168 FERC ¶ 61,013
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Neil Chatterjee, Chairman;
Cheryl A. LaFleur, Richard Glick,
and Bernard L. McNamee.

Vitol Inc. and Federico Corteggiano Docket No. IN14-4-000

ORDER TO SHOW CAUSE AND NOTICE OF PROPOSED PENALTY

(Issued July 10, 2019)

1. Pursuant to Rule 209(a)(2) of the Commission's Rules of Practice and Procedure,[1] the Commission's Revised Policy Statement on Enforcement,[2] and the Commission's Statement of Administrative Policy Regarding the Process for Assessing Civil Penalties,[3] the Commission directs Vitol Inc. (Vitol) and Federico Corteggiano (Corteggiano) (collectively, Respondents) to show cause why they should not be found to have violated Section 1c.2 of the Commission's regulations[4] and Section 222 of the Federal Power Act (FPA)[5] by selling physical power at a loss in the California Independent System Operator's (CAISO) market in order to eliminate congestion that they expected to cause losses on Vitol's congestion revenue rights (CRRs). The Commission directs Vitol to show cause why it should not be required to disgorge unjust profits of $1,227,143, plus interest, and further directs Vitol and Corteggiano to show cause why they should not be assessed civil penalties of $6,000,000 and $800,000, respectively. Respondents may also seek a modification of those amounts consistent with Section 31(d)(4) of the FPA.[6]

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[1] 18 C.F.R. § 385.209(a)(2) (2018).

[2] *Enforcement of Statutes, Regulations and Orders*, 123 FERC ¶ 61,156, at PP 35-36 (2008).

[3] *Process for Assessing Civil Penalties*, 117 FERC ¶ 61,317, at P 5 (2006).

[4] 18 C.F.R. § 1c.2 (2018).

[5] 16 U.S.C. § 824v(a) (2012).

[6] Under Section 31(d)(4) of the FPA, 16 U.S.C. 823b(d)(4), the Commission may "compromise, modify, or remit, with or without conditions, any civil penalty which may

Pursuant to Rule 213(a) of the Commission's Rules of Practice and Procedure,[7] the Commission directs Respondents to file an answer with the Commission within 30 days of the date of this order. Office of Enforcement staff (Enforcement staff) may reply to Respondents' answer within 30 days of the filing of the answer. The Commission will consider these pleadings as part of its review of this proceeding.

2. This case presents allegations by Enforcement staff of Respondents' violations of the Commission's prohibition on energy market manipulation. These allegations arose out of an investigation conducted by Enforcement staff and are described in the Enforcement Staff Report and Recommendation (Enforcement Staff Report).[8] Issuance of this order does not indicate Commission adoption or endorsement of the Enforcement Staff Report.

3. The Enforcement Staff Report alleges that Respondents sold physical power at a loss at the Cragview node in CAISO's day-ahead market from October 28 through November 1, 2013, in order to eliminate congestion costs that they expected would negatively affect Vitol's CRRs. On Vitol's behalf, Corteggiano purchased CRRs sourcing at Cragview in CAISO's annual CRR auction for 2013. Cragview is the scheduling point for the Cascade intertie, and its locational marginal price (LMP) reflects one hundred percent of the congestion on the intertie. In mid-October 2013, CAISO derated the Cascade intertie to "0" in only the export direction, while still allowing imports. During the derate, an unusually high LMP appeared at Cragview due to congestion costs. The congestion costs caused Respondents' CRRs to lose money. CAISO announced that identical derates would occur during the week of October 28 through November 1 and on additional dates later in November and in December. Respondents were able to protect against losses on their CRR positions for November and December by buying counter-flow CRRs in the CRR auctions for those months (*i.e.,* "flattening" the CRR position). However, because the monthly CRR auction for October had closed, it was too late for Respondents to flatten their CRR position for the last week of October. Respondents faced over $1.2 million in potential losses on their CRRs during that week's scheduled partial derate. Respondents therefore imported physical power in the day-ahead market at an offering price of $1/MWh, which prevented a recurrence of the congestion costs that Respondents had observed during the October 18-19 derate.

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be imposed . . . at any time prior to a final decision by the court of appeals . . . or by the district court."

[7] 18 C.F.R. § 385.213(a) (2018).

[8] The Enforcement Staff Report is attached to this order as Appendix A. The Enforcement Staff Report describes the background of Enforcement staff's investigation, findings and analysis, and recommended sanctions.

Respondents undertook the import transactions in disregard of market fundamentals and were indifferent to whether they made a profit on them. Respondents lost money on the imports, but avoided a far larger loss on their CRRs.

4. The Enforcement Staff Report alleges that Vitol avoided a loss of $1,227,143 on its CRRs through its manipulative trading, and staff recommends that Vitol pay this amount, plus interest, in disgorgement. Staff also recommends that Respondents pay civil penalties. Staff's recommended penalties are predicated on its finding that Respondents caused $2,515,738 in market harm in the form of (a) $2,429,385 in reduced funding of CAISO's CRR balancing account, and (b) $86,353 in losses suffered by the holders of CRR counter-flow positions at Cragview.

5. In light of the allegations contained in the Enforcement Staff Report, the Commission directs Respondents to respond to this order as set forth above.[9] This order also is the notice of proposed penalty required pursuant to Section 31 of the FPA.[10] In their answers to this order, Respondents have the option to choose between either (a) an administrative hearing before an ALJ at the Commission prior to the assessment of a penalty under Section 31(d)(2)(A), or (b) a prompt penalty assessment by the Commission under Section 31(d)(3)(A). If Respondents elect an administrative hearing before an ALJ, the Commission will issue a hearing order unless it is determined that the matter can be resolved in a summary disposition; if Respondents elect a prompt penalty assessment, and if, after a review of the full record to be developed in this proceeding, the Commission finds a violation, the Commission will issue an order assessing a penalty. If such penalty is not paid within 60 days of assessment, the Commission will commence an action in a United States district court for an order affirming the penalty.[11]

6. The Commission authorizes Enforcement staff to disclose information obtained during the course of the investigation as necessary to advance this matter.

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[9] Under 18 C.F.R. § 385.213(c), Respondents must file an answer that provides a clear and concise statement regarding any disputed factual issues and any law upon which they rely. Respondents must also, to the extent practicable, admit or deny, specifically and in detail, each material allegation contained in the Enforcement Staff Report and set forth every defense relied upon. Failure to answer an order to show cause will be treated as a general denial and may be a basis for summary disposition under Rule 217. 18 C.F.R. § 385.213(e)(2).

[10] 16 U.S.C. § 823b(d).

[11] FPA Section 31(d)(3)(B), 16 U.S.C. § 823b(d)(3)(B). *See also Process for Assessing Civil Penalties*, *supra* note 3.

The Commission orders:

(A) Within 30 days of the date of this order, Respondents must file an answer in accordance with Rule 213 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213, showing cause why they should not be found to have violated 18 C.F.R. § 1c.2 and 16 U.S.C. § 824v(a) with respect to their physical trading in CAISO from October 28 through November 1, 2013.

(B) Within 30 days of the date of this order, Vitol must file an answer in accordance with Rule 213 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213, showing cause why its alleged violations should not warrant an order requiring Vitol to disgorge unjust profits in the amount of $1,227,143, plus interest, or a modification of that amount consistent with Section 31(d)(4) of the FPA.

(C) Within 30 days of the date of this order, Respondents must file an answer in accordance with Rule 213 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213, showing cause why their alleged violations should not warrant an order requiring Respondents to be assessed civil penalties in the amounts described in Paragraph 1 of this order, or a modification of those amounts consistent with Section 31(d)(4) of the FPA.

(D) In any answer, Respondents should address any matter, legal, factual or procedural, that they would urge in the Commission's consideration of this matter. To the extent that Respondents cite any material not cited in the Enforcement Staff Report, Respondents are directed to file non-publicly one (1) copy of such material on CD-ROM or DVD in the captioned docket and to serve a copy of same on Enforcement staff.

(E) Pursuant to Section 31(d)(1) of the FPA, within 30 days of the date of this order, Respondents may also make an election to have the procedures set forth in Section 31(d)(3) of the FPA apply to this proceeding. Under that provision, if the Commission finds a violation, the Commission will issue a penalty assessment and, if not paid within 60 days of the order assessing penalties, the Commission will institute an action in the appropriate United States district court. Should Respondents fail to make a timely election under Section 31(d)(1), the procedures of Section 31(d)(2) will apply.

(F) Within 30 days of the filing of the answer by Respondents, Enforcement staff may file a reply with the Commission.

By the Commission.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.

Appendix A to Vitol Investigation OSC

FEDERAL ENERGY REGULATORY COMMISSION

Vitol Inc. and Federico Corteggiano

Docket No. IN14-4-000

Enforcement Staff Report and Recommendation

Office of Enforcement

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I. Executive Summary

Office of Enforcement staff (Enforcement or staff) submits this report to the Federal Energy Regulatory Commission (Commission) setting forth its findings of fact and conclusions of law regarding the investigation of Vitol Inc. (Vitol) and its trader Federico Corteggiano (Corteggiano) (collectively, Respondents). Staff concludes that Vitol and Corteggiano violated Section 222 of the Federal Power Act, 16 U.S.C. § 824v (2012), and the Commission's Anti-Manipulation Rule, 18 C.F.R. § 1c.2 (2018), by engaging in a cross-product market manipulation scheme in the California Independent System Operator's (CAISO) market. From October 28 through November 1, 2013, Respondents sold one product – electric power – at a financial loss in CAISO's day-ahead market to benefit its separate financial product – Respondents' Congestion Revenue Rights (CRRs).[1] Corteggiano, co-head of Vitol's financial transmission rights (FTR)[2] trading operation, was the architect of this scheme.

In CAISO's annual CRR auction for 2013, Corteggiano purchased quarterly CRRs sourcing at the Cragview node, including for the period from October through December 2013. Cragview is the scheduling and pricing point for transfers of power into and out of CAISO from the PacifiCorp-West balancing authority area (BAA).[3] The locational marginal price (LMP) at Cragview reflects one hundred percent of the congestion on the

[1] Vitol and Corteggiano entered into tolling agreements with staff that extend the running of the statute of limitations for 365 days beyond the otherwise applicable limitations period.

[2] "CRR" and "FTR" are synonymous; different energy markets use different names for this financial product.

[3] A Balancing Authority is the entity responsible for integrating resource plans, maintaining the load-interchange balance within a BAA, and supporting interconnection frequency in real-time. A BAA, in turn, is the collection of generation, transmission, and loads with the metered boundaries controlled by the Balancing Authority. *See* CAISO, FERC Electric Tariff, app. A, Master Definition Supp., Fifth Replacement (CAISO Tariff).

Cascade intertie.[4] Vitol's CRRs would earn money from import congestion on the Cascade intertie and lose money from export congestion.[5]

In mid-October, CAISO derated the capacity of the Cascade intertie to 0 megawatts (MW) in only the export direction, while still allowing imports (which is known as a partial derate or partially open intertie). The derate was for two hours on October 18 and fourteen hours on October 19. During all of the derate hours, an unusually high LMP of $388.11/MWh appeared at Cragview; export congestion accounted for approximately $350/MWh of the $388.11/MWh price. The export congestion caused Respondents' CRRs to lose money for every hour of the derate. CAISO announced that identical derates would occur during the week of October 28 through November 1 and on additional dates later in November and in December. Corteggiano was able to protect against losses from Vitol's CRR positions for November and December by buying counter-flow CRRs in the CRR auctions for those months (*i.e.*, "flattening" the existing CRR position). However, because the monthly CRR auction for October had closed, it was too late to flatten Vitol's CRR position for the last week of October.

Vitol faced over $1.2 million in potential losses on the CRRs during the Cascade intertie derate for the week beginning on October 28. Corteggiano knew that he could likely eliminate the problematic export congestion for that week by importing physical power in the day-ahead market at Cragview. Working with other Vitol employees, Corteggiano arranged to buy physical power in the Pacific Northwest and successfully offered it for import at Cragview. Vitol's imports over the Cascade intertie achieved their intended purpose, preventing export congestion from occurring during the period of Vitol's imports.

Vitol executed two separate purchases of power to import, one for Monday, October 28, and the other for the remainder of the week. Corteggiano learned on Sunday, October 27, that the first import transaction had eliminated the export congestion. Although Respondents lost money on the imports, they nevertheless completed a second transaction to purchase power for import for the rest of the week. Once again,

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[4] CAISO, Oct. 24, 2018 Response to Data Request OE-CAISO 1-5. Congestion is the price differential between two locations, caused by one or more limiting factors, excluding line losses.

[5] "Import congestion" occurs when the marginal congestion costs at the scheduling point for an intertie are lower than the marginal congestion costs at the relevant node on the CAISO side of the intertie. "Export congestion" occurs when the marginal congestion costs at the scheduling point are higher than the marginal congestion costs at the relevant node on the CAISO side of the intertie.

Respondents lost money on the imports, but by making them were able to eliminate the export congestion and thereby avoid the far larger financial losses they otherwise would have incurred on the CRRs at Cragview.

Corteggiano obtained approval from Vitol's General Counsel and a compliance advisor for his import transactions at Cragview based on his explanation that he was trying to capture the spread between the price of power in the Pacific Northwest and CAISO. However, Corteggiano failed to disclose key facts to them, including the fact that he knew importing as little as 1 MW of power likely would eliminate the congestion component of the LMP at Cragview, making his proposed imports unprofitable while benefiting his CRRs. Neither the General Counsel nor the compliance advisor understood or sought to understand this before approving Corteggiano's import transactions.

Corteggiano acquired the knowledge of how to manipulate congestion costs at partially derated CAISO interties in 2010, when he was working at Deutsche Bank.[6] Corteggiano had purchased CRRs for Deutsche Bank that earned money if export congestion occurred on the Silver Peak intertie and lost money if import congestion occurred. In January 2010, CAISO partially derated the Silver Peak intertie to 0 MW in the import direction and 13 MW in the export direction. Import congestion appeared on the intertie and Corteggiano's CRRs began to lose money. Corteggiano found that he could substantially alter or eliminate what he called "phantom congestion" by trading small quantities of physical power in the opposite direction of the derate.[7] Corteggiano admitted to Enforcement in 2010 that he made unprofitable physical trades on behalf of

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[6] Enforcement investigated Corteggiano's conduct at Deutsche Bank, which resulted in the settlement of manipulation allegations with Deutsche Bank for a civil penalty of $1.5 million and disgorgement of $172,645, plus interest, in January 2013. *Deutsche Bank Energy Trading, LLC*, 142 FERC ¶ 61,056 (2013) (*Deutsche Bank*) (order approving settlement agreement in which Deutsche Bank neither admitted nor denied alleged violations). Although Corteggiano was not identified by name in the Order to Show Cause in the *Deutsche Bank* enforcement matter, the public Enforcement Staff Report attached to the order explained his central role in the trading scheme and referred to him by name. *Deutsche Bank Energy Trading, LLC*, 140 FERC ¶ 61,178, at App. A (2012).

[7] Corteggiano testified that "phantom congestion" is "congestion that is not triggered by market behavior or by physical flows in the system." *Deutsche Bank,* Docket No. IN2-4-000, Testimony of Federico Corteggiano at 94:13-23 (Nov. 16, 2010) (Corteggiano 2010 Test.). "Phantom congestion" is Corteggiano's own description of a pricing outcome rather than an industry-recognized term.

Deutsche Bank to benefit CRR positions that otherwise would have been harmed by the congestion associated with partial derates at Silver Peak.[8] This was the only time in his career that Corteggiano traded physical power, until he did so at Cragview in late October 2013.

Respondents' manipulative trading enabled Vitol to avoid paying CAISO $1,227,143 on Vitol's CRRs sourcing at Cragview. Moreover, Respondents caused $2,515,738 in market harm consisting of (a) $2,429,385 in reduced funding of CAISO's CRR balancing account, and (b) $86,353 in losses suffered by the holders of CRR counter-flow positions at Cragview.

Enforcement recommends that the Commission issue an Order to Show Cause and Notice of Proposed Penalty to Vitol and Corteggiano requiring them to show cause why (i) they did not violate Section 222 of the Federal Power Act, 16 U.S.C. § 824v (2012), and the Commission's Anti-Manipulation Rule, 18 C.F.R. § 1c.2 (2018); (ii) Vitol should not disgorge $1,227,143, plus interest, in unjust profits; (iii) Vitol should not pay a civil penalty in the amount of $6,000,000; and (iv) Corteggiano should not pay a civil penalty in the amount of $800,000.

II. Background

A. Vitol

Vitol is a Delaware corporation with its principal place of business in Houston, Texas.[9] Vitol is a direct, wholly owned subsidiary of Vitol Holding SARL, which in turn is a direct, wholly owned subsidiary of Vitol Holding BV.[10] Vitol Holding BV is a privately held Dutch energy and commodities trading firm with over 40 offices worldwide and $231 billion in revenue in 2018.[11] Vitol trades and markets oil, power, and other energy-related products throughout the United States.[12] Vitol has

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[8] *See* Corteggiano 2010 Test. at 93:6-9.

[9] Vitol Inc., Application for Order Accepting Initial Rate Schedule, Waiving Regulations, and Granting Blanket Approvals, Docket No. ER10-1452-000, at 2 (filed June 15, 2010).

[10] *Id.*

[11] *Id.; see also* https://www.Vitol.com/working-with-us/where-we-work/#world-locations; https://www.Vitol.com/who-we-are/our-business-in-numbers.

[12] *See* https://www.Vitol.com/who-we-are; https://www.Vitol.com/who-we-are/our-business-in-numbers. Vitol holds market-based rate authorization from the

approximately 230 employees.[13] Vitol's power trading desk, known as the "Power Matrix," has approximately twelve traders.[14]

B. Corteggiano

Corteggiano joined Vitol in May 2012, as a member of the Power Matrix.[15] He co-heads Vitol's FTR trading[16] and has principal responsibility for Vitol's trading in CAISO's CRR market.[17] Corteggiano generated at least $13 million in profits for Vitol in 2013.[18]

Corteggiano brought to Vitol deep knowledge and expertise relating to electric power markets generally and the CAISO market specifically. He holds a Ph.D. in power system engineering.[19] From February 2005 to November 2006, Corteggiano was a senior software engineer at Nexant, Inc., where he helped create CAISO's software for operating its CRR market.[20] Corteggiano next worked at Citadel Investment Group for

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Commission pursuant to a letter order issued on July 23, 2010. *Vitol Inc.*, Docket No. ER10-1452-000 (July 23, 2010) (delegated letter order).

[13] Vitol, June 13, 2014, Response to Data Request No. 3-4.

[14] Testimony of Sergio Brignone at 27:5-8 (Mar. 5, 2014) (Brignone Test.); *see also* Description of US Power Matrix as of April 4, 2014 (VITOL_FERC_000013).

[15] Testimony of Federico Corteggiano, Vol. 1, at 24:23-24 (Mar. 6, 2014) (Corteggiano Test. Vol. 1).

[16] *Id.* at 15:13-19. The other FTR trader is Sergio Brignone, who worked with Corteggiano at Deutsche Bank and left with Corteggiano to join Vitol. Brignone Test. at 16:16-17:15.

[17] Corteggiano Test. Vol. 1 at 12:20-23.

[18] Corteggiano testified that his profits were $13 million. *Id.* at 111:18-24. Brignone estimated Corteggiano's profits were in the range of $16-20 million. Brignone Test. at 57:17-24.

[19] Corteggiano Test. Vol. 1*Id.* at 10:2-3; https://www.linkedin.com/in/federico-corteggiano-8814171 (Corteggiano biography).

[20] *See* Corteggiano Test. Vol. 1 at 10:12-18; Corteggiano 2010 Test. at 20:16-21:20.

two years, where he was assigned to the FTR/CRR trading desk and did quantitative research and developed FTR/CRR trading software.[21] From January 2009 to April 2012, Corteggiano was the co-head of FTR trading at Deutsche Bank and traded CRRs in CAISO.[22]

C. The CAISO Market

CAISO operates a competitive wholesale electricity market that uses LMPs for settlements of purchases and sales at specific locations.[23] Locations inside the CAISO market are called nodes and locations at the borders are called interties. The interties are transmission interconnections between CAISO and other BAAs. The LMP at each node consists of three components: (i) the system marginal energy cost (SMEC), which is the energy price and which, at any particular time, is the same at all locations in the CAISO market; (ii) the marginal cost of congestion (MCC), which reflects the added cost of meeting demand at a location that, due to constraints in the transmission system, cannot be met by dispatching power from lower-cost generators located outside the constrained area; and (iii) the marginal loss cost (MLC), which is the cost of physical losses of energy during transmission.[24]

During the period relevant to this matter, CAISO operated a day-ahead market, which produced schedules for the supply and usage of power and LMPs for each hour of the following day.[25] Bids for the supply or purchase of energy in the day-ahead market had to be submitted by 10:00 a.m. Pacific time on the day before the trade day. Three hours later, at approximately 1:00 p.m. Pacific time, CAISO informed bidders whether it had accepted (or "cleared") their bids for the day-ahead market.[26] At the same time, CAISO also published on its Open Access Same-Time Information System (OASIS) site

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[21] Corteggiano 2010 Test. at 17:8-19:22.

[22] *Id.* at 16:18-19; Corteggiano Test. Vol. 1 at 11:9-12:3.

[23] *See* CAISO Tariff, app. C, Locational Marginal Price.

[24] *Id*.

[25] *See Cal. Indep. Sys. Operator Corp.*, 143 FERC ¶ 61,087, at PP 3-4 (2013).

[26] CAISO Bus. Practice Manual for Market Operations, Section 2.3 (version 37, Oct. 2, 2013). Market participants received this information electronically through an internet portal known as the CAISO Market Results Interface.

the hourly LMP for each node as well the value (in $/MWh) of the three components making up the LMP (SMEC, MCC, MLC).[27]

D. Congestion Revenue Rights

CRRs are financial instruments issued by CAISO that allow CAISO market participants to manage their exposure to transmission congestion costs in the day-ahead market.[28] CRRs are structured as a pair of points: a "source" and a "sink."[29] The source and sink designations establish the direction of the CRR, which runs from the source to the sink.[30] CRRs have a designated quantity, stated in MW, and a term, which is either a month or a three-month season.[31] CRRs are differentiated by time of use periods (on-peak demand and off-peak demand) for each day covered by the CRR.[32] CAISO allocates CRRs to load- serving entities and also offers monthly and seasonal CRRs for purchase in competitive annual and monthly auctions.[33]

CRR payments and charges are calculated for each hour based on the hourly LMPs in the day-ahead market. Specifically, CRRs are settled based on the difference in the marginal cost of congestion between the source and sink points specified in the CRR.[34] The holder receives a payment if the congestion in a given hour is in the same direction as the CRR and the holder incurs a charge if congestion occurs in the opposite direction.[35] The per-MW payment or charge is equal to the marginal cost of congestion

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[27] CAISO, Oct. 24, 2018 Response to Data Request No. OE-CAISO-1-4.

[28] *See Cal. Indep. Sys. Operator Corp.*, 136 FERC ¶ 61,120, at P 2 (2011).

[29] *Id*.

[30] CAISO Tariff § 36.2.

[31] *Cal. Indep. Sys. Operator Corp.*, 136 FERC ¶ 61,120 at PP 2-3.

[32] *See* CAISO Tariff §§ 36.2.5-7.

[33] *Cal. Indep. Sys. Operator Corp.*, 136 FERC ¶ 61,120 at P 3.

[34] *Id.* P 4.

[35] CAISO CRR Bus. Practice Manual § 1.3.

at the sink minus the marginal cost of congestion at the source multiplied by the MW quantity of the CRR for each hour in the day-ahead market.[36]

CRR settlements are paid through CAISO's CRR balancing account, which is funded by a combination of day-ahead market congestion revenues and proceeds from the CRR auctions.[37] Any revenue shortfall in this account, which may occur if the payments owed to CRR holders based on their entitlements exceed the market revenue generated by congestion costs, is funded through an allocation of the shortfall to load-serving entities.[38]

E. Pricing at Partially Derated Interties and Susceptibility to Price Manipulation

As discussed below, Deutsche Bank's trading at the Silver Peak intertie drew attention to manipulation risks at CAISO's interties, resulting in the publication by CAISO and its Department of Market Monitoring (DMM) of substantial information on how prices at partially derated interties could be manipulated. Corteggiano was aware of this publicly available information when he planned the imports over the Cascade intertie. Moreover, other Vitol employees involved in reviewing, approving, and implementing Corteggiano's proposed imports could have accessed some or all of the publicly available information as well.

On March 19, 2010, CAISO's Market Surveillance Committee held a public meeting to discuss pricing at partially derated interties and their susceptibility to price manipulation.[39] CAISO's DMM and a representative of Southern California Edison Company (SCE) gave presentations at the meeting, which CAISO published on its website. At the time of his trading at Cragview, Corteggiano was well aware of the published Market Surveillance Committee materials.[40]

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[36] *Cal. Indep. Sys. Operator Corp.*, 136 FERC ¶ 61,120 at P 4.

[37] *Id.*

[38] *Id.*

[39] CAISO Market Surveillance Committee Meeting Minutes March 19, 2010, at 2 (http://www.caiso.com/Documents/MeetingMinutes19-Mar-2010.pdf) (entered as Ex. 67 in Testimony of Ann Marie Hanley (Apr. 19, 2017) (Hanley 2017 Test.)).

[40] Corteggiano testified in the *Deutsche Bank* investigation that CAISO had published information relating to the "phantom congestion" issue in March 2010.

DMM's presentation at the Market Surveillance Committee meeting explained that, when an intertie is derated to 0 MW in only one direction, CAISO permits scheduling in both directions; however, the imports and exports must *net* to 0 MW in the derated direction.[41] Drawing on the Silver Peak fact pattern, DMM further explained that the price at a partially open intertie can be set by a bid that does not clear (*i.e.,* is not awarded) and that the LMP may reflect congestion even when no export or import bids clear.[42] It also stated that intertie prices are sensitive to lack of competition and that there are lower bid volumes when an intertie is open in one direction only.[43]

SCE's presentation at the March 19, 2010 public meeting included a diagram showing that, at a partially open intertie, an accepted bid as low as 1 MW in the opposite direction of the derate could set the price.[44] SCE specifically warned that CRR holders could manipulate the LMP at a partially open tie simply by flowing more power in the opposite direction of the derate than flows in the direction of the derate.[45]

Information on price manipulation at CAISO interties became even more widely available in March 2012 when an article was published explaining that a feature of mathematical optimization known as "degeneracy" affected the pricing outcomes at Silver Peak.[46] Consistent with the Market Surveillance Committee's published materials,

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Corteggiano 2010 Test. at 137:9-11.

[41] Kallie Wells, *Inter-Tie Congestion Pricing*, Mar. 19, 2010, at 2 (http://www.caiso.com/Documents/Inter-tieCongestionPricing.pdf) (Wells Intertie Congestion Pricing Presentation) (entered as Ex. 67 in Hanley 2017 Test.).

[42] *Id.* at 4.

[43] *Id.* at 6.

[44] Jeffrey Nelson, *Intertie Congestion Pricing*, Mar. 2010, at 4-5 (http://www.caiso.com/Documents/SouthernCaliforniaEdison-IntertieCongestionPricing.pdf) (entered as Ex. 67 in Hanley 2017 Test.).

[45] *Id.* at 5.

[46] *See* William J. Hogan, *Multiple Market-Clearing Prices, Electricity Market Design and Manipulation* (Mar. 31, 2012), *available at* https://sites.hks.harvard.edu/fs/whogan/Hogan_Degenrate_Price_033112r.pdf (Hogan 2012 Degeneracy Article). For a description of degenerate pricing, see *Cal. Indep. Sys. Operator Corp.*, 156 FERC ¶ 61,152 (2016) (approving CAISO's tariff amendment eliminating degenerate pricing at interties).

the article explained that the congestion costs at Silver Peak, which arose from use of unaccepted bids to set the LMPs at Silver Peak, could be eliminated by "even the smallest possible" physical transaction.[47]

In November 2012, a publicly available filing in the Commission's enforcement proceeding against Deutsche Bank included information from CAISO explaining how and why an unaccepted bid set the price at the partially derated Silver Peak intertie and that the price was degenerate.[48] CAISO further explained that the use of unaccepted bids to set the LMP and degenerate price outcomes were consistent with its tariff, making clear that it considered these results to be valid.[49]

CAISO recognized that degenerate pricing at interties was not ideal. Among its concerns was the manipulation risk exposed by Deutsche Bank's trading at the Silver Peak intertie.[50] In 2014, CAISO commenced a stakeholder initiative to address the issue and filed a tariff amendment in 2016 to eliminate degenerate pricing. On September 1, 2016, the Commission approved the tariff amendment.[51]

F. Office of Enforcement Investigation and Procedural History

Staff's investigation began after a market participant in the CAISO market met with staff on a confidential basis on December 16, 2013, to report its concern that Vitol

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[47] Hogan 2012 Degeneracy Article at 11.

[48] *Deutsche Bank Energy Trading, LLC*, Answer of DBET to Order to Show Cause, Docket No. IN12-4-000 (DBET Answer), Ex. L, at 7-8 (filed Nov. 5, 2012) (CAISO DMM, "Analysis of Deutsche Bank Energy Trading Bidding Practices at Silver Peak Intertie" (June 15, 2010, rev. Nov. 18, 2010)) (available on FERC E-Library).

[49] DBET Answer, Ex. N (CAISO Memorandum entitled "Review of Congestion Pricing on Silver Peak" attached to E-mail from Eric Hildebrandt to Eric Ciccoretti, "Silver Peak LMPs_DMM" (Sept. 7, 2011)). Corteggiano followed the Commission's proceedings in *Deutsche Bank* after he joined Vitol and therefore may have seen this information. *See* Corteggiano Test. Vol. 1 at 100:6-12.

[50] *See* Wells Intertie Congestion Pricing Presentation at 6 (indicating that CAISO's Department of Market Monitoring would monitor CRR holders' trading at interties).

[51] *See Cal. Indep. Sys. Operator Corp.*, 156 FERC ¶ 61,152 (2016).

had engaged in cross-product market manipulation at Cragview.[52] On February 5, 2014, staff opened a preliminary investigation of Vitol's physical and CRR transactions at Cragview. Staff sent a series of data requests to Respondents beginning in March 2014. On June 3, 2014, the Commission ordered a non-public, formal investigation of Respondents' trading. Staff took testimony from nine Vitol employees. Staff also informally interviewed CAISO representatives, as well as representatives from two companies, Powerex and Morgan Stanley Capital Group (Morgan Stanley), from which Vitol sought to purchase power for import at Cragview. Staff issued document subpoenas and data requests to both Powerex and Morgan Stanley.

On December 12, 2016, staff provided Respondents with a Preliminary Findings letter (PF Letter). On March 8, 2017, Respondents submitted a joint response to staff's PF Letter (Vitol PF Response) and Corteggiano submitted a separate response (Corteggiano PF Response) (together, "PF Responses"). The Vitol PF Response included the affidavits of three Vitol employees. Staff took testimony from two of the employees in April 2017. On May 17, 2017, staff provided Respondents an oral summary of its views of the additional testimony and related evidence. On June 7, 2017, Respondents submitted a joint response to staff's oral supplemental findings (Supplemental PF Response).

On June 20, 2017, Vitol and Corteggiano entered into tolling agreements with staff that extend the running of the statute of limitations for 365 days beyond the otherwise applicable limitations period.

Staff and Respondents conducted settlement discussions, which were not successful. After settlement discussions failed, on June 22, 2018, staff provided notice to Respondents under Section 1b.19 of the Commission's regulations[53] of its intent to recommend the initiation of a public proceeding against Respondents (1b.19 Letter). On August 10, 2018, Respondents submitted a joint response to staff's 1b.19 Letter (1b.19

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52 The market participant requested that staff treat its identity as confidential information. At the December 16, 2013, meeting, the market participant gave a PowerPoint presentation to staff regarding Vitol's trading at Cragview and other, unrelated, concerns pertaining to CAISO interties. Staff redacted identifying and irrelevant information from the PowerPoint presentation and provided the redacted copy to Respondents on July 31, 2017. Letter from Enforcement to Counsel for Vitol and Corteggiano (July 31, 2017). Respondents incorrectly assert that the redacted information "may be exculpatory and should have been provided [to Respondents]." Updated 1b.19 Response at 19.

53 18 C.F.R. § 1b.19 (2018).

Response). On December 18, 2018, Respondents submitted a revised response to staff's Section 1b.19 letter (Updated 1b.19 Response).[54]

III. Staff's Factual Findings

As explained below, in October 2013, a partial derate at the Cascade intertie resulted in substantial losses on Respondents' CRR positions sourcing at Cragview. Corteggiano imported power at Cragview in the day-ahead market to avoid the additional losses he anticipated on his CRRs at Cragview. The imports prevented the congestion that otherwise would have appeared at Cragview. Respondents undertook the import transactions in disregard of market fundamentals and were indifferent to whether they made a profit on them. Respondents lost money on the imports, but avoided a far larger loss on the CRRs at Cragview.

A. Cragview CRRs Lose Money Due To Cascade Intertie Derate

During CAISO's annual CRR auction held in December 2012, Corteggiano acquired for Vitol approximately 42.9 MW of on-peak CRRs and 31.2 MW of off-peak CRRs sourcing at Cragview[55] for the fourth quarter of 2013.[56] Some of the CRRs sourcing at Cragview sank at the COWCREEK_6_N001 node and others sank at the SPIAND1_7_BI node. With this structure, the CRRs would earn money from import congestion on the Cascade intertie and lose money from export congestion. Vitol purchased the CRRs as a speculative investment, rather than as a hedge.[57]

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[54] Staff is providing to the Commission both the original 1b.19 Response and the Updated 1b.19 Response. Staff cites only the Updated 1b.19 Response in this report for the sake of simplicity.

[55] The Cragview pricing node (Pnode) is denominated as Pnode CRAGVIEW_1_GN001 in CAISO's electric network model. The Cragview Pnode is associated with the Cragview electrical bus, which is in PacifiCorp-West's BAA. Energy supply and demand bids at Cragview are injected or withdrawn at the Cragview bus. The Cragview bus is connected to CAISO through a single, small (115 kV) transmission line that is sometimes referred to as the "Cascade intertie." Energy flows into and out of the CAISO BAA over the Cascade intertie are scheduled and priced at Cragview. CAISO, Oct. 24, 2018 Response to Data Request OE-CAISO 1-3.

[56] Vitol, May 15, 2014 Response to Data Request No. 1-12; see also Staff Spreadsheet allVitolCRRsatCragview.xlsx.

[57] *See* Vitol, May 15, 2014 Response to Data Request 1-12 ("Vitol acquired the … [p]ositions to profit based upon Vitol's long-term view of market fundamentals and its

On September 13, 2013, CAISO issued a notice informing market participants that it would derate the export capacity of the Cascade intertie to 0 MW during the week of October 28-November 1 because of an outage on a connecting line; the import capacity remained at 80 MW.[58] On October 4, 2013, CAISO issued a similar notice informing the market that the intertie would be derated to 0 MW in the export direction for two hours on October 18 and, on October 11, it announced a derate to 0 MW in the export direction for fourteen hours on October 19; again, the import capacity remained at 80 MW during these derates.[59] CAISO subsequently issued additional notices announcing additional dates in November and December when the identical derate would occur on Cascade.[60] Since Cascade was a partially open intertie during the derates, market participants could submit both import and export bids; exports were permissible as long as the aggregate flow on the intertie resulted in no net exports.[61]

In the afternoon of October 17, CAISO published the prices for the day-ahead market for October 18 (the first day of the noticed Cascade intertie export limit deratings). The derate resulted in an unusually high LMP of $388.11/MWh at Cragview, which reflected substantial export congestion of approximately $350/MWh.[62] Corteggiano checked the prices that afternoon and knew that the export congestion

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expectation that the congestion component of the … [LMP] at the source location would be lower than the congestion component of the LMP at the sink locations at times during 2013."); *see also* Brignone Test. at 51:17-52:1 (explaining all of Vitol's FTR trading is speculative).

[58] *See* CAISO OASIS Transmission Outage Notices (*available at* http://oasis.caiso.com/mrioasis/logon.do; go to Transmission/Transmission Outages/Transmission Interface ID: CASCADE_BG; enter date of outage and press apply).

[59] *Id.*

[60] *Id.*

[61] *See* CAISO, Oct. 24, 2018 Response to Data Request OE-CAISO 1-7.

[62] *See* Staff Spreadsheet Aggregated_CAISO_OASIS_info.xlsx (Tab CAISO_OASISdataviaVelocitySuite, Columns H and L). CAISO informed staff (and staff informed Vitol) that the $388.11/MWh price on October 18-19 reflected a degenerate pricing solution. A market participant submitted a bid at Cragview for $388.11/MWh, which was too high to clear, but which nevertheless set the price at Cragview. *See* Affidavit of Mark Rothleder at 2-3 (July 26, 2017) (Rothleder Aff.).

produced losses of more than $30,000 on his CRRs for just two hours.[63] In the afternoon of October 18, CAISO published results for the October 19 day-ahead market, which showed Vitol's CRR position had incurred additional losses of approximately $210,000.[64] Of course, when purchasing CRRs, speculative traders like Corteggiano assume the risk that an unexpected outage may impair the CRRs' value.[65]

Corteggiano recognized the risk that CAISO's planned derates of the Cascade intertie in November and December would result in the same congestion that appeared on October 18 and 19, causing substantial losses on his CRRs sourcing at Cragview.[66] Corteggiano avoided those potential losses by flattening his CRR position; specifically, Corteggiano acquired new CRRs in the monthly auctions for November and December that ran in the opposite direction of his existing CRRs (i.e., sinking, rather than sourcing, at Cragview).[67] However, Corteggiano could not purchase counter-flow CRRs at Cragview to avoid potential losses during the derate planned for the last week of October because the monthly auction for October had closed in September.[68] If, as Corteggiano expected, the $388.11/MWh price reappeared during the scheduled derate from October

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[63] Testimony of Federico Corteggiano, Vol. 2, at 142:8-10 (July 24, 2014) (Corteggiano Test. Vol. 2); Vitol PF Response at 5; Staff Spreadsheet ProfitLoss_of_Vitol_ImportsCRRs@Cragview.xlsx (Tab Hourly data with CALCS, Column S).

[64] Vitol PF Response at 5; *see also* Staff Spreadsheet ProfitLoss_of_Vitol_ImportsCRRs@Cragview.xlsx (Tab Hourly data with CALCS, Column S).

[65] *See, e.g.,* Jose Arce, *Trading FTRs: Real Life Challenges, in* Financial Transmission Rights: Analysis, Experience, Prospects 280 (Juan Rosellon and Tarjei Kristiansen eds., 2013) ("unexpected outages" included in the "normal range" of risks for a CRR portfolio). As discussed in Section II(E) above, Corteggiano was also well aware that a partial derate of an intertie could give rise to "phantom congestion."

[66] Vitol, May 15, 2014, Response to Data Request No. 1-12 at 4-5.

[67] *Id.*

[68] *See* CAISO 2013 Monthly CRR Allocation and Auction Schedule at 3 (Apr. 15, 2012) (*available at* http:/www.caiso.com/Documents/2013MonthlyCRRAllocation-AuctionSchedule-Jul-Dec.pdf) (auction for October closed on Sept. 24, 2013).

28-November 1,[69] Corteggiano would lose another $1.2 million on his CRRs.[70] To avert that loss, Corteggiano engaged in a scheme to prevent congestion at Cragview by importing power there during the last week of October.

B. Vitol Conducts Extraordinary Search for Power to Import

On the morning of Friday, October 18, Corteggiano enlisted Mark Sickafoose, one of the Power Matrix traders, and Kolby Kettler, Vitol's head of Non-Oil Operations (a.k.a. Power Operations), to assist him in arranging to import power at Cragview in the day-ahead market during the last week of October.[71] Corteggiano had neither the authority from Vitol[72] nor the expertise to import power himself.[73] Corteggiano testified that he couldn't buy the power to import:

> "I don't have the capability. I don't have the contacts to do that."[74]

Corteggiano also explained that he needed others to handle the logistics of importing the power, including the scheduling process.[75] Indeed, the only time in his career that Corteggiano had traded physical power before was when he did so at Deutsche Bank as part of the Silver Peak intertie exports addressed in the *Deutsche Bank* matter.[76]

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[69] Corteggiano Test. Vol. 2 at 227:23-228:1 (Corteggiano expected the $388.11/MWh price to reappear).

[70] Staff Spreadsheet ProfitLoss_of_Vitol_ImportsCRRs@Cragview.xlsx (Tab Daily_clean, Column C).

[71] *See* Vitol PF Response at 5; *see also* Corteggiano Test. Vol. 1 at 78:13-79:13; Corteggiano Test. Vol. 2 at 189:25-190:13.

[72] *See* Testimony of Dylan Seff at 33:11-18 (Apr. 1, 2015) (Seff Test.) (Corteggiano needed Seff's authorization to trade physical power, which was an "exception" to Corteggiano's authorization to trade FTRs/CRRs); *Amended and Restated Declaration Under Penalty of Perjury of Ann Marie Hanley* at 3, ¶ 6(c) (Hanley Dec.) (Corteggiano not authorized to trade physical power).

[73] *See* Corteggiano Test. Vol. 1 at 79:14-80:7.

[74] *Id.* at 79:19-20.

[75] *See id.* at 79:20-80:7.

[76] *Id.* at 84:24-85:3 (Cragview imports were Corteggiano's first time trying to take

Sickafoose was one of two "west desk" traders in the Power Matrix.[77] In that capacity he had traded physical power in CAISO, but only on a limited basis,[78] and never for a colleague who was not authorized to trade physical power.[79] Nevertheless, on Friday, October 18, in response to Corteggiano's request, Sickafoose began looking for power to purchase and import at Cragview.[80] Meanwhile, Kettler gathered and circulated information about transmission paths that could be used to move power from the Pacific Northwest to the Cragview node, and also a "tagging template," a form that would need to be filled out to effectuate the transmission of power over whatever path they chose.[81]

On Monday, October 21, Corteggiano asked to meet "ASAP" with Dylan Seff, the Head of the Power Matrix (Corteggiano's supervisor), Corteggiano's co-head of FTR trading (Sergio Brignone), and Kolby Kettler to discuss the proposed import transaction.[82] Corteggiano needed his supervisor's approval for the transaction because trading physical power was beyond the scope of Corteggiano's duties.[83] That day, Kapil

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advantage of physical energy prices); Hanley Dec. at 3, ¶ 6(c) (Corteggiano had not traded physical power at Vitol before the Cragview transaction). As explained *infra* note 171, while at Deutsche Bank, Corteggiano briefly traded physical power to test liquidity at another intertie.

77 *See* Testimony of Mark Sickafoose, Vol. 1, at 9:1-5, 20:8-20 (Mar. 5, 2014) (Sickafoose Test. Vol. 1).

78 *Id.* at 9:1-5 ("I trade West Coast power financially, West Coast basis financially, NYMEX gas financially, a little bit of physical power once in a while, and Midwest once in a while, Midwest basis. I trade basis gas, NYMEX gas and power.").

79 *Id.* at 22:12-23:4.

80 *See* IM between Mark Sickafoose and bcpowerpge (Oct. 18, 2013) (VITOL_FERC_0000044).

81 E-mail from Kolby Kettler to Mark Sickafoose and Federico Corteggiano, "Import at CRAG for Cascade Price" (Oct. 18, 2013) (VITOL_FERC_0000360).

82 E-mail from Federico Corteggiano to Dylan Seff, Kolby Kettler, and Sergio Brignone, "Trading Opportunity" (Oct. 21, 2013) (VITOL_FERC_0001269). Corteggiano testified that he asked for the meeting "ASAP" because it "was not a usual trade for us, so it could take time to process and to get it execute[d]." Corteggiano Test. Vol. 2 at 187:22-24.

83 Seff Test. at 33:11-18.

Saxena, the second "west desk" trader in the Power Matrix, began working on the Cragview transaction.[84]

Over the course of the week, Power Matrix traders and Kettler contacted a number of companies, including TransAlta,[85] EDF Trading North America,[86] Powerex,[87] and Morgan Stanley,[88] seeking to purchase power for import at Cragview. As discussed in Section IV(B) below, the Vitol team spent an unusual amount of time on the transaction and exhibited exceptional willingness to concede on key deal terms, including quantity, price, and the risk of transmission unavailability.

Vitol first contacted Powerex about buying power to import at Cragview in the afternoon of Monday, October 21, 2013.[89] After several conversations, on Friday, October 25, Powerex informed Vitol that it could not complete the transaction because it would take five days to put the necessary credit arrangements in place.[90] Aside from the credit issue, Powerex was also unwilling to complete the deal because "Vitol's proposed transaction might be designed to lower the CAISO market clearing price at Cascade for

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84 *See* IM between Kapil Saxena and temutrevor (Oct. 21, 2013) (VITOL_FERC_0000049-50). "temutrevor" is Trevor MacPhee at TransAlta. Testimony of Kapil Saxena, Vol. 1, at 117:3-6 (July 22, 2014) (Saxena Test. Vol. 1).

85 IM between Kapil Saxena and temutrevor (Oct. 21, 2013) (VITOL_FERC_0000049-50).

86 IM between Kolby Kettler and jennier678 (Oct. 25, 2013) (VITOL_FERC_0000033-37).

87 *See, e.g.*, IM between Kapil Saxena and pwxtrader (Oct 21, 2013) (VITOL_FERC_0000051). "pwxtrader" is Phil Kern at Powerex. Saxena Test. Vol. 1 at 124:18-125-4. *See also* IM between Kapil Saxena and pwxmiles (Oct. 22, 2013) (VITOL_FERC_0000023-24). "pwxmiles" is Miles Federspiel at Powerex. Saxena Test. Vol. 1 at 127:15-22.

88 Telephone call between Kapil Saxena and Ryan Killam (Oct. 25, 2013) (FERC_SUB_IN14-4_00000475.mp3).

89 IM between Kapil Saxena and pwxtrader (Oct. 21, 2013) (VITOL_FERC_0000051).

90 IM between Kapil Saxena and pwxmiles (Oct. 25, 2013) (VITOL_FERC_0000087).

the purpose of supporting or benefiting Vitol's CRR position rather than being an economic physical transaction on a stand-alone basis."[91]

C. Legal/Compliance Approves Import Deal After Failing to Discover Corteggiano's True Intent

After the traders had already begun looking for power to import, Corteggiano sought approval for the import transaction from Vitol's General Counsel, Ronald Oppenheimer, and Ann Marie Hanley, the compliance advisor for the Power Matrix, who reported to Oppenheimer. Seff said he told Corteggiano to do so:

> I said it [the transaction] seems to make sense, but given the sensitivity of having transactions like that you already got an FTR position, let's make sure we run it through compliance, and have them authorize it as well.[92]

On October 21, Corteggiano sent an e-mail seeking approval to Oppenheimer and Hanley. The e-mail identified the high LMPs Corteggiano expected during the upcoming Cascade derate as a profit-making opportunity.[93] The purported opportunity involved buying physical power from the Pacific Northwest, which was trading in the $40 to $50 range, and selling it into CAISO at the $388.11/MWh price at Cragview. Corteggiano estimated that a 50-MW import for the entire period of the derate would earn a profit of $1,757,600. The e-mail stated that liquidity at Cascade was "uncertain," the price could drop as bid volume increased, and Vitol's bid could set "the price at the intertie at our bid price, selling 0 MW."[94] The e-mail also indicated that there was "regulatory risk"

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[91] Powerex, Oct. 4, 2013 Response to Data Request OE-Powerex-1-1.

[92] Seff Test. at 65:13-19. Vitol's "ISO/RTO Products Trading Guidelines" required traders to "seek guidance" from senior management or Compliance "prior to bidding or offering an ISO/RTO product that overlaps with another ISO/RTO product at an aggregate pricing point that is below 500 kV." Vitol ISO/RTO Products Trading Guidelines at 7 (Jan. 2, 2013) (VITOL_FERC_0111124-31) (Trading Guidelines).

[93] E-mail from Federico Corteggiano to Ann Marie Hanley, et al., "Trading Opportunity" (Oct. 21, 2013) (VITOL_FERC_0015481).

[94] Corteggiano did not explain how Vitol's bid could set the price if it sold 0 MW (selling 0 MW would mean CAISO did not accept the bid). As explained in Section VI below, neither Hanley nor Oppenheimer understood that an unaccepted bid could set the price at an intertie. Thus, the quoted language did not convey to them that the $388.11/MWh price at Cragview could have been set by an unaccepted bid and reflected

associated with Vitol's holding CRRs sourcing at Cragview because of Vitol's CRR position there, and that the CRRs had been "negatively impacted" by the earlier derate. However, Corteggiano's e-mail did not disclose the amount Vitol lost on the CRRs during the October 18-19 derate ($240,000) or the amount that would be lost if the $388.11/MWh price reappeared during the next derate (approximately $1.2 million).

After receiving Corteggiano's e-mail, Oppenheimer delegated the primary review responsibility to Hanley, giving her discretion to review whatever information she felt was important.[95] By her own admission, Hanley performed only a "rudimentary analysis of the economics" of Corteggiano's proposed transaction.[96]

Recognizing that the $388.11/MWh LMP at Cragview was exceptionally high, Hanley took two steps to "verify" it:

First, Hanley sought to validate the $388.11/MWh price by viewing it on Corteggiano's "nodal tool."[97] The nodal tool showed that the LMPs in every direction around Cragview were much lower than the Cragview LMP.[98] Published energy price data in the first three weeks of October 2013 told the same story.[99]

The picture painted by Corteggiano's nodal tool should have raised fundamental questions about the validity of Corteggiano's rationale for the transaction, including:

"phantom congestion" that could be eliminated by importing power.

95 Testimony of Ronald Oppenheimer at 44:2-6 (Apr. 18, 2017) (Oppenheimer Test.).

96 Hanley 2017 Test. at 152:5-6.

97 Hanley Dec. at 4, ¶ 7(b)(ii); Hanley 2017 Test. at 76:4-7.

98 A screen shot from the nodal tool showing the anomalous Cragview LMP on October 18 is included as Exhibit A to Vitol's PF Response.

99 Attachment 1 ("Regional LMP Maps") contains two maps prepared by staff showing, respectively, (1) the mean LMPs on October 18 and 19 at Cragview and other northern CAISO pricing nodes, as well as regional trading hub power prices; and (2) mean LMPs and regional hub prices from October 1–25, 2013 (the period leading up to Vitol's import transactions at Cragview).

- Why would CAISO be willing to import power at Cascade for $388.11/MWh when LMPs were (1) substantially lower throughout the region and (2) very similar on either side of the CAISO border?[100]

- Why would a counter-party be willing to sell power to Vitol in the $40-$50/MWh range if it could sell the power through the CAISO market for $388.11/MWh?

- Why would CAISO need to import this expensive power at the Cascade intertie when there was about 4,800 MW of alternative transmission capacity to import power at the California-Oregon intertie?[101]

Hanley asked none of these questions, relying instead on "*Federico's* analysis of the dynamics of the CAISO."[102]

Second, Hanley asked Kettler to find out from CAISO if the $388.11/MWh price was "real" as opposed to "a technological glitch or an error."[103] But Kettler did not ask CAISO that. Instead, Kettler and Corteggiano together drafted an e-mail to Mark Rothleder, an executive at CAISO, asking questions about how the price was set at Cragview during the derate on October 18-19.[104] The e-mail asked whether "someone has the capability to submit export schedules in this case and potentially set the intertie price" and whether "someone [can] place an import offer and a simultaneous export for

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100 Powerex, one of the potential counterparties from which Vitol sought to buy power, said "the transaction price that Vitol appeared willing to pay was generally above the prevailing market prices in the northwest and in California at that time, suggesting the transaction would not be economic on a stand-alone basis for Vitol." Powerex, Oct. 4, 2013 Response to Data Request OE-Powerex 1-1.

101 *See* Transmission Utilization Group, *COI Utilization Report*, May 4, 2011, at 6 (http://www.oatioasis.com/WASN/WASNdocs/COI_Utilization_Report_S.Anners.pdf) (California-Oregon Intertie, consisting of three 500-kV transmission lines, had nominal rating of 4,800 MW in import direction and 3,675 MW in export direction).

102 Hanley 2017 Test. at 149:24-150:2 (emphasis added).

103 *Id*. at 139:16-21.

104 Kettler testified he was just the "conduit" for Corteggiano's questions. Testimony of Kolby Kettler, Vol. 2, at 304:15-306:24 (July 24, 2014) (Kettler Test. Vol. 2).

equal mws and set the price."[105] An answer to the first question could tell Corteggiano whether actions by a third party (placing exports over the Cascade intertie) could defeat his strategy to eliminate congestion at Cragview.[106] An answer to the second question could indicate whether the price was set by an uncleared "import offer" and therefore reflected "phantom congestion."

Rothleder addressed the pricing at Cragview in a telephone call with Kettler, telling him:

> "[T]he market solution was a valid solution for the hours in which the Cascade intertie was congested. . . . [T]he price was set based on the cost for serving the next megawatt of demand at the location. . . . [S]ince the export limit was zero [MW], the price was set by an import bid during the intervals in question because the import bid . . . could allow a megawatt of demand to be served at that location."[107]

CAISO's response was very similar to its response to Corteggiano in the *Deutsche Bank* matter when he sought information about similarly anomalous pricing at the Silver Peak intertie. In both cases, CAISO said that the unusually high price was set by a "bid," rather than an actual import or export.[108] In CAISO, "bid" means an "offer" for supply

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105 E-mail from Kolby Kettler to Mark Rothleder, "FW: Cascade de-rate" (Oct. 23, 2013) (VITOL_FERC_0015847). Hanley did not see a draft of the e-mail, testifying that she was "unaware" of it. Hanley 2017 Test. at 140:10-12, 144:6-9.

106 Kettler denies that he asked the question in order to confirm how exports at Cragview could upend Vitol's strategy to eliminate congestion. *Declaration Under Penalty of Perjury of Kolby Kettler* at ¶ 6 (Mar. 8, 2017) (Kettler Dec.) (included in Vitol PF Response, Ex. E). However, Kettler testified that he was just a "conduit" for Corteggiano's questions, so it is Corteggiano's intent, not Kettler's, that is relevant.

107 Rothleder Aff. at 3. Kettler testified that he did not recall speaking with Rothleder. Kettler Test. Vol. 2 at 312:9-11. Staff questions the credibility of this testimony, which Kettler gave just six months after the call with Rothleder. Kettler claims to recall other conversations about the import transactions three-and-a-half years after they occurred. In support of Vitol's PF Response, Kettler submitted an affidavit dated March 8, 2017, recounting details of his conversations with Morgan Stanley and EDF regarding power purchases and explaining that he recommended a 5 MW deal for commercial reasons. *See* Kettler Dec., Vitol PF Response, Ex. E.

108 A CAISO representative e-mailed Corteggiano in January 2010 that the "results [at Silver Peak] are correct" and that the "price was set by the export bid. Note, you will see that nothing cleared." E-mail from Siri Klovstad to Federico Corteggiano

(import) *or* demand (export) of energy,[109] not a cleared offer. Congestion arising from an *uncleared* bid is the "phantom congestion" that Corteggiano sought to – and did – eliminate with his trading at the Silver Peak intertie when he worked at Deutsche Bank.[110] In both this case and *Deutsche Bank,* CAISO indicated that it regarded prices set by an uncleared bid to be legitimate (describing them as "valid" in this case and "correct" in *Deutsche Bank).*

Realizing that an uncleared import bid set the $388.11/MWh price at Cragview, Corteggiano understood that the "0 net flow" that CAISO reported for the Cascade intertie on October 18-19 meant there was no flow at all.[111] He also knew that the fact the net flow was at the 0 MW limit established by the derate gave rise to the congestion

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dated Jan. 25, 2010, cited in DBET Answer, Ex. A., at 14 (publicly available on FERC E-Library). Staff understands the CAISO representative's statement that Corteggiano would "see that nothing cleared" as a reference to publicly available data since the representative did not provide any information relating to cleared bids. Although CAISO does not publish information on individual bids, it does publish net flow data for the interties each day. As explained below, at a small, illiquid intertie, staff understands 0 MW net flow to mean there is no flow at all and, consequently, that no bids cleared in either the import or export direction.

109 A bid is "[e]ither (1) an offer for the Supply or Demand of Energy or Ancillary Services, including Self-Schedules, submitted by Scheduling Coordinators for specific resources, conveyed through several components that apply differently to the different types of service offered to or demanded from any of the CAISO markets or (2) a Virtual Bid." CAISO Tariff, app. A, Master Definition Supp..

110 Respondents contend that staff could not introduce the *Deutsche Bank* settlement in court to prove Corteggiano's intent in this case. *See* Vitol PF Response at 34-36. Staff does not intend to rely on the *Deutsche Bank* settlement for any purpose. However, Corteggiano's investigative testimony in *Deutsche Bank* is admissible because it establishes his knowledge of how to eliminate "phantom congestion" through a physical trade at an illiquid intertie. Under Rule 404(b)(2) of the Federal Rules of Evidence, Corteggiano's testimony in *Deutsche Bank* can be offered as evidence in proving knowledge, intent, opportunity, and plan. *See* Fed. R. Evid. 404(b)(2) (2018).

111 The net flow information was in a spreadsheet that Corteggiano had created using CAISO's published data. *See* discussion of spreadsheet in Section III(D).

costs in the $388.11/MWh price.[112] Congestion costs only arise when there is a "constraint"[113] on transmission (such as that imposed by the derate on the Cascade intertie) and the constraint is "binding."[114] The constraints imposed by an intertie's operating transfer capability limits become binding (i.e., prevent energy transfers) only when the *net* imports or *net* exports are at exactly the limits set for the intertie.[115] If the net flow on Cascade were anything other than 0 MW, there would be no binding export constraint and there would be no export congestion costs relating to Cascade in the Cragview LMP.[116] As Corteggiano understood from his trading at Silver Peak and from

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112 The evidence showing Corteggiano's knowledge of the mechanics of congestion pricing is discussed in Section IV(B).

113 "Constraints" are limits on the flow of power through a power line or other transmission facility. A constraint can be a physical limitation (e.g., a transmission line is operating at its full capacity and is physically incapable of transmitting additional power or the line is shut down for maintenance). A constraint can also be operational (e.g., the imposition of power flow scheduling limits to prevent reliability problems). *See* CAISO Bus. Practice Manual for Definitions & Acronyms, Version 5 (Aug. 16, 2010) (defining "transmission constraints" as "physical and operational limitations on the transfer of electrical power through transmission facilities"). CAISO's derate of the Cascade intertie to 0 MW in the export direction was a "constraint" because it limited power flow over the intertie.

114 A constraint is "binding" when the capacity of a transmission element has been fully utilized. CAISO, Oct. 24, 2018 Response to Data Request OE-CAISO 1-5.

115 Although CAISO does not accept bids when an intertie is derated to 0 MW in both directions, CAISO allows market participants to submit both import (supply) and export (demand) bids at a partially derated intertie because system operators can manage the intertie by netting import and export schedules to stay within the limits. *See* Attachment 2, Staff's Summary of Pricing at Cragview, at 3-5; CAISO, Oct. 24, 2018 Response to Data Request OE-CAISO 1-7. For example, at a partially open intertie derated to 0 MW in the export direction and 20 MW in the import direction, CAISO's clearing (i.e., award) of an import bid of 10 MW would allow it to clear up to 10 MW of exports since the *net* exports would be 0 or less and thereby meet the 0 MW net limitation in the export direction. If CAISO cleared exactly 10 MW of exports, the net exports would be 0 and the limitation would again be binding absent additional cleared imports. However, if CAISO cleared less than 10 MW of exports, the 0 MW export limitation would not be binding because there would still be capacity for additional exports.

116 CAISO determines the marginal costs of congestion (MCC) by using the "shadow price" at each binding transmission constraint in the CAISO network. CAISO's

the Market Surveillance Committee's published materials, the constraint (and the associated congestion costs) could be removed simply by importing power – even just 1 MW – in the opposite direction of the derate. All Corteggiano would need to do was offer very low-priced power for import and CAISO likely would clear the bid, power would flow on the intertie in the import direction, and the export constraint would be removed.

Neither Kettler nor Corteggiano told Hanley that CAISO had explained price formation during the call with Kettler. Hanley testified:

> "My interpretation of what [Kettler] conveyed to me was that he spoke to CAISO. They confirmed that the 388 was not an error or glitch. It was real to the extent that it was disseminated by CAISO *but they didn't provide any additional color related to bidding or offering* or extent or anything of that nature, any other details related to it other than yes, that was a published LMP."[117]

Corteggiano also failed to inform Hanley and Oppenheimer that CAISO had provided essentially the same information about price formation that it had given him in the *Deutsche Bank* matter. He further neglected to tell them about the CAISO Market Surveillance Committee's published information[118] showing that prices at low liquidity, partially derated interties could be manipulated simply by flowing as little as 1 MW of power in the opposite direction of the derate.[119]

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tariff essentially defines shadow price as the value of relieving the particular transmission constraint. The shadow price is multiplied by a "shift factor" to calculate MCC. The shift factor measures the relative contribution of flow from supply or demand on a given transmission element. The shift factor between the Cascade intertie and Cragview is 100%, which means that 100% of the shadow price for the Cascade intertie appears in the MCC component of the LMP for Cragview. When there is a binding constraint on the Cascade intertie, a shadow price is calculated for the intertie. *See* Attachment 2, Staff's Summary of Pricing at Cragview, at 3; CAISO, Oct. 24, 2018 Response to Data Request OE-CAISO 1-5. In the absence of a binding constraint, CAISO would not assign a shadow price for the Cascade intertie and there would be no export congestion costs relating to Cascade in the Cragview LMP.

117 Hanley 2017 Test. at 141:10-16 (emphasis added).

118 The published information is described in Section II(E) above.

119 *See* Hanley 2017 Test. at 28:9-17 (Hanley had no information on CAISO's pricing methodology at partially derated interties); Oppenheimer Test. at 26:21-24

Hanley met with Oppenheimer on October 21, the same day she received Corteggiano's e-mail describing the proposed transaction, and shared her view that it was a profit-making opportunity independent of the CRRs and therefore lawful.[120] In a subsequent meeting, Hanley and Oppenheimer discussed how Commission precedents on market manipulation might apply, and then decided together to approve the transaction.[121]

When authorizing the transaction, Hanley did not know that Vitol lost money on its CRRs during the October 18-19 derate or how much it lost.[122] She testified that having knowledge of the CRR losses would not have changed her analysis in any event:

> [Corteggiano] had a separate independent trading strategy and he was responding to a price signal that was irrespective of gains or losses on any FTR positions. And my analysis wouldn't have changed and it doesn't change with that information.[123]

Hanley concluded that Corteggiano had an "independent" trading strategy based principally on her "verification" of the $388.11/MWh price signal[124] and her belief in Corteggiano's claim that he did not propose the import transaction to benefit his CRR position. According to Hanley:

(Oppenheimer had no information on pricing at partially derated interties); *id*. at 79:7-16 (Oppenheimer was unaware of any connection between a derate and "phantom congestion").

120 Hanley 2017 Test. at 117:19-119:12.

121 *Id.* at 122:11-19; *Declaration Under Penalty of Perjury of Ronald S. Oppenheimer* at 2, ¶ 10 (Mar. 8, 2017) (Vitol PF Response, Ex. G) (Oppenheimer Dec.).

122 *See* Testimony of Ann Marie Hanley at 70:13-23 (July 24, 2014) (Hanley 2014 Test.) (Hanley aware that CRRs lost more than $100,000, but did not recall whether the losses occurred on October 18-19).

123 *Id.* at 71:11-15.

124 *Id.* at 41:8-13 ("the most important information to verify was whether the price signal showing $388.11 was valid or real or not, because the independence of the entire strategy weighed in largely on this price signal. So that was the most important thing for me to verify").

> I forcefully, directly and specifically explained to [Corteggiano] that he and the company are prohibited from entering into a physical transaction for the purpose of benefiting a related position. I made clear to him that he could not engage in the proposed transaction if it was his intent to benefit the CRR positions. Mr. Corteggiano told me that he understood my admonition, and that it was his intent to profit from a potentially high price at Cragview, not to benefit his CRR positions. I observed his demeanor and believed him.[125]

The Legal/Compliance department's approval of the Cragview import transaction was also based, at least in part, on a misunderstanding of the availability of transmission to Cragview. In Vitol's response to a data request that Corteggiano and Kettler helped prepare, Vitol stated:

> [Corteggiano] also observed a lack of transmission to CRAGVIEW for the October 28 through November 1, 2013 time period, which he and Compliance viewed as further confirmation that the price signal was valid (*i.e.,* other market participants appeared to be pursuing the same import opportunity).[126]

This claim contradicts documentary evidence showing that Kettler checked transmission availability on October 21 and informed Corteggiano that 80 MW of non-firm transmission was available to Cragview (which was the full capacity of the transmission path to Cragview).[127] Indeed, as Respondents could have seen on PacifiCorp-West's OASIS site, the *only* non-firm transmission reservations made on that path during the

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125 Hanley Dec. at 5, ¶ 7(g)(ii)-(iii).

126 Vitol, May 15, 2014 Response to Data Request 1-12 at 3.

127 Kettler reported to Corteggiano and others that there was 80 MW of non-firm transmission capacity available on the Weed to Cragview path, which Kettler advised was the "limiting factor" for power transmission to Cragview. E-mail from Kolby Kettler to Federico Corteggiano, Mark Sickafoose, Kapil Saxena, and Dylan Seff (Oct. 21, 2013) (VITOL_FERC_0001280). Staff believes that Kettler would have obtained this information from PacifiCorp-West's OASIS site.

week of Vitol's trading were for Vitol's imports.[128] Kettler subsequently received reassurance from Morgan Stanley that non-firm transmission would be available because Powerex, which held the firm transmission rights for the path's full 80-MW capacity, would not be using the capacity.[129] Apparently unaware of the transmission information that Kettler and Corteggiano had obtained, Hanley erroneously believed that it was "difficult" for Vitol to procure transmission.[130] This mistaken understanding gave her "more confidence" that there was competition to serve demand at Cragview and that Corteggiano's proposed import transaction therefore was an "independent trading strategy."[131]

Hanley and Oppenheimer have offered conflicting explanations of what size transaction the Legal/Compliance department approved. Hanley testified that she

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128 *See* PacifiCorp-West OASIS screenshot, "Reservation Summary for: PPW," *available at* https://archive.oasis.oati.com/cgi-bin/webplus.dll?script=%2Fwoaarchive%2Fwoa-main.wml&ppr=BCTC. As reflected in the screenshot, transmission reservations for the path that Kettler identified as "Weed to Crag" are made with a point of receipt of "BPAT.PACW" and point of delivery of "CRAG."

129 On October 25, Morgan Stanley's trader told Kettler that he had previously worked at Powerex and reassured him that transmission service for Vitol's transaction would be available because Powerex "won't be flowing." *See* Telephone call between Ryam Killam and Kolby Kettler (Oct. 25, 2013) (FERC_SUB_IN4-4-00000477). PacifiCorp West's OASIS site showed that Powerex held the firm transmission rights for the full 80-MW capacity of the transmission path. *See* Transmission Reservation Detail 672283 CONFIRMED, *available at* https://www.oasis.oati.com/cgi-bin/webplus.exe?script=/woa/woa-tsr-viewtsr-printview.wml&TSRID=8380313&FromHistory=0&IsFullPeriod=1&EditTSRList=. Kettler likely would have seen that Powerex held the firm transmission rights when he checked PacifiCorp-West's OASIS site on October 21 for transmission availability. *See supra* note 127.

130 Hanley 2014 Test. at 72:4-14. Hanley did not provide the specific source of her information on transmission availability, but testified that the only people with whom she had "lengthy conversations" about the proposed transaction were Corteggiano and Kettler. *Id.* at 73:9-14.

131 *Id.* at 72:10-73:1.

authorized a transaction ranging from 1 MW to 50 MW.[132] Oppenheimer testified that the approval was only for 5 MW.[133] Respondents stated in their Updated 1b.19 Response that the Legal/Compliance department approved only a 5 MW transaction.[134] Respondents claim that they did so, in part, so Vitol would not be the "marginal" bidder.[135]

Hanley also gave conflicting testimony about the price at which Corteggiano was to offer the power to CAISO. In her initial affidavit filed in support of Vitol's response to staff's PF letter, Hanley testified that she approved "the use of a $1 price-sensitive offer."[136] Hanley later amended her affidavit to eliminate the reference to $1, stating that

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132 Hanley 2017 Test. at 128:3-6.

133 Oppenheimer Test. at 39:10-13.

134 *See* Updated 1b.19 Response at 8.

135 *See, e.g.*, Letter from Vitol's Counsel to Enforcement at 5 (Apr. 28, 2015). The "marginal" bidder generally is the bidder with the highest-priced cleared bid. However, if the quantity of that bid is at exactly the quantity needed to meet the demand at that location, then the next highest unaccepted bid may set the price (because LMP is based on the cost to meet the *next* megawatt of demand).

136 *Declaration Under Penalty of Perjury of Ann Marie Hanley* at 5, ¶ 7(f)(i) (Mar. 8, 2017) (included in Vitol PF Response, Ex. F). A "price-sensitive" offer is a bid in which the bidder specifies the price. In the case of a demand bid, it is the highest price the bidder is willing to pay to buy power. In the case of a supply bid, it is the lowest price the bidder is willing to accept to sell power. A bidder may also submit a "price taking" bid, in which no price is specified and the bidder accepts whatever the LMP turns out to be. Respondents claim they submitted their 5-MW import offers at $1/MWh to increase the likelihood that CAISO would accept the offers while reducing the risks that (1) the offers would set the market-clearing price, (2) Vitol would have to dispose of an "odd lot" of purchased power at another location, and (3) CAISO might accept a price-taking offer at a very low price, including a negative price, that would create too large of a loss. *See* Vitol PF Response at 11. Oppenheimer and Hanley did not understand that Vitol could effectively set the price (i.e., prevent recurrence of the congestion cost component of the $388.11/MWh LMP) by importing as little as 1 MW at Cragview. *See* discussion of Vitol's compliance program in Section VI(B). Offering the power at $1/MWh did increase the likelihood that CAISO would accept the import bids, and thereby increased the likelihood that Vitol's imports would eliminate the congestion cost component of the LMP.

she knew only that the traders would make a "price-sensitive" bid, but did not know the bid price.[137]

Both Oppenheimer and Hanley were aware of Corteggiano's involvement in the *Deutsche Bank* matter,[138] yet neither asked Corteggiano probing questions about the proposed import transaction or enlisted a knowledgeable, disinterested power trader to do so. As explained in Section VI(B) below, both Oppenheimer and Hanley lacked sophisticated knowledge of power markets, which contributed to their failure to detect the manipulative purpose of the proposed imports – a manipulative purpose that Powerex had readily identified.

D. Corteggiano Does Not Share Spreadsheet with Legal/Compliance

Even before learning from CAISO that an import bid had set the $388.11/MWh price at Cragview on October 18-19, Corteggiano had compiled a spreadsheet of data from CAISO from which he could ascertain that the price likely reflected "phantom congestion."[139] Notwithstanding Respondents' claim that Hanley "had seen Mr. Corteggiano's spreadsheet,"[140] staff believes that Corteggiano did not share this spreadsheet with Vitol's Legal/Compliance personnel.[141]

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[137] Hanley 2017 Test. at 15:1-7 (explaining changes to affidavit). Hanley's amended affidavit was entered as Exhibit 63 in her April 19, 2017 testimony.

[138] *See* Oppenheimer Test. at 88:18-89:13; Hanley Dec. at 3, ¶ 6(c).

[139] VITOL_FERC_0000437 (Corteggiano Spreadsheet). Corteggiano sent the spreadsheet to Kettler, highlighting hours on October 18 and 19 with the $388.11/MWh price. *See* E-mail from Federico Corteggiano to Kolby Kettler, "cascade.xls" (Oct. 23, 2013) (attaching Corteggiano spreadsheet).

[140] Vitol PF Response at 22-23; *see also* Hanley Dec. at 8, ¶ 10(a)(iii).

[141] Hanley testified she had not seen the spreadsheet before. Hanley 2017 Test. at 99:21-25. She gave this testimony on April 19, 2017, just one day after submitting an amended declaration stating she was aware Corteggiano had the spreadsheet when she approved the transaction. *See* Hanley Dec. at 8, ¶ 10(a)(iii); E-mail from Sohair Aguirre to Carol Clayton, "FOIA CONFIDENTIAL: A. Hanley Amended and Restated Declaration (Apr. 18, 2017) (attaching amended declaration). Hanley claimed that she "may have" seen some of the data on Corteggiano's computer screen. Hanley 2017 Test. at 100:3. However, if she did, she appears not to have understood the data. For example, during her testimony, Hanley thought the column labeled "OTC" (Operating Transfer

Corteggiano's spreadsheet shows the Cascade line ratings, including a number of derates. For the one-year period beginning on October 23, 2012, LMPs at Cragview generally were well below $50/MWh.[142] For the hours in which net flow on the Cascade intertie was more than 0 MW, the highest price was $119.75/MWh. The *highest price* overall on Corteggiano's spreadsheet was $388.11/MWh, and it occurred for eight hours on July 31, two hours on October 18, and fourteen hours on October 19. During every one of those hours, Cascade was derated to 0 MW in the export direction, the price was *exactly* $388.11/MWh, and the net flow on Cascade was 0 MW. Corteggiano observed that this "very unusually high price" was "exactly" the same for multiple hours on October 18-19.[143]

Staff determined that the combination of the derate, exactly repeating prices, and 0 MW net flow caught Corteggiano's attention because it signaled "phantom congestion." Given his knowledge of the Cascade intertie and past experience, Corteggiano would have understood that the 0 MW net flow shown on his spreadsheet meant there was no flow at all over the Cascade intertie during the hours of the derate on October 18-19.[144] The lack of flow, in turn, meant that an unaccepted bid must have set the unusually high price. If a market participant submitted the same unaccepted $388.11/MWh bid for multiple hours, the price would exactly repeat for each hour.

Capability), which showed the Cascade line ratings, referred to "over the counter." *Id.* at 100:25.

142 Corteggiano was familiar with the price history at Cragview at the time he originally purchased the Cragview CRRs. Corteggiano Test. Vol. 2 at 205:10-19.

143 Corteggiano Test. Vol. 1 at 55:18-22. Staff calculated that, of the 8,784 total hours reflected on Corteggiano's spreadsheet, only 280, or 3.2%, repeated for more than one hour. *See* Staff Spreadsheet, Repeatingprice.xls.

144 Corteggiano knew the topology of the CAISO network and therefore understood that the Cascade intertie, like the Silver Peak intertie, was a small capacity intertie. Corteggiano co-developed Vitol's nodal tool, which is based on the topology of the CAISO network. Corteggiano Test. Vol. 1 at 19:8-20:16; *see also* Vitol's PF Response, Ex. A (screen shot from nodal tool). He also helped develop CAISO's CRR program software, which also reflects the network topology. *See* Corteggiano 2010 Test. at 20:16-21:20. Moreover, Corteggiano and his colleagues knew that liquidity at Cascade was low. Hanley 2017 Test. at 64:5-7; 92:9-13 (Corteggiano and Hanley agreed liquidity low); Kettler Dec. at 4, ¶ 8.a. ("Cragview . . . not a liquid trading hub"). Thus, it was highly unlikely that there were multiple cleared import and export bids that serendipitously cancelled each other out to equal exactly 0 MW net flow.

Staff concludes that, had Corteggiano shared his spreadsheet with Oppenheimer and Hanley and explained the significance of the extraordinarily high, repeating prices in combination with the derate and 0 MW net flow, they would have realized that the $388.11/MWh price reflected "phantom congestion" and would disappear if CAISO accepted Vitol's import bid, directly affecting Corteggiano's CRR position at Cragview.

E. Vitol Completes Two Purchase Transactions and Imports Power, Congestion Disappears, and Vitol Loses Money on Imports

After Oppenheimer and Hanley approved the proposed imports, Vitol entered into two separate transactions with Morgan Stanley to purchase power for delivery at Cragview. Late in the day on Friday, October 25, Kettler executed a transaction to acquire 5 MW of power from Morgan Stanley at $46/MWh for Monday, October 28.[145] Then Vitol offered the 5 MW at Cragview for $1/MWh in the day-ahead market for October 28.[146] On the afternoon of Sunday, October 27, CAISO published the hourly LMPs and other data for the October 28 day-ahead market, allowing Vitol to see that its bid had cleared and that Cragview's hourly LMPs for the day ranged from a low of $31.71/MWh to a high of $48.78/MWh.[147] Congestion at Cragview had evaporated, along with the $388.11/MWh price. CAISO's published data also showed a net import flow on Cascade in the *exact* amount of Vitol's bid: 5 MW.[148] Staff finds that, given the historically low liquidity at Cascade, Corteggiano recognized that the reported flow was Vitol's 5 MW of imported power. **Respondents lost about $1,000 on the imports,[149] but avoided approximately $246,000 in losses on their CRRs.**[150]

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[145] *See* Telephone call between Kolby Kettler and Ryan Killam (Oct. 25, 2013) (FERC_SUB_IN14-4_00000480).

[146] Testimony of Heather Noah at 48:15-20 (July 22, 2014) (Noah Test.). Noah worked for Kettler in the Power Operations group and managed all of Vitol's power scheduling. *Id.* at 12:12-23; 13:11-12.

[147] Staff Spreadsheet Aggregated_CAISO_OASIS_info.xlsx (Tab CAISO_OASISdataviaVelocitySuite, Column H).

[148] *Id.* (Column I).

[149] Staff Spreadsheet ProfitLoss_of_Vitol_ImportsCRRs@Cragview.xlsx (Tab Daily_clean, Column B).

[150] *Id.* (Column C).

On Monday, October 28, Vitol and Morgan Stanley discussed completing a second energy sales transaction for the remainder of the week.[151] At that point, Corteggiano could have decided to forgo further imports at Cragview having seen the day before that (1) the $388.11/MWh price had vanished, along with the congestion at Cragview, (2) his 5-MW import likely caused that result, and (3) Vitol lost money on the import deal. Corteggiano then would have realized that he could not capture the profits he had described to Hanley and Oppenheimer because Vitol's imports relieved the constraint on the Cascade intertie and thereby eliminated the export congestion costs that resulted in the exceptionally high $388.11/MWh price. Instead of opting to avoid further losses on the physical transactions, Corteggiano confirmed on Monday that he wanted to buy 5 MW of power for the rest of the week and import it at Cragview.[152] Vitol purchased the power from Morgan Stanley for $48/MWh[153] and then offered the power to CAISO at $1/MWh.[154] CAISO cleared Vitol's import bids and, once again, the net import flow at Cascade was exactly 5 MW, the congestion disappeared, and LMPs were in the normal range for Cragview throughout the week (an average of approximately $40/MWh).[155] **Vitol lost approximately $3500 on the physical import transactions, but avoided approximately $1 million in losses on its CRRs.**[156]

Using bid data provided by CAISO, staff determined that Vitol's import transactions eliminated the congestion costs that otherwise would have appeared in the Cragview LMPs during the week of October 28-November 1. Dr. Guillermo Bautista Alderete, CAISO's Director of Market Analysis and Forecasting, reached the same conclusion based on his independent analyses. The methodology and results of Dr.

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[151] IM between Kapil Saxena and Ryan Killam (Oct. 28, 2013) (VITOL_FERC_0000089-90).

[152] Testimony of Kapil Saxena, Vol. 2, at 240:25-241:2 (July 23, 2014) (Saxena Test. Vol. 2) (Corteggiano said on Monday morning that he wanted to continue the imports the rest of the week).

[153] IM between Kapil Saxena and Ryan Killam (Oct. 28, 2013) (VITOL_FERC_0000089-90). The purchase price was $2 higher than the price of Vitol's initial purchase from Morgan Stanley.

[154] Staff Spreadsheet MarketHarm.xlsx (Tab Bids, Column F).

[155] Staff Spreadsheet ProfitLoss_of_Vitol_ImportsCRRs@Cragview.xlsx (Tab CAISO_OASISdataviaVelocity Suite, Columns H, I, M).

[156] *Id.* (Tab Daily_Clean, Columns B, C).

Bautista Alderete's analyses are described in Attachment 2, "Staff's Summary of Pricing at Cragview," and in CAISO's responses to staff's data requests.[157]

IV. Legal Analysis

The Commission's Anti-Manipulation Rule, 18 C.F.R. § 1c.2, prohibits an entity from (1) using a fraudulent device, scheme or artifice, or making a material representation or a material omission . . . , or engaging in an 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 or sale of electricity subject to the jurisdiction of the Commission.[158] When adopting the rule, the Commission explained that "[f]raud is a question of fact that is to be determined by all the circumstances of a case."[159] Based on its review of the facts and circumstances in this case, staff has concluded that Vitol's and Corteggiano's[160] conduct meets all three elements of the Anti-Manipulation Rule, as discussed below.

A. Fraudulent Scheme

Fraud includes any transaction made "for the purpose of impairing, obstructing, or defeating a well-functioning market."[161] An entity "need not violate a tariff, rule or regulation to commit fraud. Nor does a finding of fraud require advance notice specifically prohibiting the conduct concerned."[162] In penalty assessment orders, the Commission has found to be fraudulent cross-market schemes in which a market participant improperly trades in one market with the intent to move prices in a particular

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157 CAISO, Oct. 24, 2018 Responses to Data Requests OE-CAISO 1-1 to 1-15.

158 *Prohibition of Energy Market Manipulation*, Order No. 670, FERC Stats. & Regs. ¶ 31,202, at P 49 (2006), *reh'g denied*, 114 FERC ¶ 61,300 (2006); 18 C.F.R. § 1c.2 (2018).

159 Order No. 670, FERC Stats. & Regs. ¶ 31,202 at P 50.

160 Individuals are "entities" within the meaning of the rule. Order No. 670, FERC Stats. & Regs. ¶ 31,202 at P 18; *see also Kourouma v. FERC*, 723 F.3d 274 (D.C. Cir. 2013) (upholding Commission's assessment of penalty on individual); cases cited *infra* note 207.

161 Order No. 670, FERC Stats. & Regs. ¶ 31,202 at P 50.

162 *Lincoln Paper and Tissue, LLC*, 144 FERC ¶ 61,162, at P 36 (2013).

direction to benefit a position in a related market.[163] In *ETRACOM,* the Commission determined that the respondents engaged in a fraudulent scheme by trading virtual supply for the purpose of lowering LMPs and thereby increasing the profitability of their CRRs sourcing at the same location as their virtual supply bids.[164] In *Barclays*, the Commission held that respondents employed a fraudulent scheme by trading physical energy products for the purpose of affecting a price index and thereby benefiting their financial swap positions, the value of which was tied to the index.[165] The Commission explained that the physical energy transactions in *Barclays* were fraudulent because they injected into the market the "false information" that the transactions were undertaken for a legitimate economic purpose when they were actually undertaken for a manipulative purpose; the false information impaired the functioning of the market.[166]

Respondents here engaged in the same type of cross-market scheme that the Commission found to be fraudulent in *ETRACOM* and *Barclays*. Specifically, Respondents engaged in a fraudulent cross-market scheme by undertaking import transactions in the day-ahead market that were designed to relieve congestion at Cragview and thereby reduce Cragview LMPs, which in turn allowed Respondents to avoid a loss of $1,227,143 on their CRRs sourcing at Cragview. Respondents injected false information into CAISO's day-ahead market and thereby obstructed that market

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163 *See ETRACOM LLC and Michael Rosenberg*, 155 FERC ¶ 61,284, at P 96 (2016) (*ETRACOM); Barclays Bank*, *PLC*, 144 FERC ¶ 61,041, at P 8 (2013) (*Barclays).* In addition, the Commission has approved settlements based on Enforcement's allegations of manipulative cross-market trading. *See MISO Cinergy Hub Transactions*, 149 FERC ¶ 61,278, at P 18 (2014) ("The Commission emphasizes that using physical power flows to influence physical prices for the purpose of enhancing the value of financial positions violates the Commission's Anti-Manipulation Rule."); *Direct Energy Servs., LLC*, 148 FERC ¶ 61,114, at P 15 (2014); *MISO Virtual & FTR Trading*, 146 FERC ¶ 61,072, at P 13 (2014) ("[U]sing virtual trades to create artificial congestion in the Day-Ahead market for the purpose of enhancing the value of FTR positions violates the Commission's Anti-Manipulation Rule."); *Constellation Energy Commodities Group, Inc.*, 138 FERC ¶ 61,168 (2012); *see also Deutsche Bank*, 142 FERC ¶ 61,056 at P 18 (Order approving settlement in which Enforcement determined Deutsche Bank engaged in cross-product manipulation by trading in physical exports to benefit CRRs).

164 *See ETRACOM*, 155 FERC ¶ 61,284 at PP 96-97, 106.

165 *See Barclays,* 144 FERC ¶ 61,041 at PP 26-32.

166 *Id.* at P 57.

because the purpose of their transactions was to reduce the Cragview LMPs for the benefit of their CRR positions, and not to profit on the physical power imports on a stand-alone basis.

B. Scienter

The Commission defines scienter as knowing, intentional, or reckless conduct.[167] Proof of scienter under the Anti-Manipulation Rule does not require direct evidence, but instead can be "established by legitimate inferences from circumstantial evidence. These inferences are based on the common knowledge of the motives and intentions of men in like circumstances."[168] The indicia of intent to manipulate include indifference to whether a transaction loses money on a stand-alone basis[169] and deviation from prior trading practices.[170] As discussed below, the evidence shows that Corteggiano's motive for the imports at Cragview was not to profit on them, but instead was to benefit Vitol's CRRs by preventing the congestion component of the $388.11/MWh LMP from recurring.

First, Corteggiano understood that flowing any quantity of power in the opposite direction of the derate at Cascade would eliminate the congestion costs that made up the lion's share of the $388.11/MWh LMP. His experience at Deutsche Bank told him that.[171] So did the Market Surveillance Committee's published materials showing that

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167 Order No. 670, FERC Stats. & Regs. ¶ 31,202 at PP 52-53.

168 *Barclays*, 144 FERC ¶ 61,041 at P 75 (citing *U.S. v. Sullivan,* 406 F.2d 180, 186 (2d Cir. 1969); *Thomas v. Doyle,* 187 F.2d 207 (D.C. Cir. 1950)); *accord Maxim Power Corp*., 151 FERC ¶ 61,094, at P 88 (2015) (*Maxim Power*) (scienter "is often proven through circumstantial evidence").

169 *See, e.g.*, *ETRACOM*, 155 FERC ¶ 61,284 at P 151; *Deutsche Bank*, 142 FERC ¶ 61,056 at P 20; *BP America, Inc.*, 156 FERC ¶ 61,031, at PP 22, 131-134 (2016).

170 *See, e.g.*, *ETRACOM*, 155 FERC ¶ 61,284 at P 153; *Brian Hunter*, 135 FERC ¶ 61,054, at PP 88-89 (2011).

171 While at Deutsche Bank, Corteggiano had determined that low liquidity made it easier for him to change the price at an intertie and that there was low liquidity at the Silver Peak intertie. Corteggiano 2010 Test. at 109:14-22 ("lack of market participation" at Silver Peak); *id.* at 96:3-4 (Corteggiano suspected that there was only one transaction on the intertie). During the period of his trading at Silver Peak, Corteggiano tested the

prices at illiquid, partially derated interties may reflect "phantom congestion" that could be eliminated by flowing as little as 1 MW of power in the opposite direction of the derate. Further, Corteggiano knew that liquidity at Cragview generally was low.[172] Moreover, Kettler and Corteggiano had information showing that ample transmission capacity to Cragview was available, indicating few or no other market participants were seeking to schedule power flows there.[173] Based on this evidence, staff finds that Corteggiano knew liquidity at Cragview would be low and therefore expected Vitol's 5 MW import over the Cascade intertie would eliminate the export congestion at Cragview – and with it the $388.11/MWh price.

Corteggiano's testimony supports staff's conclusion that Corteggiano understood that importing power over the Cascade intertie would eliminate the congestion costs in the Cragview LMP. Specifically, Corteggiano testified he knew the shadow price on the Cascade intertie arose from the binding constraint imposed by the derate.[174] He also knew that 100% of the shadow price would appear as congestion costs in the Cragview LMP.[175] Corteggiano also admitted knowing that the constraint would *not* bind if there was a net import flow on the Cascade intertie between 1 and 79 MW.[176] Consequently, Corteggiano would have known and expected that importing 5 MW of power over the Cascade intertie would result in no shadow price on the intertie and no associated congestion cost in the Cragview LMP. Respondents' imports had exactly that effect.

Second, certain of Corteggiano's e-mail exchanges show that his real concern was avoiding losses to his CRRs, not making a profit on the physical power imports. On Monday, October 21, 2013, Corteggiano sent an e-mail to Sergio Brignone and others asking for a short meeting to discuss the Cragview "trading opportunity."[177] Brignone

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susceptibility of a more liquid location to his trading, which helped confirm that the lower the liquidity, the more readily he could influence price. *See id.* at 69:19-71:18.

172 *See* Hanley 2017 Test. at 64:5-7; 92:9-13 (Corteggiano aware that liquidity was low).

173 *See* discussion of transmission availability in Section III(C).

174 *See* Corteggiano Test. Vol. 2 at 143:8-11 ("The binding constraint has an associated shadow price.").

175 *Id.* at 148:24-149:5.

176 *See id.* at 244:16-246:3.

177 E-mail from Federico Corteggiano to Dylan Seff, et al., "Trading Opportunity"

was Corteggiano's co-head of FTR trading and – like Corteggiano – had no responsibility or authority to trade physical power.[178] Corteggiano was unable to provide any reasonable explanation for why it would be important to discuss a physical power import with an FTR trader.[179] Brignone – like Corteggiano – would only be interested in the effect on Vitol's CRRs. Indeed, Corteggiano conceded that, as an FTR trader, Brignone would have nothing to offer on the merits of Corteggiano's proposed import transactions.[180]

On the morning of Sunday, October 27, Kettler sent an e-mail to Corteggiano and others inquiring about the day-ahead "pricing" at Cragview.[181] Instead of telling Kettler the price, Corteggiano replied: "No congestion on the intertie for tomorrow (export or import). LMPs similar to NP."[182] Corteggiano's focus on congestion, rather than the actual LMP, shows that he was concerned about the impact his trade had on his CRRs rather than the profitability of the import transaction.

Third, although CAISO had scheduled derates on the Cascade intertie for a number of dates later in November and December (thereby again creating the risk that the $388.11/MWh price would reappear), Respondents never sought to import power at Cragview on those dates. From the beginning, Respondents sought to import power only for the week of October 28-November 1. Corteggiano had flattened his CRR position for the months of November and December by purchasing counter-flow CRR positions, but he could not do so for the last week in October. The only way to mitigate the risk of loss

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(Oct. 21, 2013) (VITOL_FERC_0001269).

178 Corteggiano Test. Vol. 1 at 15:13-17 (Brignone and Corteggiano share responsibility for FTR/CRR trading); Brignone Test. at 12:4-7 (Brignone is an FTR trader); Seff Test. at 33:11-18 (FTR/CRR trader needs management authorization to trade physical power).

179 Corteggiano Test. Vol. 2 at 187:4-8 ("we share the FTR trading desk, so I thought it was important to inform him about the trade").

180 *Id.* at 187:15-19.

181 E-mail from Kolby Kettler to Federico Corteggiano, et al., "CRAG Imports-ARB Imports" (Oct. 27, 2013) (VITOL_FERC_0000307).

182 E-mail from Federico Corteggiano to Kolby Kettler, et al., "Re: CRAG Imports-ARB Imports" (Oct. 27, 2013) (VITOL_FERC_0000824). "NP" refers to the North Path 15 trading hub. *See* Corteggiano Test. Vol. 2 at 261:12-24.

during that week was to import power over the Cascade intertie, and that is what Respondents did.

Fourth, Respondents were indifferent to the profitability of their import transactions at Cragview.[183] Respondents could have ended their trading at Cragview after seeing on Sunday, October 27, that their imports in the day-ahead market for October 28 had (1) lost money, and (2) eliminated the congestion at Cragview – and with it the $388.11/MWh price that Respondents were supposedly pursuing. Instead, Respondents chose to continue the imports through the remainder of the week of October 28 and continued to lose money on them. Respondents lost money every day that they traded physical power at Cragview.[184]

Respondents could not reasonably have expected to make a profit on their import transactions. The spreadsheet that Corteggiano sent to Kettler showed that, other than the highly anomalous $388.11/MWh price during hours with 0 MW net flow on Cascade, hourly LMPs at Cragview in October 2013 were almost all under $45/MWh, with a handful of hours barely topping $50/MWh.[185] If Corteggiano received the prevailing price for his imports, rather than the anomalous $388.11/MWh price, he would suffer a loss because purchasing the power cost $46/MWh on October 28 and $48/MWh for the rest of the week. Corteggiano could not have expected CAISO to pay $388.11/MWh since LMPs throughout the entire *region* were much lower than $388.11/MWh and there was little difference in prices between the Pacific Northwest and California at the time.[186]

Fifth, the import transactions deviated from Respondents' normal trading in numerous ways, including:

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183 Respondents' indifference is readily understandable. As staff explained in its PF Letter, if the $388.11/MWh price reappeared at Cragview, Vitol would lose $15,000 per hour on its CRRs. In contrast, if Vitol paid Corteggiano's estimated cost of $50/MWh for 50 MW of power and had to dispose of it for nothing, the loss would be only $2,500 per hour – six times less than the potential loss on the CRRs.

184 Staff Spreadsheet ProfitLoss_of_Vitol_ImportsCRRs@Cragview.xlsx (Tab Daily_clean, Column B). Respondents realized a profit for only 19 of the 120 hours they imported power at Cragview (16% of the hours); 12 of those 19 hours (or 63%) occurred on November 1, the last day of Respondents' trading. *Id.* (Tab Hourly_clean, Column B).

185 Corteggiano Spreadsheet at 1-9 (rows 2-553).

186 *See* Attachment 1, Regional LMP Maps.

- Corteggiano was not authorized by Vitol to trade physical power on his own and had only done so once before in his career – during the cross-product market manipulation scheme at Deutsche Bank;[187]

- Corteggiano did not trade physical power after the imports at Cragview;[188]

- Vitol had not previously traded physical power at Cragview;[189]
- Vitol's traders dealt principally in financial products, not physical power;[190]

- Vitol normally traded only at liquid hubs;[191]

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187 Corteggiano Test. Vol. 2 at 163:23-165:23.

188 Corteggiano Test. Vol. 1 at 85:9-11.

189 Testimony of Kolby Kettler, Vol. 1, at 131:10-15, 140:12-15 (July 23, 2014) (Kettler Test. Vol. 1); Saxena Test. Vol. 1 at 101:9-11; Noah Test. at 45:1-6.

190 As Saxena said in an IM to a potential counterparty: "I have no idea what I'm talking about when comes to phys[ical]." IM between Kapil Saxena and pwxmiles (Oct. 24, 2013) (VITOL_FERC_0000027-28). Sickafoose only traded "a little bit of physical power once in a while." Sickafoose Test. Vol. 1 at 9:2-3.

191 Saxena Test. Vol. 1 at 123:21-124:2. In fact, 80-85% of Saxena's power trading was on ICE. *Id.* at 124:2.

- Power Matrix traders and Operations personnel spent an unusual amount of time on the import transactions[192] and were remarkably anxious[193] to complete a relatively small deal;[194]
- The traders and Kettler were exceptionally willing to concede on the key deal terms of price, quantity, and transmission risk;[195]

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[192] Saxena alone spent five hours on Corteggiano's deal, while he typically spends "seconds" on each of his own transactions. Saxena Test. Vol. 2 at 232:12-233:8, 234:2-5; *see also* IM between Kapil Saxena and Mark Sickafoose (Oct. 25, 2013) (VITOL_FERC_0000025-26) (Saxena "spent the entire morning trying to find this fucking power for federico"). Notwithstanding Saxena's investment of time in the deal, he made sure that the import transaction would be booked to Corteggiano's P&L and not his own. *See* E-mail from Kapil Saxena to Ann Marie Hanley, "FW: Crag Firm Delivered Power" (Oct. 24, 2013) (VITOL_FERC_0016924). Saxena explained that he didn't know the "economics" of the deal. Saxena Test. Vol. 2 at 260:1-2.

[193] Saxena told Powerex that Kettler was "super motivated" and that Vitol could "prepay if need be." IM between Kapil Saxena and pwxmiles (Oct. 24, 2013) (VITOL_FERC_0000029-30). On October 25, Saxena was so preoccupied with the Cragview deal that he was in the office working on it at 2:02 p.m. when he had planned to leave the office at 12:45 p.m. to catch a flight. Saxena Test. Vol. 2 at 193:13-14, 22-24; 214:6-10 (discussing IM between Kapil Saxena and Ryan Killam (Oct. 25, 2013) (VITOL_FERC_0000088)). That same day, the Morgan Stanley trader called Kettler back to ask whether he still wanted to do a deal for Monday, October 28; Kettler replied "I absolutely would. Yeah, let's do it." Telephone call between Kolby Kettler and Ryan Killam (Oct. 25, 2103) (FERC_SUB_IN14-4 00000480).

[194] As of December 9, 2013, Vitol had imported 55,040 MWs of power into California during 2013, only 600 MWs (or approximately 1%) of which were Corteggiano's imports. *See* E-mail between Kolby Kettler and Max Dweck, et al., "2013 ARB Reporting Log.xls" (Dec. 9, 2013) (VITOL_FERC_0004788). The 600 MW attributed to Corteggiano was the power imported during the week of October 28 at Cragview.

[195] Kettler told Morgan Stanley that Vitol was willing to buy and import as little as 1 MW, would take the transmission risk, and would pay the $46 price that Morgan Stanley named – with no negotiation. Telephone call between Kolby Kettler and Ryan Killam (Oct. 25, 2013) (FERC_SUB_IN14-4_00000480). He told Powerex "we will take 100% of all the risks . . . trans, bookouts, you name it." IM between Kolby Kettler and jennier678 (Oct. 25, 2013) (VITOL_FERC_0000033-37). Saxena testified that he has

- Kettler was not a trader and went well beyond his normal role in Operations to locate power to import and finalize the transaction with Morgan Stanley on October 28;[196]

- This was the only time Saxena sought to trade physical power for someone else,[197] and neither Saxena nor Sickafoose had ever worked on a trade for Corteggiano before;[198] and

- Vitol had so little experience with this type of transaction that it relied on Morgan Stanley to submit the electronic tags[199] for the imports.[200]

As shown below, Powerex's reasons for declining to sell power to Respondents underscore how widely Respondents' conduct deviated from their normal trading practices.[201] In response to staff's data requests, Powerex explained:

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never "entered into a transaction where Vitol assumed all the risk of the loss." Saxena Test. Vol. 1 at 69:8-24.

196 *See* Recording of telephone conversation between Kolby Kettler and Ryan Killam (Oct. 25, 2013) (FERC_SUB_IN14-4_00000480).

197 Saxena Test. Vol. 1 at 55:4-12.

198 Sickafoose Test. Vol. 1 at 22:12-23:4; Saxena Test. Vol. 1 at 55:4-12, 56:8-12, 91:9-15.

199 Electronic tags (or e-tags) are computerized forms used to schedule the transmission of energy from a seller to a buyer across one or more BAA boundaries. *See Availability of E-Tag Information to Commission Staff,* Order No. 771, 141 FERC ¶ 61,235, at P 3 (2012). Although Morgan Stanley prepared the e-tags, Vitol had copies and produced them in the investigation. *See* E-tag numbers CHPD_MSCG01MSK1896_CISO, CHPDMSCG01MSKJ355_CISO, CHPD_MSCG01MSKJ527_CISO, CHPD_MSCG01MSKJ716_CISO, CHPD_MSCG01MSKJ958_CISO (VITOL_FERC_0000096-0000105).

200 *See* Noah Test. at 46:16-18 (Noah typically handles tagging for Vitol); 44:8-25 (Noah had Morgan Stanley handle tagging for Cragview transaction because she had "not ever done that tag before").

201 Powerex told Vitol it could not sell the requested power to Vitol because the companies lacked a credit arrangement. *See* IM between Kapil Saxena and pwxmiles (Oct. 25, 2013) (VITOL_FERC_0000087). However, Powerex's response to staff's

> Notwithstanding credit challenges, Powerex was reluctant to pursue Vitol's proposed transaction due to the unusual nature of Vitol's call and query. In particular, Vitol was not a routine counterparty for Powerex. Moreover, Vitol was generally known as a financial trader, not an active physical market participant, whereas the transaction proposed by Vitol was physical. In fact, Vitol staff did not appear to know how to conduct the transaction. The location of the requested delivery was also unusual: Cascade is a relatively small intertie and is not a liquid bilateral trading point. In Powerex's experience, there is very little if any short-term bilateral trading activity at Cascade, even by the more active physical power marketers. Furthermore, the transaction price that Vitol appeared willing to pay was generally above the prevailing market prices in the northwest and in California at that time, suggesting the transaction would not be economic on a stand-alone basis for Vitol.
>
> Upon further review of available public data, Powerex identified that Vitol held a CAISO CRR position in the import direction at Cascade. This position would have been adversely affected by the high CAISO prices observed in the prior week at Cascade associated with a derate of the intertie to 0 MW in the export direction. A similar derate was known to be scheduled for the period October 28-November 1, which was also the period of Vitol's requested transaction. Given Powerex's understanding at the time of the potential effect of "degenerate pricing" on CAISO interties de-rated to 0 in one direction but not in the other – which matched the recent and future scheduled de-rates at Cascade – it appeared possible that Vitol's proposed transaction might be designed to lower the CAISO market clearing price at Cascade for the purpose of supporting or benefiting Vitol's CRR position rather than being an economic physical transaction on a stand-alone basis.[202]

Finally, Corteggiano had strong professional and financial incentives to prevent losses on his CRRs. At Vitol, serious adverse consequences could befall a trader who incurred significant losses. In late 2013, Vitol demoted a Power Matrix trader to an

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request shows Powerex was reluctant to pursue the transaction because of its concern that the purpose of the import deal might be to benefit Vitol's CRR position.

[202] Powerex, Oct. 4, 2018 Response to Data Request OE-Powerex 1-1.

analyst position because of his losses.[203] Moreover, a trader's profits and losses factored into the trader's annual performance bonus.[204]

Based on all of this direct and circumstantial evidence, staff concludes that Respondents intentionally used uneconomic import transactions at Cragview to manipulate prices in the day-ahead market for the benefit of their CRRs.

C. Jurisdictional Transactions

Vitol's imports from October 28-November 1, 2013, were jurisdictional transactions under 18 C.F.R. § 1c.2. The FPA gives the Commission jurisdiction over the "the sale of electric energy at wholesale in interstate commerce."[205] Vitol's import transactions were sales of power at wholesale and therefore jurisdictional. Moreover, Corteggiano's activities in the CAISO market were subject to the Commission's jurisdiction. The Court of Appeals for the District of Columbia Circuit has affirmed that the Commission has "authority [under the FPA] to regulate the activity of traders who participate in energy markets."[206] Multiple United States district courts have held that individuals are "entities" within the meaning of Section 222 of the FPA and may therefore be held liable for market manipulation.[207]

V. Respondents' Contentions Are Unpersuasive

Respondents' PF Responses and Updated 1b.19 Response set forth a number of arguments contesting staff's factual findings and legal conclusions. Staff addresses the most significant arguments below. For the reasons explained, staff finds Respondents' arguments unpersuasive.

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[203] Brignone Test. at 38:25-41:11. Brignone testified that the trader incurred "significant" losses, but did not quantify them. *Id.* at 39:13-18.

[204] *Id.* at 56:1-5.

[205] 16 U.S.C. § 824(b)(1) (2012).

[206] *Kourouma*, 723 F.3d at 276.

[207] *FERC v. City Power Marketing, LLC,* 199 F.Supp.3d 218, 240-41 (D.D.C. 2016); *FERC v. Maxim Power Corp.,* 196 F.Supp.3d 181, 200-01 (D.Mass. 2016); *FERC v. Silkman*, 177 F.Supp.3d 683, 709-11 (D.Mass. 2016); *FERC v. Barclays Bank PLC*, 105 F.Supp.3d 1121, 1145-46 (E.D.Cal. 2015).

A. Imports Motivated By Profitable Trading Opportunity, Not CRR Losses

Respondents contend that the purpose of the imports at Cragview was to profit from the high price associated with the partial derate of the Cascade intertie, rather than to benefit Vitol's CRRs.[208] Relying on Corteggiano's testimony, Respondents claim that Corteggiano understood that the derate of the Cascade intertie "meant that the rest of the CAISO system could not provide power to this 'isolated market' and that only supply offers to import power to Cragview could serve demand bids."[209] Respondents further assert that there is no documentary evidence contradicting Corteggiano's testimony regarding his intent.[210] Respondents' arguments lack support.

Corteggiano's "isolated market" explanation incorrectly implies that there was an active trading market at Cragview where demand bids drove prices up to the extraordinary level of $388.11/MWh. In reality, Cascade is a transmission interface between the CAISO and PacifiCorp-West BAAs and is principally used to import power from the Pacific Northwest into CAISO, rather than serving local load. As Powerex explained in its response to data requests, "Cascade is a relatively small intertie and is not a liquid bilateral trading point. In Powerex's experience, there is very little if any short-term bilateral trading activity at Cascade, even by the more active physical power marketers."[211] As discussed in Section IV(B), Corteggiano also had experience with small, illiquid interties and therefore could not have reasonably believed that demand bids were driving the $388.11/MWh price at Cragview.

The energy price data that was publicly available at the time of Corteggiano's proposed import transaction at Cragview also undercuts Corteggiano's claimed rationale for the transaction. Under Corteggiano's rationale, there was demand for power at Cragview that could not be served by the "CAISO system" because of the derate. In light of the derate, the purported demand would have been from buyers in the PacifiCorp-West BAA. Yet, in the weeks leading up to Respondents' trading at Cragview, prices in the Pacific Northwest (as measured at the California-Oregon Border trading hub) were

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[208] *See, e.g.,* Vitol PF Response at 4-5; Corteggiano PF Response at 5.

[209] Updated 1b.19 Response at 6 (quoting Corteggiano Test. Vol. 2 at 151:23-152:6).

[210] *See, e.g.,* Vitol PF Response at 15-16; Updated 1b.19 Response at 10.

[211] Powerex, Oct. 4, 2018 Response to Data Request OE-Powerex 1-1.

averaging approximately $39/MWh.[212] As Corteggiano would have understood, there was no reason for a buyer to pay $388.11/MWh for power at Cragview when it was available elsewhere in the PacifiCorp-West BAA for nearly ten times less.

Contrary to Respondents' assertion that there is no documentary evidence of intent, there are two e-mails showing that Corteggiano's real purpose in undertaking the import transactions was to benefit his CRRs.[213] Even if there were no documentary evidence of intent, however, proof of scienter does not require speaking documents or other direct evidence.[214] Rather, scienter may be, and often is, established through circumstantial evidence alone[215] and, as described in Section IV(B), there is abundant circumstantial evidence of scienter in this case.

Respondents' suggestion that Corteggiano's testimony should be accepted at face value is misguided for several reasons, including:

- Respondents' narrow focus on Corteggiano's own statements ignores the Commission's determination that "fraud is a question of fact that is to be determined by *all* the circumstances of a case."[216] Vitol's own Trading Guidelines say the same thing.[217] The totality of the evidence discussed in Section IV(B) establishes Respondents' manipulative intent.

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[212] *See* Attachment 1, Regional LMP Maps.

[213] As discussed in Section IV(B), one e-mail shows that Corteggiano involved fellow FTR-trader Brignone in the discussion of the proposed imports at Cragview, when the only logical reason to do so was because the imports would affect Vitol's CRRs. In another e-mail exchange in which Kettler asked about the price at Cragview after Vitol's first day of imports, Corteggiano responded that there was no congestion on the intertie.

[214] *ETRACOM*, 155 FERC ¶ 61,284 at P 129; *Barclays*, 144 FERC ¶ 61,041 at P 7.

[215] *Maxim Power*, 151 FERC ¶ 61,094 at P 88.

[216] Order No. 670, FERC Stats. & Regs. ¶ 31,202 at P 50 (emphasis added).

[217] Vitol's Trading Guidelines state "no single factor will govern whether activity in a market will be deemed manipulative or another form of market abuse. Whether a person has engaged in manipulative or abusive conduct will be decided based on all the facts and circumstances surrounding a transaction, i.e. a determination of what you have done – not what you claim (after the fact) to have intended." Trading Guidelines at 5 (VITOL_FERC_0111128).

- Corteggiano had strong motivation to deny that he intended to benefit his CRR positions. In the *Deutsche Bank* matter, Corteggiano admitted that he undertook the export transactions at the Silver Peak intertie to benefit his CRRs. The end result was an enforcement action, Order to Show Cause, and Settlement Order against Corteggiano's employer. After that experience, Corteggiano was unlikely to admit that he engaged in the same conduct at Vitol.

- In staff's view, Corteggiano was an evasive witness and his testimony was not credible. For example, Corteggiano gave a non-responsive answer when asked whether CAISO's acceptance of Vitol's import bid at Cragview would remove the constraint on the Cascade intertie, a conclusion that would inevitably follow from other facts he had admitted knowing.[218] When asked if it ever crossed his mind that there was a "reasonable chance" that Vitol's imports would cause the constraint not to bind, Corteggiano said "no," but was unable to explain his response coherently.[219] There were also significant inconsistencies between Corteggiano's testimony and that of other witnesses. For example, Corteggiano claimed that he had "no idea" how much market activity there was at Cragview.[220] That statement contradicted Hanley's testimony that Corteggiano agreed with her that "there was not a lot of liquidity" at Cragview.[221]

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[218] Corteggiano Test. Vol. 2 at 247:25-248:6 ("Any bid and offer in any market will affect the clearing price."). As discussed in Section IV(B), Corteggiano had admitted knowing that the congestion costs at Cragview resulted from the binding constraint on the Cascade intertie created by the derate and that the constraint would be removed if the net import flow on the intertie was any quantity between 1 and 79 MW.

[219] *Id.* at 248:17-20 ("No. Basically we – our – we bid $1 and we could pay – we pay 50 and were not the price-taking – we were not the marginal bid offer, so there is no…").

[220] Corteggiano Test. Vol. 2 at 149:14.

[221] Hanley 2017 Test. at 92:9-16. Moreover, as previously explained, Corteggiano was able to identify which interties were liquid when he was at Deutsche Bank, and it is not credible for him to suggest that he somehow lost that ability with respect to liquidity at Cragview. Corteggiano also testified that he had only "watercooler discussions" with colleagues at Vitol about the trading at issue in the *Deutsche Bank* matter. Corteggiano Test. Vol. 1 at 101:16-18. In contrast, Oppenheimer testified that he

B. No Fraud in Absence of Misrepresentation or Deceptive Device

Respondents incorrectly assert that, in order to establish fraud under Section 222 of the FPA, staff must prove either that there was an affirmative misrepresentation or use of a deceptive device such as a false schedule, wash trade, or other form of fictitious transaction.[222] Corteggiano argues that there was no fraud because the import transaction was an "open market, competitively priced trade," and "there is no allegation of collusion, wash sales, fictitious bids, circular flows, *uneconomic pricing* or other contrivance."[223] Respondents misstate both the facts and the law.

Contrary to Corteggiano's assertion, staff does allege that Corteggiano knowingly pursued "uneconomic" import transactions for the unlawful purpose of benefiting his CRR positions. As demonstrated in Section III(C), Corteggiano had ample information to conclude that the $388.11/MWh price would disappear on account of his trading, which would (and did) return prices to their uncongested level at Cragview. Corteggiano could also see from the data in his spreadsheet that the prevailing prices at Cragview were *below* the price that Vitol would have to pay Morgan Stanley for the power. Corteggiano's $1/MWh bid could only drive the price even lower.[224] Just as Corteggiano had to expect, the import transactions on October 28 lost money. Yet, after incurring that loss, Corteggiano decided to import power for the rest of the week, again losing money on the imports every day.

As discussed in Section IV(A), the Commission has found to be fraudulent various schemes in which a participant makes uneconomic trades in one market for the purpose of benefiting a position in another market. Vitol's attempt to distinguish the *Deutsche*

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met with Corteggiano after the show cause order issued in *Deutsche Bank* to discuss the problematic conduct in that case. *See* Oppenheimer Test. at 91:3-6.

[222] Vitol PF Response at 24-26.

[223] Corteggiano PF Response at 3 (emphasis added).

[224] Corteggiano's October 21, 2013, e-mail acknowledges the potential price impact, stating: "If the market is very thin or if there is no market, we could be setting the price at the intertie at our bid price." E-mail from Federico Corteggiano to Ann Marie Hanley, et al., "Trading Opportunity" (Oct. 21, 2013) (VITOL_FERC_0015481). Of course, this was only a partial and therefore misleading description since Corteggiano did not inform Oppenheimer or Hanley that the $388.11/MWh price could have been set by an uncleared import bid and that importing power in *any* quantity likely would eliminate that price.

Bank settlement on the ground that it involved false "wheeling through" schedules is misguided. The Staff Report in the *Deutsche Bank* show cause proceeding reflects that Enforcement staff considered the cross-market manipulation and false schedules to be separate violations.[225] Just as Deutsche Bank's conduct would have been actionable without the false schedules, so too is Respondents' cross-product market manipulation actionable without any additional fraudulent act.

Respondents misstate the law in contending that "open market" transactions undertaken with intent to manipulate prices are not actionable.[226] Both the Commission and the courts have held that open market transactions undertaken with manipulative

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[225] *Deutsche Bank*, Order to Show Cause, 140 FERC ¶ 61,178, App. A (Staff Report) at 13-14, 18-19.

[226] *See, e.g.,* Updated 1b.19 Response at 19-20. To support their position, Respondents rely on the recent decision in *United States Commodity Futures Trading Commission v. Wilson, et al.,* No. 13 Civ. 7884, 2018 WL 6322024 (S.D.N.Y. Nov. 30, 2018) (*Wilson*). That case is readily distinguishable because it involved a manipulation claim under the Commodity Exchange Act (CEA), which at the time of the conduct required proof of four elements to establish manipulation: defendant had the ability to influence prices, an "artificial price" existed, defendant caused the artificial price, and defendant specifically intended to cause the artificial price. *Id.* at *12 (citations omitted). The court in *Wilson* held that the CFTC could not establish that the price was "artificially high" based solely on defendants' intent to affect the price because that would "read out the artificial price element . . . by collapsing it into the subjective intent requirement." *Id.* at *15. The Commission has held that artificial price is not "a necessary element required to find a violation of the FPA or the Anti-Manipulation Rule." *Barclays,* 144 FERC ¶ 61,041 at P 59 (citing *Brian Hunter*, 135 FERC ¶ 61,054 at P 54; *SEC v. Tambone*, 550 F.3d 106, 130 (1st Cir. 2008); *Berko v. SEC*, 316 F.2d 137, 143 (2d Cir. 1963)). The language that Respondents quote from *Wilson* relates to the artificial price element of a CEA claim and is therefore irrelevant to a manipulation claim under the FPA. *See* Updated 1b.19 Response at 20 (manipulation theory "taken to its logical conclusion would effectively bar market participants with open positions from ever making additional bids"). Moreover, Respondents neglect to mention that, with respect to intent, the court found the evidence showed the purpose of defendants' bidding was legitimate price discovery, not price manipulation. 2018 WL 6322024 at *20. In contrast, as demonstrated in Section IV(B), the evidence here shows that Respondents' purpose in submitting the import bids was to manipulate the price at Cragview to benefit Vitol's CRR position.

intent are fraudulent.[227] Respondents claim that they did not deceive the market and actually benefited it by "restor[ing] a market price from one that CAISO had set artificially."[228] To the contrary, Respondents deceived the market by injecting into it the false information that they were importing power at Cragview in order to profit from an expected spread in prices between the Pacific Northwest and CAISO.[229] In fact, Respondents imported power at a financial loss in order to benefit their CRRs. Moreover, Respondents' self-help remedy undermined the lawful, orderly, and transparent procedures that both the Commission and CAISO have established to address market design concerns, which include the stakeholder process that led to CAISO's tariff amendment on degenerate pricing.[230]

C. No Proof Corteggiano Knew Imports Would Relieve Congestion

Respondents assert that staff has failed to prove that Corteggiano knew or could have known that the $388.11/MWh price at Cragview on October 18-19 would be eliminated by Vitol's imports.[231] This implies the wrong legal standard because the Commission must find only that Corteggiano *intended* to manipulate the price at Cragview, not that he knew in advance that he would be successful. In any event, the

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[227] *See, e.g., Houlian Chen,* 151 FERC ¶ 61,179, at P 136 (2015); *FERC v. Barclays Bank PLC*, 105 F. Supp. 3d at 1147; *Amaranth Advisors L.L.C.*, 124 FERC ¶ 61,050, at P 65 (2008) (citing *Markowski v. SEC*, 274 F.3d 525, 527-28 (D.C. Cir. 2001)).

[228] *See* Updated 1b.19 Response at 21.

[229] Both the Commission and the courts "have recognized that transactions undertaken with manipulative intent, rather than a legitimate economic motive, send inaccurate price signals to the market: 'Because every transaction signals that the buyer and seller have legitimate economic motives for the transactions, if either party lacks that motivation, the signal is inaccurate.'" *Barclays*, 144 FERC ¶ 61,041 at P 53 (citing *Brian Hunter*, 135 FERC ¶ 61,054 at P 51 (quoting *In re Amaranth Natural Gas Commodities Litig.*, 587 F.Supp.2d 513, 534 (S.D.N.Y. 2008)); *SEC v. Masri*, 523 F.Supp.2d 361, 372 (S.D.N.Y. 2007); *CFTC v. Amaranth Advisors, LLC*, 554 F.Supp.2d 523, 534 (S.D.N.Y. 2008); *Initial Public Offering Sec. Litig.*, 241 F.Supp.2d 281, 391 (S.D.N.Y. 2003)).

[230] Another mechanism was filing a complaint under FPA Section 206, 16 U.S.C. § 824e (2012), in accordance with the Commission's procedures in 18 C.F.R. § 385.206 (2018).

[231] Updated 1b.19 Response at 10-19.

evidence discussed in Section IV(B) shows that Corteggiano must have deduced that the $388.11/MWh price reflected "phantom congestion," just as the prices at Silver Peak did, and that his imports would eliminate it by moving the net export flow on the Cascade intertie away from the 0 MW limit set by the derate.

Respondents contend that "[i]t is impossible for a trader to determine CAISO pricing degeneracy without the aid of non-public information."[232] Three facts belie Respondents' claim:

First, drawing on the same public information available to Respondents, Powerex recognized that the $388.11/MWh price was very likely degenerate and that Vitol's proposed import deal appeared intended to benefit Vitol's CRR positions at Cragview.[233] Powerex stated that personnel in its trade, compliance, and policy groups already were aware of the degenerate pricing issue by October 2013 as a result of the Commission's show cause order in the *Deutsche Bank* proceeding, as well as CAISO stakeholder and other public meetings.[234]

Second, even if Corteggiano was uncertain before making his first import bid whether the $388.11/MWh price reflected "phantom congestion," he would have known it by the afternoon of Sunday, October 27, when CAISO published the results for the October 28 day-ahead market. At that point, Corteggiano knew CAISO accepted his bid, the congestion costs disappeared, and the net flow on the Cascade intertie was the exact amount of his bid (5 MW). Having seen on October 27 that his unprofitable 5 MW import eliminated the $388.11/MWh price and with it the congestion costs, Corteggiano continued the imports for the rest of the week of October 28 and continued to lose money on the imports each day that week.

Third, Respondents have not shown that Corteggiano had any non-public information relating to his trading at the Silver Peak intertie while at Deutsche Bank, yet he was able to identify "phantom congestion" and eliminate it.

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[232] Supplemental PF Response at 3; *see also* Updated 1b.19 Response at 10-11.

[233] Powerex, Oct. 4, 2018 Responses to Data Requests OE-Powerex 1-1 (appeared to Powerex that Vitol's proposed transaction may be designed to benefit its CRRs); OE-Powerex 1-2 (Powerex understood that high prices at Cragview on October 18-19 likely the result of degenerate pricing); OE-Powerex 1-3 (information on degenerate pricing was publicly available).

[234] Powerex, Oct. 4, 2018 Response to Data Request OE-Powerex 1-3.

D. Advice of Counsel Defense

Respondents contend that Corteggiano's reliance on Oppenheimer's and Hanley's approval of the import transactions negates the element of intent required to establish a manipulation violation.[235] Staff believes that, to assert their advice of counsel defense successfully, Vitol and Corteggiano must show that Corteggiano (1) made a complete disclosure of the relevant facts to Oppenheimer and Hanley, (2) requested their advice on the legality of the proposed transaction, (3) received their advice that the conduct would be legal, and (4) relied in good faith on that advice.[236] The advice of counsel defense is unavailable here both because Corteggiano did not disclose all of the relevant facts to Oppenheimer and Hanley and because Corteggiano did not rely on their advice in good faith.[237]

Corteggiano's October 21, 2013, e-mail left Oppenheimer and Hanley with the understanding that Corteggiano genuinely expected to capture the $388.11/MWh price with his proposed import transaction at Cragview, while only briefly mentioning that Vitol might set the price.[238] Corteggiano allowed Oppenheimer and Hanley mistakenly to believe that submitting a low-volume bid of 5 MW would prevent Vitol from being the marginal bidder and thereby avoid setting the LMP at Cragview. However, Corteggiano knew that being the marginal bidder was not the only way for Respondents to set the price at Cragview. As shown in Section IV(B), Corteggiano well understood that he could eliminate the congestion costs in the $388.11/MWh LMP and thereby effectively set the price by flowing as little as 1 MW of power over the Cascade intertie in the opposite direction of the derate.

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235 Vitol PF Response at 28-31; Corteggiano PF Response at 7-8.

236 *See, e.g.*, *Mumby v. Pure Energy Services (USA), Inc.,* 636 F.3d 1266, 1270 (10th Cir. 2011); *SEC v. Goldfield Deep Mines Co. of Nevada*, 758 F.2d 459, 467 (9th Cir. 1985) (citing *SEC v. Savoy Industries, Inc.*, 665 F.2d 1310, 1314 n.28 (D.C. Cir. 1981)).

237 Although Corteggiano had the responsibility to disclose the relevant facts to Oppenheimer and Hanley, more effective implementation of Vitol's compliance program likely would have enabled them to identify the manipulative purpose of Corteggiano's proposed imports. *See* Section VI(B) (discussion of Vitol's compliance program).

238 *See* E-mail from Federico Corteggiano to Ann Marie Hanley, et al., "Trading Opportunity" (Oct. 21, 2013) (VITOL_FERC_0015481) ("Same de-rate is planned form [sic] 10/28 to 11/1, we could expect same LMPs at the intertie.").

Corteggiano failed to disclose numerous material facts to Hanley and Oppenheimer, including:

- The amount that Corteggiano's CRRs lost during the October 18-19 derate, which would have been relevant in assessing Corteggiano's intent;

- The $1.2 million potential loss to Corteggiano's CRRs if the $388.11/MWh price reappeared during the week of October 28, which also would have been relevant in assessing Corteggiano's intent;

- Prevailing prices in both CAISO and the PacifiCorp-West BAA (i.e., on both sides of the Cascade intertie) were in the range of $40/MWh, indicating there was no actual demand for power at $388.11/MWh on either side of the Cascade intertie;

- The Market Surveillance Committee presentations showed that LMPs at partially derated, illiquid interties may reflect "phantom congestion" that can be eliminated by flowing as little as 1 MW of power;[239]

- Corteggiano's spreadsheet showed that the $388.11/MWh price appeared only when the net flow was 0 MW, indicating no bids cleared and the price reflected "phantom congestion";

- Corteggiano's spreadsheet showed that approximately $350 of the $388.11/MWh LMP was congestion costs, and those costs could be eliminated by importing as little as 1 MW if the $388.11/MWh LMP had been set by an unaccepted bid;

- CAISO explained price formation at Cragview in much the same way that it explained price formation at Silver Peak to Corteggiano, signaling the presence of "phantom congestion";

- CAISO said that an import bid had set the $388.11/MWh price, which meant that an unaccepted bid had set the price and Vitol could eliminate the congestion costs by submitting an import bid at a low enough price (i.e., $1/MWh) that CAISO would surely accept it;

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[239] Corteggiano was familiar with the Market Surveillance Committee materials. *See* Corteggiano 2010 Test. at 137:9-11.

- CAISO's statement that the $388.11/MWh price was "valid" did not rule out the presence of "phantom congestion";

- There was ample transmission capacity available to Cragview, indicating an absence of competition to supply the purported demand for power at $388.11/MWh; and

- Corteggiano learned on October 27 that the $388.11/MWh price disappeared for the October 28 day-ahead market, Vitol lost money on its import deal for October 28, and the net flow for that day was 5 MW, exactly the amount of Vitol's trade.

Corteggiano's failure to apprise Oppenheimer and Hanley that CAISO considered prices reflecting phantom congestion to be valid was particularly important. According to Oppenheimer, he and Hanley distinguished Corteggiano's proposed import transaction from *Deutsche Bank* on the ground that the $388.11/MWh price at Cragview did not reflect phantom congestion.[240] This belief, in turn, rested solely on Rothleder's statement to Kettler that the price was "valid."[241] However, Corteggiano knew from his communications with CAISO in the *Deutsche Bank* matter[242] and from filings in the *Deutsche Bank* enforcement proceeding[243] that CAISO considered the pricing methodology that produced phantom congestion to be valid.

Staff believes that Corteggiano's failure to disclose all of the relevant facts to Hanley and Oppenheimer alone precludes application of the advice of counsel defense. Staff asserts that the defense is also unavailing because Corteggiano did not rely on their advice in good faith. Courts have held that there cannot be good faith reliance where the person seeking advice knows that the proposed course of action is unlawful.[244] Based on his experience in *Deutsche Bank,* Corteggiano knew the proposed transaction was

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[240] Oppenheimer Test. at 71:5-11.

[241] *See id.* at 71:22-25.

[242] *See* E-mail from Siri Klovstad to Federico Corteggiano dated Jan. 25, 2010, cited in DBET Answer at 15, n.5.

[243] *See* DBET Answer, Ex. N (CAISO Memorandum entitled "Review of Congestion Pricing on Silver Peak").

[244] *See, e.g.*, *Covey v. United States*, 377 F.3d 903, 909 (8th Cir. 2004).

unlawful because his purpose was to eliminate congestion costs to avoid losses on his CRRs.

E. CAISO's Pricing System Cannot Form the Predicate for a Manipulation Claim

Respondents contend – citing no authority – that the Commission cannot lawfully take enforcement action against "a market participant that traded in response to a price that, unknown to the market or the Commission, was set based upon an unlawful pricing methodology."[245] According to Respondents, CAISO's "pricing practice that results in degenerate prices" is not in its tariff, in violation of FPA Section 205 and the Commission's "Rule of Reason," which requires provisions that "significantly affect rates, terms, and conditions" of service to be included in the tariff.[246] Respondents also assert that the $388.11/MWh price "deceived" them into executing the import transactions, which precludes holding Respondents liable for market manipulation.[247] Respondents' arguments are legally and factually groundless.

In *ETRACOM,* the Commission rejected similar defenses against market manipulation claims, finding that market design flaws "do not excuse manipulative conduct and sometimes provide the context for it."[248] The Commission dismissed the respondents' contention that CAISO violated its tariff as simply "irrelevant" since the proceeding addressed whether the respondents violated the Anti-Manipulation Rule, and not CAISO's conduct.[249] Thus, even if Respondents were able to show that CAISO's pricing at Cragview somehow violated its tariff, the violation would not give Respondents license to manipulate LMPs at Cragview to benefit their CRR position.

Even assuming an ISO's alleged violation of its tariff were legally relevant in a manipulation case (which it is not), Respondents have failed to show CAISO violated its tariff or the Commission's "Rule of Reason." The degenerate prices at Cragview resulted from application of the algorithm for calculating congestion costs described in CAISO's

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[245] Updated 1b.19 Response at 21.

[246] *Id*. at 21-22 (citations omitted).

[247] *Id*. at 22.

[248] *ETRACOM,* 155 FERC ¶ 61,284 at P 126.

[249] *Id*. P 127.

tariff,[250] and not, as Respondents erroneously claim, from some "secret, extra-tariff pricing model."[251] Even Dr. William Hogan, Deutsche Bank's expert witness in OE's manipulation investigation, acknowledged that "[t]he existence of degenerate pricing in optimization problems like economic dispatch is a 'feature, not a bug.'"[252]

As demonstrated in Section IV(B), at the time Respondents undertook the import transactions at Cragview, Corteggiano had extensive knowledge about pricing at CAISO interties and well understood that even a small import could eliminate the congestion costs harming Vitol's CRRs. CAISO's Market Surveillance Committee addressed intertie pricing publicly and it was no "secret" to any market participant – least of all to Corteggiano. Respondents' claim that they were "deceived" by the $388.11/MWh LMP at Cragview has no factual basis and provides no defense for their conduct.

Finally, Respondents' tariff-based defense should be denied to discourage market participants from employing self-help remedies. Respondents criticize the pricing at Cragview as "non-market-based."[253] Their complaint echoes Corteggiano's claim in Deutsche Bank that it was "unfair" that unaccepted bids resulted in "not market created" congestion costs.[254] Corteggiano previously admitted that he used energy trades at the Silver Peak intertie to rectify that perceived unfairness.[255] Three years later, Corteggiano employed a similar self-help remedy at Cragview to eliminate the $388.11/MWh LMP at Cragview. Respondents had several lawful avenues to challenge degenerate pricing,[256] but market manipulation was not one of them.

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250 On September 1, 2016, the Commission approved an amendment to CAISO's tariff that eliminated degenerate pricing by changing the MCC calculation formula. *See Cal. Indep. Sys. Operator Corp*., 156 FERC ¶ 61,152 (2016).

251 Updated 1b.19 Response at 17.

252 Hogan 2012 Degeneracy Article at 12.

253 *See, e.g.*, Updated 1b.19 Response at 10.

254 *See* Corteggiano 2010 Test. at 91:12-92:13.

255 *Id.* at 95:5-97:10.

256 For example, Vitol could have used CAISO's stakeholder process or filed a complaint under FPA Section 206, 16 U.S.C. § 824e (2012), in accordance with the Commission's procedures in 18 C.F.R. § 385.206 (2018).

VI. Remedies and Sanctions

Staff recommends that the Commission order Vitol to pay both disgorgement and a civil penalty. Staff also recommends that the Commission assess a civil penalty against Corteggiano individually.

Staff's calculation of the disgorgement amount and the loss amount used in its penalty computation for Vitol are predicated on staff's determination that the price at Cragview would have been $388.11/MWh in the absence of Respondents' unlawful trading. The Commission's Penalty Guidelines, as well as Commission precedent, hold that a "reasonable estimate" of loss is sufficient for assessing penalties and disgorgement.[257] In *ETRACOM*, the Commission found reasonable the same type of "but for" calculation of disgorgement and losses that staff uses here, and it recognized the actual losses that cross-product manipulation involving CRRs inflicts on the holders of CRR counter-flow positions and the CRR balancing account.[258] Staff's specific recommendations for disgorgement and penalties are set forth below.

A. Disgorgement

Staff recommends that Vitol pay $1,227,143 in disgorgement, plus interest. This is the amount of losses that Vitol avoided on its CRRs through its manipulative conduct.[259] In the absence of Vitol's manipulative trading, the LMP at Cragview would have been $388.11/MWh for the 105 hours from October 28 through November 1, 2013, during which the Cascade intertie was derated. Staff subtracted the actual posted LMP

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[257] *See* FERC Penalty Guidelines § 2B1.1, Commentary Application Note 2(C) (in calculating penalty, the "Commission need only make a reasonable estimate of the loss") (attached to *Enforcement of Statutes, Orders, Rules and Regulations,* 132 FERC ¶ 61,216 (2010) (Revised Penalty Guidelines Order)); ETRACOM, 155 FERC ¶ 61,284 at P 177 n.345 (citing *SEC v. Calvo*, 378 F.3d 1211, 1217 n.10 (11th Cir. 2004) ("The SEC is entitled to disgorgement upon producing a reasonable approximation of a defendant's ill-gotten gains."); *SEC v. First City Fin. Corp*., *Ltd.*, 890 F.2d 1215, 1231-32 (D.C. Cir. 1989) (exact information not required for disgorgement calculation)).

[258] *See ETRACOM*, 155 FERC ¶ 61,284 at PP 175, 177, 197.

[259] The Commission's Penalty Guidelines provide for disgorgement of "pecuniary gain," which includes cost savings. *See* Penalty Guidelines § 1B1.1 (disgorgement) and § 1A1.1, App. Note 3 (g) ("Gain can result from either additional revenue or cost savings"). In the *Deutsche Bank* settlement, the bank's disgorgement payment included the avoided losses on its CRRs.

for each derate hour from $388.11 to determine the price impact of Vitol's trading.[260] Staff then multiplied that amount by Vitol's MWh of CRRs, which amounted to $1,227,143 in avoided losses. Staff's calculation is shown in greater detail in Attachment 3, "Staff's Market Harm Calculation."

B. Civil Penalties for Vitol and Corteggiano

Staff also recommends that Vitol pay a civil penalty of $6,000,000 and Corteggiano pay a civil penalty of $800,000 in accordance with the FPA. Section 316A(b) of the FPA directs the Commission to determine the amount of civil penalties within the statutory penalty cap by assessing: (1) the seriousness of the violation and (2) efforts to remedy the violation.[261] Vitol's and Corteggiano's violations were serious because they were intentionally manipulative, undermined the orderly functioning of the CAISO market, and caused substantial financial harm both to CAISO's CRR balancing account and to individual market participants. Moreover, Vitol and Corteggiano made no effort to remedy their violations. Staff's recommended penalties are within the Commission's statutory authority to impose penalties of up to $1,269,500 per violation, per day, since Vitol's and Corteggiano's unlawful trading continued for five days.[262]

1. Civil Penalty for Vitol under Penalty Guidelines

Staff applied the Commission's Penalty Guidelines in calculating a recommended civil penalty of $6,000,000 for Vitol. Under the Guidelines, the first step in calculating a penalty is determining the base penalty, which is the greatest of (1) the amount calculated under the appropriate Chapter Two guideline, (2) the pecuniary gain to the organization from the violation, or (3) the pecuniary loss from the violation.[263] Here, the largest

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[260] The actual LMPs ranged from $32.38/MWh to $54.03/MWh and averaged $39.74/MWh.

[261] FPA § 316A(b), 16 U.S.C. § 825o-1(b) (2012).

[262] Section 316A(b) of the FPA, 16 U.S.C. § 825o-1(b) (2012), gives the Commission authority to impose a civil monetary penalty of up to $1,000,000 per violation, per day. This amount is periodically adjusted to reflect inflation. The Commission recently adjusted the maximum penalty under Section 316(A)(b) of the FPA to $1,269,500 per violation, per day. *See Civil Monetary Penalty Inflation Adjustments*, Order No. 853, 166 FERC ¶ 61,014 at P 8 (2019) (effective upon publication in Federal Register on February 1, 2019, 84 Fed. Reg. 966).

[263] *See* Penalty Guidelines § 1C2.2.

amount is the pecuniary loss caused by Vitol's violation.[264] Staff determined that Vitol's violation caused a total loss of $2,515,738, consisting of (a) $2,429,385 in reduced funding of CAISO's CRR balancing account, and (b) $86,353 in losses suffered by the holders of CRR counter-flow positions at Cragview.[265] Using a base penalty of $2,515,738 comports with the definition of "loss" under the Penalty Guidelines.[266]

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[264] Staff calculated that the base penalty under the Chapter Two guideline would be $2,100,000 (base violation level of 6 under § 2B1.1(a), increased by 18 points under § 2B1.1(b)(1) based on $2,515,738 in harm, for a total of 24 points, resulting in a base penalty of $2,100,000 under § 1C2.2(b)). The pecuniary gain to Vitol was $1,227,143, the amount Vitol would have had to pay on its Cragview CRRs but for its manipulative trading.

[265] Staff calculated the reduced CRR funding by summing the profits and losses of all market participants that held CRRs sourcing or sinking at Cragview during the period of Vitol's manipulation. Staff first determined each market participant's amount of CRRs (in MWh) sourcing or sinking at Cragview for the 105 hours from October 28 through November 1, 2013, during which the Cascade intertie was derated and Vitol traded physical power at Cragview. Staff subtracted the actual posted LMP for each derate hour from the $388.11/MWh LMP that otherwise would have occurred to determine the price impact of Vitol's trading. Staff then multiplied that amount by the market participant's MWh of CRRs. Thus, the impact on each market participant was equal to (MW CRR position) * ($388.11 – Actual Posted LMP). For the detailed results of staff's calculation, see Attachment 3, Staff's Market Harm Calculation.

[266] The Penalty Guidelines provide that "loss is the greater of actual loss or intended loss." Penalty Guidelines § 2B1.1, Commentary Application Note 2(A). "Actual loss" means "the reasonably foreseeable pecuniary harm that resulted from the violation." *Id.* Commentary Application Note 2(A)(i). Harm is "reasonably foreseeable" if the violator "knew or, under the circumstances, reasonably should have known, was a *potential* result of the violation." *Id.* Commentary Application Note 2(A)(iv) (emphasis added). Staff calculated the actual losses that Respondents' unlawful trading caused to CAISO's CRR balancing account and to holders of CRR counter-flow positions. These losses were "reasonably foreseeable" by Respondents since the purpose of their unlawful trading was to avoid paying out on their CRRs; that money would have been paid into the CRR balancing account. The results of CRR auctions are public information. *See* CAISO OASIS (*available at* http://oasis.caiso.com/mrioasis/logon.do) (to view 2013 annual auction awards for 2013 fourth quarter, select Congestion Revenue Rights/CRR Inventory; under "Market Name" select AUC_AN_2013_S04_TC," for "Date" select "10/01/2013," for "Time of Use" select either on peak or off peak, and press "Apply"). Therefore, Respondents knew or should have known that there were other market participants holding CRRs at Cragview, some of which sourced at Cragview (like

The next step in calculating the penalty is assigning a culpability score, which determines minimum and maximum multipliers to be applied to the base penalty to arrive at a minimum to maximum penalty range. The culpability score begins at a starting level of five points[267] and is increased or decreased based on factors set out in Section 1C2.3(b)-(g) of the Penalty Guidelines. In determining Vitol's culpability score, staff added three points based on Kettler's participation in the manipulative import transactions.[268] Kettler played a substantial role, including by negotiating the first deal with Morgan Stanley for power to import at Cragview. Kettler heads the Non-Oil Operations department, a "major functional unit" of Vitol within the meaning of the Penalty Guidelines.[269] He reports directly to Vitol's Chief Executive Officer (CEO).[270]

Respondents' CRRs) and some of which sank at Cragview. As CRR holders, Respondents obviously understood how payments and credits are calculated for CRRs. They therefore knew or should have known the "potential" result of their violations was that holders of CRRs sourcing at Cragview would avoid paying into the balancing account when Respondents' trading eliminated the export congestion at Cragview. Conversely, Respondents also knew or should have known that holders of CRRs sinking at Cragview would pay money into the balancing account as a result of Respondents' conduct.

267 Penalty Guidelines § 1C2.3(a).

268 Section 1C2.3(b)(3) of the Penalty Guidelines provides that 3 points will be added to the culpability score if the organization had 200 or more employees and an individual within "high-level personnel" of the organization "participated in, condoned, or was willfully ignorant of the violation." Vitol had more than 200 employees. *See* Vitol, June 13, 2014, Response to Data Request No. 3-4. "High-level personnel" includes "an individual in charge of a major business or *functional unit* of the organization, such as sales, *administration,* or finance." Penalty Guidelines § 1A1.1, Commentary Application Note 3(a) (emphasis added). Operations is a corporate function akin to administration and therefore encompassed within the definition.

269 Kettler's actual title is unclear. Vitol has referred to him as "Vitol's Head of Power Operations." Vitol, June 13, 2014 Response to Data Request No. 3-6. In testimony, Kettler said he is the "manager of Operations." Kettler Test. Vol. 1 at 26:3-7. In his affidavit, Kettler said he is the "Manager of Non-Oil Operations." Kettler Dec. at 1 (Vitol PF Response, Ex. E). Kettler explained that Vitol is "not big on titles." Kettler Test. Vol. 1 at 26:9-10.

270 Kettler Test. Vol. 1 at 26:11-17. As a direct report to the CEO, Kettler sits higher in the Vitol organization than the company's General Counsel. The General Counsel reports to Vitol's Chief Operating Officer, rather than the CEO. *See*

Accordingly, Kettler is one of Vitol's "high level personnel" within the meaning of the Penalty Guidelines. As Vitol's liaison to CAISO, Kettler attended CAISO stakeholder meetings and had deep knowledge of CAISO's operations.[271] He also spoke with Rothleder about price formation at Cragview. Kettler therefore knew or should have known that the $388.11/MWh price would disappear with Vitol's import transactions and that the actual purpose of the transactions was to benefit Vitol's CRR positions. Accordingly, staff concludes that Kettler "participated in, condoned, or was willfully ignorant of the violation" under the Penalty Guidelines.[272]

Staff subtracted one point from the culpability score in recognition of Vitol's compliance program. The Penalty Guidelines allow for subtraction of up to 3 points for an effective compliance program consistent with the facts and circumstances of each case.[273] Among other characteristics, Vitol's compliance program is documented and disseminated, includes an internal compliance hotline and is regularly reviewed and updated.[274]

With regard to monitoring the compliance of specific transactions, at the time of Respondents' manipulative trading, Vitol had a written policy requiring traders to "seek guidance" from the "Operations Manager, VIC Head of US Power, or Compliance" prior to bidding an ISO product that "overlaps" with another ISO product.[275] While the policy

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Oppenheimer Test. at 18:12-16. Kettler also shares authority with the "Head of U.S. Power" and "Compliance" to approve trading in "overlapping" products. *See* Trading Guidelines at 7 (VITOL_FERC_0111130).

[271] *See, e.g.,* Kettler Test. Vol. 1 at 44:1-45:24 (Kettler is Vitol's regulatory point person for CAISO and attends stakeholder meetings). At the time of Respondents' violations, Kettler had been involved in CAISO matters for up to eleven years. *See* Kettler Test. Vol. 2 at 270:11-12. He therefore should have been aware of the Market Surveillance Committee's materials published in 2010 relating to manipulation at interties.

[272] Penalty Guidelines § 1C2.3(b)(3).

[273] *Id.* § 1C2.3(f)(1); *see also* Revised Penalty Policy Statement, 132 FERC ¶ 61,216, at P 118.

[274] Letter from Vitol's Counsel to Enforcement, Ex. B (Nov. 13, 2015); *see also* Vitol Trading Compliance Manual For Vitol Group Employees Located in the United States, March 23, 2010 (VITOL_FERC_0047997-0048036).

[275] Trading Guidelines at 7 (VITOL_FERC_0111130).

represents an effective starting point, it contained no procedural guidance or substantive standards for determining whether a proposed overlapping trade should be allowed.[276]

Additionally, Vitol's compliance staff lacked sufficient training to evaluate complex transactions such as the one at issue in this case. In particular, Hanley had too little knowledge about, and experience in, power markets to evaluate Corteggiano's proposed import transactions.[277] Hanley was ill-equipped to ask the type of probing questions that would have revealed the actual purpose of Corteggiano's proposed import transactions. Hanley had been in Vitol's compliance group for only four months[278] and most of her work related to Dodd Frank issues.[279] Hanley had not given regulatory compliance advice relating to CAISO markets in her previous position[280] and she had only limited training on CAISO market operations.[281] Oppenheimer also lacked the knowledge necessary to probe the underlying intent and likely effect of the imports on the Cragview LMP.[282] Oppenheimer was not aware of how CAISO set LMPs generally[283]

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[276] The policy would have been more effective if it had required the compliance advisor independently to verify information provided by the employee(s) proposing the overlapping transaction. In this case, Hanley deferred to Corteggiano's assessment of the economics of his own proposed transaction (rather than asking a disinterested trader to help her analyze the transaction), allowed Corteggiano to frame the questions to CAISO about the $388.11/MWh LMP, and neglected to participate in Kettler's telephone call with CAISO about the LMP.

[277] Before joining Vitol, Hanley's compliance experience relating to power markets focused primarily on developing electronic surveillance programs, not substantive compliance advice relating to FERC-regulated markets. *See* Hanley 2017 Test. at 35:18-36:15. Hanley's previous experience as an equities trader gave her no knowledge or experience with respect to trading in FERC-regulated markets. *Id.* at 43:10-17.

[278] *Id.* at 19:12-16.

[279] *Id.* at 20:5-21:10.

[280] *Id.* at 32:4-33:3.

[281] *Id.* at 23:13-25:3.

[282] In any event, Oppenheimer never spoke directly to Corteggiano about the proposed import transaction. Oppenheimer Test. at 40:25-41:4.

[283] *Id.* at 61:1-2.

and had no knowledge about pricing at partially derated interties specifically.[284] Although Oppenheimer testified he had read at least some of the materials in the *Deutsche Bank* case[285] and knew that Corteggiano conceived the manipulative export strategy,[286] he apparently never asked Corteggiano about the pricing methodology at interties that allowed the strategy to succeed. Moreover, Oppenheimer did not think that the magnitude of Corteggiano's past and potential future losses on his CRRs mattered in assessing the intent behind the proposed import transaction and he did not ask about those losses.[287]

Taken together, these facts show that while Vitol possessed a compliance program, it was inadequate. Therefore, staff has subtracted one point out of a possible three points from the culpability score to reflect partial credit for Vitol's compliance program.

Staff subtracted one point from the culpability score to reflect Vitol's cooperation in the investigation. In total, staff's adjustments resulted in a final culpability score of six. Under Section 1C2.4 of the Penalty Guidelines, this produces a minimum multiplier of 1.2 and maximum multiplier of 2.4. Multiplying the base penalty of $2,515,738 by these amounts produces a penalty range of $3,018,885.60 to $6,037,771.20. Staff's penalty calculation is shown in the chart below:

Base Penalty	**Notes**
$2,515,738	Section 1C2.2 – Use highest of Chapter Two guideline amount, pecuniary gain, or pecuniary loss. Here, pecuniary loss is highest.

[284] *Id.* at 26:21-24.

[285] *Id.* at 42:18-23.

[286] *Id.* at 89:8-13.

[287] *Id.* at 54:21-55:19.

Culpability Factors	Points	Notes
Start with	5	Section 1C2.3(a)
High level personnel involvement	3	Head of Power Operations participated and was either knowledgeable or willfully ignorant. [Section 1C2.3(b)] Operations is a "major functional unit." [Section 1A1.1 Comment 3(a)(defining "High-level personnel")]
Prior history	0	Section 1C2.3(c)
No violation of an order	0	Section 1C2.3(d)
No obstruction of justice	0	Section 1C2.3(e)
Effective compliance program in place at time of violation	-1	Compliance Program lacking procedural or substantive standards in overlapping trades policy and inadequate staffing. [Section 1C2.3(f)]
No self-report	0	No self-report [Section 1C2.3(g)(1)]
Full cooperation	-1	Section1C2.3(g)(2)
TOTAL	**6**	

Penalty Range	Culpability Score Multiplier	Penalty Range (Base Penalty Culpability Score Range)
No settlement	1.2 to 2.4	$3,018,885.60 to $6,037,771.20

Staff recommends that the Commission assess Vitol a civil penalty of $6,000,000 based on the Commission's Penalty Guidelines and the penalty factors set forth in the FPA. It is appropriate to assess a penalty toward the top of the range because of the seriousness of the violation and the lack of any effort to remedy the violation.

2. Civil Penalty for Corteggiano

Staff recommends that Corteggiano individually pay a civil penalty of $800,000. The Commission's Penalty Guidelines do not apply to individuals.[288] Staff's penalty recommendation for Corteggiano is based on the statutory factors discussed above. Staff also considered the factors set out in the Commission's Revised Policy Statement on Enforcement (seriousness of offense, commitment to compliance, self-reporting, cooperation, reliance on staff guidance),[289] which also support a substantial penalty for Corteggiano.

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[288] *See* Penalty Guidelines § 1A1.1(1).

[289] 123 FERC ¶ 61,156, at PP 55-71 (2008).

VII. Conclusion

For the reasons discussed above, staff recommends that the Commission direct Respondents to show cause why they have not violated FPA Section 222 and Section 1c.2 of the Commission's regulations, which prohibit the manipulation of markets in wholesale electricity. Staff further recommends the Commission direct Vitol to show cause why it should not disgorge $1,227,143 in unjust profits, plus interest, and direct Vitol and Corteggiano to show cause why they should not pay penalties of $6,000,000 and $800,000, respectively.

Attachment 1

Investigation of Vitol Inc. and Federico Corteggiano
Docket No. IN14-4-000

STAFF'S REGIONAL LMP MAPS

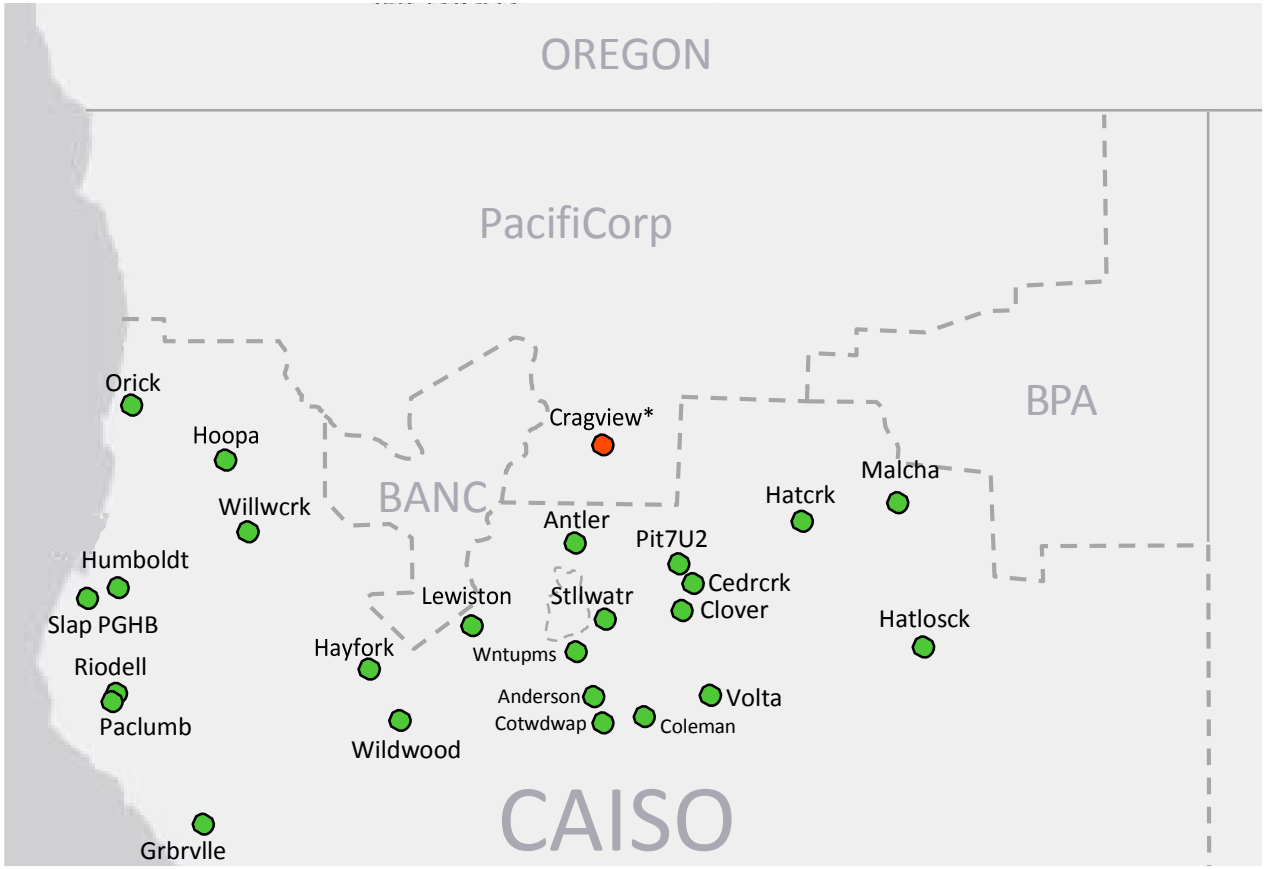
On-Peak Mean LMP ($/MWh)

October 18 and 19, 2013

COB

ICE: $42.77

Platts: $42.82



Maximum
Cragview: $214.82

(Price at Cragview was $388.11 for 16 hours on October 18 and 19, 2013)

Second Highest
Hoopa: $47.40

Median
Antler: $41.47

Minimum
HATLOSCK: $39.02

NP15

ICE: $41.08

LMP: $40.68

Source: Data is from CAISO OASIS (via Velocity Suite Online), Platts, and the Intercontinental

Exchange(ICE). COB is the "California-Oregon Border" trading hub. NP15 ("North Path 15") is the major zone in northern CAISO. The Hubs and Zones are defined by Platts at this link:

On-Peak Mean LMP ($/MWh)

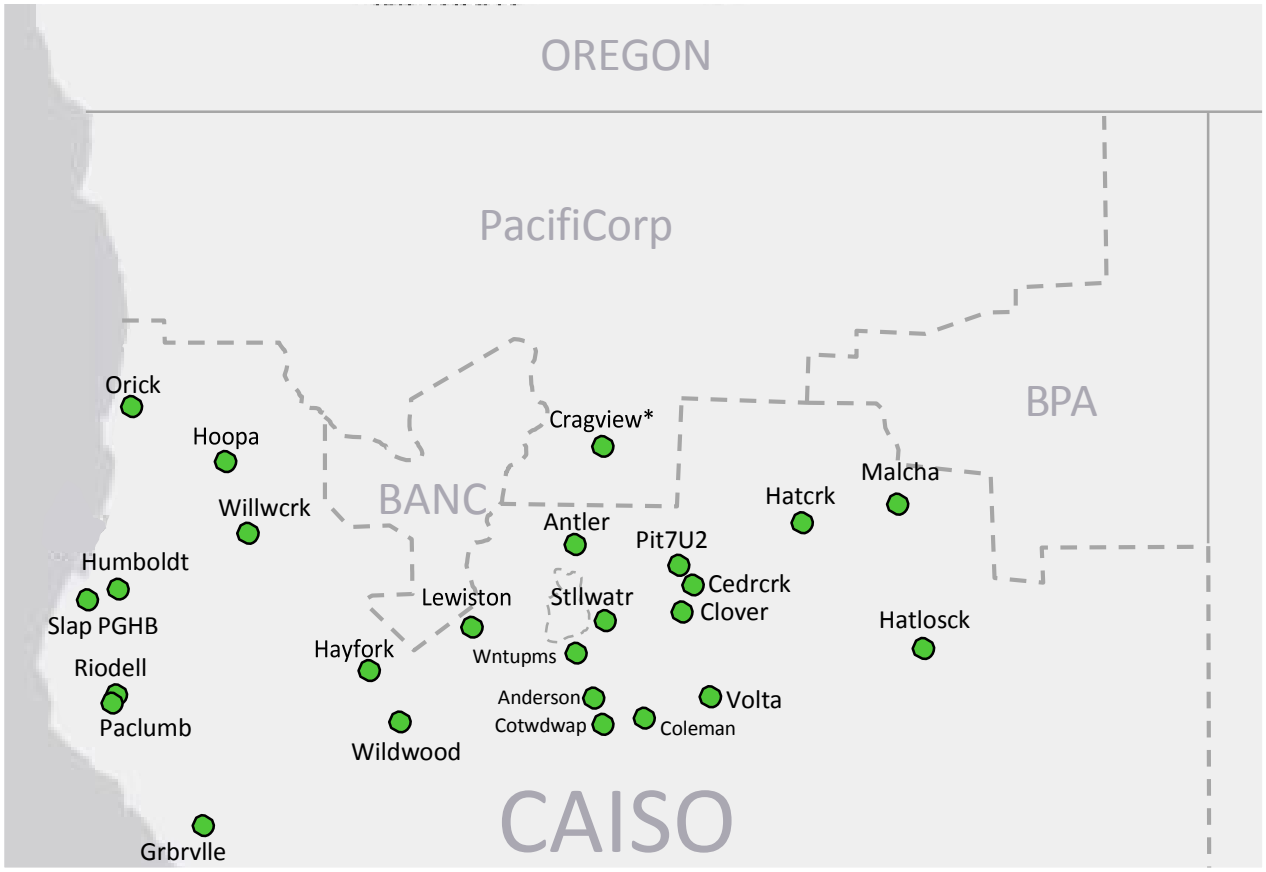
October 1 to 25, 2013

Excluding October 18 and 19, 2013

COB

ICE: $38.55

Platts: $38.48



Maximum
Hoopa: $48.84

Median
Wntupms: $40.86

Cragview: $40.27

Minimum
COB Platts: $38.48

NP15

ICE: $41.08

LMP: $40.68

Source: Data is from CAISO OASIS (via Velocity Suite Online), Platts, and the Intercontinental

Exchange(ICE). COB is the "California-Oregon Border" trading hub. NP15 ("North Path 15") is the major zone in northern CAISO. The Hubs and Zones are defined by Platts at this link:

Attachment 2

Investigation of Vitol Inc. and Federico Corteggiano
Docket No. IN14-4-000

STAFF'S SUMMARY OF PRICING AT CRAGVIEW

At the request of the Federal Energy Regulatory Commission's Office of Enforcement (OE) staff, Dr. Guillermo Bautista Alderete, CAISO's Director of Market Analysis and Forecasting, performed an analysis to determine what the day-ahead market hourly locational marginal prices (LMPs) at the Cragview pricing node would have been from October 28 through November 1, 2013, in the absence of import bids that Vitol, Inc. (Vitol) submitted at Cragview.[1] He concluded that, but for Vitol's trading, the LMPs at Cragview during that period would have been $388.11/MWh. This summary explains Dr. Bautista Alderete's methodology and results.[2]

I. Background

A. Cragview and Cascade

The Cragview node (Cragview) is a pricing node in CAISO's electric network model and is also the scheduling point for energy transfers over the Cascade intertie.[3] The Cragview node is associated with the Cragview electrical bus, which

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[1] Dr. Bautista Alderete oversees CAISO's market quality analysis, market performance and reporting, price validation, calculation of reference bids, and supply and demand forecasting. Dr. Bautista Alderete joined CAISO in 2007, and has held several positions of increasing responsibility at CAISO. From 2011 to 2016, Dr. Bautista Alderete was CAISO's Manager of Market Validation and Quality Analysis. In that role, he supervised the CAISO staff that validates market outcomes. Dr. Bautista Alderete received his Ph.D. in Electrical and Computer Engineering in 2005 from the University of Waterloo in Ontario, Canada. From 2005 to 2007, Dr. Bautista Alderete was a faculty member at the University of Waterloo, where he taught engineering courses and conducted research in electricity markets. Dr. Bautista Alderete is the author of the book "Competition in Electricity Markets: Modelling and Economics" (2010) and also of a chapter in the book "Financial Transmission Rights" (2013).

[2] The information in this summary is principally drawn from CAISO's Oct. 23, 2018 Responses to Staff's Data Request Nos. OE-CAISO 1-1 through 1-14. Staff indicates in footnotes where it relies on additional sources.

[3] Cragview is denominated as CRAGVIEW_1_GN001 in CAISO's electric

is a physical location on the transmission system within PacifiCorp-West's balancing authority area (BAA). The Cragview bus is connected to CAISO through a single, 115 kV transmission line, which is commonly referred to as the "Cascade intertie."

Energy flows into and out of the CAISO BAA over the Cascade intertie are scheduled and priced at Cragview. The Cascade intertie is relatively small compared to other CAISO interties, with approximately 80 megawatts (MW) of import capacity and approximately 45 MW of export capacity.

B. LMP Definition and Calculation

Under CAISO's tariff, LMP is defined as the marginal cost (in dollars per megawatt hour or $/MWh) of serving the next increment of demand at a pricing node consistent with existing transmission constraints and the performance characteristics of resources, and also considering market participant bids.[4] LMPs have three components: the system marginal energy cost (SMEC), the marginal cost of congestion (MCC), and the marginal losses cost (MLC).

- SMEC is essentially the price of electric energy throughout the CAISO system, which is calculated using the marginal costs of energy at all generation nodes in CAISO. SMEC is the same for each location throughout CAISO for a given time period for which LMPs are set (e.g., hourly in the day-ahead market).

- MCC is essentially the price reflecting the cost to move energy to serve demand (load) at a particular location. The cost is incurred when, in order to respect transmission constraints, higher-cost generation is dispatched in place of lower-cost generation that would be used in the absence of the constraint.

- MLC is essentially the price reflecting the expected losses of electric energy that occur during transmission to serve load.

Unlike SMEC, congestion costs and costs of losses will vary from one location to another. MLC tends to be a very small percentage of the overall LMP.

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network model.

[4] *See* CAISO, Electronic Tariff, App. C, Fifth Replacement (CAISO Tariff).

CAISO determines MCC (the marginal costs of congestion) by using the "shadow price" at each binding transmission constraint in the CAISO network.[5] CAISO's tariff defines shadow price as the value per MW of the next increment of generation that would flow across the constraint path by relaxing the binding constraint.[6] The shadow price is multiplied by a "shift factor" to calculate MCC. The shift factor essentially measures the relative contribution of flow from supply or demand on a given transmission system element. The shift factor between the Cascade intertie and Cragview is 100%, which means that 100% of the shadow price for the Cascade intertie appears in the MCC component of the LMP for Cragview.

When there is a "binding constraint" on the Cascade intertie, a shadow price is calculated for the intertie. A constraint is "binding" when the capacity of a transmission element has been fully utilized.

C. Degenerate Solutions in LMP Calculations

In 2013, CAISO's algorithm for calculating LMP, which is described in CAISO's FERC-approved tariff, produced "degenerate" market solutions under certain scenarios. Degeneracy is an inherent feature of certain mathematical optimization formulations and is not unique to CAISO or power markets. Broadly speaking, a degenerate solution is one in which there is more than one economically optimal outcome (i.e., there are multiple economically optimal prices for the same optimal dispatch). Typically, the price results from the supply and demand curves intersecting at a single price and quantity location on the respective curves. However, when an intertie was derated to 0 MW in only one direction (which CAISO refers to as a partially open intertie), the bid curves for supply and demand could effectively overlap at the 0 MW quantity level set by the derate. The graph below depicts the overlapping curves with a yellow vertical line. The supply curve is green and the demand curve is red. The demand curve in this illustration is the *implied* demand from the CAISO BAA as a whole for power priced below CAISO's overall cost of energy.

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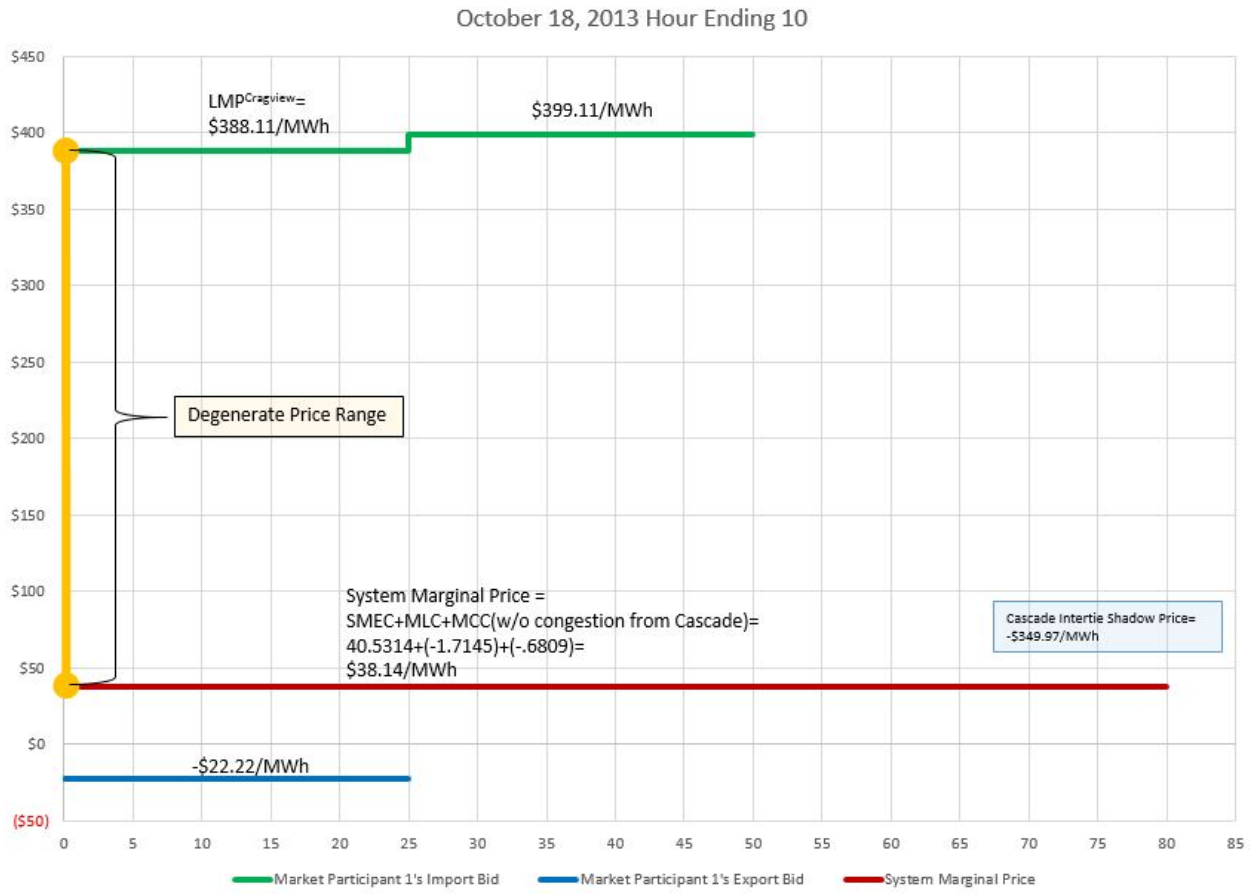
[5] "Constraints" are "physical and operational limitations on the transfer of electrical power through transmission facilities." CAISO Business Practice Manual for Definitions & Acronyms, Version 5 (Aug. 16, 2010). The operating transfer capacity limits placed on the Cascade intertie are one type of constraint.

[6] CAISO Tariff, App. C.



When a degenerate solution occurred at the scheduling node for a partially open intertie, there could be multiple economically optimal prices between the system marginal price at that location[7] and (i) the lowest import bid greater than the system marginal price when the intertie was limited to 0 MW in the export direction, or (ii) the highest export bid that was below the system marginal price when the intertie was limited to 0 MW in the import direction. In this situation, the commercial software that CAISO used to run the LMP algorithm would automatically select the LMP from the range of optimal prices, without CAISO specifying any decision rule for the selection.

D. Relaxing Intertie Constraint Can Remove Congestion and Degeneracy

[7] "System marginal price" is the combination of SMEC plus the MLC at the location plus the MCC at the location arising from constraints other than the intertie. In the illustration above, the system marginal price is represented by the red horizontal line and the equation for calculating it is set out above the red line. The system marginal price is $38.14/MWh, consisting of SMEC ($40.5314/MWh) plus MLC (-$1.7145) plus the MCC from an internal CAISO constraint (-$0.6809).

An intertie's operating transfer capability limits are constraints. Those constraints become binding (i.e., enforced to prevent energy transfers from exceeding the intertie capacity) only when the *net* imports or *net* exports are at exactly the limits set for the intertie. At a partially open intertie, CAISO allows market participants to submit both import (supply) and export (demand) bids because power can flow on the intertie and the operator can manage the intertie by netting import and export schedules to stay within the limits. For example, at a partially open intertie derated to 0 MW in the export direction and 20 MW in the import direction, CAISO's clearing (i.e., award) of an import bid of 10 MW would allow it to clear up to 10 MW of exports since the *net* exports would be 0 or less and thereby meet the 0 MW net limitation in the export direction. If CAISO cleared exactly 10 MW of exports, the net exports would be 0 and the limitation would again be binding absent additional cleared imports. However, if CAISO cleared less than 10 MW of exports, the 0 MW export limitation would not be binding because there would still be capacity for additional exports. In this situation, the supply and demand curves would intersect at a single price and a single quantity point other than 0 MW and there would be no degeneracy. Moreover, because the limits for the intertie would not be binding, no shadow price would be set for the intertie and the MCC related to the intertie would be 0.

II. Dr. Bautista Alderete's Analysis of Cragview LMPs

A. Methodology

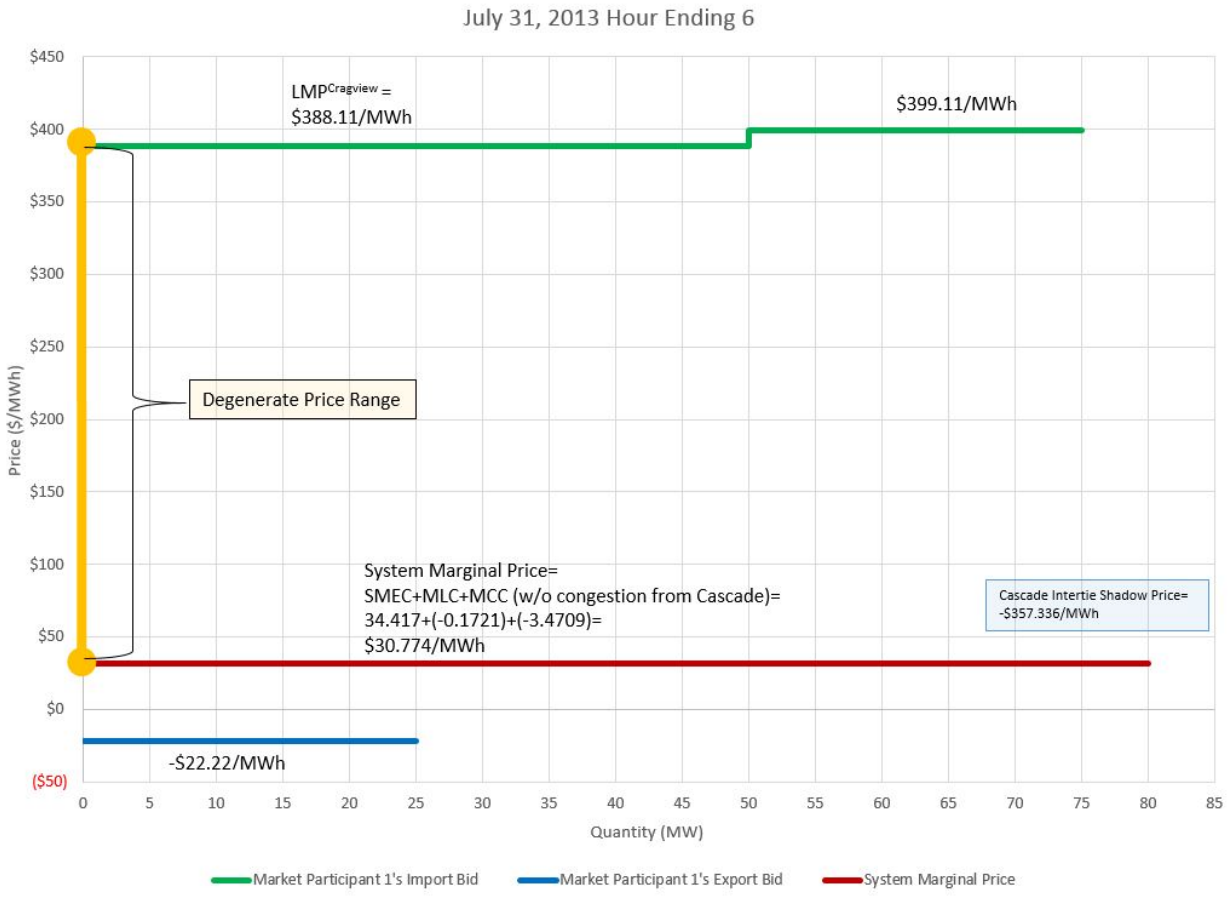
In performing his analysis, Dr. Bautista Alderete reviewed LMP formation on the dates of Vitol's trading, as well as certain other dates that helped elucidate LMP formation at Cragview. The additional dates Dr. Bautista Alderete analyzed were July 31, October 18-19, and November 4-8. On all of these dates, CAISO had derated the operating transfer capability of the Cascade intertie for some or all operating hours to 0 net MW in the export direction and either 80 or 55 net MW in the import direction. There was 0 net flow on the Cascade intertie on all of these dates. Dr. Bautista Alderete reviewed the market information for Cragview for the relevant dates, including information on intertie limits, bids from market participants, and market solution information (e.g., LMP, SMEC, MCC, and MLC data, bid awards).

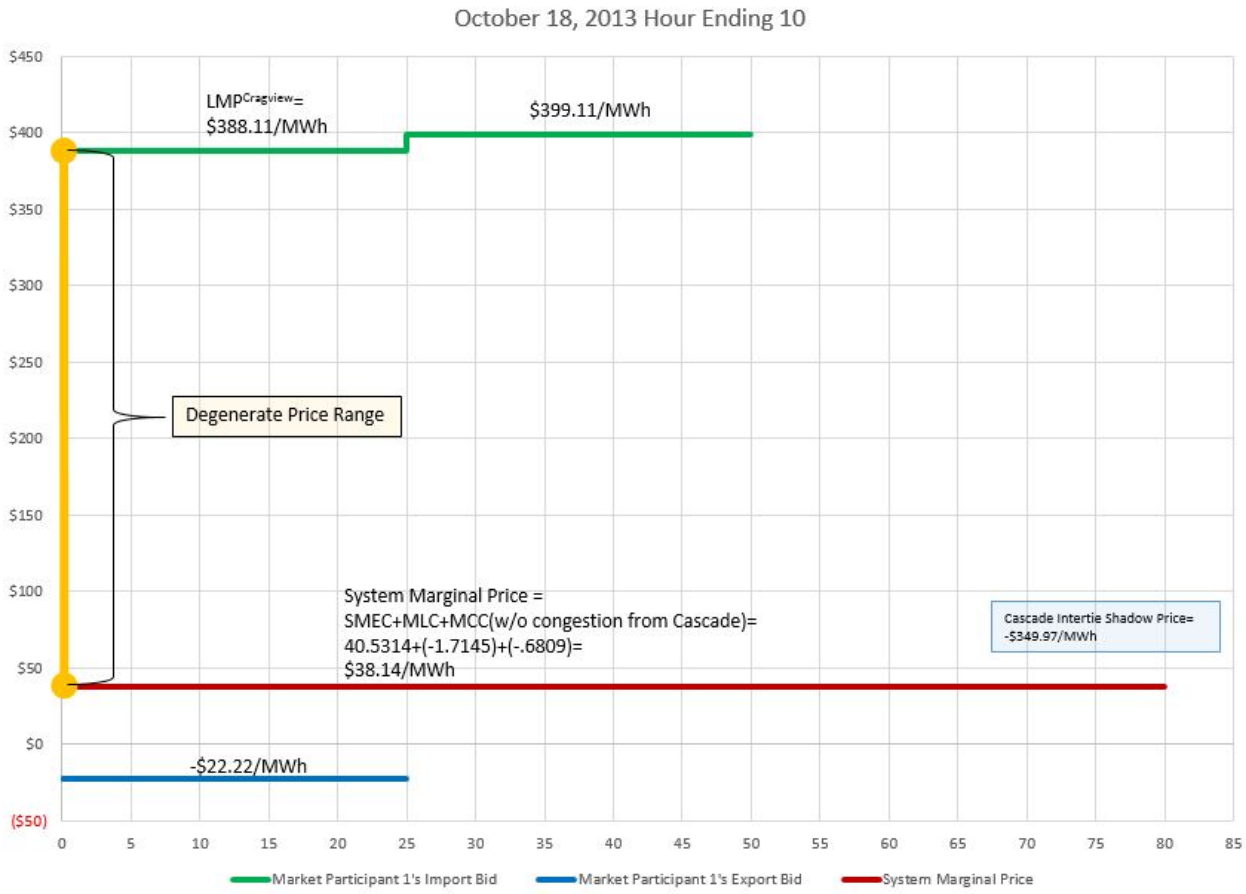
B. Results on July 31 and October 18-19

Dr. Bautista Alderete's analysis showed that, on July 31 and October 18-19, 2013, during the hours in which the Cascade intertie was derated to 0 in the export direction, the bid structure at Cragview was the same in all material respects. Only one market participant (Market Participant 1), which was not Vitol, submitted bids

on these dates. For each hour in the day-ahead market, Market Participant 1 submitted a two-segment import bid and a single-segment export bid. The first segment of Market Participant 1's bid was always for $388.11/MWh, although the quantity varied (sometimes 25 MW and other times 50 MW). The second segment of the import bid was always for $399.11/MWh. Market Participant 1 also submitted export bids, always for -$22.22. With the negative export bids, Market Participant 1 would be paid $22.22/MWh to take power out of CAISO.

The first figure below shows the bid structure and market outcome for a representative hour on July 31, 2013 (hour ending 06). The second figure shows the bid structure and market outcome for a representative hour on October 18, 2013 (hour ending 10).





CAISO did not clear Market Participant 1's import bids (first segment at $388.11/MWh) because they were higher than the system marginal price ($30.77/MWh on July 31 and $38.14/MWh on October 18, as reflected by the horizontal red line in the figures above). In other words, there was no economic reason for CAISO to pay $388.11/MWh to import power that was valued under $40/MWh inside CAISO. Similarly, CAISO did not clear the export bids (-$22.22/MWh) because they were below the system marginal price ($30.77/MWh on July 31 and $38.14/MWh on October 18); there was no economic reason for the CAISO market to pay $22.22/MWh to export power that was worth between $30-38/MWh inside CAISO.

Although none of Market Participant 1's bids were awarded, the first segment of its bid to import (sell) at $388.11/MWh set the LMP at Cragview during the derate hours on July 31 and October 18-19. The market outcomes for those hours reflected degenerate pricing solutions. The yellow vertical line in the figures above shows where the supply and demand curves overlap at the 0 MW quantity level set by the derate of the Cascade intertie to 0 MW in the export direction. There is essentially an implied demand curve at the level of the system marginal price (shown by the horizontal red line in the figures) since it would be economical for CAISO to import power at that price. In other words, CAISO had potential demand for power priced at or below its internal system price. The yellow line in the figures defines a

range of prices that were all economically optimal for dispatch purposes (i.e., they all would result in no dispatch of imported power because they were all at or above the system marginal price). The range was bounded at the low end by the system marginal price (shown by the horizontal red line in the figures) and at the high end by the Market Participant 1's $388.11/MWh offer. Since no import bids cleared, the constraint on the Cascade intertie imposed by the derate remained binding and shadow prices for the Cascade intertie were created (-$357.33 on July 31 and -$349.97 on October 18.) From the degenerate price range, CAISO's optimization software automatically selected $388.11/MWh as the LMP.

Almost all of the MCC component of the Cragview LMPs arose from the congestion costs on the Cascade intertie (i.e., -$357.33 on July 31 and -$349.97 on October 18), which are shown in the illustrations above in the blue boxes entitled "Cascade Intertie Shadow Price." Other internal constraints had a very small contribution to the MCC component. The constraint SCE PCT IMP BG contributed -$3.47/MWh on July 31 and the Barre Lewis nomogram contributed -$0.68 on October 18.

CAISO considered the $388.11/MWh price to be a valid solution. In the cases illustrated above, the price was set based on the cost of serving the next megawatt of demand at Cragview. Because of the derate of the Cascade intertie to 0 MW in the export direction, there would have to be an import in order to allow a megawatt of demand to be served at Cragview. The lowest priced import bid was Market Participant 1's bid for $388.11/MWh and that reflected the cost of serving the next increment of demand.

Because no bids were awarded for the hours of the derate on July 31 and October 18-19, there was no power scheduled to flow on the Cascade intertie in those hours. CAISO therefore reported 0 net flow for those hours in its published market results.

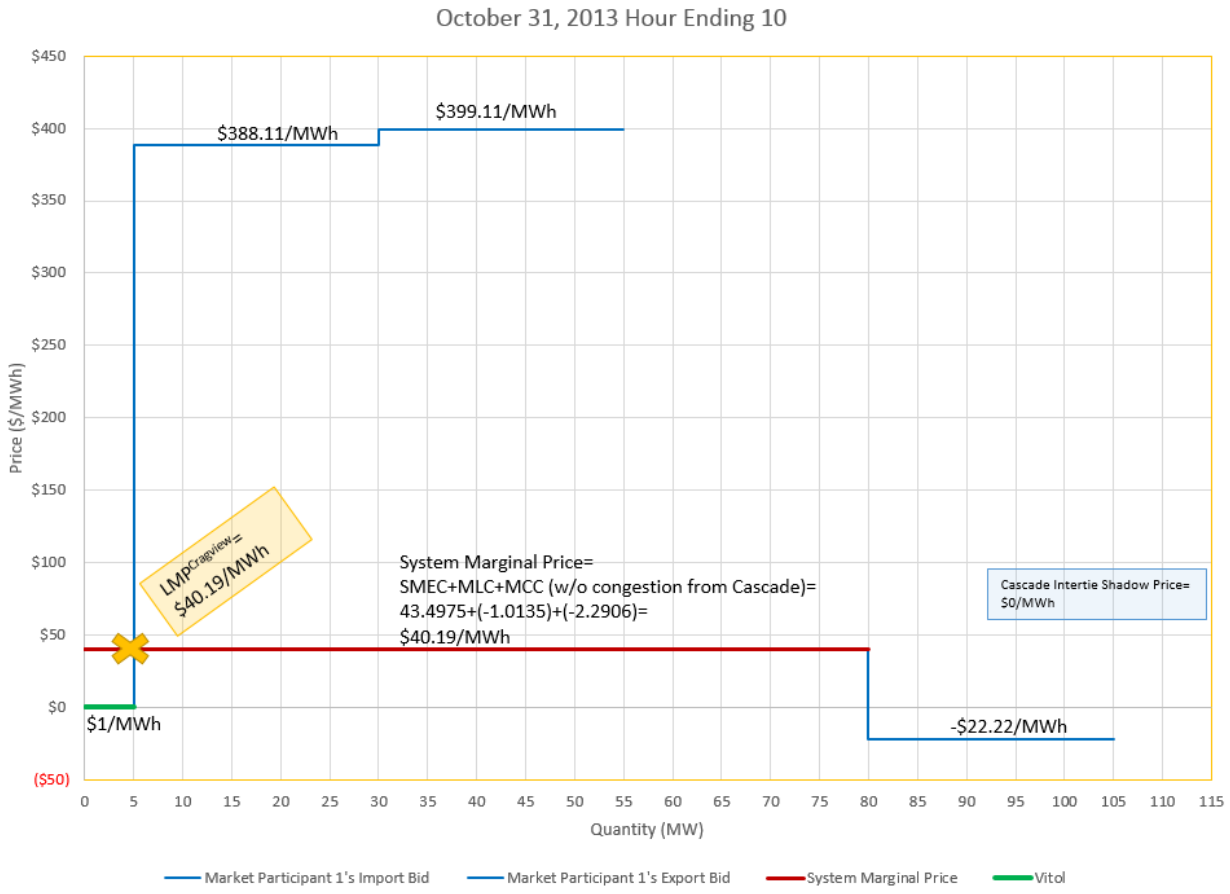
C. Results During Vitol's Trading from October 28–November 1

From October 28, 2013, through November 1, 2013, Market Participant 1 submitted the same import and export bids that it had submitted on July 31 and October 18-19. However, the pricing outcome was different during the week of October 28–November 1 because Vitol also submitted import bids at Cragview during that period. Vitol submitted import bids for 24 hours per day in the quantity of 5 MW per hour and at a price of $1/MWh. Since Vitol's bids were below the system marginal price, CAISO cleared them. For the period of Vitol's trading, hourly LMPs at Cragview ranged from $31.71/MWh to $57.40/MWh. No other bids cleared during the period of Vitol's trading and the only flow on the Cascade intertie

was Vitol's 5 MW of imports. Accordingly, CAISO's published data showed a net import flow on Cascade of 5 MW during Vitol's trading.

During the five days of Vitol's trading at Cragview, the Cascade intertie was derated to 0 in the export direction and 80 MW in the import direction for 105 hours. When CAISO cleared Vitol's import bids, the export constraint on the Cascade intertie created by the derate was no longer binding because Vitol's 5-MW imports allowed up to 5 MW of exports (although there were no cleared exports). In other words, the net flow on the Cascade intertie was no longer at the 0 MW limit set by the derate. Because there was no binding constraint, there was a $0 shadow price for the Cascade intertie and the MCC component of the Cragview LMP related to the Cascade intertie was $0.

Vitol's trading from October 28–November 1, 2013, changed the supply curve at Cragview, shifting it from the 0 MW-level shown in the illustrations above to the 5-MW level, as illustrated in the following graph depicting the bid structure and market outcome on October 31, 2013, hour ending 10:



The illustration shows that the supply and demand curves intersect at a discrete quantity (5 MW) and price (system marginal price). The intersection point is labeled with an "x" on the illustration. Because the curves intersect at a single point and do not overlap on the vertical axis for price, there is no degeneracy in the pricing solution. The LMP for this hour was $40.19/MWh, the system marginal price. The principal component of the LMP was SMEC ($43.49/MWh), which is calculated using the marginal costs of energy at nodes throughout CAISO. At Cragview, the final LMP resulted from subtracting minor marginal losses and congestion costs from SMEC (-$1.10/MWh and -$2.29/MWh, respectively).

All successful bidders at a location receive (or pay) the same LMP, so Vitol received $40.19/MWh for its awarded imports during hour 10 on October 31. Successful bidders receive (or pay) the *marginal* price, rather than the amount they bid, for reasons of economic efficiency. Simply stated, the marginal price is the cost of supplying the next megawatt of demand beyond the intersection point of the supply and demand curves at a given location.[8]

Dr. Bautista Alderete concluded that, but for Vitol's bids, the LMP at Cragview would have been $388.11/MWh for the 105 hours of the derate from October 28–November 1. In the absence of Vitol's bids, the bid structure at Cragview would have been the same as it was on July 31 and October 18-19, 2013. Specifically, Market Participant 1 was the only bidder at Cragview besides Vitol during this period. Market Participant 1 submitted the same import bids of $388.11/MWh and export bids of -$22.22 from October 28-November 1 that it had on July 31 and October 18-19. It is therefore reasonable to conclude that CAISO's optimization software would have selected the same LMP of $388.11/MWh in the absence of Vitol's bids. Dr. Bautista Alderete confirmed this by performing the computerized pricing simulation described in Data Request OE-CAISO 1-15.

D. Results for November 4-8

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[8] Marginal pricing encourages a supplier to bid its actual marginal cost of production (rather than a higher price) to maximize the chances that its bid will be accepted. This promotes economic efficiency because demand will be supplied by the lowest cost producers. In addition, marginal pricing helps assure that, over time, generators will be able to recover their long-term fixed costs, rather than just short-term marginal operating costs. *See* Steven Stoft, *Power System Economics*, at 95-97 (IEEE Press 2002).

OE staff asked Dr. Bautista Alderete to explain the pricing at Cragview from November 4 through November 8 because of questions Respondents raised during and after settlement negotiations concerning pricing during that week.[9] On these dates, for a total of 95 hours, the Cascade intertie was derated to 0 in the export direction, the net flow on the intertie was 0, and Vitol did not submit bids at Cragview. Dr. Bautista Alderete reviewed these dates and determined the following:

The $388.11/MWh LMP reappeared on November 4 and 6 during the derate hours. Market Participant 1 submitted import bids for $388.11/MWh and also submitted export bids for - $22.22 on those two dates. All of the import bids exceeded the system marginal price and therefore did not clear. The export bids were below the system marginal price and therefore did not clear. The optimization software produced degenerate pricing solutions during the derate hours on November 4 and 6. The software selected Market Participant 1's $388.11/MWh bid as the LMP, just as it had on July 31 and October 18-19. Market Participant 1 also submitted import bids for $388.11/MWh and export bids for -$22.22 on November 5. In addition, Powerex submitted import bids for $63.88/MWh that day.[10] All of the import bids exceeded the system marginal price and therefore did not clear. The optimization software selected the lowest import bid ($63.88/MWh) as the LMP, which again was a degenerate pricing solution.

Market Participant 1 did not submit bids at Cragview on November 7 and 8. However, other market participants did submit import bids on those dates. None of the import bids were for $388.11/MWh, although all were for amounts exceeding the system marginal price. None of the market participants submitted export bids. The optimization software produced degenerate pricing solutions on November 7 and 8 with this bid structure. The optimization software selected the system marginal price as the LMP (i.e., the lower end of the degenerate price range), rather than the lowest import bid above the system marginal price (i.e., the upper end of the degenerate price range).

E. Influence of Export Bids

As Dr. Bautista Alderete reviewed the bid data and LMPs at Cragview, he observed that the optimization software selected the system marginal price as the

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[9] *See, e.g.,* 1b-19 Response at 19-20.

[10] *See* Powerex Corp., Response to Data Request OE-Powerex 1-4 (Oct. 29, 2018). Powerex regularly trades physical energy at CAISO interties and the price of its import bid at the Cascade intertie on November 5 was consistent with its bids that day at other interties. *Id.*

LMP when there was no export bid present, and the lowest import bid above the system marginal price as the LMP when there was an export bid present. The software did this without CAISO programming any decision rule causing it to do so. Throughout the period of Vitol's trading at Cragview, there was an export bid present. This fact supported Dr. Bautista Alderete's conclusion that the LMP at Cragview would have been set by the first segment of Market Participant 1's import bid at $388.11/MWh (rather than the system marginal price) in the absence of Vitol's trading.

Dr. Bautista Alderete performed a computerized simulation of price formation in order to test his conclusion that, in degenerate pricing situations, the presence or absence of an export bid influenced the optimization software's selection of the LMP. In the simulation, the market software selected the import bid as the LMP when there was an export bid present and selected the system marginal price as the LMP when there was no export bid present. The simulation therefore validated Dr. Bautista Alderete's conclusion that the software would have selected $388.11/MWh (the lowest priced import bid), rather than the system marginal price, as the LMP at Cragview during the period of Vitol's trading because there was an export bid present throughout that period.

In conducting the simulation, Dr. Bautista Alderete used CAISO's current software for calculating LMPs. The software has undergone a number of revisions since 2013. In addition, in 2016, FERC approved an amendment to CAISO's tariff that prevented degenerate pricing by changing the optimization formulation that calculates MCC. CAISO's current software has the flexibility to revert to the original formula with one keystroke. This essentially provides an "on/off" switch for degenerate pricing.

To ensure compatibility with CAISO's current software, Dr. Bautista Alderete performed the simulation using a more recent market case "savecase" (i.e., a computer data file that preserves the exact information used in a calculation for a selected trade date). Dr. Bautista Alderete chose the most recent savecase he could find (1) pertaining to a CAISO intertie that was similar to Cascade in terms of small size and low liquidity, and (2) having a bid structure similar to that at Cragview (i.e., an import bid and an export bid). The savecase used in the simulation involved the 230 kV "CFE" intertie.

Dr. Bautista Alderete imposed a derate of 0 MW in the export direction on the CFE intertie in his simulation. He then turned on the degenerate pricing function and ran the LMP calculation. The software selected the first segment of the import bid as the LMP. Dr. Bautista Alderete next removed the export bid from the savecase and re-ran the LMP calculation. The software selected the system marginal price as the LMP. These results confirmed that the degeneracy algorithm

automatically selected the system marginal price as the LMP when no export bid was present, while selecting the lowest priced import bid as the LMP when an export bid was present.

Finally, Dr. Bautista Alderete added an import bid for $1/MWh to the savecase that had both the import and export bid. This case approximated the bidding structure at Cragview during Vitol's trading from October 28-November 1. Dr. Bautista Alderete ran the LMP calculation with the degeneracy function turned on. The software selected the first segment of the import bid (i.e., the lowest import bid above the system marginal price) as the LMP. This result confirmed that the LMP at Cragview would have been set at the first segment of Market Participant 1's import bid ($388.11/MWh) in the absence of Vitol's $1 import bids.

Attachment 3

Investigation of Vitol Inc. and Federico Corteggiano
Docket No. IN14-4-000

STAFF'S MARKET HARM CALCULATION

Staff calculated that Vitol caused approximately $2,515,738 in market harm in the form of (a) $2,429,385 in reduced funding of CAISO's CRR balancing account, and (b) $86,353 in losses suffered by the holders of CRR counterflow positions at Cragview. Staff calculated the reduced CRR funding by summing the profits and losses of all market participants that held CRRs sourcing or sinking at Cragview during the period of Vitol's manipulation, as reflected in the table below.

Staff's specific methodology was first to determine each market participant's amount of CRRs (in MWh) sourcing or sinking at Cragview for the 105 hours from October 28 to November 1, 2013, during which the Cascade intertie was derated and Vitol traded physical power at Cragview. The CRR data are reported separately for "on peak" and "off peak" periods and staff's calculations are therefore shown by period in the table below. Staff next calculated the price impact of Vitol's manipulative trading. In the absence of Vitol's trading, the LMP would have been $388.11/MWh for all 105 hours that the intertie was derated. Staff subtracted the actual posted LMP for each derate hour from $388.11 to determine the price impact of Vitol's trading. Staff then multiplied that amount by the market participant's MWh of CRRs. Thus, the values reported in the table below are equal to: (MW CRR position) * ($388.11 – Actual Posted LMP) for the periods shown.

	oct_on	oct_off	nov_on	nov_off	Total
Anaheim (City of)	$16,022.34	$5,641.25	$1,710.90	$0.00	$23,374.49
Castleton Commodities Merchant Trading L.P.	$10,309.45	$63,227.87	$1,598.88	$14,630.79	$89,766.99
Commerce Energy, Inc.	$43.78	$0.00	$6.79	$0.00	$50.57
Commercial Energy of Montana	$197.00	$0.00	$30.55	$0.00	$227.55
Constellation NewEnergy, Inc.	$76,281.21	$0.00	$11,850.72	$0.00	$88,131.93
DC Energy California LLC	$129,295.01	$34,452.90	$0.00	$16,872.21	$180,620.13
Eagle Energy Partners I LP	($228,340.20)	$226,631.50	($31,274.90)	$4,194.17	($28,789.43)[311]
Edison Mission Marketing and Trading, Inc.	$417,412.53	$77,629.11	($24,149.54)	($4,716.32)	$466,175.78
Mercuria Energy America, Inc.	$0.00	$0.00	($57,084.42)	$0.00	($57,084.42)
Noble Americas Energy Solutions, LLC	$1,729.19	$0.00	$268.18	$0.00	$1,997.36
Northern California Power Agency	$74,946.02	$0.00	$8,262.58	$0.00	$83,208.59
Pilot Power Group Inc.	$1,400.86	$4,934.95	$712.88	$1,500.65	$8,549.33
Sesco Caliso, LLC	$65,665.32	$0.00	$0.00	$0.00	$65,665.32
Shell Trading (CRLL)	$21.89	$0.00	$3.39	$0.00	$25.28
Silicon Valley Power	$10,747.22	$20,097.53	$19,882.46	$0.00	$50,727.21
Solios Power LLC	$199,184.80	$0.00	$30,891.31	$0.00	$230,076.11
Strategic Energy Ltd	($415.88)	$0.00	($64.50)	$0.00	($480.38)
Vitol Inc.	$940,524.34	$286,520.48	$234.23	($135.84)	$1,227,143.21[312]
Total	$1,715,024.87	$719,135.59	($37,120.49)	$32,345.66	$2,429,385.62[313]

[311] Amounts shown in red in the Total column represent net losses suffered by the holders of CRR counterflow positions at Cragview.

[312] This value ($1,227,143.21) represents Vitol's profit from the unlawful trading and the disgorgement amount.

[313] This value ($2,429,385.62) represents the reduced funding in CAISO's CRR balancing account.