UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Houlian Chen, Powhatan Energy Fund, LLC, HEEP Fund, LLC, and CU Fund, Inc.

Docket No. IN15-3-000

ANSWER TO SHOW CAUSE ORDER AND REQUEST FOR ORAL ARGUMENT

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Exhibit E  Statement of Terrence Hendershott, Ph.D.
Exhibit F  Statement of William W. Hogan, Ph.D.
Exhibit G  Statement of David Hunger, Ph.D.
Exhibit H  Statement of Stewart Mayhew, Ph.D.
Exhibit I  Statement of Craig Pirrong, Ph.D.
Exhibit J  Statement of Roy Shanker, Ph.D.
Exhibit K  Statement of Chester S. Spatt, Ph.D.
Exhibit L  Statement of Richard D. Tabors, Ph.D.
Houlian Chen, Powhatan Energy Fund, LLC, HEEP Fund, LLC, and CU Fund, Inc. hereby answer the Commission’s show cause order, including both an affidavit from Alan Chen and copies of the 12 expert reports supporting our case. We also respectfully request oral argument.

The up-to congestion trades at issue are not wash trades. Enforcement concedes this by repeatedly calling them “wash-like.” But that is like the old saw about being almost pregnant. Like pregnancy, wash trading is a binary state. There is no in-between.

One reason the trades are not wash trades is that each and every one of them made or lost money on a stand-alone basis. And that means they have economic significance on a stand-alone basis. Wash trades do not make or lose money. They are economically meaningless, putting aside whatever collateral purpose might have prompted a trader to enter into them.2

To our knowledge, there has never, in the history of the American legal system, been a case where trades that, on a stand-alone basis, made or were intended to make money were found to be wash trades. Certainly Enforcement does not cite any such case. The Commission should

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1 Houlian Chen, 149 FERC ¶ 61,261(2014) (“Order to Show Cause”), revised, 149 FERC ¶ 61,263 (2014) (“Order Revising Show Cause Order”).

2 Not all wash trades are unlawful, one example being Rich Gates’ wash trades to explore the latency of trading on various trading platforms, as detailed in chapter four of Michael Lewis’s recent book, Flash Boys. Our discussions of wash trades throughout this answer is intended to reflect that subtlety, but for ease of presentation we will not caveat our remaining discussions with this point.
reject Enforcement’s invitation to break such new—and completely counter-intuitive, not to mention unlawful—ground.

Another reason the trades are not wash trades is that, even if we focus only on the congestion component of up-to congestion trades, there still was exposure to profit and loss. There are three components affecting the financial performance of all up-to congestion trades during the time at issue:

1. There were transaction costs to engage in the trades, including paying for non-firm transmission on imports into PJM.
2. If a trade clears, there was exposure to congestion profits or losses.
3. Because imports into PJM paid transmission charges, they received transmission loss credits.

The aggregate of these three different cost or revenue streams dictates whether the trades made or lost money. But because up-to congestion trades require the trader to specify a maximum level of congestion at which a trade will clear—of no more than $50/MWh—it cannot be known in advance, with certainty, whether the trade will clear, and make or lose money, or whether it will fail to clear.

Enforcement is complaining about trades that have been called “matched pairs,” where one trade goes from Point A to Point B, and another trade, with equal volume, goes from Point B to Point A. They stress the fact that if both trades clear, the congestion components of each will be equal and offsetting. That means profit or loss will depend on whether loss credits are greater or less than transaction costs.

Enforcement apparently is complaining that, in that circumstance, the congestion components are a “wash,” which they consider “illegitimate.” At the outset, that is a peculiar
place for Enforcement to plant its flag, because it is ubiquitous in RTO markets for market participants to hedge congestion risks, either reducing them or eliminating them entirely. That is, in fact, precisely what FTRs are for. We do not know of any prior case in which the Commission has said that it is problematic—not to mention fraud-based market manipulation—to reduce or eliminate exposure to congestion gains and losses in RTO day-ahead and real-time markets.

There also is the thorny problem that the Commission never told anyone, in advance, that up-to congestion trades that make or lose money based solely on the interaction of transaction costs and loss credits would be considered market manipulation. As we explain below, that creates debilitating constitutional fair notice problems for Enforcement’s case. In fact, the Commission’s pronouncements in the *Black Oak* order, along with the pleadings filed there, show that trading “solely” based on the net result of paying transaction costs and receiving loss credits—which is not, in any event, what Alan did—was not only predictable, but actually predicted.

In many cases, the Commission has cautioned market participants not to engage in conduct that commentators in a given case have suggested might be incentivized by a particular market structure. But the Commission did not do that here. And it is unconstitutional, unlawful, and unfair to seek to do that after the fact in this case.

But even putting those threshold problems aside, Enforcement’s congestion-component-wash argument misses the mark. The “A to B—B to A” trades *did* have exposure to congestion gains and losses. If congestion levels were higher than the ceiling price used for one of the “legs,” that trade would not clear. But the other one, by definition, would. And that would create the potential for sizable profits or losses, irrespective of loss credits and transaction costs.
Enforcement does not dispute the undeniable fact that this phenomenon of one leg “breaking,” while the other holds, was possible, and, if it occurred, would produce congestion gains or losses. Nor could they. It is inherent in the math of these transactions.

Instead, their problem appears to be that, in their view, the likelihood of one leg in Alan’s A to B—B to A trades was too small. But what exactly is “too small”? Where is that line, and when was it drawn there? Enforcement never answers either question. But the Commission needs to. It cannot proceed with a case against Alan Chen, claiming that he crossed some line between non-manipulative and manipulative conduct, without explaining where that line is, and when it was drawn there. Examining those questions shows that all of Alan Chen’s trades were lawful, and, while Enforcement is trying mightily to avoid drawing lines of demarcation in this case, whatever line they might try to point to now would, in fact, be drawn after the fact. And that, once again, is unconstitutional, unlawful, and unfair.

Unable to question the undeniable fact that Alan’s A to B—B to A trades created exposure to congestion gains and losses, Enforcement seeks to brush that fact aside, saying the prospect of profiting from one leg breaking was invented after the fact by economic experts. That is absurd. Alan testified about that prospect at length in his first deposition, before he ever talked to any experts.³

Enforcement similarly claims that there is no contemporaneous evidence of any prospect of one leg breaking, creating congestion exposure. That is incorrect. There are many trades where Alan put in a ceiling price of less than the $50/MWh maximum. The only reason to do

that was to increase exposure to congestion due to one leg breaking.⁴ We have pointed that out for years. Enforcement has never offered any response.

In addition, Enforcement itself quotes an email where Alan explains this to Kevin Gates. Before June 1, when he started the A to B—B to A trades, Alan was engaging in “A to B—B to C” trades, where A and C typically had been highly correlated. Later, on June 10, 2010, after beginning the A to B—B to A trades Enforcement considers manipulative, Alan emailed Kevin Gates, explaining that “we increased volumes but decreased risk. If we rate the risk on 5/30 at 1.0, we now have probably 0.5.”⁵

This contemporaneous email proves that Alan knew that the A to B—B to A trades presented exposure to congestion. Tellingly, it also shows that he contemporaneously thought that the move to the A to B—B to A trades had cut his exposure to congestion in half (but had not eliminated it), compared to the prior A to B—B to C trades that Enforcement agrees are not manipulative.⁶ Since the “1.0” risk level trades had just lost about $400,000 in one day, cutting that risk in half meant that in Alan’s eyes it still was material.

And we are to believe that this partial reduction in congestion exposure is where Alan crossed the line—crossed the Rubicon into the land of fraud-based market manipulation?

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⁴ See id., ¶ 22.


⁶ See Chen Aff. ¶ 11. As Alan explains in his affidavit, this statement was directed mostly at reductions in congestion exposure. Id. There were, however, other directional bets in his trading. As discussed below, about 36.6 percent of his A to B—B to A trades had unmatched volumes—a point Enforcement ignores. We do not, at this point, know exactly how Enforcement views these trades for purposes of asserting violations. Are they ignoring the mismatch? Are they artificially dissecting the daily positions to allege that there is a volume-matched subset that is a violation? Presumably the answer to that question lies in the PJM data we received last week, but we have not had a chance to analyze those data yet. This leaves us in the odd position of responding to a show cause order where the attached Enforcement Report never identifies with granular specificity exactly which trades it contests.
Really? Certainly no such line was ever drawn in advance. And even now, we are given no specific description of where or why that line might exist.

Enforcement may point to the fact that Alan’s June 10 email, like many of his emails and statements at the time, talks about risks but does not specifically mention rewards. That is not credible. Alan has a Ph.D. in power systems engineering and, by the summer of 2010, had closely studied up-to congestion trades for years. He knew that if one leg of an A to B—B to A “matched” trade broke, the resulting congestion exposure could be positive or negative. To Alan, who is not a native English speaker, references to risk were to congestion exposure generally, whether positive or negative.7

Enforcement’s own report actually underscores the existence of both outcomes, claiming that they are symmetrical, and thus not likely to be consistently profitable.8 But that last assumption is wrong. Alan’s particular A to B—B to A trades presented asymmetrical opportunities for profit if one leg broke.9 The way these trades were structured, if one leg broke, the more likely outcome would be exposure to profit if congestion in real-time reduced from what it was in the day-ahead market. As Alan explains in his affidavit, and as Dr. Roy Shanker explains too, it is a fundamental property of organized power markets that congestion is more likely to reduce as we move to real time, rather than increase.10 And that made the prospect of one leg breaking generally more likely to make money than lose money.11

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7 See id., ¶¶ 11, 24.
8 Enforcement Report at 45-46.
10 Id.; Shanker Paper ¶ 38.
11 Chen Aff. ¶¶ 21, 26.
If that happened, moreover, the trade would offer valuable price convergence effects to the system. And because one leg would break only in periods of high congestion, that convergence would be targeted to times when the system is stressed—somewhat like insurance against unlikely but damaging events.\(^\text{12}\)

It is true that during the roughly two months at issue, we did not see an occurrence of one leg breaking in an A to B—B to A trade. But as noted in our 1b.19 response, and as discussed below, if Alan’s A to B—B to A trades had been in place during the Polar Vortex in January 2014, one leg would have broken for each of the five combinations he used, in a total of between 90 and 170 hours, depending on the ceiling price used, creating considerable profit.\(^\text{13}\)

Surprisingly, Enforcement never responds to this point. Presumably they will revert to claiming that the exposure is “too small,” but, as we explained above, that cannot possibly be the binding legal norm to be applied here. No one can, or did, know when small might become “too small.” Even now we do not know.

That is a particular problem here, because there is not much difference between the A to B—B to C trades that Enforcement apparently agrees are not manipulative, and the A to B—B to A trades it attacks. Alan himself thought he was cutting congestion exposure in half—not a sea change by any measure. And while one would never know it from Enforcement’s Report, for several years Enforcement was contending that the A to B—B to C trades were manipulative too, allegedly because A and C typically were highly correlated.\(^\text{14}\) Hence, they too originally were, in Enforcement’s view, “wash-like.”

\(^{12}\) Chen Aff. ¶¶ 3-12, 26.

\(^{13}\) Id., ¶ 9, 26; infra at 18, 23-25.

\(^{14}\) See, e.g., Letter from Enforcement Staff to John N. Estes, Re: Preliminary Findings of Enforcement Staff’s Investigation at 8-9, 17-18 (Aug. 9, 2013) (“Preliminary Findings Letter”).
Muddling things further, the Report purports to find bad intent based on emails spanning years, going back well before the point in time when Alan crossed Enforcement’s still-undrawn line. Emails dating to the time when he was only engaging in unpaired A to B trades are offered up as evidence of intent to manipulate the market by engaging in A to B—B to A trades he had not yet even contemplated. So too for emails dating to the time when he was engaging in A to B—B to C trades, and still had not even thought about the A to B—B to A trades. How can emails addressing these non-manipulative trades possibly be evidence of bad intent relating to A to B—B to A trades that Alan had, at the time, never even thought about?

At times the Report indicates that, in Enforcement’s view, up-to congestion trades cross the line between “legitimate” and “illegitimate” when profits are excessively based on loss credits. But that fares no better as a discernable line between lawful and unlawful conduct. And one can search the Enforcement Report high and low for any citation showing where this purported distinction between “legitimate” and “illegitimate” trading might have been expressed before the trading at issue occurred. You will not find any such support, because that purported rule, which still has not been rigorously explained, has been invented after the fact.

Having failed to offer any discernable line between manipulative and non-manipulative trading—not to mention any line drawn in advance—Enforcement may resort to claiming that Alan “exploited a loophole” or “impaired a well-functioning market.” But neither constitutes fraud.

There is no deception here. And that is an irreducible requirement for a valid fraud-based market manipulation case. Alan placed all of his trades on PJM’s systems, out in the open where PJM could see everything he was doing, and settle his transactions accordingly. He did not seek to hide his identity, or hide the fact that he was putting on matched paired trades. The only
requirement for receiving loss credits was to pay non-firm transmission rates. Alan fulfilled that requirement—and his paired trades did not in any way “undo” that qualifying requirement.

While Enforcement claims that the very high volume of the matched paired trades is an indication of manipulation,\(^\text{15}\) that gets things backwards. It shows that Alan didn’t think he was doing anything wrong. The higher the volume, the more noticeable the trades would be. And as Enforcement emphasizes, other market participants did notice.\(^\text{16}\) As did PJM and Joe Bowring. Alan placed his trades openly for all the world to see.

Talk of “exploiting a loophole” does nothing to remedy this gaping hole in Enforcement’s case. As we discuss below, it is legal to exploit loopholes in the law. But that is not a particularly accurate description of what happened here. As Professor Hogan explains, this case is not about trades that profited from some hidden defect in PJM’s rules. The payment of loss credits to up-to congestion traders was expected to incentivize trading just like what Enforcement claims, after the fact, was manipulative. Yet the Commission declined to prohibit such trading or warn market participants in any way. And that, as Professor Hogan explains, means Enforcement’s case cannot stand.\(^\text{17}\)

Nor can Enforcement rescue its case by invoking Order No. 670’s\(^\text{18}\) attempt to equate “impairing a well-functioning market” with fraud. That aspect of Order No. 670 gets the law

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\(^{15}\) Enforcement Report at 39-40 (comparing the “modest volumes” of Alan’s trades before the conduct at issue to later volumes).

\(^{16}\) Id. at 29 (“Because OASIS reservations are public, other traders could see that Chen was reserving huge volumes of transmission, and these other traders developed theories about what Chen was doing. Several traders from other firms deduced that Chen must be doing volume trades to collect MLSA. A very few tried to copy the technique; others sought to put a stop to it.”).

\(^{17}\) Hogan Paper at 4.

badly wrong, resting on a patent misreading of an old Supreme Court case. Contrary to Order No. 670, fraud was a given in that case—Communist agitators had lied about being Communist in affidavits submitted to the government, and were convicted of defrauding the government. The “impairing” language quoted in Order No. 670 thus does not stand for the proposition that the government can prove that it was defrauded without proving fraud to begin with.

Now-Chief Judge Kozinski of the Ninth Circuit has cogently explained why:

There are places where, until recently, “everything which [was] not permitted [was] forbidden . . . . [W]hatever [was] permitted [was] mandatory . . . . Citizens were shackled in their actions by the universal passion for banning things.”

_Yeltsin Addresses RSFSR Congress of People’s Deputies_, BBC Summary of World Broadcasts, Apr. 1, 1991, available in LEXIS, Nexis Library, OMNI file. Fortunately, the United States is not such a place, and we plan to keep it that way. If the government wants to forbid certain conduct, it may forbid it. If it wants to mandate it, it may mandate it. But we won’t lightly infer that in enacting 18 U.S.C. § 371 Congress meant to forbid all things that obstruct the government, or require citizens to do all those things that could make the government’s job easier. So long as they don’t act dishonestly or deceitfully, and so long as they don’t violate some specific law, people living in our society are still free to conduct their affairs any which way they please.19

So too here: “So long as [traders] don’t act dishonestly or deceitfully, and so long as they don’t violate some specific law, [rule, or tariff, they] are still free to conduct their [trades] any which way they please.”20 The Commission might seek to change that going forward. But it cannot change the past.

* * * * *

Alan Chen is an honest man. He came to this country from mainland China and proudly became an American citizen, grateful to live in a country governed by the rule of law. If he had

19 _United States v. Caldwell_, 989 F.2d 1056, 1061 (9th Cir. 1993); see also _United States v. Knapp_, 25 F.3d 451, 455 (7th Cir. 1994) (noting that _Hammerschmidt v. United States_, 265 U.S. 182 (1924) and _Caldwell_ “stand for the proposition that a defendant cannot be found guilty of defrauding the United States without some showing of fraud”).

20 _Caldwell_, 989 F.2d at 1061.
been told, in advance, that the trading at issue was unlawful, or even problematic, he never would have engaged in it. But he was not. The Commission should reject Enforcement’s effort to outlaw Alan’s trading after the fact.

This investigation has ruined almost five years of Alan Chen’s life. It is time to stop. Enforcement surely won’t. But the Commission can and should. If there ever was a case for the Commission to discharge its responsibility as the gatekeeper constraining which cases Enforcement gets to litigate in court, this is it.\textsuperscript{21}

\textit{REQUEST FOR ORAL ARGUMENT}

We respectfully submit that oral argument in this case would help provide the Commissioners a sound basis to help determine the line between lawful and unlawful conduct, both in this case and in other cases. And that unambiguously advances the public interest, along with the fairness and effectiveness of the Commission’s enforcement program.

This is an important bellwether case, teeing up critical questions about whether, when and where a line was drawn between manipulative and non-manipulative trading. The line

\textsuperscript{21} We also incorporate by reference the prior submissions on behalf of Dr. Chen, HEEP Fund and CU Fund: Written Submission to Commission Investigation Staff on Behalf of Dr. Houlian Chen (Dec. 13, 2010) (Initial Response to Investigation); Supplemental Submission on Behalf of Dr. Alan Chen (Mar. 15, 2012) (Supplemental Submission); Letter from J. Estes to S. Tabackman, RE: Preliminary Findings of Enforcement Staff’s Investigation of Up To Congestion Transactions (October 3, 2013) (Response to Preliminary Enforcement Findings); Letter from J. Estes to S. Tabackman and S. Backfield, RE: FERC Enforcement Staff’s Investigation of Up To Congestion Transactions (Sept. 24, 2014) (Response to Section 1b.19 Notice).

In addition, the Commission states in footnote 8 of the Show Cause Order that respondents “must . . . to the extent practicable, admit or deny, specifically and in detail, each material allegation contained in the OE Staff Report and set forth each defense relied upon,” and that failure to do so may be considered a general denial that is the basis for summary disposition. Order to Show Cause, 149 FERC ¶ 61,261 at n.8. Given that the OE Staff Report is 84 pages long, contains 419 footnotes, and nowhere specifically identifies “material allegation[s],” this requirement is misguided and fundamentally unfair. To the extent that the Commission purports to track the requirement under the Federal Rules of Civil Procedure that an answer admit or deny allegations in a complaint, we note that those rules also require that the complaint set forth a “short and plain statement” of the grounds for relief—a requirement that directly facilitates specific admissions or denials. We will answer Enforcement’s allegations and arguments but we object to this instruction. The respondents are entitled under the FPA to require the Commission to prove the case for imposing a civil penalty in federal district court and the Commission may not undercut that right through its extra-statutory show cause order process.
Enforcement seeks to draw here never existed prior to this prosecution. Just as it told the federal district court in the paper mill cases, here Enforcement is pursuing a Potter Stewart “we know it when we see it” approach to defining fraud-based market manipulation. And that is not the way our American legal system works. For this and other reasons detailed below, the Commission should terminate this proceeding. Otherwise, a federal district court will do so, and, as in the *Hunter* case, the resulting rulings may profoundly limit the Commission’s enforcement program going forward.

We suspect Enforcement will respond by saying a finding of fraud depends on all of the facts and circumstances, and it is enough to contend that the line of illegality was crossed here, without mapping its precise location or the timing of its creation. It perhaps is not surprising for Enforcement to seek to maintain flexibility in that fashion. But we respectfully submit that the Commission has a higher public interest obligation that transcends the facts of this case. An agency wielding significant penalty authority over industries that comprise a substantial percentage of the country’s gross national product should, wherever possible, provide guidance not only as to what is unlawful but what is lawful and where the line between the two is drawn. Oral argument will, in our view, help the Commission achieve that result.

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23 *Hunter v. FERC*, 711 F.3d 155 (D.C. Cir. 2013) (holding that FERC lacked jurisdiction to bring action for market manipulation case involving transactions in commodity futures contracts).
ARGUMENT

I. THE TRADES AT ISSUE ARE NOT FRAUDULENT

A. Enforcement Must Establish a “Device, Scheme or Artifice to Defraud”

In 2005, Congress amended the Federal Power Act (“FPA”) to grant the Commission authority to assess penalties for market manipulation.\(^\text{24}\) That enactment made it unlawful for an entity, to employ “any manipulative or deceptive device or contrivance” in conducting the purchase or sale of electricity or transmission subject to the Commission’s jurisdiction.\(^\text{25}\) EPAct 2005 expressly states that “manipulative or deceptive device or contrivance” has the same meaning as it does “in section 10(b) of the Securities Exchange Act of 1934.”\(^\text{26}\)

The Supreme Court has frequently addressed what is required to prove a violation of section 10(b) of the Securities Exchange Act. “Section 10(b) is aptly described as a catchall provision, but what it catches must be fraud.”\(^\text{27}\) In cases like this one, where there is no affirmative duty to disclose, showing fraud \textit{requires} an affirmative misrepresentation or deception.\(^\text{28}\) The Supreme Court has rejected attempts to prove a violation of section 10(b) without proving some deception:

The language of § 10(b) gives no indication that Congress meant to prohibit any conduct not involving manipulation or deception. Nor have we been cited to any evidence in the legislative history that would support a departure from the language of the statute. “When a statute speaks so specifically in terms of


\(^{25}\) \textit{Id.}

\(^{26}\) \textit{Id.} (citing 15 U.S.C. 78j(b)).


\(^{28}\) \textit{See}, \textit{e.g.}, \textit{id.} at 235 (“When an allegation of fraud is based upon nondisclosure, there can be no fraud absent a duty to speak. We hold that a duty to disclose under § 10(b) does not arise from the mere possession of nonpublic market information.”); \textit{id.} at 232 (“[T]he element required to make silence fraudulent—a duty to disclose—is absent in this case.”).
manipulation and deception, . . . and when its history reflects no more expansive intent, we are quite unwilling to extend the scope of the statute . . . .” . . . Thus the claim of fraud and fiduciary breach in this complaint states a cause of action under any part of Rule 10b-5 only if the conduct alleged can be fairly viewed as “manipulative or deceptive” within the meaning of the statute.29

The Commission addressed the elements for establishing a violation of the FPA’s prohibition on market manipulation in Order No. 670. The Commission explained that a violation is established upon a showing that one acting with the requisite scienter, and in connection with jurisdictional activities:

uses a fraudulent device, scheme or artifice, or makes a material misrepresentation or a material omission as to which there is a duty to speak under a Commission-filed tariff, Commission order, rule or regulation, or engages in any act, practice, or course of business that operates or would operate as a fraud or deceit upon any entity.30

Although the Commission has stated that it will “adapt analogous securities precedent,” essentially as it sees fit,31 the Commission is bound to apply the FPA as drafted by Congress. Enforcement dismissively states that “the anti-manipulation provision of EPAct 2005 points to section 10(b) of the Securities Exchange Act in certain respects.”32 But the FPA does more than that: it requires that the terms “manipulative or deceptive device or contrivance” be interpreted consistently with the same terms used in the Securities Exchange Act of 1934. The Commission is not authorized to ignore this express directive.33

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30 *Order No. 670, FERC Stats. & Regs. ¶ 31,202 at P 49.*

31 *Id.* at P 30.

32 *Enforcement Report at 71.*

33 *Ernst & Ernst v. Hochfelder*, 425 U.S. 185, 193 (1976) (“The rulemaking power granted to an administrative agency . . . is not the power to make law . . . . despite the broad view of the Rule advanced by the [SEC] in this case, its scope cannot exceed the power granted the [SEC] by Congress under § 10(b).”).
B.  Alan Chen’s Trades Were Not Deceptive

Enforcement concedes, as they must, that Alan Chen’s trades “did not involve any false statements, active concealment, or other explicit tariff violations.”34 We agree. Although Enforcement also states that the trades were “designed to deceive PJM,”35 there is no evidence of this. Nor is there any evidence that PJM was deceived. Indeed, the very trading volumes that Enforcement condemns show that Alan was not trying to “fly under the radar.” Furthermore, email communications Enforcement relies on suggest that it was so easy to see what Alan was doing that certain other traders were thought to actually be copying his transactions. We know that the market monitor could see what Alan was doing because he ultimately called him and asked him to stop.

To the extent that Enforcement is trying to establish fraud based on some kind of passive concealment (as opposed to the “active concealment” Enforcement acknowledges never occurred), this effort is doomed to failure. As discussed above, silence or inaction absent a duty to speak or to act is not fraud. Dr. Chen followed the rules, paid the transmission costs required by PJM, and PJM paid him transmission loss credits in return. There is no fraud.

C. The Trades Are Legitimate, and Fundamentally Different from the Types of Conduct Enforcement Compares Them To

Enforcement offers three basic arguments for its claim that the trading at issue constitutes fraud-based market manipulation: (1) the trading crossed a line between “legitimate” and “illegitimate” up-to congestion transactions; (2) the trading resembled Enron’s allegedly unlawful “Death Star” strategy; and (3) the trading was effectively a “wash,” or “wash-like.” Each misses the mark.

34 Enforcement Report at 50.
35 Id. at 81.
I. The Trades Are Legitimate

As we understand it, Enforcement’s theory is that the disputed trades were manipulative because their sole purpose was to collect transmission loss credits. According to Enforcement, during the two months at issue here, the congestion exposure of the A to B—B to A trades was always zero. If transmission loss credits were higher than transaction costs, the trades made money; if transmission loss credits were lower, the trades lost money. Hence, we are told, Dr. Chen traded solely to make money from transmission loss credits, and this allegedly violates the FPA’s prohibition against market manipulation.

As we show in the next section of this response, that is not an accurate view of the facts; the trades here did have exposure to congestion gains and losses. First, of the five categories of “paired” trades at issue, three involved unmatched daily volumes, meaning the congestion elements did not cancel out in the aggregate. There thus was a directional bet on congestion for these unmatched-volume trades, which make up 36.6% of the total megawatt-hours at issue. Second, all of the five pairs were exposed to congestion payments and costs if one leg did not clear. Notably, during the Polar Vortex, all of the paired trades, whether matched- or unmatched-volume, would have had one leg break, reaping profits, and sometimes losses, from congestion.

At some points, Enforcement suggests that following the price signal offered by loss credits is somehow an improper “ulterior purpose” or illegitimate “extrinsic benefit.” This

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36 In its preliminary findings letter, Enforcement complained about trades, “in essence wash trades,” where there was no possibility of congestion gains or losses, and “the possibility of profit depended entirely” on whether the amount of transmission loss credits exceeded the transaction costs. Preliminary Findings Letter at 13. Similarly, the PJM Market Monitor’s referral described trades “that had no economic basis other than to collect [transmission loss credits].” Monitoring Analytics Referral at 3. PJM’s referral similarly describes “offsetting transactions with no other purpose than to garner [transmission loss credits].” PJM Referral at 6.

37 Report at 39.
implies that up-to congestion transactions are only permissible if they would be undertaken without any loss credits being paid. But that makes no sense for all the reasons we discuss in this Answer. In addition, it would sweep far too broadly, capturing a large variety of up-to congestion trades by a large number of traders, including trades that do not offset. It was ubiquitous, during the summer of 2010, for up-to congestion trades to be money-losing but for loss credits. This “ulterior purpose” assertion thus cannot possibly rest on solid ground.

Enforcement fares no better in recasting that point as a continuation of its prior focus on “uneconomic” trading. Once again, that casts the net far too broadly, catching a broad variety of trades, including ones that do not offset. And this argument pointedly contradicts the Commission order approving the Deutsche Bank settlement. There the Commission had problems with traders mistakenly underestimating transaction costs, and thus engaging in trades that, in retrospect, lost money. Here Enforcement is claiming that it affirmatively is manipulation to take account of loss credits, which are simply the other side of the coin from transaction costs. Enforcement cannot have it both ways.

In any event, Enforcement has invented its purported distinction between “legitimate” and “illegitimate” up-to congestion trades out of thin air. Enforcement cannot point to a single Commission rule or order, prior to when the trading in this case occurred, where that distinction is drawn. Enforcement appears to root its after-the-fact “legitimacy” requirement in the Black Oak orders, but as we explain in this Answer, those orders never say that. To the contrary, they send the signal that the Commission realized that paying loss credits for up-to congestion trades

(cont'd from previous page)

38 Report at 56.

39 Report at 41-42.

would incentive traders to transact solely to get the loss credits, and accepted that outcome by
deciding to order PJM to pay loss credit for up-to congestion trades.

2. The Trades Were Not Wash-Trades or Wash-Like

(a) The “paired” trades were not wash trades

The disputed trades were “paired.” They have been described as A to B and B to A. If
both legs clear, and the volumes are equal, aggregated on a daily basis, the congestion
components cancel each other out and profit or loss is governed by whether the transmission loss
credits are greater or less than the transaction costs. Enforcement has always focused on the fact,
known only in hindsight, that during the two months at issue here, both legs always cleared.

But as we noted above, the paired trades nonetheless exposed the portfolio to the
possibility of earning congestion profits and suffering congestion losses in at least two ways.

First, a significant portion of the paired trades had unmatched daily volumes, meaning that
overall there was a directional congestion bet. Second, both the matched- and unmatched-

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41 Specifically, the MWh volume of the import-leg did not match the MWh volume of the export-leg on a daily aggregate basis. As the table on p. 11 below shows, only pairs 1 (COMED) and 5 (AEP) involved matched volumes on each leg. For pairs 2 (DAY), 3 (COOK), and 4 (ROCKPORT), the aggregate volumes do not match. Volumes on the import leg exceeded volumes on the export leg for pairs 2 and 3, and volumes on the export leg exceeded volumes on the import leg for pair 4.

Our analysis indicates that approximately 36.6% of all paired-trade volumes (including Heep Fund, Powhatan, and CU Fund) were for unmatched-volume paired trades. All of CU Fund’s trades—which comprise approximately 24% of all paired trades by volume—were matched in volume. For both Heep Fund and Powhatan—approximately 76% of all paired trades—the unmatched-volume paired trades were approximately 43% of all paired-trade MWhs.

In the Preliminary Findings Letter, Enforcement challenged a broader array of up-to congestion trades, including one-way A-B trades, and another form of paired trades, A-B and B-C. As we understand it, Enforcement has terminated its investigation into those other variations. But its 1b.19 notice does not give any additional details about exactly what specific transactions are being pursued. We know they are notionally described as A-B and B-A. But we do not, for example, specifically know how Enforcement views the unmatched-volume paired trades. Perhaps they would argue that the daily aggregated positions should be disaggregated into one matched-volume set of positions and one one-way position. We think that would be inaccurate cherry-picking of data, because the real exposure to congestion occurs on a daily basis, and thus can be accurately viewed only on a daily aggregate basis.
volume paired trades were exposed to congestion if one leg failed to clear. This congestion exposure is one reason why the disputed trades are not wash trades.

In addition, as we explained in our first submission, and as several experts also have explained, wash trades by definition do not make money themselves; they instead are used to make money in other ways. Here, the trades at issue did make money themselves. So, by definition, they are not wash trades.

Furthermore, even when the congestion elements completely cancelled each other out, we still would have the net outcome of paying transaction charges and receiving transmission loss credits. And that outcome was not zero. Here too the wash trade assertion runs aground on the facts.

At bottom, Enforcement’s wash trade assertion boils down to an assumption that it somehow is improper to trade in ways that earn transmission loss credits. For all of the reasons set forth herein, and previously, that assumption is false. Transmission loss credits were compensation paid in dollars. It was inevitable that traders would trade to receive them, particularly when they often became larger than the transaction costs. Enforcement’s effort to outlaw such trades after the fact is akin to claiming that it is fraud to buy a McDonald’s Happy Meal for the toy. Or, more accurately, akin to claiming that it is fraud to buy a Happy Meal for the toy after parents have been buying Happy Meals for years, with no prior warning about the perils of pursuing the plain incentives the toy presents.

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42 Written Submission to Commission Investigative Staff on Behalf of Dr. Houlian Chen at 7-8, 27-35 (Dec. 13, 2010).
44 Enforcement Report at 55 n.290. Neither of the citations hold water. The first case, Piasio v. CFTC, 54 F.App’x 702, 705 (2d Cir. 2002) is a two-page, unpublished summary order. Local Rule 32.1.1(a) of the United (cont’d)
The “paired” trades were spread trades

Several of the experts have addressed why the trades are spread trades. As Dr. Mayhew explains:

“Spread Trading” is a generic term for a type of trading strategy commonly used by traders in securities, commodities, and derivative securities markets and widely recognized by regulators as a legitimate trading strategy. In a spread trade, a trader takes offsetting positions in two or more instruments, such that the combined position has little or no risk exposure to movements in the market.

The paired trades at issue here match that definition. In one of his depositions, Dr. Chen mathematically proved that, using the pricing formula for up-to congestion trades. Thus, even

States Court of Appeals for the Second Circuit states “[r]ulings by summary order do not have precedential effect.” Enforcement cannot rely on Piasio. That aside, the facts of Piasio are inapposite. Piasio denied a petition for review filed by a futures spread trader who claimed his trades were not wash trades because he lost money from having to pay the futures’ time value, or as the court put it, costs that were “not the result of market risk it acquired, but was, in essence, a payment enabling it to acquire what would otherwise have been an interest-free transfer of money from a later date to an earlier one.” Piasio, 54 F.App’x at 705. In other words, the loss that Piasio incurred was no more than the cost of doing business and is functionally equivalent to a wash trade’s “loss” due to transaction costs. No similar facts apply here.

The second citation, to the promulgation of a final rule in the Federal Register, fares even worse. The rule has to do with “Short Sales in Connection with Public Offering.” Enforcement was unwise to cite to “Sham Transactions” “Sell/Buy and Buy/Sell,” which does, indeed, forbid sham transactions structured “such that there is . . . little or no market risk.” Unfortunately for Enforcement, the SEC illustrated their point with an example: a trade in which “[t]here is no change in beneficial ownership and no market risk associated with the transaction, i.e. these are “wash sales.” Short Sales, 69 Fed. Reg. 48008-01, 88021 (emphasis added).. Enforcement thus gains no ground with citation either.

Mayhew Report ¶ 29.

L. Harris Report at 2; Mayhew Report ¶ 48.

See Chen Dep. Tr. (July 20, 2011), at Ex. 50; see also id. at 162:5-168:21 (discussing Exhibit 50). As Dr. Chen explained, under the maximum allowable bid prices of -$50 and +$50, the formula for the import leg indicated that the bid would clear if DALMP_B minus DALMP_A were less than or equal to the bid price of $50. The formula for the export leg would clear if DALMP_B minus DALMP_A were greater than or equal to the bid price of -$50.

Under certain conditions, both legs would clear (i.e., if DALMP_B minus DALMP_A were between -$50 and +50). Under other conditions, one leg would break: for example, if DALMP_B minus DALMP_A were greater than +50, then the export leg would clear but not the import leg. If DALMP_B minus DALMP_A were less than -$50, then the import leg would clear, but not the export leg. There are no conditions in which both legs could break.

Note: DALMP stands for Day-Ahead LMP. This example assumes a bid price of $50 for the import leg. If the bid price were $35, or another price under the permitted cap, then the import leg would clear if DALMP_B minus

(cont’d)
if both legs clear in the context of equal-volume paired trades, such that the congestion component is equal and opposite in value, they are not guaranteed to offset. As noted above, the net of paying transaction costs and receiving transmission loss credits is not zero (except randomly). And if one leg fails to clear, the paired trades are exposed to congestion payments and congestion costs. For the unmatched-volume trades, the congestion exposure obviously is greater.

Enforcement claimed in its Preliminary Findings Letter that this risk-reward profile would be distributed 50-50, so it was just as likely that congestion outcomes would lose money as make money. That is mistaken. As Dr. Shanker has explained, it is inherent in PJM’s market structure, with congestion potentially occurring in both the day-ahead and real-time energy market, that the risk-reward profile is tilted towards profitability. That is because the design of the A-B and B-A trades meant they would be more likely make money if one leg failed to clear and congestion lessened as PJM moved from its day-ahead to its real-time markets. Because market participants and system operators can and do respond to congestion outcomes occurring in the day-ahead market, that inherently means it is more likely that congestion will lessen in the real-time market.

And that is a good thing for the system. We expect Enforcement will claim that the transactions here served no beneficial purpose and merely served to collect transmission loss credits. There was no requirement, when these trades took place, that traders transact only with certain pre-approved goals. Traders seek profits. And there was no prior notice that traders

(cont'd from previous page)

DALMP_A were less than or equal to $35 (or the other bid price). Similar logic follows for the export leg, which uses a bid price of -$50.

engaging in up-to congestion transactions had to forego profitable transactions where there might not be any system benefit. That might suggest the need to prospectively change the market design. Or it might prompt the Commission to adopt some prospective “system-benefit” rule. But no such rule was in place at the time those trades occurred.

Nonetheless, it remains the case that if one leg had failed to clear, the matched-volume paired trades would likely have helped reduce real-time congestion. And the trades would have had that effect precisely when day-ahead congestion was substantial—in excess of the caps, typically $50/MWh or $35/MWh, that Alan used for his paired trades.

Alan explains in his affidavit why these trades can be both profitable, and benefit the system.\(^49\) Dr. Shanker covers similar ground.\(^50\) In a nutshell, the prevailing-flow leg, into PJM, would be more likely to “break,” leaving the counter-flow position to clear. For the prevailing-flow leg to break, congestion differentials would have to be higher than the ceiling amount used on that leg (such as $35 or $50). He would be paid those differentials on the counter-flow leg—which would be a considerable sum of money. And he would be injecting virtual supply at the high-priced node within PJM that was experiencing atypically high congestion. If the congestion spread narrowed in real time, as it would be expected to do, he would pocket the difference.

In addition, because the PJM-import leg of those trades involved paying for one MWh of transmission service for every MWh of up-to congestion trading, the paired trades contributed to paying part of the costs of the PJM system—the litmus test for receiving transmission loss credits. These trades thus offered the only benefit the rules required—contributing dollars to the grid by paying for transmission service.

\(^{49}\) Chen Aff. ¶¶ 3-10.

\(^{50}\) Shanker Paper at 38-40.
Enforcement previously has claimed that there was no contemporaneous evidence that the possibility of congestion revenue was part of the paired trade strategy. As we have pointed out, the unmatched-volume paired trades involve exposure to congestion profit and loss in all instances. Where the matched-volume trades are concerned, the exposure comes when one leg fails to clear. And the lower the “cap” used in an up-to congestion trade, the greater the chances of a leg not clearing. The only conceivable purpose to Alan sometimes using a cap lower than $50/MWh, such as $35/MWh, was to increase exposure to a leg not clearing. And when Dr. Bowring first contacted Alan about stopping the paired trades, Alan emphasized his view that those trades absolutely carried risk.

While Enforcement claims that an email from mid-2008 shows that Alan never would have accepted the likely exposure to a counter-flow leg that probably would result from one leg not clearing, that is simply not the case. In that email, Alan says he would not want to hold a counter-flow position on a one-way, A to B basis. That is very different from holding a counter-flow position if a paired PJM import leg fails to clear. That latter situation is not what he had in mind in the email. As discussed above, and in Alan’s affidavit, the counter-flow position he would hold if an import leg broke was very economically advantageous. And that advantageous

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51 Moreover, as Enforcement’s preliminary findings show, the average bid prices for the paired transactions entered for HEEP fund and Powhatan were less than $50. See Preliminary Findings Letter at 17 (paired trades at AEP, COMED, COOK, DAY, and ROCKPORT all have average bid prices less than $50).

52 Email from Alan Chen to Joseph Bowring (Aug. 6, 2010) [HF-000292] (explaining conditions in which a leg might be rejected, resulting in losses).

53 Enforcement Report at 14 n.80, 46, 57 (citing email from Alan Chen to Kevin Gates (Jul. 22, 2008, 2:00 PM (POW 0001553)).

54 Chen Aff. ¶ 10.
position bears no resemblance to a one-way counter-flow position of the sort addressed in Alan’s 2008 email.\footnote{Enforcement errs in repeatedly pointing to the lack of any discussion with Kevin Gates of upside from a leg breaking. But as Alan explains in his affidavit (at ¶ 20), he did not tell Kevin Gates everything about his trading.}

Historical data also shows that the trades carried congestion exposure. We recently examined PJM market outcomes over the past nine years. Those data show that a leg has broken for each of the five “paired” combinations Alan traded. As the table below shows, there was a pronounced pattern of that occurring during the well-known “Polar Vortex” earlier this year. Under normal conditions, day-ahead congestion for the five paired-trade combinations typically would be within the range of negative-$50/MWh and positive-$50/MWh. Under those conditions, the matched pairs would clear both legs. But particularly when the system is under stress, like in the Polar Vortex, the matched pairs would have broken down and provided valuable price convergence to the system.

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<tbody>
<tr>
<td></td>
<td></td>
<td>Hours Rejected</td>
<td>Profit ($/MWh-Month)</td>
</tr>
<tr>
<td>1 COMED-&gt;MISO</td>
<td>17.04%</td>
<td>0</td>
<td>218.84</td>
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<tr>
<td>2 DAY-&gt;MISO</td>
<td>14.20%</td>
<td>100</td>
<td>1,349.92</td>
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<tr>
<td>3 COOK-&gt;MISO</td>
<td>21.23%</td>
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<td>4 ROCKPORT-&gt;MISO</td>
<td>4.77%</td>
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<td>5 AES-&gt;MISO</td>
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<td>Total</td>
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\textbf{Notes:}

1. The column "Hours Rejected" shows total hours the UTC trades were rejected. For example, MISO->COMED was rejected in 5 hours out of 744 hours.
2. The column "Profit ($/MWh-Month)" shows the total monthly profit or loss of the UTC trades with 1 MW for every hour (for a total of 744 hours). For pair 2, both legs would have been profitable.
3. The column "Profit ($MWh-Month)" shows the total monthly profit or loss of the imaginary UTC trades with the same volume as those executed during 6/1/2010 to 8/3/2010 for HEEP Fund Inc. These five matched pairs would have made $138,585 if all bids were submitted at $35/MWh, and $137,383 if all bids were submitted at $50/MWh. Pair 4 would have been very profitable if it had been perfectly matched.
4. The column "Profit ($/MWh-Month)" does not reflect profits for Peshatan or CU Fund.
5. The "Volume" columns account for all MWs traded on the specified path, including where Alan traded (a) MWs on only one leg of the path on certain days; (b) MWs for trades that were matched in volume on each leg of the path on an aggregated daily basis; and (c) MWs for trades that were not matched in volume on both legs of the path on an aggregated daily basis.
Focusing on one day during the polar vortex period—January 28, 2014—highlights the exposure that all of the paired trades had to congestion outcomes:

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<th>AEP DA</th>
<th>MISO RT</th>
<th>AEP RT</th>
<th>DA Congestion</th>
<th>PnL</th>
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</table>

Enforcement may contend that it is misleading to focus on unusual events like the Polar Vortex to show how the paired trades exposed the portfolio to congestion outcomes. But this is not a good argument. First, as stated above, it is at times of great market stress that a leg is most likely to break and provide much-needed price convergence. Second, matched pairs have “broken” under other circumstances; that is not purely a Black Swan occurrence. And future price outcomes cannot be known with any certainty, which also was the case when the trades at issue were placed in the Summer of 2010. The possibility of one leg breaking was always there. The U.S. bulk power market commonly is considered the most volatile commodity market in the world. Unexpected events happen in those markets every day. Holding a Ph.D. in power systems engineering, Dr. Chen was keenly aware of this.
Neither Alan Chen nor any other trader caused transmission loss credits to often exceed transaction costs for up-to congestion trades. That outcome was due to decisions made by the Commission and systems administered by PJM. Given that reality, Alan’s trades exposed his portfolio to a range of outcomes. There is no doubt that transmission loss credits were very important, but they were not the only consideration. Congestion risk and reward existed for the unmatched-volume paired trades, even if both legs cleared, and for both the unmatched- and matched-volume paired trades, if only one leg cleared. There was a range of potential outcomes, and there were “tails” in the distribution that reflected both positive and negative congestion outcomes. History shows that those “tails” have occurred, even for the matched-volume paired trades. And when the trades were placed, there was no way to know with certainty what would happen.

The chart below demonstrates the irreducible congestion component of the matched-volume paired trade strategy. It assumes the placement of paired trades of 1 MWh using each of the five paths relevant here for every hour over the past nine years. It presents a range of “caps”—from $5/MWh to $50/MWh (shown on the x-axis). It assumes no transaction costs or transmission loss credits. This means it isolates the congestion component.
The chart shows positive—not negative—congestion revenues across a range of caps. It shows that congestion is an active component of the matched-volume paired trades, meaning that it is an even more active component of the unmatched-volume paired trades. And it shows that Dr. Shanker’s expected asymmetric profitability is, in fact, borne out historically.

In sum, the matched-volume paired trades at issue did carry exposure to congestion profit and loss. That is beyond question. And the unmatched-volume paired trades carried greater exposure to congestion profit or loss. The receipt of transmission loss credits offset transaction costs, at least in part, and often exceeded them, thus offering an independent profit opportunity. They thus subsidized the exposure to congestion, and often even paid the portfolio to take on that exposure. But there were always two potential revenue streams, neither known with certainty in advance.
Enforcement presumably will contend that the degree of congestion exposure was too small to matter. And in support of that position, Enforcement offers two citations to buttress their elastic view of wash trades, both of which, in fact, only underscore the weakness of their case. But as several of the experts have explained, spread trades in other markets can carry very little, and even no, risk. Yet they are considered legitimate transactions and we know of no agency or court that has found them to constitute fraud-based market manipulation.

For example, as Dr. Mayhew has explained, Alan’s trading strategy is “economically similar and closely analogous to a well-documented strategy done in the exchange-traded stock option markets” called the “dividend spread” strategy. That strategy “involves trading call options on dividend-paying stocks, on the last trading date before the ‘ex-dividend’ date,” in order to “capture the dividend.” Like Enforcement’s allegations here, that strategy ends up holding offsetting positions, it “involves little or no market risk,” and it profits from “diverting benefits away from other market participants.” But even though the dividend spread strategy “may involve trading volume sufficiently large that it has a substantial impact on total trading volume,” it is not viewed as illegal by SEC staff because “the motivation of the strategy was not to deceive, and the success of the strategy does not depend on deception.”

Similarly, Dr. Larry Harris has described how Dr. Chen’s trades are no different from statistical arbitrage trades that appear commonly in stock markets and that are not in and of

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56 Mayhew Report ¶ 52.
57 Id., ¶ 53.
58 Id., ¶ 93.
59 Id., ¶ 97.
60 Id., ¶ 95.
61 Id., ¶ 96.
themselves manipulative or illegal.\textsuperscript{62} And Dr. Wallace explains that “trading for the purpose of collecting a rebate is considered a lawful and recognized practice in the securities markets,” on which FERC’s market manipulation statute is based.\textsuperscript{63}

3. \textit{The Trading Here Is Not Like “Death Star”}

Enforcement errs in claiming that the trades at issue were “analogous” to Enron’s “Death Star” strategy. Death Star involved scheduling physical counter-flows of power, which qualified for payments for reducing congestion, then scheduling additional transmission that resulted in no physical flows of power occurring. That meant that Enron received payments for relieving congestion when no congestion was relieved. The Commission found, at least preliminarily, that this constituted “gaming” or “anomalous bidding” under the CAISO tariff as it existed at the time, because Enron submitted false schedules to CAISO.\textsuperscript{64}

That is very different from what happened here. Here there were no physical flows of power; the reservation of transmission for imports into PJM was purely financial. Alan Chen never submitted false schedules to PJM. He never misrepresented anything at all. And the trades never resulted in collecting payments for relieving congestion where no congestion was relieved. During the period at issue, the trades did result in the collection of loss credits, but the only \textit{quid pro quo} the Commission \textit{ever} identified for collecting loss credits was supporting the

\textsuperscript{62} L. Harris Report at 2-3.

\textsuperscript{63} Wallace Aff. ¶ 15. Enforcement’s only counterexample is an unpublished Third Circuit opinion where the court was bound by a deferential standard of review, but indicated that if it had \textit{“de novo review of the record, [it] might well reach a different conclusion.”} \textit{Amanat v. SEC}, 269 F. App’x 217, 220 (3d Cir. 2008) (unpublished). Furthermore, as Dr. Jeff Harris explains, the distinctions between Dr. Chen’s strategy and the trading in \textit{Amanat} illustrate that case is not persuasive authority here. J. Harris Report ¶¶ 25-28.

\textsuperscript{64} Enforcement takes a cheap shot at Alan by noting (Enforcement Report at 3 n.3) that he worked at Enron during the period of the Western Power Crisis. Despite the insinuation, Alan had nothing to do with Enron’s western market power trading. And like many other innocent employees of that company, he suffered considerable financial harm when Enron imploded.
fixed costs of the PJM grid by paying for transmission service. And Alan never did anything to “cancel” or “offset” that payment. Enforcement’s inflammatory invocation of an Enron strategy thus goes nowhere.65

In any event, the Commission’s much more recent decision not to pursue enforcement action in the Lake Erie Loop Flow case66 blunts Enforcement’s effort to invoke Death Star. In the Lake Erie Loop Flow case, various traders openly placed transmission reservations, scheduled with NERC tags, for transactions that involved moving power in a circle to make positive returns, after paying transmission charges, based on LMP differentials. It turned out that those LMP differentials were due to inconsistent modelling across RTOs. But the Commission found that where there was no concealment, where transactions were openly placed, and where system operators could see accurate, identifying information regarding the transactions, there was no deception, and no manipulation.67 For this reason, too, Enforcement gains no ground by invoking Death Star.

4. The Expert Testimony Strongly Supports the Conclusion that the Trades Were Not Manipulative

As you are aware, since we sent our prior submissions, including the affidavit of Professor Craig Pirrong, the principals of Powhatan have engaged numerous additional experts

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65 In any event, we note that the order Enforcement cites was an order setting a case for hearing. Enforcement Report at 50 n.269 (quoting Am. Elec. Power Serv. Corp., 106 FERC ¶ 61,020 at PP 45, 48 (2004)). And it applied alleged legal norms that are far looser, and different, than the Commission’s current anti-manipulation rule. In addition, the Commission recently ruled again that the MMIPs at issue in California created binding legal norms, San Diego Gas & Elec. Co. v. Sellers of Energy and Ancillary Servs., Opinion No. 535, 149 FERC ¶ 61,116 (2014), but that decision is pending on rehearing.


67 128 FERC ¶ 61,049, Staff Report at 21-22.
to write papers on Enforcement’s investigation and have published those papers on their website, FERClitigation.com. These papers are attached:

- Susan J. Court, Principal, SJC Energy Consultants, LLC, and former Director of Enforcement at FERC;
- Jeffrey H. Harris, Ph.D., Gary Cohn Goldman Sachs Endowed Chair in Finance at the Kogod School of Business, American University, and former Chief Economist at the CFTC;
- Larry Harris, Ph.D., Fred V. Keenan Chair in Finance, University of Southern California Marshall School of Business, author of Trading and Exchanges: Market Microstructure for Practitioners, and former Chief Economist at the SEC;
- Terrence Hendershott, Ph.D., Cheryl and Christian Valentine Chair, Haas School of Business, University of California at Berkeley;
- William W. Hogan, Ph.D., Raymond J. Plank Professor of Global Energy Policy, John F. Kennedy School of Government, Harvard University;
- David Hunger, Ph.D., Vice President, Charles River Associates International, Inc., and former Senior Economist at FERC;
- Stewart Mayhew, Ph.D., Principal, Cornerstone Research, and former Deputy Chief Economist at the SEC;
- Craig Pirrong, Ph.D., Professor of Finance, and Director of the Global Energy Management Institute at the Bauer College of Business of the University of Houston;
- Roy Shanker, Ph.D., independent energy consultant with over 40 years of experience in PJM markets;
- Chester S. Spatt, Ph.D., Pamela R. and Kenneth B. Dunn Professor of Finance, Tepper School of Business, Carnegie Mellon University, and former Chief Economist at the SEC;
- Richard D. Tabors, Ph.D., Vice President of Charles River Associates; and
- Richard G. Wallace, Esq., Partner, Foley & Lardner LLP, and Member of the Securities Enforcement & Litigation and Securities, Commodities & Exchange Regulation Practices, and Former Vice President and Chief Counsel in the FINRA Market Regulation Department.
The weight of these independent expert views leaves no room for Enforcement Staff’s unfounded theories. Enforcement essentially ignored these views. We hope the Commission does not make the same mistake.

D. Enforcement Misconstrues the SEC’s Point of View

1. Amanat Badly Hurts Enforcement’s Case

Enforcement persists in giving prominent play to the Amanat case, but it actually underscores the vacuity of Enforcement’s case here. To begin with, the unusual litigation history of that case signals caution. The Third Circuit did not even publish its opinion affirming the SEC order in that case, which means the court’s decision has no precedential value. And the court stated that if it were applying a de novo standard—which is what will apply here if the Commission does not terminate this case—it might well not have affirmed.

In any event, there are two major differences between that case and this one. First, Amanat admittedly engaged in wash trades. He submitted thousands of offsetting trades that completely cancelled each other out. Unlike the trades here, there was no profit, and no loss. There was not even any potential for profit or loss.

Like all wash trades, the point of these null transactions was collateral. If he did enough of them, his business could qualify for a lump sum rebate paid by a trading platform. This calls to mind the story, perhaps apocryphal, of a power trader in the early years of electronic trading.

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68 Enforcement Report at 73-74.

69 Amanat v. SEC, 269 F.App’x 217.

70 See Fallon Elec. Co. v. Cincinnati Ins. Co., 121 F.3d 125, 128 n.1 (3d Cir. 1997) (“CIC places great reliance on an unpublished opinion of this Court. However, the Court does not regard such opinions as binding precedent.”) (citation omitted).

71 Amanat, 269 F.App’x at 220.
who engaged in wash trades to win a flat screen TV awarded to the trader with the highest volume.

*Amanat* thus is very different from the trading here. Amanat had to engage in numerous wash trading to qualify for a rebate. Here the rebate was paid on every trade. And that makes a difference. The loss credit rebate became part of the overall price signal sent to Alan and others for each and every up-to congestion trade where the rebate was paid. It thus became part of the overall equation of profit and loss. And when Alan entered into his trades, there indisputably was exposure to congestion gains and losses. Amanat’s trading was, in contrast, a complete “wash.”

Second, *Amanat* concealed his wash trades by conducting them using two different entities. Alan did no such thing. For this reason, too, *Amanat* casts a deep shadow over Enforcement’s case.

2. *Enforcement Ignores Our Expert’s Accounts of the SEC Never Challenging Spread Trading With Little or No Market Exposure*

In addition, as discussed above, several of our experts explain in detail that spread trading with little or no market exposure is exceedingly commonplace in securities and other markets. Enforcement totally ignores those discussions. Refusing to engage those experts, several of which were either Chief or Deputy Chief Economists at the SEC, while misreading *Amanat* on its face, is a poor way to address how the SEC administers its very similar fraud-based market manipulation standard. We hope the Commission will not repeat the same mistake.

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72 *In re Amanat*, 89 S.E.C. Docket 672, Admin. Proc. File No. 3-11813, 2006 WL 3199181, at *5 (SEC Nov. 3, 2006) (“In the morning, he ran RLevi2 in both the Irfan and Signr accounts, sending pairs of buy and sell market orders in SPYs to MarketXT every two to three seconds.”).

E. Enforcement’s “Exploiting a Loophole” Does Not Establish the Trades Were Fraudulent

Enforcement quotes a number of emails between members of Powhatan in which they describe his trades as taking advantage of a loophole. But Alan was not on those emails, and did not view his trading that way. The notion of a loophole brings to mind some little-known market technicality, when, in fact, the Commission itself provided the stage upon which for almost two years PJM and the market participants thoroughly canvassed the market implications of refunding transmission line-loss fees. The Commission’s eventual decision was the result of deliberate, public choices by both it and PJM. Those choices resulted in the establishment of a direct financial incentive to up-to congestion traders by effectively reducing their transaction costs and encouraging more trading at a lower price. This is not a loophole, this is policy.

But even if we accept the “loophole” characterization, the exploiting a loophole is not illegal. A loophole is “[a]n ambiguity, omission, or exception (as in a law or other legal document) that provides a way to avoid a rule without violating its literal requirements; esp., a tax-code provision that allows a taxpayer to legally avoid or reduce income taxes.” Everyone knows that use of such technicalities is permissible. As Judge Posner said, “if Macon County is right, a taxpayer who takes lawful advantage of a loophole in the Internal Revenue Code has been unjustly enriched and must disgorge his tax savings. No one believes that.”

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74 Beginning on page 15 of the Enforcement Report, Enforcement quotes a half-dozen emails in which members of Powhatan use the term “loophole.” Not a single one of the cited emails was from Alan Chen.

75 See Hogan Paper at 11-12 (discussing the proper response to traders who expose well-anticipated, publicly-discussed market design flaws).


77 Macon Cnty. v. Merscorp, 742 F.3d 711, 714 (7th Cir. 2014).
So what is the remedy when someone takes advantage of a loophole such as the one created by the Commission in the PJM tariff? Such an event can serve as a call to reform, but it cannot warrant punitive action by the Commission. The remedy for an improvidently-drafted tariff provision is the revision of the tariff, not the punishment of someone who violated its “spirit,” especially when that “spirit” is only articulated after the fact, and when the accused has conducted his affairs in compliance with the letter of the law.78

In any event, violation of the “spirit” of a rule cannot serve as the predicate for a penalty because unexpressed alleged intent of the Commission in this case is irrelevant.79 As Judge Easterbrook stated in an analogous context, a legislative body “does not enact ‘intsents’ . . . it enacts texts, which may differ from the expectations of the sponsors.”80 The fact that the rebates “should have gone”81 to other market participants is irrelevant. “[A]rranging one’s affairs to avoid [the agency’s] jurisdiction would be unexceptionable, just as it is lawful to take advantage of loopholes in other tax statutes (or, as the tax bar calls them, ‘opportunities for tax planning’). Tax shelters are not unlawful just because reducing taxes serves as a motivation.”82

78 See Newman & Co. v. United States, 423 F.2d 49, 54 (2d Cir. 1970) (“[I]t would indeed be hazardous for this court to create exceptions designed to close apparent loopholes in accord with the deemed Congressional policy …. [This problem] requires Congressional rather than judicial action.”).

79 See Pharm. Research & Mfrs. of Am. v. United States, 135 F. Supp. 2d 1, 15 (D.D.C. 2001) (“This court will not invalidate legislation passed by the people’s elected representatives because the legislation contains a loophole that permits conduct that, in a judge’s personal opinion, is unethical or contrary to the “spirit” of the legislation. Absent a showing that some constitutional or statutory right is being abridged, it is the province of the legislature to change the law if it perceives that it allows for conduct that is legal but unfair or contrary to the common good.”), rev’d on other grounds, 251 F.3d 219 (D.C. Cir. 2001).


81 So Enforcement claims, after the fact. See Enforcement Report at 2.

82 Livingston, 970 F.2d at 298.
F. Order No. 670’s “Impairing a Well-Functioning Market” Standard Is Dead on Arrival

Unable to establish any deceptive conduct that would satisfy the statutory requirement, Enforcement claims that the trades at issue were fraudulent because they impaired a well-functioning market. But that definition of fraud in Order No. 670 is doomed to failure in court. The case cited in Order No. 670 assumed fraud at the outset and thus cannot defend any effort to avoid proving fraud here.

*Dennis*, as we have explained before, was about a conspiracy to defraud the government, brought under a general conspiracy statute against criminal defendants who were alleged to have fraudulently obtained the services of the National Labor Relations Board on behalf of a labor union by knowingly filing false affidavits denying their affiliation with the Communist Party. The statute in question, 18 U.S.C. § 371, was a general prohibition against any conspiracy “to defraud the United States, or any agency thereof in any manner or for any purpose.” Although this language has been construed to extend beyond “fraud as that term has been defined in the common law,” and to reach “any conspiracy for the purpose of impairing, obstructing, or defeating the lawful function of any department of government,” the statute does not extend to forbid conduct that is not fraudulent. It is reserved for conspiracies to defraud or obstruct the government through “deceit, craft or trickery, or at least by means that are dishonest.”

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83 See Order No. 670, FERC Stats. & Regs. ¶ 31,202 at PP 50 & n.103 (citing *Dennis v. United States*, 384 U.S. 855, 861 (1966)).

84 *Dennis*, 384 U.S. at 861 (listing cases).

85 See *Caldwell*, 989 F.2d at 1058-59.

*Dennis*, fraud was a given—the communist sympathizers lied about being communists. Here, Enforcement has not identified even a hint of fraud in Dr. Chen’s transactions.

But courts have flatly rejected the argument that *Dennis* permits the government to punish the “impairment” of a government function without establishing some form of fraudulent conduct. As now-Chief Judge Kozinski explained in *Caldwell*:

> There are places where, until recently, “everything which [was] not permitted [was] forbidden . . . . [W]hatever [was] permitted [was] mandatory . . . . Citizens were shackled in their actions by the universal passion for banning things.” *Yeltsin Addresses RSFSR Congress of People’s Deputies*, BBC Summary of World Broadcasts, Apr. 1, 1991, *available in LEXIS*, Nexis Library, OMNI file. Fortunately, the United States is not such a place, and we plan to keep it that way. If the government wants to forbid certain conduct, it may forbid it. If it wants to mandate it, it may mandate it. But we won’t lightly infer that in enacting 18 U.S.C. § 371 Congress meant to forbid all things that obstruct the government, or require citizens to do all those things that could make the government’s job easier. So long as they don’t act dishonestly or deceitfully, and so long as they don’t violate some specific law, people living in our society are still free to conduct their affairs any which way they please.

So too here:

**II. THE FAIR NOTICE DOCTRINE PROHIBITS A FINDING THAT THE UP-TO CONGESTION TRADES VIOLATE THE PROHIBITION ON MARKET MANIPULATION**

The fair notice doctrine poses an insurmountable hurdle for Enforcement’s case the because legislators and regulators are required to give fair warning of “what the law intends to do if a certain line is passed.” And that never happened here.

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87 *Caldwell*, 989 F.2d at 1061; *see also Knapp*, 25 F.3d at 455 (noting that *Hammerschmidt* and *Caldwell* “stand for the proposition that a defendant cannot be found guilty of defrauding the United States without some showing of fraud”).

A. Enforcement Misconstrues the Law on Fair Notice

According to Enforcement, the fair notice doctrine is satisfied when regulations are “sufficiently specific that a reasonably prudent person, familiar with the conditions the regulations are meant to address and the objectives the regulations are meant to achieve, has fair warning of what the regulations require.” That is not an accurate view of the law, though, as we will show, there was no fair notice here no matter what standard is used. The weight of authority holds that fair notice requires agencies to articulate rules to an “ascertainable certainty,” in the D.C. Circuit, or that the rules be “reasonably clear,” as the Fifth Circuit requires. The “ascertainable certainty” standard, incidentally, is employed by the Third Circuit, which is where Enforcement probably would file a de novo civil penalty enforcement action, if the case ever reaches that point, which it should not. Both of the preponderant standards are built upon the bedrock principle that we live in a country constrained by the rule of law. And as we explain below, an agency’s expression of “concern,” no matter how public, no matter how relevant to your behavior, does not constitute a prohibition. Americans are not expected to read tea leaves in order to divine their government’s mandates.

Justice Holmes put it well, summing up fair notice as requiring that “a fair warning should be given to the world in language that the common world will understand, of what the

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89 Enforcement Report at 67 (citing Moussa I. Korouma, db/a Quantum Energy LLC, 135 FERC ¶ 61,245 at P 34 (2011)).
91 See Sec’y of Labor v. Beverly Healthcare-Hillview, 541 F.3d 193, 201 (3d Cir. 2008); Dravo Corp. v. OSHRC, 613 F.2d 1227, 1232 (3d Cir. 1980).
92 See United States v. Chrysler Corp., 158 F.3d 1350, 1357 (D.C. Cir. 1998) (stating that neither “the exercise of extraordinary intuition” nor the “aid of a psychic” should be necessary to understand and agency’s regulations).
law intends to do if a certain line is passed.” Though originally applied in criminal proceedings, the Due Process Clause also requires fair notice for the imposition of administrative penalties. Fair notice requires a clear expression of what an agency wishes to prohibit—“elementary fairness compels clarity.” Thus, when a regulation “is not sufficiently clear to warn a party about what is expected of it—an agency may not deprive a party of property . . . .”

Fair notice is given if, “by reviewing the regulations and other public statements issued by the agency, a regulated party acting in good faith would be able to identify, with ‘ascertainable certainty,’ the standards with which the agency expects parties to conform.”

Fair notice places the burden on the agency to be clear in expressing its prohibitions; regulated parties are not required to divine the agency’s intentions. “[A] regulation cannot be construed to mean what an agency intended but did not adequately express . . . . [The agency] has the responsibility to state with ascertainable certainty what is meant by the standards [it] has promulgated.” And the remedy for failure to provide fair notice is simple: the agency gets another crack at formulating and promulgating its regulation, but it cannot impose sanctions for prior conduct. The Commission “may be dissatisfied with the regulation’s current formulation;

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94 *See Rollins Envtl. Servs. (NJ) Inc. v. EPA*, 937 F.2d 649, 652 n.2 (D.C. Cir. 1991) (“Under the due process clause of the Fifth Amendment, a regulation carrying penal sanctions must give ‘fair warning of the conduct it prohibits or requires’”).

95 *Radio Athens, Inc. v. FCC*, 401 F.2d 398, 404 (D.C. Cir. 1968) (discussing fair notice as applied to the requirements for a license application).

96 *Gen. Elec. Co.*, 53 F.3d at 1328.

97 *Id.* at 1329.

98 *Gates & Fox Co. v. OSHA*, 790 F.2d 154, 156 (D.C. Cir. 1986) (quoting the ultimate progenitor of the D.C. Circuit’s administrative fair notice jurisprudence *Diamond Roofing*, 528 F.2d at 649).
if so, [the agency] can amend or eliminate it. But [it] cannot do so by ascribing a meaning to words they simply do not have.”

It is not surprising that Enforcement should seek to endorse and publicize the least demanding formulation of fair notice that it can find. But fair notice is a question of Constitutional law, and the Commission’s pronouncements on its contours are owed no deference at all by the courts.

**B. The Commission Failed To Provide Fair Notice, Regardless What Standard We Use**

1. *The Commission’s Orders in Black Oak Anticipated the Trading Conduct at Issue Here and Did Not Prohibit It*

When the Commission originally ordered PJM to pay transmission loss credits to traders engaging in up-to congestion transactions, it expressly anticipated the very types of transactions Enforcement now claims are manipulative. Specifically, in October 2008, the Commission said, in a footnote, that it was “concerned” that paying transmission loss credits to financial traders “would provide an incentive for the arbitrageurs to conduct trades simply to receive a larger credit.” But the Commission nonetheless decided to permit *precisely* that incentive, and never cautioned that there would be anything unlawful about traders following that incentive.

While the Commission expressed “concern[],” nowhere did it state that “conduct[ing] trades simply to receive a larger credit” was unlawful, unauthorized, or unintended. If anything, the order implies that it was acceptable. First, the Commission noted the consequences it anticipated if it approved the new revenue stream provided by transmission loss credits. Then

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100 *Black Oak Energy, L.L.C v. PJM Interconnection, L.L.C.*, Order on Rehearing, 125 FERC ¶ 61,042 at P 38 n.46 (2008) (“*Black Oak Rehearing Order*”).

101 *Id.*
the Commission approved that new revenue stream, never stating that there were any legal problems with those envisioned consequences.

And the Commission took this action on rehearing, having first issued an order discussing, at great length, how all market participants respond to price signals—including loss credits—as incentives, and flatly declining to pay transmission loss credits to financial traders. As the Commission explained it, no specific market participants had any entitlement to receive transmission loss credits, but one way to distribute them was on a pro rata basis to those who reserved and paid for transmission service, because they were paying costs associated with the power grid. After certain financial traders argued, on rehearing, that up-to congestion trades required payment of transmission charges, the Commission agreed that it was unduly discriminatory to exclude those transactions from the allocation of transmission loss credits.

The bottom line of those orders therefore is that payment of transmission service charges entitles the payer to transmission loss credits. Set in this context, the Commission’s expression of “concern” about traders transacting “simply” to earn transmission loss credits cannot colorably be said to provide prior notice that such trades were unlawful fraud-based market manipulation. Instead, as we discuss below, it was simply a consideration that the

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102 Id at P 49; see also Black Oak Energy, L.L.C. v. PJM Interconnection, L.L.C., Order Denying Complaint, 122 FERC ¶ 61,208 at PP 48-52 (2008) (“Black Oak Complaint Order”).

103 Black Oak Rehearing Order, 125 FERC ¶ 61,042 at PP 33, 37-38.

104 Id. at PP 48-49 (noting that up-to congestion transactions pay transmission costs); see also Black Oak Energy, L.L.C. v. PJM Interconnection, L.L.C., Order Denying Rehearing, 131 FERC ¶ 61,024 at PP 33, 35 (2010) (“Black Oak 2010 Rehearing Order”) (denying rehearing and summarizing principles of credit distribution, including the need to apply methodology “on a not unduly discriminatory basis”).

105 Moreover, the context of that footnote suggests that the Commission’s concerns were not directed at up-to congestion transactions. In the October 2008 rehearing order, the Commission expressed concerns about other financial arbitrageurs who did not pay transmission costs, 125 FERC ¶ 61,042 at P 43 (expressing concern about “payment of the surplus to arbitrageurs that is unrelated to the transmission costs”), but suggested that it would be inappropriate not to pay some of the surplus to up-to congestion traders and others who “also support the fixed costs of the transmission grid.” Id. at P 49. Later, the Commission reaffirmed that consistent with the (cont’d)
Commission mentioned in determining how to resolve the competing concerns and interests raised in the proceeding.

Adding to the prior notice problem, the rehearing order itself was not a model of clarity. PJM had to file a request for clarification asking whether the Commission really wanted it to pay transmission loss credits for up-to congestion transactions, eliciting confirmation that the Commission did, in fact, mandate that outcome.\(^{106}\)

It is, we submit, indisputable that once PJM began paying transmission loss credits for up-to congestion transactions, those payments changed the incentives for everyone engaging in those transactions (as well as any other transactions that qualified for the credit). Instead of one possible revenue source—congestion profits—now there were two. A trader always will consider whether a trade is going to make money. Transmission loss credits materially changed that equation for every trade that received them. Just as, in the normal course, businesses provide rebates to incentivize customers to do business with them, the payment of transmission loss credits necessarily incentivized traders to engage in more up-to congestion trades. Because, for the brief two-month period at issue here, the size of the transmission loss credits often exceeded the transmission and other charges imposed on up-to congestion transactions, the resulting incentives were powerful indeed. And the Commission did nothing to warn anyone about Enforcement’s eventual view that responding to those incentives would be market manipulation.

To be sure, it would have been odd for the Commission to issue an order requiring PJM to pay transmission loss credits to traders engaging in up-to congestion trades, and in the same order state that it would be market manipulation for traders to seek to collect those payments. The obvious solution there would be not to provide the incentive to begin with—or at least to warn of potential consequences regarding the prohibition on market manipulation. To mandate a payment, but to outlaw any interest in receiving it, seems capricious at best. But that anomalous scenario only becomes less rational, more unlawful, and more unfair if the agency mandates the payments in question without giving guidance, then, years down the road, proclaims that it always has been fraud-based market manipulation to seek to collect them. And that essentially is what Enforcement would have the Commission do here.

Enforcement might respond that all traders should have known not to engage in wash trades to collect transmission loss credits. As we explain above, however, the trades at issue here were not wash trades. There are several reasons for that, but one is that the trades did involve exposure to congestion gains and losses. Presumably Enforcement would agree that, at some point, congestion exposure would be significant enough, in comparison to transmission loss credits, to mean that the transactions would be legitimate. But even today we have no guidance as to where such a line might be drawn. Certainly there was no such guidance given in advance.

This case therefore is not about unintended consequences, or “exploiting a loophole” (not that there is anything wrong with that). The consequences here not only were foreseeable, but were actually foreseen. And that, we respectfully submit, should move this case out of the realm of after-the-fact market manipulation prosecutions. The Commission is free to change market rules prospectively in order to change incentives it ultimately decides it does not want to create.
It did that here. Similarly, the PJM Market Monitor picked up the phone and called Alan Chen in early August 2010, asking him to stop the trades in question. Alan did so.107

And that is where this case should stop. It cannot possibly be defensible for the Commission to allege that any trading conduct it ultimately decides, in hindsight, that it dislikes is unlawful fraud-based market manipulation. In cases where the market rules are followed, there is no fraud, and there is no prior notice, the right thing to do is to change the rules and move on. We respectfully submit that this is just such a case.

Terminating this case for prior notice reasons necessarily is a fact-bound result unlikely to set precedent for future cases. The unique facts here—with a Commission order essentially foreseeing the conduct Enforcement seeks to prosecute, but without providing any indication that the Commission considered that conduct unlawful—are unlikely to be repeated. And if the Commission confronts a similar situation in the future, it would be an unambiguously good thing for the Commission to specifically prohibit conduct it considers problematic in advance, rather than to remain silent and later seek retroactive sanctions.

2. The Black Oak Intervenor Pleadings Hurt Enforcement’s Case

Enforcement dwells in its Report on assertions in several interventions in the Black Oak proceeding, where intervenors explain that paying loss credits to financial traders will result in such traders engaging in transactions to obtain loss credits—including high volumes of offsetting transactions where there is no market exposure to congestion whatsoever.108 That makes things worse for Enforcement, not better.

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108 Duke Energy Ohio, Motion to Intervene and Comments in Opposition to Complaint, Black Oak Energy v. PJM Interconnection, Docket No. EL08-14-000 at 8 (Dec. 26, 2007) (“[I]f Financial Marketers were to receive a [cont’d]
The intervenors predicted precisely the same conduct that Enforcement claims occurred here (albeit without explaining, and perhaps without understanding, the risks and benefits associated with such a strategy). While Enforcement’s characterizations of Dr. Chen’s trading are wrong, they are, set against the historical context of the Black Oak pleadings, quite familiar. The trading Enforcement conjures up was both predicable and predicted. But it was never prohibited in advance.

Nor does Enforcement gain any ground by pointing to statements in pleadings filed by a small group of so-called “Financial Marketers,” saying that it would be too risky to trade just to get loss credits. Alan Chen was not part of the Black Oak litigation, and cannot be responsible for the pleadings of unrelated parties. In any event, the Commission never even mentioned those statements, and certainly never said it was relying on them as a condition of ordering PJM to pay loss credits to up-to congestion traders. In sum, diving into the pleadings only serves to highlight the fact that the Commission never prohibited the conduct discussed at length in by the parties.

(\textit{cont'd from previous page})

share of the overcharge refund in proportion to their gross sales or purchase in the RTM or DAM, an opportunity for Financial Marketers to appropriate nearly all of the overcharge refunds would be created. Financial Marketers can increase their gross volumes nearly limitlessly. Even as DAM and RTM prices converge and any net profit or loss from the transaction for the Financial Marketers vanishes, Financial Marketers’ expected overcharge refunds would continue to grow. Creating incentives for such behavior is not sound market design.”); PJM Power Providers Group, Motion to Intervene and Comments, \textit{Black Oak Energy v. PJM}, Docket No. EL08-14-000 at 14 (Dec. 26, 2007) (“Market participants could be motivated to engage in virtual transactions with offsetting marginal losses and congestion costs, merely to create a claim on the marginal loss over-collection pool.”); Consolidated Edison Energy, Inc. and Consolidated Edison Solutions, Inc., Motion to Intervene and Comments, \textit{Black Oak Energy v. PJM}, Docket No. EL08-14-000 at 4 (Dec. 26, 2007) (“[T]o receive refunds from the marginal loss over-collection, could also have perverse impacts and result in clearing transactions for purposes of receiving refunds rather than for arbitraging differences in Day Ahead and Real Time prices.”); Old Dominion Electric Cooperative, Motion to Intervene, Protest and Request for Rejection, \textit{Black Oak Energy v. PJM}, Docket No. EL08-14-000 at 9 n.12 (Dec. 26, 2007) (“If the Complainants were granted an allocation of revenue of marginal loss over-collection based on when they ‘pay’ marginal losses, then a perverse incentive could be created where it makes sense to create offsetting positions that become profitable solely based on one side of the trade being allocated revenue to which they should never have been entitled.”).

3. In Stark Contrast, the Commission Regularly Warns Market Participants About Conduct that Might Violate the Prohibition on Market Manipulation

The Commission, like all federal agencies, routinely engages in weighing competing considerations and trade-offs; that is the “essence of policymaking.”110 And that is what the Commission did in Black Oak. The Commission understood that “market participants could be motivated to engage in virtual transactions with offsetting marginal losses and congestion costs, merely to create a claim on the marginal line loss over-collection surplus,” and rejected the complainants claim that “arbitrageurs’ financial transactions should be included in the allocation of the over-collection surplus.”111 Then, on rehearing, the Commission reversed course on this issue because it decided PJM could not “unduly discriminate among the class entitled to the distribution.”112 Though it easily could have added a statement prohibiting traders from trading “solely” to get loss credits, it did not do so.

It certainly is not particularly rare for the Commission to warn against conduct that might be viewed as manipulation. For example, in Midwest Independent Transmission System Operator, Inc.,113 the Commission considered how certain “grandfathered” transmission agreements (“GFAs”) should be treated in the context of then newly adopted features of the Midwest ISO energy markets. Dr. William Hogan, one of the experts who submitted testimony on behalf of the respondents in this case, also submitted testimony in the GFA proceeding, where he explained how a “carve-out” for GFA might create opportunities for market manipulation.

110 Cont’l Air Lines, Inc. v. Dep’t of Transp., 843 F.2d 1444, 1451 (D.C. Cir. 1988) (“It is . . . for the agency to decide the exact trade-off among conflicting goals that ‘best promotes’ the Congressional ‘goal’ in question. That is the essence of policymaking.”).

111 Black Oak Complaint Order, 122 FERC ¶ 61,208 at PP 16, 20.

112 Black Oak Rehearing Order, 125 FERC ¶ 61,042 at P 49.

The Commission agreed with this concern and directed the Independent Market Monitor ("IMM") to monitor for such behavior and report to the Commission:

We agree with testimony submitted by Dr. Hogan that a GFA carve-out could create opportunities for market manipulation . . . . Thus, we will require the IMM to monitor GFA customers for gaming behavior and provide an informational report to the Commission prior to the second FTR allocation. We further note that . . . Market Behavior Rule 2 . . . would apply to scheduling behavior of GFAs.\textsuperscript{114}

Just as it did in the GFA proceeding, when the opportunity for manipulation has been brought to the Commission’s attention, the Commission has routinely put the regulated community on notice by describing the potential for manipulation or gaming and taking steps like directing the market monitor to be on the lookout and report such conduct, or advising the market participants that the conduct might violate the governing rules, including the prohibition on market manipulation.\textsuperscript{115}

It would have been easy for the Commission to have banned trading solely seeking loss credits. It would have taken no more than the stroke of a pen. But the Commission did not do.

\textsuperscript{114} Id. at P 101 (emphasis added).

\textsuperscript{115} See, e.g., \textit{Southwest Power Pool, Inc.}, 144 FERC ¶ 61,255 at PP 30-31 (2013) (because of concern over “gaming” by certain GFA customers, “we direct SPP to revise its Tariff to provide that the Market Monitor will monitor for gaming by GFA customers and to report any such instances to the Commission”); \textit{Midwest Indep. Transmission Sys. Operator, Inc.}, 137 FERC ¶ 61,213 at P 87 (2011) (discussing concerns that proposed “reference levels” will encourage gaming and market manipulation and stating that “the Market Monitor will be monitoring the behavior of resources of all affiliates . . . and can refer such behavior to the Commission”); \textit{Cal. Indep. Sys. Operator Corp.}, 134 FERC ¶ 61,211 at P 131 & n.161 (2011) (discussing arguments that offering risk of retirement Capacity Procurement Mechanism designations “may create significant market distortions, such as the opportunity for gaming” and concluding that CAISO’s proposal contained safeguards against “manipulate[ion]” because CAISO market participants are bound by rules including “the prohibitions of market manipulation in the CAISO tariff and the Commission’s rules and regulations”); \textit{Cal. Indep. Sys. Operator Corp.}, 132 FERC ¶ 61,045 at P 66 (2010) (identifying “[m]anipulation concerns in the Proxy Demand Resource proposal” and finding CAISO proposal adequately addresses concerns, including through “accurate customer baseline calculations, monitoring and verification measures and certain deterrent provisions”); \textit{PJM Interconnection, L.L.C.}, 122 FERC ¶ 61,082 at P 68 (2008) (addressing concerns over “gaming” in connection with “adoption of a postage-stamp rate design for 500 kV and above projects” and stating that PJM tariff “contains protective provisions to prevent any potential gaming” and customers can “bring inconsistencies to the attention of PJM.”); \textit{Midwest Indep. Transmission Sys. Operator, Inc.}, 114 FERC ¶ 61,106 at P 45 (2006) (“[W]e are mindful that gaming to increase the voltage level of some projects so as to be eligible for regional cost sharing could be attempted; but we expect the Midwest ISO . . . to carefully monitor projects in this area.”).
so. In marked contrast to the orders cited above, the \textit{Black Oak} orders never mention “gaming.” They never mention “manipulation.” They do not even direct the market monitor to monitor or report back on the concerns raised about potentially flawed incentives. By failing to do so, when the Commission has regularly done so in the past, the \textit{Black Oak} orders strongly signal that the Commission did not consider the conduct warned of by some commenters to be manipulation.

\textbf{4. Enforcement’s Misleading Depiction of the Views of Other Traders Does Nothing to Support Enforcement’s Case}

Nor does Enforcement help its fair notice argument by pointing to an email from Bob Steele to Kevin Gates, saying that “[m]ost [UTC] participants (myself and Connectiv included)” thought Alan’s trades were “rank manipulation.”\textsuperscript{116}

As a threshold matter, we do not think observations by other market participants have much, or any, evidentiary value. Certainly they say nothing about Alan Chen’s thinking. But given that Enforcement has embarked upon that road, we will explain why it leads in the wrong direction for Enforcement. In particular, Steele’s testimony is decidedly a mixed bag. And Enforcement glaringly omits any discussion of the deposition testimony of another trader who eviscerates Enforcement’s case.

\textit{(a) Enforcement’s treatment of Bob Steele’s views has manifest and manifold problems}

\textit{First}, Steele stated in his deposition that Alan’s trading may have been “legal and right.”\textsuperscript{117}

\textit{Second}, Steele’s email was not a contemporaneous observation. Enforcement points to no indication that Steele held similar views prior to the public Bowring and PJM statements. As

\textsuperscript{116} See Enforcement Report at 32 (quoting Email from Bob Steele to Kevin Gates (Aug. 20, 2010, 9:25 AM) (POW00001866)).

\textsuperscript{117} Id. at 148:15-17.
the email itself states, he was recounting stakeholder debate in August 2010, after Dr. Bowring and PJM had criticized Alan’s trading.\(^{118}\) In fact, in his deposition he admits that he did not know anything about the trading at issue until after the August 2010 public discussions by Bowring and PJM.\(^{119}\) That pre-existing factual setting surely colored his thinking.

Third, in his deposition, Steele recanted his email comment purporting to reflect the views of “[m]ost [UTC] participants.” As he explains, he “didn’t talk to ‘most’ or ‘all’” of them.\(^{120}\)

Fifth, he says he never thought anyone was harmed by the trading.\(^{121}\)

Finally, Steele repeatedly testifies that he was concerned about PJM shutting down the up-to congestion market because of controversy surrounding Alan’s trading, killing “the goose that laid the golden egg”\(^{122}\) right at the time that he was “trying to gain employment” engaging in up-to congestion trading.\(^{123}\) That also signals bias.

In sum, a full view of Bob Steele thoughts shows that they are entirely after the fact, and contradict Enforcement’s arguments in a number of ways.

(b) Another trader’s deposition, which Enforcement misleadingly omits from its Report, eviscerates Enforcement’s case

Enforcement’s initial Brady production included a deposition of the head of a financial trading firm. Since he has not, to our knowledge, so far been publicly named, we will spare his

\(^{118}\) See id.


\(^{120}\) Id. at 168:20-25.

\(^{121}\) Id. at 170:3-10.

\(^{122}\) Id. at 169:12-170:22.

\(^{123}\) Id. at 171:17-18.
reputation by leaving his name out of this discussion, and will refer to his deposition by its September 10, 2010 date. He describes observing Alan’s reservation of large amounts of transmission for Powhatan and CU Fund\textsuperscript{124}. He also describes figuring out that those reservations were part of what he calls “offsetting trades, which he describes in detail.\textsuperscript{125} Just as Alan always has, that trader repeatedly highlights the risk of one leg breaking—what he calls “submittal risk.”\textsuperscript{126} In addition, he notes that there was uncertainty about the level of the loss credit, meaning that even if both legs cleared, the trades might lose money.\textsuperscript{127} This extremely knowledgeable trader thus testified to Enforcement at the outset of its investigation that Alan’s A to B—B to A trading had the same sorts of risks that Alan testified to a month later. And this further Enforcement’s unfounded claim about congestion exposure being invented after the fact by experts. That makes Enforcement’s recent apparent lapse of memory about Alan’s initial deposition testimony all the more mystifying.

This trader also very pointedly rebuffed the notion that Alan’s trading was market manipulation. When asked if he was concerned at the time that the trading might “constitute a tariff violation or that it would violate some other rule or regulation, he answered “[n]o.”\textsuperscript{128} He goes on to clarify that he “wasn’t afraid of a tariff violation and I still am having a little difficulty of seeing it as a market manipulation, an energy manipulation, but that wasn’t by prime

\textsuperscript{124} Sept. 10 Dep. at 87:24-25.
\textsuperscript{125} \textit{Id.} at 83:12-19.
\textsuperscript{126} \textit{Id.} at 83:12-22.
\textsuperscript{127} \textit{Id.} at 84:10-18, 90:10 - 91:2.
\textsuperscript{128} \textit{Id.} at 117:10-13.
Instead, he was worried that PJM might do away with the trades entirely, and that the financial trading sector could be adversely affected.

Interestingly, this trader actually sought to replicate Alan’s trades—what he called “spread” trades with low risk volatility. He also experimented with what one might call an A to A trade, where the same point is both source and sink—what he calls “a spread bid between nothing” that he was “flabbergasted” to learn would clear PJM’s software systems. Alan never did A to A trades.

As this trader explains in his testimony, the offsetting trades he was experimenting with—apparently mimicking Alan’s trading—“absolutely” were “subjected to adverse price movements, price risk.” And he starkly contrasts those trades with the A to A trades, which he viewed very differently “because there basically wasn’t a spread.”

During this deposition, Enforcement drilled down on the fact that when the trader experimented with the A to A trades, which he plainly considered problematic, he transacted volumes of only 1 MW. When it came to the spread trades, however, he used his normal daily

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129 Id. at 118:19-23.
130 Id. at 17:10-188:10.
131 Id. at 98:17-99:20.
132 Id. at 99:21-101:5.
133 Id. at 101:3-5
134 Id. 104:17-25.
135 Id.
136 Id. at 133:24-137:11.
volume” of 250 MW to 500 MW. If he thought, at the time, that the offsetting trades were manipulative, surely he never would have engaged in those transactions.

Eventually, in early August, he and the head of another financial trading firm, who also apparently had noticed and explored Alan’s trading, called Andy Ott at PJM, complaining that the very large transmission reservations associating with Alan’s trading were affecting their ability to enter their own financial trades. They were told that both PJM and Dr. Bowring already had noticed the same transactions and were contacting market participants to ask them to stop.

About a month later, Enforcement deposed this trader—while his memory was still fresh. And as set forth above, he corroborates Alan’s testimony, eviscerating Enforcement’s case. Tellingly, Enforcement omits this testimony entirely from its presentation to the Commission. And that omission speaks volumes.

(c) The Bowring tape cannot be squared with Enforcement’s case

Then, of course, there is the Bowring tape. Enforcement claims that when Dr. Bowring stated that another up-to congestion trader had not “broken any rules” by engaging in transactions apparently similar to Alan’s, he was referring only to the PJM tariff, not to the Commission’s anti-manipulation rule. But the anti-manipulation rule looms largest of all when it comes to conversations between Dr. Bowring and market participants. It is not reasonable to assume that Dr. Bowring’s discussion about rules omitted the elephant in the room.

137 Id. at 136:4.
138 Id. at 137:6.
139 Id. at 114:18-119:25.
Dr. Bowring’s statement that he “understands” why the traders would engage in the trades at issue also is difficult to square with Enforcement’s case. And Dr. Bowring’s statement that he would not refer the traders to Enforcement if they stopped the transactions is impossible to square with Enforcement’s case. He has the duty under PJM’s tariff\textsuperscript{141} to refer any potential violations of the Commission’s anti-manipulation rule to Enforcement. When he stated that he would not refer the trading at issue, he necessarily must have thought, at that time, that there was no manipulation.

Enforcement states that he nonetheless called them soon after that taped call. Perhaps he changed his mind. Perhaps he was just keeping them generally apprised, and they insisted on conducting an investigation. Perhaps they upbraided him for indicating that nothing more would happen. We do not know. But whatever might have occurred afterwards does not change what was said on that call, preserved on tape. And what was said sharply contradicts Enforcement’s claim that Alan’s trades were obviously and broadly viewed as manipulative.

5. The Opinions of Professor Hogan and Dr. Shanker Contradict Enforcement’s Fair Notice Claims

While stressing its standard of a reasonably prudent person familiar with the purposes of the regulations at issue, Enforcement ignores the written submissions of Professor William Hogan and Dr. Roy Shanker, both experts in PJM’s market design with decades of expertise at the highest levels of economic analysis. Both explain in detail that the Black Oak orders never gave notice that Alan Chen’s trading was unlawful, and why the Commission cannot use manipulation investigations to prosecute conduct that was foreseeable and foreseen in advance,

\textsuperscript{141} See PJM OATT, Attachment M, Section IV.I.1.
but not prohibited. Given Enforcement’s complete failure to address these highly informed opinions to date, the Commission should set aside any effort to do so in Enforcement’s response to this answer.

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In sum, no matter what standard of fair notice we use, no fair notice occurred here. Enforcement loses under the prevailing view of the law that we assert because there was no “ascertainable certainty” regarding restrictions on trading solely to obtain loss credits. That is particularly true when the factual waters are muddied and the trading was, like Alan Chen’s, focused on two goals—one entirely divorced from the loss credits.

The same result obtains if we apply Enforcement’s “reasonably prudent person” standard. At a minimum, such a showing would require some express statement by the Commission stating that it would require up-to congestion traders not to respond to the incentives it plainly knew it was creating. No such statement exists. Furthermore, the Black Oak orders themselves are hardly a paragon of clarity. Whatever they might be construed to say, there is no express basis for construing them as precluding any form of up-to congestion trading.

III. ENFORCEMENT HAS NOT, AND CANNOT, ESTABLISH THAT RESPONDENTS ENGAGED IN “KNOWING OR INTENTIONAL MISCONDUCT”

A. Proving Scienter Requires “Knowing or Intentional Misconduct”

To establish manipulation, Enforcement also must prove that Dr. Chen acted with “the requisite scienter,” which is “‘knowing or intentional misconduct.’” As the U.S. Supreme

142 Hogan at 2-4, 12; Shanker at ¶¶ 16-27

143 Order No. 670, FERC Stats. & Regs. ¶ 31,202 at PP 49, 52 nn.106-07 (quoting Ernst & Ernst, 425 U.S. at 197).
Court has described it, the requisite scienter is “a mental state embracing intent to deceive, manipulate or defraud.”

Enforcement cannot meet that burden here because Alan Chen never thought his trades were unlawful and he never intended to engage in misconduct. Enforcement devotes a mere three paragraphs of its 84-page submission in an effort to show otherwise but they fail. Indeed, the vast majority of email communications that Enforcement purports to rely on in order to establish intentional misconduct are from periods that pre-date the trading activity in question. Even more importantly, most of the emails Enforcement cites are not even written by Dr. Chen. Finally, Enforcement draws irrational conclusions from the single email that was actually written by Dr. Chen on March 5, 2010, almost three months before the disputed trades began. Rather than showing manipulative intent, that email plainly shows that Dr. Chen’s only concern was that PJM or FERC might reverse course on the TLC payments, as a matter of policy, and try to require market participants to return the payments—which is exactly what ultimately happened.

B. Alan Chen Is Not a “Cheat”

In the late fall of 2009, Alan Chen opened his mail and discovered a mid-six-figures check from PJM. He contacted PJM and was told that the check represented refunds, providing a retroactive allocation of transmission loss credits for up-to congestion trades he had previously made. He then realized that his up-to congestion trading would receive similar rebates in the future. This changed the analysis of whether and when each and every possible up-to congestion trade would be profitable. No one ever told Dr. Chen that he could not incorporate the loss

144 *Ernst & Ernst*, 425 U.S. at 193. This requirement is mirrored in the Commission’s gloss on the Rule which requires a demonstration that the fraudulent act was done “with the requisite scienter” in order to impose penalties. Order No. 670, *FERC Stats. & Regs.* ¶ 31,202 at 49.

145 Chen Aff. ¶ 29.
credits into his overall analysis of profit and loss. The allocation of transmission loss credits undeniably created incentives, and Dr. Chen does not deny that his trading strategy included capturing those rebate payments—but that does not establish intent to engage in misconduct.

Enforcement’s Report states that after “pursuing legitimate arbitrage opportunities” in the PJM, Dr. Chen “decided to cheat.” The Report also asserts that Dr. Chen’s UTC trades were a “scheme,” that he knew this “scheme manipulated PJM’s rules,” that he “implemented” the so-called scheme for “pecuniary benefit,” that he knew “there was a substantial risk that all of the scheme’s profits would be clawed back when it was discovered,” and that he communicated the details of the alleged scheme to Kevin Gates of Powhatan.146

As Dr. Chen explains in his affidavit:

None of th[is] is true. First of all, there was no “scheme.” I believed at the time and I continue to believe that my trades were legitimate and violated no rules. I never thought that what I was doing was cheating or unlawful, and I never intended to deceive anyone or break any rules.147

While working at companies such as UBS earlier in his career, Dr. Chen participated in compliance training, “including about things like illegitimate wash trades.”148 Dr. Chen states that he “never thought that the paired UTC trades were unlawful wash trades or anything like wash trades.”149 For the reasons we explain in detail in section I.C, Dr. Chen’s assessment that the trades were not wash trades or wash-like is correct.

Dr. Chen succinctly describes his understanding of one of the key reasons why his receipt of the TLC refunds in connection with his paired trades was not “cheating:”

146 Enforcement Report at 1, 75.
147 Id., ¶¶ 27-28.
148 Id., ¶ 30.
149 Id.
One of the many reasons that Enforcement is wrong to say that I “cheated” when I executed matched pair transactions and received a TLC payment is because nothing about my paired transactions counter-acted or “undid” the thing that was the basis for getting the TLC payment, which was paying for transmission on the import leg of the paired trades. In the export leg, I was able to manage (but not eliminate) the risk associated with the congestion component of the import transaction, but the export leg in no way effected or undid the transmission payment associated with the import leg.\footnote{\textit{Id.}, ¶ 31.}

Dr. Chen thus understood that he received TLC payments because he paid transmission charges. Nothing about his matched pair transactions ever changed the fact that Dr. Chen paid the transmission charges that qualified him to receive TLC payments. Based on this understanding, it was entirely reasonable for Dr. Chen to think, as he did, that he was entitled under PJM’s tariff, to receive those payments.

\textbf{C. There Is No Evidence that Dr. Chen Knowingly or Intentionally Engaged in Misconduct}

Enforcement’s attempt to establish the required element of scienter consists of a mere three paragraphs. Although chock full of citations, they utterly fail to establish scienter because almost all of them either pre-date the trading conduct in question or set forth exchanges between individuals other than Alan Chen. Here is a summary of the supposed evidence of intentional misconduct:

- Enforcement cites twelve emails:
  - Eight of the twelve citations were to emails written before the conduct under investigation in this case and fail to shed light on Dr. Chen’s state of mind during the relevant period.
o For four of the twelve email citations, Dr. Chen was a recipient, but the email does not show any response from Dr. Chen that would establish his own thinking or reaction to the statements by other parties.

o For five of the twelve email citations, Dr. Chen was neither a sender or a recipient—they fail to establish anything about Dr. Chen’s state of mind. (We address the two emails that actually include a message written by Dr. Chen in more detail below).

o One of the emails, cited to try to establish Kevin Gates’ state of mind, does not include a Bates reference but apparently is not cited to try to prove anything about Dr. Chen’s state of mind. 151

- Enforcement cites a document entitled: “Rampin up with Alan Chen”

  o This document dates to March 4, 2010, almost three months before the conduct at issue. Dr. Chen had no part in the creation of this document and saw it for the first time when counsel for Enforcement showed it to him during his second deposition. 152

- Enforcement cites deposition testimony:

  o There is only one cite to Alan Chen’s deposition. Two other deposition transcripts cited purport to characterize Dr. Chen’s thinking, but they are both consistent with Dr. Chen’s own explanation in deposition testimony and in his affidavit that he never intended to engage in any misconduct.

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151 Email from Kevin Gates to Kevin Byrnes (Jul. 26, 2010, 05:01:02 PM) (appearing in the Enforcement Report at n.396).

152 Chen Dep. Tr. (July 20, 2011) at 140.
The cites referring to the deposition transcript of Chao Chen are totally unrelated to Alan Chen.

None of this serves to show Dr. Chen’s mindset with respect to the allegedly manipulative trades and none of it establishes the requisite scienter.

As noted above, Enforcement points to only one single email communication actually written by Dr. Chen. It is an email dated March 5, 2010, several weeks prior to the paired trading in question. In the email, Dr. Chen is forwarding to Kevin Gates the profit and loss statement for February 2010, and he discusses the TLC refund component reflected in the statement:

It is a good thing we are making money and I’m pretty sure about it if TLC refund continues as is. The bad thing is it really concerns me: if PJM ever reverts back to those days without TLC or the TLC calculation was/is incorrect and we have to pay back all or some of the TLC refunds, we are going to be in big trouble.153

Enforcement claims this is proof of manipulative intent. To the extent that it is relevant at all, this communication actually shows Dr. Chen did not have manipulative intent.

First, the email predates the allegedly manipulative trading activity by several months. Enforcement never attempts to explain how Dr. Chen’s comments in this email shed any light on his mindset regarding the matched pair trades that are at issue here. This is especially true given that, as the narrative Enforcement itself has advanced, Dr. Chen had not yet even come up with the idea yet.154

Second, Dr. Chen is not expressing concern in the March 5 email about whether there is anything wrong with his trading conduct (which at that time did not include so-called A to B—B to A paired trades). He explains this in his affidavit:

I was talking about my concern that PJM might decide to change its rules and that PJM or some other market participant might ask FERC to recalculate or resettle these payments retroactively and require recipients to pay back some or all of the TLC payments. I was concerned about this, as I explained in my deposition, because I was aware that something like that had happened in MISO with its revenue sufficiency guarantee (RSG) charges. Payments were made and then market participants were later told to give them back. This is what I was worried about—the rules changing and the possibility that all market participants would have to give money back.¹⁵⁵

Dr. Chen also explained that his reference in the March 5 email to potentially being in “big trouble,” referred to financial trouble, not legal trouble:

When I said in the March 5, 2010 email that we could be in “big trouble,” I was specifically talking about having to pay back the refunds. In other words, I was talking about trouble from a financial perspective, not a legal one. I was never concerned that I would be accused of market manipulation and face potential disgorgement and civil penalties because I thought, and continue to think, that the trades were completely lawful. If I thought that FERC would question the legality of the trades and claim they were market manipulation, I would not have done the trades. That is not a risk I would have taken.¹⁵⁶

During Dr. Chen’s deposition in July 2011, counsel for Enforcement showed Dr. Chen the same March 5, 2010 email discussed above and asked him to explain what he was concerned about.¹⁵⁷ Dr. Chen explained then, just as he does in his affidavit, that his concern was about a recalculation of the market. He expressly stated in his deposition that he was concerned about what happened in MISO with the RSG charges.¹⁵⁸ Enforcement has totally ignored that explanation.

¹⁵⁵ Chen Aff. ¶ 32.
¹⁵⁶ Id., ¶ 35.
¹⁵⁸ Id. at 226:18-227:3 (Q: “Why did you think that PJM might reverse itself on this point? A: Also go back to MISO, the RSG case . . . if the transmission loss credit and they revert back, they want to get the money back from your pocket, then the trade – suddenly it becomes less profitable . . . .”); id. at 227:9-22 (Q: “What was it about the TLC that made you think that that was a possibility? . . . A: “Yeah, I mean, the RSG case i[n] MISO, it’s kind of very alarming to me, and this kind of that similar time, and it’s kind of you have one component of (cont’d)
As it turned out, Dr. Chen’s concern about a retroactive recalculation was justified because PJM invoiced market participants and asked them to retroactively pay back TLC payments. Specifically, after FERC reversed course once again in the Black Oak proceeding and ordered PJM to recoup certain transmission loss payments that had been refunded, PJM invoiced HEEP Fund, Inc. for $498,237.62 on July 9, 2012, and HEEP Fund voluntarily paid the full amount invoiced.

Enforcement also tries to establish manipulative intent based on the message Mr. Gates sent in reply to Dr. Chen’s March 5 email. In his reply, Mr. Gates comments: “To get any insight on the issue, why not contact a law firm, the FERC, or PJM to try to get more insight into this issue?” Enforcement “presum[es]” no one followed up on this because it might prevent them from “making ‘ridiculous money.’” That assumption is unfounded, as Dr. Chen explains:

I first want to say that Enforcement never asked me about that message from Mr. Gates during my deposition. If they did, I would have told them that my concern was only about a possible reversal of policy and a market recalculation. I wasn’t worried about the legality of the trades. It didn’t seem to me that contacting a law firm would be helpful because I didn’t think they could predict what FERC or PJM might decide to do in the future. I also didn’t think I could just call PJM or FERC and ask if they were going to change their minds about the FERC order

(Cont’d from previous page)

either charges or credits, maybe they change the rule or maybe some kind of formula, and so — I mean, in my mind, I have those concern . . . .”); see also Chen Aff. ¶ 33.

159 Chen Aff. ¶ 34.

160 Id.

161 See Enforcement Report at 76 & n.388.

162 Email from Kevin Gates to Alan Chen (Mar. 5, 3:59:47 PM) (POW00016981).

163 Enforcement Report at 76 & n.389.
that approved the payments. That is why I never followed up on Mr. Gates’ comment.\textsuperscript{164}

Rather than establishing manipulative intent as Enforcement contends, these email communications plainly establish that the only concerns Dr. Chen had in connection with his UTC trading was that FERC or PJM might reverse course and eliminate the TLC payment structure. There is no indication in these contemporaneous communications that Dr. Chen had any concerns about the legality of the transactions.

\textit{IV. ENFORCEMENT FAILS TO ESTABLISH THAT THE COMMISSION HAS JURISDICTION HERE}

In our 1b.19 response, we explained that the Commission had no authority to rule that the trades violated the anti-manipulation rule because they were not FERC-jurisdictional and not in connection with FERC-jurisdictional transactions. We also explained that the Commission had no authority to penalize individuals like Alan Chen. Enforcement’s response on both points is weak and should be rejected out of hand.

\textit{A. The Trades at Issue Are Not FERC-Jurisdictional Transactions}

The Commission’s anti-manipulation statute is limited in jurisdictional scope. It prohibits “any entity” from using “any manipulative or deceptive device or contrivance (as those terms are used in section 78j(b) of title 15),” “in connection with the purchase or sale of electric energy or the purchase or sale of transmission services subject to the jurisdiction of the Commission.”\textsuperscript{165}

Enforcement claims that it has anti-manipulation authority over the trades at issue because they “are created by a Commission-approved tariff and traded through a Commission-

\textsuperscript{164} Chen Aff. ¶ 36.

\textsuperscript{165} 16 U.S.C. § 824v(a).
regulated RTO market. But that is not the statutory test; under FPA section 222, they must be involve (1) “the purchase or sale of electric energy” or (2) “the purchase or sale of transmission services.” They do not involve the purchase or sale of electric energy. And while imports into PJM did require making and paying for a transmission reservation, it was not a reservation of physical transmission. It thus was no more jurisdictional than a virtual inc or dec, which are the component parts of up-to congestion trades. FERC has repeatedly held that the physical delivery or transmission of electricity at wholesale is an essential element to its jurisdiction. Consequently, where, as here, a transaction does not result in the delivery of electricity, FERC has no jurisdiction. The up-to congestion trades at issue here were purely financial transactions, both from a sales and transmission perspective, and thus are not jurisdictional sales of physical power or purchases of transmission of physical power.

B. The Trades At Issue Are Not In Connection With Jurisdictional Transactions

Enforcement also claims that up-to congestion trades, in general, can affect RTO price outcomes and therefore are “in connection with” jurisdictional transactions. On other facts,

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166 Enforcement Report at 79.
168 See, e.g., Cal. Pac. Elec. Co., 133 FERC ¶ 61,018 at P 37 (2010) (“[W]hen a public utility delivers electricity at wholesale to a supplier for the purpose of resale, section 201 gives us unqualified authority to assert jurisdiction over that transaction.”) (emphasis added); Ne. Utils. Serv. Co., 107 FERC ¶ 61,246 at P 22 (2004) (“[T]o the extent that any facilities, regardless of their original nominal classification, in fact, prove to be used by public utilities to provide transmission service in interstate commerce in order to deliver power and energy to wholesale purchasers, such facilities are subject to this Commission’s jurisdiction and review.”) (emphasis added)); Detroit Edison Co., 95 FERC ¶ 61,415 at 62,535-36 (same), order on reh’g, 96 FERC ¶ 61,309 (2001).
169 See, e.g., Puget Sound Energy, Inc. v. All Jurisdictional Sellers of Energy and/or Capacity at Wholesale Into Elec. Energy and/or Capacity Mkts. in Pac. Nw., 96 FERC ¶ 63,044 at 65,381 n.318 (2001) (“Commission precedent on this issue is clear – the Commission has asserted jurisdiction only over those transactions that result in the physical delivery of electricity.”); Morgan Stanley Capital Grp., Inc., 69 FERC ¶ 61,175 at 61,696 (1994) (holding that transactions “in which the actual delivery of electricity, while contemplated in the contract, is not undertaken“ need not be included in quarterly reports of jurisdictional transactions, which instead are limited to “those transactions that result in the actual delivery of electricity”), reh’g denied, 72 FERC ¶ 61,082 (1995).
Enforcement might argue that up-to congestion trades changed PJM auction outcomes. We do not concede that that would clear the “in connection with” hurdle, but need not address that question because Enforcement’s case here starts from the proposition that the trades were always offsetting in the time period at issue, and thus never affected congestion outcomes.\textsuperscript{170} By Enforcement’s own lights, those trades thus were not “in connection” with FERC-jurisdictional outcomes.

C. The Commission Lacks Statutory Authority to Penalize Individuals Like Dr. Chen

Furthermore, the Commission has no authority to penalize individuals like Alan Chen. The FPA prohibits “any entity” from using a “manipulative or deceptive device or contrivance” in connection with the purchase or sale of wholesale electric energy or transmission services.\textsuperscript{171} Congress did not define the term “entity” in this legislation, nor is it defined elsewhere in the FPA. Therefore, the term must be “interpreted in accordance with [its] ordinary meaning.”\textsuperscript{172}

The plain meaning of “entity” does not include natural persons. Instead, an “entity” is “[a]n organization (such as a business or a governmental unit) that has a legal identity apart from its members or owners.”\textsuperscript{173} The plain meaning of “entity” and therefore its usage in the FPA is clear: Section 222 covers organizations, not individuals.\textsuperscript{174}

\textsuperscript{170} See Preliminary Findings Letter at 13.

\textsuperscript{171} 16 U.S.C. § 824v(a).


\textsuperscript{173} ENTITY, Black’s Law Dictionary (9th ed. 2009); Samantar v. Yousuf, 560 U.S. 305, 315 (2010) (citing Black’s definition favorably and stating that the term “‘entity’ typically refers to an organization, rather than an individual”); Am. Dental Ass’n v. Shalala, 3 F.3d 445, 446 (D.C. Cir. 1993) (concluding that the undefined statutory term “entity” did not include “individual persons”).

\textsuperscript{174} Royal Foods Co. v. RJR Holdings Inc., 252 F.3d 1102, 1106 (9th Cir. 2001) (“If from the plain meaning of the statute congressional intent is clear, that is the end of the matter.”).
Congress’ usage of “entity” elsewhere in the FPA confirms that Congress intended the term to have its ordinary meaning in the statute. In various provisions throughout EPAct 2005, the legislation that contained section 222, the term “entity” describes or refers to organizations, groups, institutions, associations, or businesses, but not individuals. Moreover, several sections expressly refer to “individuals” and “entities” separately in disjunctive and conjunctive phrases, providing further evidence that Congress did not intend for “entity” to include both organizations and individual persons. Congress thus used the term “entity” in its ordinary, plain meaning when enacting section 222.

Congress’ statutory authorization defines the limits of FERC’s authority to regulate manipulation. FERC, adhering to Congress’ intent, promulgated the Anti-Manipulation Rule using the term “entity.” Despite the fact that FERC’s Anti-Manipulation Rule does not define “entity,” FERC has attempted to unilaterally expand that authority by comments accompanying the promulgation of the Final Rule suggesting that “entity” is a “deliberately inclusive term” that includes natural persons. But this interpretation conflicts with Congress’ language and the

175 See, e.g., EPAct 2005 §§ 1211(a) (defining “regional entity”), 1231 (defining “unregulated transmitting utility”), 1291 (defining “transmitting utility,” “Regional Transmission Organization,” and “Independent System Operator”). In addition to these provisions, which amended the FPA and are codified at 16 U.S.C. §§ 796, 824j-1, and 824o, many other sections of EPAct 2005 also use the term “entity” to describe groups, organizations, associations, companies, or institutions. See, e.g., EPAct 2005 §§ 706, 791, 942, 944, 945 (defining “eligible entities” in the context of various grant or award programs) (codified at 42 U.S.C. §§ 16051, 16131, 16251, 16253, and 16254, respectively; id. §§ 962, 964, 989, 1002, 1505 (listing categories or types of entities, all of which are groups or organizations) (codified at 42 U.S.C. §§ 16292, 16294, 16353, 16392, and 7545(b), respectively).

176 See, e.g., EPAct 2005 § 133(b), 42 U.S.C. § 15831(b) (“shall invite . . . individuals and entities”), id. § 652(1)(a), 42 U.S.C. § 2169(1)(A)(i) (“shall require each individual or entity”).

177 See Morrison-Knudsen Constr. Co. v. Dir., Office of Workers’ Comp. Programs, 461 U.S. 624, 633 (1983) (“[A] word is presumed to have the same meaning in all subsections of the same statute.”).

plain meaning of the term. The FPA permits FERC to penalize the manipulative acts of entities, such as businesses and organizations. This authority does not extend to natural persons. Congress’ clear intent must be given effect “regardless of the interpretation pressed by the Commission.” FERC therefore lacks jurisdiction to assess civil penalties against Dr. Chen.

Enforcement’s only response is that the Commission already has ruled that it has authority to penalize individuals, and that we are impermissibly collaterally attacking those rulings. But we have the right to challenge such prior pronouncements when they are applied to Dr. Chen. That is precisely what Enforcement asks the Commission to do here. Enforcement thus errs in claiming that it can simply fail to engage our arguments.

V. THE PROPOSED PENALTIES ARE UNREASONABLE AND EXCEED THE FPA’S AUTHORIZATION

A. If the Commission Does Not, As It Should, Dismiss This Case, the Penalties Against Dr. Chen Should Be Significantly Reduced

For all of the reasons discussed above, this case should be dismissed. Even if the Commission disagrees, the issues we address in this answer also bear on the appropriate penalty level and compel reducing the proposed amounts.

The Commission’s Penalty Guidelines do not apply to individuals. The Commission has stated it “will determine the appropriate penalty for natural persons based on the facts and

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179 See Santa Fe Indus., 430 U.S. at 472-73 (“The rulemaking power granted to an administrative agency charged with the administration of a federal statute is not the power to make law. Rather, it is “the power to adopt regulations to carry into effect the will of Congress as expressed by the statute.”” . . . (The scope of the Rule cannot exceed the power granted the Commission by Congress . . .”)) (citation omitted).

180 Bonneville Power Admin. v. FERC, 422 F.3d 908, 920 (9th Cir. 2005) (citation omitted); see also Wolverine Power Co. v. FERC, 963 F.2d 446, 450-51, 453 (D.C. Cir. 1992) (dismissing enforcement action because assessment of civil penalties against an unlicensed entity exceeded FERC’s statutory authority over “licensees”).

circumstances of the violation,” but will look to the Guidelines for “guidance.” Ultimately, the Commission is bound by the FPA’s directive:

> In determining the amount of a proposed penalty, the Commission shall take into consideration the **seriousness** of the violation and the **efforts of such person to remedy the violation in a timely manner**.

Determining the seriousness of the alleged violation requires looking at the context, which here involved trading in a fashion that was expressly contemplated by the Commission and never prohibited or even labelled as gaming or manipulation in advance. Dr. Chen has provided credible and compelling testimony about why he believed and continues to believe that the trades in question were legitimate and lawful. In addition, Enforcement has not made any credible case that the trades caused harm. Indeed, the very concept of harm is inapplicable here because the Commission has repeatedly stated that no one is “entitled” to the surplus transmission payments. Perhaps recognizing this, Enforcement attempts in part to support its characterization that the alleged violations were “extremely serious” by citing a CFTC order stating that “wash trades and ‘grave’ violations, even in the absence of customer harm or appreciable market effect.” As we have explained, there are no wash trades here. Enforcement has not shown that the alleged misconduct merits the penalty levels they recommend.

It also bears noting that when the PJM market monitor asked Dr. Chen to stop trading, he did. Enforcement twists this and claims that it cuts against Dr. Chen for purposes of determining

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182 *Id.*


a penalty. This makes no sense. Dr. Chen did not “remedy the violation” prior to being contacted by the market monitor because he did not and does not think that was a violation. But when the market monitor raised concerns, he stopped and he did so “in a timely manner.”

Finally, the Commission can and should consider the toll this proceeding has taken on Dr. Chen. He came to the United States from China and proudly became an American citizen. He has a deep and honest respect for the rule of law in this country. Until this Enforcement proceeding, no one ever told him what he could, and could not, do to respond to the direct incentives created by PJM’s allocation of loss credits to up-to congestion trades. As a result, years of his life have been ruined while spending almost five years entangled in this investigation. And Enforcement now seeks to impose total sanctions on Alan that apparently could total many millions of dollars. That would accomplish little beyond driving him into bankruptcy. And he has done nothing to deserve that fate.

In light of these considerations, the penalties against Mr. Chen should be significantly reduced.

B. The Commission Correctly Rejected Enforcement’s Proposal on Joint and Several Liability

Enforcement recommended that the Commission hold Dr. Chen jointly and severally liable for the disgorgement it recommends against CU Fund, HEEP, and Powhatan, and to make HEEP jointly and severally liable for the proposed disgorgement and penalties against Powhatan. The Commission declined to adopt this proposal, either in the December 17, 2014 Order to Show Cause, or the later-issued Order Revising Show Cause Order, which provided notice regarding proposed disgorgement. The Commission was wise to reject Enforcement’s proposal in this regard.
First, besides stating that they “believe[] it is appropriate,” Enforcement provides no explanation or justification for imposing joint and several liability here.

Second, the Commission has recognized that “[t]here is a general preference to avoid use of joint and several liability when apportionment is possible.”186 Here, Enforcement has proposed specific penalty and disgorgement amounts against the individual parties. This demonstrates that “apportionment is possible.”

CONCLUSION

For all of the following reasons, the Commission should grant our request for oral argument and, on the merits, dismiss this case.

Respectfully submitted,

/s/
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February 2, 2015

CERTIFICATE OF SERVICE

I hereby certify that on this day a copy of the foregoing answer has been served upon counsel for FERC Enforcement in the above-referenced proceeding.

Dated at Washington, D.C., on this 2\textsuperscript{nd} day of February, 2015.

/\s/
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UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Houlian Chen, Powhatan Energy Fund, LLC, HEEP Fund, LLC, and CU Fund, Inc.

Docket No. IN15-3-000

AFFIDAVIT OF HOULIAN CHEN

1. My name is Houlian Chen and people call me Alan.

2. The purpose of this affidavit is to address a few specific aspects of the Enforcement Staff Report and Recommendation (Report) attached to the Commission’s December 17, 2014 Order to Show Cause, which recommends that the Commission (1) find that certain “Up-To-Congestion” (UTC) transactions I entered into on behalf of a number of funds are part of a manipulation scheme and (2) order me to pay substantial civil penalties. I disagree with the Enforcement’s conclusions and recommendations. I understand my lawyers are preparing an answer to explain why the Commission should reject Enforcement’s recommendations. In this affidavit, I talk about a few specific points in the Report that are wrong.

In Times of Need, the Trades in Dispute Would Have Provided Support to the Markets

3. In the Report, Enforcement claims that the trades in dispute provide no value to the market. That is wrong. Let me explain the “one leg breaking” element of my strategy a little more. Enforcement never asked me much about the details of this. They seemed mainly interested in ignoring it.

4. I generally choose to trade with a positive bid in the prevailing-flow direction. So if the trade is say MISO to DAY (Dayton zone), that means I expect that in general prices will be lower at MISO and higher at Dayton. I then would choose a positive bid price like $35. The prevailing-flow trade sources in MISO and sinks in Dayton. That means that the bid will only
clear if the price at Dayton is greater than the price at MISO by no more than $35. In this example, I also would put in a counter-flow trade, sourcing at Dayton and sinking at MISO, with the same positive $35 price. This means that whenever prices at Dayton versus MISO are $35 or less, both bids clear, and the congestion components offset each other.

5. But in the lower probability case where the prices at Dayton are more than $35 higher than prices in MISO, say $60 higher, only the counter-flow trade, sourced at Dayton and sinking in MISO, clears. That is because the price for the counter-flow spread is negative $60, which is lower than my positive $35 bid. Note that the counter-flow Day-Ahead spread value is always the negative of the prevailing-flow value. I consider this sort of trade to be “supporting the market:” because the counter-flow trade puts a virtual injection of supply into the location with the unusually high price (here, Dayton). That helps to reduce congestion and the atypical Day-Ahead higher prices.

6. If you look at the financial clearing of just the Day-Ahead side of this, PJM is paying me a net of $60 to take on the obligation to put supply into the higher-cost area. I accept this obligation, at the offer price I make, because I believe that the lower probability Day-Ahead spread of $60 will typically drop back to more “normal” prices in Real-Time, where I pay PJM back the Real-Time spread. I think this is true because of my research, and the basic incentives of the market to return to more normal spreads. In this sense I see the low probability condition providing me a chance to make money while at the same time supporting Day-Ahead prices. Of course I only would do this if I think the Day-Ahead payment from PJM is sufficient to justify the risk.
7. According to the rule of UTC trading, there is a hard range limit of ±$50/WMh on every UTC trade. This limit means that, in a stressed market particularly, you may have different outcomes depending on your trading strategy.

8. The A → B type of trade (for example MISO → DAY, or MISO → COOK, or MISO → COMED, or MISO → AEP, or ROCKPORT → MISO, without any matched pair trade) only clears under normal or less stressful market conditions (or when the market is in its comfort zone). When market is under duress, the Day-Ahead spreads between the source and the sink would exceed the range limit of ±$50/MWh and the trades would simply vanish (or break down or be forced out or be rejected).

9. Matched pair trades (A → B and B → A, the trades in dispute) produce a different and beneficial outcome in a stressed market. When the market is under normal or less stressful conditions, the import leg pays the transmission costs into the system but the export leg doesn’t. The import leg in turn receives the transmission loss credit, but the export leg doesn’t. When the market is under duress, as during the polar vortex of 2014, one and only one of the legs of the matched pairs breaks down. The one that does not break provides the market much needed support. A matched pair trade strategy therefore delivers support in a way that an A → B trade does not in a stressed market.

10. You might ask then why not trade directly B → A if A → B breaks down when the market is under heavy stress? Because most of my A → B type of trades are prevailing-flow trades and that fits my risk profile of low-risk, low-reward with high reward potential. Trading B → A directly, as a counter-flow, would increase the risk significantly and I’d not have traded it alone. This is why Enforcement is wrong in citing an early email from July 2008 where I indicate that trading B → A directly, as a counter-flow, was a position I didn’t want. That’s very
different than the matched pairs. They create a floodgate-like protection for the counter-flow B → A trade. For example, if the bid price is $35/MWh for MISO → DAY and DAY → MISO, the prevailing-flow leg MISO → DAY only breaks down when the Day-Ahead price spread is greater than $35/MWh. And if that happens, the counter-flow leg DAY → MISO stays in the market. But now it collects $35/MWh upfront in the Day-Ahead market while taking on the Real-Time risk. This bid price of $35/MWh becomes a floor you are willing to take on the counter-flow risk and also you have total control over the bid price. A one leg counter-flow trade, DAY → MISO alone, simply doesn’t have this kind of floodgate-like protection. For example, if your bid price is $35/MWh and the Day-Ahead spread (Day-Ahead price of DAY minus Day-Ahead price of MISO) is $30/MWh, which as a trader you don’t have any control over, your trade is accepted and you get paid $30/MWh upfront in the Day-Ahead market. But if the spread is -$5/MWh, you are still stuck with the trade and you also have to pay $5/MWh to PJM. Because of the feature of the matched pairs, the risk profile of the counter-flow trades are significantly reduced and I can trade them frequently with higher volumes. This exact same idea was painstakingly explained in footnote 37 of our very first submission on 12/13/2010. Enforcement uses counter-flow risk repeatedly in the Report (at pages 14, 15, 27, 46, 47, 56) to accuse the large volume matched pairs as manipulative and insists that is contrary to my low-risk, low-reward with high reward potential risk profile. That only tells you that Enforcement doesn’t really remotely understand or even try to understand my trading strategy here: because of the floodgate-like protection provided by the matched pairs and because you have complete control over the bid price as the upfront payment (meaning I generally do like prevailing-flows more, but when the prices are right and when my upfront payments are high enough, I’d simply like to
have the opposite bet – counter-flows), these counter-flows are no longer the same old counter-flows Enforcement is talking about blindly and repeatedly in the Report.

11. More tellingly, on June 10, 2010 in an email I sent to Kevin Gates, I stated “I think recent increased exposure won’t materially affect the profitability. As a matter of fact, we increased volume but decreased risk. If we rate the risk on 5/30 at 1.0, we now have probably 0.5. As a result, the reward also decreased.” On 5/30/2010, I didn’t have any matched pairs. So the risk exposure was pretty high (rate = 1.0) and I lost almost $400,000 dollars on a single day. When I was talking about risk exposure, I was mostly concentrated on the congestion component because that’s where the most uncertainty or risk resides. On 6/1/2010, I started using matched pairs. But exactly because of the protection the matched pairs provided for counter-flows, their risk was significantly reduced and became more easily manageable. I could also change my risk profile by adjusting my bidding price, such as $50/MWh, $35/MWh, or $25/MWh, just as adjusting the height of the floodgate. So I rated 0.5 for 6/1/2010. But I didn’t think the reduction in risk from 1.0 to 0.5 was a game changer (meaning changing from legitimate to manipulative) and I still don’t.

12. The range limit of ±$50/MWh is pretty restrictive and could be easily exceeded when the markets are in duress and screeching for help as happened in the polar vortex of 2014. I think it doesn’t make any sense to accuse the trades that would have provided much needed support to the market when it is under heavy stress to be manipulative and ban them.

The Explanation of My Trading Strategy Was Not Developed “After the Fact” by Experts

13. In the Report, Enforcement claims that experts working for the respondents in this case developed an “after the fact” explanation for my UTC trading. Enforcement also claims that this supposedly after-the-fact explanation is contrary to the evidence. That is wrong. The explanation that Enforcement claims was developed after the fact is the same one I described to
Enforcement during my October 7, 2010 deposition, just shortly after the Summer 2010 trading in question here, and approximately one year before the expert affidavit that Enforcement quotes in the Report. When I explained my trading strategy to Enforcement during that deposition in 2010, it was not based on discussions with any economic experts. It was based on my own personal recollection.

14. During my deposition on October 7, 2010, counsel for Enforcement questioned me extensively about my engagement in UTC trading, my strategy, and the way I approached risk. I repeatedly explained that my trading, both before and after I became aware that PJM was paying transmission loss credits (TLCs) on certain trades, was what I described as low-risk, low-reward with high-reward potential.

15. During the October 2010 deposition, the FERC Enforcement lawyer, Mr. Tabackman, asked me multiple times if my “goal” when executing pair trades was to have the trades “cancel each other out” or “net out to zero.” This is in my 10/7/2010 deposition transcript at pages 100 and 102. I tried to explain to Mr. Tabackman that the paired trades cannot completely cancel one another out and they never “net to zero.” From a financial perspective, each trade has three components. There is a cost component to each bid and, in a matched pair set of bids, that component is never cancelled out. There is the cost of paying for transmission on the import leg, and that is never canceled out. And there is also the congestion component. If both legs of a matched pair set of trades clear, this congestion component cancels out. That may or may not happen, depending on whether both legs clear. But even if they do, it is only this one discrete component that can cancel out, not the whole trade. Although I tried to explain this, it is not clear to me whether Mr. Tabackman understood what I was saying.
16. In response to Mr. Tabackman’s question about whether my “goal” when executing matched pair trades was to have them “cancel each other out,” I told Mr. Tabackman that was part of my strategy—meaning zeroing out the congestion component—but not all of it. My trading strategy had more than one single goal: “If they [meaning the congestion components of the matched pair trades] are canceling out, I will get transmission loss credit. If the transmission loss credit covers all the charges, you have been making money. If not cover all the cost, you’re losing money. That’s one goal. Another goal is in the case one of the leg is rejected, if you choose the node carefully, you could have a high probability of making money and very less probability of losing a lot of money.” This is in my deposition transcript at pages 104-05. I am using italics here for emphasis.

17. I explained this same point repeatedly during my 10/7/2010 deposition. You can see this in the transcript at page 51, where I said “if you have the transmission loss credit, it cover part of the cost, at least. Sometimes it cover all, and sometimes it cover part. So make this type of trades more profitable. If you’re losing money, you could lose cents or tenths of cents. If you’re making money, you are also making cents or tenths of cents, but you also have a big potential of high reward. When one of the leg is rejected, the other leg could get you a windfall of money. So that’s kind of the potential, high-reward potential.” I made the same point at pages 122-23 where I stated, in response to a question whether profit from TLCs was the “primary” expectation, that “[t]his is one of the reasons I put on these types of trades. . . . But I do have other reasons as well. So if one of the legs rejected, as we talked before, you have a high potential of making a lot more money.” Again, I’m adding italics for emphasis.

18. In its Report, Enforcement quotes from an affidavit, dated October 21, 2011, where Dr. Richard Tabors talks about how placing “UTC bids in both directions between two
points with the same positive cap” creates a “low probability, but high payoff” situation if “one bid will fail to clear the market while the other bid clears.” Report 42-43 (quoting Tabors Aff. at 9-10). I don’t know whether Dr. Tabors reviewed my deposition testimony when he was formulating his opinion—but when he talks about one leg failing to clear and how that presents a low probability/high payoff situation, he is basically talking about the same thing I described in my deposition testimony—over a year before the date of his affidavit.

19. Enforcement is wrong in claiming that the explanation for my trading was created after the fact by experts. This completely ignores my deposition testimony that pre-dates the involvement of any experts and was not influenced by opinions from any experts.

20. At page 44 of the Report, Enforcement suggests that what they refer to (using Dr. Tabors’ words) as the “home run strategy,” must have been fabricated after the fact because it is not discussed in email communications between me and Mr. Gates. Enforcement is drawing the wrong conclusion here. I was making trades on behalf of Powhatan, which is owned by Mr. Gates and others. I felt an obligation to inform them of general expectations, and perceived risks, and I did. But I did not feel I was obligated to tell them everything. If I explained all of the details of my strategy to them, they could have cut me out and hired someone else to execute the same strategy. I also wanted to manage expectations: I didn’t want to brag about potential rewards that weren’t there yet. But I definitely wanted to warn about potential losses. These are some of the reasons I did not highlight the potential upside of one leg of a matched pair trade not clearing.

21. I was satisfied, as I explained in my deposition, that the possibility of making money if one leg failed to clear was greater than that of losing money because of my experience trading and analyzing the nodes where I chose to trade. As I said at page 55 of my 10/7/2010
deposition, “If you choose carefully, the potential of making money is much higher than the potential of losing money.” This potential upside was always in my mind and part of my strategy, but it was not something that I chose to emphasize to the parties I was trading for.

22. One of the ways you can see that Enforcement’s characterization is wrong is that if I was trying to ensure that one leg of a matched pair of trades did not break, I would have always chosen to bid $50 instead of something lower, like $35. Bidding $50 is “safer” if your aim is to ensure that both legs of the transaction clear, whereas bidding $35 poses a greater risk. The only reason to offer at $35 is to invite greater potential for a leg not to clear. I explained during my second deposition on 7/20/2011 that I wanted to reduce, but not completely avoid, the risk of having one leg break. That is what I was talking about at pages 66 to 68 of my July 2011 deposition. In the Report, Enforcement refers to a portion of that discussion but leaves out the part where I explained that I was trying “to reduce, not avoid” having one leg break. The point here is that if I was pursuing a high risk strategy, I might have sought out trades that had a higher likelihood of one leg not clearing. That wasn’t consistent with my low risk, low reward but high potential upside strategy.

My Approach to Risk

23. There is a related example of how Enforcement has ignored or mischaracterized my deposition testimony. At page 14 of the Report, Enforcement uses a partial quote from my discussion of the “low risk, low reward with high reward potential” strategy. Instead of quoting the whole thing, Enforcement claims I described a “low risk, low reward” strategy, but they leave out the words “with high reward potential.” This does not accurately represent what I said.

24. I also want to point out that Enforcement is wrong to suggest that when I talked about “risk” during my deposition, I was only talking about potential downside and loss, rather than both sides of the coin (potential loss and potential profit). I am not a native English speaker.
In my mind, talking about risk in this context includes both sides of the coin. There was risk of loss if one leg failed to clear, and there was also the potential for profit—and in this case I determined that if one leg were to break, the potential for profit was greater than the potential of loss.

25. Enforcement’s own report also admits the existence of both outcomes, but claims that they are symmetrical, and thus not likely to be consistently profitable. But that’s wrong. Because the Real-Time market happens after the Day-Ahead market, and market participants and system operators can and do respond to congestion outcomes occurring in the Day-Ahead market by taking all necessary remedial actions, that inherently means it is more likely that congestion will lessen in the Real-Time market.

26. Empirical evidence from the polar vortex of 2014 demonstrated that the matched pairs would have been supportive to the market. This could even be easier to see in the chart below, which is at page 11 of a 11/17/2014 report by PJM’s Market Monitor (Attachment 1, also available at http://www.pjm.com/~media/committees-groups/committees/mc/20141117-webinar/20141117-item-06-market-monitor-report.ashx). During the first three months of 2014, the Day-Ahead congestions were very positive, but the Real-Time congestions were very negative. This tells you the system was running very conservatively and inefficiently. The matched pairs would have reduced the congestions in the Day-Ahead market and pushed up the congestions in the Real-Time market to make the market more efficient and at the same time save ratepayer money. There is no denying that there are many, some even more important, factors such as the coordination of natural gas delivery and electricity generation that would have contributed to this phenomena, but it is my observation and also my belief that the potential of gains and the potential of losses are asymmetrical, tilting toward the former.
I Never “Decided to Cheat,” and Never Intended to Break Any Rules or Deceive Anyone

27. The Report states at page 1 that after “pursuing legitimate arbitrage opportunities” in the PJM, I “decided to cheat” in connection with the UTC trades that Enforcement now says were market manipulation. The Report also claims that my UTC trades were a “scheme,” that I knew this “scheme manipulated PJM’s rules,” that I “implemented” the so-called scheme for “pecuniary benefit,” that I knew “there was a substantial risk that all of the scheme’s profits would be clawed back when it was discovered,” and that I communicated the details of the alleged scheme to Kevin Gates of Powhatan (Report at 75). None of these is true.

28. First of all, there was no “scheme.” I believed at the time and I continue to believe that my trades were legitimate and violated no rules. I never thought that what I was doing was cheating or unlawful, and I never intended to deceive anyone or break any rules.

29. When I first saw refunds for TLCs on my PJM billing statement in October 2009, I emailed PJM and asked, “Is it related to FERC Docket EL08-14-002.” PJM emailed me back and confirmed this, stating that it was revising the method for allocating transmission loss revenues “[d]ue to a recent FERC order (Docket No. EL08-14).” This email exchange is
attached as Attachment 2 (I understand this was produced to Enforcement; the attachment is a copy I have). I understood that the basis for getting the TLC payments was paying transmission costs.

30. Several months later, in June 2010, I started executing matched pair UTC trades, but I never thought there was anything wrong with what I was doing. Over the course of my career, including when I worked for companies like UBS, I have been required to take compliance training, including about things like illegitimate wash trades. I never thought that the paired UTC trades were unlawful wash trades or anything like wash trades.

31. One of the many reasons that Enforcement is wrong to say that I “cheated” when I executed matched pair transactions and received a TLC payment is because nothing about my paired transactions counter-acted or “undid” the thing that was the basis for getting the TLC payment, which was paying for transmission on the import leg of the paired trades. In the export leg, I was able to manage (but not eliminate) the risk associated with the congestion component of the import transaction, but the export leg in no way effected or undid the transmission payment associated with the import leg.

32. Second, Enforcement is wrong to claim that my email to Kevin Gates on March 5, 2010 shows that I knew there was something unlawful about the trades. I note that the email was actually written about two months before the period when Enforcement seems to be claiming I started engaging in trades that were market manipulation. In any case, my message in no way suggests that I thought my trades were unlawful. I said in the email: “it really concerns me if PJM ever reverts back to those days without TLC or the TLC calculation was/is incorrect and we have to pay back all or some of the TLC refunds, we are going to be in big trouble.” I was talking about my concern that PJM might decide to change its rules and that PJM or some other
market participant might ask FERC to recalculate or resettle these payments retroactively and require recipients to pay back some or all of the TLC payments. I was concerned about this, as I explained in my deposition, because I was aware that something like that had happened in MISO with its revenue sufficiency guarantee (RSG) charges. Payments were made and then market participants were later told to give them back. This is what I was worried about—the rules changing and the possibility that all market participants would have to give money back.

33. In fact, Mr. Tabackman showed me this very same March 5, 2010 email during my second deposition on July 20, 2011, and he asked me what I meant by the language quoted above. This is in the transcript from my July 2011 deposition at page 134. I explained that what I had in mind was the market recalculation-type scenario, like what I understood happened in MISO with RSG. I made the same point again later in the deposition, at transcript page 226 (Q: “Why did you think that PJM might reverse itself on this point? A: Also go back to MISO, the RSG case . . . if the transmission loss credit and they revert back, they want to get the money back from your pocket, then the trade – suddenly it becomes less profitable . . . . Q: “What was it about TLC that made you think that that was a possibility? . . . A: “Yeah, I mean, the RSG case in MISO, it’s kind of very alarming to me, and this kind of that similar time, and it’s kind of you have one component of either charges or credits, maybe they change the rule or maybe some kind of formula, and so – I mean, in my mind, I have those concern . . .”).

34. As it turned out, my concern about a retroactive recalculation was justified because PJM invoiced market participants and asked them to retroactively give back TLC payments. PJM sent such an invoice to HEEP Fund, Inc. (a fund I created) on July 9, 2012. The invoice for $498,237.62 is included at Attachment 3. HEEP Fund voluntarily paid the full amount invoiced.
35. Also, when I said in the March 5, 2010 email that we could be in “big trouble,” I was specifically talking about having to pay back the refunds. In other words, I was talking about trouble from a financial perspective, not a legal one. I was never concerned that I would be accused of market manipulation and face potential disgorgement and civil penalties because I thought, and continue to think, that the trades were completely lawful. If I thought that FERC would question the legality of the trades and claim they were market manipulation, I would not have done the trades. That is not a risk I would have taken.

36. There is another March 5, 2010 email that Enforcement refers to. It is an email from Kevin Gates to me, responding to my message about concerns there could be a recalculation of the market if PJM or FERC decided to reverse course on the TLC refunds. In his message back to me, Mr. Gates says, “To get any insight on the issue, why not contact a law firm, the FERC, or PJM to try to get more insight into the issue?” Enforcement quotes this statement a number of times (including at page 76, n.388) and suggests that it shows I knew the trades were unlawful. That is not true. I first want to say that Enforcement never asked me about that message from Mr. Gates during my deposition. If they did, I would have told them that my concern was only about a possible reversal of policy and a market recalculation. I wasn’t worried about the legality of the trades. It didn’t seem to me that contacting a law firm would be helpful because I didn’t think they could predict what FERC or PJM might decide to do in the future. I also didn’t think I could just call PJM or FERC and ask if they were going to change their minds about the FERC order that approved the payments. That is why I never followed up on Mr. Gates’ comment.
37. I also want to mention that Enforcement has not pointed to any communications that suggest I ever contemplated that anyone would claim these trades were against the rules or were a manipulation scheme.

I Have Never Seen Many of the Emails that Enforcement Relies on in the Report

38. During my two depositions, Enforcement Staff showed me a total of five emails. I was the sender or receiver on three of them, but the other two were things I had not seen before. Other emails that are quoted in the report, I have never seen. Enforcement seems to suggest that these communications show something about what I was thinking but that is not fair because I wasn’t even part of many of those communications.
ATTACHMENT 1
Monthly cleared UTCs (MW) by type: January 2005 through October 2014
Daily cleared UTCs (MW) by type: January 2013 through November 7, 2014
Daily cleared UTCs (MW) by type: July 9, 2014, through November 7, 2014
Monthly bid and cleared INCs, DECs and UTCs (MW): January 2005 through October 2014
Daily bid and cleared INCs, DECs and UTCs (MW): January 2013 through November 7, 2014
Daily bid and cleared INCs, DECs and UTCs (MW): July 9, 2014 through November 7, 2014
### Difference between real time and day ahead prices from July 9, 2014 through November 7, 2014

<table>
<thead>
<tr>
<th></th>
<th>2014 (Jul 09 - Sep 7)</th>
<th>2014 (Sep 8 - Nov 7)</th>
<th>Percent of Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day Ahead</td>
<td>Real Time</td>
<td>Difference</td>
</tr>
<tr>
<td>Average</td>
<td>$34.55</td>
<td>$34.80</td>
<td>$0.25</td>
</tr>
<tr>
<td>Median</td>
<td>$32.28</td>
<td>$30.10</td>
<td>($2.19)</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>$11.52</td>
<td>$17.10</td>
<td>$5.58</td>
</tr>
<tr>
<td>Peak average</td>
<td>$41.48</td>
<td>$40.66</td>
<td>($0.82)</td>
</tr>
<tr>
<td>Peak median</td>
<td>$39.49</td>
<td>$35.34</td>
<td>($4.15)</td>
</tr>
<tr>
<td>Peak standard deviation</td>
<td>$10.97</td>
<td>$16.99</td>
<td>$6.01</td>
</tr>
<tr>
<td>Off peak average</td>
<td>$28.66</td>
<td>$29.82</td>
<td>$1.16</td>
</tr>
<tr>
<td>Off peak median</td>
<td>$26.36</td>
<td>$26.06</td>
<td>($0.29)</td>
</tr>
<tr>
<td>Off peak standard deviation</td>
<td>$8.25</td>
<td>$15.56</td>
<td>$7.31</td>
</tr>
</tbody>
</table>
DA and RT Binding Constraint Hours: January 2014 through November 7, 2014
DA and RT Binding Constraint Hours: July 9, 2104 through November 7, 2014
DA and Balancing Congestion: January 2014 through November 7, 2014
DA and Balancing Congestion: July 9, 2014 through November 7, 2014

[Graph showing DA Total, Balancing Total, and a line marked 8-Sep-14]
Up-to Congestion Transaction Average Profit: July 9, 2014 through November 7, 2014
Up-to Congestion Transaction Average Profit per MW pre and post FERC Filing: July 9, 2014 through November 7, 2014

<table>
<thead>
<tr>
<th></th>
<th>Average Profit per MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre FERC Ruling (7/9 - 9/7)</td>
<td>$0.02</td>
</tr>
<tr>
<td>Post FERC Ruling (9/8 - 11/7)</td>
<td>$0.94</td>
</tr>
<tr>
<td>Change</td>
<td>5,081.75%</td>
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</tbody>
</table>
Energy uplift charges eight weeks before and after September 8, 2014

<table>
<thead>
<tr>
<th>Period</th>
<th>Day-Ahead</th>
<th>Balancing</th>
<th>Reactive</th>
<th>Synchronous Condensing</th>
<th>Black Start</th>
<th>Total Energy Uplift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jul14-Sep07</td>
<td>$214,557</td>
<td>$378,789</td>
<td>$61,254</td>
<td>$68</td>
<td>$134,441</td>
<td>$789,107</td>
</tr>
<tr>
<td>Sep08-Nov02</td>
<td>$289,516</td>
<td>$306,491</td>
<td>$27,718</td>
<td>$0</td>
<td>$103,877</td>
<td>$727,602</td>
</tr>
<tr>
<td>Difference</td>
<td>$74,959</td>
<td>($72,297)</td>
<td>($33,536)</td>
<td>($68)</td>
<td>($30,563)</td>
<td>($61,505)</td>
</tr>
<tr>
<td>Difference (%)</td>
<td>34.9%</td>
<td>(19.1%)</td>
<td>(54.7%)</td>
<td>(100.0%)</td>
<td>(22.7%)</td>
<td>(7.8%)</td>
</tr>
</tbody>
</table>
Energy uplift rates eight weeks before and after September 8, 2014 ($/MWh)

<table>
<thead>
<tr>
<th>Period</th>
<th>Day-Ahead Rate</th>
<th>RTO Balancing Reliability Rate</th>
<th>RTO Balancing Deviation Rate</th>
<th>East Balancing Reliability Rate</th>
<th>East Balancing Deviation Rate</th>
<th>West Balancing Reliability Rate</th>
<th>West Balancing Deviation Rate</th>
<th>Rate paid by any East Deviation</th>
<th>Rate paid by any West Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jul14-Sep07</td>
<td>0.092</td>
<td>0.020</td>
<td>0.844</td>
<td>0.008</td>
<td>0.065</td>
<td>0.000</td>
<td>0.027</td>
<td>0.909</td>
<td>0.871</td>
</tr>
<tr>
<td>Sep08-Nov02</td>
<td>0.144</td>
<td>0.014</td>
<td>0.702</td>
<td>0.002</td>
<td>0.054</td>
<td>0.001</td>
<td>0.199</td>
<td>0.756</td>
<td>0.901</td>
</tr>
<tr>
<td>Difference</td>
<td>0.052</td>
<td>(0.005)</td>
<td>(0.142)</td>
<td>(0.006)</td>
<td>(0.011)</td>
<td>0.001</td>
<td>0.172</td>
<td>(0.153)</td>
<td>0.030</td>
</tr>
<tr>
<td>Difference (%)</td>
<td>56.0%</td>
<td>(27.7%)</td>
<td>(16.8%)</td>
<td>(75.2%)</td>
<td>(17.4%)</td>
<td>4,647.8%</td>
<td>636.2%</td>
<td>(16.9%)</td>
<td>3.5%</td>
</tr>
<tr>
<td>Hourly Parameters</td>
<td>No Spin Event</td>
<td>Spin Event</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------</td>
<td>------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSRMCP=$0</td>
<td>T1 credits = $0</td>
<td>T1 credits = Synchronized Energy Premium Price * actual response MW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSRMCP&gt;$0</td>
<td>T1 credits = T2 SRMCP * calculated tier 1 MW</td>
<td>T1 credits = T2 SRMCP * min(calculated tier 1 MW, actual response MW)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Tier 1 compensation as recommended by MMU

<table>
<thead>
<tr>
<th>Hourly Parameters</th>
<th>Tier 1 Compensation by Type of Hour as Recommended by MMU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Spin Event</td>
</tr>
<tr>
<td>NSRMCP=$0</td>
<td>T1 credits = $0</td>
</tr>
<tr>
<td>NSRMCP&gt;$0</td>
<td>T1 credits = $0</td>
</tr>
</tbody>
</table>
## Dollar Impact of Paying Tier 1 Synchronized Reserve the SRMCP When the NSRMCP Goes Above $0

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>MAD Tier 1 Credits When NSRMCP &gt; $0</th>
<th>RTO Tier 1 Credits When NSRMCP &gt; $0</th>
<th>Tier 1 Credits Paid When NSRMCP &gt; $0</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>Oct</td>
<td>$655,254.26</td>
<td>$1,603.24</td>
<td>$656,857.50</td>
</tr>
<tr>
<td>2012</td>
<td>Nov</td>
<td>$3,865,259.34</td>
<td>$140,127.75</td>
<td>$4,005,387.09</td>
</tr>
<tr>
<td>2012</td>
<td>Dec</td>
<td>$439,237.82</td>
<td>$0.00</td>
<td>$439,237.82</td>
</tr>
<tr>
<td>2013</td>
<td>Jan</td>
<td>$1,099,270.92</td>
<td>$0.00</td>
<td>$1,099,270.92</td>
</tr>
<tr>
<td>2013</td>
<td>Feb</td>
<td>$180,210.84</td>
<td>$0.00</td>
<td>$180,210.84</td>
</tr>
<tr>
<td>2013</td>
<td>Mar</td>
<td>$2,408,969.22</td>
<td>$0.00</td>
<td>$2,408,969.22</td>
</tr>
<tr>
<td>2013</td>
<td>Apr</td>
<td>$1,185,455.48</td>
<td>$47,812.11</td>
<td>$1,233,267.59</td>
</tr>
<tr>
<td>2013</td>
<td>May</td>
<td>$681,357.31</td>
<td>$16,688.22</td>
<td>$698,045.53</td>
</tr>
<tr>
<td>2013</td>
<td>Jun</td>
<td>$247,187.86</td>
<td>$1,519.63</td>
<td>$248,707.49</td>
</tr>
<tr>
<td>2013</td>
<td>Jul</td>
<td>$2,178,730.80</td>
<td>$17,716.40</td>
<td>$2,196,447.20</td>
</tr>
<tr>
<td>2013</td>
<td>Aug</td>
<td>$1,213,298.83</td>
<td>$581,718.27</td>
<td>$1,795,017.10</td>
</tr>
<tr>
<td>2013</td>
<td>Sep</td>
<td>$2,056,147.14</td>
<td>$279,570.14</td>
<td>$2,335,717.28</td>
</tr>
<tr>
<td>2013</td>
<td>Oct</td>
<td>$84,208.06</td>
<td>$14,694.77</td>
<td>$98,902.83</td>
</tr>
<tr>
<td>2013</td>
<td>Nov</td>
<td>$6,459.27</td>
<td>$3,304.03</td>
<td>$9,763.30</td>
</tr>
<tr>
<td>2013</td>
<td>Dec</td>
<td>$100,461.11</td>
<td>$70,196.95</td>
<td>$170,658.06</td>
</tr>
<tr>
<td>2014</td>
<td>Jan</td>
<td>$433,637,117.68</td>
<td>$18,679,374.56</td>
<td>$62,316,492.24</td>
</tr>
<tr>
<td>2014</td>
<td>Feb</td>
<td>$1,766,396.74</td>
<td>$858,905.98</td>
<td>$2,625,302.72</td>
</tr>
<tr>
<td>2014</td>
<td>Mar</td>
<td>$7,800,330.76</td>
<td>$2,639,757.36</td>
<td>$10,440,088.12</td>
</tr>
<tr>
<td>2014</td>
<td>Apr</td>
<td>$2,648,455.99</td>
<td>$2,304,402.56</td>
<td>$4,952,858.55</td>
</tr>
<tr>
<td>2014</td>
<td>May</td>
<td>$1,659,371.64</td>
<td>$2,352,913.38</td>
<td>$4,012,285.02</td>
</tr>
<tr>
<td>2014</td>
<td>Jun</td>
<td>$227,197.77</td>
<td>$339,093.85</td>
<td>$566,291.62</td>
</tr>
<tr>
<td>2014</td>
<td>Jul</td>
<td>$65,759.59</td>
<td>$89,984.57</td>
<td>$155,744.16</td>
</tr>
<tr>
<td>2014</td>
<td>Aug</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>2014</td>
<td>Sep</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>2014</td>
<td>Total</td>
<td>$74,206,138.42</td>
<td>$28,439,383.78</td>
<td>$102,645,522.20</td>
</tr>
</tbody>
</table>
### MAD subzone ASO tier 1 estimate biasing, January through June, 2014

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Number of Hours Biased Negatively</th>
<th>Average Negative Bias (MW)</th>
<th>Number of Hours Biased Positively</th>
<th>Average Positive Bias (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Jan</td>
<td>13</td>
<td>(1,419.23)</td>
<td>2</td>
<td>250</td>
</tr>
<tr>
<td>2014</td>
<td>Feb</td>
<td>36</td>
<td>(1,036.11)</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>2014</td>
<td>Mar</td>
<td>37</td>
<td>(1,281.11)</td>
<td>4</td>
<td>500</td>
</tr>
<tr>
<td>2014</td>
<td>Apr</td>
<td>32</td>
<td>(1,387.50)</td>
<td>0</td>
<td>NA</td>
</tr>
<tr>
<td>2014</td>
<td>May</td>
<td>23</td>
<td>(909.78)</td>
<td>0</td>
<td>NA</td>
</tr>
<tr>
<td>2014</td>
<td>Jun</td>
<td>17</td>
<td>(1,179.41)</td>
<td>3</td>
<td>667</td>
</tr>
<tr>
<td>2014</td>
<td>Jul</td>
<td>36</td>
<td>(1,011.11)</td>
<td>0</td>
<td>NA</td>
</tr>
<tr>
<td>2014</td>
<td>Aug</td>
<td>31</td>
<td>(891.94)</td>
<td>1</td>
<td>750</td>
</tr>
<tr>
<td>2014</td>
<td>Sep</td>
<td>15</td>
<td>(1,206.67)</td>
<td>0</td>
<td>NA</td>
</tr>
<tr>
<td>2014</td>
<td>Total</td>
<td>240</td>
<td>(1,146.98)</td>
<td>11</td>
<td>453</td>
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</tbody>
</table>
Weighted price of tier 1 synchronized reserve attributable to a non-synchronized reserve price above zero; January through September, 2014

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Total Number of Hours When NSRMCP Greater Than $0</th>
<th>Tier 1 MW Weighted Average SRMCP for Hours When NSRMCP Greater than $0</th>
<th>Total Tier 1 Credits for Hours When NSRMCP Greater Than $0</th>
<th>Total Tier 1 MW Credited for Hours When NSRMCP Greater Than $0</th>
<th>Average Tier 1 MW Credited Per Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Jan</td>
<td>155</td>
<td>$109.81</td>
<td>$62,316,492</td>
<td>692,263</td>
<td>4,466.2</td>
</tr>
<tr>
<td>2014</td>
<td>Feb</td>
<td>15</td>
<td>$42.57</td>
<td>$2,625,303</td>
<td>65,332</td>
<td>4,355.5</td>
</tr>
<tr>
<td>2014</td>
<td>Mar</td>
<td>67</td>
<td>$46.49</td>
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<td>$85,069,063</td>
<td>1,598,317</td>
<td>3,663.1</td>
</tr>
</tbody>
</table>
ATTACHMENT 2
Alan,

Reference the attached notice email which was recently sent to the Market Settlements Working Group majordomo.

Correct it is for that FERC docket.

Relative to the Weekly Billing Statement, it would only contain billing relative to the given intra-month-to-date weekly bill cycle.

(i.e. Weekly Bills for October 2009 would only be relative to October 2009 data)

Prior period adjustments for months before Oct 2009, once processed, will appear as line item adjustments on the Monthly Bill reports.

Note, the rerun time frame is actually, 12/3/2007 through 3/2/2009 and 6/1/2009 forward.

Currently, we are tentatively planning on having the August2009 and September2009 Reruns completed for their adjustments to be included on the October 2009 Monthly bill.

However, how a full historic month rerun bumps up against time and resource constraints relative to normal intra-month processing, will ultimately control the prior time frames which are actually able to be processed for inclusion on a given monthly invoice.

Once completed for a given prior month, the adjustment line item will be posted within the BLI Adjustment Summary report under the Billing(Monthly) category in MSRS.

At that point the hourly details of the adjustment can be manually re-calculated by taking the difference between the Latest Billed and current Latest version posting of the Loss Credit report.

Following the posting of a given month's bill, the re-calc would be able to be made by taking the difference between the latest two billed versions using a single All Billed version download.

John McComb
PJM Market Settlement Operations
I've noticed a few new line items being added to the bottom of the weekly billing statement since 10/01/2009. I have a few questions related to line item "2220 - Transmission Losses":

1) Is the credit shown on the weekly billing statement for the period of 10/01/2009-10/07/2009 for this time period only?
2) Is it related to FERC Docket EL08-14-002?
3) When will the refund (for the period of 12/03/2007-03/03/2009) mentioned in previous email (dated 9/22/2009) be distributed?

Sincerely yours,
Alan Chen
HEEP Fund Inc.
19 N. Merryweather Circle
The Woodlands, TX 77384
Tel: 936-447-9108
This e-mail is intended to alert PJM customers of significant settlement issues as a supplement to the information provided by the versioned Market Settlements Reporting System (MSRS) reports.

Revised Transmission Loss Credit allocations:

Due to a recent FERC order (Docket No. EL08-14) revising the method used for allocating transmission loss revenues, retroactive billing adjustments are required. For the periods of 12/3/2007 through 3/2/2009 and 6/1/2009 forward, these charges will be allocated based on a RT Load plus Exports plus Up-To Congestion Transactions ratio share basis, where Exports and Up-To Congestion Transactions that do not pay for transmission are excluded from this allocation. The necessary billing adjustments will result in Exports sinking in MISO (which do not pay for transmission service) to refund past Loss revenues, and Up-To Congestion Transactions (that pay for transmission service) will receive a share of Loss revenues for past periods, as part of this reallocation.

Note that, for the period of 3/3/2009 through 5/31/2009, these charges will remain allocated based on a RT Load plus Exports ratio share basis, where Exports that do not pay for transmission are included in this allocation. For dates in this date range, the Up-To Congestion Transactions field on the applicable MSRS report will be null.

Effective immediately, the October 2009 billing results will reflect the new allocation method. Over the next several months, the required billing adjustments will be processed as soon as they are calculated.

Thank you.
ATTACHMENT 3
INVOICE NUMBER: 2012063012205
CUSTOMER ACCOUNT: HEEP Fund Inc.
CUSTOMER IDENTIFIERS: HEEPF (12205)
FINAL BILLING STATEMENT ISSUED: 07/09/2012 09:08:28
BILLING PERIOD: 06/01/2012 to 06/30/2012

<table>
<thead>
<tr>
<th>Monthly Billing Statement Summary</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Net Charge. Please Pay This Amount.</td>
<td>$498,237.62</td>
</tr>
</tbody>
</table>

TERMS: PAYABLE IN FULL BY 12:00 PM EPT ON 07/13/2012
WIRE TRANSFER FUNDS TO: PJM SETTLEMENT, INC.
PNC Bank, N.A.
Pittsburgh, PA
ABA NUMBER 031207607
ACCOUNT NUMBER - 8026557495

FOR INQUIRIES CONTACT:
PJM MEMBER RELATIONS (Banking / Payment): custsvc@pjm.com (866) 400-8980
PJM MARKET SETTLEMENTS (Billing Line Items): mrkt_settlement_ops@pjm.com (866) 400-8980

ADDITIONAL BILLING STATEMENT INFORMATION:

David Budney
Manager, PJM Market Settlement Operations
<table>
<thead>
<tr>
<th>CHARGES</th>
<th>ADJ</th>
<th>BILLING LINE ITEM NAME</th>
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<td>1100</td>
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<td>Network Integration Transmission Service</td>
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</tr>
<tr>
<td>1130</td>
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<td>Firm Point-to-Point Transmission Service</td>
<td></td>
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</tr>
<tr>
<td>1140</td>
<td></td>
<td>Non-Firm Point-to-Point Transmission Service</td>
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</tr>
<tr>
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<tr>
<td>1205</td>
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<td>Balancing Spot Market Energy</td>
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<td>Day-ahead Transmission Congestion</td>
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<tr>
<td>1330</td>
<td></td>
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<tr>
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<td>Regulation and Frequency Response Service</td>
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**Total Charges**: $0.00
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<tr>
<td>2220</td>
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<td></td>
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<tr>
<td>2320</td>
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<td>Transmission Owner Scheduling, System Control and Dispatch Service</td>
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<tr>
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<td>$0.00</td>
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<tr>
<td>2340</td>
<td></td>
<td>Regulation and Frequency Response Service</td>
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<td>2360</td>
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<td>Synchronized Reserve</td>
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<td>$0.00</td>
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<td></td>
<td>Day-ahead Scheduling Reserve</td>
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<td>2375</td>
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<td></td>
<td>Black Start Service</td>
<td></td>
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<tr>
<td>2220 A</td>
<td></td>
<td>Transmission Losses</td>
<td>03/01/2009</td>
<td>$(498,237.62)</td>
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</table>

Total Credits

$(498,237.62)
UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Houlian Chen, Powhatan Energy Fund, LLC, HEEP ) Docket No. IN15-3-000
Fund, LLC, and CU Fund, Inc. )

AFFIDAVIT OF HOULIAN CHEN

I, Houlian Chen, being duly sworn, depose and state that the contents of the foregoing
affidavit is true, correct, accurate and complete to the best of my knowledge, information, and
belief.

[Signature]
Houlian Chen

SUBSCRIBED AND SWORN to before me this 2 day of February 2015.

[Signature]
(Notary Public)

My commission expires: 2-5-17
EXHIBIT B
Statement of Susan J. Court  
Principal, SJC Energy Consultants, LLC  
In the Matter of PJM Up-to-Congestion Transactions  
Federal Energy Regulatory Commission  
Docket No. IN10-5-000  

November 8, 2013  

Introduction  

The Office of Enforcement of the Federal Energy Regulatory Commission (FERC or Commission) is investigating the conduct of, inter alia, Powhatan Energy Fund LLC (Powhatan), which the Enforcement staff has accused of violating the Commission’s rule prohibiting manipulation of electric energy markets. The Enforcement staff bases its case on the actions of Powhatan’s agent, Dr. Houlian “Alan” Chen, who traded in the electric energy market operated by PJM Interconnection, LLC (PJM) during the period under investigation. As former Director of FERC’s Office of Enforcement, I have been engaged by Powhatan and the law firm of Drinker Biddle & Reath LLP to advise them on the propriety of Powhatan’s activities under investigation. As explained below, Powhatan’s participation in the activity under investigation does not constitute a violation of the Commission’s rule prohibiting the manipulation of electric energy markets. Simply put, the reason is that the government should not punish people for following rules that the government itself makes.

Qualifications  

I am the Principal of SJC Energy Consultants, LLC, located in Arlington, Virginia. Previously, from 2009-2011, I was a partner in the energy practice at Hogan Lovells, LLP, Washington, D.C., and from 1982-2009, I worked at FERC, serving as an advisor to a Commissioner and a senior executive. As relevant here, in 2005, I was appointed Director of FERC’s Office of Market Oversight and Investigations, which I soon reorganized to become the first FERC Office of Enforcement. As Director, I oversaw the promulgation of Order No. 670, which codified the currently effective FERC anti-manipulation regulations. I also directed the formation of the strategies and processes to administer those regulations, and managed the initial investigations in which the Commission first imposed penalties under its new authority and prosecuted violations of its anti-manipulation regulations. While I may not reveal non-public details of the market manipulation investigations to which I was privy, the FERC Enforcement staff publicly reported that in 2008-2012, it opened 101 investigations, half of which (51) involved allegations of energy market manipulation.

FERC Anti-Manipulation Rules  

By way of background, the following is an overview of the Commission’s anti-manipulation rule for electric energy transactions. This overview comes verbatim from one of the Commission’s recent orders, and is frequently used by the Commission to describe its authority.

Section 222(a) of the FPA makes it unlawful for any entity to use a deceptive or manipulative device in connection with the purchase or sale of electric energy or the transmission of electric
energy subject to the Commission’s jurisdiction. Order No. 670 implemented this prohibition, adopting the Anti-Manipulation Rule. That rule, among other things, prohibits any entity from: (1) using a fraudulent device, scheme or artifice, or making a material misrepresentation or a material omission as to which there is a duty to speak under a Commission-filed tariff, Commission order, rule or regulation, or engaging in any act, practice, or course of business that operates or would operate as a fraud or deceit upon any entity; (2) with the requisite scienter; (3) in connection with the purchase, sale or transmission of electric energy subject to the jurisdiction of the Commission.

Challenges of Investigating Market Manipulation Claims in Organized Electric Markets

There is no question that the Commission and its Enforcement staff face considerable challenges in investigating allegations of market manipulation within the organized electric markets administrated by RTOs and ISOs. The main challenge is that such cases trigger the defense by the respondent market participant that it was functioning according to the very rules and tariff provisions that the Commission itself had reviewed, vetted through notice and comment proceedings which routinely attract a wide range of knowledgeable stakeholders, and ultimately approved. Absent deceit, this is a legitimate defense. As explained further below, the reason is straightforward. The organized electric markets in the United States are extraordinarily complex, in large part because of the extensive and comprehensive rules, regulations and tariff provisions that govern those markets. (The RTO and ISO tariffs have always reminded me of a field of mesquite in West Texas—acres of hardened vines twisting and turning around and through each other, making passage next to impossible.) Accordingly, it is unfair to punish a company or an individual who openly and guilelessly participates in those markets according to the rules and the RTO/ISO tariffs approved by the Commission.

The Commission clearly recognizes the complexities of the organized electric markets as indicated by the thoughtful participation of individual Commissioners in a recent day-long technical conference in FERC Docket No. AD13-7-000, which examined how centralized capacity markets in New England, New York, and the PJM region are supporting the procurement and retention of resources necessary to meet future reliability and operational needs. A September 23, 2013 Letter from Members of the Committee on Energy and Commerce of the U.S. House of Representatives, submitted for the record in that proceeding, succinctly captures the current situation, and accurately characterizes what the Commission itself believes, namely that “[w]e support open and competitive markets for commodities.” At least, that is what the Commission’s landmark open-access decisions—Order No. 636 and Order No. 888—and their progeny aimed to accomplish by restructuring the rules governing transmission of natural gas and electric energy to facilitate competitive markets in those commodities. As germane here, the letter adds, “[t]o this end, we want to work with the Commission to ensure that restructured electricity markets operate pursuant to legitimate market forces and are not becoming mere administrative constructs dependent on an increasing amount of Commission-approved rules and processes.”

The Commission’s recognition of the complexities of organized electric markets is also reflected in Order No. 719, which codified protocols for referrals by RTO and ISO market monitors to Commission staff. Specifically, Order No. 719 directed RTO and ISO market monitors to evaluate existing and proposed market rules, tariff provisions, and market design elements, and
recommend proposed rule and tariff changes not only to the RTO or ISO, but also to the Commission’s Office of Energy Market Regulation staff and to other interested entities such as state commissions and market participants. As is (or should be) true for any economic regulator, the Commission is always receptive to suggestions for improving the regulation of the companies under its jurisdiction; however, that openness does not need to be codified, as was the case in Order No. 719. The codification of the protocols underscored the magnitude of the issue of complexity of the rules and tariff provisions applicable to the organized electric markets, and also demonstrated the Commission’s objective to keep an open mind to ways to improve the operation of those markets for the benefit of electric energy customers.

As can be gleaned from FERC orders, the Commission has conducted several investigations in the implementation of the anti-manipulation rules where the respondents operated within the confines of the RTO/ISO tariffs, and argued in their defense that their actions were allowed by those tariffs or that the tariffs failed to provide sufficient guidance on how to operate under them. Significantly, most of the investigations where the Commission has rendered an opinion or adopted its Enforcement staff’s findings to resolve a matter, as opposed to approving a settlement with no precedential value, have involved such situations, and the Commission has accepted the respondents’ defense in a majority of those cases. That undoubtedly is directly related to the complexity of the rules and regulations of the organized electric markets, and the Commission’s appreciation of that complexity and the corresponding need to constantly monitor those markets to ensure that the tariff provisions and market rules are not counter-productive and do not impede the very markets that they are intended to advance. A brief review of the relevant cases is instructive.

In 2008, the Commission addressed two different sets of allegations in the New York ISO (NYISO). First, after ordering its Enforcement staff to investigate the conduct of certain sellers in the New York City Installed Capacity (ICAP) market, the Commission made public the staff’s report that found that the sellers’ behavior was consistent with and even anticipated by the NYISO tariff, did not constitute a fraud or fraudulent practice, and was done pursuant to a legitimate business purpose. Importantly, the Commission then proceeded to approve proposals to strengthen the mitigation of market power in that market. Second, the Commission denied a complaint by DC Energy, LLC against H.Q. Energy Services (U.S.), Inc., which the complainant accused of exercising market power to unlawfully affect congestion and energy pricing in the NYISO Energy and Transmission Congestion Credit (TCC) markets. The Commission based its decision on the Enforcement staff’s report that found that H.Q. Energy Services’ actions were explicitly contemplated by the Commission-approved rules and regulations and were consistent with a “rational actor executing a legitimate commercial strategy.”

In 2009, the Commission again publicly addressed allegations of market manipulation by companies operating under the tariffs governing the organized electric markets. The Commission first denied a complaint by PJM Interconnection, L.L.C. against Accord Energy, LLC and others, on the basis of an Enforcement staff report that found, among other things, that the orchestration of coordinated offsetting positions in regard to PJM’s Financial Transmission Rights did not necessarily evidence intent to defraud. This complaint, a companion one filed against PJM, and the activity surrounding both proceedings, helped focus the Commission’s
attention on PJM’s collateral credit rules, which PJM revised with the Commission’s approval.\(^{17}\) The Commission next adopted the Enforcement staff’s report that there was neither market manipulation nor tariff violations on the part of entities placing circuitous schedules (loop flows) in the Lake Erie region, and that the respondents were openly responding to price signals and had no reason to believe that the RTOs might object to these transactions.\(^{18}\) Again, with greater knowledge about the functioning of the organized electric markets as a result of the staff’s investigation, the Commission later addressed the underlying issue of loop flows and approved changes to the relevant tariffs.\(^{19}\)

Subsequently, the Commission affirmed an administrative law judge’s initial decision to dismiss a complaint by the Connecticut Attorney General and other public entities against ISO New England (ISO NE), and certain participants in the ISO NE Forward Capacity Market, finding among other things that the respondents acted exactly as the tariff, accepted by the Commission, allowed.\(^{20}\) Notably, the Enforcement staff served as trial staff, and sided with the respondents in the case.

Most recently, in proceedings that are still pending, the Commission assessed penalties totaling $13,750,000 against three participants in the Day-Ahead Load Response Program (DALRP) in ISO NE.\(^{21}\) Briefly, the Commission found that the respondents had artificially inflated their customer baselines by curtailing their normal use of on-site generation to receive compensation for demand response without ever intending to provide the service or actually having to reduce load. The respondents argued, among other things, that there was insufficient guidance on how the tariff worked. In all three cases, the Commission stated, “even assuming, arguendo, that certain features of the DALRP … left the DALRP vulnerable to certain manipulation, that does not excuse the manipulation itself.”\(^{22}\) Previously, around the time that the respondents’ activities were originally brought to the Commission’s attention, the Commission accepted changes to the DALRP as proposed by the ISO NE.\(^{23}\)

These eight cases demonstrate the difficulty that the Commission and its enforcement staff have in pursuing allegations of manipulation where the alleged perpetrators of the fraud were or claimed to be acting according to the intricate and complicated provisions of an RTO or ISO tariff. In all of the cases, the activity under investigation or review seemed egregious on its face, namely that someone or some company was benefitting or significantly profiting relative to what it was contributing to the market or was acting to the serious detriment of the market. The complainants, market monitors, or other market participants demanded that the activity be stopped and appropriate changes be made to the market rules. In most of the cases, regardless of the outcome of the investigation, the Commission decided to modify those rules.

The major difference between the five cases where the Commission found no manipulation and the three cases where it did is the alleged presence of deceit, the linchpin of a claim of manipulation under 18 C.F.R. Part 1c. Indeed, the Commission has stressed that its anti-manipulation rules are meant to prevent a market participant from perpetrating a fraud on the market.\(^{24}\) They are not intended to regulate negligent practices or corporate mismanagement.\(^{25}\) They are not designed to ensure just and reasonable rates or prevent the abuse of market power.\(^{26}\) They are about deceit, and, accordingly, the first element of a claim of market manipulation is, in the Commission’s words, “using a fraudulent device, scheme or artifice, or making a material
misrepresentation or a material omission as to which there is a duty to speak under a Commission-filed tariff, Commission order, rule or regulation, or engaging in any act, practice, or course of business that operates or would operate as a fraud or deceit upon any entity.”

**Powhatan’s Culpability under FERC’s Anti-Manipulation Rules**

Against this backdrop, Powhatan is not culpable under the Commission’s rule prohibiting manipulation of the electric energy markets. The company and the personnel named by the FERC investigators did not act in a deceitful way, and they had reason to believe that they were participating in the PJM market in a way allowed by PJM’s tariff. Granted, they thought the market structure approved by the Commission was not necessarily rational, and could be highly profitable, and, indeed, the Commission soon after the period at issue revised the tariff provisions under which their agent Dr. Chen had acted. That, as should be clearly evident by now, is not dispositive. The Commission approved amendments to NYISO’s, PJM’s, and ISO NE’s tariffs when it became apparent, through its Enforcement staff’s investigations, bolstered by market monitors’ recommendations and stakeholders’ concerns, that changes to those tariffs were necessary to enable the markets to function more efficiently.

Let me be more specific about what I understand took place here, an understanding which I have developed on the basis of the Enforcement Staff’s Findings and Supporting Evidence contained in their August 9, 2013 Letter to Powhatan’s counsel. What follows does not reply to the staff’s legal analyses. I leave that to Powhatan’s attorneys. Rather, what follows is how I interpret the facts, as laid out by Staff, in the context of the overarching issue, prosecution of market manipulation claims by market participants acting, without deceit, within the four corners of an RTO or ISO tariff.

- To start with, Powhatan personnel had a long-term and legitimate business relationship with Dr. Chen, who in Staff’s view (at p. 6) was a highly qualified and well educated trader in electric energy markets. So, this is not a fly-by-night operation that raises suspicions about an individual’s or a company’s motives. These are responsible people, who are engaged in earning their livings by trading and investing in the electric energy markets. This is good for those markets—the more players, the more liquidity.

- During 2008-2009, according to staff (at pp. 7-8), Dr. Chen was engaged in a “low-risk, low-reward” trading strategy, and only became aware of the Marginal Loss Surplus Allocation (MLSA) aspects of PJM’s tariff in November 2009, at which time he called PJM to make sure he understood how the MLSA worked. From staff’s account, he apparently spoke to someone with knowledge of the MLSA. PJM was thus aware of Dr. Chen’s interest in the MLSA, and, conversely, Dr. Chen did not try to hide his interest from the market administrator.

- Dr. Chen then, as staff relates (at pp.8-9), began to develop a model for executing trades within the parameters of the MLSA provisions in PJM’s tariff, and also began to experiment with his model to see how it would reduce risk. The question is, why wouldn’t someone with his knowledge and experience do just that? Such conduct does not evidence a devious person, but rather a practical one. Indeed, if he had not proceeded
in this way, would he have breached his fiduciary duty to his clients, and they in turn to their investors?

- In March 2010, according to staff (at pp. 9-10), Dr. Chen outlined a new trading strategy to his clients, including personnel at Powhatan, and talked about “taking advantage” of what appeared to be a low-risk situation, or at least a situation where the risks were lower than before. In this regard, whose fault is it that there was a situation to take advantage of? Dr. Chen? His clients? His clients’ investors? As there is no claim that any of them urged or was responsible for crafting the relevant tariff provision, the answer seemed clear, the fault lay with those who had structured the tariff.

- At this time, I need to digress from the Staff’s August 9, 2013 Letter, and turn to the September 2010 order, in Docket No. ER10-2280-000, in which the Commission accepted revisions to PJM’s tariff to eliminate the requirement to reserve transmission service for Up-To-Congestion bids in the Day-ahead Energy Market.\(^{30}\) As is apparent from the background section of that order, PJM’s Up-to-Congestion market rules, which until then included MSLA, had been the subject of extensive debate and stakeholder concern and interest for many years.\(^{31}\) Thus, activity under those rules was no secret, and traders and others playing by those rules were not doing so in some clandestine or devious way.

- Staff points out next (at pp. 12-13) that, after suffering some losses, Dr. Chen experimented and then adjusted his strategy, with the objective to reduce risk, and only started to see positive results in June 2010. Staff states (at p. 12) that “Chen learn[ed] his scheme [was] not fail-proof.” Again, his clients and their investors might have faulted Dr. Chen if he had not tried to improve his trading strategy, which staff unfairly calls a “scheme.” Granted, they ultimately view what he did as a “scheme,” but at this point in the narrative, the use of the statutory term associated with prohibited manipulation is unnecessarily pejorative.

- As Staff relates (at pp. 13-16), Dr. Chen advised his clients, including personnel at Powhatan, of what he was doing. As Staff notes (at p. 15), they were skeptical, and not necessarily excited because it appeared that what Dr. Chen was attempting to do was based on a flawed or at minimum a poorly designed market structure. They were concerned that if that were the case, and the Commission retroactively changed the rules, they could suffer severe losses. Notwithstanding the limits on FERC’s ability to change tariffs retroactively, the situation appearing too good to be true to Powhatan personnel does not mean they had a deceitful animus or intended to deceive the market. More likely, as can be gleaned from staff’s description, they were astonished that knowledgeable, well-meaning people came up with the structure to begin with, and a Federal agency approved it.\(^{32}\) Importantly, in this regard, they commented that the flaw was so obvious, transparent and significant that “a monkey could have made trades in the market.” This is not an admission of wrongdoing by any stretch of the imagination. Rather, it is an exclamation of astonishment by market participants about the structure of the market, not about the naiveté of other market participants or the ultimate consumer.
Finally, Powhatan personnel had no obligation to advise the Commission of the seeming market flaw. Any obligation to do that lay with PJM’s market monitor or with PJM itself. Both in fact apparently did that. PJM’s FERC-approved market monitor in at least three previous years (2007, 2008, and 2009) described the Up-to Congestion Market as providing for a “gaming opportunity.”  

PJM ultimately proposed to change its tariff, in Docket No. ER10-2280-000, a proposal the Commission accepted in September 2010.

At bottom, Powhatan personnel did not act in any way deceitful or devious in investing in the market strategies of Dr. Chen. They may have wondered about the market structure in which Dr. Chen was trading, but that wonderment does not constitute, in any way, shape, or form, prohibited conduct. Moreover, as mentioned, the Commission eventually recognized and changed the particular flaw in the market structure. That is the way that the system should work. Through investigations, market monitoring, and the stakeholder process, the Commission should find and correct flaws in the market structure. It should not punish someone because he acted without deceit in that imperfect structure.
Endnotes

1 Even though I do not represent Powhatan here as its counsel, but rather as its consultant on FERC enforcement matters, I am licensed to practice law in the Commonwealth of Kentucky and the District of Columbia. Besides my J.D. (from Chase College of Law, Northern Kentucky University), I also received an M.A. and a B.A. (summa cum laude) in History from the University of Cincinnati and Thomas More College, respectively. I was a recipient of numerous scholastic scholarships and fellowships, and assisted the Hon. Arthur Goldberg, former Associate Justice of the Supreme Court of the United States, when he was a visiting professor at my law school. After law school and shortly before I joined FERC, I clerked for the Hon. Robert O. Lukowsky, Justice, Supreme Court of Kentucky. I am a frequent speaker at energy conferences and programs for continuing legal education.

2 Specifically, at FERC, I served as Associate General Counsel for Gas and Oil (1986-1993), Special Counsel and Deputy Solicitor (1993-2001), Associate General Counsel for General and Administrative Law and Designated Agency Ethics Official (2001-2004), and Chief of Staff (2004-2005). In 2005, I also worked at the Irish Commission for Energy Regulation, on assignment from FERC, at which time I became active in the International Gas Union (IGU). Eventually, I participated in three IGU world gas conferences (2006, 2009, and 2012), and, in March 2012, the IGU published my paper comparing FERC with the European Union’s Agency for the Cooperation of Energy Regulators.


10 See Wholesale Competition in Regions with Organized Electric Markets, Order No. 719, 125 FERC ¶ 61,071 (2008), at PP 353-354. See also 18 C.F.R. § 35.28(g)(3)(ii)(A) and (v) (2013).

11 Order No. 719 also codified the protocol of market monitors’ referring instances of Market Violations to the Commission’s Office of Enforcement. See 18 C.F.R. § 35.28(g)(3)(iii)(C) and (iv) (2013).

12 See generally Enforcement Staff Report, Findings of a Non-Public Investigation of Potential Market Manipulation by Suppliers in the New York City Capacity Market (Feb. 28, 2008), available in Docket Nos. IN08-2-000 and EL07-39-000.


19 See New York Independent System Operator, Inc. 132 FERC ¶ 61,031, order on reh’g, 133 FERC ¶ 61,276 (2010), order on further reh’g, 136 FERC ¶ 61,011 (2011), order on compliance filing, 138 FERC ¶ 61,195, order on reh’g, 140 FERC ¶ 61,140 (2012).


22 See 144 FERC ¶ 61,162, at P 35; 144 FERC ¶ 61,163, at P 48; 144 FERC ¶ 61,164, at P 48.


24 See, e.g., Order No. 670, at P 5.

25 Id.

26 See Richard Blumenthal, 135 FERC ¶ 61,117, at PP 37-38.

27 See PJM Interconnection, Order Accepting Tariff Revisions, LLC, 132 FERC ¶ 61,244 (2010).

28 Along these lines, the U.S. Court of Appeals for the D.C. Circuit recently pointed out: “From FERC’s policy perspective, the virtual marketers serve a useful purpose: they spot and exploit inefficiencies, driving prices closer to an accurate reflection of fundamental value.” Black Oak Energy, LLC, et al. v. FERC, No. 08-1386, et al. slip op. at 16 (D.C. Cir. Aug. 6, 2013).

29 Staff described MLSA as follows (at p. 5): “Transmission line loss charges are a component of the per-MWh price of electricity in the PJM market. PJM uses the marginal loss method to calculate the charges to cover these line losses, which over-collcts the cost of the losses. Pursuant to section 5.5 of the appendix to Attachment K of PJM’s tariff, MWhs of successfully scheduled trades associated with paid-for transmission in a given hour receive a proportionate share of the surplus collected throughout the entire PJM market for the hour. This distribution is known as the Marginal Loss Surplus Allocation, or MLSA.” (Footnote omitted.)

30 See PJM Interconnection, L.L.C., 132 FERC ¶ 61,244 (2010).

31 Id. PP 2-11.


34 Notably, as can be inferred from Staff’s report at p. 19, Dr. Chen stopped his paired trading in up-to congestion contracts on August 3, 2010. Although the Staff’s report does not say why, it is my understanding that Dr. Chen stopped immediately after PJM’s market monitor contacted him.
EXHIBIT C
CONSULTING REPORT OF JEFFREY H. HARRIS, Ph.D.

1. I, Jeffrey H. Harris, hold the Gary Cohn Goldman Sachs Endowed Chair in Finance at the Kogod School of Business at American University. I have taught at a number of other universities. From 2007 to 2010, I served as Chief Economist at the U.S. Commodity Futures Trading Commission (CFTC) in Washington, DC. As the CFTC Chief Economist, I directed the economic analysis to support the Division of Enforcement in a wide variety of cases. I was in charge of directing economic research studies and providing economic guidance to the Commission. In this capacity, I recruited, hired and directed a team of economists who interfaced with market surveillance and enforcement staff regarding economic issues. I coordinated efforts with Enforcement attorneys regarding the potential for market abuses and directed staff to apply economic analysis to support Enforcement cases efficiently and effectively. Through this work and my own research, I have become intimately familiar with the interface between the law and economics.

2. My primary teaching responsibilities have spanned the areas of investments, derivative securities (options and futures), financial markets and institutions, and corporate finance. I received my Ph.D. in Business Administration (Finance) from the Ohio State University in 1995, a Masters of Business Administration from the University of Iowa in 1987 and a B.A. degree in Physics from the University of Iowa in 1986.

3. I have also served a one-year term as Visiting Academic Fellow at the NASDAQ Stock Market and a one-year term as a Visiting Academic Scholar in the Office of Economic Analysis at the United States Securities and Exchange Commission (SEC) in Washington, DC. My academic work has been in the field of market microstructure, studying how trading behavior, market regulations and market structure interact. I have published numerous articles in refereed finance journals, including The Energy Journal, the Journal of Finance, the Journal of Financial Economics, the Journal of Futures Markets, the Journal of Investment Management, and the Review of Financial Studies. My publication record includes a variety of papers related to both the trading environment of and trading rules governing commodity markets. In addition, I have served as a referee for a wide range of academic journals.

4. I have testified on four separate occasions to various Committees and Subcommittees of the United States Congress, including “The Role of Speculative Investments in Energy Markets” before the United States Senate Subcommittee on Energy and Natural Resources on September 16, 2008; “Financial Speculation in Commodity Markets: Are Institutional Investors and Hedge Funds Contributing to Food and Energy Price Inflation?” before the United States Senate
Committee on Homeland Security and Governmental Affairs on May 20, 2008; “The Influence of Speculative Traders in Commodity Markets” before the United States House of Representatives Agriculture Committee on May 15, 2008; and “The Influence of Non-commercial Institutional Investors on Oil Prices” before the United States Senate Committee on Energy and Natural Resources on April 3, 2008.

5. I have been retained by Powhatan Energy Fund LLC (“Powhatan”) and Drinker Biddle & Reath LLP to assist in the above-referenced matter by providing consulting services on market manipulation, the Up-to Congestion Trades and any related issues that arise during the course of the Engagement. At this point, Powhatan and I have agreed that any reports or work product I produce for this Engagement will be policy oriented and not necessarily intended to be presented as testimony. For this Consulting Report, I have relied on the information contained in the documents listed in the Reference section in Appendix A below. Accordingly, if additional materials or any new facts are brought to my attention, I reserve the right to modify or update my opinions.

I. Overview

6. Having reviewed the issues in the Federal Energy Regulatory Commission (FERC) Investigation, it is my opinion that the preliminary conclusions reached by FERC's Office of Enforcement staff are misguided and without merit. In particular, I believe the preliminary conclusions related to risk, manipulation, scienter, and parallel arguments based on the Amanat case do not stand up to informed judgment. I address each of these below.

II. FERC Fails to Consider the Real Economic Risks to the Trading Strategies Examined in This Case

7. The Defendants (Dr. Houlian Chen and Principals of the Huntrise Energy Fund, LLC and Powhatan) engaged in scheduling of Up-to Congestion (UTC) transactions in the PJM Interconnection from February 2010 through August 3, 2010. These trades were in part designed to share in a portion of the Marginal Loss Surplus Allocation (MLSA) that, at the time, was shared by participants according to a non-public formula determined by PJM. While the Defendants were able to profit from their trading on average, these profits were far from riskless as evidenced, for example, by the losses exceeding $176,000 on a single trade on May 30, 2010 (a day the Defendants lost over $300,000).

8. The risks in this case stem from a number of sources, including basis risk, the risk of trades failing to clear, the risk of PJM having made erroneous calculations in sharing MLSA revenues, the risk of PJM changing the (non-public) formula for sharing MLSA revenues, the risk of unknown competitive behavior by others sharing in MLSA revenues and the risk stemming from unknown weather conditions. Despite the Defendants' attempts to minimize the sources of these risks (e.g., by avoiding "shoulder months" which experience mild weather, or by focusing on correlated pair trades up through the May 30, 2010 losses or matched pair trades thereafter), these risks prevailed throughout the period under investigation.
9. Given these facts, I do not agree with FERC's assertion (Preliminary Findings, p. 22) that Chen (one of the Defendants) "did not assume market risks." This same document recognizes the largest May 30, 2010 loss exceeded $176,000 (and exceeded $300,000 for the day) and points out (in footnote 9 on p. 9 and on p. 23) that in 46% of the hours for a set of correlated pair trades and 20% of matched pair trades the MLSA revenues, combined with other costs, did not yield positive returns.

10. The prime example of basis risk inherent in correlated pair trading occurred on May 30, 2010 when an unanticipated price divergence left the Defendants with a loss exceeding $176,000. The Defendants' spread trades were based on fundamental research on the spread between prices at different nodes (prior to May 30, 2010) and points in time on PJM (throughout the period in question). As with most spread trades, this fundamental research is incorporated into market prices via trades which provide liquidity for other traders and make markets more efficient. Most certainly, however, these correlated pair trades were subject to the risk of the basis changing between nodes and across time.

11. The recognition of these risks appeared to be clear at the time of trading. The Defendants expressed concern prior to March 2010 that PJM would stop sharing MLSA revenues or that PJM had made incorrect calculations and would want the Defendants to pay back past revenues. In fact, this risk was real, given that the full extent of gains or losses from UTC trading would not be known for up to a week later when any estimated MLSA revenues might be disbursed.

12. The risk that PJM made erroneous calculations in sharing MLSA revenues never materialized during the period under question, but this does not make the risk any less relevant. In fact, the risk that PJM would change the (still) unknown formula for sharing MLSA revenues did materialize in September 2010, but after the date the Defendants ceased trading.

13. In my opinion, the market risk of unknown competitive behavior by others likely played a part in the variability of Defendant profits. Two aspects of this competitive behavior appear to play a role in this case--the risk that the trading volume of others would adversely move market prices and the risk that the Defendants' model of estimated MLSA revenues would be affected by the trades of other participants. Since UTC bids submitted by competitors affected the estimated MLSA revenues, competitive uncertainty clearly was a risk factor.

14. Defendant statements acknowledge that the market could bear volume only up to a point (where spread trades that move market prices could lead to unprofitable prices). Defendants’ analysis and trading, contrary to being reckless, attempted to quantify and avoid market moving actions so as to maximize the probability of success.

15. Importantly, uncertain weather conditions play a role in the basis risk between nodes and across time. It appears to me that the Defendants took care in minimizing this risk by avoiding "shoulder months" where weather is typically milder. This fact reinforces my belief that the Defendants applied prudent risk management to their trades. Given the fact that local weather conditions can vary substantially, the correlated pair trades undertaken before May 30, 2010 could not completely eliminate unexpected basis changes between nodes. Likewise the daily variation in weather conditions made all pair trades risky across time, including the matched pair trades.
16. Statements from FERC’s Preliminary Findings support a reasonable conclusion that these trades were risky. Apart from the massive May 30, 2010 losses, FERC notes that "over 80% of the hours" in which the Defendants employed the matched pair strategy the MLSA revenues exceeded transmission-related, market and ancillary service charges (Preliminary Findings, p. 23). Viewed objectively then, nearly 20% of the hours in which the Defendants employed this strategy, MLSA revenues apparently did not cover these charges so that the Defendants lost money. A trading strategy that loses money nearly 20% of the time is quite risky.

III. FERC Fails to Demonstrate that Market Prices Were Manipulated in this Case

17. FERC’s August 18, 2010 filing states the trades in question "were undertaken with the intent of manipulating PJM market rules." In my opinion, this cannot be the case. PJM market rules were, and continue to be, determined by PJM alone and were not manipulated by the Defendants. Indeed, as described above, the Defendants undertook some effort to analyze past MLSA payouts in an effort to maximize their expected profits from the rules which PJM established. It appears to me that at no time did the Defendants actually have knowledge of the precise rules that PJM established for calculating and distributing MLSA payments, let alone manipulate these rules to their own benefit.

18. One type of manipulation involves the exercise of market power (by cornering or squeezing a market, for instance). To my reading, the Defendants had no ability to manipulate the PJM market rules since the Defendant did not participate in setting, changing or amending these rules in any sense. The fact that the Defendant may have made some profits by scientifically estimating expected profits under a set of established rules does not by itself represent any type of market power.

19. Other types of manipulation might involve "wash trades“ (selling and re-purchasing the same security or substantially the same security to generate activity and to affect the security’s price). To my estimation, the Defendants’ pair trades cannot be considered wash trades since the pair trades were (demonstrably, as noted above) exposed to market price risks that involved potential (and actual) losses while wash trades involve no risk of loss.¹

20. The Defendants in this case appear to have taken care in minimizing, but not eliminating, market risks. FERC appears to view this risk management as evidence that no risk was taken with these pair trades. The trading results clearly show one day of significant losses (May 30, 2010) and, I believe, an extensive and significant number of individual hours where Defendant trades were unprofitable. My reading of the facts notes that a full 46% of hours involving correlated pair trades (in the analysis of two sets) and nearly 20% of hours involving matched

¹ As Richard Tabors notes (in Appendix A of Exhibit B in the Written Submission to Commission Investigation Staff on Behalf of Powhatan Energy Fund, LLC In re: PJM Up-to Congestion Transactions (Docket No. IN10-5-00) dated October 21, 2011), “a UTC transaction from Node A to Node B is never the equivalent of a UTC transaction from Node B to Node A” (emphasis in original). In this light congestion trades are not the same as securities purchases and sales.
pair trades (following May 30, 2010) were not profitable during the period in question. These facts clearly show that the Defendant trades were exposed to significant risks.

IV. FERC Fails to Credibly Establish Scienter in This Case

21. Scienter (the intent or knowledge of wrongdoing) in financial manipulation cases refers to whether accused either intended to deceive, manipulate or defraud or acted with recklessness when trading. In their Preliminary Findings, FERC Staff cite statements of the defendants which express concern about the continuing profitability of their trading (p.11). However, these statements do not show intent to deceive, manipulate or defraud, but rather a rational concern about risks that affect expected trading profits.

22. In their Preliminary Findings, FERC Staff also cite the fact that the Defendants scaled up their trading operations in May 2010, but these facts do not appear to me to demonstrate recklessness in the trading strategy. Indeed, Defendants’ statements at the time appear to express a rational concern about the viability of the trading strategy looking forward. As noted above, the risks of this strategy involved the cessation of the MLSA refund, a possible change in the MLSA calculation, a mistake in the MLSA refunds received in the past, a possibility that trades might not clear, basis risk (which appears to have led to the massive May 30, 2010 loss), and the risk of unknown actions by other participants.

23. Further, the Defendants were diligent in undertaking trades that attempted to minimize these risks. This demonstrates to me that the trading was not reckless in any sense, but rather shows that the trading was prudent and rationally intended to minimize the risk of losses.

24. In my assessment, the Defendants made no attempt to defraud anyone. PJM established the rules regarding sharing of the MLSA. The Defendants executed risky trades in order to maximize expected profits given these rules. I understand that all trades were clearly identified to PJM and in no way did the Defendants misrepresent themselves to PJM or other market participants. In fact, MLSA revenues were shared for many months before Defendants’ trades were questioned. Further, upon notice in August 2010, the Defendants ceased trading immediately as requested. To me, none of these facts even remotely suggest that the Defendants intended to defraud.

V. The Facts and Circumstances From the In re Amanat (Amanat) Case Differ Significantly From this Case

25. As noted in FERC’s Preliminary Findings, trading in the Amanat case involved "sham trades" which were "designed to avoid the effects of price changes due to market forces." Careful consideration of the facts and circumstances, however, shows that the present case differs significantly from Amanat. First, Defendants’ pair trades clearly did not (and could not) avoid the effects of price changes due to market forces and/or uncertainty in MLSA revenues as demonstrated by the fact that 46% of the hours containing correlated pair trades and almost 20% of the hours containing matched pair trades were not profitable. Further, as the May 30, 2010
results showed, these losses could also be substantial. The Amanat stock trades were exposed to no similar market risk.

26. Second, the trading in Amanat involved trading in the public markets, where the effects of the sham trades arguably led to trading volume that other traders were likely to rely upon as public information signals. The trading in the present case involved only pair trades in the UTC market which, to my knowledge, FERC has not connected to the detriment of other traders other than asserting that these trades "implicitly signaled" that the trades were made to "profit from market price movements" (FERC Preliminary Findings, p.21). As spread trades, the profitability of trades in question here clearly depended on spread changes. The variation in profitability from hour to hour depended in part on uncertain spread changes and in part on uncertain MLSA revenues.

27. Third, the Amanat case involves trading in Nasdaq securities where the formula and thresholds for sharing in data revenues are clearly public knowledge. Importantly, no public knowledge or formula for determining MLSA payments exists in this case. In fact, the Defendants were surprised by the windfall payments that were made under the MLSA payments in 2009 and only used the history of payments in an attempt to estimate the non-public PJM calculations for MLSA revenue sharing in this case. As noted above, the continued use of this non-public formula and the potential for unexpected revisions to the formula for current or future UTC trades made Defendants’ trades risky (and might well have erased past or current week profits). No similar risks apply to the Amanat case, highlighting another difference between the riskless "sham trades" in the Amanat case and the risky pair trades in the present case.

28. A fourth difference between the cases involves the mechanism by which the trades were executed. In the Amanat case, actual offsetting trades were executed immediately within milliseconds. In the current case, the Defendants entered bids that were not executed immediately. Amanat also executed trades via a broker-dealer affiliated with MarketXT, the beneficiary of the Nasdaq rebate program, concealing the fact that he was on both sides of each trade. In the current case, the Defendant trades were always clearly identified as such.

VI. Summary

29. The Defendant trades in question quite clearly profited from sharing in the MLSA revenues from UTC trading volume. Notably, however, the trades which qualified for MLSA revenues were also subject to considerable market risk, considering that as many as 46% of a sample of correlated pair trades and almost 20% of matched pair trades were not profitable during the period under question. Further, reflecting basis risk and other sources of risk, these losses could be (and were on May 30, 2010) significant.

30. Additionally, the profitability of trades in question were also subject to the risk that MLSA revenues were not guaranteed, and could only be estimated. The fact that MLSA revenues were surprisingly large and doled out months after trades occurred in 2009 highlight the uncertain nature of these revenues during the period in question. Far from the certain data sharing revenues cited in the Amanat case, this uncertainty added significant risk to Defendants’ trades, including
current trades (since MLSA revenues were doled out up to a week in arrears), past trades (had PJM again changed the non-public revenue sharing formula months after these trades were executed) and future trades (if PJM changed the non-public formula at any point in time).

Appendix A--Documents Referenced


Written Submission to Commission Investigation Staff on Behalf of Dr. Houlian Chen In re: PJM Up-to Congestion Transactions (Docket No. IN10-5-000) dated December 13, 2010.

Preliminary Findings of Enforcement Staff's Investigation of Up To Congestion Transactions by Dr. Houlian Chen on Behalf of Himself and the Principals of Hunrise Energy Fund LLC and Powhatan Energy Fund, LLC, Docket No. IN10-5-000 presented in letter dated August 9, 2013 from Steven Tabackman, Attorney in FERC’s Office of Enforcement to William M. McSwain, Esq.
EXHIBIT D
Statement of Professor Larry Harris  
In the Matter of PJM Up-to Congestion Transactions  
Federal Energy Regulatory Commission  
Docket No. IN10-5-000

Introduction
Powhatan Energy Fund LLC ("Powhatan") and its counsel, Drinker Biddle & Reath LLP, retained me to opine on whether the conclusions outlined by the Federal Energy Regulatory Commission ("FERC", "Commission") staff ("Staff") in its preliminary findings in the above-referenced investigation are well-founded. Among other career highlights, I am a former Chief Economist of the SEC, and I have authored a book titled, “Trading and Exchanges: Market Microstructure for Practitioners.” I hold the Fred V. Keenan Chair in Finance, and I am Professor of Finance and Business Economics at the University of Southern California Marshall School of Business. In Appendix A, I describe my qualifications in greater detail.

Staff concludes that certain Up-To Congestion ("UTC") transactions scheduled by Dr. Houliyan (Alan) Chen ("Chen") on behalf of HEEP Fund Inc., CU Fund Inc., Huntrise Energy Fund LLC and Powhatan during the period beginning in February 2010 through August 3, 2010 violate the Commission’s prohibition of energy market manipulation. I read the preliminary findings carefully and did not come to the same conclusion as did the Staff. Most notably, I found that the trades in question did not violate the Commission’s prohibition of energy market manipulation. I further found that the trades did not violate any other reasonable definition of market manipulation. Instead, I found that Chen’s trades were statistical arbitrage trades that he arranged with the expectation that they would be profitable due to, among other things, characteristics of a poorly designed market structure.

Before explaining the bases for my opinion, consider briefly the facts of the case.

Chen’s Trades
I understand that Chen traded UTC contracts which provided for the sale and transmission of electric energy from one specified interface to a node within the PJM system under certain circumstances. Inherent in these trades was electric price risk—the risk that the prices of Day-Ahead and Real-Time electrical congestion would change to his disadvantage. Each submitted trade also required that the trader pay fixed costs per megawatt-hour to reserve transmission capacity and to provide for the operation of the PJM system. If these costs proved to be greater than the profits associated with changes in electric prices, the trade would be unprofitable.

As a result of entering these contracts, Chen’s clients, and all other UTC traders subsequently received certain payments from PJM called Marginal Loss Surplus Allocation ("MLSA").

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1 See “Preliminary Findings of Enforcement Staff’s Investigation of Up To Congestion Transactions by Dr. Houliyan Chen on Behalf of Himself and the Principals of Huntrise Energy Fund LLC and Powhatan Energy Fund, LLC, Docket No. IN10-5-000”.
2 Chen and others sometimes refer to these payments as "Transmission Loss Credits".
FERC-approved tariffs specified the amounts of these payments. The excess of the charges paid for transmission line losses over the actual line losses funded the MLSA payments. The difference was positive because PJM priced expected line losses at marginal cost, which is above average cost. No trader knew the exact values of the MLSA payments when they submitted their bids.

Before the period in question, Chen traded UTC contracts primarily with the expectation of profiting from electric price discrepancies. As a result of these trades, Chen apparently learned to his surprise that the MLSA payments were sometimes larger than he expected. Based on research he subsequently conducted, I understand that he further determined that these payments varied with some predictability.

With this knowledge, Chen altered his trading strategies based upon MLSA payments that he expected to receive. He started to increase the volume of his trading when he expected that the MLSA payments would be large, and he sometimes made trades that he otherwise might not have made in the absence of the MLSA payments.

Chen initially arranged trades in closely related pairs of nodes. In particular, Chen submitted bids from node A to node B and from node C to node A where nodes B and C are closely related to each other. The net electric price risk from these trades generally was small, assuming both legs were accepted. FERC has called these trades “paired” trades.

I understand that Chen later also arranged trades to obtain financial exposure on electrical congestion from A to B while also arranging trades on congestion from B to A. These trades have been called “matched” trades. The net electric price risk associated with these matched trades would be zero, assuming that both legs of the trade cleared the auction.

**Characterization of Chen’s Trades**

Chen’s paired and matched trades are examples of statistical arbitrage trades, a type of spread trade. They are arbitrage trades because the risks inherent in the two legs of the trades tended to offset each other. They are statistical arbitrage trades because their profitability was not certain—the paired trades were exposed to some electric price risk, and both types of trades were exposed to the risk that MLSA payments would be smaller than expected or that one leg would not clear the auction.

A very common example of a statistical arbitrage strategy is the pairs trading strategy that arbitrageurs often execute in the stock markets. Arbitrageurs buy one security while simultaneously selling another closely correlated security. They arrange these arbitrages when they expect that their trades will be profitable after accounting for all costs and benefits associated with their positions. These costs include brokerage commissions, exchange access fees, payments in lieu of dividends (for short positions), and financing costs. The benefits include liquidity rebates, dividends received on long positions, and any gains from price changes that they expect.

The paired and matched trades that Chen conducted were qualitatively no different from this security market example. In particular, Chen expected to profit because the expected costs of entering these trades were less than their expected benefits. The fact that the costs (primarily
payments for transmission capacity and for system maintenance) and benefits (primarily expected MLSA payments) were a larger fraction of the underlying electric prices than are the costs and benefits associated with similar arbitrage strategies in the security markets does not alter their proper characterization as statistical arbitrage trades. Likewise, the fact that these costs and benefits often were larger than the profits due to expected variations in electricity prices also does not affect their characterization as arbitrage trades. Such relations also appear in security markets. For example, arbitrageurs often buy stocks cum-dividend and sell them ex-dividend with the expectation of net profits even though they expect to lose on the associated price drop. This arbitrage is profitable because the dividends paid generally exceed the expected price loss.

Chen clearly arranged his trades to profit from arbitrage opportunities. The fact that these arbitrage opportunities arose primarily because of a poorly designed mechanism for distributing MLSA payments did not make them illegal. Also, the fact that they were highly profitable did not make them illegal. Chen arranged his trades to take advantage of these expected payments, all of which were legally available to all UTC traders under FERC-approved tariffs.

**Market Manipulation**

Market manipulation consists of trading strategies and information dissemination strategies that are designed to affect prices for the purpose of generating trading profits on existing or soon-to-be-acquired positions. For example, in a “pump and dump” manipulation, the manipulator buys or otherwise acquires stock that he hopes to sell later at a higher price. The manipulator then buys aggressively, encourages others to buy aggressively, or disseminates false positive information, all with the intention of driving prices higher to generate a profit on the initial position. In a variation of this strategy, the manipulator may do any or all of the above with the intention of raising prices so that the manipulator can establish a short position at overvalued prices. Either way, the manipulation is designed to produce a profit on a current or future position as opposed to a profit on the trades used to effect the manipulation. In the first case, the profits are realized on the initial position. In the second case, the profits are realized from the subsequent short sale of an overvalued security.

Likewise, in a “short and distort” manipulation, the manipulator sells stock that he hopes to buy back later at a lower price. The manipulator then sells aggressively, encourages others to sell aggressively, or disseminates false negative information, all with the intention of driving prices lower to generate a profit on the initial sale. In a variation of this strategy, the manipulator may do any or all of the above with the intention of lowering prices so that the manipulator can buy at undervalued prices. Again, in both cases, the manipulation is designed to produce a profit on a preexisting position, or a contemplated position, and not from those trades used to effect the manipulation.

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3 Chapters 11 (Order Anticipators) and 12 (Bluffers and Market Manipulation) of my book *Trading and Exchanges* provide an introduction to manipulative trading strategies.
In manipulations of the final payments of cash-settled contracts, a manipulator holding a long (or short) position in a cash-settled contract buys (or sells) the underlying instrument or disseminates false positive (or negative) information with the intention of raising (or lowering) the cash-settlement price and thereby generating an unfair profit. Once again, the manipulation is designed to produce a profit on pre-existing positions and not from those used to effect the manipulation.

In short squeezes and market corners, manipulators engage in behaviors that are designed to force traders with short positions to buy stock, contracts, or underlying instruments from the manipulator at inflated prices. Like all manipulations, these manipulations are designed to produce profits on preexisting positions, or soon to be acquired positions.

In a spoofing manipulation, a trader interested in buying, places an order on the sell side with the hope that another trader will place a lower priced sell order. If a lower priced order is submitted, the trader then buys from that order and immediately cancels his sell order. This manipulation is designed to fool other traders into making unwise trading decisions. In particular, submission of the false sell order can lower the price at which the manipulator ultimately acquires his position. A similar manipulation can also be done to raise the price of a sale. This manipulative strategy is essentially the same as shill bidding in an auction.

Finally, manipulators sometimes arrange trades to raise or lower closing prices in securities or contracts. These manipulations are called “window dressing” or “marking the close”. Manipulators engage in them to raise the computed values of their positions or lower their margin payments. Once again, the benefits that they expect to receive are not from the manipulative trades themselves. In these manipulations, the benefits come from high reported portfolio returns (which can generate investment inflows) or lower margin cash outflows required to maintain their positions.

**Wash Trading**

Many manipulative trading strategies involve wash trading—the purchase and sale of the same instrument with no intention or expectation of profit on the transactions. Manipulators use these trades to fool other traders into believing that an active market exists in which many traders are willing to trade at the reported prices. Seeing such a market, other traders are more likely to attach higher valuations to the securities because they believe that they trade in liquid markets (such valuations are said to have a liquidity premium) and because they believe that many other buyers are willing to trade at the observed prices. Wash trading for the purpose of manipulating the information that other traders use to form their expectations of value is not permitted by the SEC.

**FERC’s Characterization of Chen’s Trades**

Staff’s argument that Chen engaged in market manipulation fails to recognize that Chen’s trades were statistical arbitrage trades. Chen traded with the expectation that each of his paired and matched trades would be profitable by themselves. Chen’s trading strategies were not designed to produce profits on previously established or subsequently established positions. They were not designed to fool other traders into making unprofitable trades. They
were not designed to affect prices to his advantage. Indeed, any effect that Chen’s trading had
on prices diminished his expected profits. Finally, they were not wash trades designed to fool
other traders into changing their estimates of value or initiating trades. For these reasons,
Chen’s trades cannot be characterized as being part of a market manipulation scheme.

Consider now the Commission’s anti-manipulation rules, codified at 18 C.F.R. § 1c.2(a). They
provide in pertinent part:

(a) It shall be unlawful for any entity, directly or indirectly, in connection with the
purchase or sale of electric energy . . . subject to the jurisdiction of the Commission,

(1) To use or employ any device, scheme or artifice to defraud,

(2) To make any untrue statement of a material fact or to omit to state a
material fact necessary in order to make the statements made, in the light of the
circumstances under which they were made, not misleading, or

(3) To engage in any act, practice, or course of business that operates or would
operate as a fraud or deceit upon any entity.

With respect to point 1, Chen’s trading strategy was not designed to defraud. It was designed
in part based upon MLSA payments that were legally available to all UTC traders.

With respect to point 2, Chen (to the best of my knowledge) did not make any untrue
statement of a material fact or omit to state a material fact necessary in order to make
statements made, in the light of the circumstances under which they were made, not
misleading. If Staff thought that he made misleading statements, I presume that they would
have been identified in the Preliminary Findings.

With respect to point 3, Chen did nothing to engage in a fraud or deceit upon any entity. Chen
did not defraud anyone by collecting MLSA payments that were available to all traders, and
Chen did not deceive anybody by his actions or statements. As a UTC trader, he was entitled to
the MLSA payments, and like all UTC traders, he was under no obligation to explain why he was
arranging his trades.

Staff’s identification of Chen’s trades as wash trades does not make them manipulative trades.
Although they clearly are arbitrage trades, I understand that some may misidentify them as
wash trades since they generally did not expose Chen and his clients to much electric price risk.
But such an interpretation logically also must classify all arbitrage trades that do not have much
price risk as wash trades, which clearly cannot be the case. In any event, Chen’s trades, even if
incorrectly considered wash trades, were not made to manipulate the market.

**What Actually Happened**

Chen identified a means of arranging profitable trades that apparently was not fully
contemplated by FERC, PJM, or perhaps some of the other market participants. He arranged
these trades to his and his clients’ benefit. In the process, he reduced the MLSA payments that
other participants would receive.
Although the intention of the MLSA payment mechanism apparently was to return to system participants overpayments for line losses, Chen had no responsibility to arrange his trades to maximize MLSA payments made to others or to minimize MLSA payments made to him and his clients. In fact, he had a fiduciary duty to his clients to fully consider the MLSA payments when placing his trades. Given PJM’s FERC-approved tariffs, Chen undeniably was legally entitled to receive MLSA payments for the trading that he engaged in.

Staff does not claim that Chen’s trades were manipulative before the period identified by Staff. If Staff is to argue that Chen’s strategies during the period were manipulative, it would have to distinguish between trades that Chen was allowed to do and those that he was not allowed to do. Any such distinction ultimately would have to specify a maximum degree of congestion risk reduction that Chen could effect through offsetting trades, or equivalently, a minimum amount of net risk that he must bear to qualify paired and matched trades as acceptable trades. Such a standard would indicate that trades with sufficient congestion risk relative to expected return are acceptable while those without are not. No US regulator or court to my knowledge has ever identified inappropriate behavior using such a standard in the absence of other improper behavior.

FERC and PJM took what they perceived to be corrective action when they changed the PJM tariff to eliminate the expected profits associated with Chen’s trades. If they had wanted to prevent these trades, they should have made these changes or taken other actions earlier. The fact that they were unable or unwilling to make these changes earlier does not in any way imply that Chen engaged in market manipulation.

Chen arranged his trading to maximize his clients’ profits, not to manipulate the markets or deceive other participants in them.

To hold that he engaged in market manipulation is to indict everyone whose behavior takes advantage of legally available opportunities. Our economy is rife with examples of such behaviors in which someone engages in legal activities that disadvantage others. Consider some examples:

1. Refiners legally formulate and produce the cheapest possible blended products that meet all product specifications, even though such products may not best serve consumers.

2. Taxpayers legally engage in transactions designed to avoid taxes, even though those transactions lower total tax revenues and often lead to unexpected and undesirable consequences, not least of which is that tax rates have to be set higher so that others must pay more to cover government expenditures.

3. It is legal to open accounts at mutual savings and loans for the purpose of participating in announced demutualization IPOs, even though doing so lowers the benefits that existing depositors will obtain from the IPOs.

4. Unless contractually or legally restricted, people can submit as many entries as they wish to lotteries that various sponsors conduct to promote products, even though this behavior disadvantages other participants and may subvert the purpose of the sponsor.
5. People legally buy and drive heavy SUVs for the purpose of protecting their lives in the event of a collision, even though doing so increases the probability that others will suffer greater injuries in the event of an accident, regardless of their liability.

6. Counting cards at blackjack tables is legal, even though doing so ultimately reduces the profits that casinos make, which in competitive markets reduces the odds that casinos offer to all gamblers.

7. Buying and hoarding “anytime” postage stamps before stamp prices rise is legal, even though doing so lowers post office revenues.

8. In California, solar water heaters were once so heavily subsidized by gas companies and by the state and federal governments that the financial benefits of installing a system were substantially greater than the costs of these systems. Owners legally could build much bigger and more expensive systems than were necessary to profit from the incentives. Those who did build such systems depleted rebate pools and thereby hurt other potential installers.

9. Purchasing and redeeming shares in open-ended mutual funds at times that they are undervalued or overvalued is legal (assuming that the orders are submitted before appropriate deadlines), even though doing so dilutes the investment values of the other shareholders. Following substantial episodes of market timing, mutual funds put restrictions on these practices to limit active market timing. Market timing was (and remains) illegal only when traders engaged in fraud to further their market timing strategies.

In all these situations, the remedy is to either accept the behavior, or adopt regulations to make the activity illegal or unprofitable. The remedy has never been to punish or prosecute the clever individuals for doing what they did.

In all markets, rational traders always make trading decisions based upon all the costs and benefits they expect will be associated with their trades. If contemplation of MLSA payments is permitted in the PJM UTC market, then Chen’s trades were legal. But if contemplation of MLSA payments is not permitted, it is impossible to understand why every other rational trader’s trades were not also illegal.
Appendix A

My name is Lawrence Harris. I hold the Fred V. Keenan Chair in Finance, and I am Professor of Finance and Business Economics at the University of Southern California Marshall School of Business.


I served as Chief Economist of the U.S. Securities and Exchange Commission from July 2002 through June 2004, where I directed the SEC Office of Economic Analysis in which 35 economists, analysts, and support staff engaged in regulatory analysis, litigation support, and basic economic research. During this time, my office and I worked extensively on market timing and late trading issues.

I currently serve as a Chairman of the Clipper Fund, Inc. (CFIMX), lead independent director of Interactive Brokers Group, Inc. (IBKR), and research coordinator of the Institute for Quantitative Research in Finance (the Q-Group).

In the past, I have served as an associate editor of the Journal of Finance, the Review of Financial Studies, and the Journal of Financial and Quantitative Analysis. I have also served as a director of CFALA—the Los Angeles Society of Financial Analysts, and as the director of the USC Marshall School of Business Center for Investment Studies.

I also have worked as a practitioner in the securities industry for the New York Stock Exchange; UNX, Inc., an electronic pure agency institutional equity broker; and Madison Tyler, LLC, a broker-dealer engaged in electronic proprietary trading in various markets.

I have been designated by the CFA Institute as a CFA charterholder, and I have written chapters for the curricula that the Institute distributes to CFA candidates and to candidates in its new Claritas certificate program.
EXHIBIT E
Introduction

Powhatan Energy Fund LLC and its counsel, Drinker Biddle & Reath LLP, retained me to opine on whether the conclusions outlined by the Federal Energy Regulatory Commission (FERC) staff in its preliminary findings in the above-referenced investigation are well-founded. I am the Cheryl and Christian Valentine Chair and Associate Professor of Finance and Operations and Information Technology Management at the Haas School of Business, University of California at Berkeley. I have focused much of my academic research on the equity market structure and trading. Appendix A contains my curriculum vitae further describing my qualifications. Appendix B lists materials that I reviewed prior to writing this position statement.

My opinion will focus on the FERC staff’s findings in its preliminary findings that Dr. Houlian “Alan” Chen and Powhatan engaged in market manipulation related to certain Up-to Congestion trades and their receipt of Marginal Loss Surplus Allocation (MLSA) payments between February 2010 and August 2010. My analysis assumes that the MLSA payments themselves are not directly at issue as they were approved by FERC. A regulatory policy punishing market participants retroactively for flaws in existing rules is preposterous when those rules were clearly approved.

Investors, traders, and other market participants do not and should not view payments for trading volume separately from the gross revenues associated with their trading activity. There is no economic support or support in academic literature that trading payments like the MLSA are relevant as to whether or not behavior constitutes “wash trades”, “sham” transactions, or manipulation.

Below I will describe the basis for my conclusion using my knowledge of working with trading firms and the academic literature related to trading fees and rebates. The study and use of these payments is most common and best known in the equity markets. Therefore, while the economic principles are universal, my evidence will focus on the equity markets.

Trading Fees and Rebates

Trading fees and rebates in equities are commonly referred to as maker/taker pricing. The maker is the resting limit order and the taker is the incoming marketable order that initiates the transaction. Typically, the market center charges the taker a fee and provides a rebate to the maker. These fee/rebate payments are explicitly designed to affect traders’ incentives and behavior in terms of how much they trade and where they trade.

The BATS stock exchange is well known for using its fee/rebate payment structure to change trader behavior. Examples of this are its pricing experiments in January 2007 and September 2007. In January 2007, BATS reduced its fees in Tape C securities (NASDAQ-listed). The below graph shows that its market-share in those securities immediately increased from 4% to almost 10% (see the green line). BATS market share in other securities did not change noticeably, demonstrating that the fee change was responsible for the change in trading behavior. This successful experiment was repeated in Tape A securities in September 2007 and its
market-share in those securities immediately increased from 2% to nearly 8% (see the blue line). Similar to the January 2007 event, the market-share effect was only present in securities affected by the temporary fee reduction. BATS repeated this experiment again by successfully increasing its market share in European equities by reducing fees in June 2009.

**Daily Average Matched Market Share**

![Graph of BATS market share in U.S. equities from July 2006 to August 2008:](http://www.batstrading.com/resources/press_releases/BATSAugust2008VolumeFINAL.pdf)

The evidence from BATS demonstrates how payments are used by markets to influence traders’ behavior and increase trading volume. BATS was one of many market centers, so focusing on its market share does not demonstrate that traders increased their total trading as it is possible they simply shifted their trading from another market to BATS. However, how fee/rebate payments affect overall trading volume is shown by Malinova and Park’s (2013) examination of a fee change in July 2005 on the Toronto Stock Exchange (TSX). The TSX moved from per-dollar to per-share calculation, generating heterogeneity in the payment depending on the price of the stock: the net maker/taker payment declined for high-priced stocks and it increased for low-priced stocks. In stocks that were only traded on the TSX, trading volume decreased where net payments increased and trading volume increased where net payments decreased. The BATS and TSX fee/rebate changes demonstrate that payments affect where and how much traders trade.

**Trading Fees and Prices**

The FERC staff’s preliminary findings seem to attach significance to the breakdown of the profitability of trading between the trading revenues based on transaction prices and trading fees/rebates. There is absolutely no economic basis for making such a distinction. All economic agents rationally view the total costs and total benefits of their actions and choose their behavior accordingly. A natural intuition is that in a competitive market, if traders are charged a fee (or given a rebate), they will adjust their pre-payment prices to exactly incorporate that payment. Colliard and Foucault (2012) provide an example of this with an economic model in
the context of financial market fees and rebates. In line with the above intuition, they find (Corollary 1) that traders adjust their prices to exactly incorporate the fee/rebate. This makes fees/rebates irrelevant to the prices (and profits) after accounting for the payments.

The preliminary findings appear to focus on the issue that trading revenues sometimes were negative before accounting for MLSA. Given the above economic principle that traders only care about prices after incorporating fees/rebates, negative trading revenues signify nothing. In my experience working with high frequency trading firms, there were often times when their trading revenues were negative before accounting for fees and rebates. They viewed this as irrelevant as their firms only cared about total net revenues, which is inclusive of fees and rebates. In fact, significant types of equity market trading have negative trading revenues before accounting for fees and rebates. My own research provides evidence of this (Brogaard, Hendershott, and Riordan (2013)). We examined high-frequency traders (HTFs) on NASDAQ in 2008 and 2009. We found that their liquidity supplying trades, which receive the above mentioned maker liquidity rebates, are unprofitable gross of fees, but profitable once liquidity rebates are included. For example, in Table 5 of Brogaard, Hendershott, and Riordan (2013), we find that in the large stocks, HFTs’ liquidity supplying trades (which are 42% of trading volume) lost $1,824.99 per stock per day on average. However, once the liquidity rebates were included, the HFTs had positive trading revenues of $8,211.21 per stock per day. In other words, on average these equity traders were buying shares of stock at higher prices than which they were selling them. They were losing money on the trades when rebates were not taken into account. However, they more than made up from this loss on the rebates paid by the exchanges and market centers where the trades were being executed. As a result, their trades were profitable after accounting for all costs and benefits of their activity. In the peer review process at one of the most highly regarded academic finance journals, no reviewer found this surprising or evidence of manipulative behavior. Moreover, one of the reviewers commended us for including fees/rebates, as the analysis without them would be incomplete and possibly misleading. Brogaard, Hendershott, and Riordan’s (2013) findings represent a large amount of trading activity and have been in the public domain for many years. I am unaware of any claims by the exchanges themselves, the Securities and Exchange Commission, or other regulators that these findings indicate manipulation.

Conclusion
Trading fees and rebates affect traders’ incentives and behavior. A properly designed market takes this into account. There is no economic basis, academic literature, nor equity market industry practice supporting the notion that trading payments like the MLSA are relevant as to whether or not behavior constitutes “wash trades”, “sham” transactions, or manipulation. Similarly, no economic basis exists for distinguishing the profitability of trading between the trading revenues based on transaction prices and trading fees/rebates. If lack of positive pre-payment trading revenues, but positive post-payment revenues, is evidence of possible market manipulation, then positive pre-payment trading revenues, but negative post-payment revenues, could be viewed as evidence against market manipulation. This illustrates how the FERC staff’s preliminary findings in this area are lacking in any sound economic reasoning. In short, economic basis, academic literature, and equity market industry practices provide no support for the relevance of pre-approved trading fees and rebates in reaching a conclusion of manipulation.
References


Appendix B: Materials Reviewed

FERC Preliminary Findings, August 9, 2013

Powhatan Written Submission to Commission Investigation Staff

Powhatan Final Submission to FERC on behalf of Alan Chen

August 24, 2012 Letter from William McSwain to Steven Tabackman, Supplemental Submission on Behalf of Powhatan

Glen Boshart, “Alleging $19M in ill-gotten gains, PJM asks FERC to grant quick approval to rule changes,” SNL Financial, August 24, 2010

Platts, Global Power Report, August 26, 2010
EXHIBIT F
Electricity Market Design Flaws and Market Manipulation

William W. Hogan

February 3, 2014

Powhatan Energy Fund LLC (Powhatan) did not commit market manipulation according to any reasonable definition. Its response to such accusations provides a rare public opportunity to discuss policy associated with electricity market design and market manipulation enforcement. The Federal Energy Regulatory Commission’s (FERC, Commission) jurisdictional authority is not properly suited for electricity markets. A discussion of elements of market design, and the respective roles of market operators, regulators and market participants, suggests both changes in policy and in the scope of market manipulation enforcement. Electricity market design requires care in providing the necessary features and rules to support an efficient market. Ideally, behavior that violates these rules and exploits market flaws should be prohibited and subject to enforcement sanctions. However, the problem of designing these markets is complex enough that market manipulation policy must recognize that some apparent market defects are features and not flaws.

Introduction

Electricity market design and enforcement policy should be consistent and reinforcing. The challenges of crafting and implementing such policies are many. Market design features create incentives and market participants will respond to those incentives. Market manipulation policy should recognize and incorporate the implications of the market design. All market participants should support identifying and correcting flaws in the market design.

Recent market manipulation enforcement actions have both raised the profile and created a new urgency to address these challenges. The confidential process of enforcement settlements obscures the issues and complicates the public discussion. The Powhatan case provides an important opportunity to examine the public policy problems that arise both from the limits of FERC’s authority and the growing disconnect between market design and enforcement actions. The purpose of the present comments is to describe some of the problems and propose possible reforms that improve both market design and enforcement policy.
The Powhatan Case
The Powhatan case presents an example of allegations of market manipulation in the presence of market design defects. ¹ This case presents an opportunity for a public discussion of these issues outside the opaque walls of enforcement settlements. ²

The central element of the Powhatan case involves the treatment of the Marginal Loss Surplus Allocation (MLSA, loss surplus) in the PJM electricity market. The MLSA arises because of a feature of electricity pricing that includes marginal losses. The Commission rightly has recognized the importance of using marginal cost information, including for losses, in determining efficient electricity market prices under bid-based, security-constrained, economic dispatch.

“That is, each spot market energy customer pays an energy price that reflects the full marginal cost—including the marginal cost of transmission losses—of delivering an increment of energy to the purchaser’s location. Since losses vary in delivering energy to different locations, marginal losses increase as the number of megawatts (MW) of power moved increases.”³

A feature of this pricing methodology includes total collection for losses that is definitionally greater than the total cost of the losses. Conceptually, the resulting surplus is intimately related to the surplus in congestion costs when the transmission system is constrained. For historical reasons, however, the treatment of losses is seen differently than congestion, and market operators seek an appropriate means for allocating the loss surplus.

Both PJM and the Commission have considered different means for the loss surplus allocation. A full discussion of alternative means of allocation would go beyond the scope of the present comments. Suffice it to say that the original method of allocation by actual load-ratio share for network customers was a better method than the one that was eventually applied by PJM and endorsed by the Commission in 2009. That rule followed after a lengthy discussion within the unhappy frame of esoteric distinctions about who was and who was not paying for the transmission grid.

¹ For details, see the Powhatan web page: www.FERCLitigation.com.
² The Deutsche Bank case involved a related but different set of issues of alleged market manipulation that was headed towards open public discussion. See (Hogan, 2012) for a further discussion of price manipulation, related transactions, and price degeneracy. In the event, the public discussion terminated when Deutsche Bank settled the dispute at about the same time as announcing its intention to leave the commodity trading business.
In adopting the MLSA rule, which assigned some of the MLSA to market transactions, the Commission recognized that this would create incentives for transactions that went beyond arbitrage or promoting market efficiency.

“...payment of the surplus to arbitrageurs that is unrelated to the transmission costs could distort arbitrage decisions and reduce the value of arbitrage by creating an incentive for arbitrageurs to engage in purchase decisions, not because of price divergence, but simply to increase marginal line loss payments.”

This is as clear a description of a market defect that one can find in regulatory proceedings. Nonetheless, the Commission and PJM made an affirmative decision to adopt just such a rule that included so-called “Up-To Congestion transactions.”

“Each user or customer would receive its proportionate share of the surplus based on the total MWhs of energy (a) delivered to load in PJM, (b) exported from PJM, or (c) related to cleared Up-To Congestion transactions (where the user or customer paid for transmission service). The Commission finds that PJM’s proposal is a just and reasonable method of allocating the surplus, subject to the condition that PJM clarify that its tariff complies with our finding that payments be made only to those who pay for the costs of the transmission grid.”

The details of the Up-To Congestion transactions include the submission of a bid for transmission between two locations with a limit on the maximum day-ahead congestion that will be accepted. These bids appear in the day-ahead market and, depending on the congestion in the system, the bids may or may not clear.

In some instances, the cleared bids required payment for associated transmission service and these cleared bids would participate in the receipt of loss surplus payments. If the resulting loss surplus payments were large enough, the loss allocation alone could make the transaction profitable.

As the Commission had anticipated, this produced an incentive for “arbitrageurs to engage in purchase decisions, not because of price divergence, but simply to increase marginal line loss payments.” Powhatan and others, working with Dr. Houlian Chen who designed and implemented the trades, developed various market analyses and tools to estimate possible loss surplus payments and engaged in paired trades that could benefit from these payments. The trading strategy worked.

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5 Black Oak Energy, LLC v. PJM Interconnection, L.L.C., 128 FERC ¶ 61,262 at P 23 (2009).
The use of paired transactions had the effect that when both transactions cleared in the market, these transactions would offset each other. However, eligibility for loss surplus allocation would remain for the cleared transactions that had also paid for transmission service. The details of all the payments and transactions costs, likely exposure to one but not both transactions clearing, and so on, do not affect the simple observation that the strategy was in part responsive to the incentives created by the loss surplus allocation rules.

Powhatan advises that the PJM Market Monitor contacted Dr. Chen and indicated that there would be a referral to FERC regarding the trading strategy, particularly in respect to paired trades, if Dr. Chen continued implementing the strategy. Upon this notification, Dr. Chen stopped using this strategy.

Should the mere fact that the trades were motivated in part by something other than “price divergence” lead to the conclusion that this was market manipulation? As discussed below, the answer should be that this is not market manipulation. However, Powhatan and others became the subject of just such a FERC enforcement action for market manipulation.

There was a market defect in the poorly crafted rules for loss surplus allocation. The rule was adopted in the full light of day, with explicit discussion of the incentive effects and the likely implications for trading strategies of market participants. This was not a hidden flaw. The market feature was already known and accepted by the Commission.

The loss surplus allocation rule was like other features of electricity markets such as the production tax credit for wind or the demand response double payment for behind the meter actions. Arguably, when both Up-To Congestion transactions cleared, the paired trading strategy had no market impact other than on the loss allocation. By contrast, the wind tax-credit-induced negative cost offers and inefficient demand response decisions impose real costs on the system in addition to transferring payments among market participants.

The loss surplus allocation rule illustrates a market defect. The basic principle that market participants can and should seek to profit from trading within the market rules should apply. The trading strategy was a response to flawed incentives. This was not fraud. This was a failure of the market designer and the Commission in its oversight role. It cannot be a principled way to define or enforce rules against market manipulation to sanction market participants for responding to the incentives created by the market rules.

**Electricity Market Design**

A purpose of good electricity market design is to support efficient operations and investment incentives. However, the development of efficient rules is neither easy nor guaranteed. Electricity market designs and the accompanying business protocols can create inefficient incentives and unintended opportunities for profit. In some cases, inefficient market elements
may be intentional. In other cases, the market design defects may be inadvertent. In either case, in hindsight, inefficient market design defects could be interpreted as features or flaws, with different implications for judging the behavior of market participants.

Policy questions arise as to how to treat defects in the market design, and how this policy should relate to enforcement of general rules against market manipulation. Flawed design elements could and should be changed and the unintended consequences eliminated or at least mitigated. However, until the flaws are corrected, should market participants pursue strategies influenced by otherwise imperfect market incentives? Or is such behavior to be treated as market manipulation? And how can market participants know the difference?

These circumstances of imperfect markets raise important issues about the respective roles and responsibilities of regulators, market operators, and market participants. What should be done in the face of market defects, and who should have a burden to act? This is a difficult topic to address in part because many of the details of market manipulation enforcement actions are not public. However, the general problem and the limited available public discussions illustrate gaps in the authority of the Commission and suggest prospective reforms in market rules. The purpose of the present comments is to help frame the problems of creating well-functioning electricity markets and address the general challenge of deterring market manipulation while simultaneously providing market participants clarity about the rules.

**Market Manipulation Policy**

A problem for dealing with real market manipulation is that current FERC jurisdictional authority follows from statutes that were designed for securities markets and not efficient electricity markets. Securities attorneys inform me that there must be “fraud” for FERC to have enforcement authority in dealing with market manipulation. But there are trading practices and other behaviors that would be inconsistent with efficient outcomes that do not involve fraud in the conventional definition of the word. The exercise of market power is a good example. There is nothing necessarily fraudulent about the exercise of market power and to say otherwise is Orwellian doublespeak.

The practice of forcing the round peg of undesirable behavior into the square hole of fraud produces a perverse result of constantly redefining or obfuscating the meaning of the words in order to expand the definition of fraud to include whatever “bad” acts that are the subject of immediate attention. There are high costs of continuing down this road. The practice makes it almost impossible to be clear about the underlying analysis to see if the actions deviated from what is allowed under the market design. It makes it difficult, if not impossible, to describe market participation standards in plain terms that connect to the market design. In the process, the confusion produces the de facto result that the prohibited behavior is either everything or nothing, depending on the preferences of the person who holds the pen that day. This cannot be good governance or good public policy.
Rather than redefining fraud beyond recognition, it would be better to expand and clarify the authority at FERC to allow it to better support well-functioning electricity markets and have better procedures for identifying and correcting market defects. In hindsight, some of the market flaws and the implied bidding practices are embarrassing for the FERC and for those like the author who work on issues of market design. But the market design flaws were not created by the market participants. The right policy response should be to focus on improving the regulatory and market framework, not imposing *ex-post* responsibilities on market participants to rise above the market design in ways that would be impossible to implement in practice.

**Workable Electricity Market Design**

Good electricity market design seeks to provide a platform to utilize the advantages of competitive markets to achieve a broad social benefit. (Joskow & Schmalensee, 1983) In particular, a core principle of organized market design is embodied in the basic ideas of an efficient market built around the model of bid-based, security-constrained, economic dispatch with locational prices and financial transmission rights. (Hogan, 1992) The use of economic dispatch, to maximize the difference between bid-in benefits and costs, explicitly embraces the social welfare objective and efficient markets. A central feature of the standard competitive market model is that the regulatory and market design policy objective of achieving economic efficiency need not be shared by the market participants. In particular, the assumption is that the market participants individually pursue the objective of maximizing their own profits or benefits. Under stylized assumptions about the nature of the underlying technology and the absence of market power, a fundamental result is that with fixed market clearing prices, market participants maximizing their own profits or benefits will produce a workably efficient outcome consistent with welfare maximization. Profit maximizing behavior by market participants is central to the theory. There is no requirement for market participants to do anything to forego profitable transactions in order to achieve better market outcomes. This market principle is often embodied in the shorthand description that prices will clear the market so that in equilibrium there will be no remaining unexploited profitable transactions—a no arbitrage condition.

In practice, no market is perfect and no market design is without its defects. The basic market design for the ideal case goes a long way, but there will always remain design elements that do not or cannot support a fully efficient outcome. In these circumstances, the best principled practice is to refine the market design as much as possible to support efficient outcomes, deal with any remaining problems through general behavioral rules or regulations to the extent possible, and then accept the small remaining imperfections under the rubric of workable competition.

A good example of a limit on fully efficient market design arises in the practices of the independent system operator in organizing and operating the market under the standards of security-constrained dispatch. The problem arises from the externality associated with reliability
and avoiding cascading blackouts. The individual profit maximizing transactions of decentralized market participants could threaten reliability for everyone, but there is no practical decentralized way to price or internalize the threat to reliability. Hence, good electricity market design follows the well-established engineering practice of imposing conservative “N-1” contingency limits to constrain the economic dispatch and protect against the worst case. It would be easy to make an argument that these constraints are too conservative and that a careful cost-benefit calculation would relax these constraints at some times or under some conditions. However, the regulators and system operators who oversee the system believe it is better to err on the side of caution and respect the security constraints at the cost of some loss in economic efficiency. Market participants are not expected to seek greater efficiency by deviating from the reliability rules as stated. Adherence to conservative security constraints, even at the cost of loss of some market efficiency, is a feature and not a flaw.

This distinction between features and flaws is important because the difference is not always obvious. For example, consider the effect of the production tax credit for electricity produced with wind generation. The production tax credit is a related payment for wind generation that creates an incentive to make negative cost supply offers. It is clear that a purpose of national policy is to support the development of wind generation and the production tax credit is one of the tools employed. However, the production tax credit creates now well-known unintended consequences when it produces negative prices that affect everyone in the electricity market. If the purpose of the tax credit is to provide an economic incentive to invest in wind generation, then it would be possible to apply the same incentive as an offer tax credit that would be paid when the wind generator was available for generation, but without incurring the unintended consequences of creating negative prices. If the purpose of the tax credit is to account for carbon free generation, then a more efficient approach would be to impose a carbon tax on actual emissions rather than create negative prices. It would be easy to argue that the production tax credit is inefficient, but is it a flaw or a feature? From the perspective of an electricity market designer, it would be fair to characterize the tax credit as a design flaw and to predict that it will not survive much longer. But from the perspective of a market participant, it would seem natural to describe the tax credit as a feature. And for such a feature, both FERC and any market designer should predict and expect market participants to follow the profit maximizing incentive to make negative supply offers that produce negative market clearing prices.

Wind generators submitting negative offers would be responding to the incentive of the tax code, but not the underlying economics of wind generation. The negative offers would be transparent, so there is no fraud in the ordinary dictionary sense of the word. The negative offers would alter market outcomes and affect everyone else, but there need be no manipulation to profit from related transactions other than the unavoidable related transaction effect on the tax liability. In the case of wind generators, there would be no need for an enforcement action based on an argument that the offers were inconsistent with economic efficiency and based solely on the
benefits of the tax credit. Negative offers from wind generators are not market manipulation, even if they do follow from a market design flaw. The proper attention of reform would be to improve the rules so that the flaw of the inefficient production tax credit would no longer be a feature for market participants.

Another example of a putative market design flaw seen as a feature from the perspective of market participants arises in the case of demand response and payments for demand reduction without charging for the demand baseline. Before FERC adopted this policy there was an extensive debate that laid out the perverse incentives of asymmetric treatment of demand response and generation behind the meter versus the treatment of generation that is not behind the customer’s meter. (Federal Energy Regulatory Commission, 2011) For example, the demand response policy provides an incentive for customers to install and operate inefficient diesel generators that would never be economic in the ordinary wholesale market. The customer avoids paying the purchase price of the electricity it generates and is then paid again for having reduced its electricity purchases even though its total electricity consumption has not decreased. (Hogan, 2009) From this perspective the demand response policy is a flaw that will eventually be a subject of reform. But as long as this is the announced policy and embedded in an electricity tariff, the effective double payment for metered demand reduction is a feature from the perspective of the market participant. Profiting from the inefficient incentive would be neither fraud nor manipulation. The design is the policy problem. The resulting market participant behavior is expected, and expected to be economically inefficient.

The distinction between a feature and a flaw appears to depend on the perspective of the viewer. In the case of both the production tax credit example and the demand response payment policy, available alternative market designs could remove the flaw. But from the perspective of the market participants, they properly think of these design flaws as market features and assume that they should respond to economic incentives created by these features with the objective of maximizing profits.

By contrast, there are other problematic electricity market defects that are not design flaws in the same sense because there is no design alternative that would be sufficient to resolve the inefficient incentives. The treatment of start-up costs and minimum load levels for generation presents such a challenge. The simple competitive market model presumes the existence of market-clearing prices that support the solution. Given those prices, economic dispatch is consistent with profit maximization and market equilibrium. However, the assumptions that drive this conclusion include that the well-behaved underlying technology is completely flexible. In particular, there are no lumpy decisions such as start-up and minimum load. These so-called “non-convexities” do not foreclose economic dispatch and efficient solutions. But these non-convexities do create situations where there is no market-clearing price that supports the economic dispatch. (Gribik, Hogan, & Pope, 2007) If the dispatch considers the start-up and
minimum load requirement, the resulting market prices imply that dispatched generation may lose money. At these prices, the profit maximizing choice would be not to participate in the dispatch. Or some other generator that is not dispatched would find it profitable to enter the market even though it was not part of the efficient economic dispatch. There is no market price that would avoid this problem. This pricing deficiency is a characteristic of the technology and the market design. Faced with this fact, organized markets have created rules for various bid-cost recovery mechanisms to ensure that dispatched generators at least recover their offer or bid costs. These rules are intended to make possible an economic dispatch and an efficient market outcome. Generators that make cost-based bids and benefit from related payments under these bid-cost recovery rules are not manipulating the market.

Another prominent example confronting the limits of market design would be the textbook exercise of market power. A market participant with market power would not have to take the market prices as given. In particular, by withholding some real-time production from the market, a generator could influence prices that would apply to its other production. Depending on many factors including the portfolio of other generation and the response of the rest of the market, the loss on the generation withheld may be small compared to the increase in the profitability of the rest of the generation portfolio. The market participant with market power may find withholding production as a profit maximizing strategy across its entire portfolio.

This exercise of market power by a generator is a special case of the larger problem of engaging in transactions that affect market prices and alter the profitability of related transactions. To some degree, all transactions have some impact on market prices. If a market participant engages in more than one transaction, then the change in market prices could affect the profitability of the related transactions. Within the confines of the available efficient market design, electricity market designers know of no easy design rule that would eliminate this incentive. The vulnerability to market power and price manipulation is a flaw that is an inherent defect of any practical market design.

The policy response to such an inherent limitation of efficient market design has been and should be to adopt general rules that prohibit or mitigate the possible market manipulation. For example, generator offer caps and must offer requirements are ubiquitous constraints on behavior intended to mitigate generator market power in organized markets. Electricity market designers constrain otherwise profit maximizing behavior by limiting the offers. Similarly, as embodied in the HQ Energy principles, FERC has made a distinction between transactions that are profitable on a stand-alone basis, but which affect market prices and those transactions which are unprofitable alone but which produce profits on related transactions that make up for any direct
losses.6 By these principles, a transaction that is profitable on its own is not manipulation, whereas a transaction which is only profitable as part of portfolio benefits that depend on changing market prices is manipulation. Such a rule-based approach is necessary when simple changes in market design are not available.

The fact that there are design flaws that could be exploited is unfortunate and surely captures the attention of the FERC and the electricity market designer. But the policy response must recognize that perfection is not attainable and there always will be market defects. It is important to identify the serious flaws and fix them as quickly as possible, to the extent possible. And where market design cannot overcome the inherent limitations of markets, it is important to adopt reasonable rules and regulations to guide behavior. The same rule of reason implies that the goal is to achieve the efficiency gains of workable competition, not the mirage of perfect competition. Hence, some market limitations, such as ordinary human errors or cumbersome stakeholder processes, will be left alone as not worth fixing. The objective, although challenging, is to improve the process to address the defects that can be fixed.

**Addressing Market Defects**

What should be the responsibility of the market participant when confronted with a defect or limitation in the market design? Should the market participant interpret the anomaly as a feature and follow profit maximizing behavior to the limits of its capability? Or should the market participant take the anomaly as a design flaw and forego the profits? Or should there be some ground in between? What should be the boundary between acceptable behavior and proscribed market manipulation? The focus here is on what should be the policy given the practical requirements of good practice and good market design.

It is clear that it cannot be the responsibility of the market participant to correct a market design flaw. Nor can it be the responsibility of one market participant to enforce a rule on other market participants that precludes exploiting a flaw. The market participants do not and should not have this authority and hence should not have this responsibility. Changing the market design and supplementing it with behavioral rules is the responsibility of the FERC and market operator.

If electricity systems were simpler, without all the advantages and limitations of organized markets, it might be possible to make a case that market participants bear no responsibility and could simply treat everything as a design feature and use any market strategy that is not explicitly forbidden as being allowed and eligible for exploitation. But such an argument for no restraint ignores the reality of the many rules and regulations that are designed to help market

participants, such as through the generator bid-cost recovery mechanisms. Surely in a complicated organized market design supported by regulation and intended to expand the size of the pie, all market participants should shoulder some responsibility other than simply to maximize their own profits. A standard that market participants bear no responsibility at all seems untenable.

On the other hand, as the discussion above illustrates, there is no easy way to distinguish market design flaws that should be corrected from market design features that are part of other policies to change incentives away from the idealized short-term efficient competitive market. If market participants were expected to refrain from profit maximizing behavior that would be inefficient in a perfect world, the wind generators would not make negative offers, demand response would not be paid twice for behind the meter generation, and so on. The confusion that such a requirement would create would be substantial and highly controversial. It cannot be good policy to impose on market participants a responsibility to rise above the actual market design. A standard of perfection in bidding practices also seems untenable.

An Expanded Notification Policy
A middle ground would be notification. Many market design flaws are inadvertent and unrecognized by the FERC or market operator. Market participants cannot be responsible for correcting market flaws. Nor should market participants be assigned responsibility to make the judgment call that distinguishes between features that are accepted deviations from efficient design and flaws that should be corrected. But market participants should know that some design elements may be such flaws and market participants should share a fiduciary responsibility to bring possible flaws to the attention of the FERC and the market operator. The basic idea would be to create a safe harbor for a bidding practice that might be suspect. Once the market participant notified the market operator, the market participant would have discharged its responsibility. The FERC or market operator should make the decision whether to change the market design, adopt a general behavioral rule, or leave the practice alone.

A responsibility to notify and a safe harbor for market participants who meet this responsibility, would go beyond the current practice in enforcement of actions against market manipulation. For example, in its Order 670 on prohibiting market manipulation, the Commission stated:

“As there is no new affirmative duty of disclosure under the Final Rule, commenters’ concern over the disclosure implications of the proposed regulations is misplaced. The Final Rule operates within the regulatory framework of the FPA and NGA; the Commission is not adopting the disclosure provisions of the securities laws or the purpose of the securities laws, which is ‘to protect investors by promoting full disclosure of information thought necessary to informed investment decisions.’ Rather, the Final Rule, like section 10(b) of the Exchange Act and SEC Rule 10b-5, is an antifraud provision, not a disclosure provision.
Nothing in the Final Rule requires disclosure of sensitive information that would only function to weaken an entity’s bargaining position in arm’s-length, bilateral negotiations. Absent a tariff requirement or Commission directive mandating disclosure, there is no violation of the Final Rule simply because an entity chooses not to disclose all non-public information in its possession.”

A fiduciary responsibility for market participants to identify possible market flaws would be more than the usual understanding of disclosure requirements. The details of this new policy would have to be worked out. Notification could be confidential and subject to a good faith requirement for clarity. To promote incentives for notification, the safe harbor for confidential notifications could apply only to the party making the notification. The policy could include a limited waiting period before trading on the market feature. In order to promote innovation and competition, after notification the default could be that the bidding practice is allowed unless prohibited by general rule or eliminated by a change in the market design. Employing the bidding practice should not require a formal “no action” decision authorizing the practice. And so on.

In the case of possible defects that are identified and discussed publicly, like the wind production tax credit, the demand response double incentive, and the MLSA for the Up-To Congestion transactions, the safe harbor provision would extend to all market participants. As noted earlier, in adopting the MLSA rule, the Commission stated that the rule would create incentives for transactions that went beyond the normal arbitrage that promotes market efficiency; neither Powhatan nor anybody else should be held liable for doing what the Commission expected. Almost by definition, if the bidding practice is known to everyone, including the market operator and the FERC, and no change is made in the design or the general rules, the design element and bidding practice must be treated as a feature and not a flaw.

**Consistent Policy for Workable Electricity Markets**

An essential characteristic of the principles of open access and non-discrimination for electricity markets is the requirement to use a market design built on the foundation of bid-based, security constrained, economic dispatch with locational prices and financial transmission rights. (IEA, 2007) This market resign requires and utilizes price incentives interacting with financial contracts in ways that are essential for meeting the Commission’s objectives. The companion policies to prevent market manipulation should be consistent with this necessary market design.

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8. The current FERC practice for “no action” letters does not provide a safe harbor and does not presume the market activity is acceptable absent a change in market design or general rules. There is no obligation for market participants to identify possible market flaws. See www.ferc.gov/enforcement/staff-guid/no-action-letters.asp.
Market manipulation policy should not be defined independent of or in contradiction to the market design.

A good policy response that seeks to promote improvements in market design should respect the essential strengths and limitations of markets. It should be the responsibility of the Commission and the market operator to correct market defects once recognized and to adopt rules or regulations to deal with serious problems that go beyond the limits of good market design. Ideally, it should be the responsibility of market participants to identify possible market design flaws in need of correction. But it should not be the responsibility of the market participants to rise above the market design and depart from profit maximizing behavior.

It would be bad policy to attempt to meet these challenges by labeling transparent bids, schedules and other transactions as fraudulent. This would move the definition of fraud into the eye of the beholder rather than being part of the rule of law. It would be bad policy to describe profit maximizing behavior within the known rules as market manipulation. This would distort a basic principle of competitive market design and make virtually every transaction possibly manipulative. It would be bad policy to prohibit transactions based solely on a state of mind. The knowledge that a bidding practice might exploit a flaw rather than a feature should be relevant but not dispositive. A workable notification practice should be enough to deal with the duties created by a state of mind.

The accumulating experience with market performance and market manipulation have created a need and an opportunity to have a more open discussion of workable approaches for market design and market manipulation policy. The Powhatan case is illustrative, but the importance of the topic goes far deeper to the foundations of electricity markets. Although it is difficult to be certain, because the enforcement actions are so opaque, it is arguable that the legal foundations of FERC’s authority are inadequate to the task, and the evolving enforcement policy is undermining the economic foundations of efficient electricity markets (Hogan, 2012).

**Conclusion**

Electricity market design requires care in providing the necessary features and rules to support an efficient market. Market manipulation that violates these rules should be prohibited and subject to enforcement sanctions. However, the problem of designing these markets is complex enough that market manipulation policy must recognize that some defects are features and not flaws. The current authority of the FERC is too restricted to the narrow case of fraud, and this leads to perversions of both policy and language. The current enforcement rules are not evolving in a way that is compatible with efficient electricity market operations. A change in policy to include notification requirements is recommended. Profit maximizing behavior that flows from the incentives of known market features should not be treated as market manipulation. Meeting a proposed fiduciary responsibility to notify market operators about possible market flaws should
provide a safe harbor for market participants and should alert market operators to requirements and opportunities to change the market rules. The Powhatan case illustrates these principles as a transparent response to known market incentives and should not be seen as market manipulation.

References


William W. Hogan is the Raymond Plank Professor of Global Energy Policy, John F. Kennedy School of Government, Harvard University. This paper draws on research for the Harvard Electricity Policy Group and for the Harvard-Japan Project on Energy and the Environment. Powhatan Energy Fund, LLC, provided part of the support.
EXHIBIT G
Statement of David Hunger

In the Matter of PJM Up-to Congestion Transactions

Federal Energy Regulatory Commission

Docket No. IN10-5-000

Qualifications

My name is David Hunger. I have a PhD in Economics from the University of Oregon and nearly 15 years of experience working as an economist on matters related to the functioning of wholesale markets at the Federal Energy Regulatory Commission (FERC). While at FERC, I led analyses involving mergers and other corporate transactions, market power in market-based rates cases, demand response compensation, compliance cases for Regional Transmission Organizations and competition issues in electricity markets. I was also involved in large investigations of energy trading practices that involved wash trades, price index manipulation, and manipulation of FERC-jurisdictional organized wholesale electricity markets. While at FERC, I was a recipient of FERC's Awards for Quality Service in the Public Interest numerous times in 14 years of service.\(^1\)

Of particular relevance here, I was the lead economist in FERC's Investigation of Price Manipulation of Western Markets and Enron's impact on energy markets. That case involved many instances of wash trading as well as attempts (often successful) of manipulating prices in a FERC-regulated regional transmission organization (RTO) market. I worked on the staff reports about this investigation. One of these reports is titled "Final Report on Price Manipulation in Western Markets: Fact-Finding Investigation of Potential Manipulation of Electric and Natural Gas Prices" which was the FERC Staff Report to the US Congress.

I left FERC in June of 2013 and now work as a Vice President at Charles River Associates International, Inc. (CRA). My business address is 1201 F Street, N.W., Suite 700, Washington, DC 20004.

Since 2001, I have also worked as a professor at the Georgetown Public Policy Institute where I teach classes on microeconomic theory, energy policy and public finance. My research interests include the effect of environmental regulations on international trade, market power in energy markets and energy policy. I frequently speak on energy market issues and publish articles on energy economics and policy.

Background

I have been engaged by Powhatan Energy Fund LLC (Powhatan) and its counsel, Drinker Biddle & Reath LLP (Drinker Biddle), to review the record in the above referenced investigation and assess the trading behavior of Dr. Houlian (Alan) Chen on behalf of Powhatan in the PJM Up-to Congestion product during the period between February and August, 2010. In particular, I researched the FERC Office of Enforcement claim that the trades constituted wash trades, which could be a form of market manipulation. I will go into more detail below, but first and foremost, the trades in question were not wash trades. A wash trade involves no risk and no legitimate business purpose. These trades did have risk associated with them and did have a legitimate business purpose.

I have familiarized myself with the details of this investigation through conversations with Kevin Gates, an investor in Powhatan, and Drinker Biddle, and by reviewing various materials, including the Written Submission to Commission Investigation Staff on Behalf of Dr. Chen, dated December 13, 2010; Dr. Craig Pirrong’s Affidavit, dated December 8, 2010; the Written Submission to Commission Investigation Staff on Behalf of Powhatan Energy Fund LLC, dated October 21, 2011; the Affidavit of Richard G. Wallace, dated October 21, 2011; the Affidavit and Appendices of Richard D. Tabor, Ph.D., dated October 21, 2011; the response of William M. McSwain to In Re PJM Up-to Congestion Transaction, Docket No. IN-5-10-000, dated August 24, 2012; Re: Preliminary Findings of Enforcement Staff’s Investigation of Up To Congestion Transactions by Dr. Houlian Chen on Behalf of Himself and the Principals of Huntrise Energy Fund LLC and Powhatan Energy Fund LLC, Docket No. IN10-5, dated August 9, 2013; various FERC decisions and rulemakings related to Up-to Congestion Transactions, transmission loss credits, and manipulation standards, as well as publicly-available materials regarding the PJM market.

PJM’s Up-to Congestion Market

PJM uses a nodal pricing system for both day-ahead and real-time energy, with the price at each node being the Locational Marginal Price (LMP). The LMP consists of three components – energy, losses, and congestion. The energy component is the same for all locations. The loss component reflects the marginal cost of system losses specific to each location, while the congestion component represents the individual location’s marginal transmission congestion cost. The congestion charge works out to be the difference in price between any two trading nodes. In PJM, the Up-to Congestion product allows virtual traders to arbitrage the difference between the day-ahead and real-time congestion charges between nodes. Like other financial products in the RTO markets, it also allows buyers and sellers to hedge risk associated with the spread between day-ahead and real-time prices, which can be very large if an unforeseen demand or supply-side event occurs in the market.

Traders bid a price quantity pair day-ahead for the specified node pair. If the bid price is greater than the day-ahead spread between the two nodes, the bid will clear. The bid price has a floor of -$50 per MWh and a ceiling of $50 per MWh. For each individual leg of the
trade, if the real-time spread at those nodes increases relative to day-ahead price spread, the trader is paid the difference between the spreads. The trader must pay the difference when the spread change decreases. If the trader holds a day-ahead counter flow position (opposite of the direction of the congestion) then he earns a profit when the real-time spread at the nodes decreases relative to the day-ahead spread. Even though the trades are purely financial and there is no flow of electricity associated with the trades, at the time in question, PJM required Up-to Congestion transactions to pay for transmission charges and included them in its calculation and refund of its over collection of transmission loss charges.

**Dr. Chen’s Trading Strategies**

One of Dr. Chen’s trading strategies in the PJM Up-to Congestion market was to buy day-ahead energy in MISO and sell it at a point in PJM (A-to-B) under an Up-to Congestion contract, and simultaneously buy day-ahead energy at the same point in PJM, and sell it into MISO (B-to-A). He often submitted the bids at or near the ceiling of $50 per MWh. Because there wasn't significant day-ahead congestion between the nodes he often selected, both bids would clear and his net profit would be the difference between his transaction costs and the transmission loss credits, although there was always the risk that the Transmission Loss Credits would be less than the transaction costs of the trades. However, if the difference in day-ahead prices at the point of the trade exceeded the bid price, then Dr. Chen would only have one bid clear (the side with a negative congestion price) and would be exposed the risk of that price difference.

The bid that would clear would be the counter flow spread. Therefore, if he was on the right side of that difference and the real-time congestion price was less than the day-ahead congestion price (convergence), then he could reap large profits. If not, however, and the real-time congestion price were greater than the day-ahead congestion price (divergence), he could suffer large losses.

The risk of one of the bids clearing and the other not clearing is one important factor that differentiates Dr. Chen’s trades from wash trades. Assuming Dr. Chen bid $50 per MWh, if either the A-to-B or the B-to-A congestion charge were more than $50 per MWh, then Dr. Chen would be holding one side of the trade going in to the real-time market and thus exposed to the risk of the difference in real-time exceeding the day-ahead difference. For example, if the A-to-B congestion price were $80 per MWh in the day-ahead, then, by definition the B-to-A price would be -$80 per MWh. In that case, Dr. Chen’s A-to-B bid would not clear, but his B-to-A bid would clear. At that point his profit or loss would depend on the size of the real-time spread between A and B.

As noted by Dr. Pirrong, the Up-to Congestion contracts that Dr. Chen was trading were essentially forward contracts for the spread between day-ahead and real-time congestion, with an embedded option. The forward contracts cancelled each other out when he placed both the A-to-B and the B-to-A bids. However, the option part of the transactions did not cancel each other out. For example, assuming the PJM-to-MISO leg of the trade cleared, Dr.
Chen faced the inherent risk that the expected real-time congestion for the PJM-to-MISO transactions could be higher than the day-ahead congestion for the PJM-to-MISO transactions, and his trade would return a loss. Wash trades carry no such inherent risk.

Also, as described by Dr. Tabors, the Transmission Loss Credit provided an incentive for traders to increase the volume of trades by reducing the net transaction costs of trading in the Up-to Congestion market. This allowed Dr. Chen to engage in more trades which had the potential to earn small profits due to the TLC exceeding the transmission charges, as well as large profits if one leg of his A-to-B or B-to-A trades cleared. Of course, he faced the possibility of incurring losses if the TLC was less than the transmission charges or if one leg of his trade cleared in the day-ahead market and prices diverged in the real-time market.

It is also noteworthy that there was nothing deceptive in Dr. Chen’s trading behavior. He submitted all of his bids through the PJM process. In the kind of wash trading that FERC has identified in previous cases, the trades involved deception and ulterior motives, such as traders agreeing to a deal that would be posted on a trading platform, and then immediately unwound over the phone in a bilateral trade, in order to affect an index price.

Mr. Gates’ Understanding of Dr. Chen’s Trading

Mr. Gates is not an energy trader, so he was unfamiliar with the complexities of RTO rules and the multitude of energy products. He consulted with Dr. Chen to get some understanding of how Dr. Chen was trading. He understood that, for the A-to-B and B-to-A trades, most of his profits were due to the spread between the transaction costs and the Transmission Loss Credits, but that there was risk associated with large spreads between the day-ahead and real-time congestion prices. There was also the risk that the Transmission Loss Credits would be less than the transaction costs of the trades. Like Dr. Chen, he assumed those risks when he invested in Dr. Chen’s trading activities.

Mr. Gates is quoted as stating that from what he knew about the structure of the PJM Up-to Congestion market, a monkey could have made trades in the market, and randomly picked nodes to move electricity to and nodes to move electricity from and taken the bet that the marginal loss credit plus other revenues would have exceeded its costs during the summer months. He further stated that he believed a monkey throwing darts at a dartboard would have been net profitable during this time period. While a colorful comment and an amusing mental image, this in no way means that Mr. Gates thought that Dr. Chen’s trades were wash trades or any other form of market manipulation. He was simply stating that during this time, the TLC often exceeded the value of the fixed cost of the trade.

Bad Market Rules, not Market Manipulation

At first glance, it seems very odd that Up-to Congestion trades would be eligible for pro rata shares of the refunds for over collecting for transmission line losses, when they have no physical element to them, and therefore never take transmission service. However, there is
a history that explains why virtual traders were receiving these payments. When PJM first implemented Up-to Congestion trading, it required traders to secure a transmission reservation associated with each trade. Given that they had to pay transmission charges, it seemed reasonable that they should also be entitled to receive rebates for their share of the over-collection for transmission line losses. Again, even though they did not actually take transmission service.

Dr. Chen was following the PJM trading rules at the time in question. Trading activities by virtual bidders such as Dr. Chen often expose flawed market rules that can in turn be changed through a tariff filing by the RTO under section 205 of the Federal Power Act (FPA) or by a complaint issued by the Commission or a market participant under section 206 of the FPA. In this sense, the virtual bidders or financial traders serve as the canary in the coal mine, testing the RTO market rules that have been approved by FERC.

In fact, since September 2010, Up-to Congestion trades no longer receive any marginal loss payments. The logic for them being included fell apart when FERC approved PJM’s tariff revision that eliminated the requirement that the traders secure transmission service for Up-to Congestion bids. With that, Up-to Congestion transactions were no longer associated with transmission reservations and therefore were no longer eligible to receive rebates for their share of the over-collection for transmission line losses.

**Conclusion**

Dr. Chen traded in PJM’s Up-to Congestion market in the summer 2010 using a strategy that reduced his risk associated with the difference in the spreads between real-time and day-ahead congestion. He made small profits per trade based on the difference between his transaction costs and the PJM rebate for transmission loss charges – obviously a legitimate business purpose on its own. The TLC reduced his transactional friction, but at any time he could have been on the right or the wrong side of a large spread between real-time and day-ahead congestion. He took on that risk, as traders do, with the possibility of large profits (or losses) when system conditions changed greatly in real-time due to unforeseen changes in demand and/or supply conditions. Dr. Chen’s trading behavior did not constitute wash trading and was not market manipulation. He followed the rules in PJM’s Up-to Congestion market at the time, and made small profits on most trades based on an oddity in the rules that has since been changed, and took the chance that he would make larger profits (or losses) based on the difference between day-ahead and real-time congestion.

Powhatan also did not engage in wash trading or any other form of market manipulation. Powhatan invested in Dr. Chen’s trading and took on the same type of risk that Dr. Chen was facing. It made profits in the summer 2010 as it invested in multiples of Dr. Chen’s trading. However, Powhatan was subject to the same risk that Dr. Chen faced with the option portion of the contracts that could have been in or out of the money, as well as the possibility of incurring losses if the TLC was less than the transmission charges.
EXHIBIT H
Affidavit of Stewart Mayhew

I. Qualifications

1. I am a Principal at Cornerstone Research, an economic and financial consulting firm, where I have been working since 2010. At Cornerstone Research, I have conducted statistical and economic analysis for a variety of matters, including cases related to securities litigation, financial institutions, regulatory enforcement investigations, market manipulation, insider trading, and economic studies of securities market regulations.

2. Prior to working at Cornerstone Research, I worked at the U.S. Securities and Exchange Commission (“SEC” or “Commission”) as Deputy Chief Economist (2008-2010), Assistant Chief Economist (2004-2008), and Visiting Academic Scholar (2002-2004). From 2004 to 2008, I headed a group that was responsible for providing economic analysis and support for the Division of Trading and Markets (formerly known as the Division of Market Regulation), the Division of Investment Management, and the Office of Compliance Inspections and Examinations. Among my responsibilities were to analyze SEC rule proposals relating to market structure for the trading of stocks, bonds, options, and other products, and to perform analysis in connection with compliance examinations to assess whether exchanges, dealers, and brokers were complying with existing rules. I also assisted the Division of Enforcement on numerous investigations and enforcement actions, including matters involving market manipulation.

3. I have taught doctoral level, masters level, and undergraduate level classes in finance as Assistant Professor in the Finance Group at the Krannert School of Management, Purdue University (1996-1999), as Assistant Professor in the Department of Banking and Finance at the Terry College of Business, University of Georgia (2000-2004), and as a Lecturer at the Robert H. Smith School of Business at the University of Maryland (2012). I earned Bachelor of Science and Master of Science degrees in economics from Brigham Young University, and a Ph.D. in Business Administration with an emphasis in finance from the University of California, Berkeley.

4. I have authored numerous articles, including studies published in peer-reviewed academic journals. My academic research has focused on the structure and regulation of option markets, trading in securities markets, and volatility estimation in securities and futures markets.
A list of publications I have authored is contained in my curriculum vitae, attached as Appendix A. Other individuals from Cornerstone Research provided assistance and research under my direct supervision. Neither my compensation nor Cornerstone Research’s compensation is dependent on the outcome of this matter.

II. Assignment

5. I have been retained by Powhatan Energy Fund (“Powhatan”) in connection with certain virtual electricity trades, known as Up To Congestion (“UTC”) trades, made by Dr. Houlian Chen (“Dr. Chen”) between February 2010 and August 3, 2010. The Federal Energy Regulatory Commission (“FERC”) is alleging that the trades in question violate the FERC’s prohibition on market manipulation.¹

6. I have been asked to evaluate the trading strategy employed by Dr. Chen, to assess whether the strategy involved deception, and whether it was the type of strategy that securities market regulators consider to be manipulative or fraudulent under the definitions and standards used in securities markets.

7. I have also been asked to assess the degree to which Dr. Chen’s strategy involving UTC trades was analogous to a strategy followed by Mr. I. M. Amanat (“Mr. Amanat”), the subject of a SEC administrative proceeding (“Amanat Case”),² in which the SEC’s Division of Enforcement (“Division”) alleged that Mr. Amanat violated the antifraud provisions of federal securities laws by executing a series of wash sales in two different accounts designed to reach the trading volume threshold necessary to qualify MarketXT³ for Nasdaq’s market data rebate program.⁴

¹ Preliminary Findings of Enforcement Staff’s Investigation of Up To Congestion Transactions by Dr. Houlian Chen on Behalf of Himself and the Principals of Huntrise Energy Fund LLC and Powhatan Energy Fund, LLC (“FERC Staff Preliminary Findings”), Docket No. IN10-5-000, August 9, 2013.
³ Mr. Amanat was the chief technology officer of MarketXT, an electronic communications network (“ECN”), registered broker-dealer, and NASD member. The two accounts used for trading existed at Momentum Securities. Mr. Amanat’s family owned fifty-three percent of Tradescape Corporation, which is the parent company of MarketXT and Momentum Securities. (Id. at pp. 1, 3, 5.)
⁴ The Administrative Law Judge initially found that Mr. Amanat’s conduct was not fraudulent, and dismissed all charges against him. (In the Matter of MarketXT, Inc. and Irfan Mohammed Amanat, Securities and Exchange Commission, Initial Decision (“Amanat Initial Decision”), December 22, 2005.) The Division of Enforcement then appealed the decision to the Commission, which reversed the decision (Amanat Opinion 2).
III. Summary of Opinions

8. The strategy implemented by Dr. Chen in the electricity UTC contract is an example of a simple spread strategy, in which a trader takes offsetting positions in two closely related contracts, attempting to obtain a benefit while taking on limited market risk. As such, Dr. Chen’s strategy is typical of a broad family of trading strategies in stock, commodity, and derivative security markets. Regulators in securities and commodities markets do not view spread trading as deceptive or manipulative. Dr. Chen’s strategy, if implemented in a market regulated by the SEC, would not be considered fraudulent or deceptive.

9. Dr. Chen’s strategy is closely analogous to a well-known spread strategy commonly done by market makers and other participants in the exchange-traded stock option market, known as a “dividend spread.” The dividend spread strategy involves executing large, simultaneous, offsetting purchases and sales in the same option series. If executed properly, the dividend spread strategy involves virtually no market risk, and has a high probability of capturing a profit, so it can appropriately be characterized as an “arbitrage” strategy. The profit is not derived from any mispricing in the options themselves, but rather, from exploiting a feature of the market structure design.

10. As I stated in a paper I co-authored, “[t]he [dividend spread] strategy exploits the mechanics of the allocation algorithm employed by the clearinghouse to assign option exercises, and involves two parties executing large offsetting buy and sell call option transactions on the last cum-dividend day.”5 The results “have implications for the design and regulation of clearinghouses. An apparently innocuous allocation rule that appears designed to place all option writers on equal footing actually enables certain participants to skew the process in their favor, and creates a huge amount of extraneous trading activity in the process. This lesson may be relevant in other contexts where clearinghouses must allocate assignments.”6 The SEC has chosen not to prohibit the dividend spread strategy, which, similar to Chen’s strategy, uses a market design feature to extract profits.

6 Id. at p. 4.
11. The case brought by the FERC against Powhatan\textsuperscript{7} is not analogous to the SEC administrative proceeding brought against Mr. Amanat. Mr. Amanat’s strategy involved wash trading, and Dr. Chen’s strategy did not. The Division offered up a theory explaining why it believed Mr. Amanat’s strategy was deceptive, and who was deceived; the FERC has not done so in its case against Powhatan.\textsuperscript{8} Mr. Amanat’s trading platform would not have qualified for market data rebates had he not engaged in the wash trading strategy the Division alleged to be deceptive, whereas Dr. Chen’s trades automatically qualified for the Marginal Loss Surplus Allocations payments. Mr. Amanat’s strategy involved little or no risk, and Dr. Chen’s strategy did involve risk.

12. I base my opinions on a review and current understanding of the facts in this matter, including information received from counsel for Powhatan Energy Fund, my personal knowledge of market structure and regulation developed over the course of the past twenty years, research I have conducted on specific trading strategies, and my eight years of experience as an economist and regulator at the Securities and Exchange Commission. I have been assisted in my research by staff at Cornerstone Research, including a Ph.D. economist who formerly worked for the Commodity Futures Trading Commission (“CFTC”) and has experience and knowledge in energy markets. A list of documents I have relied upon is in Appendix B. I reserve the right to supplement or modify my opinion should further information come to my attention.

IV. Background and Allegations

13. This case involves trading in a type of electricity contract called the UTC contract, traded in the PJM electricity market. This is a virtual contract, meaning that it does not involve the physical movement of electricity between two locations. The difference in electricity prices between two locations is called “congestion.” Conceptually, congestion can be thought of as a market price for moving electricity from an origination point (“source”) to a destination point.

\textsuperscript{7} Dr. Chen scheduled UTC transactions in the PJM Interconnection, LLC (“PJM”) on behalf of his own funds, HEEP Fund Inc. and CU Fund, and on behalf of the owners and managers of Huntrise Energy Fund, LLC and Powhatan. (See FERC Staff Preliminary Findings at p. 1.)

\textsuperscript{8} Rather, PJM continued to make MLSA payments to Powhatan after Dr. Chen received a warning from the PJM market monitor on August 2, 2010 and stopped conducting the UTC trades at issue in this case. (See Written Submission to Commission Investigation Staff on Behalf Of Powhatan Energy Fund LLC (“Powhatan Written Submission”), Docket No. IN10-5-000, October 21, 2011, pp. 31-32.) Based on statements made by PJM, they did view the behavior to be “within the rules” and did not ask that “profits…be refunded back to PJM.” (See Milena Yordanova-Kline, "PJM Files Tariff Changes at FERC Aimed at Blocking Marginal Loss Gaming," \textit{Platts Global Power Report}, August 26, 2010.)
It is calculated by subtracting the price of electricity at the sink from the price at the source.

14. Transactions for electricity deliverable at a particular geographic location on a particular hour of the following day are traded in the Day Ahead Market (“DAM”). Transactions for electricity deliverable on the same day are traded in the Real Time Market (“RTM”). The UTC contracts are settled (“UTC settlement”) based on the change in congestion from the DAM on one day to the RTM on the following day.10

15. As part of the trading process for UTC contracts, market participants submit bids (“UTC Bids”) that specify the maximum they are willing to pay for congestion. If the congestion in the DAM as published at 4:00pm ET is greater than the UTC Bid, the participant’s UTC transaction is “canceled.” If the congestion in the DAM as published at 4:00 is less than the UTC Bid, the participant’s UTC trade is “cleared.”11

16. In the PJM electricity market, a payment is made to PJM by each entity that schedules transmission to account for the loss of electricity that occurs during the transmission of power from one point to the other.12 Any UTC transaction that clears requires payment to PJM for transmission service regardless of whether the electricity is actually transmitted.13 PJM collects more revenue than is needed to pay for the actual electricity loss. The excess revenue collected is then distributed among market participants, and at the time of Dr. Chen’s trading this included UTC traders.14 These excess fees are distributed automatically, and are known as Marginal Loss Surplus Allocations (“MLSA”) or Transmission Loss Credits (“TLC”).

17. The PJM electricity market also assessed two types of costs (“Costs”), transmission reservation costs and other costs. Transmission reservation costs are for point to point

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9 Powhatan Written Submission at Appendix A, p. 1.
10 PJM’s DAM is a forward market in which hourly pricing is calculated for the next operating day based on generation offers, demand bids and scheduled bilateral transactions. (http://www.pjm.com/markets-and-operations/energy/day-ahead.aspx, accessed on October 23, 2013.) PJM’s RTM is a spot market in which current prices are calculated at five-minute intervals based on actual conditions. (http://www.pjm.com/markets-and-operations/energy/real-time.aspx, accessed on October 23, 2013.)
11 For example, if the source is Point A and the sink is Point B, than the congestion would be B – A. If the UTC Bid is greater than B – A then the UTC is scheduled and would settle the following day using the formula (RTM A – RTM B) – (DAM A – DAM B). (See Written Submission to Commission Investigation Staff on Behalf of Dr. Houlian Chen (“Chen Written Submission”), December 13, 2010, Appendix B, pp. 2-3.)
12 PJM does not assess the charge for exports from PJM to Midwest Independent Transmission System Operator (“MISO”). (See Id. at Appendix B, p. 3.)
13 Powhatan Written Submission at Exhibit B, pp. 4-5.
14 The excess revenue is “distributed pro-rata to each Network Service User and Transmission Customer in proportion to its ratio shares of the total MWhs of energy delivered to load … in the PJM Region, or the total exports of MWh of energy from the PJM Region …, or the total MWh of cleared Up-to Congestion transactions (that paid for transmission service during such hour).” (Re: PJM Interconnection, L.L.C., Docket No. ER10–000, August 18, 2010, pp. 4-5.)
transmission and total approximately $0.67 per MWh. Other costs include PJM Scheduling, System Control and Dispatch Service - Market Support, PJM Scheduling, System Control and Dispatch Service - Advanced Second Control Center, Market Monitoring Unit Funding, Reactive Supply and Voltage Control from Generation and Other Sources Service, and Black Start Service, which total approximately $0.20 to $0.25/MWh. Costs were applied to UTC transactions even though no electricity is actually transmitted.

18. Dr. Chen’s strategy at times involved bidding simultaneously on two offsetting UTC transactions—for example, bidding on a UTC transaction going from Point A to Point B and simultaneously bidding on a UTC transaction from Point B to Point A. The UTC Bids submitted for the two legs of this trade were sometimes submitted at the same price point and sometimes at a different price point. After Dr. Chen submitted a pair of offsetting bids, there were two possibilities:

   a. Both UTC transactions clear, in which case the UTC settlement amounts will be exactly offsetting.
   b. Only one of the two UTC transactions clears, in which case the UTC settlement amount is based on the leg that cleared.

19. In the scenario when both UTC transactions cleared, Dr. Chen’s trading strategy would be profitable if the MLSA payment (associated with both cleared UTC transactions) exceeds the Costs. In the scenario where one of the UTC transactions did not clear, the trade would be profitable if the single UTC settlement plus MLSA payment exceeds the Costs.

20. In addition, Dr. Chen’s trading strategy at times involved bidding simultaneously on two UTC transactions that were not exactly offsetting, but were partially offsetting. For example, Dr. Chen’s strategy sometimes involved bidding on a UTC transaction from Point A1 to Point B, and simultaneously bidding on a UTC transaction from Point B to Point A2, where the prices at Point

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15 Chen Written Submission at Appendix B, p. 3.
16 Id.
17 Transmission reservation costs do not apply to exports from PJM to MISO. (See Id.)
18 For example, Dr. Chen would make a bid on the transmission of 20 MW per hour from MISO to Dayton (in PJM), and then simultaneously make another bid on the transmission of 20 MW per hour from Dayton to MISO. (See Id. at p. 15.)
19 Based on my understanding, when Dr. Chen submitted UTC Bids at more than one price point, both price points were either both positive or both negative.
20 In this scenario, the settlement amounts were perfectly offsetting and do not figure into the profit calculation.
A1 and A2 were highly correlated. After submitting bids on partially offsetting transactions, there were two possibilities:

a. Both UTC trades clear, in which case the net UTC settlement amount depends on the realized prices in the markets—the settlement amounts from the two contracts may be partially or fully offsetting.

b. One of the two UTC trades clears, in which case the UTC settlement amount is based on the leg that cleared.

21. As for the prior case, the strategy may or may not be profitable. If both trades clear, the strategy will be profitable if the net UTC settlement plus MLSA payment exceeds the Costs. In the scenario when one of the UTC transactions does not clear, the trade will be profitable if the single UTC settlement plus MLSA payment exceeds the Costs.

22. I understand that the FERC is alleging that Dr. Chen’s spread trades that involved fully offsetting or partially offsetting positions should be considered a wash trade, or a sham trade, and constitute a violation of the FERC’s antifraud provisions.

23. I am aware of one other case concerning the collection of rebates associated with UTC trading that has been pursued by the FERC Staff. Oceanside Power, LLC (“Oceanside”) reached a settlement agreement with the FERC Staff on February 1, 2013 relating to these allegations, but neither admitted nor denied the alleged violations. Notably Oceanside’s trading did not involve alleged wash trades, rather, Oceanside was alleged to have entered one way UTC transactions from Point A to Point B when the congestion between the two points happened to always be zero in the DAM and nearly always zero in the RTM.

24. The FERC Staff found that Oceanside’s “UTC transactions were designed to be trades without intrinsic economic value, which would enable Oceanside to reserve and schedule against large amounts of transmission service without the risk of losses from UTC transactions.”

21 For example, Dr. Chen made a bid on the transmission of 600 MW from MISO to COOK (in PJM) on February 27, 2010, and then made another bid on the transmission of 600 MW from ROCKPORT (in PJM) to MISO on that same day. (See Chen Written Submission at p. 14, fn. 12.)
22 FERC Staff Preliminary Findings at p. 2.
23 In re PJM Up-To Congestion Transactions, Order Approving Stipulation and Consent Agreement (“Oceanside Agreement”), Docket No. IN10-5-00, February 1, 2013.
24 Id. at p. 2.
25 Id. at pp. 4-5.
that it was in violation of the FERC’s prohibition against manipulation in the electricity markets “because it was a scheme to defraud the PJM market.”

25. I am not familiar with the FERC’s use of the phrase “intrinsic economic value” in the context of securities markets, but it appears that the FERC is using the term to refer to the fact that Oceanside’s trades were not designed to take a directional position in the electricity market, but rather, were designed to capture MLSA payments. In essence, it appears that the FERC has concluded that a trading strategy allegedly designed to earn rebates in connection with a contract, but not based on the actual price of the contract, constitutes a scheme to defraud.

26. Although the phrase “intrinsic economic value” is unfamiliar to me in this context, prior SEC regulation and enforcement matters have used the phrase “legitimate economic purpose” in the context of manipulation claims. For example, the SEC may allege that a trade had no legitimate economic purpose if it had no purpose other than to deceive other market participants or to circumvent a rule. I am not aware of any instance of the SEC arguing that a trading strategy is illegal or fraudulent merely because it did not have a legitimate economic purpose.

27. In the case of Dr. Chen, the FERC alleges that Dr. Chen’s trading strategy involved scheduling of “matched UTC transactions that had the same or nearly the same effect as what the law would label a ‘wash trade’ or ‘sham’ transaction.” Furthermore, the FERC alleges that “[t]hese trades were carefully configured to eliminate or reduce both profits and losses from price differentials in the market, and they also incurred certain costs related to scheduling the transactions” and that the trades were designed with the “intent to avoid the effects of price changes in the market.”

26 Id. at p. 5.

27 In enforcement actions alleging that wash trades and matched orders were used to manipulate upward the price of a stock, the SEC has alleged the wash trades “had no legitimate economic purpose,” to bolster the SEC’s argument that the sole purpose of the wash trades was to increase the stock price. (See Complaint, SEC vs. Todd M. Ficeto et al., No. CV 11-1637 (C.D. Cal.), February 24, 2011, pp. 3-4.) In other enforcement actions, the SEC alleged that certain trading strategies should be considered “sham transactions” because the trade’s sole purpose was to enable the trader to circumvent an SEC rule. (See Complaint, SEC vs. Lion Gate Capital, Inc., and Kenneth Rickel, No. CV 08-06574 (C.D. Cal.), October 7, 2008, pp. 3-11.) In these cases, the SEC has argued that the transactions having “no legitimate economic purpose” is one of the conditions for the transactions to be considered sham transactions.

SEC Rule 204 of Regulation SHO addresses the close-out requirements for failures to deliver resulting from sales of any equity security. In the adopting release for Rule 204, the SEC stated that when “a participant subject to the close-out requirement purchases or borrows securities on the applicable close-out date and on that same date engages in sale transactions that can be used to re-establish or otherwise extend the participant’s fail position, and for which the participant is unable to demonstrate a legitimate economic purpose [emphasis added], the participant will not be deemed to have satisfied the close-out requirement.” Securities and Exchange Commission, Release No. 34-60388, File No. S7-30-08, July 31, 2009, fn. 82.

28 FERC Staff Preliminary Findings at p. 2.

29 FERC Staff Preliminary Findings at pp. 2-3.
28. As I explain below, the same factors stated as part of Dr. Chen’s allegations are typical in many trading strategies that are legal and pervasively used in securities and commodities markets.

V. Dr. Chen’s UTC Trades Are an Example of a Spread Strategy

A. Spread Trading

29. “Spread Trading” is a generic term for a type of trading strategy commonly used by traders in securities, commodities, and derivative securities markets and widely recognized by regulators as a legitimate trading strategy. In a spread trade, a trader takes offsetting positions in two or more instruments, such that the combined position has little or no risk exposure to movements in the market. Using the same language the FERC used to describe Dr. Chen’s UTC strategy, spread trades are in fact designed with the “intent to avoid the effects of price changes in the market.” However, these strategies are not viewed as deceptive or manipulative by the SEC or the CFTC. In fact, spread trades are pervasive in securities, commodities, and other financial markets.

30. There are many examples of different types of spread trading strategies, some of which are mentioned below. Some spread strategies are designed to allow the trader to speculate on the change between the prices of two related assets, or to derive trading profits by taking advantage of relative mispricing among assets. Other strategies have other purposes unrelated to earning trading profits. In sum, spread strategies are designed to accomplish some economic purpose for the trader, while eliminating some or all of the market risk associated with the price movement of the component assets on which the contract is based. This economic purpose may or may not be related to the profits on the spread trade itself.

31. In most cases, spread strategies are implemented by taking offsetting positions in two instruments that are different from each other but highly correlated. The market risk exposures of the two positions go in the opposite direction from each other, and the market risk exposure of the first position is mostly or entirely offset by the second position. The degree to which the

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31 In some cases, a spread may involve more than two instruments, or it may involve taking offsetting positions in the same instrument.
spread position retains risk depends on the degree to which the two instruments are correlated. In the extreme case when the two instruments are perfectly correlated, offsetting positions in the two contracts should eliminate all market risk.

1. **Example of a Spread Strategy: Brent – WTI Spread Trade**

32. An example of a common spread trade is the spread between crude oil at two different geographic locations. One such trade involves the price of crude oil traded in the United States for delivery in Oklahoma and the price of crude oil traded in Europe for delivery in the North Sea. An investor who takes a position in the U.S. crude oil contract makes or loses money based on the fluctuations of the U.S. crude oil price. Similarly, an investor who takes a position in the European crude oil contract makes or loses money based on the fluctuations of the European crude oil price. These two prices are highly correlated with each other. Investors in either contract are subject to all the market risks that affect the worldwide price of crude oil.

33. To illustrate the crude oil spread trade, consider an investor who simultaneously takes two offsetting positions by purchasing a U.S. crude oil contract and selling a European crude oil contract. This investor’s total position would not be harmed or benefitted by factors that affect the global price for crude oil. Any development in the market that increases the global price of oil would benefit the investor’s “long” position in U.S. crude oil but harm the investor’s “short” position in European crude oil, and these gains and losses would offset each other. The spread investor would only experience gains or losses to the extent that there are changes in the difference between the U.S. and European crude oil prices. The spread position is designed to eliminate the trader’s exposure to market risks, while allowing the investor to achieve an economic objective—in this case to take a targeted position focused on the difference between crude oil prices across geographical locations.

2. **Other Examples of Spread Strategies in Financial Markets**

34. The example of trading the spread between oil in the US and Europe is just one of many similar spread strategies commonly done in financial markets. This section provides a few

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33 Commonly referred to as “WTI” or West Texas Intermediate.

34 Commonly referred to as “Brent”.

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additional examples of spread strategies commonly used in the markets for futures, stock indexes, stock options, and mortgage-backed securities. It is not a complete list of spread strategies, rather it is intended to illustrate that similar strategies are common in other markets.  

35. Another futures market spread strategy is to take offsetting futures positions in the same commodity with contracts maturing in different months, called a “calendar spread.” The change in a calendar spread position depends on the difference in prices for the same commodity delivered in two different time periods.  

36. Another type of spread trade is the “interexchange spread.” This trade involves entering a long and short futures contract position on two different futures exchanges in the same commodity that mature in the same month; the change in the interexchange spread is related to the change of transportation costs for the different delivery points specified by the two different exchanges.  

37. Yet another type of futures spread involves a “crack spread” which, for example, includes a long position in a crude oil futures contract and a short position in a refined commodity such as gasoline or heating oil; the change in the crack spread is related to the change in refining margins.  

38. Although futures spread trades involve the simultaneous purchase and sale of the same or similar commodities in the same or similar amounts, these types of trades are not considered manipulative.  

39. “Index arbitrage” is a general term for a group of spread strategies involving buying and selling instruments linked to or related to a market index, in order to exploit inconsistencies in the relative prices of the instruments. Typically, index arbitrage strategies involve simultaneously taking long and short positions in the same index through different instruments, thus creating a combined position that has no risk exposure to movements of the underlying index. For example, one form of index arbitrage strategy involves buying all the component securities that make up an index and simultaneously selling the index using an index futures contract. Another is to purchase the component securities and short sell shares of an exchange-traded fund that tracks an index.

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36 Id. at p. 100.  
traded fund (“ETF”) that tracks the same index. Another involves taking offsetting positions in an ETF and a futures contract linked to the same index. These index arbitrage strategies are common and are not considered abusive or inappropriate by regulators in securities or commodities markets. While the typical motivation for implementing index arbitrage is to earn a trading profit, regulators would not view an index arbitrage strategy designed to capture dividends or trading rebates as cause for concern.

37. In option markets, the term “spread” is used to describe any strategy that involves simultaneously buying and selling call options, or simultaneously buying and selling put options. Many of these strategies involve buying and selling the same number of options, in which case the spread position has little or no risk exposure to large increases or decreases in the price of the underlying asset, but gives the trader a targeted exposure to the difference between two option prices. For example, “bull spreads” and “bear spreads” involve simultaneously buying and selling equal numbers of options with different strike prices, “calendar” spreads involve buying and selling equal numbers of options with different expiration dates, and “diagonal spreads” involve buying and selling equal numbers of options with different strike prices and expiration dates. “Butterfly spreads” involve simultaneously buying options at two different strike prices and selling options at an intermediate strike price between the two purchased options.\(^{40}\)

38. The option spread positions mentioned above have limited risk with respect to movements in the underlying stock price. Other option strategies have essentially no market risk. A “box spread” involves simultaneously taking positions in four different options, two calls and two puts at two different strike prices, such that the combined positions have no exposure to the underlying stock price.\(^{41}\) A “conversion” involves simultaneously purchasing the stock and “synthetically” selling the stock (by buying a put option and selling a call option). A “reverse conversion” strategy involves “synthetically” buying the stock (by buying a call option and selling a put option) and simultaneously selling the stock. These strategies have no market risk exposure because the risk of the option positions is exactly offset by the risk of the stock position. These and other similar option trading strategies are well-known, legal strategies. I wrote about these strategies in a book chapter when I was working at the SEC.\(^{42}\)

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\(^{41}\) Id. at p. 518.

\(^{42}\) Id. at pp. 503-524.
39. Spread trading is also done in the market for Mortgage-Backed Securities ("MBS") and Collateralized Debt Obligations ("CDOs"). MBS are structured finance securities in which a basket of mortgages is bundled together in a portfolio and securities are issued that are linked to the portfolio within a tiered structure (securities in higher tiers have cash flow claims with higher priority than lower tiers). The cash flows resulting from the mortgage principal and interest payments are then channeled to the owners of the securities according to the specified priority structure. Spread trades in this market involve taking offsetting long and short positions in securities with different priority from the same MBS or CDO structure.

40. While some spread strategies are designed to earn trading profits, in other instances, the spread strategy may be designed to hedge a risk, achieve a tax benefit, transfer an existing position in one instrument to an equivalent position in another instrument, acquire shares in order to lend them out, or acquire shares for voting purposes.

41. As I describe in section VI below, the dividend spread strategy in option markets is an example of a legitimate spread strategy involving simultaneously purchasing and selling precisely offsetting positions in exactly the same contract and has almost no market risk.

B. Dr. Chen’s Spread Trading

42. Dr. Chen’s strategy was typical of spread trading strategies. Like any spread strategy, it involved taking offsetting positions in two contracts, where the two legs of the spread have a high negative correlation, resulting in the elimination of most market risk. As described above, Dr. Chen’s strategy sometimes involved submitting a UTC Bid for congestion from Point A to Point B and another UTC Bid for congestion from Point B to Point A. The first contract had positive risk exposure to congestion from A to B, and the second contract had positive exposure to congestion from B to A, which equated to negative exposure from A to B. These two bids, if

46 For example, spread trades can be referred to "rolling" one position to another, especially in futures markets where contract maturities expire. A trader who wants to maintain a long position in the underlying commodity will sell the futures contract that is closest to expiring and simultaneously buy a futures contract in a further to maturity futures contract. (See Frank J. Fabozzi, Roland Füss, and Dieter G. Kaiser, “A Primer on Commodity Investing,” *The Handbook of Commodity Investing*, Editors Frank J. Fabozzi, Roland Füss, and Dieter G. Kaiser, John Wiley & Sons, pp. 23-24 (2008).)
both cleared, resulted in payments that were exactly offsetting and so eliminated the congestion risk.

43. Also as described above, Dr. Chen sometimes implemented a spread strategy involving congestion contracts from Point A1 to B and from point B to A2. In these cases, if both contracts cleared, the payments would have been partially but not necessarily fully offsetting. One of the main purposes of Dr. Chen’s strategy was to enter spread positions and capture the benefit of the MLSA payments.

44. My understanding is that at the time of Dr. Chen’s trading, no specific FERC rule prohibited trades designed to capture MLSA payments. Based on my review and analysis of Dr. Chen’s trading strategy, I concluded that his UTC trades were not designed to influence the market price, were not intended to create a deceptive appearance of market activity, did not seek to induce other traders to enter the market, did not deceive other market participants, and did not circumvent other rules. The design of the PJM market was such that it allocated MLSA payments automatically among all those with bids that cleared in the market, including virtual traders, regardless of whether those traders had hedged the risk of the trade through the use of spreads.

45. In securities markets, a wash trade is a transaction involving no change in beneficial ownership (a trade where the same entity is on both sides of the same trade). In a wash trade, because the trader is simultaneously acting as buyer and seller in the same transaction, the trader experiences no gain or loss if the transaction is executed at a price that deviates significantly from the market price. Because a trader does not lose any money by executing wash sales at non-market prices, a trader can engage in a series of wash sales at successively higher (or successively lower) prices, thus manipulating the market and deceiving other market participants by creating the false impression regarding the price level. In addition, because the wash trade involves no market risk even when done in large amounts, a manipulator can use wash trades to create the false appearance of an active market (at an arbitrary price point), which also can deceive other market participants and induce them to trade. Because wash trades can be used in

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48 FINRA Rule 5210.01 prohibits transactions unless “such quotation is a bona fide quotation, is not fictitious and is not published or circulated or caused to be published or circulated for any fraudulent, deceptive or manipulative purpose.” Although the rule was not in place at the time of Dr. Chen’s trading, FINRA Proposed Rule FINRA 5210.02 states that, “Transactions in a security that involve no change in the beneficial ownership of the security, commonly known as ‘wash sales,’ generally are non-bona fide transactions.”

49 Wash trades may result in a loss because the trader must pay transaction costs to execute the trades.
this manipulative manner, there is a long history of securities regulators recognizing that wash trades are red flags that are potential indicators of market manipulation.\textsuperscript{50}

46. Even though wash trades can be used as a manipulative device, they are not inherently manipulative. Based on my experience, the SEC staff would not consider a pattern of wash sales or matched orders to be illegal if the trades had a specific economic purpose, and if the trader’s purpose in executing the wash sales was not to deceive other market participants, create a false perception concerning the price or liquidity of a security, or induce other market participants to trade.

47. For example, wash trading conducted by Peter Kellogg for tax purposes was not considered illegal.\textsuperscript{51} In another case involving the Rockies Fund, the SEC found that the defendants engaged in wash sales and matched orders but found that “neither of these devices alone constitutes a security violation” and stated that allegations of violations under Section 10(b) require a showing of intent and materiality.\textsuperscript{52} In yet another example, Richard Gates of Powhatan, the identical twin brother of Kevin Gates of Powhatan, submitted buy and sell orders a few seconds apart for the same security that were executed milliseconds apart with the economic purpose of assessing the execution quality at different trading platforms. Richard Gates openly talked about these nearly simultaneous buy and sell trades in a Wall Street Journal article.\textsuperscript{53} Also, as I explain in the following section, the SEC does not view dividend spread trades as illegal even though the strategy involves the purchase and sale of the same contract.

48. My understanding is that Dr. Chen executed his strategy by submitting different bids on different contracts, each of which was entered into the system in the usual way, and cleared or not cleared according to the normal workings of the PJM market. He did not act as his own counterparty in the trades, and there was no way that he could have arranged for the trades to be executed at non-market prices. His trades were spread trades, not wash trades.

49. Spread trades do not have the same potential to be used as a manipulative device as wash trades, and are not viewed by regulators in the same light as wash trades. I am not aware that


\textsuperscript{51} NASD Office of Hearing Officers, Disciplinary Proceeding No. CMS030257, Hearing Panel Decision (Kellogg), August 6, 2004.


securities market regulators treat spread trades as red flags for manipulation, nor is there a presumption in securities markets that market participants executing spread trades might be viewed as manipulators if their trades do not have an economic purpose.

50. In summary, Dr. Chen’s trading strategy involved executing spread trading strategies, not wash trades. Even if it were to be considered analogous to wash trades, Dr. Chen’s trading strategy would not be viewed as a “sham transaction” or manipulative had it been done in securities markets, because the trades had a legitimate economic purpose, the strategy did not involve deception, and it was not intended to circumvent rules.

VI. The Dividend Spread Strategy

51. In the previous section, I discussed how Dr. Chen’s trades were an example of a spread strategy, a broad category of strategies that are not only legal but are ubiquitous in financial markets. In this section, I focus on one type of spread strategy that is particularly relevant in the current case due to its close similarity with the strategy at question in this case.

52. The strategy employed by Dr. Chen in the UTC markets is economically similar and closely analogous to a well-documented strategy done in the exchange-traded stock option markets that I will refer to as a “dividend spread” strategy. Elsewhere it has also been referred to as a “dividend play,” or “dividend trade.”

53. The dividend spread involves trading call options on dividend-paying stocks, on the last trading date before the “ex-dividend” date. In theory, the dividend spread strategy could be done by any trader permitted to buy and write uncovered options, but historically, it has most commonly been implemented by market makers and those who are member firms of option exchanges, who face significantly lower transactions costs than other investors, and therefore have a greater capability of implementing the strategy on a large scale. In essence the dividend spread strategy earns profits by exploiting the mechanics of the allocation algorithm employed


55 Investors who purchase a stock on or after the ex-dividend date will not receive a dividend payment. The trading date immediately prior to the ex-dividend date is the last day an investor can buy the stock and receive the dividend. (See http://www.sec.gov/answers/dividen.htm, accessed on October 24, 2013.)
by the OCC clearinghouse (“OCC”). The trading strategy would not be profitable, but for the
fact that the strategy allows the trader to capture the dividend.

A. Background Information

54. To understand how the dividend spread strategy works, it is important to first understand
background information including (1) the basic mechanics of call options, (2) what happens to
the prices of stocks and of call options when the stock pays a dividend, and (3) how the OCC
works, including the mechanics of what happens at the OCC when call options are exercised and
assigned. These topics are discussed below.

1. Mechanics of call options

55. A call option on a stock is a contract involving two parties, the “writer” and the “holder”
of the call option. The writer is sometimes called the “seller” of the call option. The holder is
sometimes called the “buyer” or the “owner” of the call option. One option contract gives the
holder the right, but not the obligation, to purchase 100 shares of a particular “underlying stock,”
for a pre-specified price called the “strike price,” any time prior to the option’s “expiration
date.”

56. If the holder chooses to use the option to purchase the underlying stock, it is called
“exercising” the option. When a holder of a call option exercises the option, it is then “assigned”
to an option writer, at which point the writer has the obligation to sell the underlying stock for
the strike price. Individual stock options in the U.S. have “American style” exercise, meaning
they can be exercised any time prior to expiration. The dividend spread strategy can only be
implemented using American style options.

57. For example, if the underlying stock is Microsoft, the strike price is $32.00, and the
expiration date is April 19, 2014, then the buyer of one call option contract has the right to buy
100 shares of Microsoft stock for $32.00 per share, on or before April 19, 2014. The writer of
the same option has the obligation to sell 100 shares of Microsoft for $32.00 per share if and
when the option is exercised and assigned.

56 Hao et al. at p. 2.
57 The Options Clearing Corporation, Prospectus, Put and Call Options, April 12, 2002.
58. The holder of the call option has control of whether and when it is exercised. The holder will only choose to exercise the option when it is in his or her benefit to do so. The call option writer would never consent to write an option unless sufficiently compensated for the risk of loss at assignment. Therefore, the option buyer must always pay money to the option writer at the time a trade is negotiated. The amount of money paid by the buyer to the writer is called the option “price” or the option “premium.”

59. It does not make economic sense for an option holder to exercise the call option if the price of the underlying stock is lower than the strike price—if the buyer wishes to buy the stock it would be cheaper to just buy it directly rather than by exercising the option. To continue the example, if the price of Microsoft were $31.00 per share, it would not make sense for the holder of the option to exercise an option with a strike price of $32.00 (it would be cheaper to buy the stock for $31.00 than to exercise and buy it for $32.00). In this case, the option is said to be “out of the money.”

60. On the other hand, it might make sense for the call option holder to exercise the option if the underlying stock price is higher than the strike price. For example, if the price of Microsoft is $33.00 on April 19, 2014, when the option expires, it would make sense to exercise a call option with a strike price of $32.00, as doing so allows the holder to purchase a stock that is worth $33.00 for only $32.00. In this case, the option is said to be “in the money.”

61. The question of whether it makes sense to exercise the option early (before the expiration date) is more complicated. Even though an option may be in the money, it may not make sense to exercise if the option still has time left until expiration. Options can derive much of their value from the fact that they still have time left. This is called the “time value” of the option.\(^{58}\) Exercising an option early might not make sense, because in doing so, the holder loses the option’s time value.

62. To illustrate, consider the case where the call option with a strike price of $32.00 expires in April 2014, and the price of Microsoft is $32.01 in February 2014. The call option is “in the money” but only by one penny. Thus, if the option were exercised immediately, the owner would only gain one penny per share (buying stock for $32.00 that is worth $32.01). On the other hand, if the investor does not immediately exercise the option, the investor stands to gain much more than one penny per share if the stock goes up, but if the stock declines, the worst that

\(^{58}\) Hao et al. at p 10.
can happen is the investor will have lost the opportunity to make one penny per share. In this case, the value of the option if left unexercised is likely to be considerably greater than the one penny it would be worth if exercised. This option is worth more alive than dead, and so it would not make sense to exercise.  

63. As a general matter, the value (and the market price) of a call option rises as the underlying stock price rises, and falls as the underlying stock price falls. Consequently, the holder of a call option benefits as the underlying stock rises, and is harmed as the underlying stock price falls. Conversely, the writer of a call option is harmed as the underlying stock price rises, and benefits as the underlying stock price falls.

2. **Effect of Dividends on Stock and Call Option Prices and “Early Exercise”**

64. When a stock pays a dividend, money leaves the firm and is distributed to shareholders. The money leaving the firm causes the amount of assets owned by the firm to decrease, and therefore causes the stock price to decline. At the moment the stock goes “ex-dividend,” the value of the stock instantaneously declines, and this is immediately reflected in a lower stock price. The owner of the stock is not affected by this stock price drop, however, because the amount of the stock price decline should be offset by the amount of the dividend, and receiving the dividend compensates the investor for the stock price drop.

65. When the dividend payment causes the underlying stock price to drop, it also causes the call option prices to drop. Holders of call options, however, do not receive a dividend, and are made worse off as a result of the dividend payment. The only way the call option holder can avoid being harmed by a dividend is by exercising the call option. However, as discussed above, exercising the call option prior to expiration may not be a good idea because this results in losing the option’s time value.

66. As it turns out, the best thing the option buyer can do in this situation is to compare the amount of the dividend with the amount of time value left in the option. If the time value is larger than the dividend, it does not make sense to sacrifice the time value in order to get the

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59 If it so happens that the owner is no longer interested in owning the option, it need not be exercised for the investor to get out of the position; it can be resold at the current market price.

dividend. On the other hand, if the dividend is larger than the option’s time value, it is generally better to exercise the option and get the dividend.

67. The time value of a call option tends to be small when the time to expiration is shorter, and when the call option is “deeper” in the money (in other words, when the underlying stock price is much higher than the strike price). Also, the larger the dividend, the more likely it is to be larger than the option’s time value. Thus, if the stock pays a relatively large dividend, if the call option is deep in the money, and if the time remaining until expiration is low, it will make sense to exercise the call option on the last day before the ex-dividend date.

68. From the point of view of the call option writer, a dividend that causes the call option price to decline is potentially a benefit, because the call option writer benefits when the value of the call option declines. If the dividend is large, the call option is deep in the money, and the time to expiration is short (the same conditions that make early exercise attractive for the holder), the option writer hopes that the option is not assigned. If the call option is not assigned before the ex-dividend date, the call option writer benefits from the decline in the call option price. If the call option is assigned before the ex-dividend date, the writer is forced out of the option position before the option price declines, and does not benefit from the decline.

3. Mechanics of the Options Clearinghouse, Including Exercise and Assignment

69. All trading in exchange-listed options must be done through registered broker dealers who are members of the OCC,61 which is the clearinghouse for exchange-traded options in the United States. That is, both the buyer and the seller for each option trade negotiated on the exchange must either be a member of the OCC, trade through an account held by a member of the OCC, or trade through an account with a broker who has a contractual arrangement with a member of the OCC.

70. After the trade is executed on an option exchange, as part of the “clearing” process for the trade, the OCC steps in and becomes the counterparty to both the holder and the writer of the option (see Figure 1). In other words, after a trade between a buyer and seller is executed on the exchange, the buyer does not enter into an option contract with the seller; instead, the buyer

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61 For many years, this clearinghouse was known as the “Options Clearing Corporation,” hence the acronym “OCC.” In 2011, the name was officially changed to “OCC,” reflecting the fact that it had expanded its business beyond just clearing options trades. (See Press Release, OCC, “OCC Revises Brand Identity,” March 16, 2011, http://www.optionsclearing.com/about/press/releases/2011/03_16.jsp, accessed on October 18, 2013.)
becomes the holder of an option contract where the writer is the OCC, and the seller becomes the 
writer of an option contract where the holder is the OCC. This results in the OCC having two 
positions simultaneously, one as an option holder and one as an option writer in the same 
contract. These positions are always fully offsetting, so that the net position held by the OCC in 
each option series is always zero.

**Figure 1**

71. Because of this process, known as “centralized clearing,” there is no longer a connection 
between individual option holders and individual option writers. This means that if multiple 
parties have purchased positions and multiple parties have written positions in the same call 
option series (same underlying stock, same expiration date, and same strike price), in no way are 
particular option writers matched to particular option holders. Once the trade has cleared and the 
OCC has stepped in as the central counterparty, the original trade counterparties no longer have 
any connection or association with each other.

72. This fact has important implications for the exercise and assignment process. If the 
holder chooses to exercise, the exercise is against the OCC, not against the original counterparty. 
The rules and design of the OCC ensure that the OCC always maintains a net zero position in 
each option series (the OCC must always have the same number of contracts held as written). To 
maintain this zero balance, any time an option holder chooses to exercise, the OCC in turn must 
assign the same number of contracts among those who have written positions.

73. The OCC uses a randomized process to select which option writers are assigned. Because there is no connection between individual option holders and individual option writers, 
the option writer who is assigned may not be the original trading counterparty when the

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62 The main purpose of this arrangement is for managing the risk that the writer of the option might default (for 
example, the risk that the writer of a call option might not have the resources to satisfy their obligation to sell the stock 
for the strike price if the call option is exercised).

63 Hao et al. at p. 30, fn. 13.
exercising option holder bought their option. Figure 2 illustrates this through a simplified example, in which there are two buyers and two sellers. When one buyer chooses to exercise an option, the request goes to the clearing house and then the clearing house randomly decides what seller to assign the option to.

**Figure 2**

![Diagram of option exercise and assignment](image)

74. The assignment process is implemented once each business day, after the close of trading. Instructions from all option holders received since the previous day’s assignment are processed as a batch. The process used by the OCC to assign exercises to writers is called the “standard algorithm.”

**B. Mechanics of the Dividend Spread Strategy**

75. The dividend spread is a well-known strategy implemented by option market participants, especially by option market makers. The strategy is implemented on in-the-money call options on dividend paying stocks, in particular using an option series that has open interest prior to the ex-dividend date (meaning that there are existing purchased and written positions at the OCC).

76. As discussed above, when a stock goes ex-dividend, it causes a sudden decrease in the price of call options. If the call options are exercised and assigned prior to the ex-dividend date, the writers to whom the exercises are assigned are forced out of their positions and do not benefit from the price decline. However, it is known that a substantial portion of holders of in-the-money call options fail to exercise prior to the ex-dividend date, even in instances when they

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64 Option market makers are registered with FINRA as dealers and have a special role as liquidity providers on the option exchanges. When they engage in “market making” activity, they are expected to stand willing to take the opposite side of buy and sell orders that are sent to the exchange. In addition, option makers are free to engage in other types of trading not related to their responsibilities as a market maker.

65 An option “series” refers to a unique combination of contract features for an option—options in the same series have the same underlying stock, expiration date, strike price, and option type (i.e. call option vs. put option).
would be demonstrably better off exercising. If some or all of the call options are not exercised, this decrease in the call price benefits the option writers who are not assigned.

77. The failure of option holders to exercise their deep in-the-money option prior to the ex-dividend date means there is a windfall benefit to option writers as a group. This can be considered as “money left on the table” that goes to those option writers fortunate enough to not be allocated an assignment by the OCC’s random allocation process.

78. The purpose of the dividend spread strategy is to exploit the design of the OCC’s random assignment process to force assignment on the previously existing option writers, thus leaving the traders implementing the strategy with written option positions that will capture the benefit of the price decline when the stock goes ex-dividend. The following sections explain the mechanics of the strategy in further detail.

1. Two traders establish offsetting purchased and written positions in a deep in-the-money call

79. The first step in the dividend spread strategy is for two traders to take positions in a call option series with the following characteristics: (1) the underlying stock pays a cash dividend; (2) the option series is a call option that is deep in the money, meaning that the strike price is lower than the current underlying stock price, (3) the time value\(^{66}\) of the option is lower than the dividend; and (4) the option series has open interest when entering the last trading day before the ex-dividend date. I will refer to these traders as “Trader A” and “Trader B” and the option series they identify as the “Series.”

80. A particular option series is a better candidate for a profitable dividend spread trade if the dividend payment is larger, the time value is lower, and open interest on the day prior to the ex-dividend date is larger.

81. On the trading day prior to the ex-dividend date, Trader A buys a large number of call contracts in the Series from Trader B, and simultaneously Trader B buys the same number of contracts in the same Series from Trader A. Each of the two traders then has exactly offsetting purchased and written positions in the same option.

82. The trade execution price does not matter, as long as both trades are executed at the same price. No money changes hands when the traders enter these positions because the entry cost of

\(^{66}\) The time value can be measured as the quoted option premium minus the difference between the current stock price and the option’s strike price.
the two positions exactly offset each other (the premium paid by Trader A to Trader B for the first trade is exactly offset by the premium paid by Trader B to Trader A for the second trade).

83. The strategy is more likely to be successful if the size of the two offsetting trades is large relative to the total existing open interest in the Series. As demonstrated by Hao et al., the traders may find it best to implement the strategy using a trade several times larger than the existing open interest.⁶⁷

84. The two traders are not exposed to any risk from movements in the market price of the stock or the options. Any change in the value of the options does not affect the traders because their two positions are exactly offsetting—any losses on one position would be exactly offset by gains on the offsetting position.

2. Both traders exercise their purchased options, and the OCC assigns the exercises

85. The second step in implementing the strategy is for the two traders to exercise the options. On the same day as the initial trade (the last trading day prior to the stock’s ex-dividend date), Trader A and Trader B send instructions to exercise their entire purchased position.

86. At the end of the day, the OCC processes all of the day’s exercises as a batch, including the exercises by Trader A and Trader B, along with exercises by all other holders of the Series who choose to exercise on that day.

87. It is important to understand that at the time the OCC implements its allocation algorithm, the traders implementing the dividend spread strategy each have simultaneous purchased and written positions in the system. When the OCC assigns the exercises, it randomly assigns the exercises to all written option positions, including the traders’ own written positions. Based on the outcome of the random algorithm, some portion of the exercises will be assigned to the traders’ own positions, and some portion will almost certainly be assigned to other option writers.

⁶⁷ Hao et al. at pp. 31-32.
3. The gains from the dividend spread strategy are greater if the traders execute a larger trade

88. As a result of the dividend spread trades, some of the benefits resulting from the option holders leaving money “on the table” that otherwise would have accrued to the existing option writers are diverted to, or “captured” by, the traders implementing the strategy.

89. The greater the number of contracts purchased and exercised by the dividend spread traders relative to the previously outstanding open interest, the greater (on average) will be the portion of the previous open interest that will be assigned.

90. To illustrate this point, suppose that the existing open interest was 100 contracts going into the final trading day prior to the stock’s ex-dividend date, and for simplicity assume that none of the existing holders exercise their options as they should. Then it is the case that:

   a. If the dividend spread traders write and buy 100 call option contracts and exercise the purchased calls, the OCC would have to assign 100 exercises across 200 written contracts, so on average, a random allocation would assign 50 contracts to the previously existing writers and 50 contracts to the dividend spread traders. On average, the dividend spread traders would extract one half of the windfall gain resulting from the option holders not exercising.

   b. If the dividend spread traders implement the strategy using 900 contracts, the OCC would have to assign 900 exercises across 1,000 written contracts. Because the dividend spread traders have 90% of the written positions, a random allocation would on average assign 810 contracts (90% of 900) to the dividend spread traders and 90 contracts (10% of 900) to the previously existing writers. This would leave the previous writers with 10 written contracts and the dividend spread traders with 90 written contracts, and the dividend spread traders would extract 90% of the gain.

   c. If the dividend spread traders implement the strategy using 9,900 contracts, the OCC would assign 9,900 exercises across 10,000 written contracts. On average, 99 contracts (1% of 9,900) would be assigned to the previous writers, who would be left with 1 written contract. On average 9,801 contracts (99% of 9,900) would

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68 The 200 written contracts include the original 100 contracts plus the new 100 contracts written by the traders doing the dividend spread trades.
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be assigned to the traders, leaving them with 99 written contracts. The dividend spread traders would extract 99% of the gain.

91. Figure 3 provides a simplified illustration. In the absence of the dividend spread traders, the party who had previously written the call options stood to benefit from the buyer failing to exercise the calls. As a result of the dividend spread traders, however, the clearing house is flooded with 9,900 exercises, which are assigned to the option writers (including the dividend spread traders themselves). On average, the OCC’s allocation process would be expected to assign 99 contracts (1% of 9,900) to the previous sellers, leaving them with only one contract.

**Figure 3**

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**C. Characteristics of Dividend Spread Strategies**

92. The dividend spread strategy has certain characteristics that, if considered in isolation, bear some resemblance to characteristics of market manipulation strategies. However, as discussed in Section D below, the SEC staff does not view the dividend spread strategy as market manipulation because the trades are designed to be profitable without any element of fraud or deception. Because the strategy has a legitimate economic purpose, the SEC staff does not consider the strategy to be illegal or manipulative. In the remainder of this section, I discuss some of the characteristics of the dividend spread strategy that in other circumstances might be viewed as elements of a manipulative trade, but which in the absence of deception or manipulative intent are not a concern to the SEC staff.

93. First, unlike most spread strategies, which involve taking offsetting positions in two correlated but different instruments, the dividend spread strategy involves a trader simultaneously (or nearly simultaneously) taking long and short positions in the same security. In the sense that there was no change in beneficial ownership, the trades are virtually
indistinguishable from wash trades. Moreover, in order to establish these offsetting positions, the party implementing the strategy coordinates with another party to execute two offsetting trades. Thus, the dividend strategy involves executing pre-arranged trades between two parties, and in this respect, resembles matched trading. In other contexts, wash trading and matched trading may be viewed as manipulative.

94. Second, the dividend spread strategy is profitable because it exploits a weakness or vulnerability inherent in the design of the clearing system. In this respect, it has some resemblance to a strategy known as “spoofing” that some regulators might characterize as deceptive or manipulative. Spoofing is a trading strategy that seeks to take advantage of design features of certain trading systems where market makers are obligated to provide liquidity at a price matching the quoted spread.\(^69\) Like the spoofing strategy, the dividend spread strategy diverts and captures benefits that otherwise would have accrued to other market participants. However, the dividend spread strategy captures profits without deceiving or inducing any other participant to trade. Diverting benefits from other market participants is not fraudulent or deceptive if no participants are deceived.

95. Third, the profits earned by the dividend spread trades are not derived by locking in trading profits from the trades themselves, as is often the case in arbitrage strategies. Rather, the benefits are obtained indirectly, by diverting benefits away from other market participants. This occurs by specifically forcing assignments on other market participants and stepping ahead of other participants in line to capture the benefit of the dividend. Some manipulative strategies involving wash sales also derive gains indirectly, for example, by deceiving other market participants as to the true value of the security, inducing them to trade, and then executing other profitable trades with market participants who have been deceived. In such cases, what makes the trades manipulative is not that the profits were earned indirectly, but rather that the profits were achieved through deception.

96. Fourth, the dividend spread strategy may involve trading volume sufficiently large that it has a substantial impact on total trading volume. As illustrated in Exhibit 1 for utility PPL Corporation, dividend spread trading could increase trading volume by a factor of ten or more.

\(^69\) The spoofing strategy exploits this design feature by submitting a smaller limit order on one side of the market to set the quote, then submitting a larger order on the other side of the market, which is then filled by market makers who are obligated to match the quote. To the extent that the spoofing strategy is only profitable because the trader submitted an order that deceived other market participants and induced them to trade at artificial prices, the spoofing strategy could be characterized as manipulative. (See http://www.sec.gov/news/press/2001-129.txt, accessed on October 30, 2013.)
Conceivably, this increase in trading volume could be large enough so that other market participants might be “deceived” in the sense that they could draw incorrect inferences about liquidity, or even make trading decisions based on misperceptions of liquidity. However, the SEC staff still does not view the strategy as illegal. Even though a side effect of the strategy might be that others are deceived, the motivation of the strategy was not to deceive, and the success of the strategy does not depend on deception.

97. Fifth, the dividend spread strategy involves little or no market risk. If implemented and executed properly, the strategy should have no risk exposure to movements in the underlying stock price.\(^70\) Wash sales, when used as part of a market manipulation, also have the characteristic that they have little or no market risk. But this is also a characteristic of many legal spread strategies, such as those described above. Absence of market risk does not make a trading strategy deceptive or manipulative.

**D. The SEC Staff Does Not View Dividend Spread Strategies as Illegal or Manipulative**

98. The dividend spread strategy has been known to SEC staff since at least 2003, when the Pacific Exchange submitted a rule change proposal that modified their fee structure to place a cap on transaction fees associated with certain types of option strategies, including dividend spreads.\(^71\) Similar rule proposals were submitted to the Commission by the Philadelphia Stock exchange in 2003, the American Stock Exchange in 2004, and the Chicago Board Options Exchange in 2004.\(^72\) These proposals, which facilitated dividend spread trading and other similar strategies by limiting the fees for such trading, became effective shortly after they were filed. The SEC could have taken action to prevent these fee caps from going into effect had it determined that the dividend play and similar strategies were harmful to investors, but it did not do so.

99. In 2004, when I was employed at the Commission, I studied various aspects of the dividend spread strategy, along with Dr. Avner Kalay, who was then working as a consultant for

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70 There is risk in the strategy, however, in the sense that the strategy may or may not be profitable. For example, there is uncertainty as to how much, if any, of the existing open interest will remain unexercised (how much money is left on the table), and how much of the exercised open interest will be assigned back to the traders by the OCC’s random allocation algorithm.


the SEC. Later, while I was still working at the SEC, I co-authored a research article with Dr. Kalay and Jia Hao, which explained the mechanics of dividend spread strategy, and demonstrated that the fee caps adopted by the exchanges led to an increase in the amount of dividend spread trading. This article was subsequently published in The Review of Financial Studies.\textsuperscript{73}

100. Another group of researchers, including Veronika Krepely Pool, Hans R. Stoll, and Robert E. Whaley, authored another study of the dividend spread strategy. Their study was published in the Journal of Financial Markets in 2008.\textsuperscript{74}

101. Despite the SEC being aware of the strategy for the past ten years, dividend spread trading has continued in option markets through the present time.\textsuperscript{75} Exhibit 2 shows a graph of the daily trading volume on Altria call options over a four-week period surrounding the ex-dividend date in March 2013. This is a company that pays a relatively large dividend and is often the target of significant dividend spread activity. As the graph shows, trading volume over this period ranged from less than 3,000 contracts to about 45,000 contracts per day, but jumped to approximately 630,000 contracts on March 12, 2013, the day immediately prior to Altria’s ex-dividend date. In all important respects, this graph is essentially identical to Figure 1 of the article I co-authored with Jia Hao and Avner Kalay, which shows the same graph surrounding Altria’s ex-dividend date on March 11, 2004.\textsuperscript{76}

VII. Dr. Chen’s UTC Trades are Not Analogous to the Amanat Case

102. In both the current case and the Oceanside case, the FERC has made the analogy that the UTC trading is similar to trading that occurred in the SEC administrative action in the Amanat Case\textsuperscript{77} where, upon appeal to the Commission, the Administrative Law Judge’s decision was

\textsuperscript{73} Hao et al. at pp. 1-33.
\textsuperscript{75} Recently, in May of 2013, the OCC moved to adopt a policy to restrict the exercise of options for market makers to the amount of options the market maker is net long. Note that neither the SEC or FINRA has attempted to prosecute traders for undertaking the strategy, but rather, the OCC has proposed adopting a policy to deter the strategy. In contrast, the FERC has opted to penalize traders for undertaking the UTC trading strategy to earn MLSA’s prior to the FERC’s adoption of the rules which no longer provided MLSA’s to UTC traders. (See Press Release, OCC, “OCC to Adopt a Policy to Restrict Exercises to Net Long Positions,” May 23, 2013, http://www.optionsclearing.com/about/press/releases/2013/05_23.jsp, accessed on October 18, 2013.)
\textsuperscript{76} Hao et al. at p. 3.
\textsuperscript{77} Amanat Opinion 2.
reversed and the trader was found to have violated SEC manipulation rules.\textsuperscript{78} As I will describe below, the trading that occurred in the Amanat Case was different in fundamental ways from the UTC electricity trading that occurred for both Dr. Chen’s trading and Oceanside trading.

103. Mr. Amanat, whose family was majority owner of Tradescape, the parent company of MarketXT and Momentum Securities, allegedly conducted wash trades in two Momentum Securities accounts by crossing internal trades on MarketXT’s electronic trading platform without exposing the orders to the market.\textsuperscript{79} Mr. Amanat’s trading involved de minimis risk. The SEC’s Enforcement Division argued that Mr. Amanat was motivated by the prospect of increasing the trading volume on MarketXT to exceed the threshold volume necessary to qualify for market data rebates from Nasdaq. Allegedly, Mr. Amanat, through his wash trading, deceived Nasdaq about whether MarketXT was qualified for the rebates, and deceived the market regarding the amount of data revenue Nasdaq qualified for.

104. In contrast, Dr. Chen’s trades were not wash trades. The FERC has not articulated a coherent theory as to how Dr. Chen’s strategy deceived anyone. Dr. Chen was qualified to receive the MLSA payments without deceiving anyone, and Dr. Chen’s strategy involved risk. These key differences between the Amanat Case and the current case are discussed in greater detail below.

A. Dr. Chen’s Trades Were Not Wash Trades

105. Dr. Chen’s trades were not wash trades, whereas the SEC’s case against Mr. Amanat involved trading that included a large number of wash trades. As discussed above, in securities markets, a wash trade is a trade which involves no change in beneficial ownership, which is achieved by the same entity acting as the buyer and seller on the same trade. I understand that the trading directed by Mr. Amanat involved the synchronized submission of buy and sell orders for the same security, which crossed with one another to execute trades.

106. Conversely, Dr. Chen’s trades did not involve wash trades. Rather, as explained previously, Dr. Chen followed a spread strategy that involved entering bids on two different...
contracts, one related to the congestion from Point A to Point B, and the other related to the congestion from Point B to Point A. Dr. Chen was not acting as a buyer and seller for both sides of the same contract; rather, he was taking positions in separate contracts with opposite and offsetting risk exposure.

107. My conclusion that Dr. Chen’s trades were not wash trades is based on my current understanding of the structure of the UTC market and is not intended to be a legal opinion. Even if it were to be determined that Dr. Chen’s strategy should be considered a wash trade, this does not mean the trades would be considered illegal under Federal securities laws. It is my understanding that wash trading may or may not be viewed as a violation of securities laws, depending on whether the trade has an economic purpose, whether the intent was to deceive or manipulate, and potentially other factors.

108. Dr. Chen’s trades had a clear economic purpose. Moreover, the strategy did not require deception in order to be successful, and I have seen no evidence presented suggesting that his strategy was intended to deceive.

B. The SEC Enforcement Division’s Allegations Specified How Mr. Amanat’s Strategy was Deceptive

109. The language of Section 10(b) prohibits the use of manipulative devices in connection with the purchase or sale of securities. Establishing that the trading activities were intended to deceive is a critical element of establishing liability under Section 10(b).

110. In the Amanat Case, the Division articulated a theory that Mr. Amanat’s strategy was designed to deceive Nasdaq as to whether MarketXT qualified for their rebate program. The Division also articulated a theory that Mr. Amanat’s strategy may have deceived the UTP (the entity that collects and distributes market data revenue) regarding the amount of data revenue to which Nasdaq was entitled.

80 Dr. Chen also conducted trades between three locations, which also have no relation to wash trades.
81 The decision in the NASD enforcement action against Peter Kellogg confirmed that wash trades are not prohibited if the trades have an economic purpose. (NASD Office of Hearing Officers, Disciplinary Proceeding No. CMS030257, Hearing Panel Decision (Kellogg), August 6, 2004, pp. 2, 14-15.)
82 The decision in Rockies Fund v. SEC found that the defendants engaged in wash sales and matched orders but found that “neither of these devices alone constitutes a security violation” and stated that allegations of violations under Section 10(b) require a showing of intent and materiality. (Rockies Fund, Inc., et al. v. SEC, 428 F.3d 1088 (U.S. App. D.C.), November 15, 2005.)
84 Id.
111. Based on my review of the FERC’s allegations and preliminary findings in this case, my understanding is that the FERC has not offered any explanation as to how Dr. Chen’s strategy was deceptive, or who was deceived. As far as I can ascertain, the FERC’s theory appears to be that any trading strategy that is designed to capture MLSA payments without having another economic purpose is inherently fraudulent.85

C. Mr. Amanat Would Not Have Qualified to Receive Rebates Absent The Alleged Deception

112. Unlike Mr. Amanat’s trades conducted for the purpose of attempting to qualify for a rebate, Dr. Chen already qualified for the MLSA payments, which were paid automatically. Mr. Amanat’s trades were not profitable unless and until MarketXT was able to qualify for a rebate, which it appears they were unable to do without executing wash trades.

113. It is my understanding that Nasdaq did not permit market centers to meet the volume threshold for participation in the rebate program by executing wash trades and would not have considered MarketXT to be qualified had they known of the wash trades. Dr. Chen’s trades already qualified for the MLSA payments as specifically stated by the FERC. As specified by the Black Oak decision,86 the FERC unambiguously stated that UTC transactions conducted by virtual traders would be eligible for MLSA rebates and would be “..distributed pro-rata to each Network Service User and Transmission Customer in proportion to … the total MWh of cleared Up-To Congestion transactions (that paid for transmission service during such hour).”87

114. In the context of the same Black Oak decision, the FERC also stated that they expected that market participants would have, “an incentive for arbitrageurs to engage in purchase decisions, not because of price divergence, but simply to increase marginal line loss payments.”88 In other words, the FERC staff recognized that the MLSA allocation would impact the decisions of market participants, in addition to market price signals, but did not prohibit this practice.

115. Dr. Chen was a UTC virtual trader paying the necessary transmission costs associated with scheduling his trades. Based on the public nature of the Black Oak decision to allocate

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85 FERC Staff Preliminary Findings at p. 21.
MLSA payments to UTC traders, it would have been clearly understood by other market participants that Dr. Chen qualified for MLSA rebates under the existing rules. In no way was Dr. Chen attempting to qualify for rebates he was not entitled to based on the market rules at the time of his trading.

**D. Dr. Chen’s Trades Involved Risk**

116. Because Mr. Amanat’s trades were wash sales, executed by submitting simultaneous paired orders that crossed internally, the trades exposed him to little or no risk. Conversely, Dr. Chen’s trades were risky in three main ways.

117. First, one of the two UTC scheduled legs may not clear, in which case the remaining leg would be priced and settled at market prices without the full or partial offset effect of the rejected UTC leg.

118. Second, the use of three locations in the trading strategy (simultaneous UTC transactions from Point A1 to Point B and Point B to Point A2, where the prices at Point A1 and A2 were highly correlated) subjected Dr. Chen to the risk that the realized correlation between Point A1 and A2 may not be as high as expected, in which case the trades would not fully offset one another.

119. Third, the amount of MLSA payments were not known to Dr. Chen at the time he scheduled the UTC transactions, and he bore the risk that the MLSA payments would not exceed the UTC transmission costs paid to PJM and/or the loss on the UTC net settlement amounts.

**VIII. Conclusion**

120. Dr. Chen implemented a simple spread trading strategy that is typical of a broad range of legitimate trading strategies in stock, commodity, and derivative security markets. A closely analogous strategy to Dr. Chen’s trading is the dividend spread strategy in the securities markets. The dividend spread strategy (1) involves taking offsetting positions in the same security, (2) exploits a weakness in the market design, (3) earns profits indirectly by diverting benefits away from other market participants, (4) requires a large volume of trading, and (5) involves little risk. The SEC does not view the dividend spread strategy as market manipulation because there is not an element of fraud or deception.
Based on the materials I have reviewed, it is my opinion that the FERC has not articulated a coherent theory as to how Dr. Chen’s spread trading deceived anyone. The FERC’s theory appears to be that any trading designed to capture MLSA payments without another economic purpose is inherently fraudulent, even if the activity is transparent and not deceptive. Such a theory is not consistent with the regulatory treatment of existing, legitimate, market strategies. If the FERC believes strategies designed solely to capture MLSA payments raise concerns about fairness or market efficiency, the appropriate way to address such concerns would be through regulation of the market structure, not through retroactive enforcement against market participants who at the time had no reason to believe their strategy was abusive.

Executed this 6th of November, 2013

Stewart Mayhew
ACADEMIC BACKGROUND

1996 University of California, Berkeley Berkeley, California
Walter A. Haas School of Business
Ph.D., Finance

1992 Brigham Young University Provo, Utah
M.S., Applied Economics

1991 B.S., Economics

PROFESSIONAL EXPERIENCE

Cornerstone Research, Inc. Washington, D.C.
2012-Present Principal
2010-2012 Senior Economist
Provides economic and financial consulting services and analysis in connection with litigation and regulatory investigations. Specializes in complex litigation involving financial institutions, securities, mutual funds, stock exchanges, investment advisors, broker dealers, derivative securities, and structured products. Experience includes cases involving allegations of securities fraud, market manipulation, violations of fiduciary obligations, and broker-dealer suitability standards. Experience with directing complex cases involving multiple experts.

University of Maryland, Robert H. Smith School of Business College Park, MD
2012-Present Adjunct Faculty
Taught Masters-level course in derivative securities.

U.S. Securities and Exchange Commission Washington, D.C.
2008-2010 Deputy Chief Economist (Senior Officer)
2004-2008 Assistant Chief Economist
2002-2004 Visiting Academic Scholar
Supervised teams of PhD financial economists. Provided economic analysis and support for SEC Divisions of Trading and Markets, Investment Management, Corporation Finance, and Enforcement, and the Office of Compliance Inspections and Examinations. Worked on examinations and enforcement matters related to market manipulation, insider trading, derivative security valuation, mutual fund market timing/late trading, option backdating, churning, front-running, best execution, and other areas. Worked on rulemaking projects in areas including market structure, short selling, option trading,
regulation of broker dealers, clearing and settlement, securities lending, credit rating agencies, investment advisors, hedge funds, mutual funds, exchange-traded funds, asset-backed securities, municipal bonds, option expensing, and proxy voting.

University of Georgia, Terry College of Business
Athens, GA
2000-2004
Assistant Professor
Taught courses in Mathematical Finance (PhD), Advanced Speculative Markets (MBA), Financial Engineering (MBA), Derivative Securities (undergraduate), Investments (undergraduate)

Purdue University, Krannert School of Management
West Lafayette, IN
1996-1999
Assistant Professor
Taught Investments Seminar (PhD), Options and Futures (MBA), Investment Management (undergraduate). Helped organize interdisciplinary program in computational finance.

Berkeley Options Database
Berkeley, CA
1993-1996
Database Manager

Financial Engineering Associates
Berkeley, CA
1995-1996
Financial Engineer
Consultant for financial engineering problems and valuation of fixed-income derivatives.

PUBLICATIONS


PUBLICATIONS (continued)


WORKING PAPERS

The Information Content of NYSE Equity Prices and Closing Imbalances
(with D. T. McCormick and C. Spatt)

Equity Trading and the Allocation of Market Data Revenue (with C. Caglio)

Short Sale Constraints, Overvaluation, and the Introduction of Options (with V. Mihov)

Market Fragmentation Metrics (with L. Harris)

PRESENTATIONS

“Market microstructure: An overview”
U.S. Senate Committee on Banking, Housing, and Urban Affairs Staff, 2010

“Economics of central clearing and exchange trading of security-based swaps”
SEC Division of Trading and Markets training seminar, 2010

“Black Scholes option pricing” and “Valuation of retail structured products”
SEC Enforcement Division, Structured and New Product Unit training seminar, 2010

“Regulation and risk management of new products,” “Index linked notes,” and 3 other presentations
APEC Financial Regulators Training Initiative, Shanghai, 2010

“Economics of securitization and the 2008 financial crisis”
SEC Graduate program, 2010
PRESENTATIONS (continued)

“Market Microstructure for Emerging Markets” and “Market Manipulation”

“Securities market regulation in a world of derivative securities”
SEC International Enforcement Institute, 2006

“Conflicts of interest for market intermediaries”
Council of Securities Regulators of the Americas (COSRA), 2006

“Market surveillance: theory, design, and execution,” “Market Manipulation,” and other presentations
SEC Market Oversight/Enforcement training program, Quito, 2006
SEC Market Oversight/Enforcement training program, Mumbai, 2005

Research papers presented on program at 25 conferences between 1996 and 2010 including:
- American Finance Association (4 papers)
- Western Finance Association (3 papers)
- European Finance Association (3 papers)
- Financial Management Association (3 papers)
- NBER Microstructure Conference
- Vanderbilt Financial Markets Conference
- Cornell/Queens Conference on Derivative Securities
- Q Group Conference
- Chicago Board of Trade Research Symposium

Research presented at 47 seminars at universities and other research organizations
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- [http://www.sec.gov/answers/dividen.htm](http://www.sec.gov/answers/dividen.htm)

### SEC Documents

- Securities Exchange Act of 1934, §10(b) (as amended 2012)
- Securities and Exchange Commission, Release No. 34-60388, File No. S7-30-08 | 7/31/09 |
Daily Volume on PPL Corporation (PPL) Call Options
2/19/13 – 3/19/13

Source: The Options Clearing Corporation
Daily Volume on Altria (MO) Call Options
2/27/13 – 3/27/13

Source: The Options Clearing Corporation

3/13/13: Ex-Dividend Date
EXHIBIT I
UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION  

PJM Up-To Congestion Transactions Docket No. IN10-5-000

Affidavit of Dr. Craig Pirrong

Introduction

1. I have been retained by Skadden, Arps, Slate, Meagher and Flom, to evaluate the trading activity of Houlian (Alan) Chen in PJM during the April-August, 2010 period. Based on my review of Mr. Chen's trading records, I conclude that his trades were legitimate, and not manipulative in either intent or effect. In particular, his trades were not wash trades.

Background and Qualifications

2. I am Professor of Finance, and Director of the Global Energy Management Institute at the Bauer College of Business of the University of Houston. Prior to joining the faculty of the University of Houston in January, 2003, I was the Watson Family Professor of Commodity and Financial Risk Management at Oklahoma State University. I assumed this endowed professorship in 2001 after holding research and teaching positions at the University of Michigan, the University of Chicago, and Washington University. My curriculum vitae is attached. It lists all of the publications that I have authored in the last ten years. It also lists cases in which I have testified as an expert at trial or by deposition within the preceding four years.
3. I have researched the economics of financial, futures, and securities markets for most of my academic career. I have published scholarly articles concerning financial, securities and futures markets. I have written articles on the behavior of futures prices, the organization and governance of futures exchanges, and various aspects of futures market regulation, including the regulation of market manipulation.

4. As an academic and consultant, I have been deeply involved for about 20 years in issues relating to commodity futures markets, commodity prices, and the economics of commodity market manipulation. My research has been published in a wide variety of scholarly journals. I have been a peer reviewer for many journals, including the American Economic Review, the Journal of Finance, the Journal of Law and Economics, the Journal of Futures Markets, Economic Inquiry, the Journal of Economic Behavior and Organization, the Journal of Business, and the Journal of Business and Economics Statistics.

5. Much of my research has focused specifically on issues of market manipulation. I have published a book (titled The Economics, Law, and Public Policy of Market Power Manipulation), as well as nine economics, finance, and law review articles on this subject.

6. I was the primary author of a study commissioned by the Chicago Board of Trade ("CBOT"), later published as a book titled Grain Futures Markets: An Economic Appraisal. That study analyzed the economics of the delivery system for CBOT corn, wheat, and soybean futures contracts, specifically focusing on how to revise that system to make it less vulnerable to manipulation. I recommended the
adoption of a multiple delivery point system, and specifically analyzed the pricing and hedging implications of such a system. A part of this research on multiple deliverable contracts was published in a peer-reviewed journal.

7. In 1992 I was a member of the MidAmerica Institute for Public Policy Research Treasury Securities Market Task Force. This Task Force was formed in the aftermath of the Salomon Brothers squeeze of the two year Treasury note. As a member of the Task Force, I investigated issues relating to microstructure and market power in the market for Treasury Notes and Bonds.

8. I have consulted with commodity exchanges in Sweden and Germany regarding the design of futures contracts, including the design of the delivery mechanisms for wood pulp, European wheat and European pigs. A main objective was to design contracts that were not vulnerable to manipulation.

9. In 1997 and 1998 I served as a member of the CBOT’s Grain Delivery Task Force (“GDTF”). This body was charged by the exchange with the responsibility of designing new delivery terms for CBOT corn and soybean futures contracts. Such a redesign was mandated by the United States Commodity Trading Futures Commission (“CFTC”) because the old delivery mechanism had become unduly susceptible to manipulation. Among the Task Force’s objectives was to design a contract that would tend to prevent and diminish the likelihood of price manipulation. The terms recommended by the GDTF were adopted by a large majority of the CBOT membership, and approved by the CFTC (with some modifications for soybeans) in May, 1998.
10. I provided expert testimony in a case related to market manipulation, *In re Soybean Futures Litigation*, Nos. 89 C 7009, 90 C 11th 8 (N.D. Ill. 1995). I have also been retained by the CFTC as an economic expert in a commodity manipulation case and also as an expert in manipulation matters by the Winnipeg Commodity Exchange, pursuant to enforcement actions undertaken by the WCE. In addition, I have provided expert testimony in other manipulation cases, *American Agric. Movement v. Board of Trade*, 848 F. Supp. 814 (N.D. Ill. 1994), *aff'd in part, rev'd in part sub nom. Sanner v. Board of Trade*, 62 F.3d 918 (7th Cir. 1995), and *Kohen v. Pac. Inv. Mgmt. Co.*, 2007 U.S. Dist. LEXIS 56389 (N.D. Ill. 2007). I provided expert testimony in *Energy Transfer Partners, L.P.*, a FERC case. My research has also been cited in a 7th Circuit Court of Appeals decision on manipulation, *Board of Trade v. SEC*, 187 F.3d 713, 724 (7th Cir. 1999) (Easterbrook, J.).

11. In June 2005, I was retained by FERC to make a one-day presentation on the economics, law, and regulation of market manipulation to economists, analysts, and attorneys in the agency’s Office of Market Oversight and Investigation. I made this presentation in June 2005.

12. I have testified before the House Agriculture Committee (which has jurisdiction over futures markets and exchanges) on matters relating to an energy market manipulation.

13. I was an invited participant in the Federal Trade Commission’s workshop on its proposed oil market manipulation rule.

14. I have taught courses on derivatives (including natural gas futures, forwards, and swaps) at the graduate and undergraduate levels for eighteen years. These
courses have covered the pricing of derivatives instruments, including natural gas
derivatives, the use of derivatives for hedging and speculative purposes, and
manipulation. I currently teach the PhD course in futures and options in the Bauer
College of Business at the University of Houston, and an MBA course in energy
derivatives.

15. I have a book on commodity pricing—including the pricing of electricity and
electricity derivatives—forthcoming from the Cambridge University Press.

16. I am currently director of the Global Energy Management Institute
(“GEMI”) at the Bauer College of Business of the University of Houston. GEMI is
a world leader in energy finance education. Moreover, GEMI routinely hosts
educational events for energy professionals, including a well-attended energy trading
conference held every year.

Analysis of Mr. Chen’s Trading

17. Prior to 31 May, 2010, Mr. Chen would typically purchase day ahead
power in MISO, and sell it day ahead at a point in PJM, such as Mt. Storm. He
would simultaneously buy power day ahead at another, geographically proximate
point in PJM, such as Greenland Gap, and sell day ahead power into MISO.

18. Mr. Chen traded “up to congestion” (“UTC”) contracts. These contracts
have the feature that if based on clearing prices in the day ahead market, the
spread between the PJM price and the MISO price on one of the legs exceeds $50,
that leg is rejected.

19. Since the MISO day ahead purchase and sale in the transactions described
at ¶17 supra canceled if neither leg was rejected due to a breaching of the $50
transmission price limit, in this case Mr. Chen would have been left with a long position at one PJM point (Greenland Gap in the foregoing example) and a short position at the other (Mt. Storm in the example). If one leg was rejected (e.g., the MISO into Mt. Storm leg), Mr. Chen was left with a long position in one control area and a short position in another. This would most likely result in a long position in day ahead PJM power, and a short position in day ahead MISO power.

20. Real time spreads between points in PJM are not constant, and in particular, they fluctuate randomly. At times, these random fluctuations can be extremely large. If neither leg was rejected, Mr. Chen was at risk to changes in this real time intra-PJM spread.

21. The differences between real time PJM and MISO prices—PJM-MISO real time spreads—are not constant, and fluctuate randomly. If one leg was rejected due to a breach of the $50 UTC limit, Mr. Chen was at risk to this real time PJM-MISO spread.

22. Spread trading is ubiquitous in virtually every commodity market. Indeed, a very large fraction of trading of everything from aluminum to corn to oil to natural gas to power to zinc is spread trading. Spread trading performs an important price discovery function, facilitates hedging, and provides liquidity to the market. Spread trading should be encouraged as a way of facilitating the efficiency of the market.

23. Mr. Chen chose the busses that he utilized in his spread trading based on fundamental analysis. That is, he attempted to identify bus prices that were
overpriced relative to others. By carrying out such fundamental research, and trading based on it, Mr. Chen was contributing to price discovery in the market.

24. To reiterate, Mr. Chen was at risk when engaging in this trading activity. Indeed, these risks were quite large. In particular, Mr. Chen lost over $300,000 in this strategy on 30 May, 2010 when day ahead time spreads widened dramatically to exactly $50/MWh. This reflects the fact that the distribution of electricity prices exhibit “heavy tails.” That is, the probability of extreme changes is large, as compared to the standard “normal” (bell-shaped) distribution often used to characterize risk.

25. The facts that (a) Mr. Chen was at risk to spread changes, and (b) was buying and selling power at different PJM points, means that in no way can his trading be considered “wash trading.” A wash trade involves a (near) simultaneous purchase and sale of the same asset or commodity. Wash trades create no exposure to risk of price changes. In contrast, Mr. Chen’s positions were at risk to changes in prices. This is demonstrated by the fact that Mr. Chen’s profit margins on these transactions fluctuated, and indeed, he suffered large losses on at least one day.

26. After suffering a loss on 30 May, 2010, Mr. Chen reconsidered his trading strategy. Mr. Chen decided that, in addition to executing trades as he had in the past (i.e., either with imports from MISO to PJM node A and exports from PJM node B to MISO, or simply stand alone day ahead trades to or from an interface) he would buy day ahead power in MISO and sell it at a point in PJM under a UTC
contract, and simultaneously buy day ahead power at the same point in PJM, and sell it into MISO.

27. Under this new strategy, Mr. Chen was not at risk to intra-PJM real time spread changes, as he had bought and sold power at the same bus in PJM. However, Mr. Chen was still at risk.

28. Specifically, Mr. Chen faced the risk that one leg of the pair he submitted would be rejected. In the event, Mr. Chen was at risk to the PJM-MISO real time spread risk on the non-rejected leg.

29. Given that it was impossible for both legs to be rejected (since MISO minus PJM cannot exceed $50 if PJM minus MISO does, and vice versa), and since the probability of rejection of a leg was non-zero, Mr. Chen was at risk to PJM-MISO real time spread changes with positive probability.

30. Again, this means that these were not wash trades. There were states of the world in which Mr. Chen would have faced exposure to price risk. In contrast, in a wash trade, no such states of the world exist.

31. There is another way of seeing this. UTC contracts are a combination of (a) standard “vanilla” spreads in forward contracts and (b) an embedded option. Crucially, the option embedded in the MISO to PJM UTC trade is different than the option embedded in the PJM to MISO trade. Mr. Chen’s trading strategy was therefore an option spread transaction. Although the forward contract portions of the two UTC legs of his trades cancelled out, the option portions did not. This left Mr. Chen with a contingent price exposure. In contrast, in a wash trade there is no contingent price exposure.
32. In essence, Mr. Chen was speculating that, contingent on the MISO into PJM day ahead spread exceeding $50, the day ahead PJM into MISO spread was downward biased. That is, on average, given this contingency, the real time difference between the PJM and MISO prices was larger than the difference between the day ahead PJM and MISO prices. This difference between the average (or "expected") real time PJM-MISO difference and the day ahead PJM-ISO difference is referred to as a price "bias."

33. Commodity speculation is, in essence, betting on price bias. Thus, Mr. Chen was engaging in a speculative transaction that involved taking on risk in exchange for an expected profit.

34. Mr. Chen neither made nor took deliveries of physical power, as would be necessary as part of one type market manipulation: a manipulation based on the exercise of market power, e.g., a classic corner or squeeze. In such a manipulation, a trader with a large financial position buys or sells excessively large physical quantities in order to distort prices in a way that enhances the value of his financial position. Since he did not make or take delivery of physical power, Mr. Chen could not have manipulated the market through the exercise of market power.

35. Mr. Chen did not act in a deceptive manner. He made his purchases and sales openly, and entered the information necessary to execute his trading strategy...
in an open and transparent way. Moreover, the information he entered was correct and hence could not have been fraudulent.

36. As a result of the transactions Mr. Chen executed, he was eligible for, and received, transmission loss credits ("TLC"). TLC therefore affected the profitability of the strategies that Mr. Chen employed.

37. Mr. Chen responded rationally to the economic signal that was inherent in the design of the TLC. It would be unduly burdensome and unrealistic to expect traders to decide whether or not to respond to economic signals if they can do so without engaging in deception or exercising market power. If PJM deems that the TLC is incentivizing undesirable transactions, the problem is in the incentives inherent in the TLC, rather than with traders responding rationally to these incentives.

38. Traders respond to price and value signals, regardless of whether those price and value signals are reflect only economic fundamentals, or are also affected by regulations and market design. Several examples illustrate this point.

39. For instance, the price that traders are willing to pay for corn, and the amount of corn they are willing to buy, depends on the subsidy for the production of ethanol. This subsidy is a purely legislative artifact, but affects the economics of purchasing corn. The higher the subsidy, the more corn traders purchase, and the higher the price they are willing to pay for it.

40. As another example, prior to the passage of the Staggers Rail Act in 1980, the Interstate Commerce Commission set rail rates on grain shipments. The regulated rate structure (a) equalized the rail rates on grain shipments to different
ports, even though the costs of serving these ports differed, and (b) protected the (lower) through rate from interior points to export points on shipments of grain that were shipped from a given interior point to an interior terminal, and then sent from the interior terminal to an export point. As a result of this rate structure, shipments were roughly equalized across export ports, and it was conventional for shippers to ship grain from a producing location (such as central Iowa) to an interior terminal market (such as Chicago) where it was stored for some period before being shipped to an export point. The Staggers Act eliminated these features of the regulated rate structure, and as a consequence (a) more grain was shipped to lower cost ports, and less grain to higher cost ports, and (b) grain was shipped directly from producing points to export ports without being stored at interior points like Chicago. This change in behavior makes it plain that the original patterns of shipment and storage were driven by the incentives inherent in the regulated rate structure. Again, traders responded to the economic incentives inherent in the regulated price structure, even though this regulated rate structure was not economically efficient.

41. As a final example, futures contracts often include premiums for delivery at certain locations (or of certain grades) and discounts for other locations (or grades), and these premiums and discounts do not equal market price differentials between the locations (or grades). When deciding where (or what) to deliver, market participants take into account the exchange-specified premiums and discounts. Specifically, they choose to deliver the “cheapest to deliver” location
(or grade), where the calculation of the cheapest to deliver explicitly includes the
specified premium or discount.

42. In each example, traders respond to the economic signals inherent in the
subsidy, or regulated rate structure, or contract design. When their responses to
these signals were deemed inefficient, as in the case of rail rates, neither Congress
nor regulators attempted to punish the traders. Instead, Congress changed the
regulations to eliminate equalization and through rate protection. Traders
responded quickly to the new price signals. Similarly, there have been cases
where exchanges decided that delivery premiums and discounts were leading to
inefficient delivery and trading behavior. In these cases, exchanges revised the
price differential structure in these contracts in order to give traders efficient price
signals.

43. Mr. Chen was acting no differently than the buyer of corn in a market
where ethanol is subsidized; or the trader of wheat under regulated rail rates; or
the trader of a futures contract with a particular premium or discount structure.
He was responding rationally to economic signals—price signals—inherent in the
market regulation and design. To the extent that his actions were inefficient, the
fault is with the market design, not with his response thereto.

44. And again, it is unduly burdensome and unrealistic to charge traders with
the task of determining which price signals they should respond to, and which
they should not. This puts traders like Mr. Chen in the position of mind readers
trying to divine the intent of regulators. Mind reading being a very imprecise art,
in attempting to do so they will inevitably do some things that regulators consider
inefficient, and will inevitably fail to do some things that regulators think they should do. This places traders at the acute risk of suffering penalties for their inability to distinguish which price signals regulators intend for them to follow, and which ones they do not. Moreover, out of fear of suffering such penalties, some traders may shy away from taking actions in response to price signals that would have the effect of enhancing market efficiency.

45. In the present instance, PJM essentially demands that Mr. Chen, and other traders, decide which kinds of trades “should” receive TLC payments, and which should not. This is a truly difficult task, and one fraught with potential for error. Rather than demanding that traders like Mr. Chen read their minds, system regulators should design a TLC mechanism that provides the incentives to undertake the kinds of trades they prefer, and which does not incentivize the kinds of trades that they do not prefer.

46. It should also be noted that the TLC payments that Mr. Chen received were risky. That is, he could not know at the time at which he initiated the transactions, what the TLC payment associated with those transactions would be. Those payments were determined by conditions prevailing in the PJM system at the time that the power flowed.

47. For instance, in June, 2010, the TLC payments averaged $.56, but had a standard deviation of $.09; in July, 2010, they averaged $.66 with a standard deviation of $.16, and in August, 2010 they averaged $.60 with a standard deviation of $.20. The positive standard deviations indicate that the transactions that Mr. Chen undertook were risky. Since these payments were risky,
transactions that generated such payments cannot be considered as wash trades
*per se* because wash trades involve simultaneous purchase and sale with no risk of
loss.

48. Furthermore, scarce enforcement resources are best employed detecting
and investigating conduct that distorts, or has the potential to distort the allocation
of real resources, i.e., distorts or has the potential to distort the production,
consumption, or transmission of power. Mr. Chen’s transactions entailed no such
distortions, or the potential for such distortions.

**Summary and Conclusions**

49. Mr. Chen engaged in transactions that put him at risk, and hence which
were not wash trades. Moreover, Mr. Chen did not exercise market power or
engage in misleading or deceitful acts. Furthermore, he responded rationally to
economic incentives—price signals— inherent in the PJM market design. As a
result, his trades were legitimate, and not manipulative. Moreover, his trades did
not distort the production, consumption, or transmission of power. Thus, there is
no economic basis for pursuing legal action against Mr. Chen.
UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Up-To Congestion Transactions Docket No. IN10-5-000

State of Missouri ss
County of St. Louis ss

AFFIDAVIT

Craig Pirrong, first being duly sworn on oath, deposes and says that the foregoing is his sworn affidavit in this proceeding and that the foregoing affidavit is true, correct, and complete to the best of his information, knowledge, and belief.

Craig Pirrong

Subscribed and sworn to before me this 8th day of December, 2010

Notary Public

My Commission Expires:

CAROL GOOLSBY
Notary Public - Notary Seal
State of Missouri
Commissioned for St. Louis County
My Commission Expires: Nov. 14, 2014
10425888
EXHIBIT J
November 11, 2013

Introduction and Background

1) My name is Roy J. Shanker. I have been engaged by Powhatan Energy Fund LLC (Powhatan) and its counsel, Drinker Biddle & Reath LLP (Drinker), to review the record in the above referenced investigation and to assess the Preliminary Findings put forward by the Federal Energy Regulatory Commission (FERC) Enforcement Staff (Enforcement, or Staff) in its paper issued August 9, 2013 (Staff Paper, Enforcement Paper, or Preliminary Findings). In preparing these comments, I have reviewed materials and have relied on my professional and educational experiences. While these comments reflect my professional opinion at this time, they are not intended to be a formal affidavit in the related FERC docket.

2) The materials I have reviewed include various filings and Commission Orders in Docket EL08-14, the Staff Paper, Comments Submitted by the Independent Market Monitor (IMM) in ER13-164, the Written Submission to Commission Investigation Staff on Behalf of Dr. Houlian Chen (IN10-5)(December, 2010), the Written Submission to Commission Investigation Staff on Behalf of Powhatan Energy LLC (IN10-05)(October 21, 2011) and the Affidavits of Dr. Craig Pirrong and Dr. Richard Tabors that accompanied those two submissions. I have also reviewed related documents from PJM and State of the Market reports from the IMM.

3) My industry knowledge is extensive and relevant as it relates to this particular review of market behavior. I have worked as a consultant in the energy industry for approximately

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1 Re: Preliminary Findings of Enforcement Staff’s Investigation of Up To Congestion Transactions by Dr. Houlian Chen on Behalf of Himself and the Principals of Hunrise Energy Fund LLC and Powhatan Energy Fund, LLC, Docket No. IN10-5-000, August 9, 2013.
2 Collectively referred to as Black Oak I, II, and III.
40 years, with a particular focus on the electric utility industry since approximately 1976. I have been an independent consultant since 1981. Most relevant here, I have been an active participant in the design, development and conduct of the PJM Interconnection LLC (PJM) Regional Transmission Organization (RTO) market since at least 1995. My first engagement related to PJM pre-RTO markets was in 1977. I have been active in the stakeholder processes associated with the current RTO market design for over 18 years. Significantly, I have remained engaged in the PJM stakeholder process in recent years and have witnessed in “real time” many of the stakeholder discussions and related debate about the rules associated with Up-To Congestion (UTC) transactions. I am fully engaged in the PJM stakeholder process and frequently discuss related issues with PJM Staff, the PJM Independent Market Monitor and many other market participants. During my career, I have had over 600 different engagements in the industry, and over 200 regulatory proceedings including many where I have served as an expert or as an invited speaker at technical sessions before the FERC. A significant number of these engagements have related to enforcement investigations or actions undertaken by the FERC. In other engagements, I have supported just about every sector of the industry including large investor utilities, large industrial electric customers, municipalities and local governments, project developers, project investors and lenders and regulators. I have also served as an arbitrator with respect to contractual agreements in the electric markets.

4) I received my bachelor’s degree in Physics from Swarthmore College and a master’s degree and doctorate in Industrial Administration from Carnegie Mellon University.

Summary of the Dispute

5) The Preliminary Findings conclude that certain trading activity by Dr. Houlian "Alan" Chen between the months of February and August 2010 on behalf of his own funds (HEEP Fund Inc., CU Fund) and on behalf of Huntrise Energy Fund, LLC and Powhatan Energy Fund LLC (Investor Funds) manipulated the market by responding to open, transparent,
Commission-directed, economic incentives by engaging in certain UTC transactions (Disputed Transactions). Among the various economic factors influencing the Disputed Transactions include the Marginal Loss Surplus Allocation (MLSA), which is sometimes also referred to as the Transmission Loss Credit (TLC, or Credits). Enforcement Staff erroneously concludes that the Disputed Transactions were “wash” transactions and constituted fraudulent behavior.

6) As I will discuss in more detail below, I strongly disagree with the Preliminary Findings. Dr. Chen and the Investor Funds were simply engaging in rational economic decision-making. The Disputed Transactions were exposed to risk. The Disputed Transactions were not wash trades. In summary, there is no basis for any finding of manipulation.

Rebates Create Incentives in Everyday Life

7) While there are intricacies specific to energy trading and the PJM market, the basic notions of what is in dispute are common to most of us in everyday life. We all “trade” when we buy or sell goods and services. In general, you can envision trades as consisting of three “buckets” of economic elements: the transaction costs of engaging in the trade ('Bucket 1'), the trade itself ('Bucket 2') and any credits or rebates related to the transaction ('Bucket 3').

8) Let me share a personal example that may help to further explain. If I purchase groceries at one local store, I receive a 5¢ per gallon credit to apply to gasoline purchases at a specific gas station for every $50 of goods I purchased. Thus, I incur 'Bucket 1' costs in traveling to the grocery store, make 'Bucket 2' decisions about the relative cost of groceries and products at this store versus others, and evaluate the 'Bucket 3' potential rebates.

3 My understanding from both Powhatan and as characterized by Enforcement Staff in their Staff Paper is that all direct trading activity was conducted by Dr. Chen, with him conducting parallel trades for the Investor Funds. While some references in the report may be to both Dr. Chen and the Investor funds collectively, it is not intended to be contrary to this distinction of specific actions undertaken by Dr. Chen regarding actual submission of trades.
9) This type of “trading” can have unintended consequences. For example, this particular grocery store sold gift cards and initially these purchases counted toward accumulating the gasoline credit. Several years ago for the holidays, I bought all my nieces and nephews gift cards at the grocer. The transaction was sufficiently high so that I wound up obtaining enough gasoline rebates so that I could fill my tank up almost for free. Sadly, I discovered that the next month that gift cards were disallowed from the “crediting” program going forward. The store had wanted to create incentives to attract shoppers, but apparently had not considered the impact of the credit creating a motivation for greater purchases of items like gift cards when it created this program.4

10) In capturing a very large volume of credits, no one would suggest I engaged in fraud or manipulation. I just made rational economic decisions. Initially the store wanted me to spend more and I did. Later, because the store wanted to modify customer behavior in a more refined manner, it determined the credit should no longer be applied to gift cards. It changed the rules prospectively. Because of this, I modified my behavior in response to the new economic incentives and changed my purchases at the store. This story provides a lesson that should not be lost on the FERC.

UTC Background

11) PJM operates a security-constrained locational marginal price (LMP) energy market. Parties offer to purchase/sell real power or enter virtual buy/sell financial transactions into a day-ahead (DA) auction market. The market software selects the “best” solution in terms of offered supply and bid demand, while honoring the relevant security constraints of the underlying transmission system and operational limits of suppliers. In the process of solving this optimal power flow auction, separate LMPs are established at over 10,000

4 To put this in context, for the purchase of a $100 gift card, I would receive $2 in cash rebates for gasoline (on 20 gallons), $100 of merchandise at a specific store (which I gave away as a gift), and approximately $1-$3 of value on “points” from my airline credit card. I also would receive any current coupons the store might be issuing that would apply to future purchases.
nodes, or locations, in the power grid. The LMPs reflect the marginal cost of supplying an increment of load at each location. LMPs may differ at each location on the electric grid due to transmission constraints. This difference is referred to as “congestion” between the nodes and also reflects the marginal value of transmission. The LMPs may also differ due to marginal transmission losses as well.

12) In real-time (RT) on the following day, parties are either paid or pay the difference between their DA purchases and their actual RT consumption in the market. For virtual transactions, there is no actual consumption and these transactions simply settle based upon the differences in LMP between DA and RT. The virtual traders “cover” the positions they took in the DA market, realizing either a profit or loss, as well as incurring a variety of PJM charges.

13) As originally contemplated by PJM, UTC transactions were intended to complement physical transactions. A UTC bid reflects the willingness of a participant to schedule a transaction between a source of power and a power sink (i.e. the location at which the power is consumed). The transaction will be scheduled so long as the congestion between the source and sink (calculated as the DA LMP at the sink minus the DA LMP at the source) is less than or equal to the UTC bid. The PJM market rules only allow bids in the limited range of differences between -$50 per MWH and +50 per MWH, whereas it is conceivable that source-to-sink differences could be as high as several thousands of dollars per MWH. The PJM rules during the relevant time also required that either the source or sink in the transaction be an external node.

14) A UTC transaction has the same three types of economic ‘Bucket’ elements I detailed in my example above. ‘Bucket 1’ transaction costs include: i) transmission scheduling costs from PJM (typically at the non-firm rate of $0.67 per MWH), ii) payment for PJM’s ancillary services including reactive supply, voltage support and black start5, and iii) payment for a

5 Dr. Tabors estimated the sum of non-firm transmission and other charges as approximately $0.92 per MWH. Tabors Affidavit at page 8.
portion of the administrative costs of operating the system (including scheduling and dispatch, IMM charge and other administrative charges). The 'Bucket 2' transaction itself would reflect changes between source and sink values, or congestion changes, specified in the UTC bid that occur in the DA and RT markets. Finally, there were 'Bucket 3' potential credits for adjustments to PJM overhead and also credits for MLSAs.

15) Over the years, volume and participation in the UTC market has fluctuated with changes to and controversy over the economic incentives of each of the three 'Buckets'. The Disputed Transactions are just an example of market participants responding to then-current incentives. As another example, since the period of interest described in the Preliminary Findings, the MSLAs have been eliminated for UTC transactions, but the charges for transmission service for these transactions have also been eliminated too. Net-net, this has created an incentive for market participants who had previously obtained their financial exposure from other bid mechanisms such as virtual Incremental (Inc) and Decremental (Dec) offers, to now obtain their financial exposure to the PJM markets via UTC transactions. This is because Inc and Dec transactions are being assessed Operating Reserve charges, whereas UTC transactions are not assessed this "Bucket 1" expense and as explained, also are excused from transmission costs. It is important to note that the PJM Independent Market Monitor addresses this increase in volume related to the relative incentives in his 2012 State of the Market Report, Volume 1, where he writes on page 36:

Following elimination of the requirement to procure transmission for up-to congestion transactions in 2010, the volume of transactions increased significantly. The average number of up-to congestion bids submitted in the Day-Ahead Market increased to 67,295 bids per day, with an average cleared volume of 920,307 MWh per day, in 2012, compared to an average of 29,665 bids per day, with an average cleared volume of 530,476 MWh per day, in 2011.

See Appendix B, page 3 of Written Submission to Commission Investigation Staff on Behalf of Dr. Houlian Chen (IN10-5)(December, 2010).
The sentiment is not new. The IMM actually expressed similar concerns regarding the relative costs of virtual transaction products prior to the period of interest for the Disputed Transactions. Thus, the impact of costs and credits (Buckets 1 and 3) has been a known factor regarding the relative incentives to undertake trades with respect to these transactions both before and after the period of interest.

The Introduction and Removal of TLCs Credited to UTC Transactions

16) In Docket EL08-14, initiated in December 2007, a group of virtual traders filed a complaint asking to receive a portion of the MLSA. Their argument was predicated on the fact that marginal losses were a component of the LMPs they paid. This complaint set in motion a process that would materially change the 'Bucket 3’ incentives for UTC traders.

17) The addition of marginal losses in the LMP calculation was a material improvement in price signals and system dispatch. For instance, with the average loss calculation, a $23 per MWH generator in Chicago might be dispatched to serve an increment of load in Philadelphia, instead of using a $24 per MWH generator in Philadelphia (with no incremental losses), even if the use of the $23 generator incurred $4 of additional transmission losses.

18) The allocation of the over-collection of losses was a material financial issue. Basic physics dictate that marginal losses increase in proportion to the square of system load flows. Thus, paying marginal losses over time will result in the collection of significantly

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more than the actual average losses realized. The MSLA reflects an allocation of the excess of the sum of the marginal payments collected above actual average losses incurred. This amount has been several billions of dollars over time. Not surprisingly, many market participants and related parties argued over who should receive the marginal loss surplus.

19) The Commission recognized the difficulty in properly allocating the over-collection of loss payments. In particular, they understood the basic concept that there was no 'right' place for these funds to be distributed. The Commission stated:

[T]he only fundamental principle to be applied is that the distribution should in no circumstance be based on the amount paid for transmission line losses, because that would distort the appropriate price signals which the use of marginal line loss pricing is designed to facilitate.

20) I concurred. In fact, during the initial stakeholder discussions on MSLAs, my repeated recommendation was to apply the over-collected losses to the PJM overhead and literally give the rest away. This was the most incentive neutral allocation I could think of, and I believed that inevitably any other allocation based on system use would result in unanticipated and possibly undesirable incentives being created. My advice was ignored.

21) The Commission also had its concerns. It stated:

Paying excess loss charges (sic) to arbitrageurs also is inconsistent with the concept of arbitrage itself. The benefits of arbitrage are supposed to result from trading acumen in being able to spot divergences between markets. As stated above, arbitrageurs create their own load by the volume of their trades. If arbitrageurs can profit from the

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9 For example the marginal loss over collection for 2009 was $639.7 million or 50.8% of total marginal loss collection. Id. at page 88.
10 Black Oak II, 125 FERC ¶ 61,042 at P 37.
volume of their trades, they are not reacting only to perceived price differentials in LMP or congestion, and may make trades that would not be profitable based solely on price differentials alone.”

22) In other words, the Commission stated that adding credits to 'Bucket 3' would affect incentives for rational traders. It was clear to the Commission at that time that a rational trader would pursue trading opportunities where the aggregate of the three 'Buckets' was expected to be positive, and changing Bucket 3 would result in changed incentives to engage in any specific transactions receiving the MLSA. The Commission clearly understood the basic and transparent economic incentives of the MLSA that seem obscured to the Enforcement Staff, who now accuse Dr. Chen of market manipulation for doing exactly what the Commission predicted that he (or anyone else in that position) would do in reacting rationally to market incentives.

23) However, despite these explicit concerns and direct understandings, the Commission ultimately directed PJM to pay MLSA credits to all parties contributing to the fixed costs of the transmission system. It specified that UTC transactions were included in this allocation:

4. With respect to the allocation of the surplus, the Commission found any crediting mechanism that does not distort the pricing signals may be acceptable. But once PJM has chosen a methodology for crediting line loss over-collections, the Commission found that PJM must apply that methodology on a not unduly discriminatory basis. PJM based the credit on customers' access and transmission charges for using the network. The Commission concluded, however, that PJM's tariff was unjust and unreasonable and unreasonably discriminatory because it failed to pay the credit in certain circumstances in which customers paid transmission charges. The Commission

directed PJM to revise its tariff to include a credit to others who pay for the fixed costs of the transmission system, including virtual traders.\textsuperscript{12}

24) Similarly, during the Black Oak proceedings, the Commission further explained:

10. PJM stated that it believes its proposed revisions satisfy the Commission’s concern that collected marginal line losses be distributed equitably among all parties that support the fixed costs of the transmission system, without regard to whether such parties serve load. PJM stated that Network Service Users will still receive an allocation of surplus marginal line loss collections in proportion to their ratio shares of the total megawatt-hours of energy delivered to load in the PJM region, but that allocation now will also include “Transmission Customers,” which includes load serving customers such as those taking point-to-point transmission service under Part II of the tariff. PJM explained that the allocation methodology for these customers is still based upon the Commission’s accepted principle that allocation of marginal line losses to these customers is fair because it distributes the surplus back to load customers who pay for the fixed costs of the transmission system. PJM stated that it further modified section 5.5 to capture allocation of surplus marginal line losses to those customers engaging in \textit{Up-To Congestion transactions in proportion to the total megawatt-hours of those cleared transactions} (that paid for transmission service during such hour). PJM averred that each customer identified in revised section 5.5 contributes, through transmission charges, to the overall costs of the transmission grid; therefore, through the proposed revisions, each will receive a distribution of the surplus over-collected marginal line loss charges.

11. In the September 17, 2009 Compliance Order, the Commission found that PJM’s proposed revisions comply with the directive to credit those who pay for the fixed or embedded costs of the transmission system. The Commission acknowledged, as did

\textsuperscript{12} Black Oak Energy, LLC v. PJM Interconnection, L.L.C., Docket EL08-14, Order Denying Rehearing and Denying Motions, at P 4 (May 11, 2012)(footnotes omitted).
PJM, that some virtual traders or arbitrageurs pay transmission access charges related to Up-To Congestion transactions, which contribute to the fixed costs of the transmission system and which should be included in the allocation process for disbursement of any surplus resulting from the over-collection of transmission line loss charges.\textsuperscript{13}

25) After the Disputed Transactions, PJM and the Commission realized that there was an undesirable feature now present in the PJM Tariff that should be changed. The change was straightforward - they removed the requirement for UTC traders to secure transmission, which also ended their eligibility to receive the MLSA.\textsuperscript{14}

26) Since then, UTC transactions receive no MLSA, which reduced 'Bucket 3' credits, and they also do not pay for transmission which reduced 'Bucket 1' costs. But even now there is not a stable resolution of the costs in all the 'Buckets' -- an old dispute regarding whether or not UTC transactions should be assessed Operating Reserve (OR) charges has heated up again. For years, the PJM IMM has repeatedly taken the position that UTCs should not be excluded from payment of OR charges, as he believes that such charges should be applied to UTC transactions in a fashion that is similar to Inc and Dec virtual transactions. He takes this position because he believes the 'Bucket 1' charges for UTC are too low and discriminatory. As a result, he reasoned that this has created a distortion wherein UTC charges now have lower transactions costs. Thus he concludes that the UTC market is attracting more transactions than appropriate, resulting in higher OR charges to the remaining customers who still pay those costs.\textsuperscript{15}

\textsuperscript{13} Black Oak Energy, LLC v. PJM Interconnection, L.L.C., Docket EL08-14, Order at PP 10-11 (July 21, 2011) (footnotes omitted, emphasis added). See also Black Oak Energy, LLC v. PJM Interconnection, L.L.C., Docket No. EL08-14-002, 128 FERC ¶61,262, at P 7 (Sep. 17, 2009) (footnotes omitted) (noting that the reference to PJM instituting a volumetric charge goes back to 2009).

\textsuperscript{14} Note that even this modification was not uncontested, with the IMM proposing a different solution based on modified MLSA credits for those purchasing non-firm transmission service.

\textsuperscript{15} See Docket ER13-165-4, Comments of the Independent Market Monitor for PJM, at pages 4-5 (July 1, 2013): Up-to congestion transactions have never been defined as “virtual transactions” in the tariff. There has been no general definition of “virtual transactions” in the tariff. Virtual transactions have been represented only as INCs and DECs. PJM’s filing redefines up-to congestion transactions as virtuals, and defines virtual transactions to also include INCs and DECs. The tariff provision assigning responsibility for operating reserves should have been
27) A reasonable question at this point is “Who’s on first?”.\textsuperscript{16} Originally, the UTC transactions did not receive MLSA because of the Commission’s stated concerns over creating incentives for traders to engage in whatever transaction received the MLSA (particularly noting volumetric payments). Then, the Commission overcame its concerns and directed PJM to pay the MLSA to UTC transactions based upon per MWH transmission payments. Shortly thereafter, PJM eliminated the underlying transmission service requirement for UTC transactions, thus ending the allocation. Based on other considerations, the Commission first directed PJM to pay MLSA to UTC transactions, then subsequently concluded that these credits should not have been made, and ordered them to be returned. Now, the IMM concludes that the net effect of all of this is to continue to distort trades and allocations.\textsuperscript{17} In other words, the IMM thinks that the UTC charges are still biased and create an inappropriate preference for UTC transactions over other virtual trades. Presumably, at any point, the IMM could file a complaint, and FERC could act to modify the OR allocation. This may be a reasonable conclusion, but any rational consideration would find that such an action should be prospective, and the FERC should\textsuperscript{corrected} assign operating reserve charges to all virtual transactions. The result of the failure to do so is that up-to congestion transactions are not treated like other virtual transactions under PJM’s proposed changes. There is no reason not to assign operating reserve charges to up-to congestion transactions in exactly the same way that operating reserve charges are assigned to INCs and DECs. The absence of such consistent treatment created, and will continue to create, a significant, arbitrary and uneconomic incentive to engage in up-to congestion transactions and an uneconomic incentive to shift away from INCs and DECs. Until September 2010, the damage cause by the failure to assign operating reserve charges to up-to congestion transmissions like INCs and DECs was tempered by the requirement that up-to congestion transactions procure and pay for transmission service and the requirement that up-to congestion transactions source or sink at an interface. Neither requirement applies to INCs and DECs. The requirement to pay for transmission was removed in September 2010. Prior to 2010, the tariff had required transmission reservations because the up-to congestion product was designed to facilitate imports, exports and wheel through transactions, all of which required transmission service. Consistent with the theory that all transmission service customers should receive a share of the marginal loss surplus, the Commission required PJM to allocate a share of the marginal loss surplus to market participants who acquired transmission service for up-to congestion transactions. This unintentionally created an incentive to engage in up-to congestion transactions solely to obtain an allocation of the marginal loss surplus because PJM had over allocated marginal loss surplus to up-to congestion transactions such that the allocation of the surplus exceeded the actual congestion charge, an illogical allocation result.

\textsuperscript{16} This is a reference to a comedy routine made famous by Abbott and Costello where the two actors have a dialogue where each confuses the other.

\textsuperscript{17} The IMM’s position does not go un-rebutted. It should be noted that PJM explains there should be no bucket 1 charges of BOR to UTC transactions because by definition, each UTC is balanced, with a matching injection and withdrawal.
**not do so retroactively.** De facto, in this proceeding, the FERC Enforcement staff is trying not only to implement such a conclusion retroactively, but punitively.

28) Without even considering the specific Disputed Transactions, reasonable questions might be: *With all of these rule changes, and the obvious resulting modifications in incentives related to the UTC transactions, what is the correct way to respond? Should all market participants try to guess for themselves what FERC, PJM, the IMM and the Enforcement Staff really want and intend to be the appropriate incentives? If they just follow the rules, will someone possibly knock on their door and inform them they have manipulated the market? Should they expect resettlements to be done retroactively? Though seemingly rhetorical, this is a real and ongoing decision process for every market participant. This type of uncertainty and perceived fear can destroy a market.*

**The Disputed Transactions**

29) When evaluating the Disputed Transactions, it may be helpful to keep in mind the history of shifting economic incentives described above, the resulting trader behavior and the need for market participants to understand the rules.

30) The Staff Paper, as well as previous submissions by Dr. Tabors and Dr. Pirrong, discusses the Disputed Transactions. In this short discussion, my comments focus more on “matched” UTC trades that Enforcement describes as “wash trades” that constituted market manipulation.

31) These matched UTC trades consisted of two UTC transactions, **both offered at a positive price.** In the abstract, these could be characterized by a UTC submission from

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18 See Affidavit of Dr. Richard Tabors, Docket IN10-5, October 21, 2011; Affidavit of Dr. Craig Pirrong, Docket IN10-5, December 13, 2010.
19 I use the term matched trades for the situation where two UTC transactions were submitted that had exactly opposite source and sinks but the same positive bid price. As I explain, these are not wash transactions. See following paragraphs.
source A to sink B, and a second submission from source B to sink A. In most of the transactions, the external interface was MISO, while the internal node varied. Because of the A-B, B-A nature of these UTC transactions, only when both submitted trades cleared in the market place was the resulting congestion risk reduced to zero and the economics of the trade were determined by the PJM charges in 'Bucket 1' and the PJM credits in 'Bucket 3'.

32) In this situation, Staff moves somewhat disingenuously from noting that since 'Bucket 2' had no impact on aggregate profitability of the trade, then the associated trades were wash transactions. To reach this conclusion, Staff ignores the economic substance and risk of 'Buckets' 1 and 3 and the risk of 'Bucket 2'. This is plainly irrational. Bucket 1 and 3 charges were “real”, known to exist, and potentially highly variable.

33) In fact, though clearly wrong, Enforcement Staff basically describes the entire process as a “scheme” to “target” MLSAs because of wash trading. When decomposed and evaluated with critical thinking, the Staff argument simply doesn’t hold water.

34) Staff is actually wrong with respect to virtually all of its findings. Dr. Chen and the Investor Funds undertook these matched trades that were sought to be of low risk with respect to 'Bucket 2', yet they still had material risk within each of the three components. They were typically, but not always, profitable. They also undertook these trades in an open and transparent manner, consistent with Commission and PJM rules, and in response to a Commission-directed incentive. In these circumstances, there is neither wash trading nor a fraud perpetrated on the market.

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20 Staff acknowledges that initial matched trades were done in a format characterized as A-B, C-A, where B and C were deemed by Dr. Chen to be electrically “close”.
21 This is no more descriptive than noting I bought $100 gift cards worth $100 of merchandise in my earlier example. That segment of my transaction was a “wash”, but it ignores Buckets 1 and 3, material elements of my economic decision-making.
22 Indeed, the actual characterization of wash trading seems a misnomer here, as presumably a wash trade would be without economic value, risk, or profit.
35) The Commission itself previously and openly acknowledged that such a credit would create just these types of incentives and related transactions. That is, Dr. Chen responded in exactly the way the Commission anticipated a rational participant would when presented with these incentives. Simply put, the Commission was concerned that its determination might create specific incentives, and indeed people responded just as anticipated to the Commission approved incentives. It is difficult to discern what is problematic about responses that were fully anticipated, evaluated and approved by the Commission.

**Risk / Return in Each of the 'Buckets'**

36) As discussed above, a reasoned understanding of the Disputed Transactions should incorporate the economic incentives collectively of each of the three 'Buckets' as well as their collective impact. As long as open and transparent bids are predicated on the combined incentives, there should be no basis for any conclusion of manipulation. All three 'Buckets' provided economically relevant incentives as each contributed to risk and return of the overall transaction. Rational behavior would sum the total incentives, and react accordingly.

**Risk in Bucket 2**

37) As the Preliminary Findings highlight, 'Buckets' 1 and 3 did not always result in a net benefit for Dr. Chen or the Investor Funds. This makes sense, since it was not predetermined that 'Buckets' 1 and 3 had to net to a positive amount.

38) Further, Staff ignores the fact that during the infrequent occurrence when one of the two legs of a Disputed Transactions was not accepted, it represented a potential opportunity for someone holding that position to profit from the atypical result. In such a high deviation event, it is expected that that position would be profitable as it is reasonable to assume that the RT spread between the source and sink LMPs would narrow relative to the DA due to the direct incentives such a spread would present to other market participants (e.g. to add imports or increase internal resources). Indeed a fundamental
market design objective was to create incentives for price convergence between the DA and RT market, and discourage atypical divergence.

39) It should be very easy to understand why ‘Bucket’ 2 may not be zero. Since UTC bids are restricted to the limited range between -$50 to +$50 per MWH, it does not cover all possible outcomes of DA congestion. For instance, DA prices can range as high as $1,800 per MWH. Also, negative values are possible. Staff erroneously dismisses any consideration of these realities.

40) Negative numbers are always less than positive numbers. Since Dr. Chen always bid with positive congestion caps on both legs of the transactions he submitted, if one leg were to be rejected because congestion was too high, the other leg would have to be accepted. This is because the spread between A and B is equal and opposite to the spread from B to A. This means that if the congestion in one direction is $40, on the other leg, it is negative $40. Dr. Tabors previously explained the basic arithmetic of the UTC bidding process and why if one leg failed to clear, the other must clear, along with the associated exposure to the difference between DA and RT congestion. 23

41) Also, Dr. Chen didn’t always bid the maximum congestion cap of $50. Rather, as both Dr. Tabors and Staff noted, a material amount of the offers were below the allowed bid range.24 The Staff ignores the obvious significance of this.

42) This fact is important because it highlights that Dr. Chen intentionally (and rationally) submitted bids with congestion caps that increased the likelihood that one leg would be rejected. There is at least one explanation of this behavior that again flies in the face of Staff’s incorrect characterization of these paired UTC bids as wash trades and manipulative: If the DA congestion was unusually large, the resulting exposure of having one leg rejected and the other accepted would reasonably have been expected to have a

23 See Tabors Affidavit appendix for graphical example.
24 See Staff Paper at page 23; Tabors Affidavit at page 20, referencing Dr. Chen. I have not independently vetted this analysis.
positive value. This goes back to the basic incentives for other market participants to attempt to arbitrage the congestion between the two locations. Dr. Tabors suggests that this is the so called "home run" situation. Dr. Pirrong uses a less exciting description, but makes the same observation, and notes that this is not an atypical or inappropriate trading activity.

43) Despite the choice of name one gives this occurrence, it is important to note that it is based upon market fundamentals. The market is specifically designed to create incentives to alleviate congestion. If there is significant congestion in the DA LMPs, there are many participants in both the PJM and MISO markets who may respond to such market conditions. For instance, they may schedule more imports, or commit more units in PJM. Each action would be expected to raise supply in congested areas and lower the spread position incurred by the UTC transaction. In general, it would appear that if Dr. Chen waited to see if a wide spread occurred in the DA market, it would be a reasonable trade to see if the spread converged according to the underlying market incentives. But, as markets are volatile and uncertain; it would be possible that the RT congestion could exceed the DA congestion and the counter flow spread position could lose money. Thus while making a reasonable trade, and hopefully profitable, the positions taken by Dr. Chen were exposed to inherent risk.

44) Even if Dr. Chen had always submitted his bids at $50, he would still have had exposure to this risk. But, the fact that he intentionally increased the exposure to this risk is noteworthy and relevant.

45) For some unexplained reason, Staff completely dismisses, or fails to understand, this logic. By providing the MLSA credit to 'Bucket 3', the Commission simply made it less costly, and even profitable, for Dr. Chen to “tread water” and wait for such low probability events to occur. It is hard to criticize someone for taking a potentially profitable trading

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25 See, e.g., Tabors Affidavit at page 12.
26 See Pirrong Affidavit at ¶¶ 30-32.
position while waiting for an opportunity for even larger returns. It seems even harder to criticize them if the market rewards them for taking such risks. As a matter of fact, we should all seek such opportunities and the FERC should encourage this behavior when the rules direct such behavior. And, of course, the FERC understood just the sort of incentives they were creating when they created them, although now the Staff pretend not to understand.

**Risk in 'Bucket 3'**

46) Even if it was guaranteed that both of Dr. Chen's paired legs would have always been accepted, he was still exposed to risk, again eliminating the notion of wash trading. Staff dismisses this entire issue. But such a dismissal is incorrect. Staff should consider three critical facts. First, the exact value of the TLC was unknown at the time the UTC bids are submitted. Second, TLC values are volatile. Thirdly, Staff itself cites statistics showing that paired cleared trades did sometimes lose money.

47) The Staff fully understands that the MLSA payments were not knowable at the time that Dr. Chen submitted his bids. In its Preliminary Findings on page 15, it cites Kevin Gates where he described that the MLSA payments were not posted until "about a week after the fact." If things are not known at the time when acted upon, that introduces risk.

48) The desire to attempt to predict the TLC in maximizing the expected returns on a trade is just as appropriate of an objective as trying to predict where congestion might occur. And, analyzing historical data can be a tool that could assist either goal. Enforcement Staff seems critical of Dr. Chen for having tried, possibly successfully, to estimate when he would most likely receive the largest 'Bucket 3' TLC payments. This is remarkable because this rational response was fully anticipated by the Commission, and implemented at the Commission's direction and approval. Why should anyone be criticized for trying to

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28 See Staff Paper at 8.
estimate when market fundamentals would result in higher credits or returns for legitimate trades?

49) At this point, it should be obvious that the TLC values were volatile. Commenting on the TLC values between May 29 and August 19, 2010, Dr. Tabors explained:

*During this period, average daily per-MW TLC allocations ranged from approximately $0.70 up to $2.10. For the period of May 29 through August 19, 2010, the average TLC allocation was $1.25 with a standard deviation of $0.32.*

Similarly, Dr. Pirrong stated:

*For instance, in June, 2010, the TLC payments averaged $.56, but had a standard deviation of $.09; in July, 2010, they averaged $.66 with a standard deviation of $.16, and in August, 2010 they averaged $.60 with a standard deviation of $.20. The positive standard deviations indicate that the transactions that Mr. Chen undertook were risky. Since these payments were risky, transactions that generated such payments cannot be considered as wash trades per se because wash trades involve simultaneous purchase and sale with no risk of loss.*

Thus it is obvious that risk and uncertainty existed with respect to Bucket 3 credits, and that Dr. Chen appropriately sought to capture value related to this uncertainty in his trading. Again, such actions are antithetical to the notion of wash trading or manipulation. They are directly indicative of competitive behavior consistent with the incumbent rules and regulations.

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29 Tabors Affidavit at page 6.
30 Pirrong Affidavit at ¶ 47.
Volatility Introduces Risk.

50) The Staff Paper is internally inconsistent and conflicted. On the one hand, it (erroneously) concludes that the Disputed Transactions are 'wash trades' that were not exposed to risk. On the other hand, it explicitly states (page 23, paragraph two) that even when both legs of Dr. Chen’s matched trades cleared, they failed to make a profit almost 20% of the time. Staff can’t have it both ways. And, only one of these statements can be empirically proven. As directly acknowledged by Staff and discussed above, there was no systematic or structural “wash trades”. Indeed, the assumption of risk across all three Buckets entailed risk, but admittedly, resulted in trading profits consistent with the incentives presented.

51) Perhaps in recognition of this material impairment to their argument, Staff “points the finger” at Dr. Chen. The problem that Staff will encounter with this approach is that FERC has left a detailed documentation trail of guidance and direction that makes it clear that Dr. Chen was simply following Commission-directed rules and anticipated incentives. Staff cannot credibly argue that a Commission-approved payment that was defined by PJM to be based on MWH use was not intended to be volumetric and, if expected to be positive, a volumetric incentive.

52) Staff’s logic takes the notion of the market participant as a market fiduciary to an untenable extreme. Staff is essentially arguing that even if the Commission didn’t understand the incentives it was creating (which it obviously did), market participants should have figured out what the Commission or the Staff really wanted to happen, and ignored the explicit direction the Commission gave PJM with respect to specifying that UTC transactions were to receive MLSA. If participants were to have acted this way, presumably Staff expected the market participants to then reject some or all of the TLC payments, in order to comply with Enforcement Staff’s ex post determinations of what is appropriate. None of this makes any sense whatsoever.
53) It’s also noteworthy that Enforcement Staff’s position is strained to say the least. If “it nowhere suggest[s] it would be proper to pay MLSA to those who collected based on the volume of trades”\(^\text{31}\), what was a party who purchased non-firm transmission expected to do if they received MLSA payments based on the volume of their transactions? Were market participants supposed to totally ignore the payments? Were they supposed to try to read the Staff’s mind, calculate their own “fair” share of reimbursement and return some of the money to PJM if they felt that they received an amount inconsistent with what Staff would (ex post) have wanted? These notions are ridiculous to say the least.

54) The FERC needs to assume responsibility for the incentives it creates, and potential associated consequences it may not find desirable. If it is not happy with respect to the way the market participants respond to the incentives it creates, FERC needs to change those incentives, obviously in a prospective fashion. Pushing this responsibility onto the participants will lead to a demise of the market systems as any rational participant will refuse to participate and will exit the system.

**There Was Even Risk in 'Bucket 1'**

55) While it has not received much attention to date, there are also risks associated with the 'Bucket 1' charges. PJM overhead charges, voltage support aid and black start are not fixed and do vary. Unknown expenses introduce risk to any transaction.

56) PJM’s FERC-appointed Independent Market Monitor has been vocal and clear regarding his thoughts that UTC transactions should pay Operating Reserve charges. These also add risk to Bucket 1 charges. Several excerpts from the Independent Market Monitor position in front of the Commission demonstrate this potential: \(^\text{32}\)

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\(^\text{31}\) Staff Paper at 27.

Accordingly, PJM should be required to submit an additional filing that explicitly assigns operating reserves charges to up to congestion transactions consistent with other virtual transactions.

There is no reason not to assign operating reserve charges to up-to-congestion transactions in exactly the same way that operating reserve charges are assigned to INCs and DECs. The absence of such consistent treatment created, and will continue to create, a significant, arbitrary and uneconomic incentive to engage in up-to-congestion transactions and an uneconomic incentive to shift away from INCs and DECs.

These charges can be material. For example, on September 11, 2013, the deviations based balancing operating reserve charge was $15.94 per MWH.33

Another perceived, or even possible, risk is the potential for PJM to attempt to retroactively apply Operating Reserve charges to UTC transactions. Given the tortured history with respect to the MLSA allocation to UTC traders, and the attempt to retroactively recall the retroactively returned refunds, this is certainly a perceived risk by many participants in the market and may, in fact, be a material risk. At this point, market participants have no ability to predict what rules FERC may try to impose or subsequently alter, with a retroactive effective date, after months of vacillating decisions.

Conclusion

57) I believe all the comments above point to a much more reasoned explanation of the Disputed Transactions. Dr. Chen simply adjusted his bidding strategy in direct response to a Commission-approved, and directed, credit. Each of the three 'Buckets' of these transactions introduced risk to his trades. Dr. Chen chose open, transparent and legitimate trades that, among other considerations, took the MLSA into account. Dr. Chen also legitimately tried to maximize his expected earnings by conducting analyses intended to understand when such credits might be largest and apparently increasing his trading volumes when such conditions seemed most favorable. This is all rational and expected

market behavior. It certainly doesn’t represent fraud or manipulation. Rather, it is or should be the expected behavior associated with competitive responses to incentives presented by regulators to market participants.
EXHIBIT K
UNITED STATES OF AMERICA
Before the
FEDERAL ENERGY REGULATORY COMMISSION

PJM Up-to Congestion Transactions
Docket No. IN 10-5-000

REPORT OF CHESTER S. SPATT
RE: POWHATAN ENERGY FUND LLC
I. INTRODUCTION

I have been retained by Powhatan Energy Fund LLC (“Powhatan”) and its counsel, Drinker Biddle & Reath LLP, to provide my expert assessment in the above-captioned Federal Energy Regulatory Commission (“FERC”) investigation as to whether Powhatan engaged in manipulative behavior in the Up-to Congestion market by submitting transactions that were influenced, in part, by Marginal Loss Surplus Allocation (“MLSA”) credits. This report describes my professional opinion that the transactions and the strategies undertaken by Powhatan and on Powhatan’s behalf were not manipulative. The views expressed in this Report are solely my own.

II. PROFESSIONAL QUALIFICATIONS

In addition to my general expertise regarding financial markets, my career reflects expertise in areas of finance that are directly relevant to these proceedings. My academic work has shown familiarity with the impact of mechanism design on decision-making, energy trading and equilibrium models of forward commodity pricing, equity and derivatives trading, and the impact of regulatory frictions on trading in equity markets. For example, my papers have studied (a) mechanism design in such diverse contexts as price discrimination, IPO allocation and mortgage contracting, (b) models of commodity forward curve pricing across time and products, (c) equity and derivative trading strategies, and (d) the impact of regulatory trading frictions, such as the maker-taker model on valuation and hedging. My work has exhibited a strong practical bent reflected in my understanding of trading and financial regulation as well as valuation and portfolio management decisions. Indeed, many of my papers have been an
outgrowth of my investment strategies and decision-making as well as my regulatory experience and expertise.

I also have a strong background concerning regulatory issues. For example, I am one of the founding members of the Federal Reserve Bank’s Model Validation Council, which provides advice on validating the Federal Reserve’s “stress tests”, and the Systemic Risk Council (founded and chaired by former FDIC Chair Sheila Bair to provide independent advice about systemic risk in the economy). I also am currently a member of the Shadow Financial Regulatory Committee and Financial Economists Roundtable.

I served as Chief Economist of the U.S. Securities and Exchange Commission and Director of its Office of Economic Analysis (while on loan from Carnegie Mellon University) from July 1, 2004 to July 31, 2007, under both Chairman William Donaldson and Chairman Christopher Cox. In that capacity, I was a senior officer of the SEC, responsible for its economics work product and for supervising the economics staff at the agency. I addressed a broad range of regulatory matters across various substantive domains such as trading and markets, investment management, corporate finance and disclosure, and accounting policy, both with respect to rule-making and enforcement issues. I provided advice to the Commissioners and their staffs, as well as the various staff divisions and offices at the Commission, applying economic principles in addressing a broad set of issues in the SEC’s regulatory domain as well as a range of industry practices.

I have spoken widely on questions involving the financial markets and securities regulation, and since my departure from the SEC, I have also spoken widely about a broad range
of issues that have emerged both during and in the aftermath of the financial crisis.\textsuperscript{1} I have been a keynote or distinguished speaker at a broad set of academic and practitioner conferences, both while serving as Chief Economist and subsequently.

I am a chaired professor of finance at the Tepper School of Business at Carnegie Mellon University in Pittsburgh. I have been an intellectual leader in the finance discipline for decades. For example, I was one of the founders and the second Executive Editor of the \textit{Review of Financial Studies}, which immediately emerged as one of the three elite finance publications that play the dominant role in faculty promotion and tenure decisions at major universities in the United States and globally.

I have been the Pamela R. and Kenneth B. Dunn Professor of Finance since 2008 at the Tepper School of Business at Carnegie Mellon University. I have been a faculty member at Carnegie Mellon since 1979 and a Full Professor with academic tenure since January 1, 1987. I was the first recipient of the Mellon Bank Professorship at Carnegie Mellon, which I held from 1996 until 2008, and then became the first holder of the Dunn Professorship. I received my bachelor's degree in economics from Princeton University (1975) and my master's (1976) and doctorate in economics (1979) from the University of Pennsylvania.

In the mid-1980s, I helped to found the \textit{Review of Financial Studies} and served as one of its founding Editors (1987-90) and its second Executive Editor (1990-93). I was a member of the Founding Committee of the Society for Financial Studies, the sponsoring society of the \textit{Review of Financial Studies}, and served as its third President (1993-96). I served as President of

\textsuperscript{1} For example, I presented more than 20 speeches during my service as the Chief Economist of the SEC; these are posted on the SEC’s web page, as well as on my Carnegie Mellon web page.
the Western Finance Association (1995-96), as Program Chairman for its 1995 meeting and the Distinguished Speaker at its 2009 meeting. I also currently serve as Treasurer of the Foundation for the Advancement of Research in Financial Economics, an Advisory Editor of the *Journal of Financial Markets* and an Associate Editor of several finance and real estate journals.

In recent years, I have been selected as a Fellow of the TIAA-CREF Institute in 2007 and the Columbia Program on Capital Market Regulation in 2008; elected as a member of the Financial Economists Roundtable in 2006; appointed in 2007 as a member of the Shadow Financial Regulatory Committee; and appointed in 2008 as Senior Economic Advisor to Kalorama Partners (whose CEO is former SEC Chairman Harvey Pitt) and a Research Associate of the National Bureau of Economic Research. In 2009, I received a grant from the Sloan Foundation on “The Industrial Organization of Credit Ratings Agencies”; in July 2010 I was the organizer of the Sloan Foundation and National Bureau of Economic Research “Workshop on the Economics of Credit Rating Agencies”; in 2011, I received a second grant from the Sloan Foundation on “Credit Ratings and Credit Rating Agencies: Developing a Research Network on Markets for Financial Information”; and I organized the Sloan Foundation and National Bureau of Economic Research “Workshop on The Economics of Credit Rating Agencies, Credit Ratings and Information Intermediaries” in July 2013.

I was elected as a director of a private firm that manages investment assets for a very large family trust in June 2010. I also served as a visiting scholar at the Federal Reserve Bank of New York in the fall of 2010 and served on the Academic Advisory Council of the President of the Federal Reserve Bank of Cleveland during August 2012. **Prior to joining the senior staff at the SEC, I served as an expert for the FERC in its 2002-03 investigation of the manipulation of the Western energy markets in the United States.** I served as a member of
the Economic Advisory Board of the NASDAQ in 2000 and 2001 and its chair in 2002. Most of these contexts reflect significant involvement with policy and regulatory issues confronting our capital markets and illustrate the breadth of my expertise with respect to financial regulation and trading.

As my publication record shows, my expertise concerning financial markets is very broad, including such topics as the regulation of financial markets; valuation and economic risk in commodity markets; asset allocation and taxes; the industrial organization of markets; the transmission of information in markets; market efficiency; market microstructure and trading strategies; the initial public offering process; and mortgage contract design, prepayments and valuation. My overall perspectives reflect the breadth of my training, expertise and skills in applying economic and financial theory and my knowledge of the financial markets. My co-authored paper on asset location and taxes in the *Journal of Finance* won the 2004 Paul Samuelson Award from TIAA-CREF for the best paper on lifelong financial security, and our earlier paper on portfolio rebalancing and realizing capital gains was awarded second prize for the *Review of Financial Studies*’ 2001 Michael J. Brennan Award. My work on taxation and asset allocation has helped to develop many of the key frameworks for addressing capital gains taxes and portfolio lock-in and also has addressed such issues as asset location, Roth IRA conversion, and estate planning.

My recent teaching specializations have focused on financial markets – specifically, I have been teaching advanced MBA electives on financial regulation, valuation of interest rate-dependent claims (including risk management and hedging), dynamic wealth planning, and real estate.
III. MATERIALS REVIEWED

I reviewed the Preliminary Findings of Enforcement Staff’s Investigation of Up-to Congestion Transactions by Dr. Houlian Chen on Behalf of Himself and the Principals of Huntrise Energy Fund LLC and Powhatan Energy Fund, LLC, Docket No, IN10-5-000 (August 9, 2013), the Written Submission on Behalf of Powhatan Energy Fund LLC (October 21, 2011), letter from Drinker Biddle & Reath LLP to FERC Enforcement staff (Docket No. IN10-5-000, August 24, 2012), Written Submission on Behalf of Dr. Houlian Chen (December 13, 2010), decisions by the SEC (November 3, 2007) and Third Circuit Court of Appeals in Amanat (March 17, 2008), and reports in the industry press in August 2010 discussing rule changes proposed to FERC by PJM, as well as academic studies cited in this report.

IV. BACKGROUND

Since August 2010, FERC Enforcement staff has been investigating whether prior scheduling of Up-to Congestion transactions in the PJM Interconnection undertaken by Dr. Houlian Chen on behalf of various funds including Powhatan was manipulative. In a letter to Drinker Biddle & Reath LLP (August 9, 2013), the FERC Enforcement staff described its analysis of the context and responded to arguments that counsel had raised previously. At the heart of the underlying situation was a provision in the PJM tariff that had been modified to provide for MLSA credits to virtual traders who reserved transmission between particular nodes of the system. Dr. Chen became aware of the MLSA credits when he reviewed his monthly PJM statement in November 2009 and noticed the inclusion of retroactive MLSA credits. Then, Dr. Chen began to undertake analyses of these payments to understand them better and later to facilitate adjusting the extent to which he reserved transmission based upon the fact that he
would be able to obtain MLSA credits. In light of the increased attractiveness of reserving transmission, Dr. Chen responded to the pricing incentives by undertaking steps to increase his scale of such trading. He also tried to be sensitive to risks as he scaled up his trading.

V. ANALYSIS AND CONCLUSIONS

1. Dr. Chen and Powhatan did not attempt to hide their transactions, strategy or intent. They did not create false reports in conjunction with the trades or attempt to mislead either PJM or FERC with respect to the transactions that they undertook. Indeed, the MLSA credits provided were on a trade level basis, in accordance with the PJM tariff without any misrepresentation.

2. In contrast, in the Amanat case, upon which the staff heavily relies, Amanat undertook wash sales transactions through a brokerage account (Momentum Securities) whose very purpose was to mislead Nasdaq into thinking that an ECN (MarketXT) that Amanat also had an ownership interest in satisfied a trading volume threshold that would entitle MarketXT to a portion of Nasdaq’s rebate of market data revenue.

3. Prior to August 2, 2010, neither Dr. Chen nor Powhatan was notified by FERC or PJM that their response to the pricing incentive was inappropriate. Once they were notified, they immediately stopped undertaking the strategy. This is consistent with a lack of manipulative intent before the notification and, obviously, perfectly appropriate afterwards.

4. To the extent that certain strategies and trades would not have been considered manipulative (e.g., before the August 2 notification), it also is important to reflect on the agent’s responsibility to the principals providing the investible funds. Arguably, Dr. Chen, the agent
who was acting as an advisor, would not be fulfilling his fiduciary duty to his clients if he were to leave money “on the table” and not undertake lawful strategies that he had identified within the context of investments permitted in the fund.

5. After PJM recognized the types of trading strategies from a variety of traders that arose under its tariff, it moved swiftly to modify its tariff and asked FERC to approve the modification on an expedited basis. This reflected recognition that the tariff design may have had a fundamental imperfection and needed to be fixed. Of course, if the behavior in question was manipulative, future transactions could be attacked directly, especially once traders were placed on notice—which then would be inconsistent with the need to seek FERC approval on an expedited basis. In the absence of trades reflecting manipulation, it would be important to fix the price mechanism expeditiously—especially once PJM alerted other traders to the perceived problem by announcing the contemplated change in pricing structure. This is a contemporaneous indication that the trades were not regarded as manipulation.

6. Since the pricing mechanism by which the MLSA credit was allocated was not particularly transparent, Dr. Chen worked to reverse engineer the mechanism. In most markets our society encourages asset managers to produce information when it is not readily available. We certainly do not require “index investing” of asset managers and investors and indeed encourage investors to create information and seize opportunities. This behavior provides liquidity and price discovery to markets. Of course, in this instance, some of the opportunities were embedded within a poorly conceived pricing algorithm at PJM.

7. Analogously, I have been an advocate of eliminating “maker-taker” rebate pricing in equity trading because of the adverse incentives that it creates, including distorting the important
decision of how to route an order amongst platforms (see Angel, Harris and Spatt (2011, 2013)).

In some situations, special rebates (fees) would be available to some intermediaries directing a transaction in a particular fashion, which could distort the routing decision. The resulting distortions in the routing decision have the potential to be quite significant because the order of magnitude of the potential liquidity fees and rebates is not small compared to the broker’s revenues. Yet, under the current rules, the distortionary routing induced by maker-taker rebate pricing is not viewed as manipulative, despite defects in the regulatory design that established the economic incentives. Imperfections in the design of regulations that impact the incentives for some underlying transactions do not imply that transactions that exploit such imperfections in the design are manipulative.

8. In structuring the implementation of his trading strategies, Dr. Chen was sensitive to managing the overall portfolio risk and, when evaluating the MLSA credits, he considered the structure of the trading risks that he would face. The sensitivity to managing the risk was appropriate and does not transform permissible trades into ones that are impermissible and manipulative, merely because the FERC Enforcement staff erroneously labels pairs of trades as “wash sales”.

9. The mechanism in question potentially provided for MLSA credits for transmission reserved in various directions. There could have been imperfections with such a mechanism, but that would be a matter for FERC or PJM to consider. Dr. Chen's transactions potentially helped identify and expose such imperfections, but his trades were undertaken with a profit motive,

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rather than with an intention to manipulate. The underlying imperfections in the mechanism and the profit opportunities created did not hinge on Dr. Chen’s matching of some trades *per se*. The imperfections in the mechanism are not the responsibility of Dr. Chen or Powhatan.

10. Indeed, in the current situation, the individual transactions stand on their own. The payments to a combination of positions are linear and additive. This is fundamental to understanding and describing the trading behavior in this situation. In contrast, at the heart of the mechanism and payment in *Amanat* was a combination of transactions being used to obtain special payments (by falsely claiming to have met the activity threshold).

11. There is no suggestion that Dr. Chen attempted to artificially alter the market pricing of the positions that he was purchasing, as in a classic manipulation. Indeed, if prices had changed due to market impact, they would inherently move against the positions that Dr. Chen was acquiring. Such market impact would actually reduce the profitability of Dr. Chen’s positions—the opposite of what would be intended in any classic manipulation.

12. Of course, in a broad array of contexts, there are a variety of components to pricing. Consistent with economic theory, we would expect market participants to alter their decisions in response to such pricing incentives. In most situations that would be the primary goal of PJM altering its pricing incentives. Dr. Chen and Powhatan responded to the pricing incentives without misrepresenting their actions or attempting to manipulate the prevailing prices.

13. In the current situation, an important feature of the pricing component was the distribution of MLSA credits, as that will change incentives—whether-or-not that is desired by PJM or the FERC. This simply reflects the maximizing behavior of economic agents. In fact, in the situation here, PJM attempted to finesse this by initially making retroactive adjustments so
that market participants could not respond along the lines of traditional price/substitution effects. While perhaps one would not view such retroactive price adjustments as a “manipulation” by the seller, it is certainly not the mark of transparent pricing and one could imagine that should be of interest to regulators. The need by purchasers of transmission to “reverse engineer” the effective MSLA credits suggests that the pricing continued to be somewhat opaque.

14. Theoretical models of mechanism design highlight that traditional mechanisms with desirable incentive features may not satisfy balanced budget conditions, so the awkwardness of particular ways to distribute a surplus is not surprising from a broader perspective in economic theory. Indeed, one of the fundamental teachings of mechanism design theory is that decisions by economic actors are sensitive to their incentives and the underlying economic mechanism. A simple example arises in auction models, where bidding behavior is sensitive to the rules (e.g., optimal bidding strategies are different in first-price seal-bid and oral progressive auctions). It is very appropriate for market participants to act in a manner consistent with the trading mechanism in which they operate.

15. In the context of this matter, Dr. Chen and Powhatan adjusted the extent to which they reserved transmission to take into account the MSLA credits. In many contexts in financial markets, investors can and should respond to the full available incentives. For example, taxable investors should take into account the full after-tax cash flows that they will potentially experience. Mortgage investors should consider the full range of cash flows that they might earn including flows related to loan modifications, transaction costs, and various delivery options (including optionality over the exact amount of loan balance and specific pools to deliver). Several years ago, the government itself undertook a “cash for clunkers” program, whose explicit purpose was to encourage new car purchases (linking a rebate to the retirement of a sufficiently
old vehicle). While many participants responded to the temporary price incentive and adjusted their demand for new vehicles, one would not consider the resulting adjustments in demand to constitute manipulation, such as an acceleration of demand to collect the rebate. These examples reinforce that investors can and should take into account all relevant cash flows in making their investment decisions.

16. There is a very interesting parallel in the securities space of those who trade options with one another to be able to claim a higher proportion of the dividends. The reason that this strategy can be profitable is that not all such options are being exercised, so that occasionally the option holder on the short side can obtain additional benefit when not being randomly assigned an exercise by a clearinghouse. While I served as Chief Economist at the SEC, this was studied by one of my key staff members, Stewart Mayhew, along with Jia Hao and Avner Kalay (“Ex-dividend Arbitrage in Options Markets,” 2010, Review of Financial Studies 23, 271-303). While these strategies have not been barred by the SEC, they actually are more difficult to justify than the current context for a number of reasons, including: a) option market makers, who themselves have greater responsibilities than traders, are better suited than most other investors to exploit profits from the trade; b) there are offsetting trades of exactly identical instruments, that do not have any execution risk; c) the offsetting positions are solely long and short options in the same instruments; d) there could be ulterior motives for a market maker to perform offsetting trades in stock options; and e) it is likely that it’s a typical retail investor, as opposed to the more sophisticated institutional investor, who would not generally be exercising her options prior to the ex-dividend date. This further highlights why it would not be reasonable to view the strategies by Dr. Chen and Powhatan as manipulation.

VI. SUMMARY
I do not regard the transactions and strategies undertaken on behalf of Powhatan as manipulative. Dr. Chen and Powhatan did not attempt to hide their activities, nor did they create false reports related to their trades or otherwise attempt to mislead PJM or FERC. Unlike a classic manipulation, they did not attempt to artificially manipulate the market pricing of their positions. The MLSA credits that they received were in accordance with the FERC tariff. Once notified that their response to the tariff was not viewed as appropriate, they immediately discontinued the strategy at issue. The actions by Dr. Chen were consistent with the responsibility of an advisor acting in the best interests of his investors, as he was undertaking a lawful strategy in order to maximize the expected risk-adjusted performance of the assets he was managing.

The imperfections in the pricing mechanism are not the responsibility of Dr. Chen and Powhatan, but reflect decisions by PJM and FERC. Typically, part of the reason that a tariff includes particular features is to influence behavior. Indeed, in a variety of contexts the fine structure of markets can lead to various distortions as illustrated by both “maker-taker” rebate pricing distortions, which I have explicitly criticized in some of my writings (see footnote 2) and dividend capture strategies. Here, the fundamental structure of the payments under the tariff appears to have been additive (though opaque), so efforts to manage the risks and trades experienced by Powhatan did not add directly to the MLSA credits received. It is very appropriate for traders to attempt to understand the mechanism of market pricing, even when it is opaque, and to reflect the full set of incentives and cash flows in making their investment decisions.

The foregoing represents my analysis as of the date of this report.
November 4, 2013

Respectfully submitted,

[Handwritten signature]

Chester S. Spatt
EXHIBIT L
My name is Richard Tabors. I am a Vice President of Charles River Associates (CRA) in Boston, Massachusetts. I have spent my professional career at the interface between economics and engineering, primarily in the design and implementation of markets in the electric power sector. Along with three colleagues while at the Massachusetts Institute of Technology (MIT), I co-authored *Spot Pricing of Electricity*, which is generally considered the basic theoretical text for the design of electric energy and transmission markets worldwide. I have been a director of research and research laboratories and a faculty member at both Harvard University (1970 to 1976) and MIT (1976 to 2005). In 1989, along with two of my colleagues, I formed Tabors Caramanis & Associates that became a part of CRA in 2004.

My full resume is included as Appendix B to this affidavit.

I have been asked to provide expert opinion on the functioning of Up-To Congestion (UTC) trading within the energy market of PJM Interconnection, L.L.C. (PJM). In addition, I have been asked to review the trading strategy of Dr. Alan Chen, trading on behalf of Powhatan Energy Fund LLC (Powhatan), and the impact that the Federal Energy Regulatory Commission’s
(FERC or Commission) decision to allocate Transmission Loss Credits (TLC) to cleared UTC transactions had upon that strategy. I also review the impact of any enforcement action applicable to these transactions on the broader market. Finally, I consider whether the strategy pursued by Dr. Chen constituted rational and legitimate economic behavior.

This affidavit is divided into three sections. The first section begins with a discussion of the nature of UTC transactions within the PJM market design and financial (virtual) participants’ involvement in UTC transactions. It also discusses the genesis and allocation of TLCs as well as the relationship between the transmission reservation requirements of UTC transactions and the allocation of the TLCs that result from the marginal loss calculations of PJM.

The second section of the affidavit discusses the theoretical and practical incentives created, and consequences incurred, by allocating TLCs to virtual traders who engaged in UTC transactions. It also discusses the consequences of penalizing behavior that FERC explicitly recognized that it would incentivize by allocating TLCs to UTC traders but failed to prohibit.

Finally, the affidavit will review, from the perspective of an economist who has participated widely in the design of electric energy markets throughout the world, the virtual bidding strategies executed by Dr. Chen. I explain how Dr. Chen engaged in five types of trading strategies of UTCs, none of which were either designed to ensure receipt of TLC revenues or guaranteed only to operate at a loss but for TLC revenues. All five strategies were instead designed to seek profit from price spreads while mitigating transaction costs with TLC revenues. I conclude that all the strategies reflect rational and legitimate economic behavior given the price signals and incentives created by PJM’s market design in place at the time the transactions were executed.
In Appendix A to this affidavit, I have included a detailed explanation of how UTC congestion caps work. The fundamental characteristics of UTC transactions described in Appendix A are essential to understanding Dr. Chen’s trading strategies and the incentives created by the allocation of TLCs to virtual UTC transactions that cleared the market.

In preparing this affidavit, I relied upon publicly available information from the PJM website, information available from Energy Velocity (data provider to CRA), information from the Written Submission To Commission Investigation Staff On Behalf Of Dr. Houlian Chen submitted in Docket No. IN10-5-000 on December 13, 2010, and interviews with, and summary spreadsheets provided by, Dr. Houlian (Alan) Chen.

Section I. Market Design

“Up-To Congestion” Transactions

According to PJM, UTC transactions were first incorporated into the market design of the PJM Open Access Transmission Tariff (OATT) in order to give parties with physical delivery obligations, or physical wheels of power through PJM, the opportunity to hedge against congestion costs: “[UTC] transactions were originally created as a mechanism to hedge in the Day-ahead Energy Market the exposure to price differentials from the source to the sink of their physical energy deliveries into, out of or through PJM in the Real-time Energy Market, and to allow market participants who want to wheel power through PJM to set the maximum dollar value of congestion they would be willing to pay to wheel that power.”1 In order to engage in a UTC transaction, therefore, the PJM OATT required that the (physical) trader reserve, and in

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1 PJM Initial Filing in Docket No. ER10-2280 at 2 (Aug. 18, 2010).
most instances\textsuperscript{2} pay, for firm or non-firm transmission service on the path between the two points used in the UTC transaction\textsuperscript{3}.

Transmission service must be reserved \textit{first}, before the trader enters the UTC bid into PJM’s Enhanced Energy Scheduling (EES) system and before day-ahead prices are known. After transmission service is reserved and an Open Access Same-time Information System (OASIS) reservation number obtained, the trader may go to the EES system before noon eastern time the day-ahead and enter the OASIS reservation number as well as the desired congestion cap. After PJM publishes the day-ahead locational marginal prices (LMP) at 4 p.m. eastern time, the trader will know whether the UTC bid(s) cleared the market or not.

The following are costs associated with a UTC transaction:

- Cost of transmission service, which PJM’s OASIS states is $0.67 per MWh for non-firm service. However, by agreement with the Midwest Independent Transmission System Operator, Inc. (MISO), PJM did not charge for transmission service when power was exported from PJM to MISO. The transmission reservation charge was incurred by the trader whether or not the associated bid cleared the market.

- PJM overhead costs (e.g. market monitor funding, PJM scheduling and dispatch services), which averaged $0.04 per MWh.

- Black start service, reactive supply and voltage control from generation services, which averaged $0.21 per MWh.

In addition to the costs above, PJM also provided a small “PJM Scheduling, System Control and Dispatch Service Refund – Market Support” (less than $0.01 per MW).

\textsuperscript{2} PJM did not require parties to pay for transmission service associated with transactions exporting power from PJM to MISO.

\textsuperscript{3} Attachment K – Appendix to the PJM Open Access Transmission Tariff, Section 1.10.1(b); see also parallel provision in Section 1.10.1(b) of Schedule 1 of the Amended and Restated Operating Agreement of PJM.
Prior to September 17, 2010, the FERC-approved PJM OATT required that virtual traders fulfill the same transaction requirements as do physical UTC traders, that is, that they reserve, and commit to pay for, transmission access service from MISO to PJM in advance of setting a position and paying the required costs for a UTC bid. This was a questionable market design decision on the part of PJM and FERC given that virtual transactions are non-physical and are always closed out between the day-ahead and the real-time markets – no transmission is used in these transactions and neither reactive power nor voltage control were needed. Thus, the vast majority of the costs incurred by UTC traders, including the use of the transmission system and the reactive power/voltage control charges, are not relevant or necessary to accomplish a virtual UTC transaction. In effect, these payments subsidized the entities that actually required physical transmission and or reactive power / voltage control.

**Allocation Of Transmission Loss Credits**

Starting in October 2009, PJM began to allocate TLCs to UTC traders in direct relation to each MWh of cleared UTC transactions for which the trader paid for transmission service. TLCs result from the decision of PJM, approved by FERC, to (correctly) calculate the cost of losses on the transmission system based on the marginal rather than the average cost. This principle provides to all participants in the market the theoretically correct locational price for

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6. *Atl. City Elec. Co. v. PJM Interconnection, L.L.C.*, 115 FERC ¶ 61,132 at P 22 (2006) (“Billing on the basis of marginal costs ensures that each customer pays the proper marginal cost price for the power it is purchasing. It therefore complements and reinforces PJM’s use of LMP to price electricity. Moreover, by changing to the marginal losses method, PJM would change the way that it dispatches generators by considering the effects of losses. As a result . . . the total cost of meeting load would be reduced.”).
energy against which they then can make their energy purchase, sales and investment decisions. Charging for losses at the marginal value means that, on average, more revenues are collected than are needed to pay for the actual cost of losses. There is no perfect way to allocate these excess revenues. The principle, however, is that these excess revenues should be allocated to market participants in a manner intended to not adversely affect operating decisions, most specifically of generators bidding into the market. As FERC stated, “the only fundamental principle to be applied is that the distribution should in no circumstance be based on the amount paid for transmission line losses, because that would distort the appropriate price signals which the use of marginal line loss pricing is designed to facilitate.”\textsuperscript{7} In the case of PJM, these excess revenues were allocated in the form of TLCs to those entities – primarily load – that paid for transmission service. FERC ultimately determined that because UTC traders paid for a transmission reservation, they would also be eligible to receive a portion of the TLCs based on UTC transactions that cleared the market.\textsuperscript{8}

TLC allocations vary significantly on a daily basis. Figure 1 below provides a graphic of daily TLC allocations per MW from May 29, 2010 through August 19, 2010.\textsuperscript{9} During this period, average daily per-MW TLC allocations ranged from approximately $0.70 up to $2.10. For the period of May 29 through August 19, 2010, the average TLC allocation was $1.25 with a standard deviation of $0.32.\textsuperscript{10} Moreover, because TLCs originate from over-collection of

\textsuperscript{7} Black Oak II, 125 FERC ¶ 61,042 at P 37 (emphasis added; footnote omitted).

\textsuperscript{8} Black Oak III, 126 FERC ¶ 61,164 at P 15.

\textsuperscript{9} While TLC allocations also vary significantly on an hour-by-hour basis, hourly TLC allocation data is not publicly available.

\textsuperscript{10} The standard deviation is a measure of the variation of the data about the mean. One standard deviation on either side of the mean is an indication that 34.1\% of the values lie above and 34.1\% lie below this value. As can be
transmission line losses that are based on marginal line loss rather than average line loss, the amount of the hourly over-collection – and thus the amount of the TLC allocation – was unknown to traders until after the deadline for placing UTC bids had passed. Thus, a trader, including Dr. Chen, cannot know in advance whether the TLC allocation would be less than, equal to, or greater than the costs associated with placing an individual UTC bid.

**Figure 1**

![TLC allocations 5/29 to 8/19/10](image)

seen from the standard deviation in the allocation of TLCs, there was significant variation during the period reported.
Section II: Theoretical And Practical Incentives Created By TLC Allocation To Virtual UTC Transactions

The decision to allocate TLCs to virtual UTC transactions that cleared the market necessarily created an incentive to engage in high-volume UTC transactions.

The decision to allocate TLCs to virtual UTC traders created a market signal. To the trader, payments for transmission and other costs are fixed, per MWh per trade. Receiving a credit from transmission losses – independent of the size of that credit – reduces the fixed cost per MWh per trade, thus making it possible for a trader to place more trades at the same cost to the trader – increasing the volume of trades undertaken. In short, transactional costs are reduced. At the same time, reducing this transactional friction allows UTC traders to identify additional trading strategies where volumetric increase could provide a higher payoff from low probability events. Because transactional friction is reduced, it is economically rational to pursue such low probability, but high payoff, events more aggressively.

Prior to the advent of TLC allocations to UTC virtual traders, the financial benefits of trading UTCs stemmed from being able to predict the relationship between the day-ahead market prices and the real-time market prices on the two sides of the PJM interface with an adjoining ISO, such as MISO. With the original transaction price structure ($0.67 per MW per hour for transmission plus an additional $0.25 per MWh for voltage control, scheduling and black start) there were only a finite number of UTC positions that a trader could afford to take on a regular basis. Allocation of TLCs fundamentally changed the cost of putting on UTC bids. Where previously the cost of a transaction was $0.92 per MWh, the cost (netting out the benefit of the TLC) now ranges from $0.22 per transaction to a point at which the trader is being paid $1.18
per MWh for each trade. When the cost of transactions were dramatically reduced, as occurred with the advent of receipt of TLC allocations, virtual traders gained the ability to change their strategies to increase their trading positions in terms of the number of positions taken, the volume of individual positions or the types of trades, or any combination thereof.

There are undoubtedly multiple ways in which traders could modify their likelihood of profit in the market given this change in the cost of transactions and associated risk profile. With allocation of TLCs, it now became possible to focus attention on strategies whereby volume (in both number of trading positions and the size of the positions) became far less expensive.

Given that individual trading positions could be put on at a very small cost or even a credit (after all of the allocations and costs had been netted), it became possible to consider putting on large trading volumes that were conditional upon the magnitude of the day-ahead price spread. The UTC product allowed for precisely this strategy when the cost of the transaction was minimized (or turned into a credit) due to the TLC allocation. In other words, the TLC allocation allowed UTC traders to make large volume trades even when the trader believed that the TLC allocation would be less than the fixed cost of the trades, \textit{i.e.}, lose a little bit of money because the potential return exceeded the costs of the trades. By placing UTC bids in both directions between two points with the same positive cap, the trader could guarantee that one bid will fail to clear the market while the other bid clears in the unlikely event that congestion exceeds the set cap. The goal of the strategy was to “hit the home run” on the spread: not to make a small amount of money on every position but rather to make a significant amount of money when the pre-specified condition occurred. The pre-specified condition would occur when transmission congestion in the day-ahead market exceeded the cap set by the trader. This
might have been a cap at $50/MW, the maximum that was allowed by PJM rules, or a cap at half this amount ($25/MW). With transaction costs reduced or even eliminated, the trader could put on larger volumes more often in the hope of “hitting the home run.”

Why could one “hit the home run?” The answer is that with the net reduction/elimination of the transaction costs, it was possible to put on UTC positions that would essentially cancel each other out unless the condition was met. Placing a UTC bid into PJM with a cap of $25/MWh and simultaneously placing a UTC bid out of PJM at the same positive cap would cost little (or provide a small net return) if the cost of congestion in the day-ahead was less than $25/MWh.\(^\text{11}\) As soon as the cost of congestion exceeded $25/MWh, the into PJM position would fail (and there would be no TLC allocation), but the into MISO position would clear because it also has a positive cap.\(^\text{12}\) Under these circumstances, the trader would hold a counter flow spread position in the day-ahead market and would then profit, or not, in real-time as a function of whether the real-time price for congestion into MISO from PJM was higher or lower than the position the trader holds – the traditional spread transaction. The TLC allocation minimizes the cost to the trader of waiting for the high day-ahead congestion event (and thus the spread position) to occur.

This transaction differs from the original one-way spread transaction in that the trader now knows that the spread will only be operational (profit or loss) under the condition that the

\(^\text{11}\) It is important to note that there is no specific reason in this strategy or this example that individual transactions need to be paired, even imperfectly. Busses close to the border with MISO will tend to co-vary and certainly do so within the range of the cap that any trader is likely to put on. Taking it one step further, if one were to consider putting an identical position in place randomly from every PJM bus to MISO, and the reverse position randomly from MISO to every PJM bus, the result would be numerically perfect pairing even though the individual busses and their values would be significantly different.

\(^\text{12}\) See Appendix A for additional explanation of why one bid always clears where two bids are entered with positive caps, one in each direction between two nodes.
congestion is greater than the cap that the trader has chosen – in this instance $25. The trader requires two additional pieces of analytic information before initiating this strategy. The first is the probability that at any given cap, one of the UTC positions will fail (MISO to PJM or PJM to MISO). The second is the probability that if a position fails (say the cap is exceeded from MISO to PJM in the day-ahead market), that the congestion in the real-time market will be less than it was in the day-ahead market. Both probabilities are calculable.

The trading strategy is more easily described than it is implemented. The reason is that while the probabilities are calculable, the case in which the UTC bid will fail has an extremely low probability of occurring and results from an event that is not predictable as to when and where it will occur (e.g., loss of a transmission line due to a lightening strike). The only way to improve the probability that the trader has UTC bids in place at the time the event occurs is to hold positions for every hour. Moreover, if you set the cap at $50, the probability of the bid failing is lower than if you set it at $25, and the probability is non-linear between the two. The critical consideration in deciding to lower caps is whether congestion will reduce in the desired direction between the day-ahead and real-time or instead will increase, in which case the trader will end up losing money. This point is captured in the analysis of what occurs when there is a congestion spread in the day-ahead greater than the cap value. The critical issue is whether experience (and analysis) has shown that where day-ahead spreads are large, the real-time spread tends to be less. The theory of market operations says that market transactions (without an external physical event) will work to reduce the cost of congestion between the two market periods.
The “home run” strategy described above is precisely that: a strategy to profit from rare but very profitable events, much as the slugger may swing for the wall on every pitch, seeking the home run, but strike out nine times out of ten (or worse). To consider implementation of such a strategy requires that the trader be capable of solid statistical analysis and be experienced in the market. The risk of never hitting the “home run” is extremely high. Only under the condition in which the cost of setting the UTC positions is very low can one consider such a strategy and thereby wait for the fast ball in the center of the plate (in this case, put on UTC trades in each hour awaiting the rare conditions in which congestion exceeds the cap specified by the trader in the UTC bid). Such a strategy is rational economic behavior where transactional costs are low to non-existent.

As is clear, the “home run” strategy does not require a TLC; it requires low transactional friction. Were there no costs associated with putting on a virtual UTC transaction, there would be more transactions of many types and along many strategies that would take advantage of the volume of positions as opposed to precision on each individual transaction. The strategy described above is one that structures risk around the condition that exists when and if a directional UTC bid fails. As such, the strategy accepts the risk that the event will never occur and simultaneously the risk that when and if it occurs, the real-time market will not converge relative to the day-ahead market. Those risks both become acceptable because the pay-out – the “home run” – is more than sufficient to cover the transactional costs, the opportunity cost associated with funds tied up in the transactions, and the administrative and time costs of the traders involved.
In summary, from the perspective of the UTC trader, the allocation of the TLC provides an incentive to the UTC trader to increase the volume of trades. The only certainty of the TLC is that it will be a positive number. Because it is a positive number related to transmission reservations, it is related to the number of MWs of UTC transactions cleared each hour rather than in any way to the profit or loss from each individual UTC transaction. As a result, the market impact of TLCs on the UTC trader manifests as a direct reduction in the cost of the UTC transaction. This reduction in transactional friction is precisely the effect that occurred with the advent of the allocation of TLC monies to traders bidding UTCs. Reduced transactional friction provides an incentive for traders to identify and implement trading strategies whereby they can benefit from greater numbers of trades – where there is a potentially large (or very large) benefit possible from a low probability event.

Traders in all markets are financially rewarded for identifying precisely such strategies. These strategies, as in this case, are within the rules of the market and are, as in this case, neutral or positive with respect to the operation of the market itself.

It Would Harm The Market If Traders Are At Risk for Disgorgement And Penalties By Engaging In Trading That FERC Acknowledged Would Occur, But Failed To Prohibit.

In 2008, FERC denied the complaint of several virtual traders, or arbitrageurs, who sought to either be relieved of the obligation to pay marginal line losses in locational energy
prices or be allocated a portion of the TLCs. In rejecting a TLC allocation for virtual traders, FERC stated:

Paying excess loss charges to arbitrageurs also is inconsistent with the concept of arbitrage itself. The benefits of arbitrage are supposed to result from trading acumen in being able to spot divergences between markets. As stated above, arbitrageurs create their own load by the volume of their trades. If arbitrageurs can profit from the volume of their trades, they are not reacting only to perceived price differentials in LMP or congestion, and may make trades that would not be profitable based solely on price differentials alone.

Thus, FERC fully anticipated that allocating TLC revenues to virtual traders would create an incentive for traders to profit by “trades that would not be profitable based solely on price differentials alone” – that is, transactions that would not be economic but for the TLC allocation. Nevertheless, FERC granted rehearing and held that traders that paid for transmission and engaged in cleared UTC transactions must receive a TLC allocation, since they too contributed to the fixed costs of the transmission grid. In that rehearing order, FERC again acknowledged that permitting virtual traders to receive TLC payments could create “an incentive for arbitrageurs to engage in purchase decisions, not because of price divergence, but simply to increase marginal line loss payments” but did not prohibit such trading.

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14 Id. at P 51 (emphasis added).
15 Black Oak II, 125 FERC ¶ 61,042 at P 49.
16 Id. at P 43.
As explained above, trading strategies developed in response to reduced transactional friction due to the TLC allocation constitute rational economic behavior. In addition, having predicted that allocating TLCs to virtual traders would result in volume-based transactions that would be uneconomic but for the TLCs, and then authorizing the TLC allocation to virtual traders anyway, FERC treatment of such transactions as market manipulation now would harm the energy market. Electric energy markets are no different from markets of other commodities, though in the past they may have tended to be more heavily regulated. Traders enter markets knowing the regulatory rules and working their strategies within those rules. It is often stated that the ability to estimate and operate within a structure of financial risk (hedging) is the critical characteristic that differentiates successful from unsuccessful traders and trading entities. A second risk that may be equally critical is that of regulatory risk. The role that traders can play in all markets is improving liquidity and price transparency. They count on regulatory stability in making decisions. Living by the regulatory rules assures the trader that if there are legitimate profits to be made through wise transactions, those profits will be kept. In an environment of regulatory uncertainty – one in which the rules are in flux or the interpretation of those rules changes – the trader becomes wary of the market and perceives what can be called “increased transactional friction.” This represents a price (monetized or not) that the trader perceives must be paid to stay in the market. In behavioral terms, it may be a rule change that prevents a structured transaction from being profitable. In more concrete financial terms, it may be a total change in direction on the part of the regulatory body by which, \textit{ex post}, a set of transactions that were within the rules are now transactions subject to clawback of revenues and penalties. When market participants and traders perceive a regulatory environment with significant transactional
friction, the number of trades is reduced with a consequent loss of both liquidity and price transparency. Markets without liquidity and price transparency are no longer functional and often cease to be traded. While there may never be complete regulatory certainty, there needs to be regulatory consistency if there is to be a well-functioning market.

The Market Was Not “Well-Functioning” When It Allocated TLCs To Virtual Traders That Did Not Need Transmission Service.

UTC trading grew, as was discussed earlier, as a hedging mechanism for physical traders who needed to cap their risk incurred to move energy between markets such as PJM and MISO. These trades were physical in nature in that the participants purchased (bilaterally) a quantity of energy in MISO for sale (often bilaterally) in PJM. Their uncertainty was in the cost of the congestion since they had to reserve the transmission ahead, but would not know the cost of congestion until after the transaction was in place. The UTC structure provided the answer: the ability to complete the transaction up-to a congestion price of $X. PJM put a ceiling on the price at $50, but this is largely irrelevant since the physical trader would know the maximum value of congestion that the transaction could carry.

The UTC product provided a logical trading product for a virtual trader. Virtual traders used the UTC product with the same rules as existed for the physical trader, namely that they reserve – and pay for – transmission. This represented a significant cost for the UTC virtual transactions and undoubtedly affected the number of such positions put on. That said, however, virtual transactions are precisely that: virtual. No energy was transmitted in virtual trades; there was no need for reserved transmission, voltage support or black start support. Logic would
dictate that virtual trades should carry no physical requirements since they would be cleared in, or before, real-time.

The legacy remained, however, and virtual UTC trades continued to require transmission reservations. Given that these transactions paid for transmission, the argument made in the Black Oak cases was that traders such as Black Oak should receive a portion of the TLC allocation given that those traders through their payment of transmission charges paid their share of the transmission fixed charges. In Black Oak I, FERC rejected the argument. In Black Oak II, FERC reversed itself, finding that virtual UTC trades should receive part of the TLC allocation.

From the perspective of logic and good market design, where charges are intended to cover real costs, the case of the TLC allocation to virtual UTC traders is one of “can two wrongs make a right?” If it was illogical for TLC traders to be paying transmission reservation charges, did allocating part of the TLC to those same players correct for the earlier error? Given that the FERC has now reversed itself a second time by accepting in 2010 PJM’s proposal to eliminate the requirement that UTC trades reserve transmission service (and thus eliminating TLC allocations to UTC transactions), the answer is certainly no.

The market was not well-functioning in 2008 when virtual UTC traders were required to pay to reserve transmission. It was not well-functioning in 2009 when virtual traders were allocated a part of the TLC. The logic of the changes to PJM’s tariff adopted in 2010 is that, from a market design perspective, UTC traders are paying for what they use and not paying for what they do not use. In the period between 2009 and 2010 when the rules changed, UTC traders may have been trading in a market that was not well-functioning, but they were playing by the rules of that market.
Powhatan Paid For Transmission Service And No Other Market Participant Is Entitled To The TLCs It Received In Return.

As discussed above and in Appendix A, in questions of allocation, there is never a singular right answer. The general objective, and that of the Commission, in allocating TLCs was that “the only fundamental principle to be applied is that the distribution should in no circumstance be based on the amount paid for transmission line losses, because that would distort the appropriate [economically correct] price signals which the use of marginal line loss pricing is designed to facilitate.” UTC traders received a TLC allocation based on the MWh of cleared UTC transactions associated with transmission reservations that they paid for.

The TLC allocation is not a market. It is an allocation of excess revenues. The decision as to how to allocate these revenues fulfilled the objective of FERC in that the TLCs were allocated to those entities that paid for transmission fixed costs and were not allocated to entities in a manner that could affect LMP prices. As FERC indicated, no other party has a claim to the TLCs allocated to Powhatan because Powhatan paid a portion of the fixed cost of the transmission grid, and the “fundamental principle” underlying the allocation dictates that “no party within PJM is entitled to receive any particular amounts” through the TLC allocation.

17 Black Oak II, 125 FERC ¶ 61,042 at P 37 (emphasis added; footnote omitted).
Section III. Dr. Chen's UTC Bidding Strategies.

Dr. Chen’s Trades Were Intended To Seek Profit On Price Spreads Between Two Nodes While Mitigating Transaction Costs With TLC Revenues.

I have reviewed records recently provided by Dr. Chen regarding his UTC transactions on behalf of Powhatan during the May through August 2010 period. There were five (5) categories of transactions:

(1) Directional UTC transactions between an interface node and one node within PJM (e.g. MISO to Greenland, Mt. Storm to MISO);

(2) Transactions in opposite directions between the same two nodes at the same MWh volume and bid at a $50/MWh congestion cap in both directions (e.g. 10 MW from MISO to Mt. Storm bid at the $50/MWh maximum cap and 10 MW from Mt. Storm to MISO bid at the $50/MWh maximum cap);

(3) Transactions in opposite directions between the same two nodes at the same MWh volume, but bid at a congestion cap of less than the $50/MWh maximum cap (e.g. 10 MW from MISO to Mt. Storm bid at a $25/MWh cap and 10 MW from Mt. Storm to MISO bid at a $25/MWh cap);

(4) Transactions in opposite directions between the same two nodes at different MWh volumes, but bid at the $50/MWh maximum cap in both directions (e.g. 10 MW from MISO to Mt. Storm bid at the $50/MWh maximum cap and 5 MW from Mt. Storm to MISO bid at the $50/MWh maximum cap); and

(5) Transactions in opposite directions between the same two nodes at different MWh volumes and bid at a congestion cap of less than the maximum $50/MWh cap in both directions (e.g. 10 MW from MISO to Mt. Storm bid at a $25/MWh cap and 5 MW from Mt. Storm to MISO bid at a $25/MWh cap).
Dr. Chen stated that two-thirds of Powhatan’s UTC transactions were bid with a congestion cap of less than the +$50/MWh maximum cap. This fact is critical to understanding the trading strategy and the risk profile that Dr. Chen employed during this period.

It is obvious that had Dr. Chen’s objective been solely to “harvest the TLC,” he would have behaved significantly differently from the actual behavior the trading records show. To implement a “harvesting” strategy, the objective would have been to always set the bids at equal volumes and to have always set the cap at the PJM maximum of $50/MWh. This would have reduced the probability that a net spread position in either direction would occur, though as explained above, setting the cap at $50/MWh could never eliminate the possibility of a net directional spread occurring should congestion exceed $50/MWh and only one bid clear.

As indicated by the categorization of the five trading types listed above, Dr. Chen was not trading for the TLC revenues but was instead using the TLC revenues, netted against the transaction costs, to be able to more frequently (and in greater volume) undertake a strategy of “swinging for the wall with every pitch.” In section 2 of this affidavit, I discussed in detail the “home run” strategy that was based on knowledge and analysis, logical, legitimate and, most clearly, profit seeking. While one might argue that there were positive revenues attributable to simply placing the trades based on the net of cost against TLCs, the real profits to be had were from the low probability event, the “home run,” that Dr. Chen was seeking.

Type one above represents the standard spread transaction undertaken by UTC traders. Transactional risk was hedged primarily by trader knowledge of the market. The other four of the five transaction types listed above, and identifiable in Dr. Chen’s trading records, sought a profit well beyond that achievable by “harvesting” the net of the uncertain TLC allocations and
the transaction costs, and carried a very different risk profile. Underlying these four transaction types was the opportunity to capture the large pay-out event. Two of the four transaction types exhibited the pure “home run” strategy but with a very significant difference and risk profile. In type two above, the probability of losing a UTC position was as low as possible given that the cap was set at the PJM maximum of $50/MWh. Type three above is quite different. In this type of transaction in which the cap is less than $50/MWh (and it varied as low as $25/MWh), the trader is both “learning” the behavior of the risk associated with a different cap and looking for a broader spread to the opportunity to “hit the home run.” While a bid with a cap of $25/MWh will have a greater probability of being rejected, the reciprocal bid with a $25/MWh cap that always clears in the opposite direction will also have a greater probability of losing money if and when there is divergence, rather than convergence, between the day-ahead and real-time markets. At the same time, however, it should be obvious that setting the cap at, say $25/MWh, will also allow for the “home run” at $49 or $200.

The final two types of transactions above are hybrids. In both cases, the trades are a mix of traditional spread trading (the asymmetric volume) and the “home run” bidding (the paired volume).

The five transaction types are focused on different characteristics within trading UTCs in the overall PJM energy market. Each has a very different risk reward profile. This difference in the profiles of the individual categories, when blended hourly, daily or monthly, allowed the trader to develop a portfolio risk profile that could vary as knowledge and experience were gained. What made this process work and allowed Dr. Chen to trade in larger absolute volumes
with clearly different strategies was the fact that the transactional friction – the cost of the individual trades – was vastly reduced with the allocation of TLCs to virtual UTC traders.

**Powhatan’s UTC Transactions Had No Negative Impact On The Energy Market.**

Underlying the questions and challenges to the bidding strategies that have been discussed in this affidavit is the question of harm to the PJM energy market. Harm could occur in one of several manners, but certainly the most significant is that the actions of the trader affected the structure of trading that took place in the market, or that the actual trades themselves were manipulative, causing others players in the market to behave in a manner that did not respect the basic economic structure of the market itself. In the case of Dr. Chen’s transactions, responding to the fact that the transactional friction of engaging in UTC trades was lessened or removed by the allocation of TLCs to cleared UTC trades did not cause harm to the market. The actions of those who responded to the change in transaction costs did nothing to affect the structure of the market other than to increase the volume of virtual trades. These traders also had no impact on other traders trading UTCs or trading in other elements of the PJM energy market. At a minimum, this increase in volume had no impact of any kind; to the positive, it might have provided additional price transparency.

The second question concerning possible harm is whether, in the process of undertaking these transactions, the trader made unwarranted profits by flagrantly violating the rules of the market. Certainly this was not the case here, because all of Dr. Chen’s trades were totally transparent through the PJM system.
Conclusion

The conclusion that must be reached from an analysis of the UTC transactions undertaken after introduction of the TLC allocation to cleared virtual UTC transactions is that Dr. Chen’s response was predictable and logical under economic theory. If we believe in economic man (and woman), economic incentives affect economic behavior.

In the instance of the UTC trades, there was no market manipulation, only response to economic signals. Dr. Chen responded logically and economically correctly to an environment in which the transaction costs – the transactional friction – of putting on UTC transactions had been dramatically reduced, and in which there were known and demonstrable low probability, unpredictable but high pay off outcomes – the “home runs” – that could be targeted with high volumes of bids across many hours.

In addition, and critically, there was no harm to the market caused by Dr. Chen’s transactions. At worst, the impact was neutral to the functioning of the energy market in PJM. At best, it was positive through increased liquidity at the PJM boundaries and through increased price discovery.
Appendix A: Fundamentals of UTC Transactions

Up-To Congestion (UTC) transactions are bids submitted into the PJM day-ahead energy market between two nodes. The UTC bids include a cap on the maximum amount of day-ahead congestion that the bidder is willing to pay in terms of the difference in the nodal energy price in the day-ahead market. Congestion occurs when there is insufficient transmission capacity available from Point A to Point B to accept all desired transactions from Point A to Point B. Congestion is calculated as the day-ahead sink node (Point B) LMP minus the day-ahead source node (Point A) LMP. Importantly, congestion is always one-directional; that is, if a path between two nodes is congested (i.e. day-ahead sink LMP minus day-ahead source LMP is a positive number) in one direction from Point A to Point B, then the path will be uncongested (day-ahead sink LMP minus day-ahead source LMP is a negative number) in the opposite direction from Point B to Point A.

UTC transactions must always make use of at least one external interface node, and PJM maintains a list of source/sink combinations that are available for UTC transactions.\(^\text{18}\) PJM’s market rules stipulate that the cap on day-ahead congestion in a UTC transaction may not be greater than +$50 per MWh nor less than -$50 per MWh.\(^\text{19}\) The original design of the UTC bid structure allowed physical suppliers of energy into (or out of) PJM to place a ceiling on the directional amount of day-ahead congestion they were willing to pay. Similar to other elements of the PJM energy markets, the UTC bid process spawned an active “virtual” bid process.

\(^\text{18}\) PJM Manual 11 at § 2.3.4.

\(^\text{19}\) PJM Manual 11 at § 2.3.4.
As an example of a UTC transaction, assume that the UTC transaction is to involve two nodes: the MISO interface node as the source and Mt. Storm node within PJM as the sink. Assume also that the trader bids a cap of +$50/MWh. At 4PM of the day ahead, PJM announces a day-ahead LMP for MISO of $20 and a day-ahead LMP for Mt. Storm of $50. For this UTC transaction, the day-ahead congestion is calculated as $50-$20 = $30 (day-ahead sink LMP less day-ahead source LMP). Because $30 is less than the trader’s $50/MWh cap, the UTC transaction clears the day-ahead market. If instead the trader had bid a +$25/MWh cap, the transaction would fail to clear because the $30 congestion is greater than the +$25/MWh cap. This concept can be expressed graphically as follows:

![Graphical representation of UTC transaction]

Now assume that the trader instead bids in the other direction, with Mt. Storm as the source node and MISO as the sink node. The trader bids at the +$50 per MWh cap. As above, the day-ahead LMP at MISO is $20 and the day-ahead LMP at Mt. Storm is $50. The trader’s day-ahead congestion cost (day-ahead sink LMP less day-ahead source LMP) is now negative $30. The bid clears the market because -$30 is less than +$50. Importantly, even if the trader lowers the bid cap to +$25/MWh, as in the prior example, the transaction still clears because -$30 is less than +$25. In fact, the trader would have had to bid a cap of at least negative $31/MWh before the transaction would fail to clear in this example.
Thus, a UTC transaction from Node A to Node B is *never* the equivalent of a UTC transaction from Node B to Node A. The likelihood of clearing the market is different for each transaction because congestion in one direction is a positive number, while the lack of congestion in the other direction is always represented by the reciprocal *negative* number. Thus, bidding the same cap for transactions in opposite directions guarantees that one of the bids will *always* clear.
Appendix B: Resume
RICHARD D. TABORS
Vice President

Richard D. Tabors, Vice President, is an economist and scientist with 35 years of domestic and international experience in energy markets, planning and pricing. He is a member of the group at MIT that developed the theory of spot pricing upon which locational marginal pricing (LMP) of electricity and transmission rights markets (such as FTRs) are based. Prior to joining Charles River Associates, Dr. Tabors was a president and founder of Tabors Caramanis & Associates. Dr. Tabors is working on the restructuring of the U.S. and international electric supply industry, where he provides expert testimony and works with clients on restructuring efforts at the state, provincial, regional, and federal levels in the United States and Canada, as well as in the United Kingdom. He has spent 30 years on the faculty and research staff of MIT where until 2006 he a senior lecturer in technology and policy and Assistant Director of the Laboratory for Electromagnetic and Electronic Systems (MIT’s Power Systems group) He is also a visiting professor of electrical engineering at the University of Strathclyde, Glasgow, Scotland.

EXPERIENCE

2004–Present Vice President, Charles River Associates
2004–Present Visiting Professor of Electrical Engineering, University of Strathclyde, Glasgow, Scotland
1986–2006 Senior Lecturer, Technology and Policy Program, Massachusetts Institute of Technology (MIT)
1989–1998 Lecturer, Department of Electrical Engineering and Computer Science, MIT
  • “Introduction to Power Systems Operations and Planning.”


1979-1983  *Project Manager and Principal Investigator*, Electric Generation Expansion Analysis System (EGEAS) Project, under contract to EPRI, MIT Energy Laboratory.


1971-1976  *Research Associate and Member*, Center for Population Studies, Harvard University

1977-1984  *Program Manager*, Utility Systems, MIT Energy Laboratory


1978-1984  *Program Manager*, Utility Systems, MIT Energy Laboratory


1978-1988  *Lecturer*, Department of Urban Studies and Planning, MIT

1973-1988  *Principal*, Meta Systems


1980–1993  *Principal Research Associate*, MIT


1978–1989  *Assistant Director*, Laboratory for Electromagnetic and Electronic Systems, MIT

• Responsible for laboratory administration and research in power systems economics and planning, research on power systems monitoring and control, principal investigator on research program in performance based monitoring and control.

1973-1988  *Lecturer*, Department of Urban Studies and Planning, MIT

1978–1988  *Assistant Director*, Laboratory for Electromagnetic and Electronic Systems, MIT

• Responsible for laboratory administration and research in power systems economics and planning, research on power systems monitoring and control, principal investigator on research program in performance based monitoring and control.

1980–1993  *Principal Research Associate*, MIT

• Co-Faculty “Planning for Water and Sewerage” and “Dealing with the Complete System,” MIT Summer Session.

1973-1988  *Principal*, Meta Systems

• Head, utilities group in power systems planning, pricing and systems analysis


1971–1976  *Research Associate and Member*, Center for Population Studies, Harvard University

• Research on resource and environmental planning in developing nations of South Asia and Africa.

1978–1984  *Program Manager*, Utility Systems, MIT Energy Laboratory

• Economic and systems research and development in electric and gas utility systems; including the integration of new generation systems (photovoltaics) into the grid.


1973-1988  *Principal*, Meta Systems

• Head, utilities group in power systems planning, pricing and systems analysis
1974-1976  Assistant Professor of City and Regional Planning, Harvard University.

1973-1976  Research Fellow, Environmental Systems Program, Division of Engineering and Applied Physics, Harvard University.


1973-1974  Lecturer on City and Regional Planning, Graduate School of Design, Harvard University.

1971  Resident Representative, Harvard University, East Pakistan (Bangladesh) Land, Water and Power System Study, Dacca, East Pakistan.

1970  Graduate Administrative and Teaching Assistant to A. K. Campbell, Dean, Maxwell Graduate School of Citizenship and Public Affairs, Syracuse University.


• Informal advisor on Regional Economic Planning to the Urban Development Directorate, Planning Department, Government of East Pakistan (Bangladesh).

CONSULTING EXPERIENCE

• Provided expert testimony and case strategy support to international energy supplier in area of market operations and market manipulation before the US 9th Circuit in California (2008 – Present)

• Provided expert testimony to major international independent power producer in arbitration on cost responsibility for station power (2009 – Present)

• In cooperation with Merrill Energy, provide expert advice on implementation of legislation to recover capital cost of transmission investment in Peru.

• Direct and provide consulting advice to the Federal Electricity & Water Authority in the United Arab Emirates on corporate reorganization. (2007-Present)

• Provide expert testimony to major US independent power producer in arbitration with steam host. (2007 – 2009)

• Direct and provide expert services and consulting advice to Electricite du Liban on revenue recovery through development of AMI systems. (2006 – Present)

• Direct and provide consulting services to Electricite du Liban on restructuring of distribution services. (2006 – Present)

• Provide expert analytic assistance to Private Equity Fund on purchase of generation assets within the United States (2006- 2007).

• Member, Board of Directors, NeuCo Corporation.

• Direct and provide consulting services to Abu Dhabi Water and Electricity Authority on distribution system performance. (2003–2005)

• Direct and provide expert testimony on the development of the MidWest Independent System Operator. (2002–Present)

• Direct and provide expert testimony on long-term contract market in California. (2002–Present)

• Direct and provide expert testimony in purchase, contracting and regulatory approval of Midwestern transmission system. (2002–2003)

• Direct and provide expert testimony in 9-billion dollar California Electric refund case (2001–Present)

• Direct and provide expert testimony and consulting to major U.S. market and generator in the redesign of the California electricity market. (2002–Present)

• Member of the Blue Ribbon Task Force on design of electricity auctions of the California Power Exchange with Alfred Kahn, Peter Cramton and Robert Porter. (2000–2001)

• Member, Board of Directors of Dynamic Knowledge Corporation, Glasgow, Scotland. (2001–Present)

• Consultant to more than 20 power development companies for evaluation of locational value of new generation and transmission. (1999–Present)

• Consultant to and member of Technology Advisory Board, Excelergy Corporation, development of utility billing and system auction software. (1999–Present)

• Consultant to a Midwest utility for development of transmission congestion pricing structure. (1999–2001)

• Consultant to transmission asset development team of major U.S. corporation. (1999–2000)


• Consultant to major U.S. paper manufacturer for federal regulatory change required to interconnect a new co-generation facility. (1998–2000)
• Consultant to major Midwest utility in the development of an independent transmission company and the required tariffs. (1998–2002)


• Consultant to the Department of the Attorney General, State of Rhode Island and Providence Plantation for electric utility industry restructuring. (1996–1997)


• Consultant to ABB/Systems Control on transmission pricing and power systems operations. (1994–1997)

• Consultant to a major western utility for the development of transmission pricing strategies. (1994–1996)


• Consultant on the background to electric industry restructuring to Central Vermont Public Service. (1995)

• Development of real-time pricing rate response experiments for NYSERDA, EPRI and ESSERCo in ConEd and NYSEG service territories: Response to real-time pricing. (1989–1994)

• Development of marginal, cost-based, transmission system pricing system for the National Grid Company (NGC) of the United Kingdom. (1991–1993)

• Development of purchase and transmission strategy for major U.S. independent power producer. (1990)


• Variable energy cost/spot pricing studies under contract to Integrated Communications Systems of Atlanta. Utilities included Mid-South and Pacific Gas and Electric, Southern California Edison, Central and South West. (1984-1987)

• Metcalf & Eddy Engineering, analysis of economic benefits of cogeneration/district heating for Columbia Point housing, Boston Redevelopment Authority. (1984–1985)

• Value of reliability study for Public Service of New Mexico. (1984)

• With East-West Center, Honolulu, Hawaii, study of electric futures of northeast Asia, Japan, Korea and Taiwan. (1983–1984)


• Petroleum pricing study, Philippines for IBRD. (1983–1984)

• Lignite pricing for electric power generation, Thailand. For IBRD (1982–1983)

• Independent, review of electric power futures for combustion engineering. (1982)


• Urban energy impact statement for HUD. (1979–1980)

• Consultant, Urban Systems Research and Engineering. Projects included: Analysis of Boston wastewater management plan for C.E.Q.; definition of ‘modal’ urban areas for environmental impact analysis using the EPA developed SPACE/SEAS model; Interceptor project to evaluate the impact of EPA interceptor grants program or land use patterns in suburban and rural areas of EPA Regions 2, 4, 6; Rural growth project analyzing regional development in non-metropolitan multi-county areas in the United States. (1971–1977)

• Urban systems research and engineering analysis of Boston wastewater management plan for C.E.Q. (1977)

• Bangladesh energy study for Asian Development Bank and UNDP. (1975–1976)

• Urban systems research and engineering, definition of model urban areas for environmental impact analysis using the EPA developed SPACE/SEAS model. (1975–1976)
• Land use and environmental quality modeling and case study analysis of land use impacts on water and air quality. Case studies focused on the Mill River basin in the New Haven SMSA. (1974–1975)


• Lake Chad polder development study of agricultural development with low-lift irrigation pumping in the area immediately surrounding Lake Chad. (1974)

• Urban systems research and engineering, interceptor sewer project to evaluate the impact of EPA interceptor grants program on land use patterns in suburban and rural areas of EPA Regions, 2,4,6. (1974)


FIELDS OF EXPERTISE

• Energy economics / energy pricing

• Power systems operations and planning

• Asset valuation: Generation, Transmission and Generation

• Water and wastewater management

• Corporate strategic planning and analysis

• Corporate reorganization and management

PROFESSIONAL AFFILIATIONS

• Institute of Electrical and Electronic Engineers

• American Waterworks Association

• International Association of Energy Economists

• Energy Bar Association
PUBLICATIONS

Books, Book Chapters, and Monographs


Articles and Reviews


Technical Reports


Working Papers and Discussion Papers


“Economics and Integration of Photovoltaic System into the Utility Grid.” To Senate Committee Staff on Science and Technology, September 1981.


**REGULATORY COMMENT AND TESTIMONY**

“Economics and Integration of Photovoltaic System into the Utility Grid,” to Senate Committee Staff on Science and Technology, September 1981.

Expert Witness, St. Peter, MN vs. SMMPA, Utility Planning and Forecasting, 1986.


Testimony before the California Public Utility Commission en banc hearings on industry restructuring, September, 1994 sponsored by Enron Capital and Trade Resources.

Testimony before the Massachusetts Public Utility Commission hearings on industry restructuring, April, 1995 sponsored by Enron Capital and Trade Resources.


Testimony before the Commonwealth of Massachusetts, Department of Public Utilities in Panel Format on The Independent System Operator / NEPOOL / FERC Order No. 888 and on the Power Exchange.


Testimony before the State of Maryland Public Service Commission on Restructuring, August 1997.


Testimony before the Alberta Energy and Utilities Board in regards to ESBI Alberta Ltd.’s General Rate Application, Phase II, 1999/2000, on transmission tariff design and cost allocation mechanisms.


Testimony before the Federal Energy Regulatory Commission on behalf of Powerex Corporation and the Transaction Finality Group on Ripple Effects of proposed Pacific Northwest refunds, Hydro operations in the Pacific Northwest and proposed price mitigation in the Pacific Northwest, Docket Nos. EL01-10-000; EL01-10-001, August 28, 2001.

Testimony before the Federal Energy Regulatory Commission on behalf of Powerex Corporation and the Transaction Finality Group on the need for price mitigation in the Pacific Northwest, Docket Nos. EL01-10-000; EL01-10-001, October 29, 2001.


Testimony before the Federal Energy Regulatory Commission on behalf of Dynegy Corporation on Long-Term Contracts in California; Docket Nos. EL02-6—000; EL02-62-000, October 17, 2002, November 14, 2002.

Testimony before Arbiter in Portland Oregon on behalf of Powerex against Alcan on the termination of a supply contract. November, 2002


Testimony before the Federal Energy Regulatory Commission on behalf of Cinergy Corporation on delay of Day 2 of implementation and support of the general rules of the Midwest Independent System Operator, Docket No. EL03-35, January 10, 2003

Testimony before the Federal Energy Regulatory Commission on behalf or Portland General Electric regarding Circular Schedules or Death Star Transactions, Docket Nos. EL02-114-000 and EL-02-115-001, February 24, 2003.


Submitted in Response to Formal, Non-Public Investigation
Under 18 C.F.R. § 1b.5
Subject to 18 C.F.R. §§ 1b.9 and 1b.20

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Up-To Congestion Transactions ) Docket No. IN10-5-000

AFFIDAVIT

RICHARD D. TABORS, being duly sworn, deposes and states: that he prepared the Affidavit and Appendices of Richard D. Tabors and that the statements contained therein and the Appendices attached thereto are true and correct to the best of his knowledge and belief.

[Signature]

Richard D. Tabors

Subscribed and sworn to before me
This 31 day of October, 2011

[Signature]
Notary Public

My Commission Expires:
EXHIBIT M
UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Up-to Congestion Transactions )
Docket No. IN10-5-000

AFFIDAVIT OF RICHARD G. WALLACE

1. I have been retained by the law firm of Drinker Biddle & Reath LLP to evaluate the trading activity of Dr. Houlian (Alan) Chen ("Dr. Chen") on behalf of Powhatan Energy Fund LLC ("Powhatan") in the PJM Interconnection, LLC ("PJM") and to analyze whether this trading would be considered illegal wash trading or manipulative trading under the anti-manipulation standards of Section 10(b) of the Security Exchange Act of 1934 ("Exchange Act"), and Rule 10b-5 thereunder. I conclude that under Section 10(b) and Rule 10b-5, Dr. Chen’s trades would not be considered illegal wash trades or manipulative trades.

2. I have familiarized myself with the details of this investigation through conversations with Dr. Chen and Kevin Gates, and by reviewing various materials, including the deposition transcripts and related exhibits of Kevin Gates’ depositions, dated September 23, 2010 and September 7, 2011, the Written Submission to the Staff of the Federal Energy Regulatory Commission ("FERC") on behalf of Dr. Chen, dated December 13, 2010, Dr. Craig Pirrong's Affidavit, dated December 8, 2010, various FERC decisions and rule-making releases dealing with Up-to-Congestion Transactions, transmission loss credits, and manipulation standards, as well as publicly-available materials regarding the PJM market.

Background and Qualifications

3. I am a partner at the law firm of Foley & Lardner LLP ("Foley"), resident in the Washington, D.C. office, where I am a member of the Securities Enforcement & Litigation and Securities, Commodities & Exchange Regulation Practices.

4. I have more than 18 years of experience with the National Association of Securities Dealers ("NASD"), now known as the Financial Industry Regulatory Authority ("FINRA"), and the United States Securities and Exchange Commission ("SEC"), and have extensive knowledge and experience leading securities enforcement investigations and litigation, while also advising broker-dealers on regulatory issues. While at Foley, I have represented high-frequency trading firms in connection with investigations by FINRA and the New York Stock Exchange ("NYSE"). I have an in-depth understanding of market manipulation and fraud in the securities markets through my work at Foley, FINRA and the SEC, as described below.

5. Prior to joining Foley, I was Vice President and Chief Counsel in FINRA’s Market Regulation Department (2001-2008). I was responsible for the Department’s Legal Section and its role in all formal actions taken by the Department. I supervised approximately two dozen attorneys in the Department’s Legal Section along with the Department’s two Special Investigative Units. The Legal Section handled approximately 300 formal and 200 informal
disciplinary actions per year. I oversaw the filing of complaints with FINRA's Office of Hearing Officers and the Department's litigation of those matters.

6. FINRA is a registered national securities association and thus a self-regulatory organization ("SRO"). Registered securities exchanges, such as the NYSE, Nasdaq OMX ("Nasdaq"), and other registered exchanges (the "exchanges"), are also SROs. SROs promulgate and enforce a variety of rules, including rules requiring their members to observe "high standards of commercial honor and just and equitable principles of trade," such as FINRA's Rule 2010, and they prohibit fraud and manipulation in the securities industry.

7. The Legal Section participated in gathering and analyzing information in FINRA investigations, examinations, and sweeps. I oversaw disciplinary actions involving, among other things, fraud and market manipulation, including spoofing, layering, and wash trading. One of my responsibilities was to determine if the facts established the necessary elements of a violation of the law, regulation, or rule. The Market Regulation Department was responsible for surveillance of the Nasdaq and the over-the-counter ("OTC") equities markets, along with the TRACE and municipal securities fixed income markets.

8. Some of the significant cases brought by the Market Regulation Department during my tenure as Vice President and Chief Counsel included many cases that involved allegations of market manipulation and fraud, such as:

- Debt markup cases against seven firms (2004 and 2005) – Settlements imposing fines totaling $26,750,000.
- Peter Kellogg (October 2004) – After a hearing, an NASD Hearing Panel dismissed charges of manipulation against Mr. Kellogg for executing matched trades between accounts he controlled for the purpose of realizing tax benefits on the trades.
- Knight Securities L.P. (December 2004) – A joint settlement with the SEC providing for $79 million in fines, restitution, and interest for the fraudulent handling of institutional orders.
- David Lazarus (July 2005) – A trader entered into a settlement and consented to fines and a suspension for manipulating the market by engaging in transactions to improve the national best bid and offer ("NBBO"), to enable him to trade those securities at more favorable prices with firms offering automated execution at the NBBO.
- Terrance Yoshikawa (August 2005) – A trader was found to have engaged in manipulation through the use of matched trades which manipulated the prices of several stocks.
- Instinet LLC and INET ATS (October 2005) – A joint settlement in which the firms agreed to pay $1.475 million in fines to settle FINRA charges of publishing inaccurate reports on order execution quality.
• Phillip Melnick (March 2006) — A Hearing Panel entered a default decision finding that a trader had engaged in market manipulation by executing one share transactions designed to improve the NBBO to enable him to trade those securities in larger quantities at more favorable prices.

• 19 trade volume advertising cases (January 2008) — 19 settlements for a total of $2.8 million for advertising inaccurate trade volume as to equity securities.

9. While at FINRA, I also worked with FINRA’s Market Regulation Committee on the adoption and revision of FINRA rules dealing with customer protection, market making, and reporting.

10. Prior to joining FINRA, I served as an attorney and later as a branch chief with the SEC’s Division of Enforcement from 1990 to 1996. As a branch chief, I supervised six attorneys. While at the SEC, I worked on investigations and litigation involving complex accounting issues, insider trading, issuer fraud, and broker-dealer fraud. I handled investigations and litigation for a variety of high-profile cases, including SEC v. Eddie Antar (the “Crazy Eddie” insider trading case), In re Caterpillar, Inc. (financial disclosure), In re BT Securities, Inc. (fraud in the sale of securities based derivatives), and SEC v. Pitt, et. al. (C.D. Cal. 1986) (stock manipulation).

11. I am a frequent speaker at conferences sponsored by ALI-ABA, FINRA, the SEC, the National Society of Compliance Professionals, and the Security Traders Association (“STA”). For the last four years, I have been a member of the STA’s Compliance Committee.


13. From 1984 to 1985, I served as a law clerk to the Honorable Samuel P. King, Chief Judge, United States District Court of the District of Hawaii. I earned my law degree from Berkeley Law, University of California (J.D., 1984), where I was executive editor of the California Law Review. I am a graduate of University of California, Berkeley (A.B., with honors, 1981). I am admitted to practice in the District of Columbia and California.

Introduction

14. I understand that the Staff of the Division of Investigations of FERC is currently investigating the up-to-congestion trades on the PJM effectuated by Dr. Chen for Powhatan which were motivated in part by the transmission loss credits (“TLCs”) available for such trades. The core question in this inquiry is the propriety of traders engaging in transactions motivated in
part by receipt of the TLCs. I understand that the Staff of FERC is considering whether such trades constitute unlawful market manipulation.

15. Because the concept of market manipulation in FERC rules is based on Section 10(b) of the Exchange Act and Rule 10b-5 thereunder, FERC should note that trading for the purpose of collecting a rebate is considered a lawful and recognized practice in the securities markets. Further, the SEC has allowed certain trading strategies in the options markets that rely on offsetting riskless trades that create volume without adding liquidity to the market, and are effectuated solely to earn certain dividends. When FERC adopted rules prohibiting market manipulation, it explained that these rules were “patterned after the [SEC’s] Rule 10b-5” and are “intended to be interpreted consistent with analogous SEC precedent that is appropriate under the circumstances.” *Prohibition of Energy Mkt. Manipulation*, 114 F.E.R.C. ¶ 61,047 at P 2, 52-53 (Jan. 19, 2006) (“Order No. 670”). As discussed in more detail below, just as PJM offered TLCs for various economic reasons, securities exchanges have offered certain forms of rebates to market participants, and options exchanges have approved fee caps whereby participants can profit by earning dividends through a strategy based on off-setting trades.

**Rebates for Reporting Trade Data in the Equities Markets**

16. There have historically been two primary types of rebates in the securities markets: initially there were rebates for reporting trading on an exchange or other market, and subsequently there have been rebates for providing liquidity to markets operating pursuant to the maker-taker fee model. Rebates for reporting trade data are discussed first, below.

17. The concept of fees for trade data came about from the 1975 amendment to the Exchange Act, which established the requirement of a national market system (“NMS”). Key components of the NMS were the systems for collecting and distributing consolidated market data. Consolidated market data includes both (1) pre-trade transparency — real-time information on the best-priced quotations at which trades may be executed in the future (“consolidated quotation data”), and (2) post-trade transparency — real-time reports of trades as they are executed (“consolidated trade data”). As a result of these requirements, the public has ready access to a comprehensive and reliable source of information for the prices and volume of any NMS stock (generally those stocks listed on a national securities exchange).

18. Consolidated market data is collected and distributed pursuant to a variety of Exchange Act rules and joint-industry plans. With respect to post-trade transparency, the exchanges and FINRA are required to file a transaction reporting plan regarding transactions in listed equity securities. These SROs are also required to act jointly pursuant to national market system plans to disseminate consolidated information, including an NBBO on quotations for and transactions in NMS stocks. Consolidated information for each NMS stock must be disseminated through a single plan processor.

19. To comply with these requirements, the exchanges and FINRA participate in joint-industry plans (“Plans”). Pursuant to the Plans, three separate networks distribute consolidated market data for NMS stocks: (1) Network A for securities with their primary listing on the NYSE; (2) Network B for securities with their primary listing on exchanges other than the NYSE or Nasdaq; and (3) Network C for securities with their primary listing on Nasdaq. The
three Networks establish fees for the data, which must be filed for SEC approval. The three networks collect the applicable fees from Reuters, Bloomberg and other data vendors and, after deduction of network expenses, allocate the remaining revenues to the SROs.

20. Market data revenues have amounted to hundreds of millions of dollars annually and have represented a significant portion of the exchanges' total revenues. For example, in 2004, Networks A, B, and C generated net income of approximately $155 million, $100 million, and $138 million, respectively, for a total of approximately $394 million. See Security and Exchange Commission, Regulation NMS Adopting Release, 70 Fed. Reg. 37,496, 37,558 (June 9, 2005) (codified at 17 C.F.R. Parts 200, 201, 230, 240, 242, 249, and 270) ("Reg. NMS Adopting Release"). This constituted about 10-15 percent of total revenues reported by the largest exchanges in 2004 and more for some of the smaller exchanges. See Cecilia Caglio and Stewart Mayhew, Equity Trading and the Allocation of Mkt. Data Revenue, at 1 (May 27, 2009) ("Caglio & Mayhew").

21. Prior to 2007, the revenues were allocated in a manner that rewarded SROs for reporting the maximum number of trades, regardless of the number of shares traded. For securities in Networks A and B, the calculation was based on each SRO's share of reported trades. For Nasdaq securities, an SRO's revenues were based on the average of its reported trades and share volume. As an example, if an SRO reported 10 percent of the trades for NYSE-listed stocks, it got 10 percent of the market data revenue distributed for NYSE-listed stocks. That allocation was the same whether the SRO's average print was for 100 shares or 10,000 shares.

22. In order to maximize earnings from these rebates, in the late 1990s exchanges began to introduce programs to share data revenue with the specialists or member firms that generated the order flow. Between 1997 and 1999, revenue sharing or rebate programs were initiated by the Chicago Stock Exchange ("CHX"), the Cincinnati Stock Exchange ("CSE"), the Boston Stock Exchange ("BSE"), and Nasdaq. Members of the exchanges who exceeded certain levels of reported trading activity in exchange-listed securities were awarded a certain percent of the market data revenue received from the Plan that was attributable to the members' trades ("tape rebates").

23. During 2000 and 2001, electronic communications networks ("ECNs") also began to provide tape rebates, especially on trades of exchange traded funds. As rebates grew, trading became cheaper, which led to increased volume.

24. These tape rebate programs were initiated with the SEC’s approval and had a clear influence on trading behavior. As noted by the Caglio and Mayhew study for the SEC’s Office of Economic Analysis:

It has long been understood by industry participants and regulators that allocation formulas influence how trades are executed and reported. . . . [This paper] confirms the incentives created by allocation formulas are large enough to have a significant impact on average trade size [and] that revenue-sharing/rebate programs are a key mechanism used by the exchanges to align the incentives of order-flow providers with the exchange.
The advent of tape rebates led to many traders engaging in a practice known as “tape shredding” or “trade shredding” — a term used to describe the practice of intentionally splitting orders for securities into multiple smaller orders (e.g., splitting a 1,000 share order into ten 100-share orders) for the primary purpose of maximizing payments of rebates.

This practice caused the SEC to become concerned that market participants were increasingly engaging in tape shredding as a means of increasing their share of tape rebates. The SEC was worried that tape shredding might occur at the expense of best execution of customer orders. The SEC dealt with the situation in two ways. One, it sought to disincentivize this behavior by changing, through rule-making, the allocation formula determining how participants in the Plans were allocated rebates. Two, it reached out to the SROs and asked them to adopt explicit rules prohibiting the practice of tape shredding.

The SEC altered the formula which allocated market data fees to SROs when it adopted Rules 601 – 603 of Regulation NMS (“Reg. NMS”) and revised the joint industry plans in June 2005. This revised formula, which went into effect in 2007, eliminated the print disparity and encouraged aggressive quoting by rewarding exchanges for automated and accessible limit orders. Pursuant to the new formula, half the tape revenues were allocated based on an SRO’s quoting share, and the other half were distributed according to an SRO’s share of the trading. An SRO’s trading share was computed in a way that did not assign equal value to small and large trades.

While the SEC and SROs acknowledged that tape shredding was disruptive, they did not state that it was illegal or in violation of any securities laws or rules, including the SRO rules prohibiting acts that are contrary to high standards of commercial honor and just and equitable principles of trade. In particular, the SEC stated in the Reg. NMS Adopting Release:

[T]he current [joint industry] Plan formulas are seriously flawed by an excessive focus on the number of trades, no matter how small the size, reported by an SRO. They thereby create an incentive for distortive behavior, such as wash sales and trade shredding, and fail to reflect an SRO’s contribution to the best displayed quotations in NMS stocks. The [newly] adopted formula corrects these flaws.


In addition to revising the allocation formula, in early 2005 the SEC asked the SROs to pass rules prohibiting tape shredding, and in between August 2005 and May 2006, six exchanges and the NASD adopted rules prohibiting tape shredding.¹

¹ See, e.g., Caglio & Mayhew at 17, and NASD Notice to Members 06-19, SEC Approves New Rule 3380, Order Entry & Execution Practices (Apr. 2006).
30. While the SEC and the SROs clearly recognized that the tape rebates were causing market participants to engage in trading behavior that was impacting the markets and the allocation of tape revenues, and potentially harming customers, they did not seek to punish these market participants for tape shredding in response to rebates which were put in place with the approval of the SEC. Rather, they sought to change the rebate structure to discourage participants from engaging in tape shredding and to incorporate explicit prohibitions against such behavior into SRO rules.

Liquidity Rebates, High Frequency Trading and Trading Strategies Based on Rebates

31. A maker-taker fee model has been adopted by exchanges to subsidize the provision of liquidity on their exchanges. Pursuant to this model, exchanges pay a fee to those who post non-marketable limit orders to buy or sell securities (and therefore “make” liquidity), and charge a fee to those who submit active market orders or marketable limit orders that “take” liquidity. Firms can add liquidity with non-marketable resting limit orders to either buy or sell a security.

32. These rebates for making liquidity have been a major facilitator for the emergence of algorithmic high frequency trading (“HFT”). While there is no strict definition of HFT, it typically refers to professional proprietary traders that engage in thousands and sometimes millions or more trades a day. They establish positions for very short time periods, submit numerous orders that are cancelled shortly after submission, and typically do not carry any positions over-night. HFT has been described as “a very low-margin, low-risk strategy. Traders earn less than a penny a share and rarely hold overnight positions. Profits are measured in hundredths of a cent, or ‘mils,’ to use the industry parlance. [According to a former head of quantitative trading at Goldman Sachs], high frequency traders typically earn about 10 mils, or 0.1 cent, a share trading U.S. equities. One of the attractions of the strategy is its consistency. High frequency traders rarely have losing days.” See Michael Peltz, Inside the Machine: A Journey into the World of High Frequency Trading, Institutional Investor, May 2010, at 115.

33. The SEC published a Concept Release on Equity Market Structure in January 2010 which focused, in large part, on the changes to the market caused by the emergence of HFT. See Securities and Exchange Commission, Concept Release on Equity Mkt. Structure, 75 Fed. Reg. 3594 (Jan. 21, 2010) (codified at 17 C.F.R. Part 242) (“SEC Concept Release”). It noted that HFT firms account for 50 percent or more of the total volume in the U.S. equities markets, and that “HFT is a dominant component of the current market structure and is likely to affect nearly all aspects of its performance.” Id. at 3606.

34. The SEC also acknowledged that liquidity rebates have played a significant role in the creation and strategies of HFT firms:

Highly automated exchange systems and liquidity rebates have helped establish a business model for a new type of professional liquidity provider that is distinct from the more traditional exchange specialist and [OTC] market maker. In particular, proprietary trading firms and the proprietary trading desks of multi-service broker-dealers now take advantage of low-latency systems and liquidity rebates by submitting large numbers of
non-marketable orders (often cancelling a very high percentage of them), which provide liquidity to the market electronically.

_Id._ at 3599.

35. One of the significant strategies used by HFT firms is passive market making. Passive market makers submit non-marketable bids and offers that rest on the exchange order books and provide liquidity at specified prices. Sometimes the passive market makers take liquidity (i.e., enter a bid or offer that is immediately executed at market price), but as explained by the SEC in its Concept Release, “[The HFT’s] primary sources of profits are from earning the spread by buying at the bid and selling at the offer and capturing any liquidity rebates offered by trading centers to liquidity-supplying orders.” _Id._ at 3707 (emphasis added).

36. In fact, the profit that can accrue from capturing liquidity rebates can often be greater than any profits from earning the spread. Several factors contribute to this situation. First, there is never a guarantee that a trader will be able to capture the spread before the market moves adversely to his position. Second, the mean bid-ask spread for most actively traded stocks is about $0.02.\(^2\) Third, liquidity rebates at the NYSE and BATS Exchange range from $0.0017 to $0.0031\(^3\) and a trader can trade in a manner guaranteeing that he will earn the liquidity rebate for both buying and selling securities. Thus, the guaranteed rebate for buying and selling through orders that provide liquidity can be as high as $0.0062. While the mean spread at $0.02 is somewhat larger than two rebates, the mean spread is not guaranteed.

37. The current fee for taking or removing liquidity on Nasdaq is $0.0030 per share. Nasdaq's highest rebate for adding liquidity, after meeting a certain threshold, is $0.0029 per share.

38. The fact that rebates are an important aspect of many HFT firms’ trading strategies and that some firms conduct some trades solely for the rebates has been acknowledged by the SEC. In its Concept Release the SEC stated: “One important aspect of passive market making is the liquidity rebates offered by many exchanges and ECNs...[t]he Commission requests comment on the volume of high frequency trading geared toward earning liquidity rebates and on the benefits or drawbacks of such trading.” _Id._ at 3608.

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Moreover, the SEC asked, "For example, are there risk-free trading strategies driven solely by the ability to recoup a rebate that offer little or no utility to the marketplace?" Id. The SEC did not suggest or imply that such trading is in any way fraudulent or illegal. In fact, industry commentators responding to the SEC's questions regarding HFT and liquidity rebates have affirmed that there are indeed HFT firms that rely solely on rebates to be profitable. 4

Like the SEC, the International Organization of Securities Commissions ("IOSCO") released a paper last year in which it reviewed HFT and concluded that it is in part driven by the rebates from the maker-taker model: "[M]aker/taker structures can lead to trading strategies aimed at optimizing rebates received for providing liquidity versus fees paid for taking it, rather than focusing on the level of the given instrument's price." IOSCO Consultation Report, Regulatory Issues Raised by the Impact of Technological Changes on Market Integrity and Efficiency, at 18 (July 2011).

Significantly, when HFT firms buy and sell a security at the same price in close time proximity and earn two rebates, the traders are on a net basis adding no real liquidity to the market.

As the SEC and Commodity Futures Trading Commission ("CFTC") noted in their report on the so-called “flash crash” of May 6, 2010, where the securities markets crashed and then rebounded in a matter of minutes, "[u]ntil recently, the fluctuations in the bid ask spread regulated the demand and supply of liquidity in financial markets. Now, it appears that in a world of HFT, bid ask spreads no longer provide sufficient incentives to offer liquidity in periods of high volatility." Joint CFTC-SEC Advisory Committee on Emerging Regulatory Issues, Recommendations Regarding Regulatory Responses to the Market Events of May 6, 2010, p. 9 (Feb. 2011). Further, "especially in times of significant volatility, high trading volume is not necessarily a reliable indicator of market liquidity." Joint CFTC-SEC Advisory Committee on Emerging Regulatory Issues, Findings Regarding the Market Events of May 6, 2010, at 3 (Sept. 2010).

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4 See, e.g., Correspondence from M. Nanang (Tradeworx, Inc.) to E. Murphy (SEC) dated April 21, 2010 attaching Tradeworx, Inc. Pub. Commentary On SEC Mkt. Structure Concept Release at 8 (Apr. 21, 2010) (“Tradeworx Presentation”) (explaining, “For stocks that are extremely liquid, some market-makers may be willing to buy and sell at the same price; assuming they are able to hold positions for extremely short periods, there is minimal risk of adverse price movements. Such market-makers are said to be operating rebate-capture strategies because their only compensation is the rebate offered by exchanges for posting orders.”) (emphasis added); see also Sal L. Arnuk and Joseph Saluzzi, Toxic Equity Trading Order Flow on Wall Street. The Real Force Behind the Explosion in Volume and Volatility, at 2 (Dec. 2008), available at http://www.themistrading.com/article_files/0000/0348/Toxic_Equity_Trading_on_Wall_Street_12-17-08.pdf (explaining that the provision of exchange liquidity rebates has "led to trading strategies solely designed to obtain the liquidity rebate.").
43. In sum, the history of trading for rebates and the current HFT firms that rely on rebate trading clearly show that this is a lawful practice in the securities markets and not a violation of Section 10(b) of the Exchange Act, SEC Rule 10b-5, or the SRO's rules requiring “high standards of commercial honor and just and equitable principles of trade”. The fact that Dr. Chen analogously sought to capitalize on the TLCs and make those a part of his over-all trading strategy would similarly not be considered illegal or manipulative under Section 10(b) or Rule 10b-5.

**Dividend Trade Strategies in the Equities and Options Markets**

44. Another form of trading in the equities and options markets relevant to this analysis is a form of trading referred to as “ex-dividend arbitrage” or “dividend play trades.” Jia Hao, Avner Kalay, and Stewart Mayhew, *Ex-dividend Arbitrage in Options Markets*, The Society for Financial Studies (May 21, 2009) (“Hao, Kalay and Mayhew”) [Dr. Mayhew was Deputy Chief Economist of the SEC at the time the paper was published]. Pursuant to this strategy, registered market makers in the options markets attempt to capture corporate dividend payments when individual options traders leave deep-in-the-money call options unexercised on the day prior to a stock’s ex-dividend date (the day before which a stock must be owned in order to earn a dividend). This strategy is not prohibited by the SEC.

45. To capture as much of the dividend as possible, two market makers trade deep-in-the-money call options back and forth with each other on the day prior to the ex-dividend date. “Because the two trades are exactly offsetting and executed at the same price, the initial position has zero risk and requires no capital.” Hao, Kalay and Mayhew at 272. “Because the trades are exactly offsetting, dividend play trades create trading volume without adding any liquidity to the market.” Id. at 282. The market makers then exercise all their long options positions so that they are left with a long stock position. In most cases, their corresponding short options positions will be assigned and the market makers will be required to deliver most of their long stocks.

46. Key to this strategy is the fact that the market makers will not be required to deliver all of their long stocks, because in some instances investors who are long the call options for the stock are not savvy enough to know that they should exercise their options in order to earn the dividends, or do not have enough money to buy the stock. This works to the benefit of the market makers, who rely on the fact that the Options Clearing Corporation (“OCC”) randomly settles transactions when options are exercised, and if certain call options are unexercised there is a corresponding likelihood that investors who are short the calls will not be obligated to deliver the stock. Because the market makers hold such a large number of short calls, they manage to collect the dividend payment on the corresponding long stock positions. *See* International Securities Exchange (“ISE”), *Dividend Trade Strategies in the U.S. Options Industry White Paper*, (Mar. 2010).

47. Because the market makers are left with a long stock position that is fully hedged by their short deep-in-the-money calls, this strategy has little risk in a low volatility environment. This practice is so prevalent among market makers that it has led to a marked increase in options trading volume in the options industry. *See id.* at 8-9; Hao, Kalay and Mayhew at 272, 282-83. As explained by the ISE, “[a]lthough the U.S. equity options industry reported 3% growth in
2009 . . . this growth is solely attributable to an objectionable trading strategy called a 'dividend trade.'” ISE, *Dividend Trade Strategies* at p. 2. According to ISE, “this strategy distort[s] market share with millions of contracts [and] also takes advantage of . . . individual options traders.” *Id.*

48. Despite these issues, the SEC has never forbidden these strategies and has no rules prohibiting these trades based solely on earning dividends. *Id.* at 10.

49. In fact, the SEC has approved the fee caps effectuated by the exchanges, without which these strategies would not be profitable. These fee caps encourage firms to enter into the simultaneous long and short positions necessary for this strategy. In particular, several options exchanges have set caps for market makers engaging in dividend capture strategies and have explicitly stated in adopting such caps that they are meant to facilitate these transactions. See, e.g., Hao, Kalay and Mayhew at 271, 281, and n.6 (noting the fee caps and describing dividend arbitrage as a trading scheme that “inflates reported volume and distorts its traditional relations to liquidity”). Fee structures encouraging dividend play trading have been adopted, in each case with SEC approval, by the Pacific Exchange, the Philadelphia Stock Exchange, the American Stock Exchange, and the Chicago Board of Option Exchange. *Id.* at 281.

50. As noted by Hao, Kalay and Mayhew, “[t]he trading scheme inflates reported volume and distorts its traditional relations to liquidity. . . . [D]ividend play activity increases trading volume without increasing liquidity. Exchanges executing a large amount of dividend play trading volume might convey an incorrect impression to market participants about the level of liquidity available on that exchange.” *Id.* at 271, 295. Despite the impact of the trading on reported volume, the trades, which can be executed with “zero risk and . . . no capital,” are approved by the SEC. *Id.* at 272.

**Manipulation and Wash Trading in the Securities Markets**

51. Courts considering manipulative behavior in the securities markets have identified certain hallmarks of manipulation which can be indicative of the existence of manipulative conduct. These include:

- trades that are done through fictitious names or nominees in order to hide their true ownership;
- an uneconomical trade is executed in one market or security to affect a price in another market or security;
- evidence that the trader knew or was reckless in not knowing that his actions might be harmful to the market or outright illegal;
- dissemination of false literature and/or false information about the bids, offers, price, or volume of trading of a security;
- attempts to dominate or control the market;
• the collapse of the market following the conclusion of the alleged manipulation;
• matched orders; and
• wash sales.

52. In the present case, none of the aforementioned hallmarks of manipulation is present. I understand the following facts to be true. Dr. Chen did not try to hide the trades or his trading strategies, and the trades did not adversely affect the price of any other market transactions. Further, there is no evidence that Dr. Chen or Powhatan knew or could have known that the trades were in any way harmful to the market or in any way illegal. The Up-to Congestion bids submitted by Dr. Chen did not lead to the dissemination of any false pricing or volume information. Nor did Dr. Chen attempt to dominate or control the market. The Up-to Congestion market did not collapse after these trades ended or suffer any adverse effects from these trades. Additionally, the Up-to Congestion Trades were not matched trades, because there was always a chance that one of the legs of the transactions would not be accepted.

53. Further, the trading at issue here was not wash trading, as that practice is understood in the securities markets. Prohibited wash trades are those transactions that involve nearly simultaneous purchase and sale of the same security for the same beneficial owner. Wash sales do not expose the trader to non-trivial market risk and, thus, have no legitimate economic foundation. They are effectuated with the intention of creating a false or misleading appearance of active trading in a particular security, usually to influence the price or volume of a security. Increased volume creates the appearance of demand and liquidity.

54. Wash traders do not profit from their wash trades—rather, they profit either through the subsequent change in the price of the security or through accruing some other, later benefit that is in some way tied in with the security. The “cost” of a wash trade to the trader is that he pays the transaction costs involved in making the trade.

55. In this case, my understanding about the facts surrounding the Up-to Congestion Transactions effectuated by Dr. Chen for Powhatan leads me to conclude, for several reasons, that they were not wash trades. One, they did not offset each other or reduce the risk of loss or gain to zero. When Dr. Chen entered bids for Up-to Congestion Transactions going to and from the same two locations, he incurred the risk that one of the transactions would not clear because the congestion could exceed the relevant cap. This exposed Powhatan to significant risk of loss and potential for gain. Further, the amount of the transmission loss credits was unknown at the time the bids were placed, and Powhatan ran the risk that the costs of the transaction would outweigh any potential credits.

56. Additionally, I understand that in many instances, Dr. Chen entered into Up-to Congestion Trades which did not have the maximum congestion limit, even though the chance of one leg getting rejected was greater when the congestion limit was set lower. This practice exposed Powhatan to increased risk of only one of the legs of the Up-to Congestion Transactions clearing – behavior that is contrary to trying to engage in wash transactions with no potential economic benefit.
57. Another important distinction is that Dr. Chen lacked the requisite scienter required to find an illegitimate wash trade. My understanding is that his trades were not effectuated for the purpose of creating any false or misleading impression of active trading or some other market activity, and there is no indication that he took any steps to hide his trading or continue it once he realized that questions were being raised about his trades. Further, the collection of TLCs was not the only purpose of his trades: he also hoped to profit from the transactions if one of the legs was rejected, as discussed above.

58. Dr. Chen effected the Up-to Congestion Transactions for a legitimate business purpose, and similar activity has been accepted as legitimate in the securities markets. An important case demonstrating this concept is one in which I was involved. In 2003, when I was the Vice President and Chief Counsel of the Market Regulation Department, NASD brought a case against Peter Kellogg for engaging in certain matched trades. See NASD Press Release, NASD Charges Peter Kellogg with Fraudulent Wash and Matched Trades (Nov. 5, 2003). NASD alleged that Mr. Kellogg had engaged in fraudulent wash and matched trades in August 2001 when he placed identical, simultaneous buy and sell orders between four accounts he controlled with the purpose of realizing non-taxed gains. There was no real change in the beneficial ownership of the securities at issue.

59. On August 6, 2004, the NASD announced that a Hearing Panel had dismissed NASD's complaint because the Hearing Panel found that "there was no evidence that Kellogg carried out the four transactions at issue with the intention to defraud, manipulate or deceive. Rather, the panel found that Kellogg conducted the transactions for legitimate business and tax purposes." See NASD Press Release, NASD Hearing Panel Dismisses Complaint Against Peter R. Kellogg (Aug. 6, 2004). FINRA does not make hearing panel decisions publicly available when charges are fully dismissed. However, NASD did release a redacted Order issued by a Hearing Panel that matches up with the Kellogg decision. See Dep’t of Mkt. Regulation v. Kellogg, No. CMS030257, Disciplinary Proceeding (Aug. 6, 2004) ("Hearing Panel Decision"), available at 2004 NASD Discip. LEXIS 64.

60. In its decision, the Hearing Panel explicitly rejected the arguments that (1) matched orders are per se illegal, regardless of whether they are part of a broader wash sale scheme, and therefore do not require independent proof of scienter and that (2) even in the absence of manipulative intent, wash sales and matched orders are deceptive and operate as a fraud on the market. The Hearing Panel stated that these theories were "not consistent with the provisions of the Exchange Act or the case law arising thereunder." Hearing Panel Decision, at 9.

61. The Hearing Panel found that the trades were legitimate because they were done for a legitimate business purpose and could not be prohibited wash trades without scienter. It stated that "[r]espondent’s trades were effected in good faith and did not come within the proscription [against wash trades] of § 9(a) [of the Exchange Act]. There were only four transactions in shares of an established company, and no evidence of any attempt or reason to manipulate the price of those shares, to induce anyone to trade in those shares, or to create the false or misleading appearance of market activity." Id. at 11-12.
62. Like Peter Kellogg, Dr. Chen engaged in transactions with a legitimate economic purpose, and without the intent of harming the market.

63. Wash sales that have a legitimate purpose do not violate the federal securities laws. This is the reasoned decision of the Kellogg Hearing Panel Decision. It is also the implied rationale in the SEC’s rule-making surrounding the tape revenue rebates, tape shredding and dividend trading discussed above.

64. Finally, the transactions effectuated by Dr. Chen for Powhatan are distinguishable from wash sales in the equities markets because the Up-to Congestion Trades did not have the same external effects caused by wash sales in the equities markets. Wash sales in the equities markets almost inescapably result in external effects. The primary cause of these externalities is the dissemination to the public of price and volume information about the wash sales that is misleading because it results from non-competitively priced trades. Wash sales in the equities markets give the misleading impression of trading volume and interest in a security, and market participants rely on the disseminated information and allocate their resources accordingly.

65. In contrast, I understand that the bids entered by Dr. Chen for Powhatan did not result in similar external effects. Powhatan’s increased trading volume did not adversely impact the day ahead or real-time market for electricity at the nodes involved. Further, these transactions did not deprive anyone of transmission loss credits to which they had any claim or right.

66. I therefore conclude that the transactions effectuated by Dr. Chen for Powhatan were neither manipulative nor wash trades as those terms are used or understood in the securities context.
UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Up-to Congestion Transactions ) Docket No. IN10-5-000

AFFIDAVIT

Richard G. Wallace, first being duly sworn on oath, deposes and says that the foregoing is his sworn affidavit in this proceeding and that the foregoing affidavit is true, correct, and complete to the best of his information, knowledge, and belief.

Richard G. Wallace

Subscribed and sworn to before me this 5th day of October, 2011.

Notary Public

My Commission Expires:

MY COMMISSION EXPIRES: July 14, 2013