

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

<hr/>		X
CITY OF PROVIDENCE, RHODE ISLAND,	:	Civil Action No. 1:14-cv-02811-JMF-OTW
Individually and on Behalf of All Others	:	(Consolidated)
Similarly Situated,	:	
	:	<u>CLASS ACTION</u>
Plaintiff,	:	
	:	MEMORANDUM OF LAW IN SUPPORT
vs.	:	OF LEAD PLAINTIFFS' MOTION FOR
	:	CLASS CERTIFICATION
BATS GLOBAL MARKETS, INC., et al.,	:	
	:	
Defendants.	:	
<hr/>		X

REDACTED VERSION

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. FACTUAL BACKGROUND.....	2
A. Defendants Catered to HFT Firms by Creating Products and Services that Allowed HFT Firms to Prey on Other Investors.....	3
1. Co-Location Services.....	3
2. Proprietary Data Feeds.....	6
3. Specialized Order Types.....	8
B. Latency Arbitrage Is Profitable for Defendants and HFT Firms, but Costly to Investors.....	10
III. THE STANDARDS APPLICABLE TO THE CLASS CERTIFICATION DETERMINATION UNDER RULE 23	11
IV. THE REQUIREMENTS OF RULE 23(a) HAVE BEEN MET.....	13
A. The Proposed Class is So Numerous that Joinder of All Members is Impracticable.....	13
B. Common Questions of Law and Fact Exist	13
C. Plaintiffs’ Claims are Typical of Those of the Proposed Class	14
D. Plaintiffs and Co-Lead Counsel Will Continue to Adequately Represent the Interests of the Class	15
V. THE REQUIREMENTS OF RULE 23(b)(3) HAVE BEEN SATISFIED	17
A. Common Questions of Fact and Law Predominate Because Plaintiffs’ Claim Can Be Resolved by Classwide Proof.....	17
B. The Class is Entitled to a Presumption of Reliance.....	19
C. Monetary Remedies Will Be Calculated Through Common Formulaic Methodologies.....	20
1. Damages Will Be Calculated in the Same Manner for All Class Members	20
2. Disgorgement is Calculable on a Classwide Basis	22

	Page
D. A Class Action is Superior to Other Available Methods of Adjudication and the Class is Manageable	24
VI. CONCLUSION.....	25

TABLE OF AUTHORITIES

	Page
CASES	
<i>Affiliated Ute Citizens of Utah v. United States</i> , 406 U.S. 128 (1972).....	19, 20
<i>Amchem Prods., Inc. v. Windsor</i> , 521 U.S. 591 (1997).....	11, 13, 17
<i>Amgen Inc. v. Conn. Ret. Plans and Trust Funds</i> , 568 U.S. 455 (2013).....	12, 20
<i>Anwar v. Fairfield Greenwich Ltd.</i> , 289 F.R.D. 105 (S.D.N.Y. 2013)	13
<i>Ballinger v. Advance Magazine Publishers, Inc.</i> , 2014 WL 7495092 (S.D.N.Y. Dec. 29, 2014)	12
<i>Brooklyn Ctr. for Indep. of the Disabled v. Bloomberg</i> , 290 F.R.D. 409 (S.D.N.Y. 2012) (Furman, J.).....	13
<i>City of Livonia Employees' Ret. Sys. v. Wyeth</i> , 284 F.R.D. 173 (S.D.N.Y. 2012)	20
<i>City of Providence v. Bats Global Mkts., Inc.</i> , 878 F.3d 36 (2d Cir. 2017).....	1, 19, 20
<i>City of Westland v. MetLife</i> , 2017 WL 3608298 (S.D.N.Y. Aug. 22, 2017).....	17
<i>Dura-Bilt Corp. v. Chase Manhattan Corp.</i> , 89 F.R.D. 87 (S.D.N.Y. 1981)	19
<i>Erica P. John Fund, Inc. v. Halliburton Co.</i> , 563 U.S. 804 (2011).....	18, 20
<i>Floyd v. City of N.Y.</i> , 283 F.R.D. 153 (S.D.N.Y. 2012)	14
<i>Gary Plastic Packaging Corp. v. Merrill Lynch, Pierce, Fenner & Smith, Inc.</i> , 903 F.2d 176 (2d Cir. 1990).....	12
<i>Ge Dandong v. Pinnacle Performance Ltd.</i> , 2013 WL 5658790 (S.D.N.Y. Oct. 17, 2013).....	13

	Page
<i>Gulf Oil Co. v. Bernard</i> , 452 U.S. 89 (1981).....	11
<i>Halliburton Co. v. Erica P. John Fund Inc.</i> , 573 U.S. 258 (2014).....	18, 20
<i>Haw. Structural Ironworkers Pension Trust v. AMC Entm’t Holdings, Inc.</i> , 2021 WL 1198799 (S.D.N.Y. Mar. 30, 2021).....	20
<i>Hevesi v. Citigroup Inc.</i> , 366 F.3d 70 (2d Cir. 2004).....	19
<i>In re Air Cargo Shipping Servs. Antitrust Litig.</i> , 2014 WL 7882100 (E.D.N.Y. Oct. 15, 2014).....	12
<i>In re Deutsche Bank AG Sec. Litig.</i> , 328 F.R.D. 71 (S.D.N.Y. 2018).....	19
<i>In re Enron Secs. Derivative & ERISA Litig.</i> , 529 F. Supp. 2d 644 (S.D. Tex. 2006).....	23
<i>In re Flag Telecom Holdings, Ltd. Sec. Litig.</i> , 574 F.3d 29 (2d Cir. 2009).....	15
<i>In re JPMorgan Chase & Co. Sec. Litig.</i> , 2015 WL 10433433 (S.D.N.Y. Sept. 29, 2015).....	17
<i>In re NASDAQ Market-Makers Antitrust Litig.</i> , 169 F.R.D. 493 (S.D.N.Y. 1996).....	16
<i>In re Nassau County Strip Search Cases</i> , 461 F.3d 219 (2d Cir. 2006).....	11
<i>In re NYSE Specialists Sec. Litig.</i> , 260 F.R.D. 55 (S.D.N.Y. 2009).....	14, 15
<i>In re Petrobras Secs.</i> , 862 F.3d 250 (2d Cir. 2017).....	17
<i>In re SCOR Holding (Switz.) AG Litig.</i> , 537 F. Supp. 2d 556 (S.D.N.Y. 2008).....	25
<i>In re SLM Corp. Sec. Litig.</i> , 2012 WL 209095 (S.D.N.Y. Jan. 24, 2012).....	12

	Page
<i>In re SunEdison, Inc. Sec. Litig.</i> , 329 F.R.D. 124 (S.D.N.Y. 2019)	19, 24
<i>In re Vivendi Universal, S.A. Sec. Litig.</i> , 242 F.R.D. 76 (S.D.N.Y. 2007), <i>aff'd</i> , 838 F.3d 223 (2d Cir. 2016).....	13, 24
<i>Johnson v. Nextel Commc'ns Inc.</i> , 780 F.3d 128 (2d Cir. 2015).....	12
<i>Lapin v. Goldman Sachs & Co.</i> , 254 F.R.D. 168 (S.D.N.Y. 2008)	25
<i>Liu v. SEC</i> , __ U.S. __, 140 S. Ct. 1936 (2020).....	23
<i>MacNamara v. City of N.Y.</i> , 275 F.R.D. 125 (S.D.N.Y. 2011)	13
<i>NASDAQ Stock Mkt., LLC v. Sec. & Exch. Comm'n</i> , 961 F.3d 421 (D.C. Cir. 2020).....	7
<i>Pichardo v. Carmine's Broadway Feast Inc.</i> , 2016 WL 4379421 (S.D.N.Y. June 13, 2016)	12
<i>Roach v. T.L. Cannon Corp.</i> , 778 F.3d 401 (2d Cir. 2015).....	11, 21
<i>SEC v. AbsoluteFuture.com</i> , 393 F.3d 94 (2d Cir. 2004).....	22
<i>SEC v. Commonwealth Chem. Sec., Inc.</i> , 574 F.2d 90 (2d Cir. 1978).....	23
<i>SEC v. First Jersey Secs., Inc.</i> , 101 F.3d 1450 (2d Cir. 1996).....	22
<i>SEC v. Patel</i> , 61 F.3d 137 (2d Cir. 1995).....	23
<i>Stoneridge Inv. Partners, LLC v. Scientific-Atlanta, Inc.</i> , 552 U.S. 148 (2008).....	18
<i>Sykes v. Mel S. Harris & Assocs. LLC</i> , 780 F.3d 70 (2d Cir. 2015).....	21

	Page
<i>Tsereteli v. Residential Asset Securitization Trust 2006-A8</i> , 283 F.R.D. 199 (S.D.N.Y. 2012)	14
<i>Tyson Foods, Inc. v. Bouaphakeo</i> , 577 U.S. 442 (2016).....	14
<i>Waggoner v. Barclays PLC</i> , 875 F.3d 79 (2d Cir. 2017).....	21
<i>Wal-Mart Stores, Inc. v. Dukes</i> , 564 U.S. 338 (2011).....	13, 14

STATUTES, RULES AND REGULATIONS

15 U.S.C.	
§78j(b).....	18
Federal Rules of Civil Procedure	
Rule 23	1, 11, 12
Rule 23(a).....	11, 13, 17, 25
Rule 23(a)(1).....	13
Rule 23(a)(2).....	13
Rule 23(a)(3).....	14
Rule 23(a)(4).....	15
Rule 23(b)	11, 17
Rule 23(b)(3).....	11, 17, 24, 25
Rule 23(g)	25
17 C.F.R.	
§240.10b-5(a)-(c).....	15, 18

SECONDARY AUTHORITIES

Alexander Abedine, <i>The Symbiosis of High Frequency Traders and Stock Exchanges: A Macro Perspective</i> , 14 N.Y.U. J.L. & Bus. 595 (2018)	3
---	---

I. INTRODUCTION

Plaintiffs bring this action against Defendants for engaging in a manipulative and deceptive course of conduct that allowed certain market participants – firms engaged in high frequency trading (“HFT”) – to have trading advantages, which resulted in massive financial harm to investors. Together, the exchanges Defendants operate control over 95% of all equities trading that occurs on U.S. exchanges. Throughout the Class Period, defined below, Defendants established a two-tiered system designed to cater to a class of highly profitable HFT firms. Defendants intentionally created, promoted, and sold products and services – specifically, proprietary data feeds, co-location services and specialized order types – which allowed HFT firms to trade at faster speeds and position their trades ahead of other investors. As the exchanges’ data show, this front running was pervasive. Defendants knowingly damaged investors and reaped hundreds of millions of dollars in profits. Plaintiffs, who traded billions of dollars in U.S. equities, including stocks on Defendants’ exchanges, were harmed as a result of Defendants’ misconduct.

This action is well-suited for certification under Rule 23. In finding that Plaintiffs’ Complaint adequately pled that Defendants had engaged in manipulative or deceptive conduct in violation of §10(b), the Second Circuit framed the case as follows:

The Complaint alleges that the defendant exchanges manipulated market activity [by] develop[ing] products and services that give HFT firms trading advantages over non-HFT firms and the investing public, [selling] those products and services at prices that ordinary investors could not afford, and fail[ing] to publicly disclose the full or cumulative effects that the products and services have on the market. . . . The plaintiffs . . . have sufficiently pled that the exchanges created a fraudulent scheme that benefited HFT firms and the exchanges, sold the products and services at rates that only the HFT firms could afford, and failed to fully disclose to the investing public how those products and services could be used on their trading platforms.

City of Providence v. Bats Global Mkts., Inc., 878 F.3d 36, 41, 52 (2d Cir. 2017). Virtually all of the evidence needed to prove these allegations, and thus Defendants’ securities violations, is “common”

or “generalized” evidence, meaning it is focused on Defendants’ conduct rather than on any particular firm or investor. Factual and legal issues relating to this “common evidence” will predominate in this case, and a class action is superior to other methods of adjudication.

Additionally, the proposed class representatives, City of Providence, VIGERS, Plumbers and Pipefitters National Pension Fund and Boston Retirement System, are similarly situated as to the other members of the class they seek to represent. City of Providence, VIGERS, PPNPF, Boston, and each class member: (i) purchased and sold stocks traded on Defendants’ exchanges; (ii) suffered damages caused by Defendants’ rigging of the market in favor of the HFT firms, which Defendants concealed; and (iii) possess claims under the federal securities laws. For these reasons, certification of the following proposed class is appropriate:

All investors who purchased and/or sold equity securities in the U.S. between April 18, 2009 and November 24, 2014 (the “Class Period”) on a registered public stock exchange generated by defendants. Excluded from the Class are defendants, any officer, director or partner of defendant firm, members of their immediate families and their legal representatives, heirs, successors or assigns and any entity in which defendants have or had a controlling interest, and HFT Firms.¹

II. FACTUAL BACKGROUND

As explained in the report of David Lauer, an expert in market structure and electronic trading systems, the U.S. equity markets have undergone a transformation over the past two decades. Ex. 1, Lauer Rep. at 4-5. To account for increasingly fragmented markets and changing technology, around the turn of the century the Securities and Exchange Commission (“SEC”) began modernizing its regulations for trading stocks. *Id.* The result was Regulation NMS, passed in 2005, which updated the unified “national market system” put in place by the Exchange Act in 1975. *Id.* By

¹ A list of the HFT Firms excluded from the Class is attached as Appendix A to the Expert Report of David Lauer, filed herewith as Exhibit 1 to the Declaration of David W. Mitchell. All subsequent “Ex. __” references are to the Mitchell Decl. Unless otherwise noted, all emphasis is added, citations, footnotes and internal quotations are omitted.

2011, approximately half of the trading volume in U.S. equities on Defendants' exchanges was generated by HFT firms – and considerably more at BATS. *Id.*

A. Defendants Catered to HFT Firms by Creating Products and Services that Allowed HFT Firms to Prey on Other Investors

Despite its name, the National Best Bid and Offer (“NBBO”) – an aggregation of best priced orders for a given security – that are displayed on the consolidated feed – is not necessarily the actual best prevailing price for any particular stock. Small increments of time pass while the information in an order proceeds from an exchange to the consolidated feed, the information is compiled and processed, and the official NBBO is displayed. *See Ex. 3, Alexander Abedine, The Symbiosis of High Frequency Traders and Stock Exchanges: A Macro Perspective*, 14 N.Y.U. J.L. & Bus. 595, 607 (2018). This delay is exploited by HFT firms – with help from Defendants – to construct a shadow NBBO before the actual NBBO is displayed to other investors.

For example, assume the NBBO is \$10.00, and an order comes into the Nasdaq exchange at \$10.01. Eventually, the displayed NBBO will be updated to \$10.01. But there is a delay between when this bid is entered and when it is actually reflected in the displayed NBBO. *Ex. 4 at 52.* During that period of latency, an HFT firm that knows about the order for \$10.01 can guarantee itself a profit by buying the stock at the now stale displayed NBBO of \$10.00 before the price moves up to \$10.01, and then selling it once the NBBO is released, pocketing the difference. *See, e.g., Ex. 5 at 836* [REDACTED]

1. Co-Location Services

Close physical proximity to the exchanges' order matching engines gives trading firms a competitive advantage, as Defendants recognized. *See Ex. 6 at 402* [REDACTED]

[REDACTED]

[REDACTED]

Ken Barnes, who oversaw the launch of NYSE's Mahwah colocation facility and managed NYSE's SFTI and Platform Services business units, bluntly put it as follows: [REDACTED]

[REDACTED] Ex. 7 at 808; Ex. 8 at 968

[REDACTED] Ex. 9 at 897 [REDACTED]

[REDACTED]

Following the adoption of Reg NMS, Defendants began developing plans to operate huge facilities where they would house the exchanges' matching engines, and then sell this [REDACTED] [REDACTED] to HFT trading firms, which could place their trading equipment next to the exchanges' matching engines. Ex. 6 at 402.

"NYSE violated Section 19(b)(1) by offering co-location services without an effective exchange rule in place." Ex. 10 at 9-10. NYSE initially offered its co-location services at facilities located in Brooklyn and Manhattan beginning in 2006, and in 2009 began building its own facility in Mahwah, New Jersey. *Id.* It did so, however, without disclosing its co-location program to the investing public or the SEC, which later admonished NYSE for this omission. *Id.* Similarly, [REDACTED]. Ex. 11 at 823. Direct Edge and

BATS [REDACTED]

[REDACTED]. Ex. 12 at 778 [REDACTED]

[REDACTED]

For years, Defendants operated these services without disclosing them to the SEC and, even after they were disclosed, Defendants misled regulators and the investing public by telling them that these services did not disadvantage other investors, when just the opposite was true. Nasdaq, for

example, told regulators that [REDACTED]
[REDACTED]
[REDACTED] Ex. 13 at 566. But Nasdaq's [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] Ex. 14 at 90; Ex. 15 at 4 [REDACTED]
[REDACTED] NYSE told regulators the same. Ex. 16 at 3.
Direct Edge and BATS never even bothered to seek or obtain SEC approval of the "co-location"
services provided to their members through third-party data centers.

Defendants offered a similar "level playing field" narrative to the public, dismissing
complaints by investors that HFT firms were picking off ordinary investors using Defendants'
services. Ex. 17 at 146 [REDACTED]
[REDACTED] Concerned that they were [REDACTED]
[REDACTED]
[REDACTED] Ex. 18 at 091; Ex. 19 at 149 [REDACTED]
[REDACTED]
[REDACTED] Ex. 20 at
291 [REDACTED]
[REDACTED]
[REDACTED] Ex. 21 at 994 [REDACTED]
[REDACTED]
[REDACTED] Tom Wittman, Nasdaq's former
CEO later expressed that [REDACTED] See Ex. 22 at 149

[REDACTED]

[REDACTED]

[REDACTED] Ex. 23 at 897.

Behind the scenes, however, Defendants were well aware of the trading advantage conferred by their co-location services, and they ensured that their preferred clients, the HFT firms, received priority access to their co-location space. NYSE, [REDACTED]

[REDACTED] Ex. 24 at 430; Ex. 25 at 440. In contrast, [REDACTED]

[REDACTED]. Ex. 26 at 907; Ex. 27 at 438-44; *see also* Ex. 28 at 346 [REDACTED]

The co-location “advantage” came with a steep price – [REDACTED] [REDACTED] on the number of servers an HFT firm sought to co-locate next to the exchanges’ servers. HFT firms, such as Citadel, Getco, Jump Trading and Quantlab, were willing to fork over huge sums of money at every exchange for co-location services (and paid tens of thousands more for proprietary data) to trade ahead of other investors, and it became a golden goose for Defendants. Ex. 29 at 930; Ex. 30 at 788; Ex. 31 at 364 ([REDACTED])

[REDACTED] Ordinary investors, on the other hand, were priced out, as Stacie Swanstrom, of Nasdaq, explained: [REDACTED]

[REDACTED] Ex. 32 at 228.

2. Proprietary Data Feeds

HFT firms wanted not only a head start on other investors through faster connections, but they also wanted an information advantage beyond what was provided in the consolidated data feed/SIP. As noted above, the consolidated tape/SIP displayed the NBBO, the purpose of which was

supposed to be “protected” bid/ask quotes and trades from every trading venue. To satisfy HFT demands, Defendants began developing alternatives to the consolidated feeds — proprietary data feeds to be used in coordination with co-location that gave HFTs access to key order book data and transmitted it to them at speeds faster than the consolidated feed. *See* Ex. 33 at 749 [REDACTED]

[REDACTED]
Ex. 34 at 769 [REDACTED]

[REDACTED] Ex. 35 at 020; Ex. 36 at 687.

The information Defendants transmit using proprietary data feeds is far more detailed than what the public sees via the consolidated feed. Ex. 37 at 294 [REDACTED]

[REDACTED] In marketing materials, BATS explained that [REDACTED]

[REDACTED] Ex. 38 at 11. This feed, like the feeds provided by the other exchanges, provides a [REDACTED]

[REDACTED]. *Id.*; Ex. 39 at 384; Ex. 35 at 020. This information is extraordinarily valuable because it provides superior insight into the state of the market and likely price movements, information that is unavailable to investors reliant on the consolidated data feed alone. *NASDAQ Stock Mkt., LLC v. Sec. & Exch. Comm’n*, 961 F.3d 421, 424 (D.C. Cir. 2020).

As the creators of these products, Defendants were keenly aware that their proprietary data feeds, when combined with co-location, allowed HFT firms to front-run ordinary investors by internally constructing their own NBBO before the NBBO was released. Ex. 40 at 448; Ex. 41 at 12

[REDACTED]
[REDACTED] Ex. 35 at 4 [REDACTED]

Ex. 42 at 116 [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]; Ex. 43 at 782
[REDACTED]
[REDACTED]
[REDACTED] Ex. 44 at 879 [REDACTED]
[REDACTED]

Like co-location services, proprietary data fees were inordinately expensive for other investors. Defendants charged [REDACTED]
[REDACTED]
[REDACTED] Ex. 45 at 287; Ex. 46 at 12; Ex. 47 at 016.

3. Specialized Order Types

Defendants also designed and implemented – often at the HFT firms’ request – specialized order types to further assist its HFT clients in getting to the front of the order queue. Ex. 48 at 257
[REDACTED]
[REDACTED]

For example, in 2008, two of the top HFT firms (Getco and Tradebot) worked hand-in-hand with Direct Edge’s top executives to develop the “Hide not Slide” order, which allowed them to jump ahead when a market was unlocked and to display before the original order from another investor that was initially displayed. Ex. 49, Order Instituting Admin. Cease-and-Desist Jan. 12, 2015. In a January 12, 2015 cease-and-desist order, the SEC found that Direct Edge had not accurately described the Hide not Slide order type being used on its exchanges. *Id.*, ¶¶21-24, 26, 28-

34); Ex. 50 at 465 [REDACTED]

[REDACTED]

[REDACTED] Ex. 51 at

095-188 [REDACTED]

[REDACTED]

[REDACTED] Direct Edge also gave information about order types only to some members, including certain high-frequency trading firms that provided input about how the orders would operate. Ex. 49. For these violations, the two Direct Edge exchanges agreed to pay a \$14 million penalty – the largest ever against a national securities exchange. *Id.*

Like Direct Edge, the other Defendants made similar order types available to HFT firms without disclosing the functionality of these orders to the SEC or the public for years. [REDACTED]

[REDACTED], *see* Ex. 52, Nasdaq’s Second Amended Responses at 18, [REDACTED]

[REDACTED].² Ex. 53 at

242. [REDACTED]

[REDACTED] *See* Ex. 54 at 011 [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] *Id.*; Ex. 55 at 458.

² [REDACTED]
[REDACTED]. *See* Ex. 52 at 18.

Internally, [REDACTED]
[REDACTED] Ex. 56 at 852.

NYSE's version of an order type that allows for unfair queue positioning is the Post No Preference Blind ("PNPB") order, which was developed in December 2007 and made available on NYSE's ARCA exchange. One year later, ARCA began to offer the add liquidity only order ("ALO"), which, once posted, does not route to other exchanges. Ex. 57 at 821 [REDACTED]
[REDACTED]. Without prior approval from the SEC, NYSE allowed these two order types (and other PNPB order types) to be combined on ARCA.

[REDACTED] Ex. 58 at 716, [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] *Id.*

B. Latency Arbitrage Is Profitable for Defendants and HFT Firms, but Costly to Investors

While they publicly dismissed HFT as a problem, Defendants were privately acknowledging that HFT firms had an advantage that allowed them to skim from investors. As Bryan Harkins, the COO at Direct Edge, remarked [REDACTED]
[REDACTED]
[REDACTED] Ex. 59 at 664.

HFT firms were making nearly riskless profit, and generating huge fees for Defendants. Leading HFT firm Virtu Financial, Inc. disclosed in March 2014 that it had just one day of trading losses in five years. Ex. 60 at 2-3. At one point, Tradebot, an HFT firm headed by the founder of BATS, [REDACTED]

█ Ex. 61 at 324. Those profits do not come out of thin air: they were taking money from the pockets of countless investors every trading day.

Defendants, █
█
█
█

█ See Exs. 64-65; Ex. 66 at 4 (estimating that Defendants received \$1 billion in revenue in 2018 from high-frequency traders and others for selling access to enhanced connectivity and non-public data).

III. THE STANDARDS APPLICABLE TO THE CLASS CERTIFICATION DETERMINATION UNDER RULE 23

“Class actions serve an important function in our system of civil justice.” *Gulf Oil Co. v. Bernard*, 452 U.S. 89, 99 (1981). Because they provide a single forum in which to litigate the same or similar claims, class actions afford an indispensable mechanism for the conservation of judicial resources. See *In re Nassau County Strip Search Cases*, 461 F.3d 219, 230 (2d Cir. 2006). Rule 23 aims to “achieve economies of time, effort, and expense.” *Amchem Prods., Inc. v. Windsor*, 521 U.S. 591, 615 (1997).

Under Rule 23(a), a proposed class must satisfy the requirements of numerosity, commonality, typicality, and adequacy. *Roach v. T.L. Cannon Corp.*, 778 F.3d 401, 405 (2d Cir. 2015). The movant must also satisfy Rule 23(b). Here, certification is appropriate because “questions of law or fact common to class members predominate over any questions affecting only individual members,” and “a class action is superior to other available methods for fairly and efficiently adjudicating the controversy.” Fed. R. Civ. P. 23(b)(3).

Each element of Rule 23 must be shown by a preponderance of the evidence. *Johnson v. Nextel Commc'ns Inc.*, 780 F.3d 128, 137 (2d Cir. 2015). The Second Circuit has repeatedly emphasized that “Rule 23 should be given liberal rather than restrictive construction, and it seems beyond peradventure that the Second Circuit’s general preference is for granting rather than denying class certification.” *See Pichardo v. Carmine’s Broadway Feast Inc.*, 2016 WL 4379421, at *4 (S.D.N.Y. June 13, 2016), adopted 2016 WL 5338551 (S.D.N.Y. Sept. 23, 2016). *See also In re Air Cargo Shipping Servs. Antitrust Litig.*, 2014 WL 7882100, at *29 (E.D.N.Y. Oct. 15, 2014), adopted 2015 WL 5093503 (E.D.N.Y. July 10, 2015) (“Courts in this circuit employ a liberal rather than restrictive construction of Rule 23[.]”). Any “[d]oubts concerning the propriety of class certification should be resolved in favor of class certification.” *Ballinger v. Advance Magazine Publishers, Inc.*, 2014 WL 7495092, at *3 (S.D.N.Y. Dec. 29, 2014).

This approach applies with particular force to securities claims. Generally, “claims alleging violations of Section[] 10(b) . . . of the Exchange Act are especially amenable to class certification.” *In re SLM Corp. Sec. Litig.*, 2012 WL 209095, at *3 (S.D.N.Y. Jan. 24, 2012). And, “[i]n light of the importance of the class action device in securities fraud suits, these factors are to be construed liberally.” *Gary Plastic Packaging Corp. v. Merrill Lynch, Pierce, Fenner & Smith, Inc.*, 903 F.2d 176, 179 (2d Cir. 1990). As part of the class certification analysis, courts resolve factual disputes only to the extent necessary to determine compliance with Rule 23. *See Amgen Inc. v. Conn. Ret. Plans and Trust Funds*, 568 U.S. 455, 460-66 (2013).

Plaintiffs readily satisfy the requirements of Rule 23. The adverse selection damages suffered by the Class, measured through Plaintiffs’ markout analysis, are capable of common proof. Ex. 1, Lauer Rep. at 17-31; Ex. 2, Finnerty Rep., §§V-VII. Common proof of these elements are far more substantial than any hypothetical “individual” issues that could arise. Indeed, the Supreme Court has

noted that predominance “is a test readily met in certain cases alleging consumer or securities fraud or violations of the antitrust laws.” *Amchem*, 521 U.S. at 625.

IV. THE REQUIREMENTS OF RULE 23(a) HAVE BEEN MET

A. The Proposed Class is So Numerous that Joinder of All Members is Impracticable

Rule 23(a)(1) requires that the class be “so numerous that joinder of all members is impracticable.” “[I]mpracticability exists where . . . joinder of all claims into one proceeding would be expensive, time-consuming, and logistically unfeasible.” *MacNamara v. City of N.Y.*, 275 F.R.D. 125, 137 (S.D.N.Y. 2011). “The Second Circuit has held that numerosity is presumed at a level of 40 members.” *Ge Dandong v. Pinnacle Performance Ltd.*, 2013 WL 5658790, at *4 (S.D.N.Y. Oct. 17, 2013) (Furman, J.).

During the Class Period, Defendants’ exchanges listed several thousand companies, [REDACTED] [REDACTED] Ex. 67 at 36; Ex. 68 at 9 n.36; Ex. 69 at 816. Given that millions of trades of publicly held stock occurred daily on Defendants’ exchanges, numerosity is satisfied. In securities class actions “relating to publicly owned and nationally listed corporations, numerosity may be satisfied by a showing that a large number of shares were outstanding and traded during the relevant period.” *In re Vivendi Universal, S.A. Sec. Litig.*, 242 F.R.D. 76, 84 (S.D.N.Y. 2007), *aff’d*, 838 F.3d 223 (2d Cir. 2016).

B. Common Questions of Law and Fact Exist

Rule 23(a)(2) requires that there be “questions of law or fact common to the class.” The commonality requirement “is not demanding,” *Brooklyn Ctr. for Indep. of the Disabled v. Bloomberg*, 290 F.R.D. 409, 418 (S.D.N.Y. 2012) (Furman, J.), and poses “a low hurdle.” *Anwar v. Fairfield Greenwich Ltd.*, 289 F.R.D. 105, 111 (S.D.N.Y. 2013). Even “a single [common] question will do.” *Wal-Mart Stores, Inc. v. Dukes*, 564 U.S. 338, 359 (2011). Commonality exists where a

classwide proceeding may “generate common answers apt to drive the resolution of the litigation.” *Id.* at 350. A “common question is one where the same evidence will suffice for each member to make a prima facie showing [or] the issue is susceptible to generalized, classwide proof.” *Tyson Foods, Inc. v. Bouaphakeo*, 577 U.S. 442, 453 (2016).

Virtually all of the questions of law and fact raised in this case are common to the class. These questions include, among others, whether Defendants violated the Exchange Act; whether Defendants implemented the manipulative acts, devices or contrivances or engaged in the alleged fraudulent scheme and course of business; whether Defendants omitted material facts and concealed material information concerning the HFT firms’ use of their products and services; whether Defendants acted with scienter; and whether investors suffered damages as a result of Defendants’ conduct. The answers to these common questions are likewise common and susceptible to generalized class-wide proof. Accordingly, this case satisfies the commonality requirement. *See In re NYSE Specialists Sec. Litig.*, 260 F.R.D. 55, 70 (S.D.N.Y. 2009) (finding commonality in securities case involving a scheme to “interposition” or “front run” other investors’ orders); *Virtus*, 2017 WL 2062985, at *2 (“Courts in this Circuit find commonality satisfied where there are common issues relating to violations of federal securities laws, misrepresentations of material fact, scienter, and damages.”).

C. Plaintiffs’ Claims are Typical of Those of the Proposed Class

Rule 23(a)(3) requires that “the claims or defenses of the representative parties are typical of the claims or defenses of the class.” Typicality “ensure[s] that class representatives have the incentive to prove all the elements of the cause of action which would be presented by the individual members of the class were they initiating individualized actions.” *Floyd v. City of N.Y.*, 283 F.R.D. 153, 175 (S.D.N.Y. 2012). The typicality requirement is also “not demanding.” *Tsereteli v.*

Residential Asset Securitization Trust 2006-A8, 283 F.R.D. 199, 208 (S.D.N.Y. 2012). It requires only that “each class member’s claim arises from the same course of events and each class member makes similar legal arguments to prove the defendant’s liability.” *In re Flag Telecom Holdings, Ltd. Sec. Litig.*, 574 F.3d 29, 35 (2d Cir. 2009).

In this case, Plaintiffs seek certification of a class of investors who purchased or sold equity securities on Defendants’ exchanges. Like the class, Plaintiffs purchased and sold stocks during the Class Period on Defendants’ exchanges. *See, e.g.*, Ex. 70. The trading data set forth in Ex. 70, which links data from Plaintiffs’ custodial bank data to data produced by certain third-party broker dealers, identifies shares traded on Defendants’ exchanges initiated by Plaintiffs’ investment advisors. Further, Plaintiffs’ claims turn on the same legal theories and facts – Defendants’ alleged violations of §10(b) and Rule 10b-5, by providing the tools and services that allowed HFT firms to prey on investors’ trades. And the injury Plaintiffs allegedly suffered is the same as the class members’ alleged injuries. Ex. 1, Lauer Rep. at 22-24. “As long as plaintiffs assert, as they do here, that defendants committed the same wrongful acts in the same manner, against all members of the class, they establish [the] necessary typicality.” *NYSE Specialists*, 260 F.R.D. 55 at 72-73.

D. Plaintiffs and Co-Lead Counsel Will Continue to Adequately Represent the Interests of the Class

Rule 23(a)(4) asks whether “the representative parties will fairly and adequately protect the interests of the class” – that is, are the class representatives’ interests “antagonistic” to the those of other class members, and are class counsel “qualified, experienced and able to conduct the litigation.” *Flag Telecom*, 574 F.3d at 35. This factor will bar certification only where “fundamental” conflicts exist. *Id.* Courts reject adequacy challenges to class certification where there is only “the possibility of hypothetical conflicts or antagonisms among class members” because

such conflicts are not “apparent, imminent, and on an issue at the very heart of the suit.” *In re NASDAQ Market-Makers Antitrust Litig.*, 169 F.R.D. 493, 513-14 (S.D.N.Y. 1996).

First, as discussed above, Plaintiffs’ interests in establishing Defendants’ liability and maximizing the recovery are aligned with those of the class. Plaintiffs, like all class members, purchased and sold equity securities during the Class Period on Defendants’ exchanges and were allegedly injured by Defendants’ misconduct. *See supra*, §IV.C.

Further, since appointed as Lead Plaintiffs, Boston, Providence, VIGERS and PPNPF have demonstrated their willingness and ability to serve as adequate class representatives. Plaintiffs have followed through with their commitment to take an active role in directing the litigation and overseeing Co-Lead Counsel’s efforts. Among other things, Plaintiffs have confirmed through sworn testimony that they: (i) understand the duties of a class representative and are fulfilling those duties³; (ii) have diligently supervised and monitored the progress of the case⁴; (iii) have reviewed key pleadings and filings as well as discovery responses⁵; (iv) have participated in in-person and telephonic conferences with Co-Lead Counsel regarding case developments and litigation strategies⁶; and (v) will continue to commit their resources to prosecute the action vigorously against the remaining Defendants through trial and appeal. Plaintiffs have also undertaken substantial document and data discovery efforts, collecting, reviewing and producing tens of thousands of

³ Ex. 71 at 31:17-32:2; Ex. 72 at 102:18-103:2; Ex. 73 at 51:9, 127:23, 162:18; *see also* ECF No. 169-2.

⁴ Ex. 71 at 23:8-22, 159:10-160:12; Ex. 72 at 52:16-20, 82:16-83:6; Ex. 74 at 22:10-16, 116:20-117:2; Ex. 73 at 86:19, 132-14.

⁵ Ex. 71 at 18:5-15; Ex. 72 at 15:21-17:9, 134:6-14, 166:8-167:18; Ex. 74 at 17:14-22, 107:3-14, 114:25-115:13, 117:12-118:11, 148:13-22, 150:16-151:14, 192:15-194:8; Ex. 73 at 32:2, 49:8, 126:2.

⁶ Ex. 71 at 176:4-20; Ex. 72. at 13:6-15:11, 163:17; Ex. 74 at 61:11-62:6; Ex. 73 at 22:17, 62:10, 144:45.

documents and a substantial amount of transactional data to Defendants. Each Plaintiff and their counsel prepared and sat for a lengthy deposition.⁷

As to the second part of the analysis, Plaintiffs have engaged counsel with extensive experience litigating complex cases generally, and securities actions in particular. *See* Dkt. Nos. 169-4, 169-5 and 169-6 (firm resumes).

V. THE REQUIREMENTS OF RULE 23(b)(3) HAVE BEEN SATISFIED

Upon finding the four requirements of Rule 23(a) are met, the Court must then determine whether the action can be maintained as a class action under one of the three subsections of Rule 23(b). Here, Plaintiffs seek class certification under Rule 23(b)(3) because, as explained below: (1) “questions of law or fact common to class members predominate over any questions affecting only individual members”; and (2) “a class action is superior to other available methods for fairly and efficiently adjudicating the controversy.” Fed. R. Civ. P. 23(b)(3).

A. Common Questions of Fact and Law Predominate Because Plaintiffs’ Claim Can Be Resolved by Classwide Proof

“Predominance is a test readily met in certain cases alleging . . . securities fraud[.]” *In re JPMorgan Chase & Co. Sec. Litig.*, 2015 WL 10433433, at *4 (S.D.N.Y. Sept. 29, 2015) (citing *Amchem Prods.*, 521 U.S. at 625). Predominance is satisfied where “(1) resolution of any material legal or factual questions . . . can be achieved through generalized proof, and (2) these [common] issues are more substantial than the issues subject only to individualized proof.” *In re Petrobras Secs.*, 862 F.3d 250, 270 (2d Cir. 2017). The predominance inquiry boils down to “whether proposed classes are sufficiently cohesive to warrant adjudication by representation.” *City of Westland v. MetLife*, 2017 WL 3608298, at *14 (S.D.N.Y. Aug. 22, 2017). “That the defendant

⁷ Ex. 72 at 13:6-15:11, 15:21-17:9; Ex. 74 at 17:14-22, 61:11-62:6, 192:15-194:8; Ex. 73 at 9:14-10:23.

might attempt to pick off the occasional class member here or there through individualized rebuttal does not cause individual questions to predominate.” *Halliburton*, 573 U.S. 258, 276 (2014).

Plaintiffs allege in this case that the exchanges violated §10(b) and Rule 10b-5. Section 10(b) makes it unlawful “[t]o use or employ, in connection with the purchase or sale of any security[,] . . . any manipulative or deceptive device or contrivance in contravention of . . . [the SEC’s] rules and regulations.” 15 U.S.C. §78j(b). Rule 10b-5, which was promulgated by the SEC, makes it unlawful for any person directly or indirectly in connection with the purchase or sale of any security to “employ any device, scheme, or artifice to defraud,” “make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made . . . not misleading,” or “engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person.” 17 C.F.R. § 240.10b-5(a)-(c). For a §10(b) violation, the class has to prove: (1) a material misrepresentation or omission, or a manipulative or deceptive act; (2) scienter; (3) causation, including reliance; and (4) economic loss or injury. *See Stoneridge Inv. Partners, LLC v. Scientific-Atlanta, Inc.*, 552 U.S. 148 (2008).

Defendants engaged in the unlawful manipulation of equity securities – and Plaintiffs will prove the conduct through common proof showing that Defendants created products for HFT firms that manipulated the pricing of equity securities in the HFT firms’ favor. Liability here will focus on Defendants’ conduct and will turn on questions and answers common to all class members including: (i) Did Defendants rent space to HFT firms that allowed them to place their servers in close physical proximity to the exchanges’ systems?; (ii) Did Defendants offer proprietary data feeds that allowed HFTs to construct a shadow NBBO before the official NBBO was displayed to other investors?; (iii) What information was provided by Defendants via their proprietary feeds and did those feeds provide an unfair advantage?; (iv) Did these services provide the ability for HFT firms to

have priority over the class' trades?; (v) Did Defendants develop specialized order types designed to allow HFT firms to have priority over the class' trades?; and (vi) Were these specialized order types created at the behest of Defendants' preferred HFT clients? "The existence and scope of the alleged [behavior] among the defendants it itself a question common to the class." *Dura-Bilt Corp. v. Chase Manhattan Corp.*, 89 F.R.D. 87, 93 (S.D.N.Y. 1981).

Plaintiffs further allege that Defendants failed to disclose the full impact that such products and services would have on market activity and knowingly created a false appearance of market liquidity that, unbeknownst to plaintiffs, resulted in increased costs on investors. These are quintessential common issues. *See, e.g., In re Deutsche Bank AG Sec. Litig.*, 328 F.R.D. 71, 86 (S.D.N.Y. 2018) (common issues predominated because the "existence of . . . an unlawful omission" and "materiality" are "fundamental to classwide resolution of . . . of liability." Scierter is likewise a common question because Defendants' state of mind did not differ with respect to individual class members. *See, e.g., In re SunEdison, Inc. Sec. Litig.*, 329 F.R.D. 124, 146-47 (S.D.N.Y. 2019) (scierter is a common question).

B. The Class is Entitled to a Presumption of Reliance

With respect to reliance, while Plaintiffs continue to believe that the fraud-on-the-market doctrine applies here, *Hevesi v. Citigroup Inc.*, 366 F.3d 70, 77 (2d Cir. 2004), predominance is met because Plaintiffs are entitled to a presumption of reliance under *Affiliated Ute Citizens of Utah v. United States*, 406 U.S. 128 (1972). As this Court previously held, this case falls within the category of cases to which the *Affiliated Ute* presumption may apply. ECF No. 104 at 17 (citing *City of Providence*, 878 F.3d at 50).

In such cases, "positive proof of reliance is not a prerequisite to recovery." *Affiliated Ute*, 406 U.S. at 153-54; ECF No. 104 at 18 (*Affiliated Ute* "excuses Plaintiffs from offering direct proof

(or, at the pleading stage, allegations) or reliance if there is an omission of a material fact by one with a duty to disclose.”). Instead, “[a]ll that is necessary is that the facts withheld be material in the sense that a reasonable investor might have considered them important in the making of [their] decision.” *Id.* Moreover, because materiality itself is a common question, Plaintiffs need not prove materiality at the class certification stage. *Amgen*, 568 U.S. at 467 (“[B]ecause [t]he question of materiality . . . is an objective one, involving the significance of an omitted or misrepresented fact to a reasonable investor, materiality can be proved through evidence common to the class.”); *Halliburton*, 573 U.S. at 281-83 (same).

As the Second Circuit recognized, Plaintiffs assert that “the exchanges did not publicly disclose the full range or cumulative effect that such services would have on the market, the trading public, . . . the prices of securities[, or] complex order types,” and these alleged omissions were material, *City of Providence*, 878 F.3d at 50, thus entitling Plaintiffs and the proposed class to the *Affiliated Ute* presumption. See *Haw. Structural Ironworkers Pension Trust v. AMC Entm’t Holdings, Inc.*, 2021 WL 1198799, at *7 (S.D.N.Y. Mar. 30, 2021) (class certification granted; *Affiliated Ute* applied where §10(b) claims focused on the omission of material information); *City of Livonia Employees’ Ret. Sys. v. Wyeth*, 284 F.R.D. 173, 184-85 (S.D.N.Y. 2012) (same).

C. Monetary Remedies Will Be Calculated Through Common Formulaic Methodologies

1. Damages Will Be Calculated in the Same Manner for All Class Members

Proof of loss causation or damages is not a prerequisite to class certification. *Erica P. John Fund, Inc. v. Halliburton Co.*, 563 U.S. 804, 807, 813 (2011) (loss causation is a common question, and plaintiffs are not required to “show loss causation as a condition of obtaining class certification”); (“The question presented in this case is whether securities fraud plaintiffs must also prove loss

causation in order to obtain class certification. We hold that they need not.”). In this Circuit, moreover, certification does not require “a finding that damages are capable of measurement on a classwide basis.” *Roach v. T.L. Cannon Corp.*, 778 F.3d 401, 402 (2d Cir. 2015). Instead, “the fact that damages may have to be ascertained on an individual basis” is merely a factor that courts “consider in deciding whether issues susceptible to generalized proof “outweigh” individual issues.” *Id.* at 408; *see also Sykes v. Mel S. Harris & Assocs. LLC*, 780 F.3d 70, 88 (2d Cir. 2015) (“All that is required at class certification is that the plaintiffs must be able to show that their damages stemmed from the defendants’ actions that created the legal liability.”). Further, any damages model submitted at the class certification stage “need not be exact.” *Waggoner v. Barclays PLC*, 875 F.3d 79, 106 (2d Cir. 2017).

Plaintiffs have shown that damages here can be calculated on a class-wide basis, consistent with Plaintiffs’ theory of the case. Over the past ten years, numerous peer reviewed academic articles have found that electronic front running by HFT firms in U.S. equity markets, including on Defendants’ exchanges, was prevalent. *See* Ex. 75 at 10-24, 26-40 (Plaintiffs’ Response to Interrogatory Nos. 11-12) (collecting and discussing articles). Using the speed and informational advantages provided by Defendants, the studies show, HFT firms have been preying on trades made by other investors by trading ahead of their order flow, and non-HFT traders – *i.e.*, the class – have been systematically losing money to HFTs as a result. Several academics have quantified the economic costs imposed on investors through established economic methods. *Id.*

Applying these principles, Plaintiffs’ experts, Mr. Lauer and John D. Finnerty, Ph.D., have developed methodologies for calculating overall damages. Ex. 1, Lauer Rep. at 1-2, 17-31; Ex. 2, Finnerty Rep., §§V-VII. To evaluate the impact of the HFT firms’ use of co-location services, proprietary data products and specialized order types on other investors, Mr. Lauer has run a

markout analysis across a sample of the exchanges' trading data, and then used the results to estimate damage. *Id.* Mr. Lauer's analysis shows that HFT firms' aggressive trading with non-HFT firms resting (incumbent) orders show higher adverse selection costs. *Id.* at 25. Based on the results, Mr. Lauer calculates damages of over one million dollars per day. *Id.* at 25-31; Ex. 84, A Comparison of Execution Quality Across U.S. Stock Exchanges, Wah, Feldman, Chun, Bishop and Aisen (2017) (markout analysis showed that investors' execution costs on NYSE, NYSE Arca, Nasdaq, BZX, and EDGX were, on average, a half cent worse per share than they would have been at other exchanges). The markout metric is not only used by regulators and academics to evaluate execution costs, but also widely used by trading firms to determine whether a specific trading strategy is profitable. Similarly, Dr. Finnerty, a Professor of Finance at Fordham University's Graduate Business School and an expert in financial markets, concludes that damages suffered by class members who traded shares of stock during the Class Period on the stock exchanges operated by the Defendants can be calculated on a class-wide basis. Ex. 2, Finnerty Rep., §§V-VII.

2. Disgorgement is Calculable on a Classwide Basis

In the alternative, Plaintiffs seek disgorgement of the profits generated by Defendants by selling the proprietary data feeds and co-location services to the HFT firms in violation of the securities laws. In cases involving securities law violations, a "district court has broad equitable power to fashion appropriate remedies, including ordering that culpable defendants disgorge their profits." *SEC v. First Jersey Secs., Inc.*, 101 F.3d 1450, 1474 (2d Cir. 1996). "The amount of disgorgement . . . is determined by the amount of profit realized by the defendant," *SEC v. One Wall Street, Inc.*, 2008 U.S. Dist. LEXIS 110351, at *11 (E.D.N.Y. Sept. 4, 2008) (citing *SEC v. AbsoluteFuture.com*, 393 F.3d 94, 96 (2d Cir. 2004)) (Ex. 83), and only needs to be a reasonable approximation of profits, with the risk of uncertainty in the calculation falling "on the wrongdoer

whose illegal conduct created the uncertainty.” 2008 U.S. Dist. LEXIS 110351, at *11 (citing *SEC v. Patel*, 61 F.3d 137, 139-140 (2d Cir. 1995)).

Disgorgement does not require a demonstration of individual out-of-pocket loss. On the contrary, disgorgement – known as accounting for profits – is “a method of forcing a defendant to give up the amount by which he was unjustly enriched.” *SEC v. Commonwealth Chem. Sec., Inc.*, 574 F.2d 90, 102 (2d Cir. 1978). Because the very nature of this remedy focuses on the gains of the defendants, not the losses of the plaintiffs, it is a method that can be applied class-wide. *See In re Enron Secs. Derivative & ERISA Litig.*, 529 F. Supp. 2d 644, 700-01 (S.D. Tex. 2006) (applying disgorgement remedy is a “mechanical task”).

Here, too, the amount of each exchange’s disgorgement liability will be determined in the aggregate, using a common formula and common data sets, as Defendants’ data and documents reflect the fees for providing co-location services and proprietary data feeds. Each Defendant has produced data reflecting these fee amounts. The resulting amount, less costs, is then allocated equitably to members of the respective class. *See Liu v. SEC*, __ U.S. __, 140 S. Ct. 1936, 1947 (2020) (a disgorgement award cannot exceed a wrongdoer’s net profits).

For example, [REDACTED]

[REDACTED] Ex. 76 at 162:20-163:4. [REDACTED]

[REDACTED] *See id.* at 176:20–177:14; Ex. 77 at 410-11; Ex. 78 at 973-74. [REDACTED]

[REDACTED]. *See* Ex. 79 at 22:2-23:10.

The spreadsheets show [REDACTED]

[REDACTED]

[REDACTED] *See* Ex. 80 at 808; Ex. 78 at 974. This amount, less costs, would be the amount of

disgorgement from Nasdaq for these two sample HFT firms, which would be allocated equitably to members of the respective class. [REDACTED]

[REDACTED] Ex. 81 at 581 (co-location); Ex. 82 at 583 (data feeds); Ex. 46 at 956.

D. A Class Action is Superior to Other Available Methods of Adjudication and the Class is Manageable

Finally, Plaintiffs' claims satisfy the superiority requirement of Rule 23(b)(3). "The superiority requirement asks courts to balance, in terms of fairness and efficiency, the advantages of a class action against those of alternative available methods of adjudication." *Vivendi*, 242 F.R.D. at 91. "Generally, securities actions easily satisfy the superiority requirement because the alternatives are either no recourse for thousands of stockholders or a multiplicity and scattering of suits with the inefficient administration of litigation which follows in its wake." *Gruber*, 2019 WL 4439415, at *9 (citing *SunEdison*, 329 F.R.D. at 144).

Rule 23(b)(3) identifies four factors for assessing whether a class action is superior to other methods of adjudication: (1) the interests of members of the class in "individually controlling the prosecution or defense of separate actions"; (2) "the extent and nature of any litigation concerning the controversy already begun by or against class members"; (3) "the desirability or undesirability of concentrating the litigation of the claims in the particular forum"; and (4) the difficulties likely to be encountered in the management of a class action. Fed. R. Civ. P. 23(b)(3). Each factor demonstrates that a class action is the superior method of adjudication here.

First, the interest of class members in asserting individual claims is limited. The class consists of a large number of geographically dispersed purchasers of equity securities listed on Defendants' exchanges whose individual damages likely are small enough to keep individual litigation from being economically worthwhile. The misconduct about which Plaintiffs complain imposed additional costs amounting as little as a fraction of a penny per trade, or thousands of

dollars across the entire market per day. Ex. 1, Lauer Rep. at 25-27. The class members, therefore, have little interest in asserting separate claims. *See, e.g., Lapin v. Goldman Sachs & Co.*, 254 F.R.D. 168, 187 (S.D.N.Y. 2008) (holding that “the amount of potential recovery per plaintiff is not so high as to ensure that each plaintiff could or would bring an action individually”). Second, Plaintiffs are not aware of any other pending §10(b) litigation regarding the alleged fraud. Third, concentrating the litigation in this Court has many benefits, including eliminating the risk of inconsistent adjudication and promoting the fair and efficient use of the judicial system. Finally, Plaintiffs do not foresee any management difficulties that will preclude this action from being maintained as a class action. To the contrary, litigating each claim separately would be wasteful and would effectively preclude investors from redress. *See In re SCOR Holding (Switz.) AG Litig.*, 537 F. Supp. 2d 556, 579 (S.D.N.Y. 2008). The superiority requirement is readily satisfied here.

VI. CONCLUSION

For the foregoing reasons, Plaintiffs respectfully request that the Court: (a) certify this action as a class action pursuant to Rule 23(a) and Rule 23(b)(3); (b) appoint Plaintiffs as Class Representatives; and (c) appoint Robbins Geller, Labaton Sucharow and Motley Rice as Co-Lead Class Counsel pursuant to Rule 23(g).

DATED: May 28, 2021

ROBBINS GELLER RUDMAN
& DOWD LLP
DAVID W. MITCHELL
BRIAN O. O'MARA
STEVEN M. JODLOWSKI
LONNIE A. BROWNE

s/ David W. Mitchell

DAVID W. MITCHELL

655 West Broadway, Suite 1900
San Diego, CA 92101
Telephone: 619/231-1058
619/231-7423 (fax)
davidm@rgrdlaw.com
bomara@rgrdlaw.com
sjodlowski@rgrdlaw.com
lbrowne@rgrdlaw.com

ROBBINS GELLER RUDMAN
& DOWD LLP
SAMUEL H. RUDMAN
VINCENT M. SERRA
58 South Service Road, Suite 200
Melville, NY 11747
Telephone: 631/367-7100
631/367-1173 (fax)
srudman@rgrdlaw.com
vserra@rgrdlaw.com

ROBBINS GELLER RUDMAN
& DOWD LLP
PATRICK J. COUGHLIN
RANDI BANDMAN
420 Lexington Avenue
New York, NY 10170
Telephone: 212/693-1058
patc@rgrdlaw.com
randib@rgrdlaw.com

MOTLEY RICE LLC
WILLIAM H. NARWOLD
MICHAEL J. PENDELL
20 Church Street, 17th Floor
Hartford, CT 06103
Telephone: 860/882-1681
860/882-1682 (fax)
bnarwold@motleyrice.com
mpendell@motleyrice.com

DATED: May 28, 2021

MOTLEY RICE LLC
JOSEPH F. RICE
JOSHUA C. LITTLEJOHN
MEREDITH B. WEATHERBY
ANNIE E. KOUBA

s/ Joshua C. Littlejohn (by permission)

JOSHUA C. LITTLEJOHN

28 Bridgeside Blvd.
Mount Pleasant, SC 29464
Telephone: 843/216-9000
843/216-9450 (fax)
jrice@motleyrice.com
jlittlejohn@motleyrice.com
mweatherby@motleyrice.com
akouba@motleyrice.com

MOTLEY RICE LLC
DAVID D. BURNETT
401 9th Street NW, Suite 1001
Washington, DC 20004
Telephone: 202/232-5504
202/232-5513 (fax)
dburnett@motleyrice.com

DATED: May 28, 2021

LABATON SUCHAROW LLP
THOMAS A. DUBBS
THOMAS G. HOFFMAN
CORBAN S. RHODES

s/ Corban S. Rhodes (by permission)

CORBAN S. RHODES

140 Broadway
New York, NY 10005
Telephone: 212/907-0700
212/818-0477 (fax)
tdubbs@labaton.com
thoffman@labaton.com
crhodes@labaton.com

Co-Lead Counsel for Plaintiffs

CERTIFICATE OF SERVICE

I hereby certify under penalty of perjury that on May 28, 2021, I authorized the electronic filing of the foregoing with the Clerk of the Court using the CM/ECF system which will send notification of such filing to the e-mail addresses on the attached Electronic Mail Notice List, and I hereby certify that I caused the mailing of the foregoing via the United States Postal Service to the non-CM/ECF participants indicated on the attached Manual Notice List.

s/ David W. Mitchell

DAVID W. MITCHELL

ROBBINS GELLER RUDMAN
& DOWD LLP

655 West Broadway, Suite 1900

San Diego, CA 92101-8498

Telephone: 619/231-1058

619/231-7423 (fax)

E-mail: davidm@rgrdlaw.com

Mailing Information for a Case 1:14-cv-02811-JMF City of Providence, Rhode Island v. Bats Global Markets, Inc. et al

Electronic Mail Notice List

The following are those who are currently on the list to receive e-mail notices for this case.

- **Patrick Ammann**
pammann@susmangodfrey.com
- **Patricia I. Avery**
pavery@wolfpopper.com,cdunleavy@wolfpopper.com
- **Randi Dawn Bandman**
randib@rgrdlaw.com,e_file_sd@rgrdlaw.com
- **Elisha Brandis Barron**
ebarron@susmangodfrey.com,lparrella@susmangodfrey.com
- **Stephen P Bedell**
sbedell@foley.com
- **Jeremy A. Berman**
jberman@skadden.com
- **David Charles Bohan**
david.bohan@kattenlaw.com,ecfdocket@kattenlaw.com,bridget.diedrich@kattenlaw.com
- **Andrew J. Brown**
andrewb@rgrdlaw.com,nhorstman@rgrdlaw.com,kirstenb@rgrdlaw.com,ldeem@rgrdlaw.com
- **Lonnie A Browne**
lbrowne@rgrdlaw.com,e_file_sd@rgrdlaw.com
- **Thomas Bundy**
thomas.bundy@sutherland.com
- **David Dyer Burnett**
dburnett@motleyrice.com,dave-burnett-5572@ecf.pacerpro.com
- **Michael P. Canty**
mcanty@labaton.com,lpina@labaton.com,EChan-Lee@labaton.com,4727379420@filings.docketbird.com,electroniccasefiling@labaton.com
- **Patrick Joseph Coughlin**
patc@rgrdlaw.com,smiller@rgrdlaw.com,e_file_sd@rgrdlaw.com
- **Douglas Randall Cox**
dcox@gibsondunn.com,aarias@gibsondunn.com,rmohan@gibsondunn.com,jspencer@gibsondunn.com,agesch@gibsondunn.com,CWeidner@gibsondunn.com,MAO@
- **Paul E. Dengel**
pdengel@schiffhardin.com,pdestefano@schiffhardin.com,mbocian@schiffhardin.com,edocket@schiffhardin.com
- **Charles E. Dorkey, III**
charles.dorkey@dentons.com,docket.general.lit.nyc@dentons.com
- **Jeffrey Aaron Dubbin**
jdubbin@labaton.com,6415738420@filings.docketbird.com,lpina@labaton.com,electroniccasefiling@labaton.com
- **Thomas A. Dubbs**
tdubbs@labaton.com,lpina@labaton.com,1751297420@filings.docketbird.com,wtsang@labaton.com,echan-lee@labaton.com,electroniccasefiling@labaton.com
- **Agnes Dunogue**
Agnes.Dunogue@Shearman.com,managing-attorney-5081@ecf.pacerpro.com,agnes-dunogue-0398@ecf.pacerpro.com,CourtAlert@Shearman.com,manattyoffice@shearman.com
- **Angus White Dwyer**
adwyer@spencerfane.com,pozias@spencerfane.com
- **Stephen Ehrenberg**
ehrenbergs@sullcrom.com,s&cmanagingclerk@sullcrom.com,stephen-ehrenberg-3127@ecf.pacerpro.com
- **Jason A. Forge**
jforge@rgrdlaw.com,tholindrake@rgrdlaw.com,e_file_SD@rgrdlaw.com,JForge@ecf.courtdrive.com
- **Brian Lawrence Friedman**
bfriedman@ebglaw.com,nyma@ebglaw.com
- **Harry Frischer**
hfrischer@proskauer.com,LSOSDNY@proskauer.com
- **James Loyd Gattis**
lgattis@spencerfane.com,kholm@spencerfane.com

- **Faith E. Gay**
fgay@selendygay.com,edockets@selendygay.com,Paralegals@selendygay.com,mco@selendygay.com,faith-gay-0057@ecf.pacerpro.com
- **Nevin M. Gewertz**
nevin.gewertz@bartlit-beck.com
- **Jacqueline A. Giannini**
jacqui.giannini@dentons.com
- **Robert Joseph Giuffra , Jr**
giuffrar@sullcrom.com,s&cmanagingclerk@sullcrom.com,robert-giuffra-5298@ecf.pacerpro.com
- **Justine Marie Goeke**
jgoeke@gibsondunn.com
- **Andrew Garry Gordon**
agordon@paulweiss.com,mao_fednational@paulweiss.com
- **Paul E. Greenwalt**
pgreenwalt@schiffhardin.com,amitzel@schiffhardin.com
- **Adam Selim Hakki**
ahakki@shearman.com,managing-attorney-5081@ecf.pacerpro.com,CourtAlert@shearman.com,manattyoffice@shearman.com,adam-hakki-1816@ecf.pacerpro.com
- **Stacie Rachel Hartman**
shartman@schiffhardin.com,edocket@schiffhardin.com
- **Douglas W Henkin**
douglas.henkin@dentons.com,douglas-henkin-8930@ecf.pacerpro.com,docket.general.lit.nyc@dentons.com
- **Adam L. Hoeflich**
adam.hoeflich@bartlit-beck.com
- **Thomas Gregory Hoffman , Jr**
thoffman@labaton.com,lpina@labaton.com,EChan-Lee@labaton.com,mphenrhyn@labaton.com,ElectronicCaseFiling@labaton.com,5560103420@filings.docketbird.com
- **John Joseph Hughes , III**
jhughes2@milbank.com,john-hughes-0320@ecf.pacerpro.com,AutoDocketECF@milbank.com
- **Steven M Jodlowski**
sjodlowski@rgrdlaw.com,e_file_sd@rgrdlaw.com
- **Arnold Richard Kaplan**
akaplan@spencerfane.com
- **Jay B. Kasner**
jkasner@skadden.com
- **Ankush Khardori**
ankush.khardori@usdoj.gov
- **Marlon Kimpson**
mkimpson@motleyrice.com
- **George Kostolampros**
gkostolampros@venable.com
- **Annie E. Kouba**
akouba@motleyrice.com
- **Thomas Paul Krebs**
tkrebs@foley.com
- **Mark D. Lanpher**
mark.lanpher@shearman.com,managing-attorney-5081@ecf.pacerpro.com,CourtAlert@Shearman.com,lanpher-mark-4997@ecf.pacerpro.com,manattyoffice@shearman.com,sarah.tishler@shearman.com
- **Matthew Joseph Laroche**
matthew.laroche@usdoj.gov,CaseView.ECF@usdoj.gov,USANYS.ECF@USDOJ.GOV
- **Jeremy Alan Lieberman**
jalieberman@pomlaw.com,ahood@pomlaw.com,asoto@pomlaw.com,disaacson@pomlaw.com,ashmatkova@pomlaw.com,abarbosa@pomlaw.com
- **Lewis J. Liman**
lliman@cgsh.com,maofiling@cgsh.com
- **Christopher J. Lind**
chris.lind@bartlit-beck.com,anne.doyle@bartlit-beck.com
- **Joshua C. Littlejohn**
jlittlejohn@motleyrice.com,sturman@sturman.ch,mhickey@motleyrice.com

- **Christopher Lovell**
clovell@lshllp.com,kessenmacher@lshllp.com,gjacobson@lshllp.com,msrayle@sbcglobal.net,ekroub@lshllp.com,jkrisloff@lshllp.com,emooney@lshllp.com,mgalla
- **Mitchell A. Lowenthal**
mlowenthal@cgsh.com,maofiling@cgsh.com
- **Mark S. Mandel**
mmandel@foley.com,tkrebs@foley.com,sbedell@foley.com
- **Felicia Yvonne Mann**
fmann@labaton.com
- **Justine Margolis**
justine.margolis@dentons.com,docket.general.lit.nyc@dentons.com
- **Francis Paul McConville**
fmconville@labaton.com,HChang@labaton.com,lpina@labaton.com,drogers@labaton.com,9849246420@filings.docketbird.com,electroniccasefiling@labaton.com
- **Brent James McIntosh**
brent.mcintosh@aya.yale.edu,s&cmanagingclerk@sullcrom.com,brent-mcintosh-1773@ecf.pacerpro.com
- **David W. Mitchell**
davidm@rgrdlaw.com,slandry@rgrdlaw.com,AKelly@rgrdlaw.com,mburch@rgrdlaw.com,e_file_sd@rgrdlaw.com,AKellyRGRD@ecf.courtdrive.com
- **Michael K Molzberger**
mmolzberger@schiffhardin.com,gdickinson@schiffhardin.com,dmoran@schiffhardin.com
- **Brian Lee Muldrew**
brian.muldrew@kattenlaw.com,nycclerks@kattenlaw.com
- **Scott D. Musoff**
smusoff@skadden.com
- **William H. Narwold**
bnarwold@motleyrice.com,jlittlejohn@motleyrice.com,lmclaughlin@motleyrice.com,vlepine@motleyrice.com,kweil@motleyrice.com,kquillin@motleyrice.com,ajan
- **Brian O. O'Mara**
bomara@rgrdlaw.com,e_file_sd@rgrdlaw.com
- **Stuart Harris Pack**
spack@spencerfane.com,lgarofalo@spencerfane.com
- **Kiran Patel**
kiran.patel@dentons.com,docket.general.lit.wdc@dentons.com,nick.petts@dentons.com,docket.general.lit.nyc@dentons.com
- **Michael Jon Pendell**
mpendell@motleyrice.com,ajanelle@motleyrice.com
- **Lesley Frank Portnoy**
LPortnoy@glancylaw.com,info@glancylaw.com,clinehan@glancylaw.com,charles-linehan-8383@ecf.pacerpro.com
- **Fei-Lu Qian**
fqian@saxenawhite.com,e-file@saxenawhite.com,cwallace@saxenawhite.com
- **Stephen Leonard Ratner**
sratner@proskauer.com,steve-ratner-7270@ecf.pacerpro.com,LSOSDNY@proskauer.com
- **William Michael Regan**
william.regan@hoganlovells.com,bill-regan-0012@ecf.pacerpro.com,douglas.crosno@hoganlovells.com,nymanagingclerk@hoganlovells.com
- **Andrew Hunter Reynard**
areynard@jfblegal.com,s&cmanagingclerk@sullcrom.com,filings@jfblegal.com,andrew-reynard-3412@ecf.pacerpro.com
- **Corban Smith Rhodes**
crhodes@labaton.com,lpina@labaton.com,3936743420@filings.docketbird.com,electroniccasefiling@labaton.com
- **Joseph F. Rice**
jrice@motleyrice.com
- **Samuel Howard Rudman**
srudman@rgrdlaw.com,e_file_ny@rgrdlaw.com,mblasy@rgrdlaw.com,e_file_sd@rgrdlaw.com
- **Joshua Wolf Ruthizer**
jruthizer@wolfpopper.com,cdunleavy@wolfpopper.com
- **Kayvan Betteridge Sadeghi**
ksadeghi@schiffhardin.com,sodavis@schiffhardin.com
- **David Philip Salant**
dsalant@gibsondunn.com
- **Ira A. Schochet**
ischochet@labaton.com,lpina@labaton.com,9523508420@filings.docketbird.com,electroniccasefiling@labaton.com

