

Building an Effective Trade Surveillance System:

A Framework-Based Approach using Guidance from Two Recent FERC White Papers

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EXECUTIVE SUMMARY

Two white papers published by the staff of the Federal Energy Regulatory Commission (FERC) in late 2016 discuss the need for jurisdictional companies to develop trade surveillance systems as a key component of developing a “culture of compliance” with respect to the Commission’s anti-manipulation rule.

In this paper, we summarize the FERC guidelines, then provide an example of a logical approach to building such systems using a framework that we have developed for analyzing manipulative behavior. Our recommended approach is consistent with the “effective practices” outlined in staff’s white papers and can be implemented to develop trading compliance procedures in line with those recommended by the FERC.

This approach is designed to be implemented in phases, focusing initially on easily identifiable behavior that poses the most enforcement risk. This allows a trading company to learn best practices in compliance and develop a broader system as time and resources will allow. Further, because our approach follows the cause-and-effect of manipulative acts and their resulting benefit to the actor, this approach is broadly applicable to other trade surveillance applications, such as for the Commodity Futures Trading Commission (CFTC).



I. INTRODUCTION

In November 2016, the FERC Office of Enforcement (OE) released two white papers summarizing its anti-manipulation enforcement efforts over the last decade (the Enforcement White Paper or EWP)¹ and articulating staff’s view of effective and ineffective trade compliance practices (the Compliance White Paper or CWP).² Together, the papers provide guidance as to the behavior staff sees as indicative of manipulation and suggests best practices for market participants seeking to develop effective trading compliance programs to detect and deter such behavior. Many of the tasks suggested anticipate that market participants will build and develop trade surveillance systems, monitoring trading data either on a forensic basis or in real-time.

Market participants may balk at the notion of putting in place trade surveillance for fear of cost, complexity, disruption of legitimate trading, and the possible self-reporting quandary presented if suspected manipulative behavior is found (EWP, pp. 36-37). However, the creation of an effective surveillance system need not be a financial albatross, nor interfere with normal trading operations. To the contrary, if approached as an evolutionary and incremental process, the development of trade surveillance can provide firms with a cost-effective means to reduce regulatory risk and increase profitability by broadening the universe of legitimate trades that can be placed.

In cooperation with internal and external counsel, we have used our experience in manipulation-related matters³ to help our clients build and implement the trade surveillance systems as described in the white papers. Our approach builds on many of the “effective practices” discussed in the CWP to assist clients in cost-effectively building surveillance systems tailored to their specific needs. This paper summarizes the practices identified by OE and describes the key fundamentals of our approach.

Section II provides a short summary of the white papers. Specifically, we show how the effective practices identified by OE coalesce into a simple set of flags and screens that can serve as the basis of a trade surveillance program. Section III describes our approach to trading compliance. In it we explain the logical framework we use to identify and understand manipulative behavior. We then illustrate how our approach is consistent with the effective practices identified by OE and describe an incremental approach for implementing a trade surveillance system.

II. SUMMARY OF THE RECENT FERC WHITE PAPERS

The recent FERC white papers offer substantive guidance for companies seeking to develop effective compliance programs. The EWP defines aspects of behavior that OE sees as manipulative and discusses some characteristics of manipulation that the agency has alleged in its various enforcement actions. These include “indicia of fraud,” which include conduct that serves an illicit purpose, is uneconomic, or is inconsistent with market fundamentals (EWP, pp. 10-15), and various types of market manipulation, including cross-market manipulation schemes, the gaming of market rules, and misrepresentations (EWP, pp. 16-32). Although not as clear-cut as market participants might like, these examples inform the types of behavior that the FERC perceives as manipulative and, to a lesser extent, the types of behavior it may view as legitimate.⁴

For example, the “indicia of fraud” identified by OE focus on behavior that is executed not based on its own stand-alone economics, but for an ulterior motive, such as to increase revenues derived indirectly through cross-market interactions or out-of-market payments. OE seems to recognize that behavior executed solely to serve a stand-alone, legitimate business purpose is lawful, including the use of legitimate hedging (EWP, p. 15, n. 51). However, Compliance should note OE’s currently-aggressive enforcement posture, as stated in its belief that “a manipulative purpose satisfies the *scienter* element [of the FERC’s anti-manipulation rule] even if combined with a legitimate purpose” (EWP, p. 9). We discuss the implications of this “per se” enforcement approach on compliance in Section III.

The CWP complements the EWP by emphasizing the importance of creating “(i) systems and protocols for monitoring, identifying and correcting possible violations, (ii) a management culture that encourages compliance among company personnel, and (iii) tools and training sufficient to enable employees to comply with Commission requirements” (CWP, pp. 2-3). Although staff does not mandate specific elements needed to comprise an effective compliance program, its recommendations pragmatically distill to:

- Devoting adequate resources and funding to hire compliance staff with diverse professional backgrounds, vet and train trading staff, and build an IT infrastructure capable of supporting effective trade surveillance (CWP, pp. 6-11);
- Building documentary processes to codify and inform personnel about permissible versus prohibited trading strategies and to review trader communications for potential misconduct (CWP, pp. 12-13, 17);
- Developing flags and screens for trade surveillance to detect the indicia of potentially problematic trading and report such concerns to Compliance (CWP, pp. 13-17); and
- Regularly auditing all compliance systems and processes to assure that they are working properly and identify the need for upgrades and improvements (CWP, p. 19).

Assuming that a firm has chosen to devote adequate resources to developing an effective compliance program, the CWP thus directs the need for documentary retention and review, the monitoring of trade data, and the auditing of the program over time.

A. DOCUMENTATION OF LEGITIMATE AND MANIPULATIVE TRADES

The white papers encourage compliance personnel to evaluate and record legitimate and prohibited trading strategies and review communications and other documents for evidence of potential misconduct, including illicit purposes (EWP, pp. 10-13). For example, OE notes “[o]ne way to discourage traders from using physical energy products to benefit financial positions is to require documentation of all trading strategies that involve trading related physical and financial products. This documentation should explain the rationale for the strategy (e.g., a hedge) and describe the circumstances under which the strategy might be used” (CWP, p. 13). Once a strategy is recorded and vetted by internal Compliance, future trading based on the strategy requires only that traders identify the strategy used for each trade employed, with deviations from the strategy allowed only with the permission of Compliance.

The vetting of a trading strategy requires that Compliance is aware of the potentially problematic linkages that could arise between the trading at issue, other positions within the trader’s portfolio, and other payments that might arise due to the behavior. Vetted strategies must be revisited over time as part of an audit process to assess the performance of the compliance program and improve its processes given new information (CWP, p. 19).

B. TRADE MONITORING AND SURVEILLANCE

To simplify the creation of a trade surveillance system, the FERC recommends that market participants should approach the task at the most granular level possible that is relevant to detecting the specific types of behavior of concern (CWP, p. 16). This suggests the creation of very simple surveillance tools designed to identify potential problems at granular levels (which we refer to as surveillance “flags”) as well as more complex tools designed to identify more complex behavior (which we refer to as “screens”). We provide guidance on how to implement and use these tools in Section III.

1. Surveillance “Flags”

The guidance provided in OE’s white papers informs the creation of what we call “flags” as the foundation for automated trade surveillance. By “flags” we mean calculations that produce a binary “yes/no” answer in response to a specific compliance-related question regarding the trading data, for example:

- **Is there evidence of uneconomic conduct in price-setting instruments?** OE states that “[u]neconomic conduct occurs when an entity knowingly engages in behavior that loses money on a stand-alone basis—or is indifferent to whether it loses money—but engages in the behavior anyway to serve an ulterior purpose” (EWP, p. 13; see also CWP, p. 13). Hence, “compliance departments at trading companies should consider monitoring and reviewing their traders’ profit and loss calculations, particularly for instances in which a trader is accepting persistent losses in a price-setting product while simultaneously having exposure to a position whose value is tied to such trading.” (EWP, p. 14; see also CWP, pp. 15-16). The flags created should therefore test for the profitability of trades on a stand-alone basis at the most granular level possible (CWP, p. 14).⁵
- **Is there evidence of a related, speculative price-taking position that could provide a target for manipulation?** OE states that “[l]imiting the size of a trader’s open financial position can minimize the trader’s incentive to try to move a price to benefit his or her financial positions” (CWP, p. 14). Although traders and Compliance should always be aware of the price-taking positions⁶ in their portfolios, flags can be created that tie to the direction of each financial position (i.e., long or short) and its size relative to limits set by Compliance (CWP, p. 14). OE suggests that a key limit is exceeded “[i]f the position in the financial instrument is larger than for the price-setting instrument” (CWP, p. 15). This ratio is the basis for calculating financial leverage in manipulation cases, as we discuss further below.

- **Is the trading of price-setting products concentrated enough to set prices?** OE notes that concentrated trading of price-setting products can “have the ability to push a price in a direction that could benefit a related financial position” and thus trigger a manipulation (CWP, p. 15). Compliance can set flags tied to thresholds on price setting products based on concentration, used as simple alerts or to prevent further trading (CWP, p. 14). OE suggests that these flags be adjusted to reflect market dynamics “to account for differing liquidity and the market participant’s ability to influence prices” (CWP, p. 15).
- **Is inaccurate information being provided? If so, is it intentionally being provided for manipulative purposes?** While Compliance should assure that accurate information is provided by their firms as a general matter, enforcement risk arises when factual misstatements or omissions are purposely used for manipulative purposes (EWP, pp. 23-32). To combat such concerns, Compliance can monitor or analyze the accuracy of information submitted to market administrators, such as the parameters that comprise a generator’s cost-based offer or of the size of gas flow nominations when pipelines constraints bind (CWP, pp. 16-17).

2. Surveillance “Screens”

Once flags are in place, the FERC foresees that Compliance can create screens that analyze the flags individually or in combination to assess whether there is evidence of concerning behavior. For example, it is expected that legitimate, profit-seeking trades would occasionally lose money given the normal risks inherent to the market, but it may be abnormal for those losses to last over a period of days, be unusually large, or arise only at times and locations that could bias a market price or other outcome. Automated screens can look for patterns in the flags indicative of such anomalies. If detected, the results are reported to Compliance, which then can question the behavior and/or prevent further trades of concern from occurring (CWP, p. 13). Single-flag screens are also used for statistical reviews of position concentrations (CWP, p. 15) or other circumstances when a pattern or change in the flag could be problematic.

Multi-flag screens can detect combinations of activity that could indicate a manipulative scheme. This is particularly true for cross-market manipulation schemes (EWP pp. 18-23), such as the use of price-making physical or virtual trades to affect the value of price-taking physical or financial positions (CWP, pp. 15-16), or where misinformation is used to secure market or out-of-market payments (EWP, pp. 23-28). Due to the complexities of energy markets, off-the shelf software is often inadequate to create such screens, so much so that OE lists such software under its “ineffective compliance practices” discussion (CWP, p. 21). Compliance must therefore develop customized surveillance screens suited to each company’s needs.

C. THE NEED FOR AUDITS

The CWP directs firms to regularly execute performance audits to “(1) ensure that the program’s compliance tools continue to be effective; (2) uncover compliance gaps and failures; and (3) identify where updates are necessary” (CWP, p. 19). Firms should establish a review schedule that “ensures that each element of the compliance program is evaluated on a regular basis” (CWP, p. 19). Because market dynamics, trading strategies, tradable instruments, and market rules constantly change, Compliance staff must consistently check as to whether their “monitoring tools continue to be able to detect potential compliance issues and misconduct” (CWP, p. 19). While the steps used to execute an audit can vary from one firm to the next, the process is expected to cover all aspects of their compliance program (CWP, p. 19). Where gaps are identified or the need for updates found, the firm is then expected to take action on all such issues identified (CWP, p. 20).

There are open questions that trading organizations must address to develop trade surveillance systems tailored to their own behavior and portfolios. These could include better understanding what OE considers “uneconomic” behavior; determining how much concentration in trading a price-setting product is problematic; identifying potential linkages between price-making trades and price-taking positions; or how to properly set the sensitivity of screens so as to minimize regulatory risk (i.e., avoid “false negatives”) and preserve scarce organizational resources (i.e., avoid “false positives”). We have assisted several market participants in the development of their compliance systems and in the auditing process, using a logical framework as a tool for understanding the behavior that the FERC and CFTC perceive as manipulative and as a basis for building a trade surveillance system.



III. A FRAMEWORK-BASED APPROACH TO TRADE SURVEILLANCE

While it is very useful to have the FERC’s clarifications and their view of best practices regarding compliance, they do not provide a blueprint for how to design and implement a practical system from the ground up that incorporates those best practices. In principle, one could develop a process that monitors and summarizes every single transaction and evaluates all of them for numerous possible flags and related indicia of misconduct. However, this exhaustive approach would be very expensive, impractical to build, intrusive to maintain, and too complex to effectively identify potentially manipulative behavior. It might far exceed the realistic needs for monitoring, relative to a system that had graduated degrees of oversight according to amounts at stake, frequency and complexity of practices, evidence of departures from prior standard approaches, and the like.

Below, we sketch an evolutionary and learning-driven approach to building a compliance process that is more likely to be cost effective and informative.

A. A FRAMEWORK FOR ANALYZING MARKET MANIPULATION⁷

Our approach to surveillance is based on a framework that describes a manipulation based on three elements: a *trigger*, a *nexus* and a *target*. A *trigger* begins the manipulation with an act intended to bias a market outcome to cause the manipulation to occur. This biased outcome, such as a distortion in a market price or output, is the *nexus* that links the manipulation’s cause and effect. The effect alters the worth of the *target*, which produces the manipulation’s revenues. A successful manipulation requires that the manipulator *intentionally* acted to cause (trigger) a bias in a market mechanism (nexus) to alter the value of one or more positions (target) that benefit from that bias. The enforcement actions brought by the FERC and CFTC can be analyzed using this framework, as they ultimately follow a similar logic of cause and effect. Developing your compliance protocols with this framework in mind can lead to a more economical and effective system.

Acts that can trigger a manipulation include: (1) *outright fraud*, such as filing a fraudulent report or failing to divulge material information; (2) *the exercise of market power*, executed through a fraudulent or uneconomic act of withholding; or (3) *uneconomic trading*, shown by trading excessive quantities to bias a market outcome by intentionally incurring a loss. Behavior that does not fall into one of these three categories generally serves a stand-alone legitimate business purpose and is not manipulative. The manipulation’s nexus can be any market-related mechanism that is subject to bias by the manipulation trigger, such as a market price, process or quantity traded. The manipulation’s target is then one or more positions that are designed to benefit from the bias created, such as financial derivatives tied to an index price or out-of-market payments tied to a market process. Some examples of potentially-manipulative combinations of these elements are shown in Figure 1.

FIGURE 1 Examples of Matching Triggers and Targets

Behavior	Trigger	Nexus	Target
Outright Fraud	False Information Provided to RTO Concerning Load Basepoint	Eligibility for Demand Response Payments	Demand Response Payments
Exercise of Market Power	False Outage Report to Withhold Capacity from Market	Higher Energy Market Price	Energy Sales/Financial Swaps Benefitting from the Higher Price
Uneconomic Trading	Uneconomic Virtual Bids/Offers Placed at Trading Nodes	Increase/Decrease in Day-Ahead Nodal Congestion Prices	Financial Transmission Rights Sinking/Sourcing at those Nodes

Source: The Brattle Group

In manipulations caused by intentionally-uneconomic behavior, the revenues derived from the target(s) must exceed the loss incurred in the trigger for the manipulation to be net-profitable overall, a condition we refer to as *financial leverage* (CWP, p. 15). Analysis of the leverage held in a suspected manipulation can help to distinguish legitimate trading losses from intentionally-uneconomic behavior and legitimate hedges from speculative positions placed for manipulation. If financial leverage exists between a trigger and target—i.e., the ratio of revenues produced from the target in proportion to the trader’s losses in the trigger exceeds one-to-one—the behavior at issue presents a greater need for scrutiny (CWP, p. 15).

Proof that a market actor operated (or tried to operate) the three framework components to its benefit is needed to establish a manipulation’s cause and effect, but does not prove manipulative intent. Under fraud-based statutes, such as those governing the anti-manipulation enforcement efforts of the FERC or CFTC (post Dodd-Frank), proof of intent requires additional evidence to show that the alleged manipulator acted with requisite *scienter*—i.e., fraudulent intent (EWP, p. 7). In enforcement contexts, this is shown by a combination of documentary evidence (e.g., emails, IMs, or voice recordings) in conjunction with corroborating economic evidence (EWP, p. 9). Compliance must note that the FERC presently follows a “*per se*” intent standard; if a market participant is aware that a trade could benefit the value of another position in its portfolio, then executes the trade with the intent to derive that benefit, the trade could be viewed as a manipulation trigger *irrespective of its profitability or its effect on the efficiency of the market* (EWP, p. 9).

B. FORENSIC TRADE SURVEILLANCE USING THE FRAMEWORK

This framework applies to forensic trade surveillance as described in the white papers. The process begins with two sources of information: (1) data concerning the accumulation, liquidation and/or settlement of the instruments traded in the market participant's portfolio(s) over time; i.e., "rolled up" transactions data, pre-categorized as potential manipulation triggers or targets; and (2) intelligence concerning the market and out-of-market payment mechanisms that influence or are influenced by trading those instruments, prioritizing potential nexuses that have been or are likely to be the subject of enforcement activity. Rolled-up positions that could serve as potential manipulation triggers and targets are netted on a locational, temporal and market basis to account for the most granular level that is observable and relevant to each nexus identified (CWP, p. 16).

Consistent with the suggestions made in the FERC's white papers, our approach would then monitor positions for activity that could suggest manipulative behavior, such as losses on price-making trades or the building of price-taking positions beyond established limits (CWP, pp. 13-14). Transactions data can be monitored to detect the existence of gaming schemes that take advantage of market anomalies to the detriment of the proper functioning of the market (EWP, pp. 23-28). Information submitted to market operators is also checked for misleading or erroneous information that could be perceived as fraud (EWP, pp. 28-32). If activity exceeding a threshold value set by Compliance is detected, the incident is flagged for further analysis using screens designed to identify whether the behavior is suspicious enough to warrant a deeper inquiry (CWP, p. 15). If warranted, Compliance then examines documentary evidence to assess the intent behind the transactions, questioning the employee(s) responsible if there is sufficient evidence of concerning behavior (CWP, p. 17).

For example, assume that a trading desk's portfolio includes virtual bids (potential triggers) and financial transmission rights (FTRs) (potential targets) tied to the same location. Such trades create enforcement concerns due to possible interaction of the congestion component of the day-ahead LMP (nexus). The FTRs must first be rolled-up on an hourly basis (temporal dimension) by netting sources and sinks placed at the same node (locational dimension) to determine the portfolio's exposure to the Day-ahead nodal congestion prices (market dimension). Trades are then monitored to flag if: (1) a virtual bid is executed at a location with a directionally-aligned financial exposure (a FTR "sink"); (2) that exposure is leveraged to present a manipulation risk; and (3) the virtual bids lost money on a stand-alone basis. A screen tripped in hours when the first two flags occur would address concerns relative to the FERC's present per se enforcement standard, which ignores the profitability (and efficiency) of the virtual bids. A screen tripped in hours when all three flags occur would raise a more classic cross-market manipulation concern. Automated reports summarizing the occurrences of tripped screens can be used by compliance to identify potential hours and locations of concern, with further review needed if the number or pattern of trips suggests problematic behavior.

A pitfall to anticipate in designing screens is that some screens that work well at some locations might not work at others. For example, whereas most trading nodes on an electric grid are workably competitive at most times, certain localized physical system anomalies or circumstantial market design flaws may create conditions that alter the normal trading dynamics between triggers and targets. In such circumstances, trades that might be legitimate could be construed by OE as manipulative, even if no market rules were violated by the behavior (EWP, p. 8, n. 25). Because the circumstances that present such issues can arise anytime and potentially without warning, it is imperative that screen results promptly are reported to Compliance so that unintended portfolio interactions are detected quickly and, if warranted, trading behavior can be questioned (CWP, p. 15).

C. VETTING AND IMPROVING SURVEILLANCE SCREENS

Building a robust and effective surveillance program is an evolutionary process that can be prone to inefficiencies due to trial-and-error in setting screen sensitivities and the vetting of “false positives” where benign trading activity is erroneously identified as concerning. This process must note the tradeoff between aggressive screens designed to stem manipulative behavior and screens that are too loose such that manipulative behavior is ignored altogether; i.e., “false negatives.” Scaling the sensitivity of the flags and associated screens deployed is essential to optimizing this process. Moreover, the schemes used to game market rules and traders’ ability to misrepresent information to market operators and regulators will constantly evolve. Surveillance tools must be re-thought and updated regularly to stay ahead of this evolution.

Fine-tuning and expanding trade surveillance is a long-term process, the complexity and costs of which have daunted many market participants. Some of our clients previously abandoned their surveillance efforts after wasting money on “off-the-shelf” software that promised solutions but delivered few benefits (CWP, p. 21). Faced with the cost of developing such processes internally, some have chosen partial surveillance measures, such as checking the profitability of price-making trades (CWP, p. 13), which are useful but can fail to catch potentially manipulative cross-market schemes or attempts to game out-of-market processes (CWP, pp. 15-16; EWP, pp. 18-28). Others have chosen to avoid some legitimate trades altogether due to fears that they might interact with other instruments in their portfolios. While certainly effective, this has left profits on the table, driven away traders who seek to engage in the broadest universe of trading opportunities available, and denied the market the efficiency and liquidity otherwise gained from legitimate trading.⁹

However, as the space devoted to the topic in the CWP suggests, the trend towards monitoring of trading activities is becoming an expectation used by OE in evaluating the quality of an effective compliance program. Our experience suggests that a customized, comprehensive, and effective trade surveillance program cannot be built overnight. In fact, attempts to mass-produce screening systems are usually very costly and ineffective. Therefore, we recommend a balanced approach to developing such systems, which initially implements a small number of effective and simple screens and then takes advantage of economies of scale and scope to grow a complete surveillance program.

It is better to focus initially on devising screens that are of high import given recent enforcement actions, yet are relatively simple to deploy. For instance, monitoring virtual bidding at locations where traders have FTR positions that can benefit from increased congestion would be relatively easy to deploy. Once the simple screens like this are successfully vetted, additional screens can be devised that expand the scope or deepen the analysis to reflect the variability and complexities of actual trading. For example, to develop a comprehensive surveillance program to detect the use of uneconomic virtual bids to benefit FTRs at a nodal level, it would be relatively simple to start by focusing on virtual bids and FTRs linked to the same node. Once implemented, this system can be expanded to evaluate the impact of virtual bids on an FTR portfolio across multiple nodes while accounting for shift factors and the physical limitations of the transmission system.

As discussed above, regular performance audits of the screens and their reporting systems should be included to assess and update compliance programs over time (CWP, p. 19). An independent audit will evaluate whether the screens and flags deployed are working as intended and can assist Compliance in adopting best practices toward improving efficiencies, developing new screens, or expanding existing ones. Existing screens should be evaluated forensically by back-casting against historical data, using different assumptions to see if regulatory screens that might have been overlooked or deprioritized by Compliance are tripped. Processes used for documentary review and for the interpretation of data provided from the trade surveillance system should be examined, with the goal of improving the accuracy and efficiency of those processes.

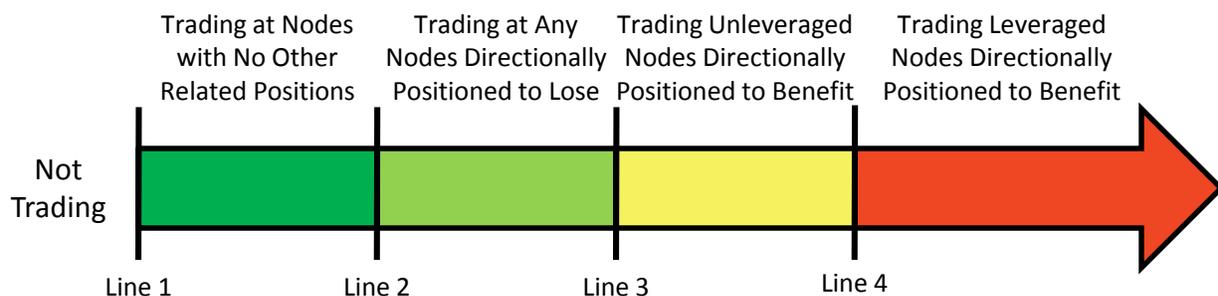
It is strongly advisable that this process be conducted through counsel, so that any deficiencies found (or previously overlooked behavior identified) can be discussed with the benefit of attorney-client privilege. The advice of counsel, combined with the auditor’s knowledge of the company’s internal systems and available resources, can help guide recommendations regarding the prioritization of documentation and/or of designing new flags and screens that are most responsive to the agencies’ evolving enforcement priorities. Ideally, this process will be useful not only as a means to abate a firm’s risk of inappropriate trading, but also as a tool to allow the firm’s employees to expand their abilities to trade profitably within and across markets.

D. REAL-TIME SURVEILLANCE CAN INCREASE PROFITABILITY

We have found that some companies have chosen to avoid the costs of trade surveillance and mitigate regulatory risk by abstaining completely from engaging in price-making trades in markets or sub-markets where they also hold price-taking positions. While this certainly reduces risk, profits are needlessly left on the table, denying traders and their companies of legitimate profits and undermining market liquidity. To counter this issue, the coordination of a real-time surveillance system with the firm’s trade submission platform can create a system that only blocks trades that Compliance perceives as too problematic, thus expanding the ability of traders to engage in legitimate, profit-seeking trades while accommodating the level of compliance risk the company is willing to bear. An example of this process is shown in Figure 2.

FIGURE 2

The Trade-off between Improved Profitability and Compliance Risk



Source: The Brattle Group

From left to right, Figure 2 anticipates the opening of trading to an expanding universe of potentially legitimate, profit-seeking trades, accompanied by increasing layers of regulatory risk that could be mitigated by a real-time surveillance system. Consider the decision set of a firm that currently blocks all virtual trades in a market where it holds FTRs, shown to the far left of Figure 2. There is no regulatory risk, but the profits from legitimate virtual trades are left on the table. As a relatively riskless option, the company could use its trade surveillance system to identify nodes at which no FTRs are held and allow its traders to place virtual trades at those locations (Line 1). Still more legitimate virtual trades could be allowed if the firm would open trading to points where the directionality of the virtual bid or offer could only injure the value of the FTR, such that no manipulation could arise (Line 2).

If the firm wished to unlock an even greater amount of virtual trading, it could rely upon its real-time surveillance system to allow virtual trades that could directionally benefit the value of its FTRs positions, but only when those positions are unleveraged such that a loss on a virtual trade would be greater than or equal to any potential gains on the FTR (Line 3). However, even with this leverage-based safeguard, regulatory risk can remain; e.g., if the virtual trade only partially cleared and lost money, the outcome might be wrongly be interpreted as uneconomic behavior intentionally designed to benefit the (accidentally leveraged) FTR position. Lastly, a firm could allow virtual trading at nodes with directionally-aligned, financially-leveraged FTR positions under the belief that the firm’s traders will only place those bids in pursuit of stand-alone profits (Line 4). Despite *ex ante* good intentions, such trades could expose the company to a high risk of inadvertently-tripping a regulator’s screens, which only view the profitability of trades *ex post*.



IV. Conclusion

In its recent white papers, the FERC's staff provides suggestions and recommendations on what it considers effective trading compliance practices. The approach to trade surveillance we describe herein is designed to be consistent with the recommendations and practices provided. Market participants can forensically analyze trade and position data to develop simple flags that identify positions or behavior that could be problematic. The flags are then analyzed individually or in combination using screens tailored to identify trading behavior that could be manipulative, including the potential cross-market interactions like those that have been the subject of several recent enforcement actions. Learning from experience will hasten the development of new and more complex screens and methods, including the ability to track trading in real-time. If done properly, such trade surveillance systems can help companies to avoid enforcement concerns and increase profitable trading opportunities.

ENDNOTES

1. *Staff White Paper on Anti-Market Manipulation Enforcement Efforts*, available at: <https://www.ferc.gov/legal/staff-reports/2016/marketmanipulationwhitepaper.pdf>
2. *Staff White Paper on Effective Energy Trading Compliance Practices*, available at: <https://www.ferc.gov/legal/staff-reports/2016/tradecompliancewhitepaper.pdf>
3. Since the Western Power Crisis, Brattle has been consistently and deeply involved in litigation and enforcement actions related to alleged acts of market manipulation, working for defendants, plaintiffs and the agencies in products jurisdictional to the FERC and the CFTC.
4. See Ledgerwood and Tsoukalis, "Market manipulation push is widening the compliance gap," *Energy Risk Magazine* (January 23, 2015).
5. The FERC may assess profitability based on opportunity cost. Therefore, flags should test whether greater profits could have been made on other trades that should have been obvious to the trader.
6. A price-taking position refers to an asset that does not affect price formation, but rather is valued based upon the price-setting trades of other assets. For example, financial transmission rights are valued based on the many factors that influence congestion prices in wholesale electricity markets, but their purchase or sale has no impact upon those congestion prices.
7. The FERC's OE has adopted the logic of cause and effect presented by the framework, referencing the manipulation's trigger as the "tool," its nexus as the "target," and its target as the "benefitting position." See *Energy Primer: A Handbook of Energy Market Basics*, pp. 118-119, available at: <http://www.ferc.gov/market-oversight/guide/energy-primer.pdf>. For further discussion, see Taylor, Ledgerwood, Broehm, and Fox-Penner, *Market Power and Market Manipulation in Energy Markets: From the California Crisis to the Present*, PUR Inc. (April 2015).
8. At the other extreme, some firms have chosen to "fly blind" under the belief that their traders would never act in ways that would threaten their careers (or their company's solvency).

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