

**UNITED STATES OF AMERICA**  
**Before the**  
**SECURITIES AND EXCHANGE COMMISSION**

**SECURITIES EXCHANGE ACT OF 1934**  
**Release No. 73369 / October 16, 2014**

**INVESTMENT ADVISERS ACT OF 1940**  
**Release No. 3950 / October 16, 2014**

**ADMINISTRATIVE PROCEEDING**  
**File No. 3-16199**

**In the Matter of**

**ATHENA CAPITAL  
RESEARCH, LLC,**

**Respondent.**

**ORDER INSTITUTING ADMINISTRATIVE  
AND CEASE-AND-DESIST PROCEEDINGS,  
PURSUANT TO SECTION 21C OF THE  
SECURITIES EXCHANGE ACT OF 1934  
AND SECTION 203(e) OF THE  
INVESTMENT ADVISERS ACT OF 1940,  
MAKING FINDINGS, AND IMPOSING  
REMEDIAL SANCTIONS AND A CEASE-  
AND-DESIST ORDER**

**I.**

The Securities and Exchange Commission (“Commission”) deems it appropriate and in the public interest that public administrative and cease-and-desist proceedings be, and hereby are, instituted pursuant to Section 21C of the Securities Exchange Act of 1934 (“Exchange Act”) and Section 203(e) of the Investment Advisers Act of 1940 (“Advisers Act”), against Athena Capital Research, LLC (“Athena” or “Respondent”).

**II.**

In anticipation of the institution of these proceedings, Respondent has submitted an Offer of Settlement (the “Offer”) which the Commission has determined to accept. Solely for the purpose of these proceedings and any other proceedings brought by or on behalf of the Commission, or to which the Commission is a party, and without admitting or denying the findings herein, except as to the Commission’s jurisdiction over it and the subject matter of these proceedings, which are admitted, Respondent consents to the entry of this Order Instituting Administrative and Cease-and-Desist Proceedings, pursuant to Section 21C of the Securities Exchange Act of 1934 and Section 203(e) of the Investment Advisers Act of 1940, Making

Findings, and Imposing Remedial Sanctions and a Cease-and-Desist Order (“Order”), as set forth below.

### III.

On the basis of this Order and Respondent’s Offer, the Commission finds<sup>1</sup> that:

#### Summary

1. Athena, an algorithmic, high-frequency trading firm based in New York City, used complex computer programs to carry out a familiar, manipulative scheme: marking the closing price of publicly-traded securities. Through a sophisticated algorithm, Athena manipulated the closing prices of thousands of NASDAQ-listed stocks over a six-month period.

2. Between at least June through December 2009 (the “Relevant Period”), Athena made large purchases or sales of the stocks in the last two seconds before NASDAQ’s 4:00 p.m. close in order to drive the stocks’ closing prices slightly higher or lower. The manipulated closing prices allowed Athena to reap more reliable profits from its otherwise risky strategies. Internally, Athena called the algorithms that traded in the last few seconds “Gravy.”

3. By using high-powered computers, complex algorithms, and rapid-fire trades, Athena manipulated the closing prices of tens of thousands of stocks during the final seconds of almost every trading day during the Relevant Period.

4. Although Athena was a relatively small firm, it dominated the market for these stocks in the last few seconds. Its trades made up over 70% of the total NASDAQ trading volume of the affected stocks in the seconds before the close of almost every trading day.

5. Athena’s manipulative trading focused on trading in order imbalances in securities at the close of the trading day. Imbalances for the close of trading occur when there are insufficient on-close orders to match buy and sell orders, *i.e.*, when there are more on-close orders to buy shares than to sell shares (or *vice versa*), for any given stock.

6. Every day at the close of trading, NASDAQ runs a closing auction to fill all on-close orders at the best price, one that is not too distant from the price of the stock in the continuous book. Leading up to the close, NASDAQ begins releasing information, called Net Order Imbalance Indicator (“Imbalance Message”), concerning the closing auction to help facilitate filling all on-close orders at the best price. At 3:50:00 p.m., NASDAQ issues its first Imbalance Message.

7. Athena’s general strategy for trading based on Imbalance Messages worked as follows: Immediately after the first Imbalance Message, Athena would issue an Imbalance Only

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<sup>1</sup> The findings herein are made pursuant to Respondent’s Offer of Settlement and are not binding on any other person or entity in this or any other proceeding.

on Close order to fill the imbalance. These orders are only filled if there is an imbalance in a security at the close. Athena would then purchase or sell securities on the continuous book on the opposite side of its on-close order, until 3:59:59.99, with the goal of holding no positions (being “flat”) by the close. It called this process “accumulation,” and the algorithms that accumulated these positions were called “accumulators.”

8. Athena was acutely aware of the price impact of some its strategies, particularly its last second trading Gravy strategies. Athena used these strategies and its configurations to give its accumulation an extra push, to help generate profits.

9. For example, in April 2009, an Athena manager (“Manager 1”), after analyzing trading in which Gravy accumulated only approximately 25% of its accumulation, and, thus, had no price impact on the stock, emailed another Athena manager (“Manager 2”) and Athena’s Chief Technology Officer (“CTO”) suggesting that they: **“make sure we always do our gravy with enough size.”** (emphasis added). In fact, Athena traded nearly 60% of its accumulation in the final 2 seconds of the trading day.

10. With the helping hand of its Gravy strategy, Athena refined a method to manipulate the daily process, known as the “Closing Cross,” that NASDAQ uses to set the closing price of stocks listed on the exchange. Manipulating the closing process can increase market volatility (thereby frustrating the very purpose of the closing auction) and throw off critical metrics linked to the closing price of stocks. A stock’s closing price is the data point most closely scrutinized by investors, securities analysts, and the financial media, and is used to value, and assess management fees on mutual funds, hedge funds, and individual investor portfolios.

11. Athena, however, did not want to push the price of the stocks it traded too much because it created certain trading risks, but also because Athena was concerned about scrutiny from regulators as result of its last second trading. NASDAQ issued an automated Regulatory Alert for “Scrutiny on Expiration and Rebalance Days,” which provided that “Suspicious orders or quotes that are potentially intended to manipulate the opening or closing price will be reported immediately to FINRA.” Athena’s CTO forwarded this alert to Manager 1 and Manager 2 and wrote: **“Let’s make sure we don’t kill the golden goose.”** (emphasis added).

### **Respondent**

12. Athena is a Delaware limited liability company with its office in New York, New York. It serves as the general partner and investment manager for its master and feeder funds, which traded using the relevant algorithmic strategies. During the Relevant Period, the assets under management of the fund trading these strategies were approximately \$40 million.

### **Background**

13. In late 2003, two former colleagues from a large high-frequency trading firm formed Athena as an algorithmic, high-frequency trading firm.

14. In 2007, Athena sought someone with practical trading experience to help enhance its strategies and develop new ones. In late 2007, Athena hired the Manager 2, as a portfolio manager. Manager 2 introduced Athena to strategies that he and others at Athena referred to as the “Mach” strategies.

15. Athena’s Mach strategies focused on trading in securities that were likely to have order imbalances — that is, more orders to buy than sell or vice versa — at the 4:00 p.m. market close.

### **NASDAQ’s Closing Auction and Imbalances**

16. During at least the Relevant Period, NASDAQ traders could place several types of orders, known as “on-close” orders, that were only filled at the market close. These order types are not published by any exchange and traders do not know if their orders will be filled until the close. They included:

- a. Limit-On-Close Orders, orders to buy or sell a stock within a specific price range when the market closed;
- b. Market-On-Close Orders, orders to buy or sell a stock at the closing price, regardless of what the price was, when the market closed; and
- c. Imbalance-Only-On-Close Orders (“Imbalance-Only Orders”), limit orders that would be executed when the market closed, but only if there was an imbalance at the close.

17. Every day at approximately 4:00:00 p.m., NASDAQ ran a closing auction, known as the “closing cross.” NASDAQ’s proprietary auction algorithm generally set the closing price of each stock to match as many buyers and sellers on the close as possible at a price nearest the last trade on the continuous book, the trades before the close, to reduce volatility.

18. Based on the existing on-close orders for a particular stock, including limit-on-close orders, a closing imbalance of buy or sell orders could occur or disappear as the stock price fluctuated. Leading up to the close, NASDAQ calculated whether, at the then-existing market price for each security, such a closing imbalance would occur.

19. To improve liquidity by encouraging market participants to help fill potential imbalances, NASDAQ informed market participants about the size and direction of predicted closing imbalances during the ten minutes before the close. At 3:50:00 p.m., NASDAQ released a message called a Net Order Imbalance Indicator (“Imbalance Message”). The Imbalance Message contained information for each ticker for which NASDAQ predicted an imbalance based on the then-market price of that stock. The Imbalance Message included the imbalance direction (buy or sell), the size (number of shares predicted to be unfilled at the close), and certain price ranges that could help sophisticated participants estimate the likelihood of an imbalance at a certain closing

price. NASDAQ then updated the Imbalance Message, based on the changing market prices and changing on-close orders, every five seconds until the last message at 3:59:55 p.m.

### **The Mechanics of Athena's Trading Strategy**

20. Traders often try to profit from trading on imbalances by taking advantage of expected price increases or decreases when there is more demand for buying a stock than for selling a stock, or vice versa. For example, when an Imbalance Message shows a buy imbalance for a particular stock, meaning there are orders to buy more shares at the close than orders to sell shares at the close, traders often expect that the stock's closing price will rise to reflect the excess buyer demand. Conversely, when there is a sell imbalance, meaning there are orders to sell more shares at the close than orders to buy shares at the close, traders often expect a lower closing price.

21. Athena's early trading on Imbalance Messages was fairly simple. For example, if the Imbalance Message showed a buy imbalance of 10,000 shares in a particular stock, Athena placed a sell Imbalance-Only Order for 10,000 shares and then tried to accumulate those 10,000 during the next ten minutes before the close. If the Imbalance Message showed a sell imbalance of 10,000 shares, Athena placed a buy Imbalance-Only Order for 10,000 shares and then tried to accumulate a short position of 10,000 shares over the next ten minutes. Athena would exit its position by its on-close order, which, due to the on-close imbalance, was expected to be filled at a better price than the average price at which it accumulated shares.

22. Over time, Athena developed sophisticated strategies for the timing and quantity of its accumulation. Athena's accumulation pattern often involved placing a large order right after the first Imbalance Message, to capture the expected price move due to the published imbalance, then accumulating small amounts of stock over the next nine minutes, followed by a large burst of orders in the final seconds and milliseconds of trading.

23. Athena referred to its accumulation immediately after the first Imbalance Message as "Meat," and to its last second trading strategies as "Gravy." In early 2009, Manager 2 described this pattern in an internal Athena email as follows: "**We have a desired accumulation pattern which includes grabbing stock at the beginning, a period of 'average price' accumulation, and a crescendo at the end.**" (emphasis added).

24. During the Relevant Period, Athena used a version of Gravy that placed limit orders in six phases during the last two seconds. For example, Gravy placed the first order at 3:59:58.35 p.m., the second at 3:59:58.50 p.m., and so on until the sixth order at 3:59:59.95 p.m., just milliseconds before the close.

25. If a competing order filled the imbalance, Athena was left with large positions of shares that it had accumulated between 3:50 p.m. through 3:59:59.999 p.m. In other words, if Athena was not flat at the end of the day, it would incur overnight risk, and the price of the stock would often move in an unfavorable direction, resulting in losses, sometimes significant. Athena referred to this as being "stuck" with those positions.

26. This was particularly problematic for the Gravy strategy – as Manager 2 pointed out in an email to Manager 1 and the CTO: “**We can have some aggressive gravy if we know we have a 100% chan[c]e of getting the fill.**” (emphasis added).

27. Accordingly, Athena took measures to gain priority over competing limit-on-close orders and Imbalance-Only Orders. As Athena knew, not all closing trade orders are necessarily executed during the Closing Cross, and trade orders placed earlier in time are given priority in the Closing Cross over orders placed later in time. Similarly, better priced orders are given priority over inferior priced orders.

28. Athena, therefore, performed sophisticated quantitative analyses which it used to place Imbalance-Only Orders prior to 3:50 p.m. It called this strategy, “Collars.”

29. By way of illustration, Athena’s trading in shares of EBAY stock on November 25, 2009, occurred as follows:

- Prior to **3:50 p.m.**, Athena began entering its Collars orders.
- **3:50:00 p.m.** – NASDAQ issued its first Imbalance Message, which included a 224,638 Buy Imbalance for shares of EBAY. At the time, shares of EBAY were trading at \$23.55.
- **3:50:00.578** – Athena placed a Sell Imbalance-Only Order for 224,638 shares at \$.01, and simultaneously placed a buy order of 85,300 shares at \$23.56 to begin its accumulation. 16,000 shares were filled almost instantly.
- Between **3:50:07.004** and **3:59:58.112** – Athena placed over 140 limit orders to buy between 100 and 5800 shares of EBAY, purchasing an additional 64,000 shares.
- Milliseconds before 3:59:58, the National Best Offer for EBAY was \$23.58, at which point, *Gravy* kicked in, consisting of the following buy orders:

<u>Time</u>	<u>Order Price</u>	<u>Quantity</u>	<u>Exchange</u>
<b>15:59:58.355</b>	\$23.81	11,200	BATS
<b>15:59:58.503</b>	\$23.81	22,400	BATS
<b>15:59:59.403</b>	\$23.81	33,600	BATS
<b>15:59:59.705</b>	\$23.81	5,600	NASDAQ
<b>15:59:59.870</b>	\$23.81	28,000	BATS
<b>15:59:59.950</b>	\$23.81	11,200	NASDAQ

- During this time, Athena bought 112,000 shares (for an average price of \$23.594) which constituted over 71% of the entire market volume for EBAY stock in the final two seconds of trading, overwhelming available liquidity and driving up its price.
- **3:59:58.510** – the National Best Offer moved up to \$23.59, and at 3:59:59.963, it was

\$23.60.

- **4:00:03.348** – NASDAQ ran its Closing Cross auction. Athena’s Sell Imbalance-Only Orders were filled by selling 233,979 shares for \$23.61, \$.03 or 13 bps, higher than the best offer in the milliseconds prior to Gravy.

30. As a result of these steps, during the Relevant Period, Athena’s Imbalance-Only Orders were filled at least partially over 98% of the time and the firm traded on the entire imbalance of almost every imbalance it wanted. Athena referred to this in internal emails as “**dominating the auction**” and “**owning the game.**” (emphasis added).

31. Athena’s ability to predict with a higher degree of probability that it would get filled on almost every imbalance order it placed, removed a major element of uncertainty and allowed Athena to fine-tune its strategies to maximize its profits. For example, Athena rolled out the six phase Gravy configuration shortly afterwards. In addition, as its Imbalance-Only Order submissions became more sophisticated, Athena was able to ramp up its trading from approximately 1,000-3,000 tickers traded per month during the final months of 2008 to 12,844 symbols in November 2009.

### **Athena’s Manipulative Gravy Trading**

32. On average during the Relevant Period, Athena waited until the two seconds before the close to fill nearly 56% of its accumulation — meaning it accumulated, on average, almost 5600 of every 10,000 shares it accumulated in the two seconds before the close.

33. During the Relevant Period, Athena’s trading in the last two seconds accounted for 73% of the entire NASDAQ market volume, on average, for the stocks it traded during those two seconds. These massive volumes, relative to other market participants in the last two seconds, allowed Athena to overwhelm the market’s available liquidity and push the market price — and therefore the closing price — in Athena’s direction.

34. Athena employees knew and expected that Gravy impacted the price of shares it traded, and at times Athena monitored the extent to which it did. For example, in August 2008, Athena employees compiled a spreadsheet containing information on the price movements caused by an early version of Gravy. They titled the spreadsheet “**gravy [average] move by symbol[.]**” (emphasis added).

35. That same month, an analyst at Athena emailed Manager 2 the day’s overall results and a breakdown of Athena’s profits from Gravy: “PM Gravy made 5.3k, trading on 33 symbols, **biggest dollar move** NTRS \$.12 (.15%), **percentage move** PCBC \$.06 (.41%).” Manager 2, who was out of the office on vacation, responded affirmatively: “**Looks like we have some Mach chips....going to Vegas tonight....**” (All emphasis added).

36. Importantly, Athena configured Gravy so that it would have a price impact.

37. In April 2009, Manager 1 emailed Manager 2 and the CTO about a preliminary version of a strategy for trading lower-priced stocks. After that day's trading, including through Gravy, resulted in losses, the Manager 1 conducted an analysis of the trades and provided suggestions on moving forward:

Bad #3) (I[n ]M[y ]O[pinion], the biggest bad) Both the dd and the wn [two earlier-stage accumulators] accumulated all the shares they wanted before 3:55:00. **So at 3:59:58, gravy kicked in . . . To try to get a whopping 1000 shares. 1000 shares had 0.0 price impact, but 2000 shares would probably move it a few cents, I'm guessing . . .** With 4300 imbal shares to play and a near guarantee that we are going to get the whole print, **we should tax a little more**, up to some cap. . . This last item is my biggest [Manager 2] recommendation – let's use the discount shares or some other way **to make sure we always do our gravy with enough size.** (All emphases added).

38. Athena therefore knew that Gravy, which accumulated shares in the last few seconds before the close, had a greater price impact than its earlier accumulators. Athena sought to take advantage of Gravy's price impact by accumulating more shares in the last few seconds before the close and fewer shares earlier in the ten-minute period.

39. In early 2009, Athena hired an officer ("the Officer") whose duties were primarily to market the firm. Although he was not privy to the firm's trading strategies, the Officer observed some of the trading activity that occurred near the close of the day and told the CTO that he was concerned that Athena was "**punching the stock.**" (emphasis added).

40. The CTO relayed the Officer's statement to Manager 2. By email, the CTO explained that the Officer had warned him that Athena should get a legal opinion on its trading strategies and that he should use certain search terms to research Athena's trading "**at home, not here.**" (emphasis added).

41. The CTO and Manager 2 then ceased their email exchange on Athena's email servers and resumed their email exchange using their personal email addresses.

42. Athena never obtained a legal opinion on its Gravy algorithms.

### **Protection Orders**

43. Because Gravy was critical to the success of Athena's trading based on Imbalance Messages, Athena devised several strategies to ensure that its Gravy program could be traded with maximum efficiency.

44. Although Athena profited from Gravy's price impact, pushing the price too far created additional risks for Athena when the price of a ticker reached critical points which would result in Athena's Imbalance-Only Orders not being filled.

45. The Imbalance Message's contains a field called "far price."<sup>2</sup> Athena observed that if stocks it traded moved closer to the far price, competing limit-on-close orders, and not Athena's Imbalance-Only Orders, would likely fill the imbalance.

46. Another problem occurred when published imbalances changed from a buy to a sell or *vice versa*. Athena called this "flipping." When this happened, Athena also did not get filled on its Imbalance-Only Orders, and was stuck with large amounts of stock it accumulated. When a stock hit the flip price points during any phase of the accumulation, it was problematic for Athena. Gravy causing the stock price to flip was even more problematic, because there were no subsequent Imbalance Messages, and Athena would not know that the imbalance flipped.

47. As a result, Athena devised strategies called "Protection Orders" which enabled Athena to use Gravy to push the price in conjunction with the placement of a large order to exit the firm's accumulated position when the price of a security approached the far or flip prices.

48. Protection Orders were an important tool for Athena to trade its Gravy strategy. Manager 2 emailed Manager 1 and Athena's CTO: "**Protection orders are probably necessary in order to gravy up some of the thinner issues, but since we rank them largely according to volume, we should certainly be able to ramp those guys up.**" (emphasis added).

49. Athena continuously grappled with the challenge of balancing the beneficial price impact of its last second strategies, such as Gravy, with the detrimental consequences of getting "stuck" by pushing the price of the stocks too far.

50. On the last Friday of June each year, the Russell Investment Group rebalances the individual share components of its stock indices, causing large index mutual funds to buy and sell substantial portions of their portfolios to match the indices. This typically creates large imbalances across many stocks, fertile ground for Athena's imbalance-trading strategies.

51. On the 2009 Russell rebalancing day, however, Athena had its worst trading day as-of-that-date, and lost approximately \$2-3 million. Several weeks later, Manager 2 wrote a "post-mortem" providing several explanations as to why he believed this occurred. In the post-mortem, which he emailed to Manager 1 and the CTO, he explained that the Gravy strategy caused a price impact that, while generally desired by Athena, could have negative financial consequences:

...The net result, in some cases, was that when it came time to blast away at the end to square its positions, it thought that it only wanted

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<sup>2</sup> The "far price" by definition is the price at which all On-Close orders would be filled if the auction occurred at the time of the Imbalance Message. This is an indicator of where limit-on-close orders are priced.

3,100 shares instead of the 25,000 it really wanted (to use CHEV as an example). This was particularly bad, because the lack of the blast resulted in large positions in these names, and **the lack of the blast resulted in extremely poor prices (we essentially gave someone else all the liquidity they wanted with no price impact at all).** (emphasis added)

#### Gravy Causing Flips

This is a risk that we imagined going into the day: **Not knowing the flip price going into the gravy phase, then having the gravy push us over the price; thereby changing the direction of the print.**

The problem is relatively simple, and before the event, we knew that there was not much we could do about it. In all, this happened in 45 stocks. My feelings on this are mixed, in that it is a good number of stocks. On the other hand, it was the devil we knew, and I can't say that I would have done anything differently (none of these were enormous losers). (emphasis added)

52. In other words, when Athena's Gravy "blasts" at the end of the trading day were too small, the Imbalance-Only Orders were filled at bad prices, but when Gravy pushed the price too far, the imbalances flipped. The latter point, however, was predictable and was a trading outcome Athena was willing to accept.

53. Athena was also concerned about regulatory scrutiny of its last-second trades. On this and other index rebalance or options expiration dates, NASDAQ issued an automated regulatory alert for "Scrutiny on Expiration and Rebalance Days." It alerted market participants that "[s]uspicious orders or quotes that are potentially intended to manipulate the opening or closing price will be reported immediately to FINRA."

54. In September 2008, the CTO received the alert by email and forwarded it to Manager 1 and Manager 2. He wrote: "**Let's make sure we don't kill the golden goose.**"

55. As a result of the conduct described above, Athena willfully violated Section 10(b) of the Exchange Act and Rule 10b-5 thereunder, which prohibit fraudulent conduct in the offer or sale of securities and in connection with the purchase or sale of securities.

#### IV.

In view of the foregoing, the Commission deems it appropriate, and for the protection of investors to impose the sanctions agreed to in Respondent's Offer.

Accordingly, pursuant to Section 21C of the Exchange Act of 1934 and Section 203(e) of the Advisers Act, it is hereby ORDERED that:

A. Respondent Athena cease and desist from committing or causing any violations and any future violations of Section 10(b) of the Exchange Act and Rule 10b-5 thereunder.

B Respondent Athena is censured.

C. Respondent shall, within 10 days of the entry of this Order, pay a civil money penalty in the amount of \$1,000,000 to the Securities and Exchange Commission. If timely payment is not made, additional interest shall accrue pursuant to 31 U.S.C. § 3717. Payment must be made in one of the following ways:

- (1) Respondent may transmit payment electronically to the Commission, which will provide detailed ACH transfer/Fedwire instructions upon request;
- (2) Respondent may make direct payment from a bank account via Pay.gov through the SEC website at <http://www.sec.gov/about/offices/ofm.htm>; or
- (3) Respondent may pay by certified check, bank cashier's check, or United States postal money order, made payable to the Securities and Exchange Commission and hand-delivered or mailed to:

Enterprise Services Center  
Accounts Receivable Branch  
HQ Bldg., Room 181, AMZ-341  
6500 South MacArthur Boulevard  
Oklahoma City, OK 73169

Payments by check or money order must be accompanied by a cover letter identifying Athena Capital Research, LLC as a Respondent in these proceedings, and the file number of these proceedings; a copy of the cover letter and check or money order must be sent to Michael J. Osnato, Division of Enforcement, Securities and Exchange Commission, New York Regional Office, Brookfield Place, 200 Vesey Street, Suite 400, New York, NY, 10281.

By the Commission.

Brent J. Fields  
Secretary