

GLOBAL COMPETITION REVIEW

The Guide to Energy Market Manipulation

Editor

Gordon Kaiser, JAMS

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Part III

The Regulatory Process

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Economic Evidence of Market Power and Market Manipulation in Energy Markets

Robin Cohen, David Hunger, Brian Rivard and Christopher Russo¹

Introduction

Deregulated energy markets were created to harness the powers of competition in promoting efficient markets and competitive prices for energy consumers. The design and operation of these markets is complex and susceptible to participant conduct that can threaten their efficiency and integrity. Market monitors and regulatory authorities are responsible for protecting the efficiency and integrity of the markets by monitoring, investigating and enforcing compliance with the various rules and laws prohibiting such conduct.

In the early days of energy markets, the concern of the enforcement agencies was largely related to market power, and investigations to assess economic evidence of market power were guided by the long history of antitrust enforcement. Following the US's Western Energy Crisis in the early 2000s,² energy market monitors and regulators became acutely aware that energy markets were susceptible to even more creative schemes and manipulative behaviours, and that they lacked the enforcement tools to properly protect the efficiency and integrity of the markets from market manipulation.³ This led many jurisdictions to promulgate new anti-manipulation laws and rules often fashioned after financial securities market regulations.⁴ Over the last decade or so, enforcement of these laws has provided a new understanding of the common patterns of manipulative conduct and elements of economic evidence that the regulators look for in enforcing these laws.

1 Robin Cohen, David Hunger and Christopher Russo are vice presidents and Brian Rivard is a principal at Charles River Associates.

2 Most notable for the strategies employed by Enron and others.

3 For a discussion from the US perspective, see FERC Staff White Paper on Anti-Market Manipulation Enforcement Efforts Ten Years after EPA Act 2005.

4 This includes the Energy Policy Act of 2005 in the United States, the 2013 General Conduct Rule in Ontario, Canada and the 2011 European Union Regulation on Wholesale Energy Market Integrity and Transparency (REMIT).

This chapter examines the economic analysis underlying recent enforcement actions related to market power and market manipulation in the Canadian, European and US energy markets, and describes the evidence typically sought by regulators when assessing manipulative activities. The chapter begins with a summary discussion of the types of conduct that have been investigated in these jurisdictions and the common elements of economic evidence that regulators have deemed relevant in their judicial decisions. The chapter then proceeds by providing case studies that illustrate the different types of conduct and use of relevant economic evidence, and concludes with some summary remarks.

What evidence do regulators seek?

The types of conduct generally proscribed by energy regulators can be divided into two basic categories:

- market power; and
- market manipulation.

The following provides a brief description of each.

Market power

Market power is defined as the ability of a firm to restrict market output in order to profitably raise and sustain prices above the competitive level. The competitive level is the price that would prevail in the theoretical world of perfect competition.

In energy markets, market power is exercised through an act of withholding of supply, either physical or economic. Physical withholding is a decision by a firm not to offer available generation (or pipeline or refining) capacity that it owns or controls into the market, when the short-run marginal cost of the capacity is less than or equal to the competitive market price. Economic withholding is a decision by a firm to offer capacity that it owns or controls into the market, but at a price that exceeds the short-run marginal cost of the capacity and exceeds the market clearing price, effectively removing that capacity from the market.

There are different approaches across jurisdictions with respect to how concerns related to market power are enforced. The United States, under the Federal Energy Regulatory Commission's (FERC) standard of 'just and reasonable', take a strict regulatory stance against economic and physical withholding. For example, US RTOs and ISOs employ prospective market power mitigation measures to market participant incremental offers in their day-ahead and real-time markets. These measures are designed to ensure that resources are able to bid their marginal cost, but not able to exercise market power.⁵

Other jurisdictions take more of an antitrust-style approach to market power, enforcing against the abuse of market power rather than the mere exercise of market power through withholding.⁶ An abuse of market power entails some action or anticompetitive conduct on

5 See Staff Analysis of Energy Offer Mitigation in RTO and ISO Markets. <https://www.ferc.gov/legal/staff-reports/2014/AD14-14-mitigation-rto-iso-markets.pdf>.

6 At least until recently, this has been the case in the Canadian provinces of Ontario and Alberta. See Monitoring Document: Monitoring of Offers and Bids in the IESO-Administered Electricity Markets. https://www.oeb.ca/oeb/_Documents/MSP/MSP_Report_20120427.pdf and Offer Behaviour

the part of a market participant (or group of market participants) that lessens or prevents competition. Anticompetitive conduct is behaviour that in some way impedes responses from competitors to market signals. Examples of anticompetitive conduct can include exclusionary practices, collusion and predatory pricing.

Below, we provide three case studies in the enforcement of market power conduct, namely economic and physical withholding, market foreclosure and the use of contracts to restrict a competitive response, and the evidence used to show each.

Market manipulation

As described above, since the US Western Energy Crisis, there has been increased enforcement activity related to market manipulation. In the United States, the FERC has defined market manipulation broadly to include:

- the use of any device, scheme or artifice to defraud;
- making untrue statements 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
- acts, practices or courses of business that operate or would operate as a fraud or deceit upon any entity.⁷

Similarly, the European Union Regulation on Wholesale Energy Market Integrity and Transparency (REMIT) distinguishes four different categories of market manipulation:

- false or misleading transactions (such as ‘wash trades’, ‘marking the close’, cross-market manipulation, market cornering or ‘spoofing’);
- price positioning (such as ‘pump and dump’, circular trading or pre-arranged trading);
- transactions involving fictitious devices or deception; and
- dissemination of false and misleading information.⁸

As some have noted, a narrow reading of the US regulation suggests the law is restricted to manipulation that is pure fraud and does not apply to many other non-fraudulent forms of manipulation. However, in its decisions, FERC has interpreted and applied the regulation more broadly to non-fraudulent activity.⁹ The European Union and Canada have also pursued non-fraudulent manipulative behaviours. Our focus in this chapter is on non-fraudulent activity in which the manipulative behaviour can be identified through economic principles. We do not address the pure fraud types of manipulation in this chapter

Enforcement Guidelines For Alberta's Wholesale Electricity Market. <https://albertamsa.ca/uploads/pdf/Archive/00000-2017/2017-05-26%20Offer%20Behaviour%20Enforcement%20Guidelines%200011411%20Revoked.pdf>.

7 See generally Order No. 670, FERC Stats. & Regs. Paragraph 31, 202.

8 REMIT also contains provisions requiring information disclosure in order to prevent against trading where a market participant has been able to exploit privileged access to market-sensitive inside information (such as an unexpected plant or transmission line outage in a power market) before the information becomes widely known.

9 See Pirrong, C. (2010). Energy Market Manipulation: Definition, diagnosis and deterrence. *Energy Law Journal*, 31, 1-20 and Evans, M. (2015). Regulating Electricity-Market Manipulation: A Proposal for a New Regulatory Refine to Proscribe all Forms of Manipulation. *Michigan Law Review*, Vol 113, Issue 4.

although we provide one case study (on manipulation of price indices) that is reflective of fraudulent manipulation.

Market manipulation can take many forms and it is not possible to provide an exhaustive list of the types of manipulation. There are undoubtedly future, and unanticipated cases, in which new ingenious forms of manipulation will emerge. Nevertheless, a review of the recent case law highlights the economics behind two common types of manipulation: (1) benefited trading in related markets and (2) gaming of Market Rules.

Benefited trading in related markets

Perhaps the most common indicator for regulators of manipulative behaviour is the presence of uneconomic transactions. Uneconomic transactions are those which, simply speaking, are unprofitable on a stand-alone, short-term basis. The necessary corollary to such transactions is the presence of transactions in a separate market that will benefit from the uneconomic transaction. These markets are frequently separated either in time, or by the physical and financial, or by geographical location. Indeed, the FERC directly links such evidence and considers it to be prima facie evidence of market manipulation.

Take electricity markets for example, which are cleared on multiple timescales, from the day-ahead through several minutes before real-time operation. Uneconomic transactions (or other actions) could have the effect of moving profits from the day-ahead market to the real-time market, or vice versa.

Electricity markets have been specifically designed to allow and encourage the interaction between physical and financial transactions. An example of this would be the concept of Financial Transmission Rights (FTRs). Such instruments are purely financial instruments that can allow holders to profit (or lose) when price differentials exist on the physical transmission grid. A manipulative actor could, through uneconomic acts in physical markets, greatly increase the value of their financial instruments, thus earning an overall profit.

Recently, however, FERC took the position of suggesting that even economic transactions could be associated with manipulative behaviour. In the *Deutsche* case, FERC wrote that:

*Enforcement concluded that Deutsche Bank's Congestion Revenue Rights (CRR) traders acted with the requisite manipulative intent because, among other reasons, they engaged in the physical transactions with the intent to increase the value of Deutsche Bank's CRR position. Specifically, as stipulated by Deutsche Bank, the CRR traders sought for the exports at Silver Peak to change the price to benefit the bank's losing CRR position. Deutsche Bank's physical transactions were not profitable. Even if these physical transactions had been profitable, however, profitability is not determinative on the question of manipulation and does not inoculate trading from any potential manipulation claim (although profitability may be relevant in assessing the conduct). Rather, as we have recognized, the elements of manipulation are 'determined by all the circumstances of a case.'*¹⁰

¹⁰ *Deutsche Bank Energy Trading, LLC*, 140 FERC 91 61,056 at PP 20 (2013).

The implication of FERC's ruling can potentially muddy the waters regarding trading overall. Taken to its logical, though implausible extreme, this could indicate that any profitable trade could be part of a manipulative strategy.

Not every trade made in good faith, of course, is profitable, and so unprofitable trades by themselves should not be considered evidence of manipulation; sometimes traders are simply unlucky. Where uneconomic transactions start to resemble market manipulation is when such trades are made repeatedly, and often at high volumes, when economic principles suggest that rational actors ought to forestall future trades.

We provide two examples of cases where traders engaged in cross-market trading to benefit between related markets.

Gaming of Market Rules

FERC has defined gaming to include 'behaviour that circumvents or takes unfair advantage of Market Rules or conditions in a deceptive manner that harms the proper functioning of the market and potentially other market participants and consumers'.¹¹

The Ontario Market Surveillance Panel (MSP) provides a similar definition of gaming. The MSP defines gaming as conduct involving four elements:

- a defect or gap in the market design, rules or procedures governing the IESO administered markets (market defect);
- exploitation of the market defect by a market participant;
- profit or benefit to the participant; and
- expense or disadvantage to the market.

A key evidentiary consideration in gaming is the economic purpose for the conduct. Conduct that is clearly inconsistent with efficient market behaviour or motivated by profit opportunities that are inconsistent with the economic fundamentals of supply and demand have been cited as indicia of possible manipulative gaming activity.¹² Similarly, engaging in transactions that, due to a design flaw, are effectively riskless transactions, can be viewed as an exploitation of the design flaw. Finally, transactions that appear to be motivated by an opportunity to garner excessive uplift payments rather than a response to opportunities related to a market-clearing price can be considered indicia of gaming.

We provide two case studies on how enforcement agencies have viewed gaming and the economic evidence used in the formulation of their decisions.

Case studies

The following section provides case studies from Canada, Europe and the United States that illustrate enforcement action against the types of conduct described above and the economic evidence used to assess the conduct.

The fact that regulators, or other market participants who notify regulators, see evidence of manipulation does not mean that there is indeed manipulation. In this chapter, description of evidentiary approaches by regulators does not necessarily mean that we

11 Staff Analysis of Energy Offer Mitigation in RTO and ISO Markets p. 23.

12 Staff Analysis of Energy Offer Mitigation in RTO and ISO Markets p. 15.

would agree that manipulation has occurred. Instead, these descriptions serve as a guide to what enforcement officials might look for. The ultimate outcome of proceedings precipitated by these findings is another matter entirely.

Capacity withholding

In 2008, the European Commission (EC) investigated claims that E.ON may have raised wholesale power market prices by withholding capacity. E.ON was one of the four large vertically integrated market participants: E.ON, RWE, Energie Baden-Württemberg and Vattenfall.¹³ The EC investigated for the period 2003–2007, the company's hourly bids of its generation units into the power exchange and their subsequent dispatch. In doing so it took into consideration the physical availability of plant (following from plant outages, periods of maintenance and the technical constraints of individual units) and all the costs related to the operation of plants (including fuel costs, operation and maintenance costs, CO₂ emission costs, start-up costs and additional risk premia relating to forced outages). The EC concluded that E.ON may have withdrawn from offering certain units into the power exchange even though that capacity was available and would have been profitable given the prevailing market price. It further concluded that given the scale of E.ON's overall generation portfolio, the increase in market prices caused by the capacity withdrawal may have been sufficient to enable it to earn higher profits on its other plants that more than offset the loss of profits from the capacity withdrawal. Consequently, E.ON proposed to divest itself of about 5,000MW (around 20 per cent of its overall generation portfolio) in order to eliminate the incentive for capacity withholding. This structural remedy was accepted by the EC and subsequently implemented.¹⁴

Market foreclosure

A repeated competition concern in power markets has been foreclosure by vertically integrated firms of non-integrated firms. The UK's Competition and Market Authority (CMA) recently considered both customer foreclosure and input foreclosure in the power market.¹⁵

Customer foreclosure may arise where the downstream, supply business of the vertically integrated firm refuses to purchase from the generation business of a rival that is competing with the upstream, generation business of the vertically integrated firm. In the GB market, the CMA dismissed the likelihood of customer foreclosure by reference to a number of considerations including the following:

- No supplier exceeding a 30 per cent market share.¹⁶ Further consideration of the location of customers or the extent of 'inactive' customers (with low propensity to switch

13 More recently E.ON and RWE have restructured to separate their renewables and network businesses from their remaining conventional and nuclear generation assets.

14 Phillippe Hauve, et al. (2009). The E.ON electricity cases: an antitrust decision with structural remedies. *Competition Policy Newsletter*, Number 1.

15 Energy market investigation: Foreclosure A consultative working paper of the Competition and Markets Authority 24 February 2015.

16 The EC uses 30 per cent as a threshold below which problems from vertical restraints are unlikely because there is enough competition between downstream suppliers to mean that they cannot exercise any market power over upstream suppliers.

suppliers) did not change this finding. The GB supply market is national rather than regional and inactive customers do not by themselves affect buyer power.

- The availability of routes-to-market for independent upstream firms given that most of the six large suppliers are net purchasers of electricity.
- Regulations – for example, the supply businesses of vertically integrated firms are required by regulation to act as ‘offtakers of last resort’ for renewable generators with contracts for differences otherwise unable to find a counterparty.
- Trading opportunities – independent generators can trade on an anonymised basis OTC or through exchanges. This makes it difficult to foreclose a specific generator other than by refusing to agree to credit terms.
- Market arrangements – dispatching generation at below cost prices may displace other generation units but it is not possible for the vertically integrated firm to be sure which generator would otherwise have been at the margin and, as a result, pushed out of the market.

The CMA also considered tacit coordination between firms but concluded that there was an absence of mechanisms to effectively monitor any possible coordinated outcome. Moreover, given that independent generators represent nearly 30 per cent of upstream volumes, and independent firms have continued to invest in new plants in recent years, there is a strong indication that widespread foreclosure is not occurring.

Input foreclosure occurs where a vertically integrated firm uses its vertically integrated position to harm downstream competitors, most obviously by increasing the wholesale cost of electricity supply. The CMA considered two tools for input foreclosure: (1) the exercise of generation market power, and (2) efforts to reduce contract market liquidity.

The exercise of generation market power as a tool for input foreclosure

The CMA concluded that there was limited incentive for generators to withhold capacity in order to increase wholesale prices since individual generators could not shift the price-setting technology by the withdrawal of capacity and as such any price changes from withdrawal were small. Moreover, given extensive forward contracting by suppliers, any attempts to increase supplier costs from such behaviour would require sustained manipulations of the wholesale spot market in order for forward market contract prices to be impacted.

The CMA also assessed the overall incentive for input foreclosure. It noted that while the costs incurred in raising wholesale prices were large (not least because these vertically integrated firms themselves would have to bear some of these increased prices by virtue of being net buyers), the benefits from increasing downstream customer numbers were limited given the size of retail margins.

Potential efforts to reduce contract market liquidity as a tool for input foreclosure

The CMA focused its analysis on the likelihood of actions to reduce trading activity. Most importantly, the CMA noted that the market shares in traded products of the vertically integrated firms were 20 per cent or less, that the independent generators had a larger market share than the downstream independent suppliers (indicating that some options would

always be available to the independent suppliers) and that Ofgem's regulated requirement for market-making by the large utilities would in any event sustain liquidity.

Consequently, on the basis of its assessment of vertical integrated firms' abilities and incentives to foreclose the market as well as the likely effects of any such actions, the CMA concluded that market foreclosure was unlikely.

Use of contracts to restrict a competitive response

This case study is drawn from the Alberta Utilities Commission Decision 3110-D01-2015 'Market Surveillance Administrator allegations against TransAlta Corporation et al, Mr Nathan Kaiser and Mr Scott Connelly.

The MSA alleged that in November and December, 2010 and February 2011, TransAlta intentionally took certain coal-fired generating units owned by TransAlta, that were subject to power purchase arrangements (PPAs) with Enmax, offline for repairs during periods of high demand when TransAlta had the option to delay such repairs until periods of lower demand. Specifically, the MSA alleged that TransAlta engaged in this conduct to drive up electricity prices to benefit its portfolio. The MSA asserted that this conduct restricted or prevented competition and restricted or prevented a competitive response and manipulated market prices away from a competitive market outcome. In its decision, the Alberta Utilities Commission (AUC) found that TransAlta engaged in conduct that was contrary to the fair, efficient and openly competitive operation of Alberta's energy market. Specifically, the AUC found that TransAlta had timed the outages at its coal-fired generating units on the basis of market conditions, which restricted or prevented a competitive market response by Enmax and which manipulated market prices away for a competitive market outcome.

Benefited trading in related markets

In 2012, FERC investigated Constellation Energy Commodities Group (CGC) for violation of FERC's Anti-Manipulation rule, in docket IN12-7-000. The investigation related to CGC's conduct in the NYISO market, and involved the use of virtual bids in the NYISO (and other) markets. The conduct investigated reached back to 2007, but was finalised in 2012.

The concept of virtual bidding relates to the aforementioned electricity market structure in which markets exist at different timescales. In particular, the NYISO operated then (and still does) markets at the day-ahead and real-time timescales, reflecting daily and five-minute intervals, respectively. These markets have different clearing prices, and reflect the relative supply and demand in each market, with the price spread often being driven by differences between forecast and actual conditions in the markets. Virtual bids allow market participants to buy and sell in each of these markets, either to arbitrage predicted price differences, or to assist in managing risk exposure.

In this case, FERC alleged, and CGC ultimately stipulated, that virtual bids were being used to increase prices in the day-ahead markets, to benefit CGC's swaps positions. Thus, this case was an example of using uneconomic transactions to shift rents between different temporal markets, and ultimately from the physical to the financial.

The CGC traders held contracts for differences (CFDs) in certain zones in New York, which were essentially swaps against the day-ahead market price. These swaps were significant in size, and frequently larger than the physical load in the zone in question. When

the traders' CFD position was short, they would enter virtual supply bids (in other words, buying from the real-time market to supply the day-ahead market) to cover their position, and conversely, create virtual demand when their positions were short.

These transactions often went 'upstream' against the price, in that they bought high and sold low, thus leading prices to diverge even further between the two markets.

It is perhaps worth noting that FERC identified this behaviour through an anonymous informant. Such are modern electricity markets that identification of manipulative strategies through the vast amount of data provided is a challenging endeavour. This endeavour is, in fact, sometimes impossible without knowledge of the market participants' financial positions and obligations.

Nevertheless, FERC identified several key pieces of evidence that it used to form its opinion of market manipulation.

- First, it determined that the size of the swap position was significant.
- Second, it determined that the trades were, if not deliberately uneconomic, not necessarily intended to be economic.
- Third, FERC found that the trades were larger than those that would be warranted by physical and market conditions, describing them as 'large and [...] persistently repetitive'.
- Finally, and closely related to the second point, FERC determined that the trades were evaluated as an overall strategy, and that the combined, multi-market results were what drove CGC's behaviour.

Cross-market manipulation – Etracom

An example of alleged cross-market manipulation is seen in the FERC enforcement action against Etracom LLC¹⁷ in 2016. The case stemmed from Etracom's behaviour in the California electricity markets in May of 2011. Etracom held both virtual positions, and financial transmission (or FTR/CRR) positions at the New Melones intertie in central California. The New Melones intertie connected California to Nevada, and Etracom used its virtual positions to import power into the California market at this point.

Simultaneously, it also held financial transmission positions, in the form of CRRs. These CRRs allowed Etracom to earn revenue when there were different prices for electric power in different locations. Specifically, when price differences existed on either side of the New Melones intertie, Etracom could profit from import or export congestion.

FERC has alleged that Etracom placed numerous virtual supply bids that were uneconomical, but with the effect of increasing congestion, which increased the value of Etracom's financial portfolio by more than the amount lost on the virtual portfolio.

The principal evidence considered by the regulator in this case was the combination of uneconomic trades along with benefited positions in multiple markets.

Gaming to exploit an uplift payment

This case study is based on the Ontario MSP's 'Report on an Investigation into Possible Gaming Behaviour Related to Congestion Management Settlement Credit Payments by Greenfield Energy Centre LP', Investigation No. 2011-04 (14 July 2014).

¹⁷ FERC Docket IN16-2-000.

The MSP investigated three aspects of Greenfield Energy Centre LP's (GEC) market conduct as possible gaming per its mandate under OEB By-Law 3. The conduct under investigation occurred during the period January 2010 to August 2011 and included: (1) the use of slower ramp rates relative to the ramp rates used in previous periods; (2) an increase in the frequency of short-term (two hours or less) shutdowns; and (3) an increase in the offer prices used to effect a shutdown.

In its investigation, the MSP considered whether GEC intentionally modified aspects of how it offered into the market (i.e., ramp rates and offer prices) so as to exploit certain defects or gaps in the manner in which the congestion management settlement credits (CMSC) were calculated and settled. The modifications in the offer would most certainly provide GEC with higher CMSC payments and higher profits, and these payments would come at the expense and disadvantage of consumers.

The MSP investigated each conduct separately, and its decision turned on the element of intent to exploit. In particular, the MSP concluded the following:

- GEC's use of slower ramp rates were for the purpose of addressing environmental and technical issues relating to the operation of its plants and was not for the purpose of exploiting a market defect. As a result, this conduct did not constitute gaming.
- GEC's decision to use more frequent short duration shutdowns was for the purpose of risk management, outage management and dealing with contemporaneous grid conditions and not for the purpose of exploiting a market defect. As a result, this conduct did not constitute gaming.
- GEC increased the offer price it used to trigger a shutdown for the purpose of increasing its CMSC payments.
- GEC profited from the increased CMSC payment since the payment was higher than was needed to cover its marginal operating cost or to effect a shutdown. The ability to profitably increase the CMSC payment was due to a defect in the rules that define how CMSC is calculated and settled. Essentially, the defect is that the rules allow payment in situations and for reasons not initially intended by the original designers of the market.
- The exploitation of the defect imposed an expense or disadvantage throughout the market as consumers had to pay higher uplifts as a result of the conduct. The MSP estimated that GEC obtained a profit of approximately C\$432,000 from the conduct and that it cost consumers the additional expense in the same amount through higher uplifts.

Gaming behaviour related to infeasible import transactions

This case study is based on two similar MSP investigations as described in the Report on an Investigation into Possible Gaming Behaviour Related to Infeasible Import Transactions Offered by West Oaks NY/NE, LP on the Manitoba-Ontario – Intertie, Investigation No. 2011-01 (22 October 2012) and the Report on an Investigation into Possible Gaming Behaviour Related to Infeasible Import Transactions Offered by TransAlta Energy Marketing Corp on the Manitoba-Ontario Intertie, Investigation No. 2011-02 22 October 2012.

The MSP reported in its Summer 2010 Monitoring Report that two traders received CMSC payments for their repeated constrained-off import offers at the Manitoba-Ontario interface. This happened over a two-day period in July. The constrained-off events were triggered by a de-rating of part of the transmission system in Manitoba that essentially limited the Manitoba to Ontario interface to 0MW. The MSP reported that the two traders

continued to offer, even though the imports could not possibly have flowed. The event caused Ontario consumers to pay C\$163,000 in uplift to the two traders over the two-day period. The MSP recommended that the IESO make certain changes to its procedures to prevent any recurrence of this event.

Upon receipt and publication of the MSP Report, the chair of the OEB as per her prerogative under OEB By-Law 3 Section 5.1.1(c), requested that the MSP investigate the conduct of the two traders. The MSP commenced two separate investigations, one for West Oaks and one for TransAlta, as possible instances of gaming, as per its mandate under OEB By-Law 3.

The MSP applied their four-part gaming framework to the investigations of West Oaks' and Trans Alta's conduct.

The report discusses the market defect in terms of the intent of CMSC payments. Specifically, CMSC were established to incentivise market participants to respond to IESO dispatch instructions to relieve internal congestion; CMSCs were not intended to provide compensation to participants for reasons related to external constraints. The MSP cited agreement from the IESO in support of this conclusion.

The MSP also cites supporting documentation for a market rule amendment implemented in 2003, which was intended to correct the design flaw. The rationale for the rule amendment was to enable the IESO to modify interchange schedule data so both the constrained and unconstrained schedules would reflect the transactions ability to flow.¹⁸ While the Market Rule Amendment envisioned CMSCs would not be paid in these circumstances, the manner in which the IESO implemented its procedures still allowed for the payments to occur in certain situations. Hence, the market defect was not in the Market Rules per se, but in how the IESO implemented the rules through its procedures.¹⁹

The finding in each case turned on the second element of the MSP's gaming framework – exploitation of the defect. The MSP stated 'an essential element of gaming related to a Market Defect is the exploitation of the opportunity. The Panel considers that exploitation may exist where the market participant had some level of intention to exploit or knowledge of an opportunity to exploit arising from the Market Defect.'²⁰

The MSP conducted a review of the information made available to the traders to assess their level of knowledge and intent. The MSP determined that information of the de-rating in the Manitoba transmission system was shared by Manitoba Hydro with system operators (MISO and IESO) and transmission operators (Hydro One); however, these operators did not share the information with traders. Manitoba Hydro did place information about the outage on the Manitoba OASIS system but it did not share the information directly with traders. Furthermore, the MSP concluded that traders as a normal course of business would

18 See page 26 and 27 of the West Oaks report and page 27 and 28 of the TransAlta report. The market rule amendment rationale said further that paying CMSCs for reasons related to external constraints 'creates an inconsistency with the original intent of the CMSC payment structure in Ontario.'

19 The procedures call for the IESO to manually curtail a transaction if it cannot flow due to external constraints and it has a constrained schedule greater than 0MW. In this case the manual curtailment is done for both the constrained and unconstrained schedules. However, if the constrained schedule is 0MW, the IESO does not manually curtail the transaction and if the unconstrained schedule is greater than 0MW, a CMSC will be paid. There are no market rules or procedures that automatically claw back the CMSC in this instance.

20 Page 19 of both reports.

not review information on the Manitoba OASIS system as the information was often unreliable or not timely. As a result, the MSP concluded that West Oaks and TransAlta could not reasonably have been expected to have identified or obtained information of the de-rating.

The MSP also engaged an independent expert that had experience of trading in the markets under review to corroborate its findings on the evidence and to review West Oaks' and TransAlta's trading behaviour. The expert concluded that the patterns in the offer behaviour of the two traders were consistent with a lack of knowledge of the Manitoba de-rating.

Based on these findings, the MSP concluded that West Oaks and TransAlta did not exploit the Manitoba de-rating for the purpose of receiving CMSCs. Given that the MSP did not find evidence of exploitation in relation to the market defect, it concluded that neither trader engaged in gaming. No remedial action was required of the two traders; the MSP did not ask that the two traders voluntarily repay the CMSCs, even though the CMSCs were received as a result of a market defect, served no efficiency purpose, and came at the expense of consumers in the form of higher uplifts.

The MSP did make two recommendations to remedy the market defect. In particular, the MSP recommended that the IESO modify its procedures so that when it becomes aware that an external constraint would prevent a transaction from flowing over an intertie, transactions on the intertie be removed from the unconstrained schedule, effectively avoiding unwarranted CMSC. The MSP also recommended that when the IESO becomes aware that external conditions may prevent or reduce the ability of power to flow on an Ontario intertie, the IESO reflects this information in its public reports.

Market manipulation of price indices

In response to the 2000–2001 Western Energy Crisis, the FERC conducted an investigation that included the possible manipulation of the published electricity and natural gas price indices, including Platts Gas Daily and Inside FERC.²¹ In that investigation FERC concluded that traders had attempted to manipulate the published indices and the publishers had inadequate verification procedures and stated that it 'cannot independently validate the reporting firms' price data, and undetected errors may exist due to a lack of formal verification procedures'.²²

The manipulation schemes were quite simple: mis-reporting trades, selectively omitting trades and overstating volumes. Ultimately, staff found that the companies reporting their trades had little, if any, formal procedures in place to ensure the accuracy of the data reported to the trade press. In fact, in some cases there were systematic efforts to bias the data reported to the trade press for the purpose of trying to offset the perceived dominance of Enron's input to the process, trying to benefit traders' own positions or that of their trading desk, and trying to offset the inaccuracies that other companies were reporting. In addition, even when these companies claim they were not trying to influence the published

21 See, Initial Report on Company-Specific Separate Proceedings and Generic Reevaluations; Published Natural Gas Price Data; and Enron Trading Strategies. Fact-Finding Investigation of Potential Manipulation of Electric and Natural Gas Prices Docket No. Pa 02-2-000 (13 August 2002) (FERC Initial Report) And Final Report on Price Manipulation In Western Markets (March 2003) (FERC Final Report).

22 FERC Initial Report at pp. 36.

indices, staff uncovered cases in which the data were inaccurate due to unstructured or non-existent processes for reporting, such as calculating a ‘volume-weighted average’ by taking the simple arithmetical average of the high and low trades, making up trades in order to come up with an average that was the midpoint of the traders’ perceived range, and entering fictitious trades (both prices and volumes) in order to replicate what they had seen on EnronOnline or other platforms.²³

The indexes have far-reaching applications, including basis trading, gas daily swaps, affiliate transactions, purchase agreements, local distribution companies’ purchases and electricity contracts (index times heat rate). The fact that they are used in electricity contracts and affiliate transactions makes them subject to FERC review.²⁴ FERC further stated that Platts filed its responses under claim of privilege and declined to respond to certain aspects of staff’s data request to protect the confidentiality of its sources. As noted by FERC, the price index reporting and calculations have been markedly improved to avoid manipulation.²⁵ However, the claim of privilege remains, so there is no way to independently validate the Platts indexes. The claim of privilege is particularly problematic for detecting attempted or successful index price manipulation.

The key factor in detecting a manipulative scheme is access to the actual and reported trades. It is difficult, if not impossible, to know what reported trades the index publisher included or excluded in the index because the publishers have methodologies for excluding outliers but also use some degree of editorial judgement.²⁶

Summary remarks

There is a growing body of international case law on market power and market manipulation in energy markets. Emerging from this case law is helpful guidance on the broad types of economic evidence that are likely to raise concerns with the regulators and enforcement agencies. The nature of economic evidence deemed indicative of market power or manipulative conduct by regulators has included:

- financial – i.e., offer price-to-cost ratios and how these ratios change as a function of market rules or trading conditions in related markets instead of underlying cost;
- physical – i.e., changes in physical behaviour (such as outages) or physical specifications (such as ramp rates) that appear not to be a function of underlying physical capabilities; and

23 FERC Final Report at III-3.

24 There has been extensive legal questioning of whether the indexes are subject to FERC jurisdiction, CFTC jurisdiction, or both. See, e.g., memorandum of understanding between the Federal Energy Regulatory Commission and the Commodity Futures Trading Commission, 2 January 2014.

25 FERC Final Report at III-46.

26 See, e.g., Platts Methodology and Specifications Guide – North American Natural Gas Updated September 2016.

- informational – i.e., actions intended to distort or impact information flowing to the markets (which may influence price-setting behaviour) as opposed to actions that have a competitive motivation.

While the application of this evidence will depend on specific facts and circumstances of each case, it does provide guidance for firms and lawyers looking to ensure compliance with relevant laws and avoid enforcement actions.²⁷

²⁷ The conclusions set forth herein are based on independent research and publicly available material. The views expressed herein are the views and opinions of the authors and do not reflect or represent the views of Charles River Associates or any of the organisations with which the authors are affiliated.

Appendix 4

About the Authors

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Dr Robin Cohen has more than 25 years of experience consulting on economic regulation and strategy in the energy industry. He has acted as an adviser on more than 25 regulatory investigations and as appointed expert in eight commercial or investor-state disputes. He is currently an appointed expert in several bilateral investment treaty disputes under ICSID – *Vattenfall et al v. Germany* under the Energy Charter Treaty and *Micula et al v. Romania*. He has also been the expert for the respondent in a dispute under UNCITRAL between two European utilities concerning gas transit tariffs (2013–2014) and in a dispute between UK oil and gas companies concerning contract pricing and the alleged abuse of a dominant position before the UK courts (2014–2015). He provides expert opinions to energy regulators on price setting, evaluating operating efficiencies, and the opening up of markets to competition. He also has particular expertise in advising on state aid (including application of the market economy investor principle) and undertaking market reviews.

Based in London, Dr Cohen heads CRA's European energy practice. He advises regulators, governments and energy companies on market mechanisms and price setting, competition issues, strategy, regulatory accounting and asset values. Internationally he has advised on the design of electricity market liberalisation or reform in India, Bangladesh, Australia, New Zealand, Spain, Norway and the US. This work has included advice on tariffs and investment appraisal. In addition to his expertise in the energy sector, Dr Cohen has consulted for regulatory bodies, governments, and private sector clients on matters involving financial services, state aid, healthcare, and transportation, among others. Prior to joining CRA, he was the lead partner in the economic consulting practice at Deloitte. He has a PhD in economics from London School of Economics and a MA in philosophy and economics from the University of Oxford.

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David Hunger is vice president with the energy practice of CRA. Formerly a senior economist at the Federal Energy Regulatory Commission, Dr Hunger is an expert in energy market merger analysis and market-based rate matters, as well as energy and capacity market rules in the FERC-regulated regional transmission organisations. For 14 years at the Commission, he took part in or led analyses involving mergers and other corporate transactions, market power in market-based rates cases, affiliate transactions, investigations of market manipulation in electricity and natural gas markets, demand response compensation, compliance cases for capacity and energy market rules in regional transmission organisations (RTOs), merchant transmission, and competition issues in electricity markets. Since leaving the Commission and joining CRA in 2013, he has testified in multiple Commission proceedings involving organised capacity markets administered by RTOs, as well as merger and market power cases at the state and federal level.

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Brian Rivard is a principal in CRA's energy practice specialising in energy market design, market analysis and market monitoring matters. Since joining CRA in the summer of 2015, Dr Rivard has assisted several Canadian and US clients on matters related to asset valuation, market rule compliance and market manipulation. He has testified before the Federal Energy Regulatory Commission and the Ontario Energy Board.

Prior to joining CRA, Dr Rivard was the director of markets at the Independent Electricity System Operator (IESO) in Ontario. While working at the IESO, Dr Rivard was responsible for providing analysis of the impacts of changes to the IESO Market Rules or market design, government policies and other industry initiatives. For almost 15 years at IESO, he helped support the development of market-based approaches to managing Ontario's electricity system needs.

In addition, Dr Rivard spent six years as a senior economist with the Canadian Competition Bureau. He has written articles for various publications such as the *Energy Journal*, *Canadian Competition Record*, *Antitrust Law Journal* and the *Journal of Economic Theory* as well as chapters included in competition policy and intellectual property rights in the knowledge-based economy and payments systems in the global economy: risks and opportunities.

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He has directed the analysis of hundreds of physical and financial energy assets over his career, for multiple investors, utilities, consumers, and regulatory bodies. Prior to joining CRA, Mr Russo was a senior consultant with Cambridge Energy Research Associates in Paris, and prior to that, worked with ABB Corporate Research in the US and Switzerland. Mr Russo also served on the board of directors of Neuco, a Boston-based company that provides software to enable neural network control of coal and gas-fired power plants.

He started his career as a power-plant engineer, and later held an academic research appointment at the MIT Energy Laboratory where he investigated electricity technology and energy policy. He received his BS from Tufts University and his MS from the Massachusetts Institute of Technology.

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The Guide to Energy Market Manipulation is a survey of the law on market manipulation in the energy sector across nations that reflects the collective wisdom and real-life experiences of 30 distinguished practitioners from 18 different organisations.

Part I looks at legislation and jurisprudence where laws have been applied, most notably North America, but also Europe, the UK and Australia. Part II shines a light on enforcement practices, including negotiating with regulators and private actions. Part III looks at the regulatory process itself: administrative law, evidence and the use of expert evidence.

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