.g., odd-lot quotations, orders at prices above and below

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790 See Rule 602 of Regulation NMS, 17 CFR 242.602.

791 See Rule 601 of Regulation NMS, 17 CFR 242.601.

792 The national best bid and offer are constructed from the best bid and offer prices across all exchanges in which the quoted size is at least one round lot. See supra Section III.C.1.

793 The best bids and offers on an exchange are determined by the best prices in which the quoted size is at least one round lot. Some exchanges aggregate odd-lot orders at better prices into round lots and report such aggregated orders as their best bid or offer at the least aggressive price of the aggregated orders. Typically, the best bids and offers on each exchange are protected quotes under NMS Rule 611 and cannot be traded-through. See supra Section III.C.1(a).

794 See supra note 38.

795 See supra note 39.

796 See supra note 40.

797 See supra note 41.

the best prices, and information about orders participating in auctions, including auction order imbalances) at lower latencies,[798] relative to the exclusive SIPs, for certain segments of the data market, such as automated trading systems. They have also developed proprietary TOB products that provide data that is generally limited to the highest bid and lowest offer and last sale price information at a lower price for another segment of the data market that is less sensitive to latency (e.g., retail or non-professional investors and wealth managers that access market data visually).[799] Proprietary data feeds are available as part of exchanges' standard offerings. All exchanges, with the exception of IEX,[800] offer for sale as part of their proprietary DOB products the complete set of orders at prices above and below the best prices (e.g., depth of book data), complete odd-lot quotation information, and information about orders participating in auctions, including auction order imbalances (for listing exchanges).[801]

One notable gap between SIP data and proprietary DOB data is that SIP data does not include complete odd-lot quotation information even though odd-lots represent a large share of

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798 See, e.g., Nasdaq Global Data Products, Real-Time - NYSE Proprietary Market Data, and Cboe Equities Exchanges Market Data Product Offerings, supra note 19 (describing low-latency DOB data products).

799 Examples of such proprietary TOB products include NYSE BBO, Nasdaq Basic, and Cboe One Feed. See supra note 19. NYSE BBO provides TOB data. Nasdaq Basic and Cboe One's Summary Feed provide TOB and last sale information. Nasdaq Basic also provides Nasdaq Opening and Closing Prices and other information, including Emergency Market Condition event messages, System Status, and trading halt information. Cboe One also offers a Premium Feed that includes DOB data. Each of these products is sold separately by the relevant exchange group. See TD Ameritrade Letter, supra note 19, at 5–8 (stating that the lower cost of exchange TOB products, coupled with costs associated with the process to differentiate between retail professionals and non-professionals imposed by the Equity Data Plans, and associated audit risk, favors retail broker-dealer use of exchange TOB products).

800 IEX makes proprietary data available but does not charge for it. See, e.g., IEX, Market Data, available at https://iextrading.com/trading/market-data/ (last accessed Jan. 8, 2020); Ramsay Letter II.

801 See supra note 335.

all trades in the U.S. stock market and can represent economically significant trading opportunities at prices that are better than the prices of displayed and disseminated round lots.[802] While several exchanges aggregate odd-lot orders into round lots and report such aggregated orders as quotation information to exclusive SIPs,[803] market participants must purchase proprietary data feeds, available from the exchanges, to see the odd-lot quotations that are priced better than the best bid or offer.[804]

Odd-lot transactions make up a significant proportion of transaction volume in NMS stocks, including ETPs. As discussed above,[805] based on data from the SEC's MIDAS analytics tool, the daily exchange odd-lot rate (i.e., the number of exchange odd-lot trades as a proportion of the number of all exchange trades) for all corporate stocks ranged from approximately 29% to 42% of trades and the daily exchange odd-lot rate for all ETPs ranged from 14% to 20% of trades in 2018, with the daily exchange odd-lot rate for all corporate stocks exceeding 50% several times in June 2019 (and exceeding 65% several times for the top decile by price) and reaching almost 30% for all ETPs in the same period.

Additionally, the staff analysis, referenced above, found that a significant portion of quotation and trading activity occurs in odd-lots, particularly for frequently traded, high-priced tickers, and that as stock prices rise, the difference in spreads calculated using the different feeds

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802 See Alexander Osipovich, supra note 166.

803 See supra Section III.C.1(a). Exchange rules specify how the aggregation process works in different terms and with different levels of specificity, but many exchanges aggregate odd-lots across multiple prices and provide them to the exclusive SIPs at the least aggressive price if the combined odd-lot interest is equal to or greater than a round lot. See supra notes 157, 158, 789.

804 See supra note 163.

805 See supra Section III.C.1(b).

also rises, indicating that odd-lots are more likely to set the best quote as stock prices rise.[806] In addition, one commenter provided data supporting the findings of the staff analysis and showing that the odd-lot quotes provide superior pricing compared to the SIP data.[807] A panelist at the Roundtable stated that odd-lot quotation data is needed to make effective decisions in trading applications and to fill client orders effectively.[808] The Commission is unable to differentiate in the data between original round lot quotes and odd-lot quotes that were aggregated by the exchanges to be a round lot quote. The Commission invites comments on this issue.

Another gap between SIP data and proprietary DOB data is that SIP data currently lacks quotation information in NMS stocks beyond the top of book[809] even though the decimalization of securities pricing in 2001 led to a dispersion of quoted volume away from the top of book. Consequently, the NBBO currently shown in SIP data became less informative and some market participants have come to view depth of book data as necessary to their efforts to trade competitively and to provide best execution to customer orders.[810] Market participants interested in such depth of book data must rely upon the proprietary DOB products offered by the exchanges that include varying degrees of depth data.[811]

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806 Id. The staff analysis in Section III.C.1(b) found that for the 500 top tickers by dollar volume, odd-lot quotes represented a significant price improvement over the exclusive SIP quotes. This analysis further found that as the price of the stock increased, the duration-weighted amount by which the odd-lot quote improved on the SIP quote increased as well.

807 See supra note 177 and accompanying text.

808 See supra note 173 and accompanying text.

809 See supra Section III.C.2.

810 See supra Section III.C.2(d).

811 See supra note 270.

A staff review of depth of book quotations for corporate stocks using data from July 19, 2019, referenced above,[812] revealed that there is a substantial amount of quotation volume at several levels below the best bid. During active parts of the trading day, there is quotation interest at every $0.01 increment at least ten levels out for the most liquid stocks; for the least liquid stocks, there is a large gap between the best bid and the next highest bid and large gaps are generally also present between the next several bid levels.

The Commission recognizes that market participants have diverse market data needs. Depth of book data can assist SORs and electronic trading systems with the optimal placement of orders across markets. Specifically, depth of book data can help market participants improve trading strategies and lower execution costs by placing liquidity taking orders that are larger than the displayed best bid or best offer and achieve queue priority for liquidity providing orders that post at prices away from the best bid or offer.[813] At the same time, the depth of book data may be less valuable to a certain segment of market participants (e.g., retail or non-professional customers). For example, a relatively small portion of orders execute at prices outside the NBBO indicating that some market participants do not find "walking the book" useful.[814]

Finally, yet another gap between SIP data and proprietary DOB data is that SIP data includes only limited auction-related information even though auctions, especially opening and

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812 See supra Section III.C.2(d).

813 See id.; infra Section VI.C.1(b)(ii).

814 That is, an order so large that it executes against all the volume at the top of the book and then executes against orders behind the top of the book. See Craig W. Holden and Stacey Jacobsen, Liquidity Measurement Problems in Fast Competitive Markets, 69 J. FIN. 1760, at Table I (2014) (showing that 3.3% of orders clear outside the NBBO). This does not necessarily mean that limit orders outside the NBBO are irrelevant. There are limitations to using the observation of trades at prices outside the NBBO at the time of trade execution as an indicator for orders that executed at prices outside of the NBBO at the time of trade order (specifically, these events are not necessarily the same thing).

closing auctions, represent a significant proportion of trading volume on the primary listing exchanges.[815] In particular, auctions account for approximately 7% of daily equity trading volume.[816] Auctions are important for the implementation of passive investment strategies and generate prices that are used for a variety of market purposes, including setting benchmark prices for index rebalances and for mutual fund pricing. As such, the Commission recognizes that auction information may be valuable to a certain segment of market participants (e.g., those market participants that participate or would participate in auctions).

Today, some NYSE auction data, such as pre-opening indicators,[817] is disseminated through the CTA/CQ SIP, and no auction information generated by the other primary listing exchanges is distributed through the exclusive SIPs, except very limited LULD information related to auction collar messages.[818] Thus while the exchanges' proprietary data includes detailed information on several aspects of their auctions, only a small subset of the auction-related information is included in SIP data.[819]

While all listing exchanges make auction information available to market participants through proprietary data feeds, only some exchanges offer this information through specialized feeds for a lower price than full DOB products. For instance, NYSE Order Imbalances is an

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815 See supra note 330.

816 See supra Section III.C.3(c); supra note 348.

817 See NYSE Rule 15.

818 See supra note 333; UTP Plan, UTP Participant Input Specification (Dec. 3, 2019), available at http://www.utpplan.com/DOC/UtpBinaryInputSpec.pdf.

819 See, e.g., NYSE, TAQ NYSE Order Imbalance – Quick Reference Card, available at https://www.nyse.com/publicdocs/nyse/data/TAQ_NYSE_Order_Imbalance_QRC.pdf (last accessed Jan. 8, 2020).

example of such proprietary auction data product offered by NYSE,[820] while Nasdaq does not offer such specialized product.[821]

Currently, the gap in information between data in the exclusive SIP and proprietary DOB products may limit the current level of price efficiency if market participants with access to proprietary DOB products do not incorporate this information into prices quickly enough through their trading or quoting activity.[822] However, the Commission does not know the extent of this possible effect.

(b) Current Process for Dissemination of SIP Data and Proprietary Data Feeds

As discussed above,[823] today SIP data is disseminated to investors and market participants through a centralized consolidation model with an exclusive SIP for each NMS stock, centrally collecting market data transmitted from the dispersed SRO data centers and then redistributing the consolidated market data to market participants who are often in different locations. The SROs typically transmit their market data through fiber optic cables to the SIPs.[824]

Typically, proprietary data is transmitted directly from each exchange to the data center of the subscriber and does not first travel to a centralized consolidation location. Furthermore,

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820 See NYSE, Real-Time Data Imbalances, available at https://www.nyse.com/market-data/real-time/imbalances (last accessed Jan. 8, 2020) (describing the NYSE Order Imbalances product).

821 The Nasdaq Net Order Imbalance Indicator is a feature of Nasdaq's BookViewer proprietary data feed product rather than a stand-alone product. See Nasdaq, Net Order Imbalance Indicator, available at https://data.nasdaq.com/NOII.aspx (last accessed Jan. 8, 2020).

822 See infra Section VI.D.1. Price efficiency is greater when prices reflect current information faster.

823 See supra Sections I, II.A.

824 See supra Section II.A.

unlike the standardized transmission of SIP data over fiber optic cable, proprietary data is frequently transmitted using low-latency wireless connectivity or other forms of connectivity (often provided by the exchanges) that are faster than fiber.[825]

There is a significant latency differential between SIP data and the proprietary market data products that are delivered directly to market participants or to market data aggregators who generally have better connectivity, communications, and aggregation technology than the SIPs.[826] Specifically, the centralized consolidation model has three sources of latency: (a) geographic latency; (b) aggregation or consolidation latency; and (c) transmission or communication latency. The latency differentials between SIP data and proprietary data, in their various forms, are meaningful as detailed below, and market participants believe these differentials impact their ability to trade and their order execution quality.[827]

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825 Id.

826 See supra note 397; Bartlett and McCrary, supra note 418, at 45.

827 See supra note 412 and accompanying text; Martin Scholtus et al., Speed, algorithmic trading, and market quality around macroeconomic news announcements, 38 J. BANKING & FIN. 89 (2014) ("This paper documents that speed is crucially important for high-frequency trading strategies based on U.S. macroeconomic news releases. Using order-level data on the highly liquid S&P 500 ETF traded on Nasdaq from January 6, 2009 to December 12, 2011, we find that a delay of 300 ms or more significantly reduces returns of news-based trading strategies."); Grace Hu et al., Early peek advantage? Efficient price discovery with tiered information disclosure, 126 J. FIN. ECON. 399 (2017) ("Calibrating the speed of price discovery at a finer scale, we find that the first 200 milliseconds at 9:54:58 accounts for 89% of the one-second return at 9:54:58 on negative news days, and 85% of the one-second return at 9:54:58 on positives news days. In other words, most of the price discovery happens during the first 200 milliseconds, faster than the blink of an eye."); Tarun Chordia et al., Low Latency Trading on Macroeconomic Announcements (Jan. 2016), available at https://www.business.unsw.edu.au/About-Site/Schools-Site/banking-finance-site/Documents/Low-Latency-Trading-on-Macroeconomic-Announcements.pdf ("Trading in the direction of the announcement surprise results in average dollar profits (across market participants) of $19,000 per event for the S&P500 ETF. Profits are larger for index futures, roughly $50,000 per event, yet this dollar amount translates to just two basis points of return relative to the $80 million of notional value traded in the direction

Geographic latency refers to the time it takes for data to travel from one physical location to another. Greater distances usually equate to greater geographic latency, though geographic latency is also affected by the mode of data transmission. The Commission understands that geographic latency is typically the most significant component of the additional latency that SIP data feeds experience compared to proprietary data feeds.[828] Because each exclusive SIP must collect data from geographically-dispersed SRO data centers, consolidate the data, and then disseminate it from its location to end-users, which are often in other locations, this hub-and-spoke form of centralized consolidation creates additional latency.[829] The Commission understands that the geographic latency of SIP data may be up to a millisecond.[830]

Aggregation or consolidation latency refers to the amount of time an exclusive SIP takes to aggregate the multiple sources of SRO market data into SIP data and includes the time it takes to calculate the NBBO. This latency reflects the time interval between when an exclusive SIP receives data from an SRO and when it disseminates consolidated data to the end-user. Even though in recent years the exclusive SIPs made improvements to address aggregation latency, the related latency differential remains: as mentioned above, in the second quarter of 2019, for Tapes A and B average quote feed and average trade feed aggregation latencies were 69 and 139 microseconds, respectively.[831] In the same time period, the Tape C aggregation latency was an

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of the surprise, and our measured profits do not account for commissions or the expense incurred in subscribing to real-time data services.”).

828 See supra Section IV.A.

829 Id.

830 See supra note 396.

831 See supra Section IV.A.

average of 16.9 microseconds for quotes and 17.5 microseconds for trades.[832] Notably, these latency differentials remain even though the Equity Data Plans' operating committees have made some improvements to certain aspects of the exclusive SIPs and related infrastructure, including improvements to address aggregation latency.[833]

Although exclusive SIPs are tasked with calculating and disseminating the NBBO, at each particular instant the NBBO being used by various market participants could be different due to market participants using proprietary data feeds. In particular, because of geographic and aggregation latencies, market participants that aggregate proprietary data feeds internally or that purchase proprietary data feeds from market data aggregators are likely to have NBBO quotes different from each other and different from the NBBO quote distributed by the exclusive SIPs.

Transmission latency refers to the time interval between when data is sent (e.g., from an exchange) and when it is received (e.g., at an exclusive SIP and/or at the data center of the subscriber), and the transmission latency between two fixed points is determined by the transmission communications technology through which the data is conveyed. Transmission latency also varies depending on the geographic distance between where the data is sent and where it is received. There are several options currently used for transmitting market data, such as fiber optics, which typically are used by the exclusive SIPs for receipt and dissemination of SIP data, and wireless microwave connections, which the exchanges offer as an alternative for their proprietary data feeds but not for SIP data.[834] Fiber optics are generally more reliable than wireless networks since the data signal is less affected by weather. The modes of transmission

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832 Id.

833 Id.

834 Id.

for SIP data are typically slower than the modes of transmission used for proprietary data. For instance, the Commission understands that currently each of the CTA/CQ Plan participants must transmit its data through connectivity options that have a round-trip latency of at least 280 microseconds.[835]

The Commission preliminarily believes that the benefits of greater speed on the timescales at which the market currently measures latency have mostly to do with being faster than one's competitors. That is, the Commission understands that a speed increase on the microsecond timescale is less useful unless it makes a market participant faster than its rivals in the market. This means that in some situations small latency differentials that leave enough time for certain market participants to observe and react to information before other, slower market participants can be as costly to slower market participants as larger latency differentials.[836]

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835 See supra note 410.

836 Academic literature examines the effects of trading speed on revenues, adverse selection, and liquidity. See, e.g., Matthew Baron et al., Risk and Return in High-Frequency Trading, 54 J.FIN. & QUANTITATIVE ANALYSIS 993 (2019) (testing the connection between high frequency trading ("HFT") latency and trading performance; the authors find that relative latency matters and that "HFT firms exhibit large, persistent cross-sectional differences in performance, with trading revenues disproportionally accumulating to a few firms." Furthermore, when HFT firms use their relative latency advantages to trade on news to create short-term arbitrage opportunities, they generate adverse selection on slower traders.); Bruno Biais et al., Equilibrium fast trading, 116 J. FIN. ECON. 292 (2015) (arguing that fast trading technology "provides advance access to value-relevant information, which creates adverse selection, lowering welfare," and "generates a negative externality"); Thierry Foucault et al., Toxic Arbitrage, 30 REV. FIN. STUD. 1053 (2017) (providing evidence that "[a]rbitrage opportunities due to asynchronicities in the adjustment of prices to news are toxic because they expose dealers to the risk of trading with arbitrageurs at stale quotes." The authors then claim that these toxic arbitrage opportunities that come with higher trading speed impair market liquidity.).

Currently, some market participants obtain proprietary data feeds from many SROs.[837] Of these market participants, some prefer to have consolidated proprietary data. There are two ways these market participants can obtain consolidated data. First, market participants may independently create consolidated data by purchasing individual exchange proprietary market data products and consolidating that information for their own use.

Second, market participants may obtain consolidated data from market data aggregators, which are mostly firms that purchase direct access to exchange data,[838] consolidate the data, and disseminate the data (after various levels of processing) to market participants.[839] Additionally, some market data aggregators do not purchase direct access to exchanges. Instead they provide hardware and software for market data aggregation to the parties that have contractual relationships to purchase or license the market data. These market data aggregators offer the opportunity for market participants to outsource the significant hardware, software, and personnel expertise that is required to consolidate the proprietary feeds directly. The products provided by these market data aggregators are used by many of the most sophisticated market participants in the market, and despite the fact that they create an additional chain link between market participants and proprietary feeds, the Commission preliminarily believes that these firms still deliver the data to the market participants faster than the exclusive SIPs.[840]

(c) Current Costs of Generating SIP Data and Proprietary Data Feeds

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837 The exchanges, as a subset of SROs, sell proprietary data feeds to market participants.

838 As mentioned below, even when obtaining consolidated market data from market data aggregators, market participants also have to pay data fees directly to the exchanges. See infra Section VI.B.2(c).

839 Market participants who consolidate market data independently may use other market data aggregators' products and services such as software.

840 See, e.g., Roundtable Day One Transcript at 128–129 (Mark Skalabrin, Redline Trading Solutions).

As mentioned above,[841] currently the exclusive SIPs consolidate and disseminate SIP data to market participants. The data fees that exclusive SIPs charge to market participants for obtaining SIP data are set by the operating committees of the Equity Data Plans.[842] A portion of the SIP data revenues is used to pay for the cost of maintaining and administering the exclusive SIP,[843] and the remaining funds are distributed to the SRO members proportionately to their trading and quoting activity.[844] In the case of the UTP SIP, there is an additional FINRA cost for the oversight of the OTC markets that is also taken out of the exclusive SIP's revenues before distributing funds to the plan participants.

Exclusive SIP revenues from data fees totaled more than $430 million in 2017.[845] There are three broad categories of SIP data fees: access fees, content fees, and

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841 See supra Section VI.B.1.

842 Currently, these fees are immediately effective on filing, although the Commission has the ability to abrogate them. See Rule 608(b)(3)(i) and (iii), 17 CFR 242.608(b)(3)(i) and (iii). The Commission recently proposed to amend Rule 608 to rescind the effective-on-filing nature of the fees and make them subject to the procedures in Rule 608(b)(1) and (2) for NMS plan amendments. If adopted as proposed, the Commission would publish a proposed fee and provide an opportunity for public comment on the proposed fee, and the proposed fee would not become effective unless approved by the Commission. See Effective on Filing Proposal, supra note 37.

843 Once an exclusive SIP is selected, upgrades to that processor's SIP infrastructure are mandated and funded by the operating committee of the relevant Equity Data Plan. This comes out of SIP revenues distributed to the SROs.

844 The market data revenue allocation formula is summarized at, e.g., UTP Plan, Summary of Market Data Revenue Allocation Formula, available at http://www.utpplan.com/DOC/Revenue_Allocation_Formula.pdf (last accessed Jan. 8, 2020). FINRA rebates a portion of the SIP revenue it receives back to broker-dealer internalizers and ATSs based on the trade volume they report. See FINRA Rule 7610B. One Roundtable commenter estimated that from 2013 to 2017, through the Nasdaq/UTP plan, the FINRA/Nasdaq TRF gave 83 percent of SIP revenue it received to broker-dealers. See Wittman Letter, supra note 290, at 19.

845 See Proposed Governance Order, supra note 8.

distribution/redistribution fees.[846] An access fee is a flat monthly fee for physical connectivity to SIP data and does not depend on the type of market participant (e.g., market data vendor vs. institutional broker).

There are three categories of content fees that depend on how market participants access SIP data. First, if SIP data is displayed for market participants on computer screens or other devices, the market participant is charged a display fee (a professional or a non-professional subscriber fee depending on the type of market participant). These fees can be per screen displaying the data, per user as part of the multi instance single user (MISU) program, and per application where multiple applications can run on one screen. Second, if SIP data is not displayed on computer screens and instead is directly sent to an automated system such as a trading algorithm or a smart order router, then the market participant is charged a non-display fee. Display and non-display fees are monthly fees and entitle the subscriber to an unlimited amount of real-time market information during the month. In 2018, around 65% to 75% of total SIP revenue was accounted for by professional and non-professional display fees, and around 8% to 13% of revenue was accounted for by non-display fees.[847] A third type of content fee is the query quote fee, which are fees collected from market participants accessing SIP data on a per quote basis. Under the per-query fee structure, subscribers are required to pay an amount for each request for a packet of real-time market information. Around 4% to 10% of total SIP

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846 See, e.g., CTA Plan, Q3 2019 CTA Quarterly Revenue Disclosure, available at https://www.ctaplan.com/publicdocs/Q3_2019_CTA_Quarterly_Revenue_Disclosure.pdf ; Nasdaq UTP Plan, Q3 2019 UTP Quarterly Revenue Disclosure, available at http://www.utpplan.com/DOC/UTP_Revenue_Disclosure_Q32019.pdf; Jones Letter, supra note 291.

847 Id.

revenue is accounted for by quote query fees in 2018.[848] Finally, exclusive SIPs charge distribution/redistribution fees when the market data is delivered to a user other than the initial purchaser.

Based on the exclusive SIPs' public disclosures, as of fourth quarter of 2018 there were approximately 2-3 million non-professional subscription use cases and approximately 0.3 million professional subscription use cases across the UTP and CTA/CQ SIPs. Additionally, there were approximately 300 non-display vendor use cases at each of the exclusive SIPs.[849] The Nasdaq UTP SIP operating expenses totaled around $7 million in 2017.[850] The CTA/CQ SIP operating expenses totaled around $8.8 million in 2018.

The Commission preliminarily believes that there is a substantial difference between the fees market participants pay for SIP data and the fees they pay for proprietary DOB data products. For instance, monthly non-display fees charged by the CTA/CQ SIP is $2,000 for Network A and $1,000 for Network B,[851] while monthly non-display fees charged by NYSE as part of proprietary data feed is $20,000,[852] which is an order of magnitude larger than the SIP data fee. Additionally, proprietary data feed fees have increased significantly over the past

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848 Id.

849 See supra note 789.

850 Operating expenses for the Nasdaq UTP Plan represent support costs, paid to the SIP, and are a pre-determined amount agreed upon by the Nasdaq UTP Plan's SRO participants. The Nasdaq UTP SIP costs do not include the costs of the exchanges generating the data they send to the Nasdaq UTP SIP. The UTP Plan also incurs administrative costs and other miscellaneous expenses, which together totaled around $3.6 million.

851 See CTA Plan, Schedule of Market Data Charges (Jan. 1, 2015), available at https://www.ctaplan.com/publicdocs/ctaplan/notifications/trader-update/Schedule%20Of%20Market%20Data%20Charges%20-%20January%201,%202015.pdf.

852 See SIFMA Letter.

decade. For instance, SIFMA estimates that between 2010 and 2018 data fees charged by some exchanges went up by three orders of magnitude or more.[853] In comparison, SIP data fees went up by 5% during the same time period.[854] Based on Commission staff experience, the Commission understands that the number of subscribers to proprietary market data is relatively small.[855] The Commission understands that the number of subscribers of proprietary market data and proprietary market data revenues vary across exchanges and that some exchanges obtain a larger percentage than other exchanges of their total market data revenue from proprietary data products (as opposed to revenue from SIP data products). For example, the Commission estimates that in 2018, NYSE collected approximately 5% of its net revenues from selling proprietary market data products. On the other hand, according to the Commission's estimates, Cboe BYX collected approximately 9% of its revenues from selling proprietary market data products.[856]

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853 See SIFMA Letter.

854 SIFMA's study submitted in connection with the Roundtable contained analysis examining the change in fees that some broker-dealers paid for CTA SIP data between 2010 and 2018. The analysis showed that CTA SIP fees for most categories of data increased by an average of 5% between 2010 and 2018. However, the change in the total amount each broker-dealer spent on CTA SIP data varied based on the type of broker-dealer. The analysis found that the average amount of money spent on CTA SIP data by retail broker-dealers declined by 4% between 2010 and 2017, but the average amount spent by institutional broker-dealers increased by 7%. See id. at 21–28.

855 See supra note 140.

856 See infra Section VI.B.2(d). The Commission estimates are based on NYSE and Cboe BYX's Form 1 filings and UTP and CTA/CQ revenue metrics. NYSE's Form 1 filings disclose $968 million as its net revenues in 2018. NYSE's revenues from the SIP redistribution is approximately $47 million. Note 2 to the exchange's financial statements states that NYSE collects market data revenues from the exclusive SIPs and "to a lesser extent for (sic) New York Stock Exchange proprietary data products," indicating that the approximately $47 million in revenues from SIP data could be a benchmark for their proprietary market data revenues. NYSE Form 1, available at https://www.sec.gov/Archives/edgar/vprr/1900/19003689.pdf (last accessed Jan. 29,

As mentioned above,[857] market participants who purchase proprietary data feeds from multiple SROs may choose to self-aggregate multiple data feeds, or, alternatively, they can purchase already consolidated data from market data aggregators. The exchanges charge a data fee to any market participant that purchases exchanges' data from market data aggregators.[858] Therefore, these fees are effectively a part of the total price that a market participant must pay when purchasing data from a market data aggregator. In some cases, these fees may be so high that only a subset of market participants can afford to self-aggregate proprietary feeds from all exchanges or purchase market data aggregator products.[859] The Commission preliminarily believes that more active market makers and some sophisticated broker-dealers including a number of HFT firms and some of the larger banks with proprietary data feed trading desks either self-aggregate or purchase aggregation services or products from third-party vendors.

Based on Commission staff expertise, the Commission understands that the data fees the exchanges charge to market participants that purchase the exchanges' data from market data aggregators may account for a significant portion of the total price market participants pay for the market data aggregators' data products. However, the Commission does not have

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2020). Similarly, Cboe BYX Form 1 filings report $58 million in net revenues. Of this $58 million, $26 million were market data revenue—approximately $21 million from SIP data revenues and $5 million from proprietary market data revenues. Cboe BYX Form 1, available at https://www.sec.gov/Archives/edgar/vprr/1900/19003669.pdf (last accessed Jan. 29, 2020).

857 See supra Section VI.B.2(b).

858 Some exchanges charge redistribution fees or their equivalents to market data aggregators and separately, one or more data fees (based on different use cases such as professional or non-professional, display or non-display) to market participants who purchase the exchanges' data from market data aggregators. See Virtu Letter I, at 16–79 (Exhibit "A," lists of data and connectivity fees by several exchanges).

859 See, e.g., Roundtable Day One Transcript at 128–129 (Mark Skalabrin, Redline Trading Solutions).

information on the pricing of market data aggregators' data and cannot break down market data product prices between the direct data fees charged by the exchanges and the fees charged by market data aggregators for their services; the Commission invites comments on the issue.

Among other fees, the exchanges charge fees for various connectivity services they offer (e.g., co-location, fiber connectivity, and wireless connectivity). Connectivity services permit a customer to access an exchange's proprietary market data and/or its trading and execution systems as well as SIP data. The purchase and use of certain connectivity services is necessary to directly access an exchange's market data and to directly participate in that market, at least for those market participants that represent the vast majority of trading activity on exchanges. Additionally, these connectivity services may be needed in order to take advantage of the reduced latencies offered by the proprietary data feeds, including when market participants prefer the contents of SIP data consolidated from the proprietary data feeds—rather than delivered by an exclusive SIP—to avoid additional latencies.

Connectivity fees can be substantial. For instance, the annual fiber connectivity fees per port at the exchanges' primary data centers are $90,000 at Cboe, $120,000 at Nasdaq, and $168,000 at NYSE.[860] Co-location services may have two components: an initial fee and an ongoing monthly fee based on the kilowatt (kW) usage. For example, at NYSE an initial fee for a dedicated high-density cabinet that consumes 9kW per month is $5,000, and an ongoing monthly fee per kW is $1,050.[861] At Nasdaq, an initial fee is $3,500, and an ongoing monthly

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860 See Letter to Brent J. Fields, Secretary, Commission, from Brad Katsuyama, CEO, Investors Exchange LLC, at Table 7 (Jan. 29, 2019) ("Katsuyama Letter II") (10Gb fiber connectivity).

861 See NYSE price list 2020, supra note 408.

fee is $4,500.[862] Thus, for a year of co-location in a dedicated cabinet with 9kW power, these fees add up to over $118,000 for NYSE and over $57,000 for Nasdaq.

(d) Current Aggregate Exchange Revenues from Selling Market Data and Connectivity

The Commission estimates that in 2018 the exchanges earned a total revenue of approximately $941 million from selling both proprietary and SIP market data products and connectivity services in the equities market. In addition, the Commission estimates that the exchanges earned approximately $596 million of this $941 million revenue from selling market data products and approximately $345 million of this revenue from selling connectivity services. With respect to the revenue from market data products, the Commission estimates that in 2018 the exchanges earned approximately $327 million of the $596 million revenue from equity SIP data and approximately $269 million from selling proprietary data products. Further, approximately $63 million of the $327 million equity SIP revenue in 2018 was distributed to FINRA.[863]

The Commission's estimates above are mainly based on revenue information that the exchanges submitted as part of their Form 1 filings.[864] In addition, the Commission used SIP

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862 See Nasdaq, Price List - Trading Connectivity, available at https://www.nasdaqtrader.com/Trader.aspx?id=PriceListTrading2 (last accessed Dec. 19, 2019).

863 When taking this $63 million into account, total SIP revenues shared by SROs were approximately $390 million in 2018, which is consistent with the $430 million estimate for 2017 noted in the Proposed Governance Order (which also included the amount paid to the plan processor). See supra note 845 and accompanying text. This estimate is also consistent with the $387 million estimate for 2017. See Jones Letter, supra note 291, at 25.

864 See Commission, National Securities Exchange Periodic Amendments to Form 1 (Modified June 20, 2019), available at https://www.sec.gov/rules/national-securities-exchanges-amendments.htm (providing links to exchanges' Form 1 filings).

revenue information disclosed by the CTA/CQ Plans and the Nasdaq UTP Plan in their quarterly revenue disclosures.[865] Furthermore, because revenue information provided by some exchanges in their Form 1 filings is not sufficiently detailed for this calculation, the Commission had to make certain assumptions in order to derive these estimates. First, the Form 1 filings for NYSE and NYSE MKT combine revenue from connectivity fees with revenue from market data fees. For these exchanges, the Commission derived the revenue earned from connectivity fees by assuming that the revenue that these exchanges earn from proprietary data is slightly smaller than the revenue that they earn from SIP data (based on notes in their Form 1 filings which indicate that SIP revenue exceeds proprietary data revenue). Second, the Form 1 filing for Nasdaq combines revenue from connectivity fees with revenue from transaction fees. The Commission derived the revenue that Nasdaq earned from connectivity fees by assuming that Nasdaq's revenues from connectivity fees and transaction fees were in the same proportion to one another as NYSE's revenues from these two business lines. Third, Form 1 filings for exchanges that offer trading in both equities and options provide revenue information for these two asset classes combined. For these exchanges, the Commission assumed that their combined revenues from market data fees and connectivity fees in the equities market and in the options market were in the same proportion to one another as the market data and connectivity revenues that these exchanges would have earned in each of these markets based on their dollar volume market share (as compared to the dollar volume market share of the exchanges that trade only equities or only options).

3. Competition Baseline

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865 See supra note 846.

This section discusses, as it relates to this rulemaking, the current state of the market for core and SIP data products, the market for proprietary data products, the market for connectivity services, and the market for trading services as well as broker-dealers' competitive strategies for trading services.

(a) Current Structure of Market for Core and SIP Data Products

As discussed above,[866] under the NMS plans, SIP data is collected, consolidated, processed, and disseminated by the exclusive SIPs.[867] Equity Data Plan operating committees, which are composed of the SROs, set the fees the exclusive SIPs charge for SIP data.[868] Any revenue earned by the exclusive SIPs, after deducting their operating costs and FINRA's OTC oversight costs, is split among the SROs. FINRA rebates a portion of the exclusive SIP revenue it receives back to broker-dealer internalizers and ATSs based on the trade volume they report.[869]

The fact that Equity Data Plan operating committees approve all NMS plan proposed fee changes can create conflicts of interest for the SROs because their duties administering NMS plans that either charge or could charge fees could potentially come into conflict with other products the SROs sell or costs they incur as part of their businesses. For example, some of the SROs sell proprietary data products that are considered by some to be substitutes for SIP data. This can create a conflict of interest regarding the three NMS plans that set fees for SIP data because the SROs vote to set SIP fees, own and control the dissemination of data, and set the prices of some of the proprietary data products the exclusive SIPs may compete against.

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866 See supra Section II.A.

867 Id.

868 See supra note 842 and accompanying text.

869 See supra note 844.

As discussed in detail above, each Equity Data Plan selects a single exclusive SIP through a bidding process to be the exclusive distributor of the NMS plan's data.[870] This grants the SIP a monopoly franchise in the distribution of the NMS plan's data, which means that the SIPs may not be subject to competitive forces. The Commission acknowledges that there is uncertainty about this conclusion. In particular, the economic literature provides theory and evidence that could predict either more efficient or less efficient outcomes under a monopoly structure. A paper by Demsetz would predict that the current monopolistic structure is most efficient.[871] In industries where there are economies of scale, a monopoly structure may lead to the most efficient means of production. This profile applies to the distribution of core data because of the high fixed costs.[872] Demsetz (1968) argues that just because an industry has a monopolistic provider of a service does not mean that it is not subject to competitive forces. In particular, Demsetz (1968) argues that if the monopolistic provider of a service is subject to competition in the bidding process it could provide sufficient competitive incentives to achieve a competitive outcome. However, many theories provide examples of situations in which the monopolistic structure is less efficient than other structures.[873] The Commission does not believe that the exclusive SIP bidding process provides sufficient competitive incentives for three reasons. First, the bidding process could be subject to conflicts of interest since some of the SROs voting to select the exclusive SIP are also bidding to be the SIP. Second, the contracts are

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870 See supra Section IV.A.

871 See Harold Demsetz, Why Regulate Utilities?, 11 J. L. & ECON. 55 (1968) ("Demsetz (1968)").

872 See infra note 882 and accompanying text.

873 See, e.g., Oliver E. Williamson, Franchise Bidding for Natural Monopolies – in General and with Respect to CATV, 7 THE BELL J. ECON. 73 (1976) (discussing why bidding for monopolies may not work well); Robin A. Prager, Firm behavior in franchise monopoly markets, 21 RAND J. ECON. 211 (1990).

not bid out regularly, so there may not be a significant chance that the current exclusive SIP will be replaced. Third, historically in some cases the bidding process may not be competitive due to the number of bidders. Therefore, the Commission does not believe that the bidding process for exclusive SIPs is likely to produce the most efficient outcome and subject the exclusive SIPs to competitive forces.

The exclusive SIPs have significant market power in the market for core and aggregated market data products and are monopolistic providers of certain information, which means that for all such products they would have the market power to charge supracompetitive prices. Fees for core data are paid by a wide range of market participants, including investors, broker-dealers, data vendors, and others.

One reason the exclusive SIPs have significant market power is that, although some market data products are comparable to SIP data and could be used by some core data subscribers as substitutes for SIP data in certain situations, these products are not perfect substitutes and are not viable substitutes across all use cases. For example, as mentioned above, some market data aggregators buy direct depth of book feeds from the exchanges and aggregate them to produce products similar to SIP data.[874] However, these products do not provide market information that is critical to some subscribers and only available through the exclusive SIPs, such as LULD plan price bands and administrative messages.[875] Additionally, some SROs offer top of book data feeds, which may be considered by some to be viable substitutes for SIP data

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874 The feeds produced by market data aggregators offer additional features, such as lower latency, but usually cost more than SIP data. See Roundtable Day One Transcript at 126–129 (Mark Skalabrin, Redline Trading Solutions).

875 See supra Section III.D, III.E.

for certain applications.[876] However, broker-dealers typically rely on the SIP data to fulfill their obligations under Rule 603 of Regulation NMS, i.e., the "Vendor Display Rule," which requires a broker-dealer to show a consolidated display of market data in a context in which a trading or order routing decision can be implemented.[877]

The purchase of SIP data or proprietary market data from all exchanges, either directly or indirectly, is necessary for all market participants executing orders in NMS securities.[878] SROs have significant influence over the prices of most market data products. For example, the exchanges individually set the pricing of the top of book data feeds that they sell to market data aggregators and broker-dealers that self-aggregate who in turn generate consolidated data. At the same time, SROs collectively, as participants in the national market system plans, decide what fees to set for SIP data.[879] Although market data aggregators might compete with the exclusive SIPs by offering products that provide consolidated data, they ultimately derive their data from

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876 In the equity markets, the top of book feeds offered by the SROs are usually cheaper than SIP data. However, they may only contain information from one exchange, or one exchange family. See, e.g., Nasdaq Basic, supra note 19; CBOE One, supra note 19; NYSE BQT, supra note 19; TD Ameritrade Letter, supra note 19 (stating that the lower cost of exchange TOB products, coupled with costs associated with the process to differentiate between retail professionals and non-professionals imposed by the SIP Plans, and associated audit risk, favors retail broker-dealer use of exchange TOB products).

877 See Vendor Display Rule, Rule 603 of Regulation NMS; supra Section IV.B.2(a).

878 For example, Rule 611(a) of Regulation NMS requires trading centers to establish policies and procedures to prevent trade-throughs. In order to prevent trade-throughs, executing broker-dealers need to be able to view the protected quotes on all exchanges. They can fulfill this requirement by using SIP data, proprietary data feeds offered by the SROs, or a combination of both.

879 See supra note 842.

the exchanges' direct proprietary data feeds, whose prices are set by the exchanges, a subset of SROs.[880]

Regarding the level of competition among non-SRO market data aggregators that sell consolidated data to market participants, the Commission currently does not have a precise estimate of the number of players in this market and does not know how specialized these players are.[881] The Commission invites comments on this issue.

Additionally, the production of both core data and proprietary data feeds involves relatively high fixed costs and low variable costs.[882] Fixed costs are composed of, among others, costs to set up infrastructure, regulatory approval costs, software development costs, administrative costs and overhead costs, while variable costs include costs to contract with and establish connectivity to each customer. Importantly, fixed costs of the production of both core data and proprietary data feeds are not specific to the production of data but also support the exchanges' other services such as intermediating trade. In such markets, the firms have additional incentives to increase the number of their customers in order to spread the fixed cost across a larger base of consumers.

(b) Current Structure of Market for Proprietary Market Data Products

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880 Pursuant to Section 19(b) of the Exchange Act and Rule 19b-4 thereunder, SROs must file with the Commission proposed rules, in which they set prices for their direct feed data. Those prices can vary depending on the type of end user.

881 The Commission assumes that certain entities from the list of market data vendors published on Nasdaq's website currently perform the market data aggregator function. See supra note 516.

882 See, e.g., Paul M. Romer, Endogenous Technological Change, 98 J. POL. ECON. S71–102 (1990) (pointing out that information is fundamentally distinct from other goods because it has a fixed cost of discovery and a near zero cost of replication).

In addition to SIP data, the exchanges voluntarily disseminate proprietary data and charge fees for this data. As noted above,[883] the proprietary DOB products are generally characterized as fast, low latency products designed for automated trading systems that include additional content, such as depth of book data, while proprietary TOB products are limited in content, such as the exchange's top of book quotation information and transaction information and are designed largely for the non-automated segment of the market (e.g., non-professional investors and wealth managers that access market data visually). Proprietary DOB products typically include odd-lot quotations, orders at prices above and below the best prices (i.e., depth of book data), and information about orders participating in auctions, including auction order imbalances.

Proprietary data fees have increased significantly over the past decade, as suggested by SIFMA estimates that show that, for some broker-dealers, data fees charged by some exchanges went up by three orders of magnitude or more between 2010 and 2018.[884] Correspondingly, exchanges' revenues from selling proprietary data and connectivity services also went up over the last several years. For example, Budish, et al. (2019) observe that exchanges earn significant revenues from selling proprietary data (as well as connectivity services).[885] According to NYSE's Form 1 filings, its revenues from data services (including connectivity revenues but excluding SIP data revenues) increased approximately 93% from 2014 to 2018. Similarly, Nasdaq's Form 1 filings show an approximately 21% increase in their revenues from data services (excluding revenues from connectivity services and SIP data revenues). On the other hand, during the same period, revenues distributed back to NYSE by the exclusive SIPs

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883 See supra Section II.A.

884 See SIFMA Letter; Virtu Letter I, at 4 (discussing double "dipping" on fees by the exchanges).

885 See Eric Budish et al., supra note 15.

increased approximately 18% and the revenues distributed back to Nasdaq increased approximately 12%. The exchanges' differences in their reporting of these numbers make it difficult to compare revenue numbers across exchanges. However, for both of these exchanges, their revenues from the proprietary data and connectivity business have been growing faster than the revenues they collect from SIP data.[886]

Indicia that exchanges may not be subject to robust competition include that many broker-dealers state that even in the face of increasing proprietary data fees they feel compelled to buy proprietary data to be able to provide competitive trading strategies for their clients.[887] Additionally, some academic research suggests that each particular exchange's proprietary data has no substitutes for some uses of the data and no perfect substitutes for any uses. For example, Budish et al. (2019) conclude that each exchange has market power with respect to the data products (and the speed technology) specific to that particular exchange because of a lack of substitutes for many applications of their data.[888]

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886 According to its 2014 Form 1 filing, NYSE collected approximately $138 million as market data revenues, covered under the "data services fees" income statement line item. According to the notes to NYSE's financial statements, these market data revenues include proprietary data revenues, SIP data revenues, and revenues from connectivity services. NYSE's same revenue line item increased to approximately $236 million by the end of 2018. Whereas during this same time period, the revenues NYSE collected from the exclusive SIPs went from approximately $40 million to approximately $47 million. Nasdaq's 2014 Form 1 filing discloses approximately $206 million in "information services" line item in its income statement. According to the footnotes to its financial statements, this line item includes Nasdaq's market data revenues and redistributed SIP revenues but does not include connectivity service revenues. In its 2018 Form 1 filing, Nasdaq disclosed $242 million in revenues under the same information services line item. During the same time period, Nasdaq's SIP data revenues went up from approximately $76 million to $85 million, a smaller revenue increase relative to its market data revenues.

887 See supra note 598.

888 See Eric Budish et al., supra note 15.

(c) Current Structure of Market for Connectivity Services

Exchanges are exclusive providers of their own connectivity services, and for many market participants, effective trading strategies require connecting to many if not all of the exchanges, making their demand for these connectivity services less elastic (i.e., less sensitive to price changes). The Commission examined data on exchange orders that shows that large broker-dealers (as measured, for example, by the number of messages sent to exchanges) connect to all or almost all exchanges.[889] This is consistent with commenters' and Roundtable participants' stated view that in order to avoid a competitive disadvantage, market participants have little choice but to purchase direct connectivity services from multiple SROs.[890]

As mentioned above, the exchanges offer different connectivity options to transmit market data to market participants. These options may include fiber optics connections, wireless microwave connections, and laser transmission, all of which vary in speeds and reliability.[891] The fastest and more reliable connections (e.g., laser transmission) offer market participants an advantage over other market participants with slower or less reliable connections. Therefore, the Commission preliminarily believes that the exchanges have incentives to offer multiple levels of connectivity so that the fastest connections have the least elastic demand and the exchanges could charger higher prices for these connections.

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889 Based on the sample of audit trail data made available to the Commission by FINRA, firms that are connected to all exchanges account for 76.6% of the message volume (there are 37 such firms out of a total of 327 firms in the sample). Firms that are connected to at least all but one of the exchanges account for 91.6% of the message volume (there are 50 such firms). The FINRA data sample covers the week of December 5, 2016, and includes messages sent to 11 exchanges (NYSE National and Chicago Stock Exchange are not part of this sample).

890 See supra Section III.C.2(c); supra Section II.A.

891 See supra Section II.A.

(d) Current Structure of the Market for Trading Services in NMS Stocks

The market for trading services is served by exchanges, ATSs, and liquidity providers. The market relies on competition to supply investors with execution services at efficient prices. These trading venues, which compete to match traders with counterparties, provide a framework for price negotiation and disseminate trading information. The market for trading services in NMS stocks currently consists of 16 national securities exchanges, as well as off-exchange trading venues including wholesalers[892] and 33 NMS stock alternative trading systems.[893]

Since the adoption of Regulation NMS in 2005, the market for trading services has become more fragmented. The number of exchanges increased from eight in 2005 to 16 exchanges operating today.[894] Additionally, the market shares of individual exchanges became less concentrated, with a shift in market shares from some of the bigger and older exchanges to the newer ones.[895] For instance, from 2005 to 2013, there was a decline in the market share of trading volume for exchange-listed stocks on NYSE.[896] At the same time, there was an increase

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892 Wholesalers are broker-dealers that pay retail brokers for sending their clients' orders to the wholesaler to be filled internally (as opposed to sending the trade orders to an exchange). Typically a wholesaler promises to provide price improvement relative to the NBBO for filled orders.

893 As of February 7, 2020, 33 NMS stock ATSs are operating pursuant to an initial Form ATS-N. A list of NMS stock ATSs, including access to initial Form ATS-N filings that are effective, can be found at https://www.sec.gov/divisions/marketreg/form-ats-n-filings.htm.

894 See supra note 660.

895 See Letter to Brent J. Fields, Secretary, Commission, from Edward T. Tilly, Chairman and Chief Executive Officer, Cboe (May 25, 2018), at note 9.

896 See Securities Exchange Act Release No. 76474 (Nov. 18, 2015), 80 FR 80998, 81112 (Dec. 28, 2015) (Regulation of NMS Stock Alternative Trading Systems Proposing Release).

in the market share of newer national securities exchanges such as NYSE Arca, Cboe BYX, and Cboe BZX.[897]

During the same time period, the proportion of NMS stocks trading off-exchange (which includes both internalization and ATS trading) increased; for example, as of August 2018, NMS stock ATSs alone comprised approximately 14 percent of consolidated volume, and other off-exchange volume totaled approximately 21 percent of consolidated volume.[898] Aside from trading venues, exchange market makers provide trading services in the securities market. These firms stand ready to buy and sell a security "on a regular and continuous basis at a publicly quoted price."[899] Exchange market makers quote both buy and sell prices in a security held in inventory, for their own account, for the business purpose of generating a profit from trading with a spread between the sell and buy prices. Off-exchange market makers also stand ready to buy and sell out of their own inventory, but they do not quote buy and sell prices.[900]

All of these developments increased the competitiveness of the market for trading services in NMS stocks. However, the Commission recognizes that while the market is more competitive, the actual level of competition that any given trading venue faces may depend on multiple factors including the liquidity of a stock as well as the type of trading venue and market participant engaging in the trade.

(e) Broker-Dealers' Competitive Strategies for Trading Services

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897 Id.

898 See Securities Exchange Act Release No. 84875 (Dec. 19, 2018), 84 FR 5202, 5255 (Feb. 20, 2019) (Transaction Fee Pilot for NMS Stocks).

899 See Commission, Fast Answers: Market Maker (modified Mar. 17, 2000), available at http://www.sec.gov/answers/mktmaker.html.

900 See Laura Tuttle, OTC Trading: Description of Non-ATS OTC Trading in National Market System Stocks, Commission (Mar. 2014), available at http://www.sec.gov/dera/staff-papers/white-papers/otc-trading-white-paper-03-2014.pdf.

While many market participants use market data to make investment decisions, not all market participants are equally competitive in their use of real-time data. The Commission understands that while some investors (including retail investors) may use a broker-dealer to execute a trade on their behalf, others, such as the broker-dealers themselves and other latency sensitive traders, utilize sophisticated routing tools to strategically decide how to fill an order on an exchange, including when and where to submit the order, how to split a larger order (i.e., into how many pieces, or "child orders"[901]), how large the child order sizes should be, and what order type(s) should be used, e.g., whether to use a market order, limit order, or some other order type. The strategies employed by broker-dealers and other latency sensitive traders in this regard are designed to secure the best possible execution price(s) for an order. For example, the Commission understands that methodologies utilized in trading orders can impact the price of the stock being purchased or sold in a manner that can increase or decrease its execution cost.

The Commission understands that broker-dealers in particular compete with each other to provide the lowest possible execution costs for their clients (i.e., high execution quality) as quickly as possible.

An example of routing tools as noted above is smart order routing ("SOR"). SORs employ the use of algorithms (e.g., by broker-dealers on behalf of a client) designed to optimally send parts of an order (child orders) to various market centers (e.g., exchange and ATSs) so as to optimally access market liquidity while minimizing execution costs. SORs help to determine how to quickly access ("take") available market liquidity before other market participants, and help to determine how to strategically place limit orders to optimize queue priority across various limit order books among exchanges. The ability to optimize queue priority facilitates the ability

[901] Child order refers to a smaller order that was a piece of a larger "parent" order.

for a broker to "capture the quoted" spread, i.e., buy on the bid or sell on the offer, while also potentially benefitting from exchange rebates paid to liquidity providers.

The Commission understands that data beyond the NBBO with minimal latency are important inputs to strategies designed to optimize the ability to access market liquidity and minimize execution costs. Further, the Commission understands that competing with the most effective SORs is more difficult without possessing real-time market data while minimizing data latency.[902] The Commission understands that those traders who do not access trading tools that utilize comprehensive market data with low latency experience higher execution costs on average.

4. Request for Comments on Baseline

The Commission requests comments on its baseline analysis. In particular, the Commission solicits comment on the following:

161. Do you agree with the Commission's assessment of the market failures and the need for regulation to solve market data problems? Why or why not? Do additional market failures exist that are not described in this release? If so, what are they? Please explain in detail.

162. Do you agree that some market participants are unable to rely solely on SIP data to trade competitively in today's markets? Why or why not? Please explain in detail. If so, what businesses rely on the purchase of proprietary market data? The Commission is also seeking information on the number, type and sizes of market participants that purchase proprietary market data products either directly from exchanges for self-

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902 The Commission preliminarily believes that there is also a significant personnel and technological cost to producing a sophisticated, competitive smart order router.

aggregation or through market data aggregators. The Commission requests that commenters provide such information where available.

163. Do you agree that exchanges are disincentivized from making improvements to the content or latency of SIP data? Why or why not? Please explain in detail.

164. Does the Economic Analysis contain all relevant baseline information? If not, what else should the baseline contain? Please explain in detail.

165. How competitive is the selection process for the exclusive SIPs? How does the selection process affect the performance of the SIP? How does past performance factor into the selection process? Please explain in detail.

166. The Commission is seeking information on the number of market participants that rely solely on SIP data for their trading needs, and, separately, on the number of market participants that do not rely solely on SIP data for their trading needs. The Commission requests that commenters provide such information where available.

167. The Commission is seeking information on the consequences (both positive and negative) of the limited amount of odd-lot quotation information currently included in SIP data. Please be specific about exact odd-lot quotation information that results in these consequences and provide data analysis where possible. Do the consequences vary across stocks and/or exchanges? Please explain and provide data analysis where possible.

168. The Commission is seeking information on the consequences (both positive and negative) of the lack of depth of book information currently included in SIP data. Please be specific about exact depth of book information that results in these consequences and

provide data analysis where possible. Do the consequences vary across stocks and/or exchanges? Please explain and provide data analysis where possible.

169. The Commission is seeking information on the consequences (both positive and negative) of the lack of auction-related information currently included in SIP data. Please be specific about exact auction-related information that results in these consequences and provide data analysis where possible. Do the consequences vary across stocks and/or exchanges? Please explain and provide data analysis where possible.

170. The Commission requests comment on the scope and content of exchange proprietary data feeds. Are the proprietary data offerings similar across exchanges? Please explain in detail.

171. What are the consequences of the differences in latency between the SIP and proprietary feeds? Please explain in detail.

172. The Commission requests comment on the comparison of SIP versus proprietary data access experiences and costs. How do the types of fees and discount programs compare? Do the exclusive SIPs offer services that target the same clients as the exchanges do? Please explain in detail. Do exclusive SIPs offer services that target the same clients as third-party aggregators? Please explain in detail.

173. The Commission is seeking information on specific revenues and expenses associated with processing and disseminating market data by market data aggregators. The Commission requests that commenters provide such information where available.

174. The Commission is seeking information on pricing of market data aggregators' data and the breakdown of such product prices between the direct data fee charged by the

exchanges and the fees charged by market data aggregators for their services. The Commission requests that commenters provide such information where available.

175. Do you agree with the Commission's competition baseline? Why or why not? Please explain in detail.

176. Do you agree that the exclusive SIPs have market power? Why or why not? Please explain in detail.

177. Do you agree with the Commission's assessment of the state of competition in the market for core and aggregated market data products in the equities market? Why or why not? Please explain in detail. What is the magnitude of this market? What are the total expenses incurred by broker-dealers on market data products? What are the total revenues earned by exchanges on market data products? Who else incurs costs or earns revenues on market data products?

178. The Commission requests that commenters provide information on the number of players in the market data aggregator space, and provide information on how specialized these companies are.

179. To what extent is it necessary for market participants executing orders in NMS securities to purchase market data from all SROs? Please explain in detail.

180. How does the market for proprietary data differ from the market for consolidated data? Please explain in detail.

181. Do you believe that exchanges have significant market power in the market for proprietary data products? Why or why not? Please explain in detail.

182. In what situations can top of book data products serve as substitutes for SIP data in the equities market? In what situations are top of book data products not viable substitutes for SIP data? Please explain in detail.

183. Do you agree with the Commission's assessment of the market for connectivity services? Why or why not? Please explain in detail. Do you believe that exchanges have significant market power with respect to connectivity services? Why or why not? Please explain in detail. What is the magnitude of this market? What are the total expenses incurred by broker-dealers on connectivity services? What are the total revenues earned by exchanges on connectivity services? Who else incurs costs or earns revenues on connectivity services?

184. Do you agree with the Commission's assessment of the market for trading services? Why or why not? Please explain in detail. How does market data and connectivity relate to the market for trading services? Can market power in one market translate into market power in another? Please explain in detail.

185. Characterizing competitors as producers (an entity that creates a good or service for trade) or intermediaries (an entity that facilitates the trading of goods or services produced by others) could have implications for the competitive landscape. To what extent are exchanges producers versus intermediaries in market data products and/or other services (e.g., execution services, connectivity services)? Please explain in detail.

186. To what extent is market execution on one exchange a substitute for execution on another exchange? To what extent are they complements? Please explain in detail.

187. To what extent is market data from one exchange a substitute for market data from another exchange? To what extent are they complements? Please explain in detail.

C. Economic Effects of the Rule

1. Core Data and Consolidated Market Data

The Commission preliminarily believes that the proposed enhancements to consolidated data, namely expanding core data and the amendments to the definitions of "national best bid and offer" and "protected bid or protected offer," would result in numerous economic effects. These economic effects derive from codifying the definition of core data, from expanding the content of the core data, and from changing the prices that determine the NBBO and the protected quotes.

The proposed change would have the benefit of mitigating the influence of existing conflicts of interest inherent in the existing exclusive SIP model.[903] The proposed change establishes a required amount of data to be included in proposed consolidated market data, and thus reduces the divergence between exchanges' proprietary DOB products and current SIP data.

(a) Definitions of Consolidated Market Data, Core Data, Administrative Data, and Regulatory Data

The Commission's proposed definitions of "consolidated market data," "core data," "regulatory data," "administrative data," and "exchange-specific program data" under Regulation NMS would specify the quotation and transaction information in NMS stocks that must be collected, consolidated, and disseminated under rules of the national market system and pursuant to an effective national market system plan(s). This definition would codify the dissemination of certain current SIP data elements, and would include some additional data elements, but would not include some data that the exclusive SIPs currently disseminate. This section discusses the secondary economic effects of this proposed expansion to core data that would come from

[903] For a discussion of these conflicts of interest, see supra Section VI.A.2.

codifying the inclusion of some current SIP data in "core data," while the next section discusses the economic effects of expanding the content of core data. These secondary effects are providing flexibility to the Data Plans for including new data elements, requiring that regulatory data would continue to be provided in the decentralized consolidation model, cost to update the national market system plan(s), and costs to obtain data that is currently in SIP data but not in proposed consolidated market data elsewhere.

The proposed definitions of "exchange-specific program data," "regulatory data" and "administrative data," along with the proposed ability for the Equity Data Plans to add elements to these proposed definitions, promotes regulatory efficiency by providing flexibility for consolidated market data to include data elements beyond those explicitly defined as "consolidated market data" in the proposal. It provides a mechanism for the participants in the national market system plan(s) to propose to add additional data elements, such as elements similar to current retail liquidity programs. This would allow for organic change in consolidated market data that may become useful due to future market and regulatory developments.

Further, while the underlying data elements of "regulatory data" are currently included in disseminated SIP data, the proposed definition of "regulatory data" would help ensure that market participants continue to have access to this information.

The Commission recognizes that market data plans would incur one-time initial implementation costs in ensuring the plans are consistent with the proposed definitions of "consolidated market data," "core data," "administrative data," "regulatory data," and "exchange-specific program data," but the plans would not incur significant ongoing costs as a

result of the codification of these five definitions.[904] These initial implementation costs would come from the operating committees needing to draft revisions to their respective plans that are consistent with the proposed definitions.

The Commission preliminarily believes that not including some data elements that the exclusive SIPs currently transmit[905] in the definition of "consolidated market data" could have some costs to those market participants who would want to arrange to get this data elsewhere. As discussed above, the UTP SIP offers OTCBB quotation and transaction feeds for unlisted stocks, and the CTA Plan permits the dissemination of "concurrent use" data related to corporate bonds and indexes.[906] As proposed, these data elements would not be defined as consolidated market data or core data elements. However, the proposal would not preclude the provision of these data elements by the SROs via proprietary data products to market participants and investors who wish to receive them.

(b) Expanding Core Data Content

As discussed above,[907] the Commission proposes to define core data to include certain odd-lot quote information, certain depth of book data, and information on orders participating in auctions. This section discusses the economic effects of expanding the core data content separately for each additional core data element and then discusses the additional economic effects that may accrue to market participants from the combined new core data elements, although market participants may choose not to take in all of the new core data elements in every

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904 Below in Section VI.C.1(b)(iv), the Commission discusses the costs of including data elements to the proposed definition of "core data" that are not currently in SIP data.

905 See supra Section III.B.

906 See supra Section III.C.

907 Id.

instance. The economic effects discussed in this section depend on the fees for core data charged by the effective national market system plan(s) for NMS stocks and the competing consolidators. The fees for new core data are discussed later.[908]

(i) Effects of New Round Lot Definition

The Commission proposes to define a round lot according to a tiered system based on the price of the stock.[909] This definition would result in the inclusion of quotes at better prices in core data that were previously excluded from being reported because they consisted of too few shares. These new quotes would now become visible to anyone who subscribes to core data, thereby improving transparency. The Commission preliminarily believes that the proposed changes to the round lot definition would create an economic benefit for market participants who currently rely exclusively on SIP data to obtain market information, and for market participants who post odd-lot quotes at prices superior to the NBBO. These market participants would benefit from being able to see more information on these smaller quotes at better prices before they send in their orders, which could improve their trading decisions and order execution quality by providing an opportunity to realize gains from trade,[910] as discussed below in this section.[911] The proposed change could also improve price efficiency. This is because certain odd-lot information not currently disseminated as part of SIP data would be made available as part of proposed core data; therefore market participants who use SIP data who previously did

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908 See infra Section VI.C.1(b)(iv).

909 See supra Section III.C.1(d)(i).

910 See supra note 754.

911 The proposed round-lot definition may benefit retail investors even without changes to their decision to submit orders based on seeing the price-improving quotes. This is because the proposed round-lot definition would likely cause the NBBO to become narrower, and this would affect the execution quality provided by retail wholesalers to retail investors. See infra Section VI.C.1(c)(i) for additional discussion on this point.

not use the information contained in odd-lots would be able to incorporate this information into their trading decisions. These trading decisions are integral to how market prices are formed. Also, the proposed change could affect order routing and the share of order flow received by each exchange, since more traders will be aware of quotes at better prices that are currently in odd-lots sizes, and these may not be on the same exchange as the one that has the best 100 share quote.

The Commission preliminarily believes that changing the round lot definition to include smaller-size orders would be a significant benefit for market participants who would have traded with price-improving odd-lot quotes in certain stocks but do not do so because they cannot see information on odd-lot quotes.[912] Under the proposed rule, some of these quotes at better prices would be reported as the NBBO in the new core data. This would mean that these traders would be able to see the quotes,[913] and make a decision about whether to trade based on this newly visible, improved price. This may benefit traders because they would be able to realize the gains from trade that are available in this situation and are not currently occurring because of the lack of information. Also, some traders may wish to exchange an odd-lot quantity of a stock by posting a limit order for an odd-lot amount. Currently, this order's price is not visible to traders who rely solely on SIP data, and thus there may be delays in getting this limit order filled, since such traders would not send market orders in. Thus, adding smaller-size quotes in core data for

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912 Currently, some information about odd-lot quotes ends up in core data through certain exchanges rolling up odd lot quotes. But even in this case, the rolled up quote is reported to the exclusive SIPs at the worst price out of all the odd-lots that were rolled up to produce the quote, so the full amount of price improvement available on that exchange is still not visible to market participants relying solely on exclusive SIPs for market data.

913 The traders able to see these quotes as a result of the proposed round-lot definition would include retail investors as a result of the Vendor Display Rule, among others. See supra Section III.C.1(d)(i).

certain stocks would result in a benefit to both the market participants who would submit the market orders and the market participants who post the odd-lot quotes they execute against.

The magnitude of this benefit depends on the amount of additional trading generated by the inclusion of odd-lot information. In particular, the Commission preliminarily believes that to the extent many market participants who rely solely on SIP data and lack information on odd-lot quotes would have traded frequently against odd-lot quotes had they known about them, the benefit would be large. However, if it is uncommon for market participants who would trade frequently against odd-lot quotes to rely solely on SIP data and to lack information on odd-lot quotes, then the Commission preliminarily believes that the associated economic benefit from including odd-lot quotes in core data would be small. The Commission preliminarily believes it is not possible to observe this willingness to trade but for lack of information with existing market data, and invites comments on this issue.

However, the Commission can quantify the frequency with which the hypothetical trader discussed above would see better prices under the new round lot definition in the current market environment. Based on this quantification, the Commission preliminarily believes that market participants relying on new core data would see a significant improvement in quoted spreads within a large percentage of the dollar volume of stock trading. Specifically, Table 4 shows the percentage of instances in a sample of MIDAS data that the NBBO provided at the time by an exclusive SIP[914] was inferior in price to the price of a round lot computed according to the new definition in the proposed rule. For instance, the table shows that for stocks with prices of $1,000 or greater, the new round lot definition would cause a quote to be displayed that

[914] Since the source used for this SIP NBBO is an exclusive SIP itself, this quote includes quotes the exchanges produce by aggregating or "rolling up" odd-lots to obtain a round lot-sized quote.

improved on the current round lot quote 92.2% of the time. The frequency of this instance of price improvement appears to increase uniformly through the round lot tiers in the sample, starting lower at 9.7% for the $50.01-$100 tier. This analysis shows that, within each round lot tier in which the round lot size would change, there is a significant number of instances in which the new round lot definition would improve the quoted spread.

The quantity of instances of price improvement as a result of the new round lot definition depends on the volume of stocks in the tiers for which the round lot size would change. Table 1 above documents the number of stocks in each tier. It shows that while most stocks (80.9%) would remain unaffected by the new round lot definitions, most of the dollar trading volume, around 68.3%, currently is in stocks that would have a new round lot definition under the proposed rule. Based on this analysis, the Commission preliminarily believes that a meaningful amount of dollar volume is concentrated in stocks that would have significant changes to the quoted spread displayed under the new round lot definition.

The amount of price improvement available in the event that any price improvement is available, is also a relevant consideration when deciding whether to trade. Table 5 quantifies the average price improvement offered by the best quote under the new round lot definition, conditional on the event that price improvement is available in the first place. The table shows, for example, that the new round lot definition in the $50.01-$100 tier could yield an 8 basis point reduction in the spread (conditional on a price improving quote being available). Since the average quoted half spread is 31 basis points, this represents a significant reduction in the half spread. In the case of the $1000+ tier, the difference of 8.8 basis points represents an even more significant fraction of the 17 basis point average half spread. Based on this analysis, the

Commission preliminarily believes that the size of price improvement, conditional on it being available, is also substantial.

Table 4. Instances of Price Improvement

Round Lot Tier[1,2]	**Instances of Price Improvement (%)[3]**		
	Best Bid	**Best Ask**	**Best Bid or Best Ask**
1. <= $50	n/a	n/a	n/a
2. $50.01 - $100	5.3	5.0	9.7
3. $100.01 - $500	11.5	11.4	20.6
4. $500.01 - $1000	46.8	50.1	72.8
5. 1000.01+	73.5	70.5	92.2

1. Tier based on the stock's prior calendar month's average closing price on the primary listing exchange in August 2019.

2. Seven stocks were excluded due to trading in round lots different than 100 shares (i.e., 1 or 10 shares: symbols BH, BH.A, BRK.A, DIT, MKL, NVR, and SEB).

3. Overall frequency of price improving NBBO quotes during September 2019 using the proposed round lot tier criteria versus the current 100 share round lot criteria (see footnote 4 of Table 5 for more details). An instance of a price improving quote is calculated from a sample of MIDAS data, which consists of hourly snapshots from 10:30 am to 3:30 pm for each trading day in September 2019. Calculation is based on the difference between the best bid / best ask calculated under the new round lot tier definition (source: direct feeds) compared to the NBBO based on the current 100 share round lot criteria (source: SIP).

Table 5. Size of Price Improvement

Round Lot Tier[1,2]	**Best Bid: Average Price Improvement ($)[3]**	**Best Ask: Average Price Improvement ($)[3]**	**Average Difference in Quoted Half Spread (%)[4]**	**SIP: Average Quoted Percent Half Spread (%)**
1. <= $50	n/a	n/a	n/a	n/a
2. $50.01 - $100	0.09	0.12	0.080	0.31
3. $100.01 - $500	0.15	0.14	0.044	0.14
4. $500.01 - $1000	0.79	0.89	0.080	0.22
5. 1000.01+	1.35	1.36	0.088	0.17

1. Tier based on the stock's prior calendar month's average closing price on the primary listing exchange in August 2019.

2. Seven stocks were excluded due to trading in round lots different than 100 shares (i.e. 1 or 10 shares: symbols BH, BH.A, BRK.A, DIT, MKL, NVR, and SEB).

3. Overall frequency of price improving NBBO quotes during September 2019 using the proposed round lot tier criteria versus the current 100 share round lot criteria. Conditional on a the instance of a price improving quote, stock-day average price improvement is calculated from a sample of MIDAS data, which consists of hourly snapshots from 10:30 am to 3:30 pm for each trading day in September 2019. Calculation is based on the difference between the best bid / best ask calculated under the new round lot tier definition (source: direct feeds) compared to the NBBO based on the current 100 share

round lot criteria (source: SIP).
4. Conditional on a the instance of a price improving quote (bid or ask), stock-day average difference in percent quoted half spread is calculated by SIP NBBO quoted percent half spread minus the new percent quoted half spread under the proposed round lot tier criteria. Quoted half spread is defined by: Quoted half-spread = $QS_{it} = 100 * (Ask_{it} – Bid_{it}) / (2*M_{it})$, where M is the midpoint between the best bid and best ask.

The Commission preliminarily believes that the new round-lot definition would benefit market participants who utilize strategies related to order routing, provided that they do not already obtain information on odd-lots from proprietary feeds. For instance, traders who wish to fill an order at the best possible price, including at sizes of less than 100 shares, would be better able to do so if the new round lot sizes are visible to them, e.g., the exchange with the best 100 share quote may not be the exchange with the best 10 share quote.[915] The use of this information could improve order execution quality and facilitate best execution for these traders.[916] The Commission preliminarily believes that many of the market participants who utilize such strategies already have access to full odd-lot information via proprietary feeds; for these traders the proposal would not produce a direct benefit.[917]

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915 Battalio, Corwin, and Jennings (2016) examines the frequency of trading at inferior prices as compared to available unprotected odd-lot quotes in a sample of 10 high-priced stocks during one week in 2015. They find that there was an unprotected odd-lot limit order available at a better price for 2.52% of the trades that occurred. See Robert Battalio et al, Unrecognized Odd Lot Liquidity Supply: A Hidden Trading Cost for High Priced Stocks, 12 J. Trading 35 (2016).

916 For discussion of order execution quality and the provision of execution services by broker-dealers, see supra Section VI.B.3(e).

917 The new round-lot definition may benefit those market participants who already obtain odd-lot information by providing them with alternatives to proprietary feeds. For discussion of this effect, see infra Section VI.C.4(a). Also, the Commission preliminarily understands that some market participants who use proprietary feeds as their main source of market data also use the SIP feeds as a backup. For such market participants, the change in the round lot definition may improve the value of a core data feed as a backup.

Also, the Commission preliminarily believes that there may be market participants that would start running these order routing strategies if the data were available to them at prices comparable to SIP data. These market participants might currently find that the value of attempting such strategies without information on odd-lots is too low to justify running the strategies, but they might find that access to data on such orders through the new round-lot definition would enable them to run such strategies effectively. To the extent that such market participants exist, the change to the round-lot definition would be a benefit to them as well.[918]

The Commission preliminarily believes that the new round lot definition could improve price efficiency. The wider availability of information about smaller-sized quotes could mean that more market participants (who currently rely solely on SIP data) would incorporate the information contained in those quotes into their trading decisions. This could have the effect of improving the efficiency with which this information becomes reflected in prices.[919]

The Commission preliminarily believes that the new round lot definition could cause changes to order flow as market participants change their trading strategies to take advantage of newly visible quotes.[920] This could mean that there would be changes to the share of order flow each exchange receives as a result of this rule. The Commission is uncertain about the magnitude and direction of this effect, and invites comments on the issue.

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918 For further discussion of new entrants to the competitive order routing business, see infra Section VI.C.4(b).

919 For additional discussion of the price efficiency point, see infra Section VI.D.1.

920 For example, currently a market participant, relying on SIP data, may submit an order to the exchange with the exclusive SIP NBBO and in the process trade at an inferior price to an odd-lot quote that the market participant was not aware of on another exchange. If the market participant would have preferred to route to the price-improving odd-lot quote, and if that quote would count as a round-lot under the proposal, then under the proposal the market participant would send the order to the exchange with the smaller, price improving quote.

The Commission preliminarily believes that the use of the previous calendar month's average closing price on the primary listing exchange to determine the round lot tier for a given stock balances certain tradeoffs that should be considered when selecting such a benchmark. The Commission is balancing a more up-to-date stock price estimate against the costs imposed on market participants from having to frequently make updates to systems and practices to account for changes to a stock's round lot tier. A more recent average (e.g., the past week's average closing price) may better reflect the stock's current price level, and thereby lead to the stock being placed in the correct tier more frequently. However, such a recent estimate may be more volatile and thus more prone to causing frequent changes to the stock's status, especially if the stock's price level is close to a round lot tier cutoff point, which could then require more frequent adjustments from market participants, including SROs and competing consolidators, to account for what a stock's round-lot tier is and what the NBBO for that stock would be given its tier.

(ii) Effects of Addition of Depth of Book Information

The Commission proposes to add certain depth of book information to the definition of core data, which would result in this information becoming available to anyone who subscribes to this element of core data. The Commission preliminarily believes that this information could be useful in trading, and therefore disseminating this information as an element of core data could have the effect of causing changes to the trading strategies of those market participants who currently rely solely on SIP data. This could potentially lead to these traders being able to reduce their execution costs and facilitate best execution, changes in order flow to different exchanges, improvements in price efficiency of markets, and gains from trade that are not currently being realized.

The Commission preliminarily believes that adding the depth of book information as an element of core data would benefit traders who previously relied exclusively on SIP data and who, as a result of the proposed rule, would receive information they previously did not get. Academic research has found evidence that valuable trading information can be obtained from the full depth of a limit order book.[921] As noted above, market participants also believe that depth of book information is valuable.[922] Currently, only traders who subscribe to exchanges' proprietary data feeds can receive this information. As a result of the proposed amendments, additional depth of book information would become available to anyone who subscribes to these elements of core data. The Commission preliminarily believes that market participants that currently rely solely on SIP data could use the additional depth of book information to improve trading strategies and to lower execution costs. To the extent that the advantage of having this information depends on other traders not having it, this economic effect would represent a transfer from the current users of depth of book information to those market participants who would now get access to, and would be able to utilize, this information. In particular, a more widespread dissemination of depth of book information may cause market prices to adjust to this information more rapidly as more people react to this information. Once market prices settle to a level that reflects this information, the opportunity to profit from having additional depth of book information may be lost.

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921 See Lawrence E. Harris and Venkatesh Panchapagesan, The Information Content of the Limit Order Book: Evidence from NYSE Specialist Trading Decisions, 8 J. FIN. MKTS. 25 (2005); Jonathan Brogaard et al., Price Discovery without Trading: Evidence from Limit Orders, 74 J. FIN. 1621–1658 (2019); Shmuel Baruch, Who Benefits from an Open Limit-Order Book?, 78 J. BUS 1267 (2005), available at https://www.jstor.org/stable/10.1086/430860 (presenting some theoretical results showing that liquidity takers benefit more from an open limit order book).

922 See supra Section III.C.2(c) (describing how market participants have stated that they believe they need depth of book information in order to run their businesses).

The Commission preliminarily believes that market participants who utilize strategies related to order routing, order placement, and order execution, could benefit from the new depth of book information, provided that currently they do not already obtain this information via proprietary data feeds. For instance, traders may seek to get priority in the queue at a particular price level behind the top of book by posting a limit order. Such a strategy could benefit from being able to see the depth at these price levels at multiple exchanges in order to evaluate which exchange's queue would provide the order with the highest execution priority. To the extent this is the case, the Commission believes that the traders who previously did not have access to additional depth of book information would benefit by being able to better run such strategies. This could improve order execution quality for these traders.[923] The Commission preliminarily believes that many of the market participants who utilize such strategies already have access to full depth of book information via subscriptions to proprietary feeds; for these traders the rule would not produce a direct benefit.[924] The Commission is unable to quantify the number of market participants who currently run these types of strategies without using depth of book information because the Commission does not have access to information on specific strategies utilized by individual traders in the market.[925]

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923 For discussion of order execution quality and the provision of execution services by broker-dealers, see supra Section VI.B.3(e).

924 The inclusion of depth of book information may benefit those market participants who already use depth of book information by providing alternatives to proprietary feeds. For discussion of this effect, see infra Section VI.C.1(b)(iv). Also, the Commission preliminarily understands that some market participants who use proprietary feeds as their main source of market data also use the exclusive SIP feeds as a backup. For such market participants, the expansion of DOB information may improve the value of a core data feed as a backup.

925 The Commission preliminarily believes that it is possible that the inclusion of this information in the proposed definition of core data, along with reductions in the latency differential that would result from the decentralized consolidation model, could benefit

Also, the Commission preliminarily believes that there may be market participants that would start running these order routing strategies if the data were available to them at core data prices. These market participants might currently find that the value of attempting such strategies without DOB data is too low to justify them, but that access to additional DOB data through these elements of new core data would enable them to run such strategies effectively. To the extent that such market participants exist, the additional DOB data would be a benefit to them as well.

The revision in trading strategies discussed above could result in changes to the decisions traders make about where to route their orders among the various exchanges. Market participants may find that depth of book information suggests trading opportunities on exchanges to which they would not have otherwise routed their orders. The Commission is uncertain about the magnitude of this effect or which exchanges may gain or lose order flow as a result. The Commission cannot determine how many market participants may choose to change routing strategies as a result of the new depth of book information, nor to what extent the new depth of book information would cause market participants to change where they route their orders. The Commission invites comments on this issue.

Also, the Commission preliminarily believes that the more widespread dissemination of depth of book information could result in more efficient pricing.[926] The Commission preliminarily believes that as more traders take advantage of information contained in the depth of book data, prices would reflect this information more quickly. Therefore, more widespread

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market participants who do not currently run these strategies but who would choose to start running them as a result of the proposed changes. For more discussion on this possibility, see infra Section VI.C.4(b).

[926] For further discussion of this point, see infra Section VI.D.1.

dissemination of depth of book information has the potential to lead to pricing that better reflects available information. If many current users of SIP data are capable of utilizing the information in the new core depth of book data, this effect may be large, but if only a few choose to make use of the new data or are capable of utilizing it, then this effect would be small. The size of this effect depends on the willingness and ability of current market participants who currently rely solely on SIP data to make use of the information in the new depth of book data, which is unobservable.

The Commission preliminarily believes that there may be gains from trade that would be realized as a result of adding this depth of book information as an element of core data. The possibility for this benefit to materialize relies on the extent to which there exist traders who would be willing to send orders that "walk the book"[927] but currently do not do so because they do not see what is beyond the top of the book. This situation represents an economic inefficiency because there are potential gains from trade that are not realized because of a lack of information. This would presumably be a benefit to both the trader walking the book and the traders who posted orders behind the BBO that would be filled as a result of the trade.

Relatively few orders actually execute at prices outside the NBBO,[928] which implies that trading against quotes away from the NBBO on a single exchange, using a single marketable order, does not occur frequently. In addition, an analysis of a sample of trading in ten stocks on the Nasdaq exchange found that an average of 0.65% of market orders walked through the best displayed price level for these ten stocks.[929] Therefore, the Commission preliminarily believes

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927 See supra note 814.

928 See supra note 814.

929 See Nikolaus Hautsch and Ruihong Huang, Limit Order Flow, Market Impact and Optimal Order Sizes: Evidence from NASDAQ TotalView-ITCH Data, at 10, Table 3

that there may be limited benefits from additional DOB information in the particular hypothetical case of traders who currently rely solely on SIP data for market information and who would submit market orders to trade against limit orders beyond the top of the book on a single exchange if the depth of book information were available. However, the size of the benefit depends on the willingness of traders to walk the book after receiving the new DOB information, as well as their trading interest, and this is unobservable in the current market.

(iii) Effects of Addition of Auction Information

The Commission proposes to add "auction information" as an element of core data. This proposal would result in all auction information currently disseminated by exchanges via proprietary data feeds being made available to subscribers of these elements of core data feeds. The Commission preliminarily believes that the addition of auction information as an element of core data would make this information more readily available to anyone who subscribes to these elements of core data and would have effects that include changes to market participants' trading strategies, gains from trade as a result of new participation in auctions, potential improvements to price discovery in auctions, changes to order routing decisions, and a significant reduction in the value of dedicated proprietary auction feeds.

As discussed above, some auction information is currently available to market participants through specialized feeds for a lower price than full DOB feeds,[930] and also a limited set of auction information is available through the current SIP feeds.[931] This enables access to a

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(Aug. 22, 2011), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1914293.

930 See supra Section VI.B.2(a).

931 See supra Section VI.B.2(a).

limited set of auction information for some market participants, at lower prices than full DOB feeds. To the extent that any market participants find these auction feeds sufficient for their trading needs, the Commission preliminarily believes that the addition of all auction information as an element of core data will have a limited effect on these market participants. To the extent that these market participants make up a large share of the market participants who would be interested in using additional auction information, the Commission preliminarily believes that the effect of adding auction information may be limited.[932] The Commission preliminarily believes that the extent of this limitation is reduced by the fact that not all auction information is available to market participants through such feeds. The Commission does not have data on the number of market participants with proprietary feed subscriptions.

The Commission preliminarily believes that auction information contains insights useful to traders in devising and executing trading strategies.[933] Therefore, the Commission preliminarily believes that adding this information as an element of core data would produce a benefit for those traders who currently do not access such information. To the extent that these traders can exploit this auction information, the addition of this information as an element of core data should enable them to produce better trading strategies and lower execution costs, as well as facilitate best execution. To the extent that the advantages of possessing auction information come from exploiting the trading decisions of market participants who lack this information, this effect would represent a transfer from those traders who currently have auction information to

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932 Since the cost to integrate multiple auction feeds into a single feed is a fixed cost in producing a market data feed, the Commission preliminarily believes that there would still be a benefit from the rule in the form of competing consolidator integrated auction feeds, which could be cheaper for market participants than integrating the feeds themselves.

933 See supra notes 344–346.

those traders who would obtain access to it through this rule and are able to exploit it to improve their trading strategies. The Commission preliminarily believes that this auction information could potentially be used across all trading venues, including exchange auctions, continuous exchange trading, and off-exchange venues.

The Commission preliminarily believes that there may be potential gains from trade that would be realized through the addition of auction information as an element of core data. The Commission believes that there may be market participants who would trade in auctions but currently do not trade in auctions because they do not access auction data. To the extent such traders exist, the addition of auction information as an element of core data would give them that data. This trade could benefit both sides of the trade, thus resulting in an economic benefit.

To the extent that market participants who start trading in auctions as a result of gaining access to auction information possess insights beyond what can be inferred from auction information, increasing the number of participants in auctions as described above should improve price discovery in the auction process. The Commission preliminarily believes that those who do not participate in auctions because they do not access auction information are unlikely to possess insights beyond what can be inferred from auction information. This is because any market participant who has such insights would find it worthwhile to purchase auction information and participate in the auction so as to exploit the value of the insights. Therefore, this benefit could be small. The size of this effect depends on the relative number of traders who possess such insights to those who do not who start participating in auctions as a result of this rule and the size of their auction traders in that event, both of which are unobservable in the current market.

The Commission preliminarily believes that the addition of auction information as an element of core data may affect the order routing decisions of market participants who currently do not have access to auction information. For example, some off-exchange trading venues cross market-on-close orders before the closing auction takes place and later settle the trades at the closing auction price. Having access to auction imbalance information may affect market participants' decision to route a closing order to either an off-exchange venue or to the closing auction on the primary listing exchange. For example, a market participant who gets access to auction information through a subscription to these elements of new core data might decide not to route the order to an off-exchange venue so as to be able to participate in the auction using the new information available. This auction information could also affect decisions made during the time when auction information is disseminated about whether to send orders to continuous trading venues instead of auctions or off-exchange venues. However, the Commission preliminarily believes that the overall effect of auction information on order routing decisions is uncertain and likely would vary based on market conditions.

The Commission preliminarily believes that the value of dedicated auction feeds would be substantially reduced as a result of the proposed addition of auction information to core data, and that this would result in a loss of revenue for those exchanges who offer such feeds. Since the full set of all auction information currently available in the market would be included in the definition of core data proposed by this rule, the Commission preliminarily believes that the value of any existing data product that provides only auction data[934] that is not currently in the exclusive SIP feeds would be substantially reduced. The Commission expects that many market participants who are executing a trade, either for themselves or for a client, have, and would

[934] See supra note 335.

continue to have, a subscription to core data. Therefore, when this subscription includes all available auction information, the value of dedicated proprietary auction data feeds could be substantially reduced.

(iv) General Costs to Expanding Consolidated Data

The Commission preliminarily believes that there are three potential costs to adding the new core data elements proposed in this rule, which are common across all these elements. The first potential cost is the cost to the new competing consolidators that would be necessary to implement or upgrade existing infrastructure and software in order to handle the dissemination of the additional core data message traffic. The second cost is the technological investments market participants might have to make in order to receive the new core data message traffic. The third cost is the cost to users of certain kinds of trading strategies that may currently be relying on the fact that this data is not widely distributed today.

The Commission preliminarily believes that the cost for firms that wish to become competing consolidators to implement or upgrade infrastructure to handle the dissemination of new round lot quotes, depth of book information, and auction information would be limited. As discussed in more detail below,[935] the Commission preliminarily believes that the new competing consolidators will likely be firms that already have the technological infrastructure necessary to process full depth of book data and to generate the NBBO using this data. Therefore, for these

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935 See infra Section VI.C.2(a) for a discussion of the technological capabilities of firms the Commission preliminarily believes are most likely to become competing consolidators. It is possible that the addition of this proposed definition of core data would make consolidation more difficult for core data than it is currently, and that this added difficulty would result in additional latency. However, the Commission preliminarily believes that the risk of this is minimal, again because of the technological capabilities of competing consolidators and the market forces that will be in effect in the decentralized consolidation model.

firms, requiring the competing consolidators to be able to process the new message traffic resulting from the additional core data may add only a minimal cost to becoming a competing consolidator. However, for a firm that does not currently subscribe to, or process data from, exchange proprietary feeds, the new core data message volume would increase the cost of becoming a competing consolidator beyond what it would have cost if the rule did not propose to expand core data. In particular, if the existing exclusive SIPs should decide to enter the competing consolidator business, they may incur such costs as they do not currently disseminate full depth of book data.[936]

The Commission preliminarily believes that there would be limited infrastructure investment required on the part of SROs to provide the information necessary to process and disseminate new core data. This is because the SROs currently provide all elements of new core data over their proprietary feed infrastructure.[937] In addition, the Commission preliminarily believes that many competing consolidators would be firms that already subscribe to these feeds,[938] and thus, the SROs would likely not have a large amount of new data connections to service and therefore would not need to invest in infrastructure to handle them. However, exchanges, particularly primary markets, may incur some infrastructure costs related to the dissemination of new regulatory data.[939] Currently, the new regulatory data component to the proposed consolidated market data is distributed through the SIPs. In order for this information to be distributed through the new decentralized consolidation model, the rule requires the

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936 These costs are included in the discussion of costs for current exclusive SIPs to provide competing consolidator services. See infra Section VI.C.2(d).

937 See supra Section VI.B.2(a).

938 See infra Section VI.C.2(a).

939 As discussed above, this new regulatory data would consist of all the same messages as current regulatory data distributed through the exclusive SIPs. See supra Section III.D.

exchanges to provide a feed to competing consolidators and self-aggregators that contains the regulatory data. The Commission preliminarily believes that the infrastructure and operational processes provide such a feed is currently not completely in place and would require investment on the part of exchanges.[940]

The Commission preliminarily believes that the costs for infrastructure investment on the part of market participants[941] that choose to receive the new DOB and auction information components of core data would have only a limited impact.[942] Adding these components to core data could substantially increase the total message traffic in core data,[943] and this increase in message traffic may be accompanied by costs to market participants to set up the infrastructure required to handle this new level of traffic. However, the proposed amendments would not require market participants to receive (or display) the complete set of proposed consolidated market data, and competing consolidators would not be required to deliver all proposed consolidated market data for each data product they offer.[944] Therefore, those market participants who do not want to incur the costs associated with the expanded core data message traffic due to additional depth of book information or auction information would be able to choose not to receive any such additional information. Presumably, a market participant would

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940 The costs to SROs to produce a feed for such regulatory data is included in the numbers for the general costs to SROs for providing the data necessary to generate consolidated market data in Section V.D.6.

941 These market participants would include any entity that subscribes to the new consolidated market data.

942 See also supra Section VI.C.1(b)(i).

943 The Commission preliminarily believes that the addition of DOB information, in particular, may substantially increase message traffic. See supra note 294.

944 A market participant that has obligations under Rule 603(c) would have to receive all data necessary to generate consolidated market data to comply with the rule. The specific cost associated with some of this data is discussed below. See infra Section VI.C.1(c)(i).

therefore only seek to obtain the full set of consolidated market data if it believed that the benefits of receiving the data justified the costs. Thus, the Commission preliminarily believes that no market participant who does not consider this cost of the infrastructure investments necessary to receive the new core data worthwhile would have to incur it. For those market participants who do wish to incur the cost, the Commission is unable to estimate the associated costs because it does not have access to information about the infrastructure expenses a market participant incurs to process market data and because of the likelihood that such costs depend on each market participant's existing infrastructure.

The Commission preliminarily believes that adding the depth of book and auction information to core data could impose a cost on traders who rely on strategies that take advantage of the fact that the information in depth of book and auction data is not widely distributed (i.e., those traders who are beneficiaries of existing informational asymmetries). To the extent that some of the value of depth of book and auction information lies in the fact that they currently are not observed by a number of market participants, the Commission preliminarily believes that the dissemination of this data would adversely impact the profitability of such trading strategies. For traders using trading strategies based on depth of book information, the magnitude of the cost caused by the proposed amendments would depend on the extent to which the five aggregated levels of depth proposed in this rule approximate the information contained in the full depth of book information. To the extent that these strategies exploit the lack of information on the part of exclusive SIP-reliant traders, this cost would represent a partial transfer to traders who currently rely solely on SIP data. The Commission is unable to estimate the size of this effect, since it does not have a method for detecting the use of

such trading strategies from market data or determining what the profit on such strategies would be if they could be detected. The Commission invites comments on the issue.

Regarding the proposed amendment to change the round lot definition, the Commission preliminarily believes that the proposed amendment may negatively affect certain trading strategies, but the associated costs are likely to be small. First, the Commission preliminarily believes that there may be traders who currently attempt not to display their orders to wide public view by posting them in odd-lot sizes, in pursuit of trading strategies that take advantage of a market's limited knowledge of odd-lot size quotes. The Commission understands that certain traders (ones who are the most likely to recognize any advantage being sought in this manner) obtain proprietary feeds and so currently can see these odd-lot quotes. This means that this strategy cannot be used to hide quotes from users of proprietary feeds. To the extent that it is necessary to hide the quotes from such users in order for the strategy to work, the benefits of such a trading strategy are likely to be minimal. If this is the case, then to the extent that the new round lot definition makes this strategy more difficult, the Commission preliminarily believes that the cost to these traders of losing such an opportunity would also be minimal. On the other hand, if there is some benefit to posting quotes in odd-lot sizes to hide them from view (or at least from the view of exclusive SIP users) despite the fact that users of proprietary feeds can still see the quotes, the Commission preliminarily believes that to the extent that the new round lot definition makes this strategy more difficult, there could be a cost to the traders who use such a strategy. The Commission cannot observe whether an odd-lot quote is being used to hide the order or not but invites comments on the issue.

Second, there may be costs to those traders who currently enjoy the position of being among the traders who can see odd-lot quotes via proprietary data feeds. The Commission

preliminarily believes that odd-lot quotes are more easily taken advantage of by those traders who can see the quotes. Currently, this advantage is available only to those traders who purchase proprietary data feeds. The Commission preliminarily believes that this gives these traders an advantage over other traders by improving their order execution costs. Under the proposed changes to core data, this advantage is likely to be reduced. If this were to happen, it would be because other traders would obtain the advantage as well and may take advantage of these quotes before the current direct feed subscribers do. To the extent that this happens, this cost to current direct feed subscribers from losing this advantage represents a transfer to the traders who can see the liquidity currently in odd-lots. The Commission is uncertain about the size of the loss in advantageous trading opportunities to traders who subscribe to the proprietary data. To quantify this requires knowing (among other things) when an odd-lot quote is traded with by a participant who had access to full odd-lot information and when it was traded with by a participant who did not know the quote was there, and this is not observable from available market data. However, the Commission invites comments on the issue.

(v) Request for Comments

The Commission requests comments on its analysis of the economic effects the proposed amendments regarding core data and consolidated market data. In particular, the Commission solicits comment on the following:

188. Do you agree with the Commission's analysis of the economic effects of creating definitions for "consolidated market data," "core data," "administrative data," and "regulatory data"? Why or why not? Please explain in detail.

189. Do you agree with the Commission's analysis of the economic effects of expanding the content of core data? Why or why not? Please explain in detail.

190. To what extent would the expansion of core data reduce the value of current market data products? What would be the economic effect of any reduction? Who would benefit and who would incur costs of any value reduction? Would the reduced value result in a net welfare gain or loss? Please explain in detail and quantify if possible.

191. To what extent would market participants who wish to receive information currently contained in the exclusive SIP feeds that will not be included in the proposed definition of consolidated market data be able to obtain this information from other sources? What would be the likely price of such sources?

192. The Commission requests comments on the potential uses of expanded core data content. How would market participants use the expanded core data? Which market participants would be likely to use the additional depth of book data? To what extent would the users or uses differ from current users and uses? What would be the potential economic effects of the expanded core data? Please be specific.

193. The Commission requests comment on the capacity requirements needed by exchanges, competing consolidators, and users resulting from expanded core data. Would any of these participant types need to upgrade systems to be able to handle the expanded data? If so, what would be the aggregate one-time and ongoing expenses of these upgrades? Would such expenses vary by type of entity or other factors? If so, what factors might affect these expenses and what would a reasonable range of expenses be for exchanges, competing consolidators, and users? Would the expansion of core data increase any data latencies relative to today? If so, what would be the economic effect of the increased latency? Please be specific.

194. The Commission requests that commenters provide any insights they may have as to the effect of the addition of depth of book information, smaller quotes (from the definition of round lot), and the inclusion of auction information on the share of order flow received by various exchanges, ATSs, and other trading systems. If you expect the inclusion of such information to alter order routing decisions, please explain the factors that could determine the winners and losers and whether such changes would result in net welfare gains or losses. Please provide estimates of these potential effects.

195. The Commission requests that commenters provide any insights they may have as to the effect of adding the depth of book, smaller quotes, and auction information to the core data on traders who currently benefit from information asymmetries. Would any losses to these traders be offset by gains to others? If so, would there be net welfare gains or losses? Please explain in detail and also submit any insights you may have as to the size this effect.

196. The Commission requests that commenters provide any insights they may have as to the effect of the proposed round lot definition on the informational advantage currently possessed by those traders who obtain odd-lot quotes via proprietary feeds. Would any transfers between those who currently have access to this data and those who do not result in any welfare gains or losses? What effect would the proposed round lot definition have on trading strategies that exploit the hidden nature of odd-lots? Please explain in detail.

197. Do you agree with the Commission's assessment that the traders currently reliant on SIP data, who will be able to see price-improving odd-lot quotes in certain stocks,

could create additional trades that do not currently take place? Why or why not? Please explain in detail.

198. The Commission requests that commenters provide any insights they may have as to the effect of including depth of book information in core data on trading strategies that exploit the information in current depth of book data products.

199. The Commission requests that commenters provide any insights they may have as to the effect of including depth of book information in core data on the informational advantage currently possessed by those traders who obtain depth of book via proprietary feeds. Would any transfers between those who currently have access to this data and those who do not result in any welfare gains or losses? Please explain in detail.

200. The Commission requests that commenters provide any insights they may have as to the use of depth of book information in running strategies that attempt to establish priority in the queue at a particular price level behind the top of book. Are such strategies ever run without access to depth of book information? How common are such strategies in the market?

201. Would the inclusion of depth of book information in core data strain current throughput, processing, or storage capacities? If so, by how much? How costly would it be and who would incur the costs of upgrading capacity to handle depth of book information in core data?

202. Do you agree that the inclusion of odd-lot or depth of book information in core data would result in more efficient pricing? Why or why not? Please explain in detail.

203. To what extent would any benefits of including depth of book information in core data depend on the degree to which orders "walk the book"? Which benefits, if any, depend on this? Please explain how.

204. To what extent would adding all auction information to core data result in such information being more widely disseminated, and what role do existing dedicated auction feeds play in this? If so, how would market participants use this more widely disseminated data and what would be the economic effect of this usage? Please explain in detail.

205. Would disseminating auction information in core data increase participation in auctions? Why or why not? What would be the economic effect of any change in auction participation? Would this change in auction participation improve price discovery? Please explain.

206. What are the initial and ongoing technology costs that competing consolidators would incur to collect, compile, process, and disseminate the expanded core data? How would these costs vary across potential competing consolidators – current exclusive SIPs, current market data aggregators and self-aggregators, and new entrants? Would these costs constitute a significant barrier to entry to becoming a competing consolidator? Why or why not? Please explain and provide quantified costs.

207. What are the initial and ongoing technology costs that exchanges would incur to disseminate the expanded core data to competing consolidators? Please quantify these costs. Do commenters agree that these costs would be minimal to the extent that exchanges are already disseminating such information in proprietary data feeds? Why or why not? Please explain.

208. What would be the initial and ongoing technology expenses incurred by market participants to receive and process the expanded core data for their intended uses? Please quantify these expenses. Do you agree that such technology expenses would be minimal for those market participants that currently receive and process such information from proprietary data feeds? Why or why not? Do you agree that such technology expenses would be mitigated by the fact that only those market participants that would significantly benefit from receiving and using such data would choose to receive it? Why or why not? Please explain in detail.

209. Do you agree with the Commission's range of the potential increase in message traffic associated with the expansion of market data? Please explain and provide alternate estimates as necessary. How would the costs incurred by exchanges, competing consolidators, and data users depend on the increase in message traffic? Would the relation between message traffic and costs for each of these entities be linear, concave, or something else?

(c) Amendments to the NBBO and Protected Quotes and Other Conforming Changes

The proposal to change the round lot size for stocks with prices greater than $50 would mechanically change NBBO spreads for these stocks, as explained below. Specifically, almost all stocks with prices above $50 would experience narrower NBBO spreads. In addition to the direct effect of narrower quoted spreads, the Commission recognizes that these mechanical changes to the NBBO may affect other Commission or SRO rules and regulations. For some of these rules and regulations, the Commission is proposing conforming changes, which themselves

can have economic effects. For other rules and regulations, the Commission analyzes below the follow-on economic effects of the mechanical changes to the NBBO.

(i) Changes in the National Best Bid and Offer and Protected Quotes

As discussed in detail above,[945] the proposed amendments would reduce the number of shares included in the definition of a round lot for NMS stocks for which the prior calendar month's average closing price on the primary listing exchange was greater than $50.00.[946] Higher priced stocks would be grouped into tiers based on their price and stocks in higher price tiers would have fewer shares in their definition of a round lot. In addition, the proposed amendments would, as part of the proposed definition of core data, require that the best bid and offer and national best bid and offer include odd-lots that, when aggregated, are equal to or greater than a round lot and that such aggregation shall occur across multiple prices and shall be disseminated at the least aggressive price of all such aggregated odd-lots.[947]

The Commission preliminarily believes that these amendments could potentially change the spread between national best bid and offer for these higher priced stocks because the NBBO would now be calculated based off of the smaller round lot size. To the extent that odd-lot shares exist in these stocks at prices that are better than the national best bid and offer (i.e., at prices higher than the national best bid and prices lower than the national best offer), the new national best bid and offer under the proposed amendments may be at a higher/lower price

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945 See supra Section III.C.1(d).

946 The round lot size for the twelve stocks that currently have round lot sizes less than 100 shares could also change as a result of the proposed amendments. For some of these stocks, the round lot size may increase, which could cause the quoted spread derived from the NBBO to widen. See supra Section III.C.1.

947 See supra Section III.C.1. Several exchanges already aggregate odd-lot orders into round lots and report such aggregated odd-lot orders as quotation information to the exclusive SIPs. See supra notes 157–158 and accompanying text.

because fewer odd-lot shares would need to be aggregated together (possibly across multiple price levels) to form a round lot. This could result in a quoted spread that is calculated based off of the NBBO being smaller for these stocks. The Commission preliminarily believes that the reduction in spreads would be greater in higher priced stocks because stocks in higher priced tiers would have fewer shares included in the definition of a round lot.[948]

The proposed amendments would also change the definition of a protected quote from a round lot to 100 shares.[949] This would increase the number of shares required for a quote to be protected for the twelve stocks that currently have round lot sizes of less than 100 shares.[950] Additionally, the proposed amendments would only allow odd-lot orders at a single price point to be aggregated together to form a protected quote.[951] As discussed above, several exchanges already aggregate odd-lot orders across different price levels into round lots and report such aggregated odd-lot orders as protected quotes to the exclusive SIPs.[952] To the extent that a stock currently has odd-lot shares inside the NBBO, the Commission preliminarily believes the proposed amendments could cause the protected quotes to widen because odd-lot shares at multiple price levels could no longer be aggregated together to create a protected quote.[953] Additionally, if stocks have periods of time when they do not have 100 aggregated shares at the same price point, then under the proposed amendments, they could have increased periods of

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948 See supra Section III.C.1. Also, for additional analysis of the narrowing of spreads as a result of the new round lot definition, see supra VI.C.1(b)(i).

949 See supra Section III.C.1(d)(i).

950 See supra notes 141, 251.

951 See supra Section III.C.1.

952 See supra note 85 and accompanying text.

953 Although such a widening of the protected quote could impact execution quality of orders, the Commission preliminarily believes that best execution obligations of broker-dealers may mitigate this result.

time during which they might not have a protected quote. The Commission cannot quantify to what extent protected quotes would widen because the effects would partially depend on how market participants adjust their order submissions based on the new round lot size, which the Commission is unable to predict. However, the Commission preliminarily believes that these effects would vary based on the price of the stock. For stocks with prices in the lowest proposed round lot tier, i.e. stocks with prices of $50.00 or less, the Commission preliminarily believes that the effects would be minimal because the round lot size would not change for these stocks and because there is evidence that these stocks have fewer odd lots inside the current NBBO.[954] The Commission preliminarily believes that the effect on protected quotes would be greater for stocks with higher prices. Since higher priced stocks appear to have more odd lots inside the current NBBO,[955] the Commission preliminarily believes that under the proposed amendments their protected quotes could widen. The Commission preliminarily believes that both the amount by which, and the proportion of time, the protected quote would be wider under the proposed amendments would increase with the price of the stock.[956] The Commission invites comments and analysis in order to estimate to what extent the protected quotes would widen under the proposed amendments.

The Commission preliminarily believes that the change in the round lot and protected quote definition could have an effect on retail order flow internalization businesses. Currently,

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954 See supra Section III.C.1(b) (discussing staff odd-lot analysis).

955 Id.

956 The Commission preliminarily believes that under the proposed amendments some high priced stocks that currently have round lot sizes of less than 100 shares may not have a protected quote in place for much of the trading day because they might have price levels with size greater than or equal to 100 shares.

some wholesalers,[957] by arranging to execute orders on behalf of retail broker-dealers, offer superior prices relative to the existing NBBO (i.e., price improvement) to retail investors. As part of this arrangement, the wholesaler typically agrees that some percentage of the broker-dealer's orders will execute at prices better than the NBBO and/or agrees to certain execution quality metrics. The Commission expects that the new definition of a round lot will, at times, make the NBBO narrower for the affected stocks because the new definition would include orders that are at superior prices to the 100 share NBBO at a size less than 100 shares. As a result, it may become more difficult for the retail execution business of wholesalers to provide price improvement and execution quality metrics at levels similar to those provided under the 100 share round lot definition today.

It is also possible that by the same mechanism retail investors could experience an improvement in execution quality from these wholesalers.[958] Assuming that the NBBO has narrowed, and wholesalers continue to agree to provide a certain level of price improvement off of the narrower spread, this would lead to better execution prices for retail investors. To the extent that retail wholesalers are held to similar execution quality standards by retail broker-dealers in a narrower spread environment, this could have a negative effect on the profitability of the retail execution business for wholesalers, given that there would be less "spread profit" available to the wholesaler in a narrow spread environment. This is, in part, because the wholesaler may often keep a portion of the spread profit that is not given as price improvement to the investor who submitted the order. Therefore, if the NBBO has narrowed and price

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957 See supra note 892 for discussion of wholesalers and retail internalization.

958 This improvement may not be transparent to the retail investor. See infra note 976 for further discussion of this point.

improvement must still be provided, there would be less revenue for the wholesaler.[959] To the extent this happens, it would be a transfer from the wholesaler to retail investors.

To make up for lower revenue per order filled in a narrower spread environment, wholesalers could respond by changing how they conduct their business in a way that could affect retail broker-dealers. There are several possibilities, including but not limited to, reducing per order costs associated with their internalization programs, such as reducing any payments for order flow or reducing the agreed upon metrics for price improvement. In the event that wholesalers reduce payments for order flow, retail broker-dealers could respond by changing certain aspects of their business. The Commission is uncertain as to how wholesalers may respond to this proposal, and, in turn, how retail broker-dealers may respond to those changes, and the Commission is uncertain as to the extent of these effects.

The effect of lost revenue for wholesalers discussed above may be reduced if wholesalers use proprietary feeds to trade, to the extent they already see and respond to odd-lot quotations inside the NBBO and currently provide execution quality to customers based upon the superior odd-lot quotations.

The Commission preliminarily believes that the change in the NBBO and the protected quote caused by this proposal could change the share of order flow captured by each exchange. Currently, Rule 611 requires that the trading center on which the order is executed prevent executions that result in trade-throughs of protected quotes,[960] and exchange rules provide for the

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959 The NBBO based off of the new round-lot definition would be relevant to the spread considered by the wholesalers because, among other things, it would be used for Rule 605 execution statistics. See infra Section VI.C.1(c)(iii) for further discussion of Rule 605 statistics.

960 See supra notes 234–235.

aggregation or "rolling up" of odd-lots of different prices to produce protected quotes.[961] With the NBBO based off of the new round lot definition, the protected quote remaining at 100 share quotes, and a change in the "roll up" practice for odd-lot quotes, the Commission preliminarily believes that there would be changes in how orders are routed to fulfill both best execution requirements and protected quote requirements. These changes might not be uniform across exchanges, and it is possible that some exchanges would see an increase in order flow. This particular effect would represent a transfer of business (and therefore transaction fees) between the exchanges.

Also, the Commission preliminarily believes that changes in the NBBO caused by the new round lot and protected quote definitions could also affect other trading venues, including exchanges and ATSs.[962] Exchanges and ATSs have a number of order types that are based off of the national best bid and offer.[963] Changes in the NBBO could affect how these order types perform and could also affect other orders they interact with. Some ATS matching engines also derive their execution prices based off of price improvement measured against the NBBO. Changes in the definition of the NBBO could affect execution prices on these platforms. Overall, the Commission preliminarily believes that these interactions could affect order execution quality on different trading platforms, but it is uncertain of the direction or magnitude of these effects.

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961 See supra note 157.

962 See supra Section VI.C.1(c)(iii) for additional discussion of effects on exchange rules.

963 For example, the apparent price improvement over the NBBO calculated off of core data that is offered by a midpoint crossing network would be reduced as a result of these changes to the NBBO.

Changes in execution quality could in turn affect competition for order flow between different trading venues, with trading venues that experience an improvement/decline in execution quality attracting/losing order flow. However, the Commission is uncertain of the direction or magnitude of these effects.

The Commission preliminarily believes that market participants who currently rely solely on core data to obtain NBBO feeds would incur some infrastructure investment costs as a result of the proposed amendment to change the definition of a round lot. This is based on the Commission's belief that the proposed amendment would lead to more frequent updates to the NBBO and that this would result in an increase in message traffic for NBBO feeds.[964] The Commission acknowledges that having an NBBO feed is an essential component of the broker-dealer business. The Commission is unable to estimate the associated costs because it does not have access to information about the infrastructure expenses a broker-dealer incurs to process market data and because of the likelihood that such costs vary substantially according to the existing infrastructure of broker-dealers, but the Commission invites comments on the issue.

For certain core data use cases, the costs described in the preceding paragraph are likely to be minimal. Many broker-dealers, when accessing data for the purposes of visual display, currently obtain NBBO quotes from the exclusive SIPs with a "per query" use case. This use case is set up so that a quote is only sent when it is asked for. The Commission preliminarily believes that this setup has very little technological cost associated with it and that furthermore whatever cost there is to receiving such a feed would not be impacted by increasing the number of times the NBBO is updated over a given time period. Thus, the Commission believes that for

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964 As discussed previously, this will happen more in high-priced stocks where the new round lot definition will have more of an effect. See supra Section III.C.1(d)(i).

those broker-dealers who rely on per query use cases for their quotes, the upgrade costs resulting from changing the round lot definition would be minimal.[965]

Trading venues and broker-dealers could also experience implementation costs from having to modify and reprogram their systems, including matching engines and SORs, to account for the changes in the NBBO and protected quotes caused by the proposed amendments. For costs to trading venues as a result of changes to the protected quotations, NBBO, and the new restriction on roll up quotes, the Commission does not have detailed information on the operation of exchange matching engines. However, the Tick Size Pilot required re-programming of exchange matching engines as well. For that pilot, CHX estimated that total costs for implementing the pilot were $140,000 per SRO and market center.[966] The Commission preliminarily believes that this number may provide some sense of the level of cost associated with the changes SROs, ATSs, and other off-exchange trading venues would have to make in order to comply with the new rules regarding protected quotes. In addition, there could be variation in this cost between different market centers or categories of market centers depending on the existing state of their infrastructure. The Commission invites comments on the reasonableness of this number as an approximation for the cost to update matching engines.

Broker-dealers may also incur implementation costs. For example, a broker-dealer who runs an SOR off of core data alone would now have to adapt this system to keep track of the NBBO separately from the protected quote. This is particularly relevant for the submission of Intermarket Sweep Orders ("ISOs"), where the broker-dealer assumes responsibility for

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965 This conclusion is contingent on the assumption that competing consolidators would choose to offer a per query service to market participants so that this arrangement could continue after the rule takes effect.

966 See Letter to Brent J. Fields, Secretary, Commission, from James G. Ongena, General Counsel, Chicago Stock Exchange, Inc. (Dec. 22, 2014).

preventing trade-throughs. For ISOs, the broker-dealer's SOR would now have to simultaneously target liquidity available at the NBBO while keeping track of protected quotes to prevent trade-throughs. The Transaction Fee Pilot required re-programming of SORs as well, and forms a basis for an estimate of these costs. For that pilot, the Commission estimated that the costs of a one-time adjustment to the order routing systems of a broker-dealer would $9,000 per broker-dealer.[967] The Commission preliminarily believes that this number may provide some sense of the level of cost associated with changes that broker-dealers, as well as other entities making real-time order routing decisions based off of SIP data, would have to make as a result of the proposed changes to the NBBO and protected quote and other implementation costs discussed below.[968] Such costs are likely to vary substantially across broker-dealers according to the state of their existing infrastructure. The Commission invites comment on the reasonableness of this number as an approximation for the costs to update trading systems to deal with this implementation cost and the implementation costs discussed below.

The Commission is also deleting the reference to "The Nasdaq Stock Market, Inc." from the definition of protected bid or offer and believes that this changes would have no economic effects. As explained above in Section III.C.1(d)(ii), Nasdaq is now a national securities exchange and is thus otherwise bound by the definition.

(ii) Amendments to Locked/Crossed Markets

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967 See Securities Exchange Act Release No. 84875 (Dec. 19, 2018), 84 FR 5202 (Feb. 20, 2019) (Transaction Fee Pilot for NMS Stocks).

968 The Commission preliminarily believes that this $9,000 estimate would cover the changes that would have to be made as a result of the proposed distinction between the NBBO and the protected quote as well as changes that would result from the effect of the proposal on locked or crossed markets. These costs are discussed below, see infra Section VI.C.1(c)(ii).

The Commission preliminarily believes that the proposed amendments could cause an increase in the frequency of locked and crossed NBBOs in certain stocks.[969] This is expected to occur due to the fact that the existing locked and crossed markets prohibition, as affected by the proposed amendments, would only apply to protected quotations (or the PBBO) and not to the new round lot sizes, which may often constitute the NBBO. As described above in Section III.C.1(d)(ii), Rule 610(d), which requires trading centers to establish procedures to prevent orders being entered that would lock or cross markets, is based solely on protected quotations, which, as proposed to be defined, may not be the NBBO. If a locked and crossed NBBO is not prohibited by rule, it is more likely to occur.

The Commission preliminarily believes that this increase is unlikely to have much economic effect. The new round lot definition may cause the NBBO to narrow. The Commission preliminarily understands that it can sometimes happen that a market becomes locked or crossed in odd-lot orders. To the extent that these odd-lots are included in the new definition of a round lot, the NBBO will appear locked or crossed on occasion. The Commission preliminarily anticipates that the fact that they will now be classified as a locked or crossed NBBO will not make much difference, because these locked or crossed conditions already occur in odd-lots. Furthermore, the effect of having these locked or crossed quotes visible to market participants who rely solely on core data is unlikely to be different from the general effects discussed for the added information as a result of the change in the round lot definition. In

969 Locked and crossed markets already occur with respect to odd-lot quotes and are observable to market participants who subscribe to proprietary feeds. See supra note 256 and accompanying text. Even if there is no increase in the frequency of locked and crossed markets, their occurrence may still be observed by a higher number of market participants under the proposed amendments because of the change in the round lot definition.

particular, to the extent that these crosses and locks in odd-lot sizes represent a profitable trading opportunity to those market participants who rely solely on exclusive SIPs, being able to observe the occurrence of these events as a result of the proposed change to the round-lot definition would be a benefit to these market participants.[970] Also, to the extent that market participants who currently subscribe to proprietary feeds are able to profit from being the only market participants to observe crossed or locked odd-lots, the proposed change will represent a cost to them.[971] To the extent that the ability to profit from observing crossed or locked odd-lot quotes comes from exploiting those market participants who cannot see the crosses or locks, this change will represent a transfer from those who currently trade on this information to those who acquire the information through new core data and are able to use it effectively.[972] It is also possible that traders avoid sending orders because of the risk of being exploited if they cross or lock the market. To the extent that this happens, and to the extent that the proposed expansion of core data addresses this concern, the increase in trading that would result would represent a benefit to both sides of the trade.[973]

The Commission preliminarily believes that some crossed or locked quotes represent traders who are not aware at the time they post their quote that the quote could be filled by a marketable order elsewhere. To the extent this happens it represents a cost to this trader since

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970 See supra Section VI.C.1(b)(i) for further discussion of such benefits resulting from the new round-lot definition.

971 See supra Section VI.C.1(b)(iv) for further discussion of such costs resulting from the new round-lot definition.

972 See supra Sections VI.C.1(b)(i) and VI.C.1(b)(iv) for further discussion of transfers resulting from the changes to the round-lot definition.

973 See supra Section VI.C.1(b)(i) for further discussion of such benefits resulting from the new round-lot definition.

the posted order is exposed to the risk that it will be executed with a marketable order at a price inferior to what is available on the market to the trader who posted the order.

Market participants would also experience implementation costs in order to modify their systems to account for locked and crossed NBBOs. The Commission preliminarily believes that to the extent that market participants currently rely on the exclusive SIPs to keep track of whether trading restrictions imposed by Rule 610(d) would apply, their systems would have to be updated to take into account the fact that the NBBO is no longer the price point at which such restrictions are triggered. Instead, they would have to keep track of both the NBBO for trading purposes, and the new protected bid and offer in order to monitor whether a 610(d) restriction would apply. The costs to make such changes are covered by the estimate provided above for costs to implement changes that would result from changes to the NBBO and protected quote, since that estimate is related to trading system adjustments.[974] Such costs are likely to vary substantially across market participants depending on their existing infrastructure.

An increase in the frequency of locked and crossed markets could also have additional economic effects. As discussed above, it could cause a change in order routing behavior and order flow between trading venues. Furthermore, as discussed below, it could also affect the calculation of Rule 605 execution statistics.

(iii) Other Rules and Regulations

The changes to core data, particularly the changes to the definition of "national best bid and national best offer" affect how other rules and regulations operate. In particular, this change affects which orders determine the reference price for numerous rules, including rules under the Exchange Act, SRO rules, and NMS plans. The Commission discussed many of these above in

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974 See supra note 968 and accompanying text.

Section III.C.1(d)(i). Specifically, the Commission preliminarily believes that the changes to the NBBO may present changes to the benchmark prices used in Regulation SHO, LULD, retail liquidity programs, market maker obligations, and certain exchange order types and recognizes that the change in the benchmark price could result in economic effects. Further, changing the NBBO would alter the estimation mechanics for Rule 605 metrics, resulting in implementation costs. In addition, the proposed round lot definition would result in economic effects through its impact on the Rule 606 compliance. Finally, the Commission preliminarily believes that the proposed rules, though appearing to change the requirements of several other rules and regulations, would not necessarily have an economic impact through these other rules and regulations.

For Rule 201 of Regulation SHO, the reference bid for the execution of a short sale transaction could be higher under that proposal than it is currently, potentially slightly increasing the burdens on short selling. Currently, after the Short Sale Circuit Breaker triggers, short sales can only execute at prices greater than the NBB. While short sales are currently permitted to execute against any odd-lot quotations that exist above the NBB, the proposed round lot definition would reduce the instances of such odd-lot quotations. Therefore, the proposal could result in a higher NBB and thus result in a slightly higher benchmark price for short sale executions in stocks priced more than $50, reducing the fill rate of short sales or increasing the time to fill for short sales.

In addition, a potentially higher NBB price or potentially lower protected best bid could marginally affect the trigger of the Short Sale Circuit Breaker. In particular, the proposal could result in slight delays in or a reduction in the number of Short Sale Circuit Breaker triggers, or it could have the opposite effect. In particular, an NBB that includes smaller round lots could

result in a higher-priced execution relative to an NBB that does not include smaller round lots. This higher-priced execution could be above the price that would trigger the Short Sale Circuit Breaker whereas an execution on a 100-share quote would have triggered the circuit breaker. This could delay the trigger if the price continues downward, such that the circuit breaker still triggers, or the circuit breaker may not trigger at all if the price rebounds after such an execution. On the other hand, if the proposal results in a lower protected bid, it could have the opposite effect on circuit breaker triggers: triggering sooner and more often.

The Commission preliminarily believes that the economic effects of the potential impact on the Short Sale Circuit Breaker are unlikely to be significant. These effects should not create implementation costs, and the Short Sale Circuit Breaker should continue to function consistent with its stated purpose. Notably, if the proposal would result in not triggering as many Short Sale Circuit Breakers, it could reduce ongoing compliance costs in situations in which the price rebounds despite the lack of a price test on short sales.

Similarly, a potentially higher bid price or lower offer price could affect the trigger of a Limit State under the LULD Plan. A lower-priced NBO or a high-priced NBB could result in that quote being more likely to touch a price band, thus triggering a Limit State, when it otherwise would not have. Depending on whether the quote would have otherwise rebounded, this could increase the number of Limit States and/or Trading Pauses or could merely trigger such Limit States or Trading pauses sooner. As in the case of the Short Sale Circuit Breaker, the effects should not create implementation costs, and LULD should continue to function consistent with its stated purposes. In addition, the economic effects of this potential marginal change depends largely on how often odd-lot quotations lead price declines or lead price increases.

As discussed above,[975] a number of Rule 605 execution quality statistics are benchmarked to the NBBO. Under the proposed amendments, the NBBO would be based on the proposed tiered, price-based round lot sizes, which means any Rule 605 execution quality statistics that rely on the NBBO as a benchmark would reflect the modified definition of the NBBO. This could cause certain execution quality statistics to change in higher priced stocks. As discussed above, the Commission preliminarily believes that the NBBO would become narrower for some stocks in higher price tiers. This could cause execution quality statistics that are measured against the NBBO to change because they would be measured against the new, narrower NBBO. For example, execution quality statistics on price improvement for higher priced stocks may show a reduction in the number of shares of marketable orders that received price improvement because price improvement would be measured against a narrower NBBO. However, the Commission preliminarily believes that some of these changes may cause some Rule 605 statistics to more accurately reflect actual execution quality because the NBBO based on the new definition for round lots may now take into account more liquidity that the current NBBO ignores.[976] The Commission preliminarily believes that these effects would be larger for stocks in higher price tiers because their new round lot definition would include fewer shares.

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975 See supra Section III.C.1(d)(i).

976 In the hypothetical case of a stock in which there are often valuable odd-lot quotes, broker-dealers trading in this stock can currently use these odd-lot quotes to improve on the NBBO, and this improvement might be reflected in Rule 605 statistics. Under the proposed change, if this stock is priced over $50 per share, then some of these odd-lot quotes could end up being defined as round lots under the new definition and thereby end up the basis for the NBBO. With these quotes as the NBBO, the broker-dealer would no longer appear to be improving over the NBBO in its execution, and Rule 605 statistics may appear to indicate a decrease in execution quality. However, they would, in fact, merely be reflecting a more accurate picture of the market circumstances at the time of execution.

In addition, the NBBO midpoint in stocks priced higher than $50 could be different under the proposal than it otherwise would be, resulting in changes in the estimates for Rule 605 statistics calculated using NBBO midpoint, such as effective spreads. In particular, at times when bid odd-lot quotations exist within the current NBBO but no odd-lot offer quotations exist (and vice versa), the midpoint of the proposed NBBO would be higher than the current NBBO midpoint. For example, if the NBB is $60 and the NBO is $60.10, the NBBO midpoint is $60.05. Under the proposal a 50 share buy quotation at $60.02 would increase the NBBO midpoint to $60.06. Using this proposed midpoint, effective spread calculations for buy orders would be lower but would be higher for sell orders. More broadly, the proposal would have these effects whenever the new round lot bids do not exactly balance the new round lot offers. However the Commission does not know to what extent or direction that odd-lot imbalances in higher priced stocks currently exist, so it is uncertain of the extent or direction of the change.

Additionally, a change in the rate of locked and crossed markets could also affect how Rule 605 execution quality statistics are calculated. The Commission preliminarily believes that orders received when the NBBO is crossed for more than 30 seconds are generally not included in Rule 605 execution statistics. To the extent the changes in the definitions of round lots and protected quotes cause an increase in the frequency or length of crossed markets, more orders could end up being excluded from Rule 605 execution statistics, which could cause some Rule 605 execution statistics to less accurately reflect actual execution quality.

Finally, the Commission recognizes that such changes could force market centers (or their third-party service providers) to revise their processes for estimating the Rule 605 execution statistics. Such changes would result in implementation costs.

The Commission recognizes that the NBBO serves as a benchmark in SRO rules in addition to Exchange Act rules and NMS plans. For example, the NBBO acts as a benchmark for various retail liquidity programs on exchanges, for exchange market maker obligations, for some order types, and for potentially many other purposes.[977] As such, including smaller quotes in the NBBO would change how these rules operate and these changes could have economic effects. For example, having to post more aggressive limit orders into retail liquidity programs could reduce the already low volume by reducing the liquidity available but could result in better prices for those retail investors able to execute against that liquidity. In addition, a narrower NBBO could effectively increase some market maker obligations, which could improve execution quality for investors and/or provide a disincentive to being a market maker on the margin. Alternatively, the exchanges with such retail liquidity programs, order types, or market maker obligations could elect to propose rule changes to maintain the current operation of these rules. Such proposals could mitigate any follow-on economic effects (both benefits and costs) but would require exchanges to incur the expenses associated with proposing amendments to their rules. The Commission understands that the proposed changes to the NBBO could affect numerous other SRO rules and requests comment on any significant follow-on economic effects.

As discussed above,[978] the proposed definition of round lot could result in an increase in the number of indications of interest in higher priced stocks that would be required to be included in 606(b)(3) reports. Depending on the number of potential indications of interest included as a result of the proposed rule, the Commission preliminarily believes that these

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977 For a discussion of the effect of changes to the NBBO on order types and to exchange odd-lot "roll-up" practices for protected quotes, see supra Section VI.C.1(c)(i). For discussion related to changes to round lot size for stocks with round lots of less than 100 shares, see supra note 946.

978 See supra Section III.C1 (discussion of how the definition impacts Rule 606).

changes could increase the benefits of Rule 606(b)(3) with little to no effect on costs.[979] In particular, the inclusion could result in clients receiving information on order routing for more of their orders, with the resulting benefits. Further, because the incremental cost of adding orders to the reports is low, the Commission does not expect that adding additional indications of interest to the reports would significantly increase costs.

In addition, the Commission preliminarily believes that the proposal may result in some rules appearing to change but such changes might not result in economic effects. For example, the proposed amendments may impact the compliance with Rules 602(a), 602(b), 604(a)(1), 604(a)(2), and Rule 610(c). It is unclear whether these impacts would have economic effects. For example, exchanges may already have procedures to collect and make available their best bids and offers to vendors, regardless of the size of those best bids and offers. Further, broker-dealers may already treat all bids and offers as firm quotes regardless of size and may already display all customer limit orders regardless of size. Finally, exchanges may already pay the same rebates or charge the same access fees regardless of order size. To the extent that these practices are in place, there would be no economic effect from these changes. To the extent that these practices are not in place, the proposal may result in some additional compliance costs. The Commission invites comments on the impact of the proposal with compliance cost for Rules 602(a), 602(b), 604(a)(1), 604(a)(2), and Rule 610(c).

(iv) Request for Comments

The Commission requests comments on its analysis of the economic effects of the proposed amendments to the NBBO, protected quotes, and other conforming changes. In particular, the Commission solicits comment on the following:

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979 See 606 Adopting Release, supra note 227, for a discussion of the benefits of 606(b)(3).

210. Effectively, the proposed round lot definition reduces the minimum quotation size for the NBBO, depending on the price of the security. The Commission requests that commenters provide any insights they may have as to the economic effects of price-improving odd-lot quotes being reported as the NBBO in the new core data.

211. Do you agree with the Commission's data analysis of the potential frequency of improvements to the NBBO and the magnitude of improvements to the NBBO spread? Why or why not? Please provide additional data analysis as needed to support your answer.

212. What would be the economic effects of the proposed changes to the PBBO? For the twelve stocks that currently have a round lot defined as one share, how often would such securities not have a protected best bid ("PBB") or protected best offer ("PBO")? What would be the economic effects of not having a PBB or PBO in these stocks? For stocks that tend to have a significant number of odd-lots that are rolled-up into the current PBBO, the proposed changes to the PBBO could widen the PBBO spread. What would the magnitude of this increased spread be and how often would the PBBO be wider? Would a wider PBBO necessarily result in higher transaction costs for investors? If so, by how much would transaction costs increase? Please explain and provide any data analysis needed to support your answer.

213. How do exchanges currently calculate their protected quotes? If the proposal were to allow odd-lots to be rolled up across prices to create a protected quote, how would the PBBO be different than the proposed PBBO? Would the economic effects of such a change be different than the economic effects of the proposed protected quotes? Please explain.

214. How would the changes to the NBBO and protected quotes affect off-exchange executions? What benchmark price would ATSs, internalizers, and other off-exchange venues use to price transactions? Would this differ from current practice? Please explain. What would be the effect of this on transaction costs of off-exchange executions? How large would any change in transaction costs be?

215. How would the proposed changes to the NBBO and protected quotes affect transaction costs incurred by various investor types – e.g., active institutional investors, passive institutional investors, and retail investors? Please explain. How large would any change in transaction costs be for each investor type? Please provide any data analysis needed to support your answer.

216. How would the proposed changes to the NBBO and PBBO affect order routing decisions and the share of order flow captured by each exchange and off-exchange venue? Would some exchanges or other venues gain order flow while others lose order flow? What are the factors that could determine a gain or loss in order flow? Can you quantify this change in order flow? What would be the economic effects of any changes in order flow? Would such changes result in net welfare gains or losses? Please explain in detail.

217. Under the proposed NBBO, what would ATSs and other off-exchange venues use as a benchmark to price executions on their system? How would this affect execution quality for investors? How would the proposed NBBO affect the operation of certain orders types on ATSs? Please explain.

218. To what extent would the proposed NBBO result in additional message traffic for those market participants who currently rely on SIP data and, under the proposal, would

receive and use NBBO but not depth of book information? Would these market participants incur significant initial costs to prepare to receive and use such additional message traffic? Would these market participants incur significant ongoing costs in receiving and using such additional message traffic? Do you agree that most such broker-dealers currently pay for SIP NBBO data on a "per query" basis and, therefore, would not incur significant initial or ongoing costs as a consequence of any increase in message traffic? Please explain.

219. To what extent would the proposal result in exchanges and other trading venues incurring costs to reprogram their matching engines to account for changes in the NBBO and protected quotes?

220. Do you agree with the Commission's assessment about the implementation costs for implementing a definition of the protected quote that differs from the NBBO? Why or why not? Please also submit any insights you may have as to the size and scope of the effect of this change.

221. Would the change to the NBBO result in an increase in the proportion of time in which the market is locked or crossed? Why or why not? If so, what would be the economic effects of this increase? Would this effect vary across securities? Please explain in detail.

222. How often do locks or crosses occur between odd lot orders today? Please provide any data analysis needed to support your answer.

223. Would an increase in locked or crossed markets result in market participants incurring additional implementation costs to account for this increase? If so, what would

be the magnitude of the additional implementation costs? Please quantify. Do you agree with the Commission's assessment of the relevant costs?

224. Do you agree that the proposed definition of the NBBO could change the benchmark price for short sale executions following a trigger of Rule 201 of Regulation SHO? What would be the economic effects of the changes in the benchmark? Would the proposal significantly increase the burdens on short selling following a trigger? Please explain.

225. Do you agree that the proposed definition of the NBBO could reduce the frequency of triggers of Rule 201 of Regulation SHO? Would such a reduction have significant economic effects? Why or why not? Please explain.

226. How would the proposal alter the operation of Rule 605? If so, would such changes have any economic effects? Would execution quality appear better or worse for all market participants or would it affect the relative appearance of execution quality? Would the changes result in actual changes to execution quality or just apparent changes in execution quality? Would the changes result in fewer orders being included in the Rule 605 statistics? Please explain.

227. The proposed changes to the NBBO and Protected Quotes likely affect the operation of numerous SRO rules. Please provide information on the number and type of SRO rules that rely on the NBBO or protected quotes. Assuming the SROs do not propose amendments to these rules, what would be the effect of the proposed changes to the NBBO and protected quotes on the operation of these SRO rules and the likely resulting economic effects? How much would SROs expend in proposing to amend their

rules, assuming the SROs choose to amend their rules? Please provide estimates of such costs.

2. Decentralized Consolidation Model

This section focuses on the economic effects pertaining to the proposed decentralized consolidation model. The section first discusses relevant broad economic considerations and economic benefits and costs of the proposed model with regards to competing consolidators, then addresses economic benefits and costs for self-aggregators, and concludes with the discussion of conforming changes.

(a) Broad Economic Considerations about the Decentralized Consolidation Model

The economic analysis of the effects of the decentralized consolidation model assumes that upon the introduction of the model, a sufficient number of competing consolidators would enter the market so that competitive market forces would have a significant effect on their behavior. Several factors affect the reasonableness of this assumption: competing consolidators' ability to offer differentiated products, barriers to entry into the competing consolidator space, the fees for data content and consolidation and dissemination services, and the uncertainty regarding connectivity charges for proposed consolidated market data. While the Commission recognizes uncertainty in these factors and that certain economic impacts depend on this assumption, the Commission believes that the risk of few or zero competing consolidators is low. Further, the Commission notes that it would consider the state of the market and the general readiness of the competing consolidator infrastructure in determining whether to approve an NMS plan amendment that would effectuate a cessation of the operation of the existing exclusive SIPs.

(i) Factors

This section discusses the factors affecting the reasonableness of the assumption that a sufficient number of competing consolidators would enter the market.

a. Competing Consolidators' Ability to Offer Differentiated Products

The first factor that may affect the number of firms willing to register as competing consolidators is firms' ability to offer differentiated products. Market participants' demand for proposed consolidated market data is likely to be heterogeneous because there are many different investor types (e.g., retail investors, small banks, market participants focused on value investment) that have differing investment strategies. The ability of competing consolidators to attract different investor types would depend on fees set by the national market system plan(s) and competing consolidators' ability to differentiate among themselves.[980]

Competing consolidators' ability to differentiate may be necessary to ensure multiple competing consolidators are serving the market for the following reasons. As discussed above, the production of consolidated data involves relatively higher fixed costs and lower variable costs.[981] In such markets, the firms have additional incentives to increase the number of their customers in order to spread the fixed cost across a larger base of consumers. Therefore, due to the fixed-cost nature of the market and resulting economies of scale, without differentiation, the competing consolidator market could consist of only one competing consolidator because the largest competing consolidator would be able to offer the most competitive price.

However, the Commission preliminarily believes that the competing consolidators would be able to differentiate among themselves by product customization; by focusing on different segments of demand; and/or by offering varying levels of other services such as customer

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980 See infra Section VI.C.2(a)(iii) for a discussion of the influence of fees on the ability to differentiate.

981 See supra Section VI.B.3(a).

service, ease of user interface, analytics, data reformatting and normalization services, and latency rates. Competing consolidators could offer different consolidated data products that range from full consolidated market data to subsets of consolidated market data such as top of book products. In addition, because exchanges offer different connectivity options, some competing consolidators could differentiate themselves by specializing in lower latency data. Other competing consolidators could target data users who might prefer not to have the lowest latency product if the higher latency products came with a lower price or additional analytics. Competing consolidators could offer a range of user interfaces and analytics (e.g., various ways to display consolidated data, or provide forecasting services) that appeal to different data users or could even offer an analytical environment to customize analytics (e.g., offer software tools allowing market participants to analyze and summarize consolidate data). Differentiation along these dimensions would allow competing consolidators to offer different services at potentially different prices to different types of end users. Therefore, the market would be able to sustain multiple competing consolidator businesses, and this would encourage further entry into the market.

b. Barriers to Entry

The second factor that would affect the number of competing consolidators is the barriers to entry into the competing consolidator space. Potential entrants into the competing consolidator business could incur two types of barriers to entry: business implementation costs that emerge from the technical necessities of becoming a competing consolidator and regulatory compliance costs. The business implementation costs would include creation or modification of technical systems to receive, consolidate, and disseminate the proposed consolidated market data. Competing consolidators would need to have systems and connections in place to receive

data content from all SROs and then to disseminate the proposed consolidated market data to a variety of market participants who would purchase their products. Further, based on the proposed rule, potential entrants would need to satisfy two compliance requirements to become competing consolidators. The first is the Regulation SCI requirements[982] that would be applicable to competing consolidators because the proposed rule amends Rule 1000 of Regulation SCI to expand the definition of "SCI entity" and include competing consolidators. The second is the proposed Rule 614 requirements, including the Form CC requirements.[983] There would be both initial implementation and ongoing costs to comply with these two regulatory requirements. Both the business implementation and regulatory compliance costs would differ based on the entrant type. As discussed above,[984] the Commission preliminarily believes that five types of entities may register to become competing consolidators: (1) market data aggregation firms, (2) broker-dealers that currently aggregate market data for internal uses, (3) the existing exclusive SIPs, (4) new non-SRO entrants, and (5) SROs. The barriers to entry would differ across these five types of entities.

The Commission preliminarily believes that the existing market data aggregation firms and some broker-dealers that currently aggregate market data for internal uses could face large barriers to entry to become competing consolidators. Because they currently collect, consolidate, and, in some cases, disseminate market data to their customers, much like competing consolidators would, the Commission preliminarily believes that firms and broker-dealers that currently aggregate proprietary market data would not have to extensively modify their systems.

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982 See supra Section IV.B.2(e)(ii).

983 See supra Section IV.B.2(e).

984 See supra Section V.D.2.

However, the Commission preliminarily believes that each of these firms and broker-dealers would incur costs to expand their bandwidth and purchase hardware to receive information that is not currently disseminated in the exchange proprietary market data feeds, such as the proposed regulatory data and administrative data. Further, based on the proposed rule, current market data aggregators and broker-dealers that currently aggregate market data for internal uses would incur new compliance costs to satisfy the two regulatory compliance requirements to become competing consolidators. As discussed below,[985] these costs could be large and therefore may affect entry and the benefits of the decentralized consolidation model.

The Commission preliminarily believes that barriers to entry for exclusive SIPs to become competing consolidators are low and are likely lower than the barriers to entry of the existing market data aggregation firms and some broker-dealers that currently aggregate market data for internal uses. The Commission preliminarily believes that the existing exclusive SIPs may choose to become competing consolidators due to their years of experience in collecting, consolidating, and disseminating market data. Because the systems used by the exclusive SIPs already collect information in quotations and transactions from the SROs, aggregate it, and disseminate it, the Commission preliminarily believes that the exclusive SIPs would not have to extensively modify their systems.[986] The Commission preliminarily believes that each exclusive SIP would incur costs to expand their bandwidth and connections to consume and disseminate the expanded consolidated data as well as to transmit it with lower latency, and to program feed

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985 See infra Section VI.C.2(e)(ii).

986 Based on Commission staff expertise, the Commission understands that existing exclusive SIPs' protocols for receiving direct data from exchanges are not standardized and introduce additional operational complexities. However, the operators of exclusive SIPs, the exchanges, have figured out how to aggregate direct feeds for the purposes of their exchange matching engines, so they have the technology that would be deployable in the new decentralized consolidation model.

handlers to receive and normalize the different formats of the data feeds developed by the exchanges. Additionally, the exclusive SIPs would have some compliance costs. The exclusive SIPs already are required to satisfy Regulation SCI requirements since they are currently SCI entities. And they also have experience with the consolidated market data business. Thus, any exclusive SIP entering the competing consolidator business would only have ongoing Regulation SCI and initial and ongoing compliance costs. The Commission preliminarily believes that the difference between compliance costs to satisfy these requirements and current exclusive SIP compliance costs are small.[987]

The Commission anticipates that firms without prior experience in the market data aggregation business may become competing consolidators but that they would have the highest barriers to entry because they would have to build new systems to comply with the proposed rules. The new entrants would incur costs to program feed handlers to be able to receive and normalize exchange data in different formats, and purchase bandwidth and connections to exchanges and colocation. These costs increase the fixed costs of participating as a competing consolidator in the market, further contributing to the barriers to entry. New entrants would also have the highest compliance costs among all potential entrants, since they would have to build compliance systems from scratch to satisfy both Regulation SCI and proposed Rule 614, including Form CC, requirements. Therefore, the Commission preliminarily believes that there may be a limited number of firms that could enter the market data aggregation business for the first time.

The Commission anticipates that SROs may choose to become competing consolidators. Although SROs may be able to leverage existing systems in developing a system compliant with

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987 See infra Sections VI.C.2(d) and VI.C.2(e)(ii).

the proposed rules, the Commission preliminarily believes that SROs would likely have to build at least some new systems and thus may incur initial costs.[988] At the same time, despite higher initial costs, the Commission preliminarily believes that the barriers to entry for SROs are relatively low due to their current unique position in the industry and their particular infrastructure and expertise. Similar to the existing exclusive SIPs, SROs already are required to comply with Regulation SCI. SROs that have experience in the consolidated market data business (e.g., exchanges that currently operate an exclusive SIP) would only incur ongoing Regulation SCI and initial and ongoing Form CC compliance costs. SROs that do not have experience in consolidated market data business would incur some initial Regulation SCI costs in addition to the ongoing Regulation SCI costs. These SROs would also incur initial and ongoing proposed Rule 614, including Form CC, compliance costs. The Commission preliminarily believes that SROs that wish to become competing consolidators could find it convenient to arrange an affiliate to do this work so as to avoid having their competing consolidator business subject to the same regulatory regime as an SRO.[989]

c. Fees for Consolidated Market Data

Another factor that would affect the number of competing consolidators relates to the fees that the effective national market system plan(s) would set for the proposed consolidated market data content and the price competing consolidators would charge market participants for consolidation and dissemination services.[990] If these fees are set too high or have the effect of

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988 See supra Section V.D.2(e).

989 As explained above, SROs that wish to act as competing consolidators would not be required to register with the Commission on Form CC. See supra note 537.

990 See infra Section VI.C.2(b) (discussing economic analysis of data content, consolidation, and dissemination, and connectivity fees).

limiting product differentiation,[991] they could limit the opportunities for competing consolidators to build profitable businesses.

Regarding the fees for the proposed consolidated market data content, the Commission recognizes uncertainty in these fees. The fees charged by the effective national market system plan(s) for the data content necessary to create proposed consolidated market data would be proposed by the operating committee(s) of the national market system plan(s) and filed with the Commission.[992] Because such fees depend on future action by the effective national market system plan(s), the Commission cannot be certain of the level of those fees or whether such fees would provide discounts for those end users who wish to receive subsets of consolidated market data.[993] As discussed further below, while these fees would not be set by competition, they must be fair and reasonable and not unreasonably discriminatory. Assuming that such fees would be reasonably related to costs,[994] the Commission believes the resulting data content fees could be set at a level that could help sustain the competing consolidator business. Further, if the national market system plan(s) choose(s) to offer discounts for subsets of consolidated market data, competing consolidators would have greater opportunity to offer differentiated products to market participants. Likewise, exchanges continuing to offer connectivity at different latencies would further promote product differentiation by competing consolidators. The Commission

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991 See supra Section VI.C.2(a)(i)a. (discussing potential dimensions of product differentiation by competing consolidators).

992 See supra Section IV.B.2(c).

993 See infra Section VI.C.2(b)(ii) for further discussion.

994 See supra note 439. (The Commission has previously stated that similar fees can be shown to be fair and reasonable if they are reasonably related to costs.)

preliminarily believes that the national market system plan(s) could propose such discounts because at least one exchange has suggested tiered SIP data products.[995]

The fees charged by competing consolidators to market participants would also determine how many competing consolidators could profitably exist. Given the high fixed-cost nature of the business, with multiple competing consolidators each competing consolidator's fixed costs would be spread over fewer customers than the costs with just one or few competing consolidators. However, the market for consolidated market data is relatively large enough[996] that the Commission preliminarily believes that the average cost per customer is likely to be reasonable enough to support multiple competing consolidators.

d. Connectivity

The fourth factor affecting the number of competing consolidators is the uncertainty regarding connectivity charges for proposed consolidated market data and their effects on the viability of the decentralized model. The data connectivity fees would continue to be set forth in the exchanges' fee schedules.[997] Connectivity fees for the provision of consolidated market data would be a fixed input cost for competing consolidators, and, therefore, the level of connectivity fees for proposed consolidated market data may affect the economies of scale and the resulting number of competing consolidators. The Commission invites comments on the likely effects of connectivity fees for consolidated market data on the proposed competing consolidator business.

(ii) Impact on Economic Effects of Decentralized Consolidation Model

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995 See supra note 316 (citing an NYSE proposal to enhance the exclusive SIPs by offering depth of book, odd-lot quotes, and primary auction imbalance information in three new tiers of service, each of which with different levels of data content).

996 See supra Section VI.B.2(c).

997 See supra note 440.

As discussed in the previous section, there are several factors that may affect the number of competing consolidators entering the market. While the Commission recognizes uncertainty in some of these factors, the Commission preliminarily believes that the risk of few competing consolidators entering the market is low. The Commission also preliminarily believes that the risk of zero competing consolidators is even lower because the possibility of being the only consolidator in the market for proposed consolidated market data could represent a substantial business opportunity—especially given market participants' different preferences for data content and latency—thus leading to entry into the competing consolidator market space. In particular, a monopolist in the market for proposed consolidated market data would be able to charge high prices for the service fee portion of the overall price[998] and thus capture supra-competitive profits from all market participants.[999] Based on the discussion above, the Commission preliminarily believes that entry into the competing consolidator market space will continue until competing consolidators' profits decrease to competitive levels.

The assumption that there would be a sufficient number of competing consolidators entering the market affects some economic effects of the decentralized consolidation model. Generally, many of the benefits and competitive considerations below depend on this assumption. For example, the Commission preliminarily believes that a higher number of competing consolidators would lead to lower fees paid by market participants for proposed consolidated market data,[1000] larger gains in efficiency in the delivery of proposed consolidated

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998 See infra Sections VI.C.2(b) and VI.C.2(c).

999 Supra-competitive profits are profits above what can be sustained in a competitive market.

1000 See infra Section VI.C.2(b).

market data and market data communication innovations,[1001] as well as a reduction in data consolidation and dissemination latencies.[1002] In addition, some of the costs discussed below also depend on this assumption. For example, the transition to a competing consolidator model would decrease regulatory compliance costs imposed by Regulation SCI on existing exclusive SIPs that may register as competing consolidators, by changing their status from "critical SCI systems" to standard "SCI systems."[1003]

While the Commission preliminarily believes that the risk of few competing consolidators is low, as discussed above,[1004] in determining whether to approve an NMS plan amendment that would effectuate a cessation of the operation of the existing exclusive SIPs, the Commission would consider the state of the market and the general readiness of the competing consolidator infrastructure. Examples of some of the things that the Commission could consider include the status of registration, testing, and operational capabilities of multiple competing consolidators, self-aggregators, and market participants; capabilities of competing consolidators to provide monthly performance metrics and other data required to be published pursuant to proposed Rule 614(d)(5)-(6); and the consolidated market data products offered by competing consolidators. Therefore, the Commission believes the economic analysis below represents a reasonable assessment of the potential economic effects of the proposal notwithstanding the assumption of sufficient competing consolidators.

(b) Analysis of the Impact on Data Fees

1001 See infra Section VI.C.2(c).

1002 Id.

1003 See infra Section VI.C.2(e)(ii) (discussing heightened requirements for "critical SCI systems" versus standard requirements for "SCI systems").

1004 See supra Section IV.B.6.

This section discusses potential effects of the introduction of the decentralized consolidation model on prices market participants pay for consolidated market data. When comparing data fees for proposed consolidated market data with current data fees, this economic analysis holds data content constant. In other words, the fee comparison in this analysis is between what market participants would pay under the proposed rule versus what they currently would have to pay to access the same content of the proposed consolidated market data. After analyzing how fees could change for the same data content, the analysis then considers the costs to various market participants, including those market participants who are likely to expand the content of data from that they currently utilize. This last analysis is critical to understanding the potential for many of the benefits and costs discussed above in Section VI.C.1 and below in Section VI.D.1.

The Commission preliminarily believes that the fees for consolidated market data could be lower than fees that market participants pay for equivalent data today, but recognizes significant uncertainty. The Commission also recognizes uncertainty in the fees that subscribers choosing to receive a subset of consolidated market data would pay under the proposed rule and that these subscribers could pay higher or lower fees than they do today for equivalent data.

(i) Fees for Proposed Consolidated Market Data Content

The Commission first considers the effect of the proposed rule on fees market participants would pay for proposed consolidated market data versus what they currently would have to pay to access the same content of the proposed consolidated market data. The Commission preliminarily believes that fees for proposed consolidated market data could be lower than fees for equivalent data today, but recognizes significant uncertainty about how the effective national market system plan(s) would set the fees for the data content and how SROs

would set the fees for connectivity necessary to create proposed consolidated market data as well as how the competing consolidators would price their services. For the purposes of this section, the Commission assumes that the effective national market system plan(s) would set fees for the proposed consolidated market data content that are reasonably related to costs.[1005]

The Commission preliminarily believes that three sets of fees may be affected as a result of the proposed rule: fees for the data content necessary to create proposed consolidated market data, fees for the consolidation and dissemination of proposed consolidated market data, and fees for the connectivity services necessary to receive the components of proposed consolidated market data from the SROs. Regarding the SIP data, the first two fees are currently bundled into a single fee, which covers SROs' data and the exclusive SIPs' operations such as consolidation and dissemination of data. The proposed rule would unbundle these two components and would allow competing consolidators to provide the data consolidation and dissemination services. Under the proposed rule, the fee for data content would be set by the effective national market system plan(s).[1006] The operating committee(s) of the effective national market system plan(s) would propose the data content fees for the SROs' data required to create proposed consolidated market data and would then file the proposed fees with the Commission for consideration pursuant to Rule 608.[1007] Competing consolidators would charge a second fee for their consolidation and dissemination services, which could also include associates costs for data access at exchanges and transmission of data between data centers. The fees for data

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1005 See supra note 439. (The Commission has previously stated that similar fees can be shown to be fair and reasonable if they are reasonably related to costs.)

1006 See supra note 96 (discussing amendments to the provision regulating NMS plan(s) fee filings).

1007 See supra Section IV.B.4; supra note 433.

consolidation and dissemination would be determined by competition among competing consolidators. Finally, SROs currently charge connectivity fees for both exclusive SIP and proprietary data feeds. Under the proposal, SROs could charge connectivity fees to competing consolidators and self-aggregators, which must be consistent with statutory standards.[1008] Competing consolidators could charge connectivity fees to end users, which would be subject to competitive forces.

First, the Commission preliminarily believes that how the proposed rule would affect the fees for the data content used to create proposed consolidated market data is uncertain, primarily because they depend on future action by the effective national market system plan(s), but the Commission preliminarily believes that such fees would likely be lower than today's fees for the equivalent data. Currently, market participants who would like to access content equivalent to the data content of the proposed consolidated market data would need to separately purchase SIP data and additional data elements via proprietary data feeds. Under the proposed rule, market participants would be able to receive substantially similar content from one source.[1009] Further,

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1008 Currently, connectivity fees are charged to the market participants that connect to the exchange and not to end users. See infra note 1017.

1009 Currently, fees for SIP data and proprietary data are generally charged based on the number and type of end user of the data. For example, the CTA/CQ Plan Schedule of Charges distinguishes fees by professional and nonprofessional subscribers and the number of devices. See CTA Plan, Schedule of Market Data Charges, supra note 851. The Nasdaq UTP Plan, Exhibit 2 provides separate fees for non-professionals and per device fees. See Nasdaq UTP Plan, supra note 13. Similar user distinctions are made in proprietary data products. See Nasdaq, Price List – U.S. Equities, available at www.nasdaqtrader.com/Trader.aspx?id=DPUSdata#tv (last accessed Jan. 30, 2020) (showing Nasdaq TotalView usage fees, which provide fees for professional and non-professional subscribers); NYSE Proprietary Market Data Fees (as of Nov. 4, 2019), available at https://www.nyse.com/publicdocs/nyse/data/NYSE_Market_Data_Fee_Schedule.pdf (showing the NYSE Integrated Feed fee schedule, which distinguishes between professional and non-professional users).

market participants would pay the data content fees set by the effective national market system plan(s) for NMS stocks, which would be filed with the Commission under Rule 608 and be subject to public comment.[1010] Therefore, the analysis of the potential impact on data content fees depends on, among other things, whether the current fees for the proprietary data content that will be included in the newly defined consolidated market data are fair and reasonable and on how costs are likely to change. As discussed above, the Commission does not believe that the proposal would significantly increase SRO costs specifically for distributing data.[1011] The proposal could, on the other hand, increase the allocation of fixed exchange costs to consolidated market data because the data content would expand.[1012] However, the Commission lacks the necessary information to ascertain those impacts.[1013]

The Commission can deduce, however, that data content fees for the proposed consolidated market content are unlikely to increase. As discussed above,[1014] the Commission understands that SRO proprietary feeds for depth of book data are significantly more expensive than the exclusive SIP feeds. The effective national market system plan(s) for NMS stocks would be unlikely to implement fees for the proposed consolidated market data content that are

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1010 Rule 608 of Regulation NMS, 17 CFR 242.608.

1011 See supra Section VI.C.1(b)(iv).

1012 See infra Section VI.C.4(a) for a discussion of the likely effects of the proposal on the revenues exchanges receive for proprietary data.

1013 In a comment letter, IEX provided data that the SRO markups on proprietary data may be large. In particular, IEX compared its own costs of providing proprietary market data with the fees charged by other exchanges for comparable produces and found markups of 900-1,800 percent. See Katsuyama Letter II; Letter to Brent J. Fields, Secretary, Commission, from John Ramsay, Chief Market Policy Officer, Investors Exchange LLC (Feb. 4, 2019) (discussing the "all-in" cost to trade concept advocated by other exchanges).

1014 See supra Section VI.B.2(c).

higher than the current fees for equivalent data unless it is demonstrated that the higher proposed fees are justified under the applicable legal standard.

The Commission preliminarily believes that the proposal is likely to reduce data content fees. The Commission expects that unless the Commission approves a filing for data content fees that would set fees at a level that the effective national market system plan(s) has shown is consistent with statutory standards, the fees for the proposed consolidated market data—which is equivalent to the existing exclusive SIP data plus additional proprietary DOB data product elements—would remain at current SIP data fee levels and thus would be lower than the current fees for the equivalent data.[1015] Absent information on data costs, the Commission, at this time, recognizes that such fees could be lower than current exclusive SIP fees, similar to current exclusive SIP fees, greater than current exclusive SIP fees but less than the fees for the current equivalent of proposed consolidated market data, or similar to the current equivalent of proposed consolidated market data. However, the Commission preliminarily believes that such data content fees would be lower than current fees for equivalent data because, between 2010 and 2018, the proprietary data feed portion of the current fees for equivalent data appears to have increased at a rate that seems unlikely that costs have matched.[1016]

Second, the Commission preliminarily believes that data consolidation and dissemination fees for proposed consolidated market data would be lower than consolidation and dissemination fees market participants currently pay to receive equivalent data. Consolidation and dissemination fees that competing consolidators would charge would cover several associated

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1015 See supra note 96 (noting the Commission's proposal to rescind the provision of Rule 608 that allows a proposed amendment to an effective national market system plan(s) to become effective upon filing if the proposed amendment establishes or changes a fee or other charge).

1016 See supra Section VI.B.2(c).

costs, including fixed costs of hardware and software; processing to take in data; processing for consolidation (including compiling the NBBO and protected quotes); distribution of the data; and connectivity fees paid to exchanges to acquire the data for consolidation. The variable costs of the competing consolidators would be minor in comparison because additional data users would have a minimal impact on the costs of competing consolidators. The fixed costs of the competing consolidators could be spread out among its subscribers, including subscribers utilizing other proprietary data services provided by competing consolidators that are not covered by the fees established by the effective national market system plan(s).

To receive data equivalent to proposed consolidated market data today, market participants would have to pay separately for a portion of exclusive SIPs' cost to perform consolidation and dissemination of market data and a fee for consolidation and dissemination of additional data elements of proposed consolidated market data that are available via third-party providers of proprietary market data, who face competitive pressures. As discussed above,[1017] exclusive SIPs are not constrained by competition and thus have lower incentives to reduce their costs. By comparison, the Commission preliminarily expects that the competition among competing consolidators would put downward pricing pressure on these service fees. The Commission recognizes that the stronger the competition among competing consolidators, the harder it would be for any given competing consolidator to increase its consolidation and dissemination fees and make supra-competitive profits from these services.[1018] Further, because having more subscribers could help competing consolidators spread their fixed costs out, any increase in the number of subscribers of current market data aggregators who would become

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[1017] See supra Section VI.A.2.

[1018] See supra Section VI.C.2(c).

competing consolidators would reduce the service fees of those aggregators in equivalent data. For these reasons, the Commission preliminarily believes that the competition among competing consolidators would lead to lower consolidation and dissemination fees for proposed consolidated market data as compared to these fees for equivalent data today.

Third, the Commission preliminarily believes that connectivity fees charged by competing consolidators for proposed consolidated market data would also be lower than connectivity fees market participants would currently have to pay to receive equivalent data. To receive data equivalent to proposed consolidated market data today, market participants currently have to pay separately a connectivity fee to the exchanges to access SIP data and a connectivity fee to the exchanges or market data aggregators to access additional data elements of proposed consolidated market data that are not part of SIP data. Under the proposed rule, the Commission expects that market participants would pay only one connectivity fee for proposed consolidated market data, set by competing consolidators, and this connectivity fee would be subject to competition among competing consolidators. By contrast, current exchange connectivity fees are not as competitive because an exchange has sole control over its own connectivity charge for its proprietary market data. Therefore, the Commission preliminarily believes that connectivity fees that would be charged by competing consolidators for proposed consolidated market data would be lower than the connectivity fees for equivalent data today.

The Commission recognizes that SROs would charge connectivity fees to competing consolidators and self-aggregators. The exchanges could continue to set connectivity fees for data feeds as part of their SRO fee schedules and these fees must continue to meet statutory

standards.[1019] The exchanges' connectivity fees are not currently based on the number of end users, and therefore the Commission preliminarily believes that the connectivity fees for proposed consolidated market data would not be directly passed through to the end users. SRO connectivity fees would be fixed costs incurred by self-aggregators and by competing consolidators, a cost the latter could spread out among their end users as a part of the consolidation and dissemination fees.

Additionally, because the total fees for the equivalent of proposed consolidated market data are likely to decline as a result of the proposal, some market participants may choose to purchase more consolidated market data content than they purchase today, such as purchasing the expanded core data. The likelihood of this outcome would depend on the difference between total fees for proposed consolidated market data and current total fees for equivalent data content. The economic effect of more market participants purchasing expanded core data is discussed above in Section VI.C.1(b).

(ii) Fees for the Content of Current SIP data

The Commission also considers the effect of the proposed rule on fees market participants currently pay for SIP data content versus what they would pay for equivalent content under the decentralized consolidation model. The Commission recognizes that a significant proportion of market participants currently purchase only SIP data and/or the unconsolidated equivalent of SIP data.[1020] Under the proposed rule and conditional on fees for proposed consolidated market data, while some of these market participants would choose to purchase

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1019 For example, under Section 6(b)(4) of the Exchange Act, the rules of an exchange must "provide for the equitable allocation of reasonable dues, fees, and other charges among its members and issuers and other persons using its facilities." 15 U.S.C. 78f(b)(4).

1020 See supra Section VI.B.2(a).

more data than they purchase today, other market participants would continue to purchase content equivalent to current SIP data (e.g., NBBO and TOB). The Commission preliminarily believes that data fees paid for equivalent data content could be higher than current SIP data fees or could be lower than current SIP data fees. Whether the fees are higher or lower depends on several factors: the data content fee structure proposed by the effective national market system plan(s) for NMS stocks, how competing consolidators allocate their costs of processing (i.e., receiving, consolidating, and disseminating) consolidated market data, and any connectivity fees charged by competing consolidators for consolidated market data.

The Commission preliminarily believes that the data content fee structure proposed by the effective national market system plan(s) for NMS stocks under the decentralized consolidation model is an important factor in determining whether total data fees (i.e., the sum of data content fees, consolidation and dissemination fees, and connectivity fees) for the equivalent of current SIP data could be higher or lower under the proposed rule.[1021] The Commission recognizes that because of the expanded scope of proposed consolidated market data relative to the current SIP data, the data content fee market participants would pay for data necessary to create proposed consolidated market data might be higher than the portion of current SIP data fees that accounts for the data content. Until the effective national market system plan(s) propose fees for the data content necessary to create proposed consolidated market data, the Commission is unable to determine whether this fee structure would charge lower fees for end users who wish to receive subsets of consolidated market data from competing consolidators. In other words, the Commission is unable to determine whether the effective national market system plan(s) for NMS stocks would propose a fee structure reflecting different tiers of data

[1021] See supra Section VI.B.2(c).

content for the proposed consolidated market data. Without such a structure, all subscribers to consolidated market data would pay the same data content fee regardless of whether they wish to receive all or a subset of consolidated market data. As a result, the proposal could increase the content fees for the equivalent of SIP data. This potential outcome is highly dependent on the effective national market system data plan(s) and fee proposals.[1022]

The fees for data consolidation and dissemination depend on how competing consolidators allocate fixed costs among subscribers receiving different subsets of data. As discussed above,[1023] the Commission expects competing consolidators to offer a menu of products and services, regardless of the data structure of the effective national market system plan(s). Competing consolidators could elect to charge lower consolidation and dissemination fees to subscribers receiving subsets of data compared to fees charged to subscribers receiving all consolidated market data. In fact, the Commission preliminarily believes that competitive pressure could result in such a fee structure. As a result, the data consolidation and dissemination component of total fees charged to those who purchase content equivalent to SIP data could be lower than this component of current SIP data fees today.

The fees for connectivity services paid by end users are likely to decline for some users but could increase for others. Currently, some SIP data users connect to the exchanges that are the administrators of exclusive SIPs and pay connectivity fees to access the SIP data. These connectivity fees are paid directly to the exchanges and do not go to the exclusive SIPs. There are also SIP data users that do not connect to the exchanges and thus do not pay SRO connectivity fees for SIP data, but may pay fees to other market data service providers. Under

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1022 The Commission has proposed an order to modernize the governance of the data plans. See supra note 8.

1023 See supra Section VI.C.2(a).

the proposed rule, both types of current SIP data subscribers may be charged a connectivity fee by competing consolidators when they subscribe to proposed consolidated market data. The Commission acknowledges that there is uncertainty over whether the competing consolidator connectivity fees would be larger or smaller than what some of the SIP data users currently pay in connectivity fees. The overall connectivity fees under the proposed rule may be larger if competing consolidators are not constrained by competition such that they can charge higher connectivity fees without concern for subscribers' scope of content. On the other hand, as discussed above[1024] and given the potential connectivity options available, the Commission preliminarily believes competing consolidators will be under competitive pressure, and as such, they may offer a range of connectivity fees, including based on market participants' scope of data content and speed choice. In that case, SIP data subscribers who currently pay connectivity fees to the exchanges may see their connectivity fees decline.

(c) Benefits of the Decentralized Consolidation Model Pertaining to Competing Consolidators

As discussed above,[1025] currently SIP data is collected, calculated, and disseminated to market participants through a centralized consolidation model with an exclusive SIP for each NMS stock. Even though current exclusive SIPs are selected through a bidding process,[1026] the Commission preliminarily believes that a competitive marketplace is more capable of producing the benefits that come from competitive forces than the process of soliciting bids for exclusive

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1024 See supra Section VI.C.2(b)(i).

1025 See supra Sections IV.A, VI.B.2(b).

1026 See supra Section VI.B.1.

contracts.[1027] In particular, the Commission preliminarily believes that the decentralized consolidation model would have three potential benefits for market participants. First, the Commission believes that the decentralized consolidation model offers the potential for more gains in efficiency in the delivery of consolidated market data, which may include cost savings that could be passed on to market participants, to emerge over time. Second, the Commission believes the model would enable consolidated market data delivery to continue to keep up with market data communication innovations in the future, in a way that the current centralized consolidation model has not. Third, the Commission preliminarily expects the new model would significantly reduce the various types of content and latency differentials that currently exist between SIP data and proprietary data products.[1028]

The Commission preliminarily believes that introducing competition into the provision of consolidated market data and dissemination services would present more incentives for reducing costs and lowering prices for those services,[1029] and innovating on product offerings more tailored to the needs of the consumers. It is therefore the Commission's preliminary expectation that the decentralized consolidation model would result in a meaningful increase in investments intended to lower costs and/or improve quality in the provision of consolidated market data. This represents an economic benefit for the industry, some of which would be kept by competing consolidators as profit, and some of which would be received by market participants in the form of lower fees and/or improved quality for competing consolidator services.

1027 See supra Section VI.A.2; infra Section VI.D.2.

1028 See supra Section VI.B.2(b).

1029 See infra Section VI.D.2.

As discussed above,[1030] some market participants may benefit as a result of the introduction of the decentralized consolidation model because of the lower price for proposed consolidated market data relative to today's price for consolidated market data holding data content constant. These market participants are likely interested in expanded consolidated market data, and currently would have to pay to obtain additional data elements via proprietary data feeds. Therefore, these market participants could pay a lower price for expanded consolidated market data under the decentralized consolidation model.

The Commission preliminarily believes that the decentralized consolidation model would provide a benefit to market participants by increasing the amount of innovation in the consolidation and dissemination of consolidated market data. This is a benefit because it represents an improvement over the current system for dissemination of SIP data, in which the lack of competitors reduces the incentives of the exchanges that govern SIPs to innovate.[1031] As mentioned above, the Commission preliminarily believes that the current system of disseminating SIP data through exclusive SIPs, which are managed by Equity Data Plans' operating committees, is not well suited to keep up with the pace of innovation in data processing and communication in the market.[1032] The decentralized consolidation model would place the task of determining the method of consolidation and dissemination to free market forces, which the Commission preliminarily believes would make it easier to innovate rapidly and maintain competitive parity with other market participants. The end result of this improved efficiency in investment decisions by consolidators would be to improve the quality and

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1030 See supra Section VI.C.2(b).

1031 See supra Section VI.A.2.

1032 Id.

reliability of market data consolidation and dissemination services, which would result in market participants having better data to make trading decisions.[1033] The Commission preliminarily believes this would lead to better trading decisions, lower execution costs, and would help reduce information asymmetries between market participants that currently solely rely on SIP data and market participants who purchase the exchanges' proprietary data products. The Commission preliminarily believes that the magnitude of this benefit depends on the assumption that there would be a sufficient number of competing consolidators entering the market.

The Commission preliminarily believes that another benefit of the decentralized consolidation model would be to substantially reduce the latency differential between proposed consolidated market data and proprietary data. This belief is based upon the Commission's assumption that the business practices of current market data aggregators, some of which will likely become competing consolidators, would serve as a model for how competing consolidators would operate under the decentralized consolidation model.[1034] Current market data aggregators have achieved connectivity, transmission, consolidation, and distribution speeds that are meaningfully faster than SIP data even as they process larger amounts of data than SIP data.[1035] Therefore, the Commission believes that competition among competing consolidators would keep market data consolidation and distribution feeds close to the speeds achieved in the private market currently.

1033 See infra Section VI.D.1.

1034 See supra Section VI.C.2(a).

1035 The Commission preliminarily believes that if the existing exclusive SIPs choose to become competing consolidators in the decentralized consolidation model, the competition with other competing consolidators will incentivize them to improve their connectivity, transmission, consolidation, and distribution speeds to the levels of other competing consolidators.

The Commission preliminarily believes that all forms of latency discussed previously—geographic, consolidation, and transmission latency[1036]—have the potential to be the source of these reductions in the latency differential. The Commission understands that the existing market data aggregator business does not rely on the single-instance consolidator model but instead produces a separate consolidated feed at each data center. This has the potential to substantially reduce geographic latency for data centers that are not co-located with one of the existing exclusive SIPs because it means new information at a data center can be used immediately at that data center instead of being returned to the processing center first. The Commission therefore expects that the decentralized consolidation model would serve to substantially reduce geographic latency in the same way for market participants. For instance, the existing market data aggregators already have infrastructure in place to consolidate market data in the described way. And if the existing exclusive SIPs become competing consolidators, they would also have to produce separate consolidated feeds at each data center to be able to compete with other competing consolidators. Therefore, the Commission preliminarily believes that the geographic latency reduction in the decentralized consolidation model can be achieved even if one existing market data aggregator enters the competing consolidator business. Therefore, the benefit of the decentralized consolidation model with regard to geographic latency would not rely heavily on the assumption that a large number of consolidators would enter the market.[1037] Importantly, as discussed above,[1038] geographic latency is the biggest cause of

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1036 See supra Section VI.B.2(b).

1037 See supra Section VI.C.2(a).

1038 See supra Section VI.B.2(b).

latency differentials between current SIP data distributed by exclusive SIPs and current proprietary data feeds.

Also, the Commission understands that many current market data aggregators rely on wireless communications to receive data from various exchange data centers, using fiber connections as a backup in case of bad weather. To the extent that wireless communications are faster than current transmission methods for SIP data, the Commission expects the decentralized consolidation model to reduce transmission latency as well. In addition, to the extent that existing market aggregators have developed faster consolidation methods, the Commission expects that the decentralized consolidation model would also reduce consolidation latency. The Commission preliminarily believes that the effect of the decentralized consolidation model on the consolidation and transmission latencies depends on robust competition among competing consolidators going forward. The Commission preliminarily believes that to the extent that the benefits of faster access to market data come from the ability to engage in more timely participation in the provision of liquidity, this effect represents an economic benefit to the equity market generally because it would provide more fair and equal access to market data and would reduce information asymmetries among market participants. In particular, to the extent that the existing advantages of having access to fast proprietary data feeds are derived from trading strategies exploiting differentials in the speed of access to market data (i.e., exploiting traders in the market who currently rely solely on slower SIP data), this benefit would represent a transfer

from current users of faster proprietary data to the users of proposed consolidated market data in the decentralized consolidation model that would now also have access to faster data.[1039]

In order for both economic benefits and transfers to be realized, at least some market participants that are new users of fast and more content-rich consolidated market data would need to possess the technological capability to take advantage of the speed improvements the decentralized consolidation model is likely to provide. It is the Commission's preliminary understanding that such technological capabilities are expensive to acquire, and this fact would reduce the amount of benefit and the degree to which individual market participants can profit (through the transfers mentioned above) from the decrease in data latency.

If even a small delay remains between the typical competing consolidator's consolidated market data feed and proprietary data feeds, then the benefits of increased consolidated market data delivery speed described above are likely to be smaller. This belief is based on the Commission's preliminary understanding that speed gains at these timescales only matter insofar as to help a market participant react to new information faster than other market participants.[1040]

Additionally, the Commission notes two other potential benefits of the proposed amendments. First, market participants could potentially save on the cost of consolidated market data because they will only need to subscribe to one competing consolidator instead of two exclusive SIPs (i.e., Nasdaq UTP and CTA/CTQ). To the extent market participants can subscribe to one competing consolidator, they could save money by not having to pay the costs of processing consolidated market data to two different providers. Additionally, market

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1039 See also Don Bollerman, A NYSE Speed Bump You Weren't Aware Of, IEX available at https://iextrading.com/about/press/op-ed/ (last accessed Jan. 8, 2020) (discussing the effect of speed differentials on trading).

1040 See supra Section VI.B.2(b).

participants may also save on their infrastructure costs if they have the ability to customize their data purchases and receive, for example, narrower data content than proposed consolidated market data. Market participants may achieve this if competing consolidators offer tiered levels of service with different data contents and different service fees based on the needs of specific types of investors similar to what one SIP proposed recently.[1041]

Second, expanding Regulation SCI to include competing consolidators would help ensure that competing consolidators' systems involved in the collection, consolidation, and dissemination of proposed consolidated market data are able to maintain their operational capability, including the ability to maintain effective operations, minimize or eliminate the effect of performance degradations, and have sufficient backup and recovery capabilities. The Commission preliminarily believes that competing consolidators being subject to the Regulation SCI requirements would lead to, among other things, fewer interruptions in the data delivery process and, thus, may result in better trading decisions.[1042]

(d) Costs of the Decentralized Consolidation Model Pertaining to Competing Consolidators

The Commission preliminarily believes that the proposed amendments that introduce a decentralized consolidation model are likely to have both direct and indirect costs on potential competing consolidators, SROs, existing exclusive SIPs, and market participants, as detailed below. As explained below, the Commission preliminarily estimates that the direct costs to each potential competing consolidator would be between around $5.12 MM and $5.13 MM in ongoing annual costs, and total one-time costs of up to between approximately $897,000 and

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1041 See supra Section VI.C.2(b); supra note 267.

1042 See infra Section VI.C.2(e)(i).

$2.40 MM, depending on entity type.[1043] Further, the Commission preliminarily estimates that costs to each SRO from the proposed amendments regarding the decentralized consolidation model include up to around $246,000 in the direct one-time costs, and around $128,000 in the ongoing annual costs. The Commission expects, however, that the proposed amendments that introduce a decentralized consolidation model would have additional indirect costs. Some of these direct and indirect costs are likely to be passed on to investors.

As discussed above,[1044] the Commission preliminarily believes that five types of entities may register to become competing consolidators and would have to build systems, or modify existing systems, that comply with the proposed rules: (1) market data aggregation firms, (2) broker-dealers that currently aggregate market data for internal uses, (3) the existing exclusive SIPs, (4) new entrants, and (5) SROs. The Commission preliminarily estimates that all direct ongoing annual costs and some one-time costs would be common among all competing consolidators and that some one-time costs would vary depending on entity type.

For purposes of the PRA,[1045] the Commission preliminarily estimates that direct ongoing costs for each competing consolidator, except for SROs, would be $5,126,167 and consist of the following costs: costs of $5,744 to amend Form CC prior to the implementation of material changes to pricing, connectivity, or products as well as to correct inaccurate or incomplete information;[1046] costs of $25 to obtain digital IDs for the purposes of signing the Form CC

1043 These costs do not include the costs of compliance with expanded Regulation SCI, which are discussed below. See infra Section VI.C.2(e)(ii).

1044 See supra Sections V.D.2, VI.C.2(a).

1045 Direct costs cited in this section are quantified from estimates in the PRA. See supra Section V.

1046 See supra Section V.D.1(b); supra note 671.

annually,[1047] costs of around $5.07 MM associated with operating and maintaining a competing consolidator system;[1048] costs of $120 to ensure that it has posted the correct direct URL hyperlink to the Commission's website on its own website;[1049] costs of $4,360 of recordkeeping;[1050] and costs of $45,222 to prepare and make publicly available a monthly report.[1051]

The Commission preliminarily estimates that direct ongoing costs for each SRO as a competing consolidator would be $5,120,398 and would consist of the same costs as for all other competing consolidators excluding the costs of $5,744 to amend Form CC prior to the implementation of material changes to pricing, connectivity, or products as well as to correct inaccurate or incomplete information, and the costs of $25 to obtain digital IDs for the purposes of signing the Form CC.[1052]

The Commission preliminarily estimates that direct one-time costs that are common across all competing consolidators would be $89,348 and consist of the following costs: costs of $120.50 to publicly post the Commission's direct URL hyperlink to its website upon filing of the initial Form CC;[1053] costs of $8,720 to keep and preserve at least one copy of all documents

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1047 See supra Section V.D.1(b).

1048 These costs are composed of labor costs of $176,250, external costs of $123,725 to operate and maintain systems to comply with Rules 614(d)(1)-(d)(4), external costs of $168,000 to purchase market data from the SROs, and an additional annual ongoing external cost of $4,602,720 to co-locate itself at four exchange data centers. See supra Section V.D.2(f).

1049 See supra Section V.D.2(h); supra note 724.

1050 See supra Section V.D.3(b).

1051 See supra Section V.D.4(b); supra note 732.

1052 These costs are excluded because SROs are not required to file Form CC. See supra Section V.D.1(a).

1053 See supra Section V.D.2(g); supra note 721.

made or received by it in the course of its business and in the conduct of its business;[1054] and costs of $80,507 to produce the monthly reports.[1055]

The Commission preliminarily estimates that the total direct costs to each market data aggregation firm or each broker-dealer that currently aggregate market data for internal uses that would decide to register as a competing consolidator would include $5,126,167 in ongoing annual costs, as discussed above, and total one-time costs of $896,542. The one-time costs are composed of costs of $93,540 to complete the initial Form CC;[1056] costs of $50 to obtain digital IDs for the purposes of signing the initial Form CC;[1057] costs of $5,604 to file two amendments to Form CC;[1058] labor costs of $293,750;[1059] external costs of $206,250 to modify its systems to comply with Rules 614(d)(1)-(d)(4), external costs of $14,000 to purchase market data from the SROs, an additional initial external cost of $194,000 to co-locate itself at four exchange data centers;[1060] as well as $89,348 in costs that are common to all competing consolidators, as described above.

The Commission preliminarily estimates that the total direct costs to each existing SIP that would decide to register as a competing consolidator would include $5,126,167 in ongoing annual costs, as discussed above, and total one-time costs of $1,396,542. The one-time costs per

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1054 See supra Section V.D.3(a); supra note 726.

1055 See supra Section V.D.4(a); supra note 727.

1056 See supra Section V.D.1(a); supra note 664.

1057 See supra Section V.D.1(a).

1058 Id.

1059 See supra Sections V.D.2(a), V.D.2(b); supra notes 676, 683.

1060 See supra Sections V.D.2(a), V.D.2(b).

existing SIP are composed of costs of $93,540 to complete the initial Form CC;[1061] costs of $50 to obtain digital IDs for the purposes of signing the initial Form CC;[1062] costs of $5,604 to file two amendments to Form CC;[1063] labor costs of $587,500;[1064] external costs of $412,500 to modify its systems to comply with Rules 614(d)(1)-(d)(4), external costs of $14,000 to purchase market data from the SROs, an additional initial external cost of $194,000 to co-locate itself at four exchange data centers;[1065] as well as $89,348 in costs that are common to all competing consolidators, as described above.

The Commission preliminarily estimates that the total direct costs to each new entrant in the competing consolidator space would include $5,126,167 in ongoing annual costs, as discussed above, and total one-time costs of $2,396,542. The one-time costs are composed of costs of $93,540 to complete the initial Form CC;[1066] costs of $50 to obtain digital IDs for the purposes of signing the initial Form CC;[1067] costs of $5,604 to file two amendments to Form CC;[1068] labor costs of $1.175 MM,[1069] external costs of $825,000 to build its systems to comply with Rules 614(d)(1)-(d)(4), external costs of $14,000 to purchase market data from the SROs,

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1061 See supra Section V.D.1(a); supra note 664.

1062 See supra Section V.D.1(a).

1063 Id.

1064 See supra Section V.D.2(c); supra note 691.

1065 See supra Section V.D.2(c).

1066 See supra Section V.D.1(a); supra note 664.

1067 See supra Section V.D.1(a).

1068 Id.

1069 See supra Sections V.D.2(d), V.D.2(e); supra notes 698, 705.

an additional initial external cost of $194,000 to co-locate itself at four exchange data centers;[1070] as well as $89,348 in costs that are common to all competing consolidators, as described above.

The Commission preliminarily estimates that the total direct costs to each SRO that would decide to register as a competing consolidator would include $5,120,398 in ongoing annual costs, as discussed above, and total one-time costs of $2,297,348. The one-time costs are composed of labor costs of $1.18 MM;[1071] external costs of $825,000 to build systems to comply with Rules 614(d)(1)-(d)(4), external costs of $14,000 to purchase market data from the SROs, an additional initial external cost of $194,000 to co-locate itself at four exchange data centers,[1072] as well as $89,348 in costs that are common to all competing consolidators, as described above.

Separately, the Commission preliminarily estimates that the total direct costs to each SRO would include $128,064 in ongoing annual costs, and total one-time costs of $246,005. The ongoing annual costs are composed of costs to collect the information necessary to generate proposed consolidated market data required by proposed Rule 603(b).[1073] The total one-time direct costs include up to $175,140 to prepare an amendment to the effective national market system plan for NMS stocks,[1074] and labor costs of $70,865 of legal, compliance, information

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1070 See supra Sections V.D.2(d), V.D.2(e).

1071 See supra Sections V.D.2(d), V.D.2(e); supra notes 698, 705.

1072 See supra Sections V.D.2(d), V.D.2(e).

1073 See supra Section V.D.2(f).

1074 Half of these costs, or $87,570, would be incurred to comply with the timestamps required by the proposed rule, including a review and any applicable change of the respondent's technical systems and rules. A quarter of these costs, or $43,785, would be incurred to compose the form of annual report on competing consolidator performance. Additionally, $8,340 would be incurred to compile and confirm the primary listing exchange for each NMS stock. See supra Section V.D.5; supra note 734.

technology, and business operations personnel to collect the information necessary to generate consolidated market data as required by proposed Rule 603(b).[1075]

The Commission preliminarily believes that the proposed amendments that introduce a decentralized consolidation model are likely to have indirect costs to existing exclusive SIPs, some market participants, and investors. The Commission preliminarily believes that the proposed amendments may impose a substantial cost for existing exclusive SIPs in terms of loss of business because exclusive SIPs would no longer be exclusive consolidators and disseminators of consolidated market data, and at least one of the exclusive SIPs–Nasdaq UTP–would no longer be paid out of the NMS plan for its processing costs.[1076] The Commission preliminarily believes that this loss of business would be mitigated by the opportunity for the exclusive SIPs to become competing consolidators. If exclusive SIPs decide to become competing consolidators, they would compete for business with each other and with other competing consolidators. This competition may lead to revenue that is lower than their current revenue. This potential decrease in revenue would represent a transfer of resources to other competing consolidators and to market participants potentially increasing social welfare. On the other hand, the exclusive SIPs have the benefit of having been in this business for a long time. The exclusive SIPs have significant connectivity to market participants and vendors and can leverage their existing customer base and established relationships with vendors and purchasers at firms. If the exclusive SIPs decide to become competing consolidators, their experience with this market may give them a competitive advantage and help mitigate their potential revenue losses.

1075 See supra Section V.D.6; supra note 737.

1076 This does not apply to CTA/CQ Plan that, as discussed above, is paid differently. See supra Section VI.B.2(c).

Some market participants may also incur indirect costs as a result of the introduction of the decentralized consolidation model. First, as discussed above,[1077] the price that some market participants would pay for proposed consolidated market data may be higher than today's price for consolidated market data, holding data content constant. These market participants are likely interested in the current scope of SIP data, and, therefore, may have to pay a higher price for expanded data content that they are not interested in.

Second, the Commission preliminarily believes that there would be an implementation cost for market participants to switch from using current exclusive SIP providers or proprietary data feeds to using competing consolidators. This cost is likely to vary among types of market participants; for instance, existing purchasers of proprietary DOB data products are likely to assume limited additional costs while new customers of proposed consolidated market data from competing consolidators would need, for example, to establish new connectivity and integrate a larger set of data into their operations. This implementation cost would include administrative costs for subscribing to a new provider of the data, as well as any infrastructure investments that may be needed to handle the data as delivered by the competing consolidator. The Commission is uncertain about the size of these costs but notes that these costs and the magnitude of their effect may vary by market participant.

Additionally, one of the current exclusive SIPs, SIAC, processes and disseminates the academic TAQ dataset. If SIAC discontinues its SIP business, there may be interruptions to the availability of this data, which would create a cost for both the academic community and investors that otherwise benefit from regulators' use of this dataset. Other data vendors also provide comprehensive historical data products that may become more readily available from

[1077] See supra Section VI.C.2(b).

competing consolidators.[1078] The Commission is unable to quantify the incremental social welfare cost of the interruption of availability of the TAQ dataset and invites comments on this issue.

Finally, the Commission preliminarily believes that the decentralized consolidation model may result in multiple NBBO quotes observed by different market participants due to different aggregation methods used by competing consolidators. As discussed above,[1079] currently market participants may already observe multiple NBBO quotes. Therefore, the Commission preliminarily believes that the decentralized consolidation model would result in no meaningful difference in practice with respect to the existence of multiple NBBOs.

The proposed amendments would impose a cost for SROs from losing SIP fees. However, the Commission preliminarily believes that this loss of fees would be offset by the data content and access fees paid to SROs by competing consolidators.

(e) Economic Effects of Competing Consolidators Being Subject to Regulation Systems Compliance and Integrity

The proposed rule amends Rule 1000 of Regulation SCI by expanding the definition of "SCI entities" to include "competing consolidators."[1080] Under the proposed rule, competing consolidators would be subject to the standard requirements of Regulation SCI (i.e., requirements for SCI systems that are not critical SCI systems).[1081] The Commission preliminarily believes that expanding Regulation SCI to include competing consolidators would

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1078 See, e.g., MayStreet, Market Data, available at http://maystreet.com/products/market-data/ (last accessed Jan. 2, 2020).

1079 See supra Section VI.B.2(b).

1080 See supra Section IV.B.2(f) and note 557 and accompanying text.

1081 See supra Section IV.B.2(f) and note 563 and accompanying text.

help prevent market disruptions due to one or more competing consolidators' systems issues and reduce the severity and duration of any effects that may result if a systems issue were to occur for a competing consolidator. But expanding Regulation SCI to include competing consolidators would also impose costs on various entities, most significantly on competing consolidators. Competing consolidators would incur a number of direct and indirect compliance costs, such as initial and on-going paperwork burdens as well as competing consolidators' potential switching costs to find vendors that can satisfy the Regulation SCI requirements. Additionally, Regulation SCI would impose some indirect costs on other market participants because of their specific business relationships with competing consolidators. For example, third-party vendors employed by competing consolidators to provide services used in their SCI systems would incur Regulation SCI compliance costs similar to those incurred by competing consolidators.

(i) Benefits to Expanding Regulation SCI to Include Competing Consolidators

Currently, the exclusive SIPs are SCI entities and the benefits discussed in Regulation SCI already apply to them and to market participants.[1082] Under the proposed amendments, competing consolidators would also be considered SCI entities and the benefits of Regulation SCI would apply to them and would continue to apply to market participants, i.e. maintain the status quo, if the exclusive SIPs cease operating as exclusive plan processors. This section discusses the benefits that would apply to competing consolidators and would continue to apply to market participants from adding competing consolidators to the list of SCI entities.[1083]

1082 See Regulation SCI Adopting Release, supra note 28, at 72404.

1083 More specifically, the benefits discussed in this section are not measuring a change from the baseline but are discussing the benefits that would continue to apply from including competing consolidators in the list of SCI entities.

The Commission preliminarily believes that at least three benefits would continue to apply by expanding Regulation SCI to include competing consolidators.[1084] First, imposing the requirements of Regulation SCI on competing consolidators would help prevent market disruptions due to one or more competing consolidators' systems issues. Second, it would help reduce the severity and duration of any effects that may result if a systems issue were to occur for one of these competing consolidators, which could also help prevent potential catastrophic events that might start out as a minor systems problem but then quickly spread across the national market system, potentially causing damage to market participants, including investors. Third, expanding the Regulation SCI framework would help ensure more effective Commission oversight of competing consolidators' systems.

The Commission preliminarily believes that adding competing consolidators to the list of SCI entities would help prevent market disruptions by strengthening the infrastructure and improving the resiliency of the systems of new competing consolidators who are not currently SCI entities. The proposed amendments to Regulation SCI would help new competing consolidators who are not currently SCI entities establish robust systems that are less likely to experience a system disruption by requiring these competing consolidators to establish, maintain and enforce written policies and procedures reasonably designed to ensure that their SCI systems have levels of capacity, integrity, resiliency, availability, and security, adequate to maintain the

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1084 As discussed in detail above, the Commission preliminarily believes that a number of entities who would become competing consolidators are already subject to Regulation SCI. The Commission preliminarily believes that many of the benefits described below would not apply to these entities, because they already have systems that meet the requirements for Regulation SCI. Instead, the Commission preliminarily believes that many of the benefits from extending Regulation SCI to include competing consolidators would come from new entities who become competing consolidators who are not currently subject to Regulation SCI. See supra Section V.G.

SCI entity's operational capability and promote the maintenance of fair and orderly markets.[1085] The Commission preliminarily believes that some potential new competing consolidators may already have policies and procedures in place to maintain and test critical systems. However, the Commission preliminarily believes that the requirements of Regulation SCI would strengthen these policies and procedures, which would help improve the robustness of critical systems.

The Commission preliminarily believes that complying with the provisions of Regulation SCI would help reduce the severity and duration of any effects that may result if a systems issue were to occur for one of the new competing consolidators who are not currently SCI entities. For example, Rule 1002(a), which requires an SCI entity to take corrective action if an SCI event occurs, could reduce the length of systems disruptions, systems compliance issues, and systems intrusions, and thus reduce the negative effects of those interruptions on the competing consolidator and market participants. Additionally, each SCI entity must establish, maintain and enforce business continuity and disaster recovery plans that include maintaining backup and recovery capabilities sufficiently resilient and geographically diverse and that are reasonably designed to achieve next business day resumption of trading and two-hour resumption of critical SCI systems following a wide-scale disruption. These plans would help competing consolidators restore their systems more quickly in the event of a disruption.

The Commission also preliminarily believes that the requirement for competing consolidators to establish procedures to disseminate information about SCI events to responsible SCI personnel, competing consolidator subscribers, and the Commission would help reduce the duration and severity of any system distributions that do occur for one of the new competing consolidators who are not currently SCI entities. The procedures would help these competing

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[1085] See supra Section IV.B.2(f).

consolidators quickly provide the affected parties with critical information in the event that it experiences a system disruption. This could allow the affected parties to respond more quickly and more appropriately to the incident, which could help shorten the duration and reduce the effects of a system event. This could also potentially help prevent an event that might start out as a minor systems issue from becoming a catastrophic problem that quickly spreads across the national market system, potentially causing damage to market participants, including investors.

Additionally, the Commission believes that the requirement for a competing consolidator to conduct testing of its business continuity and disaster recovery plans with its designated participants and other industry SCI entities would help detect and improve the coordination of responses to system issues that could affect multiple market participants in the NMS stock market. This testing should help prevent these system disruptions from occurring and help reduce the severity of their effects, if they do occur.

The Commission preliminarily believes expanding Regulation SCI to include competing consolidators would help ensure more effective Commission oversight of new competing consolidators who are not currently SCI entities. As SCI entities, these competing consolidators would have to immediately notify the Commission upon the occurrence of an SCI event (unless de minimis) and, each quarter, would have to inform the Commission of any planned material changes to its SCI systems and the security of indirect SCI systems, as well as any SCI events that had a de minimis impact on its operations or on market participants. Each year these competing consolidators would also have to provide the Commission with an SCI review of their compliance with Regulation SCI. This information would help ensure more effective Commission oversight by enhancing the Commission's review of these competing consolidators and helping make the Commission aware of potential areas of weakness in the competing

consolidator's systems that may pose risk to the entity or the market as a whole, as well as areas of non-compliance with Regulation SCI.

Additionally, the Commission preliminarily believes that the exclusive SIPs could realize an incremental benefit relative to the baseline from lower SCI-related costs. Because the Commission assumes that enough competing consolidators would enter the market to provide for multiple viable sources of consolidated market data,[1086] the Commission preliminarily believes that if the exclusive SIPs become consolidators then they would be considered SCI entities subject to the standard obligations of Regulation SCI, rather than subject to the additional costs associated with being subject to the heightened requirements applicable to "critical SCI systems."

(ii) Costs of Expanding Regulation SCI to Include Competing Consolidators

Competing consolidators would incur both paperwork and non-paperwork related direct and indirect compliance costs as SCI entities. Because Regulation SCI imposes some indirect requirements on other market participants interacting with SCI entities (e.g., vendors providing SCI systems to SCI entities), those market participants would also incur indirect costs from competing consolidators being defined as SCI entities.

The Commission preliminarily believes that the 2018 estimates of initial paperwork burdens for new SCI entities and ongoing paperwork burdens for all SCI entities under Regulation SCI are largely applicable to potential entrants into the competing consolidator business.[1087] The 2018 PRA Extension includes estimates distinguishing between new versus existing SCI entities. The Commission preliminarily believes that, using the same new versus

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1086 See supra Section VI.C.2(a) for a discussion of this assumption.

1087 See supra note 740.

existing SCI entity framework, the 12 estimated entrants into the competing consolidator business could be divided into three groups: entrants that are existing SCI entities with experience in the consolidated market data business (e.g., exclusive SIPs or exchanges or entities affiliated with an exchange that currently operate an exclusive SIP); entrants that are existing SCI entities but with no experience in the consolidated market data business and needing to performing a new function with new SCI systems (e.g., a national securities association or national securities exchanges that do not currently operate an exclusive SIP); and finally, entrants that are entirely new SCI entities that are not currently subject to Regulation SCI (e.g., third-party aggregators that are not currently subject to Regulation SCI). As discussed above,[1088] the Commission preliminarily believes that the existing SCI entities in the first category would not have any initial burden, whereas the existing SCI entities in the second category would incur approximately 50% of the Commission's initial burden estimates for an entirely new SCI entity. Further, the 2018 ongoing burden estimates for existing SCI entities in both of these categories would continue to be applicable. Similarly, the Commission preliminarily believes that new SCI entities in the third category would have the same estimated initial paperwork burdens as those estimated for new SCI entities and the same ongoing paperwork burdens as all other SCI entities.

As SCI entities, competing consolidators would also incur non-paperwork related direct compliance costs. In 2014, the Regulation SCI adopting release estimated that an SCI entity would incur an initial cost of between approximately $320,000 and $2.4 million.[1089] Additionally, an SCI entity would incur an annual ongoing cost of between approximately

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1088 See supra Section V.G.

1089 Regulation SCI Adopting Release, supra note 28, at notes 1943–1944.

$213,600 and $1.6 million.[1090] The Commission preliminarily believes that similar to the paperwork burden estimates, these non-paperwork related costs are also largely applicable to competing consolidators. But the Commission is uncertain about the actual level of costs competing consolidators would incur, because these costs could differ based on the type of potential entrant into the competing consolidator business. The Commission preliminarily believes that there are two reasons why competing consolidators' costs are likely to be on the lower end of these cost estimates.

First, these cost estimates include costs of having part of an SCI entity's system be a "critical SCI system," and therefore be subject to certain heightened resilience and information dissemination provisions of Regulation SCI. For instance, as discussed above,[1091] the existing exclusive SIPs currently represent single points of failure and are subject to heightened requirements for "critical SCI systems." Under the proposed rule, competing consolidators' systems are not included within the scope of "critical SCI systems." The Commission preliminarily believes that if competing consolidators' systems are subject to the standard requirements of Regulation SCI, they would not incur compliance costs of the heightened requirements for "critical SCI systems." To the extent that the incremental costs of being subject to the heightened requirements for "critical SCI systems" versus the standard requirements for "SCI systems" is small, these cost savings could be low.

Second, among all of the SCI entities, competing consolidators have relatively simpler systems and fewer functions, and thus would have compliance costs closer to the lower end of the above cost estimates. The above cost estimates provide an average for all SCI entities,

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1090 Id. at notes 1945–1946.

1091 See supra Section IV.B.2(f).

without distinguishing between different categories of SCI entities. However, the Regulation SCI adopting release explains that compliance costs would depend on the complexity of SCI entities' systems and they would be higher for SCI entities with more complex systems.[1092] Competing consolidators would likely have simpler systems and fewer functions relative to some of the other SCI entities, such as exchanges. As a result, the Commission preliminarily believes that competing consolidators' compliance costs are likely to be on the lower end of the average cost estimates for all SCI entities.

Additionally, the Commission preliminarily believes that some of competing consolidators' subscribers associated with the testing of business continuity and disaster recovery plans would incur Regulation SCI-related connectivity costs. Rule 1004 of Regulation SCI sets forth the requirements for testing an SCI entity's business continuity and disaster recovery plans with its designated members or participants.[1093] Competing consolidators and their designated subscribers would be subject to these same costs. The Regulation SCI adopting release estimated connectivity costs as part of these business continuity and disaster recovery plans to be approximately $10,000 per SCI entity member or participant.[1094] The Commission preliminarily believes that these connectivity cost estimates would also be applicable to competing consolidators' designated subscribers.

The Commission preliminarily believes that competing consolidators and various other market participants would incur certain indirect costs related to compliance requirements for competing consolidators as SCI entities.

1092 Regulation SCI Adopting Release, supra note 28, at 634.

1093 Id.; Rule 1004.

1094 Id. at note 2065.

The Commission preliminarily believes that the costs to comply with Regulation SCI discussed above would also fall on third-party vendors employed by competing consolidators to provide services used in their SCI systems. Regulation SCI requires that any system provided by a vendor to an SCI entity and used by that entity in its SCI system must also comply with Regulation SCI requirements. The Commission preliminarily believes that all costs discussed above for competing consolidators to comply with Regulation SCI would also fall on third-party vendors employed by competing consolidators in the course of providing consolidated market data. Examples of such vendors may include communications firms employed by competing consolidators to transport data from exchanges to the competing consolidator's aggregation servers at various data centers. If many third-party vendors are employed by potential competing consolidators in their consolidated market data business, the size of this cost could be significant. The Commission invites comment on the issue.

Additionally, the Commission preliminarily believes there is the potential for these costs to cause the vendors to end existing business relationships with market participants who become competing consolidators. It is possible that third-party vendors would not want to incur the costs that competing consolidators may impose to assure that the competing consolidator can comply with Regulation SCI requirements, and as a result be unwilling to provide services to the competing consolidator's consolidated market data business. To the extent that this happens, competing consolidators would incur costs from having to find new vendors, form a new business relationship, and adapt their systems to the infrastructure of the new vendor. Competing consolidators may also elect to perform the relevant functions internally. To the extent that competing consolidators either find new vendors or perform the functions internally,

it would represent an increased inefficiency in the market, since presumably the current market data vendors are the most efficient means of performing these functions.

The Commission preliminarily believes that the technology supporting some of the services provided by vendors to current data aggregators (notably communications, such as microwave transmission) require significant expertise in order to be competitive and are difficult to replicate. To the extent this is the case, and to the extent that Regulation SCI requirements prevent competing consolidators from using these vendors, the ability of competing consolidators to provide consolidated market data in a manner that rivals current third-party aggregation practices could be significantly reduced.

(f) Economic Effects of the Decentralized Consolidation Model Pertaining to Self-Aggregators

As discussed above,[1095] a number of market participants currently purchase proprietary data products from the exchanges and consolidate this data for their internal use. To permit self-aggregation under the proposed decentralized consolidation model, the Commission proposes to define a self-aggregator as a broker or dealer that would receive information from the exchanges necessary to generate consolidated market data solely for internal use.[1096]

Market participants that currently effectively self-aggregate and that decide to become self-aggregators under the proposed decentralized consolidation model will have two choices regarding the use of the exchanges' proprietary data products. First, they may decide to limit the use of exchange data to the creation of proposed consolidated market data, in which case they would be charged for proposed consolidated market data pursuant to the fee schedules of the

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1095 See supra Section IV.B.2(e)(iii).

1096 Id.

effective national market system plan(s) for NMS stocks. In this case, market participants would likely benefit from lower data fees as compared to current fees they pay for proprietary data and connectivity products.[1097]

Second, they may decide they need data beyond the scope of proposed consolidated market data, in which case they would be additionally charged for the proprietary data and connectivity services pursuant to the individual exchange fee schedules. In this case, the potential price gain would be limited to the price decline for the portion of the data corresponding to the proposed consolidated market data. The Commission is uncertain about the extent of this effect.

Market participants that currently effectively act as self-aggregators and that would choose to become self-aggregators under the proposed decentralized consolidation model may incur some switching costs, especially if the exchanges provide components of the consolidated market data with feeds and connections other than what these market participants currently use. However, since these market participants already have the infrastructure to receive the proprietary data products from the exchanges, the Commission expects these switching costs to be minimal.

(g) Other Conforming Changes

The Commission is proposing conforming changes for some of the previous Commission or SRO rules and regulations, which themselves can have economic effects. This section discusses the conforming changes and corresponding economic effects.

(i) Amendments to Regulation SHO

[1097] See infra Section VI.C.4.

As described above in section III.D.1, the Commission is proposing amendments to Regulation SHO to adjust the process of determining whether a Short Sale Circuit Breaker has been triggered and disseminating such trigger information. First, the primary listing exchange would decide how to obtain the consolidated data necessary to determine whether a Short Sale Circuit Breaker should be triggered. Second, the primary listing exchange would be responsible for notifying competing consolidators and self-aggregators rather than a single plan processor. The first change allows the primary listing exchange to select the most cost-effective means of fulfilling its responsibilities. The second change could entail some compliance costs for competing consolidators but is necessary to ensure that all competing consolidators are on a level playing field. The resulting compliance costs for exchanges are included in the Commission's general compliance estimate above.[1098] The resulting compliance costs for competing consolidators are included in the Commission's estimate of the general costs to becoming a competing consolidator above.[1099]

In addition, the Commission is proposing to define "primary listing exchange" in Regulation NMS and to amend the definition of "listing market" in Regulation SHO to refer to the proposed definition of primary listing exchange. The Commission preliminarily believes that this change would have no direct economic effects, other than harmonizing Regulation SHO with Regulation NMS.

(ii) Effective Changes to Responsibilities under the Limit Up Limit Down Plan and Market Wide Circuit Breaker Rules

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1098 See supra Section V.D.6.

1099 See supra Section V.B.2.

The proposed definition of "regulatory data" requires the primary listing exchange to be the entity responsible for monitoring, calculating, and disseminating certain information necessary to implement the LULD Plan and the MWCB rules. These functions are currently the responsibility of a single exclusive SIP, however, the Commission is proposing that the primary listing exchanges be responsible for disseminating information regarding Price Bands and Limit States and the primary listing exchange with the largest portion of S&P 500 Index stocks be responsible for determining whether an MWCB has been triggered. While the Commission preliminarily believes that these amendments could result in implementation and ongoing costs for primary listing markets that currently do not operate a SIP, these amendments ensure a single set of Price Bands and a consistent message that MWCBs have triggered. The Commission preliminarily believes that the additional cost of calculating the information necessary to implement the LULD Plan and WMCB rules would be minimal. The cost imposed on these primary listing markets is included in the general compliance cost the Commission has estimated for SROs above.[1100]

(h) Request for Comments

The Commission requests comments on its analysis of the economic effects pertaining to the proposed decentralized consolidation model. In particular, the Commission solicits comment on the following:

228. Do you agree with the reasonableness of the Commission's assumption that the proposed amendments would lead to multiple competing consolidators participating in the consolidated market data business and distributing data to market participants? Why or why not? Please explain in detail.

[1100] See id.

229. Are you an organization that would want to provide the competing consolidator service described? If so, please include an estimate of how much effort would be required for you to begin providing this service in the market. If you are willing to provide price estimates, please do so as well.

230. What factors are likely to influence the decision of various market participants to become competing consolidators? How large would be the barriers to entry to becoming a competing consolidator? Would there be any sources of barriers to entry other than building the technological infrastructure, filing Form CC, and complying with the other regulatory requirements associated with being a competing consolidator?

231. Which market participants would be likely to become competing consolidators? Are the current exclusive SIPs likely to become competing consolidators? Why or why not? Would existing market aggregation firms become competing consolidators? Why or why not? Would any other types of firms likely become competing consolidators? Why or why not?

232. How would the Commission's assessment of the economic effects of the rule be affected by too few competing consolidators? Please be specific.

233. To what extent would the adoption of the various proposals in Section III independently respond to some or all of the issues the proposed competing consolidator model is intended to address?

234. Do you agree with the Commission's assessment of the potential effect of the proposal on data fees? In particular, do commenters agree with the Commission's conclusion that the proposal could reduce overall data fees? What is the likely effect of the proposal on each of the components of the overall data fees, fees for consolidated

market data, fees for proprietary market data, and fees for connectivity? What are some of the important factors that could result in fee increases and decreases? Please explain in detail.

235. The Commission requests that commenters provide any insights or data they may have as to potential changes in connectivity fees and the effect of these new connectivity fees on the proposed competing consolidator business.

236. Do you agree that there would be three potential benefits from the increased competition provided by the decentralized consolidation model: efficiency gains in the delivery of consolidated market data, improvements in technological innovation in consolidated market data, and reductions in latency? Why or why not? If not, which benefits do you disagree with? Please explain.

237. What are the benefits of expanding Regulation SCI to define competing consolidators as "SCI entities"? What are the costs of expanding Regulation SCI to define competing consolidators as "SCI entities"? Please explain and provide cost estimates, if available.

238. The Commission requests that commenters provide relevant data and analysis to assist in analyzing how the total price of proposed consolidated market data (including the data fee paid to the operating committee(s) of the effective national market system plan(s) for NMS stocks and service fees paid to competing consolidators) in the decentralized consolidation model would compare to current pricing of SIP data. More specifically, how would the aggregate fees paid by various types of market participants under the decentralized consolidation model likely compare to the aggregate fees paid by the same types of market participants for the same data today, assuming the content of the

data consumed by market participants remains constant but the providers of that data change? Would any market participant types be likely to expand the data they purchase if such data is included in the definition of consolidated market data? Please explain. How would the aggregate fees paid by such market participants under the decentralized consolidation model likely compare to the aggregate fees paid by them today, assuming such market participants expand the data they purchase? Please quantify if possible.

239. Do you agree with the Commission's assessment of the costs incurred by potential competing consolidators as a result of the proposal? Specifically, do you agree that potential competing consolidators would incur initial costs of $0.6 million to $3.9 million and ongoing costs of $2 million and $2.6 million? Why or why not? Please provide revised cost estimates, if possible. How would these costs vary across the types of entities likely to become competing consolidators? What costs would be common across competing consolidators?

240. Do you agree with the Commission's assessment of the costs to each SRO of amending effective national market system plan(s) for NMS stocks to implement the proposed decentralized consolidation model? Why or why not? Please explain and provide alternative cost estimates, if possible.

241. Would existing SIPs and exchanges lose business as a result of the proposed decentralized consolidation model? If so, what is the nature and potential magnitude of the business they would lose? Could any exclusive SIPs or exchanges gain business as a result of the decentralized consolidation model? Please explain.

242. Would the proposed decentralized consolidation model result in more NBBOs than could be viewed today? If so, would this increase the complexity of our markets?

Why or why not? Please describe any economic effects resulting from an increase in multiple NBBOs.

243. Do you agree with the Commission's assessment of the costs to data users of potentially switching from purchasing market data from exclusive SIPs and/or exchanges to purchasing market data from competing consolidators? Why or why not? Please explain. Do you agree that these costs are likely to vary among types of market participants?

244. Would the proposed amendments result in the interruption of data available for research by the academic community and investors, such as TAQ data? If so, the Commission requests that commenters provide relevant data and analysis to assist us in determining the incremental social welfare cost of such interruption of data to the academic community and investors.

245. How costly would be the proposed changes to the entities responsible for requirements of Regulation SHO, LULD and MWCB for listing exchanges? What is the magnitude of such costs that derive from implementing processes to continuously calculate and track data metrics for compliance with the proposed changes? What is the magnitude of such costs that derive from notifying the competing consolidators and others of price bands and triggers? Does the magnitude of such costs depend on the number of competing consolidators?

246. Do you agree with the Commission's assessment of the benefits of subjecting competing consolidators to Regulation SCI requirements? Why or why not?

247. Do you agree with the Commission's assessment of the costs of subjecting competing consolidators to Regulation SCI requirements? Why or why not? Do you agree with the Commission's estimates of the costs involved? Please explain in detail.

248. Are geographically diverse backup systems a standard practice among firms likely to become competing consolidators today? What effect does the answer to this question have on the likely cost for competing consolidators to maintain geographically diverse backup systems?

249. Do you agree with the Commission's assessment on the impact of Regulation SCI requirements on third-party vendors employed by competing consolidators? Why or why not? To what extent do potential competing consolidators contract with third-party vendors for systems that would meet the definition of an SCI system? What is the magnitude of costs to third-party vendors who operate these systems to make sure these systems meet the requirements of Regulation SCI? What effect will this impact have on the ability of competing consolidators to provide reliable data products? Please explain and provide estimates, if possible.

250. Do you believe that the amendments to Regulation SCI could reduce innovation among new competing consolidators? Please explain. If so, which provisions of Regulation SCI affect innovation the most and how? Please explain.

251. How significant is the barrier to entry provided by Regulation SCI requirements on potential competing consolidators? Do you believe this will have a significant impact on the number of entities who enter the competing consolidator business? Why or why not?

3. Economic Effects of Form CC

As discussed above in Section IV.B, the proposed amendments would not let a person, other than an SRO, act as a competing consolidator, i.e., generating proposed consolidated market data for dissemination to non-affiliated persons, unless that person files with the Commission an initial Form CC and the initial Form CC has become effective. The proposed amendments would require the public disclosure of Form CC, which requires a number of disclosures about a competing consolidator's services and fees and operations, and metrics related to the performance of competing consolidators. As a result, the proposed amendments would provide transparency for investors who might purchase the products and services of a competing consolidator. The Commission preliminarily believes that the information provided in Form CC and the resulting transparency would help market participants make better-informed decisions about which competing consolidator to subscribe to in order to achieve their trading or investment objectives.

Additionally, the Commission preliminarily believes that the process for the Commission to declare an initial Form CC ineffective would improve the quality of information the Commission receives from competing consolidators, which would allow the Commission to better protect investors from potentially incomprehensible or incomplete disclosures that would misinform market participants about the operations and services of a competing consolidator.

(a) Public Disclosure of Form CC and Other Competing Consolidator Information

The proposed Form CC would require competing consolidators to publicly disclose four sets of information on the Commission website.[1101] First, proposed Form CC would require competing consolidators to disclose general information, along with contact information. Second, proposed Form CC would require competing consolidators to disclose information

[1101] See supra Section IV.B.2(e).

regarding their business organizations. Third, proposed Form CC would require competing consolidators to disclose information regarding their operational capabilities. Fourth, proposed Form CC would require competing consolidators to disclose information regarding their services and fees. The proposed rule also includes requirements for amendments under defined circumstances and a notice of cessation of operations at least 30 business days before the date the competing consolidator ceases to operate as a competing consolidator. Proposed Form CC, any amendments to it, and any notices of cessation would be made public via posting on the Commission's website. The proposed rule also has a disclosure requirement about competing consolidators' performance metrics on their own websites. Additionally, the proposed rule would require competing consolidators to disclose operational information on their websites related to vendor alerts, data quality and systems issues, and clock drift in the clocks they use to create timestamps. Generally, these requirements promote transparency and competition among competing consolidators and effective regulatory oversight within a streamlined approach to avoid significant barriers to entry.

The business organization disclosures would give market participants a window into the ownership as well as the organizational structures of competing consolidators. The Commission preliminarily believes that this information would help market participants make better-informed decisions about which competing consolidator to subscribe to as well as how to avoid any potential conflicts of interest. For example, if a broker-dealer is considering subscribing to a competing consolidator for consolidated data and any other potential additional services such as analytics, they may search for a competing consolidator that is not owned by a competitor or an affiliate of a competitor in the broker-dealer space. Purchases of data and additional market intelligence services between two competitors could potentially create conflicts of interest.

Thus, the required disclosure of a competing consolidator's business organization—which would, for example, clarify the ownership information—would provide transparency on its potential conflicts of interest.

The information on operational capabilities would provide market participants detailed information about each competing consolidator's product portfolio and technical capabilities. Since market participants vary in their data and technical capability needs, information on competing consolidators operational capabilities would allow the market participants to make better-informed purchase decision. For example, market participants who trade frequently and who need robust backup systems might choose competing consolidators with those capabilities. Whereas other market participants who have longer term investment strategies with potentially less frequent trades might prefer competing consolidators with less aggressive backup systems. Proposed Form CC disclosures would facilitate a better match between market participants' needs and competing consolidators' offerings, and would also help to ensure consistent disclosures between competing consolidators.

With the consistent disclosures on services and fees, market participants could compare and contrast the various services provided and the corresponding fees asked by competing consolidators. Market participants could then make better purchase decisions, based on their individual needs. Additionally, the service and fee transparency resulting from these disclosures would promote competition in similar products and/or services across different competing consolidators, which could result in similar prices, and would help to protect market participants from unfair and unreasonable prices.

The Commission preliminarily believes that the proposed requirement for competing consolidators to amend Form CC prior to implementing material changes to their pricing,

products, or connectivity options would provide transparency into changes in the operations of competing consolidators and better inform subscribers and other market participants about significant changes in the fees and services offered by a competing consolidator. This would allow subscribers to a competing consolidator to better evaluate if it would continue to serve their business needs. Additionally, it would facilitate effective oversight by the Commission.

Similarly, the Commission preliminarily believes that the requirement for a notice of cessation would also benefit subscribers to the competing consolidator, because it would give them advanced notice before the competing consolidator ceases to operate. Thus those subscribers would have more time to find another competing consolidator to supply them with consolidated market data.

The fact that the information on Form CC would be in a single location instead of dispersed across the competing consolidators' own websites would aid market participants by introducing only minimal search costs when evaluating and comparing potential competing consolidators to decide which one best suits their business interests.

As discussed above,[1102] the Commission preliminarily believes the proposed rule would cause each competing consolidator, except for SROs, to incur an approximately $93,540 in implementation compliance cost in order to collect the information required to fill out and file an initial Form CC as well as $5,744 in ongoing costs in order to file amendments to an effective Form CC. The Commission believes these requirements are streamlined to include only what is necessary to achieve the benefits discussed above without creating significant barriers to entry that would discourage entities from becoming competing consolidators.

[1102] See supra Sections V.D.1(a), VI.C.2(d); supra note 664.

Competing consolidators would also experience implementation costs because initial Form CC and any amendments to Form CC would be required to be filed electronically with the Commission. The Commission preliminarily believes that requiring Form CC to be filed electronically would reduce filing costs compared to requiring the competing consolidator to file paper forms.

To file a form CC, competing consolidators would need to access the Commission's EFFS system. Each competing consolidator would have to submit an application and register each individual who would access the EFFS system on behalf of the competing consolidator. The Commission believes that each competing consolidator would initially designate two individuals to access the EFFS system, with each application taking 0.15 hours for a total of 0.3 hours per competing consolidator. On an ongoing basis, each competing consolidator will add one individual to access the EFFS system for amendments, adding 0.15 hours per competing consolidator. To make a submission into the EFFS system, the competing consolidator must download a proprietary viewer; however, the Commission would cover the cost of the license for all competing consolidators, as it currently does for other filers that use the EFFS system.

Because the EFFS system is not available to the public, when the Commission makes an effective Form CC available to the public, the Commission will transform the data into an unstructured format, meaning that it is not machine-readable. Market participants that would use the Form CC data to evaluate and compare competing consolidators would bear the costs of locating, comparing, and evaluating the information on the Commission's website and take steps to put the information "side by side" for comparison purposes.

The Commission preliminarily believes that the public disclosure of performance metrics and additional information would introduce transparency to the operations of competing

consolidators. These metrics would allow subscribers and potential subscribers to better evaluate the performance and current and future capabilities of a competing consolidator. Market participants, based on their individual needs, could review competing consolidators' performance statistics and choose ones that would best serve their trading needs. While the requirements to post the monthly performance metrics and operational information on websites would introduce transparency, it would not completely eliminate costs incurred when market participants want to compare competing consolidators because collecting the information would involve market participants expending some resources to go to each competing consolidator's website.

Competing consolidators would also incur implementation and ongoing compliance costs in order to setup and maintain systems required to calculate and produce the information for the performance metrics as well as other information the competing consolidator would be required to post to its website.

Each month, competing consolidators would be required to post the monthly performance metrics and operational information on their own websites. Excluding the cost of preparing the information, the Commission estimates an average competing consolidator would incur a one-time cost of $2,651 (6 hours (for website development) × $308.50 per hour (blended rate for a senior systems analyst ($285) and senior programmer ($332)) + $800 for an external website developer to develop the web page = $2,651) for posting the required information to a website, and would incur an ongoing annual cost of up to $3,702 (1 hour (for website updates) × $308.50 per hour (blended rate for a senior systems analyst ($285) and senior programmer ($332)) x 12 monthly postings = $3,702) to update the relevant web page each month. Because the monthly performance metrics and operational information may be posted in any format the competing consolidator finds most convenient, market participants that would use the data to evaluate and

compare competing consolidators would bear the costs of locating, comparing, and evaluating the information on each competing consolidator's website. The Commission preliminarily believes that the operational information that competing consolidators would be required to publicly disclose on their websites would create a mechanism for market participants to hold competing consolidators accountable for any systems issues they may experience. One strong accountability mechanism market participants have is their purchasing power. The disclosure requirements would alert market participants to any system breaches or any data quality or systems issues a competing consolidator experiences. Market participants could hold competing consolidators accountable by abandoning competing consolidators that repeatedly experience system issues and gravitating toward competing consolidators that demonstrate more reliable systems through their disclosures. This demand shift could cause competing consolidators with less reliable systems to exit the market.

In addition to the requirements of Regulation SCI promoting competing consolidators to develop resilient systems,[1103] the requirement that competing consolidators publicly disclose information on systems issues as well as performance metrics regarding system availability could also encourage competing consolidators to make investments that would ensure the resiliency of their systems. These disclosures would help market participants determine which competing consolidators have more reliable systems. Competing consolidators who display more reliable systems with greater system availability would attract more subscribers. This should incentivize competing consolidators to invest in better backup systems or other technology that would improve the resiliency of their systems and increase their system uptime.

[1103] See supra Section VI.C.2(e)(i).

The Commission preliminarily believes that information from the disclosures in Form CC and the performance metrics and operational information competing consolidators would provide on their websites would promote effective regulatory oversight of competing consolidators and increased investor protection by providing the Commission and relevant SROs with information about competing consolidators. With this information, the Commission and the SROs could identify competing consolidators that are not properly complying with the proposed amendments or parts of them. The Commission and SROs, then, could utilize this information to help prioritize examinations and possibly help identify potential issues.

The Commission preliminarily believes that the public disclosure of the information in Form CC and the performance metrics and operational information competing consolidators would provide on their websites could also increase competition between competing consolidators and also expose some competing consolidators to certain competitive effects. If the public disclosures show that certain competing consolidators have higher fees or poorer performance, it may result in those competing consolidators losing subscribers and earning lower revenues. Similarly, competing consolidators who display lower prices or superior system performance may be able to attract more subscribers and earn more revenue. The public disclosure of the fee and performance information on the Commission and competing consolidator websites would facilitate competing consolidator comparison and would also promote competition. Greater competition between competing consolidators could in turn incentivize competing consolidators to innovate—particularly in terms of their technology—so that they can attract more subscribers.[1104]

(b) Commission Review and Process for Declaring Initial Form CC ineffective

[1104] See infra Section VI.D.2 (discussing the potential effects of the proposal on competition).

The Commission preliminarily believes that the process of reviewing an initial Form CC would allow the Commission to evaluate, among other things, the completeness and comprehensibility of the competing consolidators' disclosures and, if necessary, declare the Form CC ineffective. To be a consolidated market data provider, a competing consolidator is required to have a Form CC that has become effective pursuant to proposed Rule 614(a)(1)(v). Thus, for competing consolidators that submit low quality and potentially inaccurate data, the Commission's review and declaration of their Form CC ineffective could start an iterative cycle of increasingly better information provision, until the competing consolidator can have an effective Form CC. The Commission preliminarily believes that this public disclosure and review process would improve the quality of information the Commission receives from competing consolidators, which would allow the Commission to better protect investors from potentially incomprehensible or incomplete disclosures that would misinform market participants about the operations of the competing consolidator. Additionally, an entity cannot operate as a competing consolidator without an effective Form CC. The Commission's review would be designed to ensure that the competing consolidators serving the investors would be the ones that meet the Commission's qualification requirements.

The Commission preliminarily believes that the filing requirements of Form CC and the Commission review period could impose costs on competing consolidators. The Commission preliminarily believes that declaring a Form CC ineffective could impose costs on a competing consolidator—such as delaying the start of operations while the competing consolidator resubmits its Form CC—and could impose costs on individual market participants and the overall market for competing consolidators resulting from a potential reduction in competition. However, competing consolidators and market participants would not incur these costs unless the

competing consolidator submitted a deficient Form CC. Therefore, the Commission preliminarily believes that a competing consolidator would be incentivized to submit Form CC disclosures that are complete and comprehensive to avoid bearing the costs of resubmitting a Form CC filing or of having its Form CC declared ineffective.

The Commission recognizes that the registration process would create uncertainty about whether the form would be declared ineffective. This uncertainty could create a disincentive for entities to become competing consolidators, which could potentially reduce competition in the competing consolidator market.[1105]

(c) Request for Comments

The Commission requests comments on its analysis of the economic effects of proposed Form CC. In particular, the Commission solicits comment on the following:

252. Do you agree that Form CC would help market participants make better-informed decisions about which competing consolidators to subscribe to in order to achieve their trading or investment objectives? Why or why not?

253. Do you agree that the process for the Commission to declare an initial Form CC ineffective would promote the quality of information the Commission receives from competing consolidators? Do you agree that the quality would affect the ability of the Commission to protect investors? Why or why not?

254. Do you agree with the Commission's assessment of the costs of Form CC? Please explain and provide cost estimates, if available.

1105 See infra Section VI.D.2 (discussing the potential effects of the proposal on competition).

255. Do you agree that filing initial Form CC and amendments to Form CC electronically with the Commission through the EFFS system would reduce filing costs and increase benefits compared to filing paper forms? Please explain.

256. The Commission has provided cost estimates that competing consolidators would incur for accessing and filing using the Commission's EFFS system. Do you believe these cost estimates are accurate? If not, please explain. Do you believe there are other costs potential competing consolidators would incur related to using the EFFS system that the Commission should consider?

257. Do you agree that the proposed performance metrics would create operational transparency of competing consolidators and allow subscribers and potential subscribers to evaluate and compare the performance of competing consolidators? Please explain. Do you agree that posting the monthly performance metrics on the websites of the competing consolidators would limit the ability to compare competing consolidators relative to posting or filing the metrics in a central location? Please explain.

258. How costly would it be for competing consolidators to calculate and post the performance metrics? Please explain and provide cost estimates.

259. The Commission has provided cost estimates that competing consolidators would incur for posting monthly statistics on their websites. Do you believe these cost estimates are accurate? If not, please explain. Do you believe there are other costs competing consolidators would incur related to posting monthly statistics on their websites that the Commission should consider? Please explain.

260. Do you agree with the Commission's assessment of the costs imposed by the process for declaring an initial Form CC ineffective, including the uncertainty it would create? Please explain.

4. Economic Effects from the Interaction of Changes to Core Data and the Decentralized Consolidation Model

The Commission preliminarily believes that the proposed amendments would have a number of economic effects that are only possible as a result of a combination of the expanded content of core data and latency reductions due to the introduction of the decentralized consolidation model.[1106] Specifically, the Commission preliminarily believes that the combination of these factors would affect proprietary data feed business; market participants who choose to engage in market making, smart order routing, and other latency sensitive trading businesses; the Consolidated Audit Trail; and data vendor business.

(a) Economic Effects on the Proprietary Data Feed Business

The Commission preliminarily believes that the expanded content of core data and latency reduction due the introduction of the decentralized consolidation model could make proposed consolidated market data a reasonable alternative to exchange proprietary data feeds for some market participants. This would have the effect of providing these market participants with a potentially lower cost option (relative to proprietary feeds) for low latency, high content market data. The lower cost of either self-aggregating proposed consolidated market data or obtaining a competing consolidator's data feed would come at the expense of losing the full set of data currently available via proprietary feeds, because the proposed consolidated market data

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[1106] See supra Section VI.C.2(c) (discussing the effect of the decentralized consolidation model on consolidated market data latency).

definition does not include all data elements currently available via proprietary data feeds. Nevertheless, some market participants may find that the expanded content of core data makes the trade-off worth it and may choose to drop their proprietary feed subscriptions in favor of the proposed consolidated market data.

This effect would represent a transfer from exchanges who sell proprietary data feeds to the market participants who would save money by either self-aggregating proposed consolidated market data or subscribing to a competing consolidator's data feed. In the latter case, a portion of the benefit is also transferred to the competing consolidator in the form of additional business. The Commission preliminarily believes that a transfer from the exchanges to market participants may help market participants enhance their product and service offerings to their customers. Additional business and revenues for competing consolidators may enhance competing consolidators' efforts to offer higher quality products and a wider range of product offerings.[1107]

It is possible that changes to the pricing and customer base of core and proprietary data feeds may not have a uniform impact across all exchanges. Some exchanges currently have more proprietary feed revenue than others, and some exchanges may currently rely more on revenue from SIP data fees than other exchanges. To the extent that an exchange receives a large share of revenue from its proprietary feed business, the impact of these potential reductions in proprietary feed subscriptions could be large for that exchange. To the extent that an exchange receives only a small portion of its revenue from proprietary feed subscriptions, the impact of these potential reductions in subscriptions could be small for that exchange. The Commission invites comment on the issue.

[1107] See supra Section VI.C.2(c).

The Commission also notes that the exchanges' revenues from connectivity services may increase or decrease, depending on any new data connectivity fees that the exchanges may propose for data content use cases. The connectivity fees for proposed consolidated market data must be fair and reasonable and not unreasonably discriminatory.[1108] If these new connectivity fees are higher than current fees, there is a possibility that the exchanges' overall revenue from connectivity services would increase. It is also possible that exchanges could lose revenue from existing customers reducing the number of ports or the amount of bandwidth they purchase as they switch to competing consolidators for some use cases. The overall effect on the exchanges' connectivity revenues is uncertain, and the impact on connectivity revenues could differ across different exchanges.

The Commission preliminarily believes that these competitive pressures on the exchange proprietary feed and connectivity business could also have the effect of causing the exchanges to lower the fees they charge for these services in an effort to stay competitive with the proposed consolidated market data. This effect represents a transfer from the exchanges to the customers of these services. To the extent that existing customers of these services invest the money saved from lower fees in new products (such as expanding brokerage services) this effect will also have benefit of encouraging the creation of new products and services. To the extent that the lower fees for these services enable new market participants to subscribe to these feeds and offer the services that these feeds are required for (such as high quality execution brokerage services), this effect will also represent a benefit in the form of new competition in the broker-dealer business.

The Commission preliminarily believes, however, that if a small latency differential between competing consolidator feeds and the proprietary data feeds remains, then the above

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[1108] See supra note 620.

effects are likely to be small, owing to the nature of high speed competition.[1109] However, this limitation would only be for the case where current subscribers to proprietary data feeds switch to using a competing consolidator feed. In the case of those proprietary feed subscribers who become self-aggregators, the Commission preliminarily believes that it is unlikely that this would result in a latency differential compared to receiving proprietary data.[1110] It is also possible that the data that would remain exclusive to proprietary feeds would also reduce the incentives for market participants to switch to using consolidated market data only, further reducing the size of the above effects.

In the event that proprietary data feed subscribers are willing to switch to receiving new consolidated market data and a latency differential remains between these feeds and feeds provided by competing consolidators, the effects discussed in this section would apply only to those market participants who become self-aggregators. The Commission preliminarily believes that the set of current subscribers of proprietary feeds willing to become self-aggregators may be smaller than the set of current subscribers willing to switch to using a competing consolidator, as it is possible that subscribing to a competing consolidator would be more convenient or less costly. To the extent this is the case, the size of the effects described in this section will be reduced. Furthermore, these self-aggregators may continue to enjoy a latency advantage over customers of competing consolidators.

1109 See supra Section VI.B.2(b).

1110 More generally, the proposed rule would enable some reduction in the latency differential between current market participants to the extent that such market participants would be willing to make the necessary technology and personnel investments to take advantage of the latency reductions provided by the decentralized consolidation model. Thus, while some differences in latency may remain, the barriers to entry for market participants to compete in the latency sensitive businesses at various levels of sophistication and competitiveness would be reduced.

To the extent that the changes to proprietary feed subscriptions described above are realized, the exchanges would have corresponding losses in revenue or profit from the provision of proprietary data. Since the Commission is unable to determine how many broker-dealers or other market participants would no longer want to use proprietary data feeds as a result of this rule, it is unable to determine the size of this potential reduction in revenue or profit.

(b) New Entrants into the Market Making, Broker-Dealer and other Latency Sensitive Trading Businesses

The Commission preliminarily believes that proposed amendments may lead to new market participants entering the market making, smart order routing broker-dealer, and other latency sensitive trading businesses. For instance, it is possible that currently there are broker-dealers who would try to compete in the business of sophisticated order routing but choose not to because of the cost of the market data necessary to be competitive. To the extent that the expanded content of new core data and the latency reductions due to the introduction of the decentralized consolidation model make consolidated market data a viable data product for smart order routing, the Commission preliminarily believes that these changes could induce these broker-dealers to enter the business.[1111] This would have the benefit of increasing competition in the sophisticated order routing broker-dealer business.

The Commission preliminarily believes that access to this new, faster consolidated market data could encourage new entrants into the automated market maker business. This

[1111] These would be broker dealers who have not entered these businesses because, currently, the only way to obtain the benefits associated with the new, expanded core data and decentralized consolidation model is to subscribe to proprietary data feeds, which the Commission preliminarily expects to remain more expensive than core data.

would not only improve the competitiveness of this business but also may increase liquidity in the corresponding markets.

The Commission preliminarily believes that if these new entrants would want to use a competing consolidator, and if a small latency differential between competing consolidator feeds and the proprietary data feeds remains, then this effect is likely to be small.[1112] If instead these potential new entrants were to become self-aggregators, then this limitation would be reduced, because the Commission preliminarily believes that there is unlikely to be a significant latency differential between being a self-aggregator and using proprietary data feeds. However, if self-aggregation is required to be a new entrant in these businesses, the number of potential new entrants could be small, since using a competing consolidator may be more convenient or less costly than self-aggregating.[1113] It is also possible that potential participants in the sophisticated SOR, automated market making, and other latency sensitive trading businesses find that they cannot compete effectively without using the data that would remain exclusive to proprietary feeds. To the extent this is the case, the effects discussed above would be further limited.

(c) Effects from the Interaction with the Consolidated Audit Trail

(i) CAT Baseline

Rule 613 of Regulation NMS requires the national securities exchanges and national securities associations ("self-regulatory organizations") to jointly develop and submit to the Commission a national market system plan to create, implement and maintain a consolidated audit trail ("CAT").[1114] At the time of adoption, and even today, trading data was and is

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1112 See supra Section VI.B.2(b).

1113 For related discussion on latency advantages, see supra note 1110.

1114 See supra note 624.

inconsistent across the self-regulatory organizations and certain market activity is difficult to compile because it is not aggregated in one, directly accessible consolidated audit trail system. The goal of Rule 613 was to create a system that provides regulators with more timely access to a sufficiently comprehensive set of trading data, enabling regulators to more efficiently and effectively reconstruct market events, monitor market behavior, and identify and investigate misconduct. Rule 613 thus aims to modernize a reporting infrastructure to oversee the trading activity generated across numerous markets in today's national market system.

On November 15, 2016, the Commission approved the national market system plan required by Rule 613 ("CAT NMS Plan" or "Plan") that was submitted by the self-regulatory organizations.[1115] In the CAT NMS Plan, the Participants described the numerous elements they proposed to include in the CAT, including, (1) requirements for the plan processor responsible for building, operating and maintaining the Central Repository,[1116] (2) requirements for the creation and functioning of the Central Repository, (3) requirements applicable to the reporting of CAT Data by plan participants and their members. "CAT Data" is defined in the CAT NMS Plan as "data derived from Participant Data, Industry Member Data, SIP Data, and such other data as the Operating Committee may designate as 'CAT Data' from time to time."[1117]

The CAT NMS Plan requires plan participants and their members to record and report various data regarding orders by 8:00 am the day following an order event.[1118] The Plan requires industry members to record timestamps for order events in millisecond or finer increments with a

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1115 See id.

1116 The Central Repository is the repository responsible for the receipt, consolidation, and retention of all information reported to the CAT. See CAT NMS Plan, supra note 624, at Section 1.1.

1117 See id. The Operating Committee is the governing body of the CAT NMS Plan.

1118 See id. at Sections 6.3 and 6.4.

clock synchronization standard of within 50 milliseconds.[1119] The CAT NMS Plan Processor, FINRA CAT, is then required to process the order data into a uniform format, link the entire lifecycle of each order, and combine it with other CAT Data such as SIP Data.[1120] The Plan Processor is also required to store the CAT Data to allow the ability to return results of queries on the status of order books at varying time intervals.[1121] Regulators, such as the Commission and SROs will use the resulting CAT Data only for regulatory purposes such as reconstructing market events, monitoring market behavior, and identifying and investigating misconduct.[1122] At this time, the Commission has little information about what specific data, in addition to CAT Data, such as proprietary depth of book and auction data, the SROs currently intend to include in their enhanced surveillance systems.[1123]

(ii) Economic Effects on CAT

The Commission recognizes that the proposal could affect the Consolidated Audit Trail, resulting in benefits to investors from improved regulatory oversight, costs to CAT from potentially switching from a current SIP to a competing consolidator, costs to CAT from integrating consolidated market data into the CAT Data model, and costs to SROs of updating their enhanced surveillance systems to use consolidated market data provided by the CAT.[1124] Specifically, the Plan Processor for the Consolidated Audit Trail, FINRA CAT, is required to incorporate all data from SIPs or pursuant to an NMS plan into the Consolidated Audit Trail. If

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1119 See id. at Section 6.8.

1120 See id. at Section 6.5.

1121 See id. at Section 6.5(c)(ii).

1122 See id. at Section 6.5(g); CAT NMS Plan Approval Order, supra note 624, at 84833–4.

1123 See Rule 613(f) of Regulation NMS.

1124 See supra Section IV.B.5 for a more detailed discussion of how the proposal would alter the requirements of the Consolidated Audit Trail NMS Plan.

the Commission were to approve these amendments, the CAT NMS Plan Operating Committee could choose to purchase such data from a different entity and would be required to purchase the expanded consolidated data.

The Commission believes that the incorporation of the expanded data into CAT would improve regulatory oversight to the benefit of investors. As explained in the Approval order for the Consolidated Audit Trail, the expected benefits of the CAT include "improvements in regulatory activities such as the analysis and reconstruction of market events, in addition to market analysis and research…, as well as market surveillance, examinations, investigations, and other enforcement functions," and derive from improvements in four data qualities: accuracy, completeness, accessibility, and timeliness.[1125] Accuracy refers to whether the data about a particular order or trade is correct and reliable. Completeness refers to whether a data source represents all market activity of interest to regulators, and whether the data is sufficiently detailed to provide the information regulators require. Accessibility refers to how the data is stored, how practical it is to assemble, aggregate, and process the data, and whether all appropriate regulators could acquire the data they need. Timeliness refers to when the data is available to regulators and how long it would take to process before it could be used for regulatory analysis.

The Commission believes that the expanded consolidated data from the proposal could improve the completeness and accessibility of CAT Data.[1126] In particular, the proposal would

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1125 See CAT Approval Order, supra note 624, at 84802–3.

1126 The Commission believes the proposal would not affect the accuracy or timeliness of CAT Data. The Commission does not believe that the proposal would alter the accuracy of timestamps of trades and quotes. While some competing consolidators might offer data that more accurately represents the data observed by certain market participants at the time of an order event, the Commission does not expect that all market participants

improve the completeness of CAT Data because CAT Data would contain quotes smaller than 100 shares, depth of book information, and auction information. While the CAT will contain query functionality capable of recreating limit order books, the depth of book information would allow regulators to see the displayed order books that others see around the time of the order events. While the Commission does not know if SROs plan to incorporate depth of book and auction information into their enhanced surveillance systems or other regulatory activities using CAT Data, the proposal would improve the accessibility of consolidated market data for SRO and Commission CAT-related uses because SROs would have access to such data in a standardized format through the Consolidated Audit Trail instead of through the variety of formats currently used in proprietary data. The proposal would also improve accessibility because the SROs and Commission would have such data on the same system as CAT Data.

The Commission believes that the potential improvements in completeness and accessibility would facilitate more efficient regulatory activities using CAT Data that would benefit investors. In particular, the proposal could make broad-based market reconstructions using CAT Data more efficient by increasing the depth of information that could be incorporated into such reconstructions with CAT Data alone. The Commission believes that depth of book information, quote information in sizes less than 100 shares, and auction information are all valuable in a broad-based market reconstruction. Further, the improvements would allow for

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would observe the exact same data at that order event, much like the case today. In addition, industry member clock synchronization and timestamps on the order events in CAT Data are not fine enough for the latency improvements to affect the accuracy of assigning an order event to the consolidated market data likely observed at the time of the order event. Finally, the order data in CAT is not required to be reported until 8:00 am the day following an order event. Hence, because latency improvements from the proposal would be measured in microseconds, the Commission does not believe that the proposal would improve the timeliness of CAT Data.

more targeted surveillances and risk-based examinations using CAT Data alone. For example, the depth of book information would be valuable when building surveillances to detect spoofing or in investigating spoofing because spoofing often involves creating a false impression of depth at prices outside of the best bid or offer. In addition, the auction information would facilitate auction market reconstruction to evaluate manipulation concerns and inform policy. Quote information in sizes less than 100 shares would facilitate analysis by regulators of broker-dealers' best execution practices by providing potential execution prices that are better than the current NBBO.[1127]

The Commission recognizes that the interaction between the proposal and the Consolidated Audit Trail could also create additional costs. Such additional costs are likely to be borne by SROs and their members. These costs could include switching costs, additional data costs, and data storage and processing costs. The proposal would result in switching costs if the CAT Central Repository has to obtain the data from a different source. The source of the switching costs could be from changing data input formats and technical specifications, which would require one-time implementation costs. The Commission recognizes that the SIP technical specifications change a few times a year such that the switching costs associated with the proposal would be the costs in excess of the regular costs incurred when the SIP technical specifications change.[1128] The Commission at this time, cannot judge whether switching data providers would result in higher or lower on-going data intake costs but data intake costs

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1127 See supra Section VI.C.1(b)(i) for data showing that odd-lot quotes in higher priced securities often improve upon the current NBBO.

1128 See CTA, Technical Documents, available at https://www.ctaplan.com/tech-specs (last accessed Jan. 30, 2020) (showing the SIP tech specs version history, which identifies the changes over the years); UTP Data Feed Services Specification, supra note 142 (showing the SIP tech specs version history, which identifies the changes over the years).

presumably could be factored into the selection of a competing consolidator. The Commission recognizes that increasing the amount of data managed and analyzed by CAT would increase the costs of data storage and processing to integrate the expanded data with other CAT Data. However, the Commission does not expect the proposal to substantially increase the costs of operating the CAT because any marginal increase in cost associated with consolidated market data would be dwarfed by the processing costs already incurred by CAT, which includes processing for all options quotation activity among other order lifecycle events and is significantly larger in size than consolidated market data.

The Commission recognizes that the proposal would result in SROs incurring costs to integrate additional CAT Data into their surveillances. Even if the SROs would otherwise include depth of book and auction information in the CAT-related surveillances, they would incur costs in changing their surveillances to use the data in CAT rather than using data from proprietary feeds.

The Commission also considered whether the requirements in CAT would impose costs as a result of CAT's effect on the competition among competing consolidators. Because the Commission does not believe CAT would significantly affect the competition among competing consolidators,[1129] it would not impose additional costs resulting from this effect.

The Commission preliminary believes that CAT implementation milestones will not be impacted by the infrastructure proposal given that sufficient lead time would be available and integration efforts could be scheduled as part of standard release planning. The Commission believes that switching market data providers and expanding consolidated market data within

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[1129] See infra Section VI.D.2 for a discussion of the interaction between the proposal and CAT on competition among competing consolidators.

CAT would require limited resources relative to the current implementation activities. Further, any resources devoted by SROs to updating their surveillances are separate from the efforts to implement CAT.

(d) Effects on Data Vendors

The Commission preliminarily believes that the proposed amendments would have an effect on the broad financial data services industry. To the extent that the amendments lead to cheaper (relative to proprietary data feeds) and higher content consolidated market data, the Commission preliminarily expects that costs to data vendors would go down and the ability of such vendors to grow their customer base would increase. It is also possible that data vendors may increase the range and quality of products they offer using the new expanded core data and that new firms enter the data vendor business. To the extent that the risk of price increases for core data is realized instead, the Commission believes these businesses could potentially face higher costs, which when passed on to clients could cause their customer base to shrink. In the event that these outcomes are severe, it is possible that some data vendors could exit the market. The Commission is uncertain about the potential size and scope of these effects because it is unable to determine both the role of these costs in producing the products supplied by the data services industry and the extent to which the enhanced quality of new core data could play a role in the quality of their products. The Commission invites comments on the issue.

(e) Request for Comments

The Commission requests comments on its analysis of the economic effects from the interaction of changes to core data and the decentralized consolidation model. In particular, the Commission solicits comment on the following

261. Do you agree with the Commission's analysis of the effect of the proposal on the proprietary data business? Why or why not? Please explain in detail.

262. Would exchanges lose proprietary data business as a result of the proposed decentralized consolidation model? Why or why not? Please explain. Would any market participants still elect to purchase proprietary data feeds from exchanges? If so, which market participants? Please explain in detail. What would be the net effect of any changes in this business?

263. The Commission invites comment on the role of SIP data revenue and proprietary feed revenue in the overall data revenue of exchanges. To what extent do exchanges rely on each source of revenue? Please explain in detail.

264. Do you agree with the Commission's analysis of the effects of the proposed amendments on the broad financial industry data services industry? Why or why not? Please explain in detail. Would the proposal lead to new broker-dealers developing SORs, new market makers, or other new latency sensitive traders? If so, what would be the economic effect of these new players? Please explain in detail.

265. Do you agree with the Commission's analysis of the effects of the interaction between the proposal and the Consolidated Audit Trail? Why or why not? Please explain.

266. Would the proposal result in more complete and/or accessible CAT Data? Please explain. How would regulators use the additional CAT Data resulting from the proposal and how would investors benefit from this usage? Please explain.

267. To what extent would the proposal alter the SROs enhanced surveillances using CAT Data? Please explain. Would the proposal result in SROs incorporating more depth

of book and auction information into their surveillances? What would be the costs and benefits of doing so? Please explain.

268. If the proposal resulted in FINRA CAT switching data providers, what would be the switching costs? How would the proposed amendments affect the implementation and ongoing costs of CAT? Please provide estimates if possible.

269. Do you agree that the proposal would not affect the implementation of CAT? Please explain.

270. Do you agree with the Commission's analysis of the effects of the proposal on data vendors? Why or why not? Please explain.

5. Request for Comments on the Economic Effects of the Proposed Rule

The Commission requests comment on its analysis of the economic effects of the proposed amendments. In particular, the Commission solicits comment on the following:

271. Do you believe the Commission's analysis of the potential economic effects of the proposed amendments is reasonable? Why or why not? Please explain in detail.

272. Do you believe the proposed amendments may have unintended consequences that are not captured by the Commission's analysis of the potential economic effects? Why or why not? Please explain in detail.

273. Do you agree with the Commission's analysis of the benefits of the proposed amendments? Why or why not? Please explain in detail.

274. Do you agree with the Commission's analysis of the costs of the proposed amendments? Why or why not? Please explain in detail.

275. The Commission requests that commenters provide relevant data and analysis to assist us in determining the economic consequences of the proposed amendments. In

particular, the Commission requests data and analysis regarding the costs SROs, exclusive SIPs, and market participants may incur, and benefits they may receive, from the proposed amendments.

D. Impact on Efficiency, Competition, and Capital Formation

1. Efficiency

The Commission preliminarily believes that the proposed amendments would have a number of different effects on efficiency. In particular, the Commission preliminarily believes that the proposed amendments would: lead to more efficient gains from trade, improve the efficiency of order execution for some market participants, improve price efficiency, and affect how efficiently core data is distributed. The rest of this section discusses these different effects of the proposed amendments on efficiency in detail. The Commission solicits comments whether the proposed amendments might have a significant impact on other forms of efficiency.

As discussed above, the Commission preliminarily believes that the expansion of core data under the proposed amendments would increase transparency for market participants who do not currently access proprietary DOB feeds and allow them to more easily find liquidity that they can trade against.[1130] Currently, some of these market participants may not trade because they cannot see the quotes available to them, either through a lack of information about odd-lots, depth of book, or auction information. The Commission preliminarily believes that the proposed amendments would alleviate some of this information shortage and would allow traders to more easily find counterparties. This may result in more voluntary trades occurring between market participants, which could lead to more efficient gains from trade, since these are trades which

[1130] See supra Section VI.C.1(b).

currently do not take place only because of a lack of information.[1131] However, if the inclusion of additional odd-lot, depth of book, or auction information does not induce additional voluntary trading from market participants who do not currently access proprietary DOB feeds, then the proposed amendments may not produce more efficient gains from trade.[1132]

The Commission preliminarily believes that the expansion of core data could also improve the efficiency with which some market participants, or their broker-dealers, execute orders. As discussed above, by adding odd-lot, depth of book, and auction information to core data, the proposed amendments would reduce information asymmetry between broker-dealers and other market participants who subscribe to proprietary data feeds and users of current SIP data. This could improve the ability of broker-dealers and other market participants who currently do not have access to this information to trade against those market participants who do. As a result, this could improve the efficiency with which they execute their orders by allowing them to select a better trading venue or method of executing their order. Furthermore, for market participants who currently rely on exclusive SIPs for their order executions, the reduction in latency provided by the decentralized consolidation model could reduce the risk that their orders are picked off, which could reduce their adverse selection costs. This could potentially reduce their transaction costs and allow them to more efficiently achieve their investment or trading objectives or those of their clients.[1133]

As discussed previously, the Commission preliminarily believes that there is some potential for new broker-dealers to become competitive in the market for sophisticated order

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1131 Id.

1132 Id.

1133 Id.

execution as a result of this rule because they may be able to use the expanded content and lower latency of core data to develop SORs or other tools that allow them to compete more effectively with broker-dealers who currently base order execution decisions off of proprietary DOB data.[1134] To the extent that this happens, the clients of these broker-dealers could see their orders executed more efficiently and their execution costs reduced.

The current lack of certain odd-lot quote, depth of book, and auction information in SIP data could affect price efficiency. The gap in information between data provided by exclusive SIPs and proprietary data products may cause prices in some securities to be less efficient, i.e. to deviate further from fundamental values, if market participants with access to proprietary data products do not incorporate this information into prices quickly enough through their trading or quoting activity. However, the Commission does not know the extent of this possible effect, but it preliminarily believes the effect could be larger in less actively traded securities where the gap in information between SIP data and proprietary data products is larger.

The Commission preliminarily believes that, to the extent that there is information in the new core data elements that is not currently reflected in market prices, the proposed amendments may improve price efficiency.[1135] In particular, the proposed introduction of odd-lot quote, depth of book, and auction information into core data could result in the information becoming impounded in prices more rapidly and accurately as a result of the more widespread dissemination of this information. As the Commission understands that the most sophisticated traders already have access to this information and likely already compete to profit from it, the

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1134 See supra Section VI.C.4(b).

1135 See supra Section VI.B.2(a).

Commission expects that the size of this gain in price efficiency would be small because this information is already impounded quickly into prices.

Finally, under the current rule, the exclusive SIPs operate like public utilities in their consolidation and distribution of the NMS stock data.[1136] The proposed changes would unbundle the data fees for consolidated market data from the fees for its consolidation and distribution.[1137] The decentralized consolidation model would subject the fees charged by competing consolidators for the consolidation and distribution of consolidated market data to competition. The Commission preliminarily believes that the proposed decentralized consolidation model would lead to consolidated market data being distributed in a more timely, efficient, and cost-effective manner. The Commission preliminarily believes that the proposed changes to the consolidation and distribution of consolidated data is economically similar to the restructuring of public utilities and may have an impact on the efficiency with which the consolidation and distribution is carried out. In particular, as discussed above, the proposed decentralized consolidation model is anticipated to produce better investment to lower costs and improve quality in the consolidation and distribution of consolidated market data, as well as promote better price competition (all of which translates into a more efficient allocation of capital) than the bidding process currently in place.[1138]

The Commission acknowledges the uncertainty in this conclusion. The literature on the economics of restructuring of public utilities does not provide clear guidance. Some papers

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1136 See supra note 390.

1137 See supra Section VI.C.2(c).

1138 See id.

show efficiency gains from regulatory restructuring,[1139] yet others claim no efficiency gains or efficiency declines after regulatory restructuring of public utilities.[1140] The likely impact of the proposed changes rests on the strengths and weaknesses of the existing exclusive SIP model.

The Commission preliminarily believes that the existing exclusive SIP model has an important weakness: it does not provide sufficient competitive incentives.[1141] SIPs have significant market power in the market for core and aggregated market data products and, as a result, do not need to compete hard to capture demand for their products. The Commission preliminarily believes that the adoption of the decentralized consolidation model would open up the consolidation and distribution services to data consolidators that would need to vigorously compete to capture some demand for the data they provide. This need to compete for market share would create incentives to reduce costs. As discussed above, the Commission preliminarily believes that this competition could incentivize competing consolidators to pass on some of those cost savings to customers by charging lower service fees in order to capture market share.[1142] The focus to capture market share might also lead to technological improvements for competing consolidators to be able to differentiate themselves in the eyes of

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1139 See, e.g., Kira R. Fabrizio et al., Do Markets Reduce Costs? Assessing the Impact of Regulatory Restructuring on US Electric Generation Efficiency, 97 AM. ECON. REV. 1250 (2007).

1140 See, e.g., Severin Borenstein, The Trouble with Electricity Markets: Understanding California's Restructuring Disaster, 16 J. ECON. PERSP. 191 (2002).

1141 See supra Section VI.B.3(a) (discussing SIPs market power).

1142 See supra Section VI.C.2(b). However, the Commission also acknowledges the possibility that fees for the consolidation and distribution of consolidated market data may remain the same or increase, because consolidated market data will contain more information and/or there might not be enough competition among competing consolidators.

the customers and generate demand.[1143] The Commission preliminarily believes that these improvements in data provision technology and the introduction of competitive forces on fees for the consolidation and distribution of consolidated market data could result in a more efficient allocation of capital.

Additionally, the decentralized consolidation model could allow market participants to receive consolidated market data more efficiently. Instead of having to receive separate consolidated market data feeds from two exclusive SIP plan processors, UTP and CTA/CQ Plans, market participants would have the option to receive all of their consolidated market data from one competing consolidator.[1144] This could allow market participants to achieve efficiencies in the design and in making modifications to their systems for the intake of consolidated market data because they would only have to configure their systems to intake consolidated market data from one source.

2. Competition

[1143] Several studies found evidence of efficiency gains and technological improvements from restructuring in the public utilities sector. In the electricity industry, for example, the introduction of competition to the electricity generation services created strong incentives to become more cost efficient and technologically advanced to improve operating performance. If a plant could not become efficient enough to compete, it would lose business and have to exit the market. Craig and Savage (2013) establish a 9% increase in efficiency in investor-owned electricity plants in response to the restructuring and increasing competition in the electricity sector. Similarly, Davis and Wolfram (2012) argue that electricity market restructuring is associated with a 10 percent increase in operating performance for nuclear plants generating electricity. The authors state that increasing competition led to managers focusing more attention on financial costs of outages. See J. Dean Craig and Scott J. Savage, Market Restructuring, Competition and the Efficiency of Electricity Generation: Plant-level Evidence from the United States 1996 to 2006, 34 ENERGY J. 1 (2013); Lucas W. Davis and Catherine D. Wolfram, Deregulation, Consolidation, and Efficiency: Evidence from US Nuclear Power, AM. ECON. J.: APPLIED ECON. (Oct. 2012), at 194.

[1144] The Commission acknowledges that market participants may subscribe to more than one competing consolidator for different core data products or as a backup feed.

As discussed previously, the Commission preliminarily believes this proposed rule would have a substantial impact on competition. The Commission preliminarily identifies seven markets or areas of the market for which the proposed rule would have a substantial impact on competition. The Commission acknowledges that the seven markets or areas may not be a comprehensive list of all markets or areas for which the proposed rule might have an impact on competition. However, the Commission preliminarily believes that competition in these seven markets or areas are most likely to be impacted substantially by the proposed rule. The Commission solicits comments regarding whether the proposed rule might have a substantial impact on competition in other markets or areas of the market.

First, the proposed rule introduces a competitive marketplace for the consolidation and dissemination of consolidated market data to replace the centralized consolidation model, which is not currently subject to competitive pressures.[1145] Under the proposed amendments multiple competing consolidators would be able to distribute consolidated market data to market participants. The Commission preliminarily believes that, since market participants could freely select the competing consolidator that charged the lowest distribution fee or offered better quality (i.e. lower latency, a more reliable system, etc.), the competing consolidators would be subject to competitive forces and the marketplace for the consolidation and dissemination of proposed consolidated market data would be competitive if enough competing consolidators enter the market.[1146] As discussed above, the Commission preliminarily believes that this introduction of competition could reduce the prices competing consolidators charge for the consolidation and distribution of consolidated market data and improve the quality of

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1145 See supra Sections IV.B.2, VI.B.3(a).

1146 The Commission assumes that enough competing consolidators will enter the market in order to make it competitive. See supra Section VI.C.2(a).

consolidated market access.[1147] The Commission recognizes the risk that there could be too few competing consolidators to realize these benefits fully, in which case the proposed competitive changes may have a number of costs,[1148] including higher prices for the consolidation and dissemination of consolidated market data, which could increase the overall prices market participants pay for consolidated market data.[1149]

The Commission recognizes that the extension of Regulation SCI to include competing consolidators could impact competitive dynamics in the competing consolidator market. The Commission preliminarily believes the costs associated with being an SCI entity could raise the barriers to entry for firms seeking to become competing consolidators who are not already SCI entities, including market data aggregation firms.[1150] Exclusive SIPs and SROs who seek to become competing consolidators could gain a competitive advantage over these firms because they would face lower barriers to entry since they are currently SCI entities and already incur many of these costs.[1151] Therefore, the extension of Regulation SCI to competing consolidators could result in fewer firms seeking to become competing consolidators which could lead to less competition in the competing consolidator market. Less competition and less innovation would reduce the incentives of competing consolidators to reduce the costs and improve the speed and quality of their consolidated market data aggregation and dissemination services.

Additionally, the Commission preliminarily believes that the public disclosure of the information in Form CC and the performance metrics and operational information competing

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1147 See supra Sections VI.C.2(a), VI.C.2(b), VI.C.2(c).

1148 See supra Sections VI.C.2(a), VI.C.2(d).

1149 See supra Section VI.C.2(a).

1150 See supra Sections VI.C.2(a)(i)b., VI.C.2(e)(ii).

1151 See supra Sections V.G.,ViC.2(a)(i)b.

consolidators would provide on their websites would enhance competition between competing consolidators.[1152] The public disclosure of competing consolidator fees and performance metrics would allow market participants to more easily compare competing consolidators and select the ones that charged the lowest fees or offered the best performance. This could enhance competition between competing consolidators. For example, if the public disclosures show that certain competing consolidators have higher fees or poor performance, it may result in those competing consolidators losing subscribers and earning lower revenues. Similarly, competing consolidators who display lower prices or superior system performance may be able to attract more subscribers and earn more revenue. This in turn could enhance competition by incentivizing competing consolidators to lower fees and/or innovate and make investments in their systems in order to improve system performance in order to attract more subscribers. In theory, the Commission acknowledges that the public disclosure of Form CC could harm competition by making firms reluctant to enter the competing consolidator market and reducing the incentives of competing consolidators to innovate if it discloses certain information that a competing consolidator might view as a "trade secret" or giving it a competitive advantage. However, the Commission believes that these effects are not likely to occur because it preliminarily believes that the disclosures on Form CC are not detailed enough to allow other market participants to reproduce a competing consolidator's "trade secret." Additionally, the Commission preliminarily believes that the delayed public disclosure of material amendments to Form CC should prevent another competing consolidator from replicating a competing consolidator's innovations before it has a chance to implement them.[1153]

[1152] See supra Section VI.C.3.

[1153] See supra Sections IV.B.2(e), VI.C.3.

The Commission recognizes that the registration process for Form CC could create uncertainty about whether a Form CC would be declared ineffective. This could potentially harm competition in the market for competing consolidators by raising the barriers to entry and creating a disincentive for entities to become competing consolidators. However, the Commission preliminarily believes that these effects will not be significant because the Commission would not declare a Form CC ineffective without notice and opportunity for hearing. Additionally, entities whose Form CC is declared ineffective would still have the opportunity to file a new Form CC with the Commission.

The Commission considered the effect of the interaction between the proposal and the CAT NMS Plan on competition among competing consolidators, but believes that this interaction would not have a significant effect on the competitive landscape. In particular, the Commission considered two effects: first, the effect in the event that there is a bias toward an exchange-operated competing consolidator over other competing consolidators and second, any competitive advantage for the competing consolidator selected for the CAT NMS Plan. In relation to any bias, the Commission notes that the CAT NMS Plan would be only one of many potential customers of the competing consolidator, so this bias is not likely to affect the market unless the selection produces a competitive advantage. In particular, a competing consolidator could enjoy a competitive advantage only if broker-dealers believe that market surveillances would be less likely to appear to show violations if the broker-dealers made trading decisions using the same data used in SRO surveillances. However, the latency differences across the competing consolidators are likely to measure in the microseconds while the clock synchronization requirements for industry members in the CAT NMS Plan is 50 milliseconds for

electronic order flow.[1154] Therefore, the Commission does not believe the CAT's choice of competing consolidator would confer any regulatory value on the competing consolidator or their broker dealer clients.

Second, the Commission preliminarily believes that the expanded content and reduced latency of consolidated market data would make it a more viable substitute for proprietary data feeds.[1155] The Commission preliminarily believes that this would increase competition between consolidated market data and exchange proprietary data feeds. These competitive pressures could lead to lower prices for proprietary data feeds and may reduce the data costs that market participants pay, at the expense of the SROs who charge the fees.[1156] The Commission recognizes the risk that the extension of Regulation SCI to include competing consolidators could lead to less competition in the competing consolidator market, which could reduce the incentives of competing consolidators to reduce the cost and improve the speed and quality of consolidated market data. If this occurs, it could make consolidated market data less of a viable substitute for proprietary data feeds, which would reduce the competitive pressures consolidated market data would impose on proprietary data feeds.

Third, the Commission preliminarily expects the new decentralized consolidation model for proposed consolidated market data to create competitors to market data aggregators for two reasons. First, the potential revenues from becoming a competing consolidator may cause new firms to enter the market for the consolidation and distribution of market data. Second, some

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1154 See CAT NMS Plan, supra note 624, at Section 6.8.

1155 However, consolidated market data would not be a perfect substitute for the proprietary data feeds because it would not contain all the information in proprietary data feeds. For example, the expanded core data would not include full depth of book information or information on all odd-lots. See supra Section VI.C.4.

1156 See supra Section VI.C.4(a).

market participants who currently use market data aggregators may switch to getting proposed consolidated market data from a competing consolidator. This could have two effects: the competition could lead to lower prices and higher quality in the market data aggregator business, but it could also lead to fewer market data aggregators if the competition from the proposed consolidated market data system makes it no longer viable for some market data aggregators to offer their services.[1157] The latter could lead to higher prices in the market data aggregator space.[1158] In addition, some of these market data aggregators may choose to become competing consolidators, which could have two effects: it could cause market data aggregators to leave the proprietary feed aggregation space thereby reducing the competition in that space, or it could cause market data aggregators to use the economies of scale and the additional profits they derive from being a competing consolidator to improve their offerings as a market data aggregator of proprietary feeds. Depending on which effect dominates, competition in the market data aggregator space could increase or decrease, which in turn could lead to lower or higher prices, respectively. The Commission recognizes that the extension of Regulation SCI to include competing consolidators could diminish the ability of market data aggregators who become competing consolidators to compete in the market data aggregator space. If a market data aggregator becomes a competing consolidator, the requirements of being an SCI entity

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1157 The Commission acknowledges that fewer competitors could decrease or increase efficiency in the market data aggregator business. On the one hand, fewer competitors could reduce the incentives for market data aggregators to innovate, which could reduce efficiency. On the other hand, fewer competitors could also improve efficiency if the firms that exited the market did not aggregate market data as efficiently as the firms that remained.

1158 As discussed above, consolidated market data would not be a perfect substitute for proprietary data feeds, so there would still be demand for proprietary data. Since not all firms aggregate proprietary data themselves, there would still be a demand for third-party aggregators to perform this function.

could also extend to their aggregation of proprietary market data.[1159] These requirements could raise their costs, which could reduce their ability to compete with other market data aggregators that are not competing consolidators.

Fourth, the Commission preliminarily expects that the expanded content and reduced latency of core market data provided by this proposed rule may increase competition in the broker-dealer business by improving the ability of some broker-dealers who currently access core data to execute orders.[1160] It is the Commission's understanding that some broker-dealers that do not subscribe to all of the current proprietary DOB feeds rely solely on the exclusive SIPs today and that this makes them uncompetitive in the market for offering execution services to the most transaction-cost-sensitive market participants. The new decentralized consolidation model with expanded core data would reduce the latency and expand the information delivered to broker-dealers who subscribe to core data, possibly without raising data prices. This in turn would allow broker-dealers that subscribe to consolidated data to improve their order execution services and compete more effectively with broker-dealers who subscribe to proprietary DOB feeds. This would lead to greater competition between broker-dealers, which could benefit investors by resulting in lower prices for and higher quality of broker-dealer execution services.[1161]

Fifth, the Commission preliminarily believes that the proposed rule could affect competition between exchanges. As discussed above, the proposed enhancements to core data could increase competition between proposed consolidated market data and proprietary data

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1159 See supra Section VI.C.2(e)(ii).

1160 See supra Section VI.C.4(b).

1161 See supra Sections VI.B.3(e), VI.C.4(b).

feeds, which could lead to exchanges charging lower fees for proprietary market data.[1162] If these lower fees do not result in more subscribers to proprietary market data, it would lead to a decline in revenues from proprietary market data for SROs.[1163] Additionally, the proposed amendments could affect competition in the market for exchange data connectivity. If some current subscribers to proprietary market data decide to only receive consolidated market data from competing consolidators, they could also reduce the exchange connectivity services that they currently use. In turn, this could reduce the revenue that some exchanges earn from connectivity services. Additionally, new connectivity fees may be proposed for core data use cases, which could potentially increase or decrease the revenue exchanges earn from connectivity.[1164] It is the Commission's understanding that revenues from proprietary market data and connectivity services are a substantial portion of overall revenues for many exchanges.[1165] The Commission recognizes that it is possible that an exchange group could close some or all of its exchanges if the revenues from proposed consolidated market data did not increase and revenues from proprietary market data and connectivity services were to decline to a level that a given exchange or exchange group is no longer able to cover operating expenses. The Commission is unable to quantify the likelihood that an exchange will cease operating because it would depend on the fees and revenue allocation for consolidated market data.

1162 See supra Section VI.C.4(a).

1163 In addition to adjusting fees, SROs could also redesign their proprietary market data product lines to try and increase revenue. However, it is possible that demand for these new products would not be sufficient to offset the decline in revenues from proprietary market data.

1164 See supra Section VI.C.4(a).

1165 See supra Section VI.B.3(b).

However, the Commission preliminarily believes that it is unlikely exchanges will be forced to leave the market.

Even if an exchange were to exit, the Commission does not believe this would significantly impact competition in the market for trading services because the market is served by multiple competitors, including off-exchange trading venues. Consequently, if an exchange were to exit the market, demand is likely to be swiftly met by existing competitors. The Commission recognizes that small exchanges may have unique business models that are not currently offered by competitors, but the Commission preliminarily believes a competitor could create similar business models if demand were adequate, and if they did not do so, it seems likely new entrants would do so if demand were sufficient.

Sixth, the Commission preliminarily believes that the proposed rule would affect competition between traders.[1166] The Commission preliminarily believes that traders will be affected differently based on the type of market data they use when making trading decisions. Traders who subscribe to different types of market data can broadly be grouped into three categories: (1) traders who use proprietary DOB feeds received directly from the SROs and self-aggregate, (2) traders who use market data aggregators to aggregate proprietary DOB feeds, and (3) traders who use core data (currently from the exclusive SIPs and, under the proposed rule, competing consolidators).[1167] The Commission preliminarily believes that under the proposed rule the core data would be of higher quality, and thus the value to traders from acquiring

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[1166] In this context the term traders could refer to either proprietary traders executing orders on their own behalf or broker-dealers executing orders on behalf of their clients.

[1167] Traders who currently subscribe to proprietary DOB feeds may also subscribe to the exclusive SIPs as part of their backup systems. However, the Commission preliminarily believes that these traders primarily rely on proprietary DOB feeds when making trading decisions because proprietary DOB feeds contain more information and have lower latency than the exclusive SIPs.

proprietary DOB data would decrease.[1168] As a result, it would be harder for traders who use proprietary DOB feeds (both self-aggregators and traders who use market data aggregators) to generate profits and the competition between those traders would increase. For traders who use core data, the Commission believes that the competition between those traders would increase because the proposed amendments would reduce the latency and expand the information included in core data, which would allow those traders to devise better trading strategies with bigger profit potential. The Commission preliminarily believes that the most substantial change in competition would occur between traders who use proprietary DOB feeds (both self-aggregators and traders who use market data aggregators) and traders who use core data. As described, the proposed rule expands the information and reduces the latency of core data, thereby closing the gap between core data and proprietary DOB feeds. This would allow traders who use core data to compete on a more level playing field with traders who use proprietary DOB feeds. The Commission preliminarily believes that this would lead to a transfer of profits from traders who use proprietary DOB feeds to traders who use proposed consolidated market data.

Seventh, the Commission preliminarily believes that the proposed rule changes would affect competition between off-exchange trading venues and exchanges in the market for trading services. As discussed above, the Commission preliminarily believes that the proposed amendments would reduce the latency of core data.[1169] This could improve the competitive positions of some off-exchange trading venues in the market for trading services. Off-exchange trading venues that currently rely on the exclusive SIPs to calculate the NBBO would benefit

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[1168] See supra Section VI.C.4(a).

[1169] See supra Section VI.C.2(c).

from the latency reductions in the distribution of core data provided by the competing consolidators.[1170] These venues would now receive a more timely view of the NBBO, which could improve the execution quality of trades that take place on these venues. This could make them more attractive venues to trade on and they could attract more order flow, from both exchanges and other off-exchange venues. Off-exchange trading venues that currently subscribe to proprietary data feeds could also see their competitive positions improve. If the new core data represents a viable alternative to the proprietary data feeds for their order executions, they could substitute core data for proprietary data, which could lower their costs. They might be able to pass along these cost reductions as reduced fees to subscribers, which could improve their competitive position relative to exchanges and other off-exchange trading venues. Reductions in the fees charged by these off-exchange trading venues could in turn potentially benefit investors if broker-dealers who subscribe to these venues passed along these cost savings by, in turn, reducing their fees.[1171]

3. Capital Formation

The Commission preliminarily believes the proposed amendments would have only a modest impact on capital formation. However, the Commission is unable to quantify the effects on capital formation because, as discussed above, it is unable to quantify the additional gains from trade and the effects of improvements in order routing that may be realized from the

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1170 Id.

1171 Broker-dealer subscribers could potentially pass along the cost savings from the reduction in off-exchange trading venue fees to investors either directly, if they reduced fees for investors who were clients of the broker-dealer, or indirectly, if they reduced fees for institutional clients, such as mutual funds, who, in turn, passed along the cost savings to their end investors.

proposed amendments.[1172] However, in the section below the Commission provides a qualitative description of the effects it preliminarily believes the proposed amendments would have on capital formation and invites comments on the subject.

As discussed above, the Commission preliminarily believes that the addition of information about odd-lot quotes, depth of book, and auction information to core data may result in more voluntary trades occurring between market participants, which could lead to more efficient gains from trade.[1173] Improved gains from trade may result in a more efficient allocation of capital, which would improve capital formation.

Additionally, the Commission preliminarily believes that the proposed amendments would improve order execution for market participants who currently rely upon SIP data, which may lower their transaction costs.[1174] Lower transaction costs could reduce firms' cost of raising capital.[1175] This, in turn could improve capital formation.

4. Request for Comments on Impact on Efficiency, Competition, and Capital Formation

The Commission requests comments on its analysis of the impact of the proposed amendments on efficiency, competition, and capital formation. In particular, the Commission solicits comment on the following

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1172 See supra Sections VI.C.1(b), VI.D.1.

1173 See supra Section VI.D.1.

1174 See supra Sections VI.C.1(b), VI.D.1.

1175 See Yakov Amihud and Haim Mendelson, Asset Pricing and the Bid‐Ask Spread, 17 J. FIN. ECON. 223 (1986).

276. Do you agree with the Commission's analysis of the effects the proposed amendments might have on efficiency, competition and capital formation? Why or why not? Please explain in detail.

277. Do you believe the proposed amendments may have unintended consequences that are not captured by the Commission's analysis of the effects the proposed amendments may have on efficiency, competition and capital formation? Why or why not? Please explain in detail.

278. Do you agree that the proposed amendments would lead to gains from trade? Do you agree that the proposed amendments would improve the efficiency or order execution? Do you agree that the proposed amendments would improve price efficiency? Do you agree that the proposed amendments would improve the efficiency of how core data is distributed? Please explain.

279. To what extent does the gap in information between SIP data and proprietary DOB products affect price efficiency? Are these effects larger in less actively traded securities where the gap in information between SIP data and proprietary DOB products is larger? Please explain in detail.

280. Do you believe the proposed amendments would have effects on efficiency that the Commission has not recognized? Please explain in detail.

281. Do you agree with the Commission's analysis that the proposal will have a substantial impact on competition in several markets? In particular, do you agree that the decentralized consolidation model improves the competition in the market to distribute consolidated market data? Do you agree that the decentralized consolidation model creates more viable substitutes for proprietary exchange data? Do you agree that the

proposal increases competition to provide smart order routing? Do you agree that the proposal could affect competition among exchanges to provide transaction services? Do you agree that the proposal could affect competition among traders? Do you agree that the proposal could affect competition among exchanges and off-exchange trading venues? Please explain in detail.

282. Do you agree that the public disclosure of Form CC and the performance metrics promote competition more than if such information were not disclosed? Please explain.

283. Do you agree that the extension of Regulation SCI to include competing consolidators could raise the barriers to entry for competing consolidators and reduce competition in the competing consolidator market? Why or why not? Please explain in detail.

284. Do you agree that the purchase of consolidated market data from a competing consolidator by the CAT would not have a significant effect on competition among competing consolidators? Why or why not? Please explain in detail.

285. Would the public disclosure of Form CC or the performance metrics risk revealing any trade secrets that could harm competition? Please explain.

286. Do you believe the proposed amendments would have effects on competition that the Commission has not recognized? Please explain in detail.

287. Do you agree that the proposal would only have a modest impact on capital formation? Why or why not? Please explain in detail.

288. Do you believe the proposed amendments would have effects on capital formation that the Commission has not recognized? Please explain in detail.

E. Alternatives

The Commission considered potential alternatives to the proposed amendments that broadly fall into two categories: introduce the decentralized consolidation model and make alternative changes to the core data definition, and make changes in the core data definition as proposed in the amendments and consider alternative models of SIP competition.

1. Introduce Decentralized Consolidation Model with Additional Changes in Core Data Definition

The Commission considered an alternative that would introduce the decentralized consolidation model and expand core data more than the proposal does. For example, the Commission considered expanding core data to include information on quotations and aggregate size at all prices in the limit order book ("full depth of book") in addition to the depth of book information contained in the proposal, i.e., five price levels from the protected quotes.[1176] Alternatively, the Commission considered expanding core data to include information on all odd-lot sized quotes instead of only information on quotes at or above the proposed round lot size.[1177] Under both alternatives, the definition of a round lot for the purposes of determining the NBBO and a protected quote would remain the same as in the proposed amendments, which means the costs and benefits associated with the changes in the definition of the NBBO and protected quotes would be similar to the proposal.[1178]

Relative to the proposal, full depth of book information would provide market participants who currently do not access proprietary DOB feeds, as well as market participants who currently access proprietary DOB feeds and would have switched to using consolidated

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1176 See supra Section III.C.2.

1177 See supra Section III.C.1.

1178 See supra Section VI.C.1(c).

market data under the proposal, with additional information on liquidity provision across more price levels. To the extent that these market participants can utilize full depth of book information, the Commission preliminarily believes that this alternative could result in increased benefits to such market participants relative to the proposal.[1179] Certain commenters on the Roundtable stated that without full depth of book information, broker-dealers may not be able to provide best execution to their clients,[1180] indicating that full depth of book information would provide valuable information to market participants. However, as discussed above, the Commission preliminarily believes that the marginal benefit of including additional information on price levels further away from the best quotes may decrease as the price level moves away from the best quote because orders at these price levels are less likely to execute.[1181]

Relative to the proposal, the inclusion of full depth of book information in core data would increase the ability of market participants to use it as a substitute for proprietary DOB feeds.[1182] Currently, market participants interested in full depth of book data rely on proprietary DOB feeds offered by exchanges, which provide varying degrees of the depth of book information. To the extent that there are market participants who utilize full depth of book information via proprietary DOB feeds in trading, this alternative could increase the benefits for

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1179 This alternative could increase costs relative to the proposal for market participants that access full depth of book information and execute trading that earn profits at the expense of other market participants who do not access this information. As discussed above, this cost would represent a partial transfer from traders who currently have access to depth of book to those who do not. See supra Section VI.C.1(b)(iv).

1180 See supra notes 284–285.

1181 See supra Sections VI.C.1(b)(ii), III.C.2.

1182 Including full depth of book information in core data would not make it a perfect substitute for all proprietary DOB feeds. For example, some proprietary DOB feeds contain more detailed information than full depth of information, such as messages on individual orders.

some of these market participants relative to the proposal by potentially reducing their data costs if they would switch to using core data under this alternative but would not have done so under the proposal. Subscribers of proprietary DOB feeds would realize these cost savings if they switched to receiving proposed consolidated market data through a competing consolidator or if they registered as a self-aggregator.[1183]

The Commission preliminarily believes that the alternative to include full depth of the book in core data would result in greater costs for exchanges than would the proposal. To the extent that the alternative results in fewer market participants subscribing to proprietary DOB data or purchasing connectivity services from the exchanges than under the proposal, exchanges' business for their proprietary feeds and connectivity services could be less profitable.[1184] Additionally, to the extent that not all exchanges sell full depth of book, certain exchanges would incur additional costs to set up systems and produce full depth of book information to be included in the core data. However, the Commission is unable to quantify this cost because it lacks information on the modifications exchanges would need to make to their systems in order to provide full depth of book information, but the Commission invites comments on the issue.

Compared to the proposal, this alternative could result in additional costs for competing consolidators to create infrastructure and expand capacity to distribute full depth of book information.[1185] The costs are likely to vary substantially according to the existing infrastructure

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1183 See supra Section VI.C.2(b).

1184 More broadly, this could have differential effects between exchanges who derive significant revenue from proprietary data feeds and those who derive significant revenue primarily from SIP revenue. These effects would also depend on the NMS plan(s) fees for consolidated market data as well as their method for allocating revenue received from consolidated market data among the SROs. See supra Section VI.C.4(a).

1185 See supra Section VI.C.2(d).

of the entity seeking to be a competing consolidator. The Commission preliminarily believes that these incremental costs for market data aggregators and existing exclusive SIPs will be small, because they already work with proprietary DOB data. However, the Commission invites comments on the issue.

Additionally, including full depth of book information would require market participants who subscribed to core data and wished to receive the additional depth of book information to make more extensive upgrades to their systems than under the proposal. However, the Commission is unable to estimate the associated costs because it does not have access to information about the infrastructure expenses a market participant incurs to process market data and because of the likelihood that such costs vary substantially according to the existing infrastructure of the market participant, but the Commission invites comments on the issue. To the extent that some market participants who subscribe to the exclusive SIPs do not need full depth of book information, they would not need to expand their own proprietary technology or that of a third-party vendor to process the full depth of the book data. Therefore, this alternative would not result in additional costs for these market participants compared to the proposal.

In addition to the alternative of adding full depth of book information, the Commission also considered expanding core data to include information on all odd-lot sized quotes instead of only information on quotes at or above the proposed round lot size.[1186] The proposed rule is specifically designed to leave out odd-lot quotes for low priced stocks. Under this alternative, market participants who subscribe to core data would have odd-lot information for low priced stocks. Furthermore, compared to the proposal, this alternative would provide market participants who subscribe to core data with more detailed information about at which prices

[1186] See supra Section III.C.1.

odd-lot liquidity exists (i.e., instead of rolling up odd-lot quotes at different prices to the highest price) for higher priced stocks. To the extent that market participants who currently do not have access to this information utilize the more detailed odd-lot information in order routing and execution, this alternative could improve their execution quality relative to the proposal.[1187] However, as discussed above,[1188] Commission and commenter analysis shows that there is a higher percentage of odd-lot trades in higher priced stocks. This could imply that there are fewer odd-lot quotes present in low priced stocks, which could mean that the marginal benefit of including odd-lot information in low priced stocks may be smaller than including it in stocks with higher prices.

The Commission preliminarily believes that the inclusion of all odd-lot data would not significantly change the processing costs for competing consolidators relative to the proposal. Under the current proposal, competing consolidators would already be processing all odd-lot data in order to calculate exchange round lot BBOs and the round lot NBBO that would be contained in the proposed core market data. Competing consolidators may incur some additional infrastructure expenses in order to disseminate the additional message volume associated with all odd-lot information to market participants. These costs are likely to vary according to the existing infrastructure of the entity seeking to be a competing consolidator, but the Commission

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1187 This alternative could increase costs relative to the proposal for market participants that access all odd-lot quotes and execute trading that earn profits at the expense of other market participants who do not access this information. As discussed above, this cost would represent a partial transfer from traders who currently have access to all odd-lot quotes to those who do not. See supra Section VI.C.1(b)(iv).

1188 See supra note 178 and accompanying text.

preliminarily believes that these additional infrastructure costs are likely to be small.[1189] However, the Commission invites comments on the issue.

Additionally, the Commission preliminarily estimates that market participants and data vendors would need to make additional upgrades to their systems beyond the proposal in order to receive the additional odd-lot data. However, the Commission does not have access to information about the infrastructure expenses a market participant incurs to process market data and because of the likelihood that such costs vary substantially according to the existing infrastructure of market participants, but the Commission invites comments on the issue.

2. Introduce Changes in Core Data and Introduce a Distributed SIP Model

The Commission considered an alternative that would expand the core data as proposed and would introduce a distributed SIP model whereby the current exclusive SIP processors would establish multiple instances of their systems in multiple data centers.[1190] As some commenters and panelists suggested at the Roundtable,[1191] this alternative would achieve a similar reduction in exclusive SIP geographic latency to the proposal by allowing firms to consume data under the current structure without making any changes or to consume data at the nearest exclusive SIP instance depending on the firms' latency concerns. However, this alternative would still provide exclusive rights to one operator to provide exclusive SIP services for a given tape.

1189 See supra Section VI.C.2(d).

1190 See also a discussion about a single SIP alternative, supra Section IV.C.2

1191 See supra Section IV.C.1(a).

This Commission preliminarily believes that this alternative would produce lower benefits compared to the proposed decentralized consolidation model.[1192] Under this alternative, the exclusive SIPs would not be subject to the same competitive forces that competing consolidators may be subject to under the decentralized consolidation model.[1193] This lack of competition would reduce the incentives to innovate and would not improve efficiency or reduce the transmission and aggregation latencies of core data as much as the proposal. If core data does not achieve the same overall latency reduction as under the proposal, then market participants would be less likely to substitute using core data for proprietary data than they would be under the proposal. This could mean that the decline in profits from exchanges' proprietary data fees may not be as large as they would be under the proposal.[1194]

Under this alternative, the exclusive SIPs would still need to make upgrades to their systems to account for the expansion of core data and would still need to install systems in multiple data centers. The Commission preliminarily believes that the costs of these SIP system upgrades would be similar to those under the proposal.[1195] However, under this alternative, market participants may experience higher costs to access core data compared to the proposal. Instead of having the option to receive all core data from one competing consolidator, as they would under the proposal, market participants would still need to receive data from both exclusive SIP plan processors.[1196] This means that under this alternative, the total price market participants would pay to access core data may be greater than under the proposal because it

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1192 See supra Sections VI.C.2, IV.C.1.

1193 See supra Sections VI.C.2, VI.D.2.

1194 See supra Section VI.C.4(a).

1195 See supra Section VI.C.2(d).

1196 See supra Section VI.B.2.

would include the costs of the two plan processors to aggregate and transmit the data. Under the proposal, the total price market participants would pay to receive core data may only include the costs of one processor, because market participants would have the option to receive all of their core data from one competing consolidator.[1197]

3. Require Competing Consolidators' Fees be Subject to the Commission's Approval

The Commission considered an alternative to the decentralized consolidation model that would require competing consolidators' fees to be subject to the Commission's regulatory approval.

The Commission preliminarily believes that, relative to the proposal, this alternative would potentially reduce the risk and uncertainty surrounding the total price of consolidated market data. This alternative would provide for Commission review and approval of the fees of competing consolidators. Therefore, compared to the proposal, this alternative could reduce the risk that market participants are exposed to unreasonable fees, which could reduce the risk that some market participants or data vendors would no longer provide services in the equity market because the price of consolidated market data becomes too high.[1198]

The Commission preliminarily believes, however, that this alternative would impose additional regulatory burdens on the competing consolidator business compared to the proposal, and may inhibit competing consolidators from being able to respond effectively and quickly to free market forces. These burdens would reduce the incentive for firms to become competing consolidators and lead to less robust competition in the decentralized consolidation model than

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[1197] See supra Section VI.C.2(c).

[1198] See supra Section VI.C.2(d).

under the proposal.[1199] With less competitive forces to discipline competing consolidators' service fees, competing consolidators' would have less incentive to innovate in their consolidating business. Moreover, less competing consolidators in the market would reduce the extent to which the pricing is based on market forces.

4. Do Not Extend Regulation SCI to Include Competing Consolidators

The Commission considered an alternative that would not extend Regulation SCI to include competing consolidators. Under this alternative, the Commission would have required competing consolidators to establish, maintain, and enforce written policies and procedures reasonably designed to ensure that its systems involved in the collection, consolidation, and dissemination of consolidated market data have levels of capacity, integrity, resiliency, availability, and security adequate to maintain operational capability and to assure the prompt, accurate, and reliable delivery of consolidated market data. These policies and procedures could address, among other things, data security and integrity; reasonable current and future capacity estimates; business continuity and disaster recovery plans; periodic capacity stress tests of critical systems; procedures to review and keep current system development and testing methodology; periodic reviews to assess the vulnerability of its systems and operations to internal and external threats, physical hazards, and natural disasters; and an annual independent audit to ensure that these requirements are satisfied, together with a review by senior management of a report containing the commendations and conclusions of the independent review. The Commission preliminarily believes that this alternative would reduce some of the

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[1199] See supra Section VI.C.2(a).

benefits as well as some of the costs compared to extending Regulation SCI to include competing consolidators.[1200]

The Commission preliminarily believes that this alternative could result in some competing consolidators producing systems that would be less secure and resilient than they would be under the proposed amendments because they would not be subject to all of the requirements of being an SCI entity.[1201] If competing consolidators produce less secure and resilient systems compared to if they were SCI entities, then there could be a greater risk of more market disruptions due to systems issues in competing consolidators compared to the proposed amendments.[1202] Additionally, if a competing consolidator does experience a systems issue, it could result in more severe and longer disruptions compared to the proposed amendments. However, the increase in competing consolidator systems issues compared to the proposal may not be significant. Under this alternative, competing consolidators would still have to establish policies and procedures to ensure that their systems have levels of capacity, integrity, resiliency, availability, and security adequate to maintain operational capability. They would also still need to post information on systems issues on their websites as well as monthly reports containing statistics on their capacity and systems availability.[1203] This would place competitive pressure on competing consolidators to ensure that their systems are reliable and resilient. Otherwise, they could lose subscribers to competing consolidators that had more reliable and resilient systems.

The Commission preliminarily believes that this alternative would result in lower costs for some competing consolidators compared to the proposed amendments. Under this

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1200 See supra Section VI.C.2(e).

1201 See supra Section VI.C.2(e)(i).

1202 Id.

1203 See supra Section VI.C.3(a).

alternative, competing consolidators would not incur the costs that are associated with SCI entities that are discussed above.[1204] Instead, the Commission preliminarily estimates that requiring a competing consolidator to establish, maintain, and enforce written policies and procedures reasonably designed to ensure that its systems involved in the collection, consolidation, and dissemination of consolidated market data have levels of capacity, integrity, resiliency, availability, and security adequate to maintain operational capability and to assure the prompt, accurate, and reliable delivery of consolidated market data would require an average initial expense of $68,710 per competing consolidator.[1205] The Commission based these estimates upon those it used with regards to establishing similar policies and procedures for Security-Based Swap Data Repository Registration, Duties and Core Principles.[1206] Once these policies and procedures are established, the Commission preliminarily estimates that, on average, a competing consolidator will incur an ongoing cost of $21,810 annually to maintain these policies and procedures.[1207]

1204 See supra Section VI.C.2(e)(ii).

1205 The Commission estimates a total of 210 initial burden hours per competing consolidator. The Commission estimates a total monetized initial burden of $68,710 per competing consolidator. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Compliance Manager at $310 for 80 hours) + (Attorney at $417 for 80 hours) + (Sr. Systems Analyst at $285 for 25 hours) + (Operations Specialist at $137 for 25 hours)] = 210 initial burden hours per competing consolidator and $68,710.

1206 See Securities Exchange Act Release No. 74246, supra note 554, at 14523; 17 CFR 242.13n-6.

1207 The Commission preliminarily estimates that it will take, on average, 60 annual hours to maintain these policies and procedures per competing consolidator. The Commission estimates the monetized burden for this requirement to be $21,810. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff to

The Commission preliminarily believes that, compared to the proposed amendments, this would lower the barriers to entry for new competing consolidators who are not currently SCI entities, including market data aggregators.[1208] This could result in more firms becoming competing consolidators and could increase competition in the competing consolidator market compared to the proposal. Increased competition could lower the costs and increase the speed and quality of consolidated market data compared to the proposed amendments. This, in turn, could make consolidated market data a more viable substitute for proprietary data feeds and result in greater competition between consolidated market data and proprietary data feeds compared to the proposed amendments.

5. Require Competing Consolidators to Submit Form CC in the EDGAR System Using the Inline XBRL Format

The Commission considered the alternative of requiring competing consolidators to submit Form CC using the Commission's EDGAR system and using the Inline XBRL format. Requiring this could create benefits for market participants by enabling more efficient retrieval, aggregation and analysis of disclosed information and facilitating comparisons across competing consolidators. This alternative also could allow a competing consolidator to efficiently benchmark key aspects of its operations (e.g., operational capabilities or fee structures) against the rest of the potential competing consolidator population. However, the benefits to market participants of efficient aggregation and comparison and the benefits to potential competing

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account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead: [(Compliance Manager at $310 for 30 hours) + (Attorney at $417 for 30 hours)] = 60 annual burden hours per competing consolidator and $21,810.

[1208] See supra Sections VI.C.2(a)(i)b., VI.D.2.

consolidators of efficient benchmarking depend on the number of competing consolidators that ultimately register with the Commission, which we estimate to be relatively low at twelve.

Additionally, many potential competing consolidators may not be familiar with Inline XBRL and thus could incur increased costs if they need to learn Inline XBRL compared to the proposal's requirement to submit Form CC and various exhibits through EFFS – a system with which we believe many potential competing consolidators are already familiar. However, to the extent that potential competing consolidators already have experience filing information in EDGAR in an XML format, costs associated with learning a new system and format may be mitigated. We request comment on the specific benefits and costs of filing Form CC in EDGAR using the Inline XBRL format.

6. Require Competing Consolidators to Submit Monthly Disclosures in the EDGAR System Using the Inline XBRL Format

The Commission considered the alternative of requiring competing consolidators to submit their monthly performance metrics and operational information using the Commission's EDGAR system and using the Inline XBRL format. This alternative could create benefits for market participants by having the monthly information of each competing consolidator in a centralized location. Additionally, it could allow for more efficient retrieval, aggregation and analysis of disclosed information and facilitate comparisons across competing consolidators and time periods. To the extent there are a small number of potential competing consolidators, the magnitude of such benefits would be reduced.

Additionally, competing consolidators would incur increased costs to file the information with the Commission compared to the proposal's requirement to post the monthly information on the competing consolidator's website in any format. The difference in costs would likely vary

across competing consolidators, depending on the systems and processes they currently have in place, such as for internal reporting, posting of website updates, and submission of regulatory filings, and the manner in which competing consolidators currently maintain data required for the additional disclosures.

In addition, similar to submitting Form CC information on EDGAR using the Inline XBRL format, competing consolidators may need to learn Inline XBRL. We request comment on the specific benefits and costs of filing the monthly disclosures in EDGAR using the Inline XBRL format.

7. Prescribing the Format of NMS Information

The Commission considered an alternative in which it would prescribe a single format that SROs would use to provide NMS information to competing consolidators and self-aggregators. Each SRO would still be required to make all methods of access available to competing consolidators and self-aggregators as such SRO makes available to any other person.[1209] Each SRO would still be able to offer proprietary data products in other formats.

By prescribing the format, the Commission could better ensure consistency of the data. Compared to the proposal, a standard format could reduce the costs for competing consolidators and self-aggregators to aggregate the data to create consolidated market data. However, the Commission preliminarily believes that these costs may not be significantly reduced. As discussed above, the SROs currently use a variety of formats for their proprietary data feeds and some broker-dealers, market data aggregators, and the SIPs are already adept and experienced in aggregating and normalizing the data across different formats.[1210] Therefore, some potential

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[1209] See supra note 428.

[1210] See supra Section VI.B.2(b).

competing consolidators and self-aggregators may not experience significant cost reductions relative to the proposal if the Commission required that SROs provide NMS information in a prescribed format.

Requiring a single format for SROs to deliver NMS information to competing consolidators and self-aggregators would also increase the costs to SRO's compared to the proposal. SROs would incur a greater cost to conform their existing data to a format they do not already use. It could also increase the costs of exchanges making future changes to their data because they may need to make alterations to both their proprietary data products and to data in the standard format they would supply to competing consolidators and self-aggregators, assuming the changes would need to be included in consolidated market data. Additionally, compared to the proposal, this increased cost could reduce the likelihood that the effective NMS plan(s) for NMS stocks or SROs introduce additional elements into consolidated data in the future.[1211]

Requiring the SROs to deliver data to competing consolidators and self-aggregators in a single format could also impact the latency between consolidated market data and aggregated proprietary DOB feeds. On the one hand, receiving all of the data in a single format should expedite the aggregation and normalization process for consolidated data. This could potentially reduce the latency differential between consolidated market data and aggregated proprietary data feeds compared to the proposal. However, it is possible that the format of certain proprietary data feeds may allow for faster aggregation initially than the single format specified by the Commission because of certain SROs' existing familiarity with its format. If this occurred, it could increase the latency differential compared to the proposal.

[1211] See supra Sections III.C, III.D.

In addition, if the SROs are required to transform their existing data to a different format, it could hinder the timeliness of the data competing consolidators receive compared to data delivered via the proprietary feeds. Any changes in the timeliness with which the competing consolidators receive the data or any difference in latency between consolidated core data and proprietary data feeds would affect the viability of consolidated core data as a substitute for proprietary data feeds and affect many of the benefits of the decentralized consolidation model.[1212] If the latency differential is reduced, more market participants may substitute consolidated market data for proprietary data feeds and the benefits of the decentralized consolidation model could increase compared to the proposal. If competing consolidators receive less timely data or the latency differential increases, fewer market participants would switch to consolidated market data and the benefits would be smaller than under the proposal.

8. Request for Comments on Alternatives

The Commission requests comments on its analysis of alternatives to the proposed amendments. In particular, the Commission solicits comment on the following:

289. Should the Commission adopt an alternative approach? Why or why not? What alternatives should the Commission consider? What are the benefits and costs of such an approach? Please explain in detail.

290. Do you agree with the Commission's analysis of the alternative to further increase the content of core data to include the full depth of book and/or all odd-lot quotes? Would additional depth of book information, beyond what is include in the proposal, be valuable? Why or why not? How much larger would consolidated market data be if it included the full depth of book and/or all odd-lots? How much larger than the proposal

[1212] See supra Section VI.C.2(c).

would the costs of this alternative be for exchanges, competing consolidators, and other market participants? Please provide estimates, if possible.

291. Do you agree with the Commission's analysis of the distributed SIP alternative? Why or why not? Please explain. How would the competitive effects of the distributed SIP alternative compare to the competitive effects of the proposed decentralized consolidated model? As such, how would the benefits of the distributed SIP model compare to the benefits of the decentralized consolidation model? How would the costs of the distributed SIP model compare to the costs of the decentralized consolidation model? How would the distributed SIP model affect aggregate data fees paid by market participants for market data? How would the distributed SIP model affect the types of products and services available to purchase consolidated data?

292. Do you agree with the Commission's analysis of the relative economic effects of the alternative to not extend Regulation SCI to include competing consolidators? Why or why not? Please explain. Would this alternative increase the risk of a competing consolidator experiencing a system disruption? If so, how economically significant would this increase be? Would this alternative lower the barriers to entry for competing consolidators compared to the proposed amendments? Would this alternative result in more new competing consolidators? Would this alternative increase competition among competing consolidators? Would this alternative increase innovation in the competing consolidator market? Would this alternative increase competition between consolidated market data and proprietary depth of book feeds? Please explain and provide estimates if possible.

293. Do you agree with the Commission's analysis of the relative economic effects of the alternative to require that competing consolidator fees be subject to Commission approval? Why or why not? Please explain. Should the Commission be concerned that the proposal does not require an approval process for competing consolidators' market data fees? What is the risk and how large is that risk? Would the alternative reduce this risk? If so, how economically significant would this reduction be? How burdensome would it be for competing consolidators to have to obtain Commission approval for their fees? Please explain and provide cost estimates if possible.

294. Do commenters agree with the Commission's analysis of the alternative to require all disclosures be filed in the EDGAR system using the Inline XBRL format? Why or why not? Please explain in detail. Would the alternative further help market participants evaluate and compare the merits of competing consolidators? Would the alternative promote consistency relative to the proposal? Would the disclosures be more accessible in EDGAR than if they were on the Commission's website or on competing consolidators' websites? Please explain in detail. What are the costs of using EDGAR and the Inline XBRL format relative to the proposal? Please explain and provide estimates if possible.

295. Do you agree with the Commission's analysis of the relative economic effects of the alternative in which the Commission would prescribe a single format that SROs would use to provide NMS information to competing consolidators and self-aggregators? Why or why not? Please explain. What effects would the Commission prescribing NMS information be provided in a single format have on the costs of SROs, competing consolidators, and self-aggregators? How economically significant would these effects

be? What effects would the alternative have on the latency of consolidated market data compared to aggregated proprietary data feeds? What effects would the alternative have on the timeliness of the data competing consolidators and self-aggregators would receive? Please explain and provide estimates if possible.

296. Are there other reasonable alternatives for the proposed amendments to Regulation NMS to update the content of the consolidated market data and introduce competition into the distribution of that consolidated market data? If so, please provide additional alternatives and how their costs and benefits, as well as their potential impacts on the promotion of efficiency, competition, and capital formation, would compare to the impact of the proposed amendments.

297. Is the competing consolidator approach necessary to achieve the economic benefits of the proposal related to expanding consolidated market data? Are there alternatives to the decentralized consolidation model with competing consolidators that would achieve the Commission's objectives at lower cost? If so, how would their costs and benefit compare to the proposed decentralized consolidation model? Please explain and provide estimates if possible.

F. Request for Comments on the Economic Analysis

The Commission is sensitive to the potential economic effects, including the costs and benefits, of the proposed amendments to Regulation NMS to update the content of core data and introduce the decentralized consolidation model into the distribution of consolidated market data. The Commission has identified above certain costs and benefits associated with the proposal and requests comment on all aspects of its preliminary economic analysis, including with respect to the specific questions posed above. The Commission encourages commenters to identify,

discuss, analyze, and supply relevant data, information, or statistics regarding any such costs or benefits.

VII. Consideration of Impact on the Economy

For purposes of the Small Business Regulatory Enforcement Fairness Act of 1996 ("SBREFA"),[1213] the Commission requests comment on the potential effect of the proposed amendments on the United States economy on an annual basis. The Commission also requests comment on any potential increases in costs or prices for consumers or individual industries, and any potential effect on competition, investment, or innovation. Commenters are requested to provide empirical data and other factual support for their views to the extent possible.

VIII. Regulatory Flexibility Certification

The Regulatory Flexibility Act ("RFA")[1214] requires Federal agencies, in promulgating rules, to consider the impact of those rules on small entities. Section 603(a)[1215] of the Administrative Procedure Act,[1216] as amended by the RFA, generally requires the Commission to undertake a regulatory flexibility analysis of all proposed rules, or proposed rule amendments, to determine the impact of such rulemaking on "small entities."[1217] Section 605(b) of the RFA states that this requirement shall not apply to any proposed rule or proposed rule amendment

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1213 Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996) (codified in various sections of 5 U.S.C., 15 U.S.C., and as a note to 5 U.S.C. 601).

1214 5 U.S.C. 601 et seq.

1215 5 U.S.C. 603(a).

1216 5 U.S.C. 551 et seq.

1217 Although Section 601(b) of the RFA defines the term "small entity," the statute permits agencies to formulate their own definitions. The Commission has adopted definitions for the term "small entity" for purposes of Commission rulemaking in accordance with the RFA. Those definitions, as relevant to this proposed rulemaking, are set forth in Rule 0-10, 17 CFR 240.0-10.

which, if adopted, would not have a significant economic impact on a substantial number of small entities.[1218]

The proposed rule would apply to national securities exchanges registered with the Commission under Section 6 of the Exchange Act, national securities associations registered with the Commission under Section 15A of the Exchange Act, and competing consolidators. None of the exchanges registered under Section 6 that would be subject to the proposed amendments are "small entities" for purposes of the RFA.[1219] There is only one national securities association, and the Commission has previously stated that it is not a small entity as defined by 13 CFR 121.201.[1220] For purposes of the Commission rulemaking in connection with the RFA[1221] as it relates to competing consolidators, a small entity includes a SIP that "(1) Had gross revenues of less than $10 million during the preceding fiscal year (or in the time it has been in business, if shorter); (2) Provided service to fewer than 100 interrogation devices or moving tickers at all times during the preceding fiscal year (or in the time that it has been in business, if shorter); and (3) Is not affiliated with any person (other than a natural person) that is not a small

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1218 See 5 U.S.C. 605(b).

1219 See 17 CFR 240.0-10(e). Paragraph (e) of Rule 0-10 states that the term "small business," when referring to an exchange, means any exchange that has been exempted from the reporting requirements of Rule 601 of Regulation NMS, 17 CFR 242.601, and is not affiliated with any person (other than a natural person) that is not a small business or small organization as defined in Rule 0-10. Under this standard, none of the exchanges subject to the proposed amendment to Rule 608 is a "small entity" for the purposes of the RFA. See also Securities Exchange Act Release Nos. 82873 (Mar. 14, 2018), 83 FR 13008, 13074 (Mar. 26, 2018) (File No. S7-05-18) (Transaction Fee Pilot for NMS Stocks Proposed Rule); 55341 (May 8, 2001), 72 FR 9412, 9419 (May 16, 2007) (File No. S7-06-07) (Proposed Rule Changes of Self-Regulatory Organizations Proposing Release).

1220 See, e.g., Securities Exchange Act Release No. 62174 (May 26, 2010), 75 FR 32556, 32605 n.416 (June 8, 2010) ("FINRA is not a small entity as defined by 13 CFR 121.201.").

1221 See supra note 1217.

business or small organization under this section."[1222] The Commission preliminarily believes that no competing consolidators would be "small entities" for purposes of the RFA.

For the above reasons, the Commission certifies that the proposed amendments to Rules 600 and 603 and the new Rule 614, if adopted, would not have a significant economic impact on a substantial number of small entities for purposes of the RFA.

The Commission invites commenters to address whether the proposed rules would have a significant economic impact on a substantial number of small entities, and, if so, what would be the nature of any impact on small entities. The Commission requests that commenters provide empirical data to support the extent of such impact.

IX. Statutory Authority

Pursuant to the Exchange Act, and particularly Sections 3(b), 5, 6, 11A, 15, 17, and 23(a) thereof, 15 U.S.C. 78c, 78e, 78f, 78k–1, 78o, 78q, and 78w(a), the Commission proposes to amend Sections 240.3a51-1, 240.13h-1, 242.105, 242.201, 242.204, 242.600, 242.602, 242.603, 242.611, and 242.1000 of Chapter II of Title 17 of the Code of Federal Regulations and proposes Rule 614, as set forth below.

List of Subjects

17 CFR Part 240

Brokers, Dealers, Registration, Securities.

17 CFR Part 242 and 249

Brokers, Reporting and recordkeeping requirements, Securities.

For the reasons stated in the preamble, the Commission is proposing to amend title 17, Chapter II of the Code of Federal Regulations as follows:

[1222] 17 CFR 240.0-10(g).

PART 240 – GENERAL RULES AND REGULATIONS, SECURITIES EXCHANGE ACT OF 1934

1. The authority citation for part 240 continues to read in part as follows:

Authority: 15 U.S.C. 77c, 77d, 77g, 77j, 77s, 77z–2, 77z–3, 77eee, 77ggg, 77nnn, 77sss, 77ttt, 78c, 78c-3, 78c-5, 78d, 78e, 78f, 78g, 78i, 78j, 78j-1, 78k, 78k-1, 78l, 78m, 78n, 78n-1, 78o, 78o-4, 78o-10, 78p, 78q, 78q-1, 78s, 78u–5, 78w, 78x, 78ll, 78mm, 80a-20, 80a-23, 80a-29, 80a-37, 80b-3, 80b-4, 80b-11, 7201 et seq., and 8302; 7 U.S.C. 2(c)(2)(E); 12 U.S.C. 5221(e)(3); 18 U.S.C. 1350; Pub. L. 111-203, 939A, 124 Stat. 1376, (2010); and Pub. L. 112-106, sec. 503 and 602, 126 Stat. 326 (2012), unless otherwise noted.

* * * * *

§240.3a51-1 [Amended].

2. In §240.3a51-1, amend paragraph (a) by removing the text "§242.600(b)(48)" and adding in its place "§242.600(b)(55)".

§240.13h-1 [Amended].

3. In §240.13h-1, amend paragraph (a)(5) by removing the text "§242.600(b)(47)" and adding in its place "§242.600(b)(54)".

PART 242 – REGULATIONS M, SHO, ATS, AC, NMS, AND SBSR AND CUSTOMER MARGIN REQUIREMENTS FOR SECURITY FUTURES

4. The authority citation for part 242 continues to read as follows:

Authority: 15 U.S.C. 77g, 77q(a), 77s(a), 78b, 78c, 78g(c)(2), 78i(a), 78j, 78k-1(c), 78l, 78m, 78n, 78o(b), 78o(c), 78o(g), 78q(a), 78q(b), 78q(h), 78w(a), 78dd-1, 78mm, 80a-23, 80a-29, and 80a-37.

§242.105 [Amended].

5. Amend § 242.105 by:

a. In paragraph (b)(1)(i)(C) removing the text "§242.600(b)(23)" and adding in its place "§242.600(b)(29)" and

b. In paragraph (b)(1)(ii) removing the text "§242.600(b)(68)" and adding in its place "§242.600(b)(76)".

§242.201 [Amended].

6. Amend §242.201 by:

a. In paragraph (a)(1) removing the text "§242.600(b)(48)" and adding in its place "§242.600(b)(55)";

b. In paragraph (a)(2) removing the text "§242.600(b)(23)" and adding in its place "§242.600(b)(29)";

c. Amending paragraph (a)(3) by removing the text "the term "listing market" as defined in the effective transaction reporting plan for the covered security" and adding in its place "the term "primary listing exchange" as defined in §242.600(b)(67)";

d. In paragraph (a)(4) removing the text "§242.600(b)(43)" and adding in its place "§242.600(b)(50)";

e. In paragraph (a)(5) removing the text "§242.600(b)(51)" and adding in its place "§242.600(b)(58)";

f. In paragraph (a)(6) removing the text "§242.600(b)(59)" and adding in its place "§242.600(b)(66)";

g In paragraph (a)(7) removing the text "§242.600(b)(68)" and adding in its place "§242.600(b)(76)"; and

h. In paragraph (a)(9) removing the text "§242.600(b)(82)" and adding in its place "§242.600(b)(93)".

i. Amending paragraph (b)(1)(ii) by removing the text "by a plan processor";

j. Amending paragraph (b)(3) by removing the text "notify the single plan processor responsible for consolidation of information for the covered security pursuant to §242.603(b). The single plan processor must then disseminate this information" and adding in its place "make such information available as provided in §242.603(b)".

§242.204 [Amended].

7. In §242.204, paragraph (g)(2) is amended by removing the text "§600(b)(68) of Regulation NMS (17 CFR 242.600(b)(68))" and adding in its place "§600(b)(76) of Regulation NMS (17 CFR 242.600(b)(76))".

8. Amend § 242.600 by:

a. Redesignating paragraphs (b)(72) through (87) as paragraphs (b)(83) through (98);

b. Adding new paragraphs (b)(81) and (82);

c. Redesignating paragraphs (b)(69) through (71) as paragraphs (b)(78) through (80);

d. Adding new paragraph (b)(77);

e. Redesignating paragraphs (b)(60) through (68) as paragraphs (b)(68) through (76);

f. Adding new paragraph (b)(67);

g. Redesignating paragraphs (b)(26) through (59) as paragraphs (b)(33) through (66);

h. Adding new paragraph (b)(32);

i. Redesignating paragraphs (b)(20) through (25) as paragraphs (b)(26) through (31);

j. Adding new paragraph (b)(25);

k. Redesignating paragraphs (b)(16) through (19) as paragraphs (b)(21) through (24);

l. Adding new paragraphs (b)(19) and (20);

m. Redesignating paragraphs (b)(14) and (15) as paragraphs (b)(17) and (18);

n. Adding new paragraph (b)(16);

o. Redesignating paragraphs (b)(4) through (13) as paragraphs (b)(6) through (15);

p. Adding new paragraph (b)(5);

q. Redesignating paragraphs (b)(2) and (3) as paragraphs (b)(3) through (4);

r. Adding new paragraph (b)(2); and

s. Revising newly redesignated paragraphs (b)(50) and (69).

The additions and revisions read as follows:

§242.600 NMS security designation and definitions.

(b) ***

(2) *Administrative data* means administrative, control, and other technical messages made available by national securities exchanges and national securities associations pursuant to the effective national market system plan or plans required under §242.603(b) or the technical specifications thereto as of [date of Commission approval of this proposal].

*** * * * ***

(5) *Auction information* means all information specified by national securities exchange rules or effective national market system plans that is generated by a national securities exchange leading up to and during an auction, including opening, reopening, and closing auctions, and disseminated during the time periods and at the time intervals provided in such rules and plans.

* * * * *

(16) *Competing consolidator* means a securities information processor required to be registered pursuant to Rule 614 or a national securities exchange or national securities

association that receives information with respect to quotations for and transactions in NMS stocks and generates consolidated market data for dissemination to any person.

* * * * *

(19) *Consolidated market data* means the following data, consolidated across all national securities exchanges and national securities associations:

(i) Core data;

(ii) Regulatory data;

(iii) Administrative data;

(iv) Exchange-specific program data; and

(v) Additional regulatory, administrative, or exchange-specific program data elements defined as such pursuant to the effective national market system plan or plans required under §242.603(b).

(20) *Core data* means the following information with respect to quotations for, and transactions in, NMS stocks. For purposes of the calculation and dissemination of core data by competing consolidators, and the calculation of core data by self-aggregators, the best bid and best offer, national best bid and national best offer, and depth of book data shall include odd-lots that when aggregated are equal to or greater than a round lot; such aggregation shall occur across multiple prices and shall be disseminated at the least aggressive price of all such aggregated odd-lots. For purposes of the calculation and dissemination of core data by competing consolidators, and the calculation of core data by self-aggregators, protected quotations shall include odd-lots at a single price that when aggregated are equal to or greater than 100 shares:

(i) Quotation sizes;

(ii) Aggregate quotation sizes;

(iii) Best bid and best offer;

(iv) National best bid and national best offer;

(v) Protected bid and protected offer;

(vi) Transaction reports;

(vii) Last sale data;

(viii) Odd-lot transaction data disseminated pursuant to the effective national market system plan or plans required under §242.603(b) as of [date of Commission approval of this proposal].

(ix) Depth of book data; and

(x) Auction information.

* * * * *

(25) *Depth of book data* means all quotation sizes at each national securities exchange, aggregated at each price at which there is a bid or offer that is lower than the best bid down to the protected bid and higher than the best offer up to the protected offer; and all quotation sizes at each national securities exchange, aggregated at each of the next 5 prices at which there is a bid that is lower than the protected bid and offer that is higher than the protected offer.

* * * * *

(32) *Exchange-specific program data* means: (i) Information related to retail liquidity programs specified by the rules of national securities exchanges and disseminated pursuant to the effective national market system plan or plans required under §242.603(b) as of [date of Commission approval of this proposal]; and

(ii) Other exchange-specific information with respect to quotations for or transactions in NMS stocks as specified by the effective national market system plan or plans required under §242.603(b).

* * * * *

(50) *National best bid and national best offer* means, with respect to quotations for an NMS stock, the best bid and best offer for such stock that are calculated and disseminated on a current and continuing basis by a competing consolidator or calculated by a self-aggregator and, for NMS securities other than NMS stocks, the best bid and best offer for such security that are calculated and disseminated on a current and continuing basis by a plan processor pursuant to an effective national market system plan; provided, that in the event two or more market centers transmit to the plan processor, a competing consolidator or self-aggregator identical bids or offers for an NMS security, the best bid or best offer (as the case may be) shall be determined by ranking all such identical bids or offers (as the case may be) first by size (giving the highest ranking to the bid or offer associated with the largest size), and then by time (giving the highest ranking to the bid or offer received first in time).

* * * * *

(67) *Primary listing exchange* means, for each NMS stock, the national securities exchange identified as the primary listing exchange in the effective national market system plan or plans required under §242.603(b).

* * * * *

(69) *Protected bid or protected offer* means a quotation in an NMS stock that:

(i) Is displayed by an automated trading center;

(ii) Is disseminated pursuant to an effective national market system plan; and

(iii) Is an automated quotation that is the best bid or best offer of at least 100 shares of a national securities exchange, or the best bid or best offer of at least 100 shares of a national securities association.

* * * * *

(77) *Regulatory data* means:

(i) Information required to be collected or calculated by the primary listing exchange for an NMS stock and provided to competing consolidators and self-aggregators pursuant to the effective national market system plan or plans required under §242.603(b), including, at a minimum:

(A) Information regarding Short Sale Circuit Breakers pursuant to §242.201;

(B) Information regarding Price Bands required pursuant to the Plan to Address Extraordinary Market Volatility (LULD Plan);

(C) Information relating to regulatory halts or trading pauses (news dissemination/pending, LULD, Market-Wide Circuit Breakers) and reopenings or resumptions;

(D) The official opening and closing prices of the primary listing exchange; and

(E) An indicator of the applicable round lot size.

(ii) Information required to be collected or calculated by the national securities exchange or national securities association on which an NMS stock is traded and provided to competing consolidators and self-aggregators pursuant to the effective national market system plan or plans required under §242.603(b), including, at a minimum:

(A) Whenever such national securities exchange or national securities association receives a bid (offer) below (above) an NMS stock's lower (upper) LULD price band, an appropriate regulatory data flag identifying the bid (offer) as non-executable; and

(B) Other regulatory messages including subpenny execution and trade-though exempt indicators.

(iii) For purposes of paragraph (i)(C) of this definition, the primary listing exchange that has the largest proportion of companies included in the S&P 500 Index shall monitor the S&P 500 Index throughout the trading day, determine whether a Level 1, Level 2, or Level 3 decline, as defined in self-regulatory organization rules related to Market-Wide Circuit Breakers, has occurred, and immediately inform the other primary listing exchanges of all such declines.

* * * * *

(81) *Round lot* means:

(i) For any NMS stock for which the prior calendar month's average closing price on the primary listing exchange (or the IPO price if the prior month's average closing price is not available) was $50.00 or less per share, an order for the purchase or sale of an NMS stock of 100 shares;

(ii) For any NMS stock for which the prior calendar month's average closing price on the primary listing exchange (or the IPO price if the prior month's average closing price is not available) was $50.01 to $100.00 per share, an order for the purchase or sale of an NMS stock of 20 shares;

(iii) For any NMS stock for which the prior calendar month's average closing price on the primary listing exchange (or the IPO price if the prior month's average closing price is not available) was $100.01 to $500.00 per share, an order for the purchase or sale of an NMS stock of 10 shares;

(iv) For any NMS stock for which the prior calendar month's average closing price on the primary listing exchange (or the IPO price if the prior month's average closing price is not available) was $500.01 to $1,000.00 per share, an order for the purchase or sale of an NMS stock of 2 shares; and

(v) For any NMS stock for which the prior calendar month's average closing price on the primary listing exchange (or the IPO price if the prior month's average closing price is not available) was $1,000.01 or more per share, an order for the purchase or sale of an NMS stock of 1 share.

(82) *Self-aggregator* means a broker or dealer that receives information with respect to quotations for and transactions in NMS stocks, including all data necessary to generate consolidated market data, and generates consolidated market data solely for internal use. A self-aggregator may not make consolidated market data, or any subset of consolidated market data, available to any other person.

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§ 242.602 [Amended].

9. Amend § 242.602 by:

a. In paragraph (a)(5)(i) removing the text "§242.600(b)(77)" and adding in its place "§242.600(b)(88)" and

b. In paragraph (a)(5)(ii) removing the text "§242.600(b)(77)" and adding in its place "§242.600(b)(88)".

10. Amend § 242.603 by revising paragraph (b) to read as follows:

§242.603 Distribution, consolidation, and display of information with respect to quotations for and transactions in NMS stocks.

* * * * *

(b) *Dissemination of information*. Every national securities exchange on which an NMS stock is traded and national securities association shall act jointly pursuant to one or more effective national market system plans for the dissemination of consolidated market data. Every

national securities exchange on which an NMS stock is traded and national securities association shall make available to all competing consolidators and self-aggregators its information with respect to quotations for and transactions in NMS stocks, including all data necessary to generate consolidated market data, in the same manner and using the same methods, including all methods of access and the same format, as such national securities exchange or national securities association makes available any information with respect to quotations for and transactions in NMS stocks to any person.

*****

§ 242.611 [Amended].

11. In §242.611, amend paragraph (c) by removing the text "§242.600(b)(31)" and adding in its place "§242.600(b)(38)".

12. Add §242.614 to read as follows:

§242.614 Registration and responsibilities of competing consolidators.

(a) *Competing consolidator registration*. (1) *Initial Form CC*. (i) *Filing and effectiveness requirement*. No person, other than a national securities exchange or a national securities association,

(A) May receive directly from a national securities exchange or national securities association information with respect to quotations for and transactions in NMS stocks; and

(B) Generate consolidated market data for dissemination to any person unless the person files with the Commission an initial Form CC and the initial Form CC has become effective pursuant to paragraph (a)(1)(v) of this section.

(ii) *Electronic filing and submission.* Any reports to the Commission required under this Rule 614 shall be filed electronically on Form CC (17 CFR 249.1002), include all information as

prescribed in Form CC and the instructions thereto, and contain an electronic signature as defined in §240.19b-4(j).

(iii) *Commission review period*. The Commission may, by order, as provided in paragraph (a)(1)(v)(B) of this section, declare an initial Form CC filed by a competing consolidator ineffective no later than 90 calendar days from the date of filing with the Commission.

(iv) *Withdrawal of initial Form CC due to inaccurate or incomplete disclosures.* During the review by the Commission of the initial Form CC, if any information disclosed in the initial Form CC is or becomes inaccurate or incomplete, the competing consolidator shall promptly withdraw the initial Form CC and may refile an initial Form CC pursuant to paragraph (a)(1).

(v) *Effectiveness; Ineffectiveness determination*. (A) An initial Form CC filed by a competing consolidator will become effective, unless declared ineffective, no later than the expiration of the review period provided in paragraph (a)(1)(iii) of this section and publication pursuant to paragraph (b)(2)(i) of this section.

(B) The Commission shall, by order, declare an initial Form CC ineffective if it finds, after notice and opportunity for hearing, that such action is necessary or appropriate in the public interest, and is consistent with the protection of investors. If the Commission declares an initial Form CC ineffective, the competing consolidator shall be prohibited from operating as a competing consolidator. An initial Form CC declared ineffective does not prevent the competing consolidator from subsequently filing a new Form CC.

(2) *Form CC Amendments*. A competing consolidator shall amend a Form CC:

(i) Prior to the implementation of a material change to the pricing, connectivity, or products offered ("Material Amendment"); and

(ii) No later than 30 calendar days after the end of each calendar year to correct information that has become inaccurate or incomplete for any reason and to provide an Annual Report as required under Form CC (each a "Form CC Amendment").

(3) *Notice of cessation*. A competing consolidator shall notice its cessation of operations on Form CC at least 30 business days prior to the date the competing consolidator will cease to operate as a competing consolidator. The notice of cessation shall cause the Form CC to become ineffective on the date designated by the competing consolidator.

(4) *Date of filing.* For purposes of filings made pursuant to this section:

(i) The term *business day* shall have the same meaning as defined in §240.19b-4(b)(2).

(ii) If the conditions of this section and Form CC are otherwise satisfied, all filings submitted electronically on or before 5:30 p.m. Eastern Standard Time or Eastern Daylight Saving Time, whichever is currently in effect, on a business day, shall be deemed filed on that business day, and all filings submitted after 5:30 p.m. Eastern Standard Time or Eastern Daylight Saving Time, whichever is currently in effect, shall be deemed filed on the next business day.

(b) *Public disclosures*. (1) Every Form CC filed pursuant to this section shall constitute a "report" within the meaning of sections 11A, 17(a), 18(a), and 32(a) of the Act (15 U.S.C. 78k-1, 78q(a), 78r(a), and 78ff(a)), and any other applicable provisions of the Act.

(2) The Commission will make public via posting on the Commission's website, each:

(i) Effective initial Form CC, as amended;

(ii) Order of ineffective initial Form CC;

(iii) Form CC Amendment. The Commission will make public the entirety of any Form CC Amendment no later than 30 calendar days from the date of filing thereof with the Commission; and

(iv) Notice of cessation.

(c) *Posting of hyperlink to the Commission's website.* Each competing consolidator shall make public via posting on its website a direct URL hyperlink to the Commission's website that contains the documents enumerated in paragraph (b)(2) of this section.

(d) *Responsibilities of competing consolidators*. Each competing consolidator shall:

(1) Collect from each national securities exchange and national securities association, either directly or indirectly, the information with respect to quotations for and transactions in NMS stocks as provided in Rule 603(b).

(2) Calculate and generate consolidated market data as defined in Rule 600(b)(19) from the information collected pursuant to paragraph (d)(1) of this section.

(3) Make consolidated market data, as defined in Rule 600(b)(19), as timestamped as required by paragraph (d)(4) of this section and including the national securities exchange and national securities association data generation timestamp required to be provided by the national securities exchange and national securities association participants by paragraph (e)(1)(ii) of this section, available to subscribers on a consolidated basis on terms that are not unreasonably discriminatory.

(4) Timestamp the information collected pursuant to paragraph (d)(1) of this section (i) upon receipt from each national securities exchange and national securities association; (ii) upon receipt of such information at its aggregation mechanism; and (iii) upon dissemination of consolidated market data to subscribers.

(5) Within fifteen [15] calendar days after the end of each month, publish prominently on its website monthly performance metrics, as defined by the effective national market system plan(s) for NMS stocks, that shall include at least the following. All information must be publicly

posted in downloadable files and must remain free and accessible (without any encumbrances or restrictions) by the general public on the website for a period of not less than three years from the initial date of posting.

(i) Capacity statistics;

(ii) Message rate and total statistics;

(iii) System availability;

(iv) Network delay statistics; and

(v) Latency statistics for the following, with distribution statistics up to the 99.99th percentile:

(A) When a national securities exchange or national securities association sends an inbound message to a competing consolidator network and when the competing consolidator network receives the inbound message;

(B) When the competing consolidator network receives the inbound message and when the competing consolidator network sends the corresponding consolidated message to a subscriber; and

(C) When a national securities exchange or national securities association sends an inbound message to a competing consolidator network and when the competing consolidator network sends the corresponding consolidated message to a subscriber.

(6) Within fifteen [15] calendar days after the end of each month, publish prominently on its website the following information. All information must be publicly posted and must remain free and accessible (without any encumbrances or restrictions) by the general public on the website for a period of not less than three years from the initial date of posting.

(i) Data quality issues;

(ii) System issues;

(iii) Any clock synchronization protocol utilized;

(iv) For the clocks used to generate the timestamps described in paragraph (d)(4) of this section, the clock drift averages and peaks, and the number of instances of clock drift greater than 100 microseconds; and

(v) Vendor alerts.

(7) Keep and preserve at least one copy of all documents, including all correspondence, memoranda, papers, books, notices, accounts and such other records as shall be made or received by it in the course of its business as such and in the conduct of its business. Competing consolidators shall keep all such documents for a period of no less than five years, the first two years in an easily accessible place;

(8) Upon request of any representative of the Commission, promptly furnish to the possession of such representative copies of any documents required to be kept and preserved by it.

(e) *Amendment of the effective national market system plan(s) for NMS stocks*. (1) The participants to the effective national market system plan(s) for NMS stocks shall file with the Commission, pursuant to Rule 608, an amendment that includes the following provisions within 60 calendar days from the effective date of Rule 614:

(i) Conforming the effective national market system plan(s) for NMS stocks to reflect provision of information with respect to quotations for and transactions in NMS stocks that is necessary to generate consolidated market data by the national securities exchange and national securities association participants to competing consolidators and self-aggregators;

(ii) The application of timestamps by the national securities exchange and national securities association participants on all consolidated market data, including the time that consolidated market data was generated as applicable by the national securities exchange or national securities association and the time the national securities exchange or national securities association made the consolidated market data available to competing consolidators and self-aggregators;

(iii) Assessments of competing consolidator performance, including speed, reliability, and cost of data provision and the provision of an annual report of such assessment to the Commission;

(iv) A list that identifies the primary listing exchange for each NMS stock.

13. Amend § 242.1000 by:

a. In the definition of "Critical SCI systems," removing the text "consolidated market data" in paragraph (1)(v) and adding in its place "market data by a plan processor";

b. Adding in alphabetical order the definition of "Competing consolidator";

c. In the definition of "Plan processor" removing the text "§242.600(b)(59)" and adding in its place "§242.600(b)(66)".

d. In the definition"SCI entity" removing the period and adding at the end of the definition ", or competing consolidator."

The addition to read as follows:

§ 242.1000 Definitions.

*****

Competing consolidator has the meaning set forth in §242.600(b)(16).

*****

PART 249 – FORMS, SECURITIES EXCHANGE ACT OF 1934

14. The general authority citation for part 249 continues to read in part as follows**:**

Authority: 15 U.S.C. 78a et seq. and 7201 et seq.; 12 U.S.C. 5461 et seq.; 18 U.S.C. 1350; Sec. 953(b), Pub. L. 111-203, 124 Stat. 1904; Sec. 102(a)(3), Pub. L. 112-106, 126 Stat. 309 (2012); Sec. 107, Pub. L. 112-106, 126 Stat. 313 (2012), and Sec. 72001, Pub. L. 114-94, 129 Stat. 1312 (2015), unless otherwise noted**.**

*** * * * ***

15. Add §249.1002 to Subpart K to read as follows:

§249.1002 Form CC, for application for registration as a competing consolidator or to amend such an application or registration.

This form shall be used for application for registration as a competing consolidator, pursuant to section 11A of the Securities Exchange Act of 1934 (15 U.S.C. 78k-1) and §242.614 of this chapter, or to amend such an application or registration.

Note: The text of Form CC does not, and the amendments will not, appear in the Code of Federal Regulations.

Securities and Exchange Commission
Washington, DC 20549
FORM CC
INTENTIONAL MISSTATEMENTS OR OMISSIONS OF FACTS MAY CONSTITUTE CRIMINAL VIOLATIONS.

Section I - Form Filing Information

Page 1 of _____ File No: FORMCC-[acronym]-YYYY-####

{Name of Competing Consolidator} is making the filing pursuant to Rule 614 under the Securities Exchange Act of 1934

Submission Type (select one)

☐ Rule 614(a)(1) Initial Form CC

☐ Rule 614(a)(2)(i) Material Amendment

☐ Rule 614(a)(2)(ii) Annual Report

☐ Rule 614(a)(3) Notice of Cessation

○ Date competing consolidator will cease to operate (mm/dd/yyyy).

Section II – General Information

☐ Check Box if there is a change in information previously filed.

1) Legal name of applicant:_____

2) DBA if operating under a different name than above:_____

3) Primary Street Address (Do not use a P.O. Box)

4) Street: _____

5) City_____, State_____ Zip Code_____

6) Mailing Address: ☐ Same as above

   Street: _____

   City_____, State_____ Zip Code_____

7) Business Telephone (###) ____-_____

8) Provide the website URL of the registrant:_____

9) Is the applicant a broker-dealer or affiliated with a broker-dealer registered with the Commission (yes/no)

   a) If yes, provide the full name of the registered broker-dealer as stated on Form BD:

   b) SEC File No:_____

   c) CRD No:_____

10) If applicant is a successor (within the definition of Rule 12b-2 under the Securities Exchange Act of 1934) to a previously registered competing consolidator, please complete the following:

a) Date of Succession: mm/dd/yyyy

b) Full name/address of predecessor registrant:_____

11) Legal Status (select one):

a. Sole Proprietorship
b. Corporation
c. Partnership
d. Limited Liability Company
e. Other (Specify):_____

If other than a sole proprietor, please provide the following:

f. Date entity obtained legal status (e.g., date of incorporation) (mm/dd/yyyy).
g. State/country of formation: {pick list}
h. Statute under which entity was organized _____

Section III: Business Organization

☐ **All Exhibits-Consolidated Document Attachment:** The competing consolidator may choose to provide a consolidated document containing all Exhibits or individual documents for each Exhibit. If providing individual documents, use the attachment buttons in the Exhibit Table. If providing a consolidated document, please use the attachment buttons here:

12) Attach as **Exhibit A** to this application a list of any person as defined in Section 3(a)(9) of the Securities Exchange Act of 1934 (see also Section 3(a)(19) of the Securities Exchange Act of 1934) who owns 10 percent or more of applicant's stock or who, either directly or indirectly, through agreement or otherwise, in any other manner, may control or direct the

management or policies of the competing consolidator. Include the full name and title of each such person and attach a copy of the agreement or, if there is none written, describe the agreement or basis upon which such person exercises or may exercise such control or direction. Alternatively, if applicant is a broker-dealer, or is affiliated with a broker-dealer, you may provide the Schedule A of Form BD relating to direct owners and executive officers.

☐ In lieu of filing this Exhibit A (or providing Schedule A of Form BD), [name of entity] certifies that the information requested under this Exhibit is available at the Internet website below and is accurate as of the date of this filing.

URL_____

13) Attach as **Exhibit B** to this application a list of the present officers, directors, governors (and, in the case of an applicant that is not a corporation, the members of all standing committees grouped by committee), or persons performing functions similar to any of the foregoing, of the competing consolidator. For each person provide (a) Name (last, first, middle); (b) Title (if any) and area of responsibility; (c) Length of time each present officer, director, or governor has held the same office or position, and (d) Any other business affiliations in the securities industry or securities information processing industry. Alternatively, if applicant is a broker-dealer, or is affiliated with a broker-dealer, you may provide the Schedule B of Form BD relating to indirect owners.

☐ In lieu of filing this Exhibit B (or providing Schedule B of Form BD), [name of entity] certifies that the information requested under this Exhibit is available at the Internet website below and is accurate as of the date of this filing.

URL_____

14) Attach as **Exhibit C** to this application a narrative or graphic description of the organizational structure of the applicant. Note: If the securities information processing activities of the competing consolidator are conducted primarily by a division, subdivision, or other segregable entity within the applicant corporation or organization, describe the relationship of such division, subdivision, or other segregable entity within the overall organizational structure and attach as part of this Exhibit only such description as applies to the division, subdivision, or other segregable entity.

15) Attach as **Exhibit D** to this application a list of all affiliates (within the definition of Rule 12b-2 under the Securities Exchange Act of 1934) of the competing consolidator and indicate the general nature of the affiliation.

Section IV: Operational Capability

16) Attach as **Exhibit E** to this application a narrative description of each consolidated market data service or function, including connectivity and delivery options for the subscribers, and a description of all procedures utilized for the collection, processing, distribution, publication and retention of information with respect to quotations for, and transactions in, securities.

Section V - Services and Fees

17) Attach as **Exhibit F** to this application a description of all market data products with respect to consolidated market data or any subset of consolidated market data that are provided to subscribers.

18) Attach as **Exhibit G** to this application a description and identification of any fees or charges for use of the competing consolidator with respect to consolidated market data or any subset of consolidated market data, services, including the types of fees (e.g., subscription, connectivity), the structure of the fee (e.g., fixed, variable), variables that impact the fees, pricing differentiation among the types of subscribers, and range of fees (high and low).

19) Attach as **Exhibit H** to this application a description of any co-location and related services, the terms and conditions for co-location, connectivity, and related services, including connectivity and throughput options offered. Describe any other means besides co-location and related services to increase the speed of communication, including a summary of the terms and conditions for its use.

20) Attach as **Exhibit I** to this application a narrative description, or the functional specifications, of each consolidated market data service or function, including connectivity and delivery options for the subscribers.

Section VI: Contact Information

Provide the following information of the contact employee at {the name of the competing consolidator} prepared to respond to questions for this submission:

First Name: Last Name:

Title:

E-Mail: Telephone:

Section VII: Signature Block and Consent to Service

The {Entity Name} consents that service of any civil action brought by, or notice of any proceeding before, the SEC in connection with the competing consolidator's activities may be

given by registered or certified mail or e-mail to the competing consolidator's contact employee at the primary street address or e-mail address, or mailing address if different, given in Section II above. The undersigned, being first duly sworn, deposes and says that he/she has executed this form on behalf of, and with the authority of, said competing consolidator. The undersigned and {Entity Name} represent that the information and statements contained herein, including exhibits, schedules, or other documents attached hereto, and other information filed herewith, all of which are made a part hereof, are current, true, and complete.

Date {auto fill} {Entity Name}

By: _____ Title_____

(Digital signature)

Form CC General Instructions:

A. Use of the Form

Form CC is the form a competing consolidator must file to notify the Securities and Exchange Commission ("SEC" or "Commission") of its activities pursuant to Rule 614 of Regulation NMS, § 242.614 et seq. Filings submitted pursuant to Rule 614 shall be filed in an electronic format through an electronic form filing system ("EFFS"), a secure website operated by the Commission. Documents attached as exhibits filed through the EFFS system must be in a text-searchable format without the use of optical character recognition. If, however, a portion of a Form CC submission (e.g., an image or diagram) cannot be made available in a text-searchable format, such portion may be submitted in a non-text searchable format.

B. Need for Careful Preparation of the Completed Form, Including Exhibits

A competing consolidator must provide all of the information required by Form CC, including the exhibits, and must provide disclosure information that is accurate, current, and

complete. The information in the exhibits must be provided in a clear and comprehensible manner. A filing that is incomplete or similarly deficient may be returned to the competing consolidator. Any filing so returned shall for all purposes be deemed not to have been filed with the Commission. See also Rule 0-3 under the Securities Exchange Act of 1934 (17 CFR 240.0-3).

C. When to Use the FORM CC

Form CC is comprised of 4 types of submissions to the Commission required pursuant to Rule 614 of Regulation NMS. In filling out the Form CC, a competing consolidator shall select the type of filing and provide all information required by Rule 614 of Regulation NMS. The types of submissions are:

1) Rule 614(a)(1) Initial Form CC: Prior to commencing operations, a competing consolidator shall file an initial Form CC and the initial Form CC must become effective.
2) Rule 614(a)(2)(i) Material Amendment: The competing consolidator shall file an amendment on Form CC prior to implementing a material change to the pricing, connectivity, or products offered of the competing consolidator..
3) Rule 614(a)(2)(ii) Annual Report: The competing consolidator shall file an Annual Report on Form CC correcting any information contained in the initial Form CC or in any previously filed amendment that has been rendered inaccurate or incomplete for any reason, and that has not previously been reported to the SEC, no later than 30 calendar days after the end of each calendar year in which the competing consolidator has operated. Competing consolidators filing the Annual Report must file a complete form, including all pages and answers to all

items, together with all exhibits. The competing consolidator must indicate which items have been amended since the last Annual Report.

4) Rule 614(a)(3) Notice of Cessation: The competing consolidator shall file a notice of cessation of operations at least 30 business days prior to the date upon ceasing to operate as a competing consolidator.

D. Documents Comprising the Completed Form

The completed form filed with the Commission shall consist of Form CC, responses to all applicable items, and any exhibits required in connection with the filing. Each filing shall be marked on Form CC with the initials of the competing consolidator, the four-digit year, and the number of the filing for the year (e.g., FormCC-acronym-YYYY-XXX).

E. Contact Information; Signature; and Filing of Completed Form

Each time a competing consolidator submits a filing to the Commission on Form CC, the competing consolidator must provide the contact information required by Section VI of Form CC. The contact employee must be authorized to receive all contact information, communications and mailings and must be responsible for disseminating that information within the competing consolidator's organization.

In order to file Form CC through the EFFS, a competing consolidator must request access to the Commission's External Application Server. Initial requests will be received by contacting the Division of Trading & Markets at (202) 551-5777. An e-mail will be sent to the requestor that will provide a link to a secure website where basic profile information will be requested.

A duly authorized individual of the competing consolidator shall electronically sign the completed Form CC as indicated in Section VII of the form.

F. Paperwork Reduction Act Disclosure

Form CC requires a competing consolidator subject to Rule 614 of Regulation NMS to provide the Commission with certain information regarding the operation of the competing consolidator, material and other changes to the operation of the competing consolidator, and notice upon ceasing operation of the competing consolidator.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid control number. Sections 3(b), 11A(a), 11A(c), 15(c), 17(a), 23(a) and 36(a) authorize the Commission to collect information on this Form CC from competing consolidators that are subject to Rule 614. See 15 U.S.C. §§78c(b), 78k-1(a), 78k-1(c), 78o(c), 78q(a), 78w(a) and 78mm(a).

It is estimated that a competing consolidator will spend approximately 200.3 hours completing the initial operation report on Form CC, approximately 6.15 hours preparing each amendment to Form CC, and approximately two (2) hours preparing a cessation of operations report on Form CC. Any member of the public may direct to the Commission any comments concerning the accuracy of the burden estimate on the facing page of Form CC and any suggestions for reducing this burden.

Form CC is designed to enable the Commission to determine whether a competing consolidator subject to Rule 614 of Regulation NMS is in compliance with Rule 614 and other federal securities laws. It is mandatory that a competing consolidator subject to Rule 614 file an initial Form CC, file an amendment to Form CC prior to making a material change, file Annual Reports to Form CC to reflect changes not previously reported, and file notice on Form CC upon ceasing operation of the competing consolidator.

All reports provided to the Commission on Form CC are subject to the provisions of the Freedom of Information Act, 5 U.S.C. 522 ("FOIA") and the Commission's rules thereunder (17 CFR 200.80(b)(4)(iii)).

This collection of information has been reviewed by the Office of Management and Budget ("OMB") in accordance with the clearance requirements of 44 U.S.C. §3507. The applicable Privacy Act system of records is SEC-2 and the routine uses of the records are set forth at 40 FR 39255 (August 27, 1975) and 41 FR 5318 (February 5, 1976).

G. Definitions

Unless the context requires otherwise, all terms used in this form have the same meaning as in the Securities Exchange Act of 1934, as amended, and in the rules and regulations of the Commission thereunder.

16. Revise subpart T, consisting of §249.1900 to read as follows:

Subpart T—Form SCI, for filing notices and reports as required by Regulation SCI.

§249.1900. Form SCI, for filing notices and reports as required by Regulation SCI.

Form SCI shall be used to file notices and reports as required by Regulation SCI (§§ 242.1000 through 242.1007).

Note: The text of Form SCI does not, and the amendments will not, appear in the Code of Federal Regulations.

Securities and Exchange Commission
Washington, DC 20549
Form SCI

Page 1 of _____ File No. SCI-{name}-YYYY-###

SCI Notification and Reporting by: {SCI entity name}

Pursuant to Rules 1002 and 1003 of Regulation SCI under the Securities Exchange Act of 1934

- ❑ Initial

- ❑ Withdrawal

SECTION I: Rule 1002 - Commission Notification of SCI Event

A. Submission Type (select one only)

- ❑ Rule 1002(b)(1) Initial Notification of SCI event
- ❑ Rule 1002(b)(2) Notification of SCI event
- ❑ Rule 1002(b)(3) Update of SCI event: ####
- ❑ Rule 1002(b)(4) Final Report of SCI Event
- ❑ Rule 1002(b)(4) Interim Status Report of SCI event

If filing a Rule 1002(b)(1) or Rule 1002(b)(3) submission, please provide a brief description:

_____

_____

_____

B. SCI Event Type(s) (select all that apply)

- ❑ Systems compliance issue
- ❑ Systems disruption
- ❑ Systems intrusion

C. General Information Required for (b)(2) filings.

1) Has the Commission previously been notified of the SCI event pursuant to 1002(b)(1)? *yes/no*
2) Date/time SCI event occurred: *mm/dd/yyyy hh:mm am/pm*
3) Duration of SCI event: *hh:mm*, or *days*
4) Please provide the date and time when a responsible SCI personnel had reasonable basis to conclude the SCI event occurred:

   mm/dd/yyyy *hh:mm am/pm*
5) Has the SCI event been resolved? *yes/no*
   a) If yes, provide date and time of resolution: *mm/dd/yyyy* *hh:mm am/pm*
6) Is the investigation of the SCI event closed? *yes/no*
   a) If yes, provide date of closure**:** *mm/dd/yyyy*
7) Estimated number of market participants potentially affected by the SCI event: ####
8) Is the SCI event a major SCI event (as defined in Rule 1000)? *yes/no*

D. Information about impacted systems:
Name(s) of system(s):

_____

_____

_____

Type(s) of system(s) impacted by the SCI event (check all that apply):

- ❑ Trading
- ❑ Clearance and settlement
- ❑ Order routing
- ❑ Market data
- ❑ Market regulation
- ❑ Market surveillance
- ❑ Indirect SCI systems (please describe):

_____

_____

_____

Are any critical SCI systems impacted by the SCI event (check all that apply)? Yes/No

1) Systems that directly support functionality relating to:
   - ❑ Clearance and settlement systems of clearing agencies
   - ❑ Openings, reopenings, and closings on the primary listing market
   - ❑ Trading halts
   - ❑ Initial public offerings
   - ❑ The provision of market data by a plan processor
   - ❑ Exclusively-listed securities

2) ❑ Systems that provide functionality to the securities markets for which the availability of alternatives is significantly limited or nonexistent and without which there would be a material impact on fair and orderly markets (please describe):

_____

_____

_____

SECTION II: Periodic Reporting (select one only)

A. Quarterly Reports: For the quarter ended: mm/dd/yyyy

- ❑ Rule 1002(b)(5)(ii): Quarterly report of systems disruptions and systems intrusions with no or a de minimis impact.
- ❑ Rule 1003(a)(1): Quarterly report of material systems changes
- ❑ Rule 1003(a)(2): Supplemental report of material systems changes

B. SCI Review Reports

- ❑ Rule 1003(b)(3): Report of SCI review, together with any response by senior management
  Date of completion of SCI review: *mm/dd/yyyy*

  Date of submission of SCI review to senior management: *mm/dd/yyyy*

SECTION III: Contact Information

Provide the following information of the person at the {SCI entity name} prepared to respond to questions for this submission:

First Name: Last Name:

Title:

E-Mail:

Telephone: Fax:

Additional Contacts (Optional)

First Name: Last Name:

Title:

E-Mail:

Telephone: Fax:

First Name: Last Name:

Title:

E-Mail:

Telephone: Fax:

SECTION IV: Signature

Confidential treatment is requested pursuant to Rule 24b-2(g). Additionally, pursuant to the requirements of the Securities Exchange Act of 1934, {SCI Entity name} has duly caused this {notification}{report} to be signed on its behalf by the undersigned duly authorized officer:

Date:

By (Name) Title (_____)

"Digitally Sign and Lock Form"

Exhibit 1: **Rule 1002(b)(2)** **Notification of SCI Event** Add/Remove/View	Within 24 hours of any responsible SCI personnel having a reasonable basis to conclude that the SCI event has occurred, the SCI entity shall submit a written notification pertaining to such SCI event to the Commission, which shall be made on a good faith, best efforts basis and include: (a) a description of the SCI event, including the system(s) affected; and (b) to the extent available as of the time of the notification: the SCI entity's current assessment of the types and number of market participants potentially affected by the SCI event; the potential impact of the SCI event on the market; a description of the steps the SCI entity has taken, is taking, or plans to take, with respect to the SCI event; the time the SCI event was resolved or timeframe within which the SCI event is expected to be resolved; and any other pertinent information known by the SCI entity about the SCI event.
Exhibit 2: **Rule 1002(b)(4)** **Final or Interim Report of SCI Event** Add/Remove/View	When submitting a final report pursuant to either Rule 1002(b)(4)(i)(A) or Rule 1002(b)(4)(i)(B)(2), the SCI entity shall include: (a) a detailed description of: the SCI entity's assessment of the types and number of market participants affected by the SCI event; the SCI entity's assessment of the impact of the SCI event on the market; the steps the SCI entity has taken, is taking, or plans to take, with respect to the SCI event; the time the SCI event was resolved; the SCI entity's rule(s) and/or governing document(s), as applicable, that relate to the SCI event; and any other pertinent information known by the SCI entity about the SCI event; (b) a copy of any information disseminated pursuant to Rule 1002(c) by the SCI entity to date regarding the SCI event to any of its members or participants; and (c) an analysis of parties that may have experienced a loss, whether monetary or otherwise, due to the SCI event, the number of such parties, and an estimate of the aggregate amount of such loss. When submitting an interim report pursuant to Rule 1002(b)(4)(i)(B)(1), the SCI entity shall include such information to the extent known at the time.
Exhibit 3: **Rule 1002(b)(5)(ii)** **Quarterly Report of De Minimis SCI Events** Add/Remove/View	The SCI entity shall submit a report, within 30 calendar days after the end of each calendar quarter, containing a summary description of systems disruptions and systems intrusions that have had, or the SCI entity reasonably estimates would have, no or a de minimis impact on the SCI entity's operations or on market participants, including the SCI systems and, for systems intrusions, indirect SCI systems, affected by such SCI events during the applicable calendar quarter.
Exhibit 4: **Rule 1003 (a)** **Quarterly Report of Systems Changes** Add/Remove/View	When submitting a report pursuant to Rule 1003(a)(1), the SCI entity shall provide a report, within 30 calendar days after the end of each calendar quarter, describing completed, ongoing, and planned material changes to its SCI systems and the security of indirect SCI systems, during the prior, current, and subsequent calendar quarters, including the dates or expected dates of commencement and completion. An SCI entity shall establish reasonable written criteria for identifying a change to its SCI systems and the security of indirect SCI systems as material and report such changes in accordance with such criteria. When submitting a report pursuant to Rule 1003(a)(2), the SCI entity shall provide a supplemental report of a material error in or material omission from a report previously submitted under Rule 1003(a)(1).
Exhibit 5: **Rule 1003(b)(3)** **Report of SCI review** Add/Remove/View	The SCI entity shall provide a report of the SCI review, together with any response by senior management, within 60 calendar days after its submission to senior management of the SCI entity.
Exhibit 6: **Optional Attachments** Add/Remove/View	This exhibit may be used in order to attach other documents that the SCI entity may wish to submit as part of a Rule 1002(b)(1) initial notification submission or Rule 1002(b)(3) update submission.

GENERAL INSTRUCTIONS FOR FORM SCI

A. Use of the Form

Except with respect to notifications to the Commission made pursuant to Rule 1002(b)(1) or updates to the Commission made pursuant to Rule 1002(b)(3), any notification, review, description, analysis, or report required to be submitted pursuant to Regulation SCI under the Securities Exchange Act of 1934 ("Act") shall be filed in an electronic format through an electronic form filing system ("EFFS"), a secure website operated by the Securities and Exchange Commission ("Commission"). Documents attached as exhibits filed through the EFFS system must be in a text-searchable format without the use of optical character recognition. If, however, a portion of a Form SCI submission (e.g., an image or diagram) cannot be made available in a text-searchable format, such portion may be submitted in a non-text searchable format.

B. Need for Careful Preparation of the Completed Form, Including Exhibits

This form, including the exhibits, is intended to elicit information necessary for Commission staff to work with SCI self-regulatory organizations, SCI alternative trading systems, plan processors, exempt clearing agencies subject to ARP, and competing consolidators (collectively, "SCI entities") to ensure the capacity, integrity, resiliency, availability, security, and compliance of their automated systems. An SCI entity must provide all the information required by the form, including the exhibits, and must present the information in a clear and comprehensible manner. A filing that is incomplete or similarly deficient may be returned to the SCI entity. Any filing so returned shall for all purposes be deemed not to have been filed with the Commission. See also Rule 0-3 under the Act (17 CFR 240.0-3).

C. When to Use the Form

Form SCI is comprised of six types of required submissions to the Commission pursuant to Rules 1002 and 1003. In addition, Form SCI permits SCI entities to submit to the Commission two additional types of submissions pursuant to Rules 1002(b)(1) and 1002(b)(3); however, SCI entities are not required to use Form SCI for these two types of submissions to the Commission. In filling out Form SCI, an SCI entity shall select the type of filing and provide all information required by Regulation SCI specific to that type of filing.

The first two types of required submissions relate to Commission notification of certain SCI events:

(1) "Rule 1002(b)(2) Notification of SCI Event" submissions for notifications regarding systems disruptions, systems compliance issues, or systems intrusions (collectively, "SCI events"), other than any systems disruption or systems intrusion that has had, or the SCI entity reasonably estimates would have, no or a de minimis impact on the SCI entity's operations or on market participants; and

(2) "Rule 1002(b)(4) Final or Interim Report of SCI Event" submissions, of which there are two kinds (a final report under Rule 1002(b)(4)(i)(A) or Rule 1002(b)(4)(i)(B)(2); or an interim status report under Rule 1002(b)(4)(i)(B)(1)).

The other four types of required submissions are periodic reports, and include:

(1) "Rule 1002(b)(5)(ii)" submissions for quarterly reports of systems disruptions and systems intrusions which have had, or the SCI entity reasonably estimates would have, no or a de minimis impact on the SCI entity's operations or on market participants ("de minimis SCI events");

(2) “Rule 1003(a)(1)” submissions for quarterly reports of material systems changes;

(3) “Rule 1003(a)(2)” submissions for supplemental reports of material systems changes; and

(4) “Rule 1003(b)(3)” submissions for reports of SCI reviews.

Required Submissions for SCI Events

For 1002(b)(2) submissions, an SCI entity must notify the Commission using Form SCI by selecting the appropriate box in Section I and filling out all information required by the form, including Exhibit 1. 1002(b)(2) submissions must be submitted within 24 hours of any responsible SCI personnel having a reasonable basis to conclude that an SCI event has occurred.

For 1002(b)(4) submissions, if an SCI event is resolved and the SCI entity’s investigation of the SCI event is closed within 30 calendar days of the occurrence of the SCI event, an SCI entity must file a final report under Rule 1002(b)(4)(i)(A) within five business days after the resolution of the SCI event and closure of the investigation regarding the SCI event. However, if an SCI event is not resolved or the SCI entity’s investigation of the SCI event is not closed within 30 calendar days of the occurrence of the SCI event, an SCI entity must file an interim status report under Rule 1002(b)(4)(i)(B)(1) within 30 calendar days after the occurrence of the SCI event. For SCI events in which an interim status report is required to be filed, an SCI entity must file a final report under Rule 1002(b)(4)(i)(B)(2) within five business days after the resolution of the SCI event and closure of the investigation regarding the SCI event. For 1002(b)(4) submissions, an SCI entity must notify the Commission using Form SCI by selecting the appropriate box in Section I and filling out all information required by the form, including Exhibit 2.

Required Submissions for Periodic Reporting

For 1002(b)(5)(ii) submissions, an SCI entity must submit quarterly reports of systems disruptions and systems intrusions which have had, or the SCI entity reasonably estimates would have, no or a de minimis impact on the SCI entity's operations or on market participants. The SCI entity must select the appropriate box in Section II and fill out all information required by the form, including Exhibit 3.

For 1003(a)(1) submissions, an SCI entity must submit its quarterly report of material systems changes to the Commission using Form SCI. The SCI entity must select the appropriate box in Section II and fill out all information required by the form, including Exhibit 4.

Filings made pursuant to Rule 1002(b)(5)(ii) and Rule 1003(a)(1) must be submitted to the Commission within 30 calendar days after the end of each calendar quarter (i.e., March 31st, June 30th, September 30th and December 31st) of each year.

For 1003(a)(2) submissions, an SCI entity must submit a supplemental report notifying the Commission of a material error in or material omission from a report previously submitted under Rule 1003(a). The SCI entity must select the appropriate box in Section II and fill out all information required by the form, including Exhibit 4.

For 1003(b)(3) submissions, an SCI entity must submit its report of its SCI review, together with any response by senior management, to the Commission using Form SCI. A 1003(b)(3) submission is required within 60 calendar days after the report of the SCI review has been submitted to senior management of the SCI entity. The SCI entity must select the

appropriate box in Section II and fill out all information required by the form, including Exhibit 5.

Optional Submissions

An SCI entity may, but is not required to, use Form SCI to submit a notification pursuant to Rule 1002(b)(1). If the SCI entity uses Form SCI to submit a notification pursuant to Rule 1002(b)(1), it must select the appropriate box in Section I and provide a short description of the SCI event. Documents may also be attached as Exhibit 6 if the SCI entity chooses to do so. An SCI entity may, but is not required to, use Form SCI to submit an update pursuant to Rule 1002(b)(3). Rule 1002(b)(3) requires an SCI entity to, until such time as the SCI event is resolved and the SCI entity's investigation of the SCI event is closed, provide updates pertaining to such SCI event to the Commission on a regular basis, or at such frequency as reasonably requested by a representative of the Commission, to correct any materially incorrect information previously provided, or when new material information is discovered, including but not limited to, any of the information listed in Rule 1002(b)(2)(ii). If the SCI entity uses Form SCI to submit an update pursuant to Rule 1002(b)(3), it must select the appropriate box in Section I and provide a short description of the SCI event. Documents may also be attached as Exhibit 6 if the SCI entity chooses to do so.

D. Documents Comprising the Completed Form

The completed form filed with the Commission shall consist of Form SCI, responses to all applicable items, and any exhibits required in connection with the filing. Each filing shall be marked on Form SCI with the initials of the SCI entity, the four-digit year, and the number of the filing for the year (e.g., SCI Name-YYYY-XXX).

E. Contact Information; Signature; and Filing of the Completed Form

Each time an SCI entity submits a filing to the Commission on Form SCI, the SCI entity must provide the contact information required by Section III of Form SCI. Space for additional contact information, if appropriate, is also provided.

All notifications and reports required to be submitted through Form SCI shall be filed through the EFFS. In order to file Form SCI through the EFFS, SCI entities must request access to the Commission's External Application Server by completing a request for an external account user ID and password. Initial requests will be received by contacting (202) 551-5777. An e-mail will be sent to the requestor that will provide a link to a secure website where basic profile information will be requested. A duly authorized individual of the SCI entity shall electronically sign the completed Form SCI as indicated in Section IV of the form. In addition, a duly authorized individual of the SCI entity shall manually sign one copy of the completed Form SCI, and the manually signed signature page shall be preserved pursuant to the requirements of Rule 1005.

F. Withdrawals of Commission Notifications and Periodic Reports

If an SCI entity determines to withdraw a Form SCI, it must complete Page 1 of the Form SCI and indicate by selecting the appropriate check box to withdraw the submission.

G. Paperwork Reduction Act Disclosure

This collection of information will be reviewed by the Office of Management and Budget in accordance with the clearance requirements of 44 U.S.C. 3507. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid control number. The Commission estimates that the average burden to respond to Form SCI will be between one and 125 hours, depending upon the purpose for which

the form is being filed. Any member of the public may direct to the Commission any comments concerning the accuracy of this burden estimate and any suggestions for reducing this burden.

Except with respect to notifications to the Commission made pursuant to Rule 1002(b)(1) or updates to the Commission made pursuant to Rule 1002(b)(3), it is mandatory that an SCI entity file all notifications, reviews, descriptions, analyses, and reports required by Regulation SCI using Form SCI. The Commission will keep the information collected pursuant to Form SCI confidential to the extent permitted by law. Subject to the provisions of the Freedom of Information Act, 5 U.S.C. 522 ("FOIA"), and the Commission's rules thereunder (17 CFR 200.80(b)(4)(iii)), the Commission does not generally publish or make available information contained in any reports, summaries, analyses, letters, or memoranda arising out of, in anticipation of, or in connection with an examination or inspection of the books and records of any person or any other investigation.

H. Exhibits

List of exhibits to be filed, as applicable:

Exhibit 1: Rule 1002(b)(2) – Notification of SCI Event. Within 24 hours of any responsible SCI personnel having a reasonable basis to conclude that the SCI event has occurred, the SCI entity shall submit a written notification pertaining to such SCI event to the Commission, which shall be made on a good faith, best efforts basis and include: (a) a description of the SCI event, including the system(s) affected; and (b) to the extent available as of the time of the notification: the SCI entity's current assessment of the types and number of market participants potentially affected by the SCI event; the potential impact of the SCI event on the market; a description of the steps the SCI entity has taken, is taking, or plans to take, with respect to the SCI event; the

time the SCI event was resolved or timeframe within which the SCI event is expected to be resolved; and any other pertinent information known by the SCI entity about the SCI event.

Exhibit 2: Rule 1002(b)(4) – Final or Interim Report of SCI Event. When submitting a final report pursuant to either Rule 1002(b)(4)(i)(A) or Rule 1002(b)(4)(i)(B)(2), the SCI entity shall include: (a) a detailed description of: the SCI entity's assessment of the types and number of market participants affected by the SCI event; the SCI entity's assessment of the impact of the SCI event on the market; the steps the SCI entity has taken, is taking, or plans to take, with respect to the SCI event; the time the SCI event was resolved; the SCI entity's rule(s) and/or governing document(s), as applicable, that relate to the SCI event; and any other pertinent information known by the SCI entity about the SCI event; (b) a copy of any information disseminated pursuant to Rule 1002(c) by the SCI entity to date regarding the SCI event to any of its members or participants; and (c) an analysis of parties that may have experienced a loss, whether monetary or otherwise, due to the SCI event, the number of such parties, and an estimate of the aggregate amount of such loss. When submitting an interim report pursuant to Rule 1002(b)(4)(i)(B)(1), the SCI entity shall include such information to the extent known at the time.

Exhibit 3: Rule 1002(b)(5)(ii) – Quarterly Report of De Minimis SCI Events. The SCI entity shall submit a report, within 30 calendar days after the end of each calendar quarter, containing a summary description of systems disruptions and systems intrusions that have had, or the SCI entity reasonably estimates would have, no or a de minimis impact on the SCI entity's operations or on market participants, including the SCI systems and, for systems intrusions, indirect SCI systems, affected by such SCI events during the applicable calendar quarter.

Exhibit 4: Rule 1003(a) – Quarterly Report of Systems Changes. When submitting a report pursuant to Rule 1003(a)(1), the SCI entity shall provide a report, within 30 calendar days after the end of each calendar quarter, describing completed, ongoing, and planned material changes to its SCI systems and the security of indirect SCI systems, during the prior, current, and subsequent calendar quarters, including the dates or expected dates of commencement and completion. An SCI entity shall establish reasonable written criteria for identifying a change to its SCI systems and the security of indirect SCI systems as material and report such changes in accordance with such criteria. When submitting a report pursuant to Rule 1003(a)(2), the SCI entity shall provide a supplemental report of a material error in or material omission from a report previously submitted under Rule 1003(a); provided, however, that a supplemental report is not required if information regarding a material systems change is or will be provided as part of a notification made pursuant to Rule 1002(b).

Exhibit 5: Rule 1003(b)(3) – Report of SCI Review. The SCI entity shall provide a report of the SCI review, together with any response by senior management, within 60 calendar days after its submission to senior management of the SCI entity.

Exhibit 6: Optional Attachments. This exhibit may be used in order to attach other documents that the SCI entity may wish to submit as part of a Rule 1002(b)(1) initial notification submission or Rule 1002(b)(3) update submission.

I. Explanation of Terms

Critical SCI systems means any SCI systems of, or operated by or on behalf of, an SCI entity that: (a) directly support functionality relating to: (1) clearance and settlement systems of clearing agencies; (2) openings, reopenings, and closings on the primary listing market; (3) trading halts; (4) initial public offerings; (5) the provision of market data by a plan processor; or

(6) exclusively-listed securities; or (b) provide functionality to the securities markets for which the availability of alternatives is significantly limited or nonexistent and without which there would be a material impact on fair and orderly markets.

Indirect SCI systems means any systems of, or operated by or on behalf of, an SCI entity that, if breached, would be reasonably likely to pose a security threat to SCI systems.

Major SCI event means an SCI event that has had, or the SCI entity reasonably estimates would have: (a) any impact on a critical SCI system; or (b) a significant impact on the SCI entity's operations or on market participants.

Responsible SCI personnel means, for a particular SCI system or indirect SCI system impacted by an SCI event, such senior manager(s) of the SCI entity having responsibility for such system, and their designee(s).

SCI entity means an SCI self-regulatory organization, SCI alternative trading system, plan processor, ~~or~~ exempt clearing agency subject to ARP, or competing consolidator.

SCI event means an event at an SCI entity that constitutes: (a) a systems disruption; (b) a systems compliance issue; or (c) a systems intrusion.

SCI review means a review, following established procedures and standards, that is performed by objective personnel having appropriate experience to conduct reviews of SCI systems and indirect SCI systems, and which review contains: (a) a risk assessment with respect to such systems of an SCI entity; and (b) an assessment of internal control design and effectiveness of its SCI systems and indirect SCI systems to include logical and physical security controls, development processes, and information technology governance, consistent with industry standards**.**

SCI systems means all computer, network, electronic, technical, automated, or similar systems of, or operated by or on behalf of, an SCI entity that, with respect to securities, directly support trading, clearance and settlement, order routing, market data, market regulation, or market surveillance.

Systems Compliance Issue means an event at an SCI entity that has caused any SCI system of such entity to operate in a manner that does not comply with the Act and the rules and regulations thereunder or the entity's rules or governing documents, as applicable.

Systems Disruption means an event in an SCI entity's SCI systems that disrupts, or significantly degrades, the normal operation of an SCI system.

Systems Intrusion means any unauthorized entry into the SCI systems or indirect SCI systems of an SCI entity.

By the Commission.

Dated: February 14, 2020

Jill M. Peterson
Assistant Secretary

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