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UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Enron Power Marketing, Inc.	**)**	**Docket No. EL03-180-000**
and Enron Energy Services, Inc.	**)**	
Colorado River Commission	**)**	**Docket No. EL03-184-000**
Modesto Irrigation District	**)**	**Docket No. EL03-193-000**
Public Service Company of New Mexico	**)**	**Docket No. EL03-200-000**
Enron Power Marketing, Inc.	**)**	**Docket No. EL03-154-000**
and Enron Energy Services, Inc.	**)**	
Portland General Electric Company	**)**	**Docket No. EL02-114-000**
Enron Power Marketing, Inc.	**)**	**Docket No. EL02-115-000**

PREPARED DIRECT TESTIMONY OF
ROBERT F. MCCULLOUGH ON BEHALF OF PUBLIC UTILITY DISTRICT NO. 1 OF SNOHOMISH COUNTY, WASHINGTON

I. INTRODUCTION AND SUMMARY

Q. Please state your name, title and address for the record.

A. My name is Robert McCullough. I am the Managing Partner of McCullough Research, an energy consulting firm specializing in bulk power issues. My address is 6123 S.E. Reed College Place, Portland, Oregon 97202.

Q. Please briefly summarize your background and experience related to the Western energy market.

A. I am an economist with approximately 25 years of experience working on Western energy market issues, including electricity transactions involving market participants in California and the Pacific Northwest. During the early 1980s, I was involved in California bulk power exports for Portland General Electric ("PGE"). I was considered an expert, even in those early days, in wholesale transactions over the Pacific Northwest Intertie. I have helped utilities and industries buy and sell power in California. Also I have helped utilities, industries, regulators, the Oregon, Washington, and California Attorneys General, and the State of California Senate Select Committee to Investigate Price Manipulation of the Wholesale Energy Market understand and investigate the causes of the Western market failure in 2000-2001.

Q. Please briefly describe your prior testimony and publications related to the Western market crisis of 2000-2001.

A. I have written and testified on the Western market crisis of 2000-2001, including the lack of effective competition and the acts of market manipulation occurring during this period. As a result of our firm's work on the collapse of Enron and our analysis of Enron's trading practices, I testified as an expert before the U.S. Senate Energy and Natural Resources Committee in January of 2002, the U.S. House and Energy Committee in February of 2002, the U.S. Senate Committee on Commerce, Science and Transportation in April of 2002, the California Senate Select Committee to Investigate Price Manipulation of the Wholesale Energy Market in June of 2002, and I also testified on the Western market crisis before the Federal Energy Regulatory Commission ("FERC" or "Commission"). For example, I presented testimony on behalf of the Public Utility

District No. 1 of Snohomish County, Washington ("Snohomish") in the long-term, Western market contract complaint case in FERC Docket No. EL02-56. I also presented testimony on behalf of The City of Tacoma, Washington and The Port of Seattle, Washington in the Pacific Northwest spot market complaint case in FERC Docket No. EL01-10. My analyses of the Western market crisis were published in Public Utilities Fortnightly, one of the industry's leading periodicals, in January of 2001 and April of 2002.

Q. Do you have other experience in the electric industry demonstrating your qualifications as an expert witness?

A. Yes. My detailed qualifications are demonstrated in Ex. SNO-59.

Q. What is the purpose of your current testimony?

A. The purpose of this testimony is to aid the decision-making of the Presiding Administrative Law Judge ("ALJ") by offering evidence on the gaming practices of Enron Power Marketing, Inc. and Enron Energy Services, Inc. (collectively "Enron") and the partnerships, alliances and arrangements made by Enron with other entities to facilitate those gaming practices. This evidence shows that Enron brazenly flaunted the authority of the Commission, California Independent System Operator Corporation ("ISO") and California Power Exchange ("PX") and engaged in an unscrupulous pattern of market manipulation in disregard of electric system reliability, competition and consumers.

More than any other electric company I have ever encountered, Enron's corporate culture was driven by ego and greed. This point is illustrated quite poignantly by the

following quote from the movie "Trading Places" that was inserted at the very front of a collection of Enron training materials we discovered in Enron's warehouse:

> Think Big. Think Positive.
> Never Show Any Sign Of Weakness.
> Always Go For The Throat.
> Buy Low, Sell High. Fear, That's The Other Guy's Problem.
> Nothing You Have Ever Experienced Can Prepare You For The Unbridled Carnage You
> Are About To Witness.
> The Super Bowl, The World Series, They Don't Know What Pressure Is.
>
> In This Building, It's Either Kill Or Be Killed.
> You Make No Friends In The Pits And You Take No Prisoners.
>
> One Minute Your Up Half A Million In Soybeans, And the Next, Boom.
>
> Your Kids Don't Go To College, And They've Repossessed Your Bentley.
>
> Are You With Me?
> Dan Akyroyd
> - In –
> "Trading Places"

(Ex. SNO-60).

Along with this quote, Enron's training materials contained several educational articles and publications on commonly-used economic or market terms, bid and offer spreads, forward price curves, futures contracts, hedging, and credit or market risks. Tellingly, however, we discovered no training materials, either in Enron's warehouses or in materials produced in federal and state investigations, educating traders about FERC regulation and Enron's responsibilities to comply with the Federal Power Act.

Furthermore, Enron's former director of federal regulatory affairs, Mary Hain, admitted during the August 10, 2002 deposition taken of her in FERC Docket Nos. EL02-26, *et al.*, that Enron did not have a legal compliance function. Ex. SNO-35 During this

deposition, Ms. Hain was asked her impression of the traders' behavior during the meeting where all of the trading strategies were revealed. Ms. Hain responded

> [I]t was like they were going to say penance at church. That, you know, they felt like just by telling us about it that they got it off their chest and, you know, like they were absolved of their sins or something just by telling us about it or in some sense relieved by doing that . . . . Ex. SNO-35 at 163-64.

Q. On whose behalf are you testifying in these proceedings?

A. I am testifying on behalf of the Public Utility District No. 1 of Snohomish County, Washington ("Snohomish").

Q. Please briefly summarize the issues set for hearing in the Commission's show cause orders.

1. Gaming and Anomalous Market Behavior

A. On June 25, 2003, the Commission required over fifty entities – including Enron – to show cause why they should not be found to have engaged in acts constituting gaming and/or anomalous market behavior, as defined in the tariffs of the California Independent System Operator Corporation ("ISO") and California Power Exchange Corporation ("PX"), during the period January 1, 2000 to June 20, 2001. I refer to this Commission order, published at 103 FERC ¶ 61,345, as the "gaming show cause" order.

On the same date, the Commission required approximately twenty-five entities – again including Enron – to show cause why they should not be found, through partnerships, alliances or other arrangements, to have engaged in gaming and/or anomalous market behavior, as defined in the tariffs of the California ISO or PX, during the period January 1, 2000 to June 20, 2001. I refer to this Commission order, published at 103 FERC ¶ 61,346, as the "partnership show cause" order.

In both orders, the Commission ruled that the following trading practices constitute gaming or anomalous market behavior in violation of the California ISO and PX tariffs:

(1) Cutting Non-Firm Power;

(2) Circular Scheduling;

(3) Scheduling Counterflows on Out-of- Service Lines (also known as Wheel Out);

(4) Load Shift;

(5) Paper Trading;

(6) Double Selling;

(7) Selling Non-Firm Energy as Firm; and

(8) False Import.

Thus, to the extent an entity engaged in such gaming practices, the Commission's orders conclude that the entity committed a tariff violation. (103 FERC ¶ 61,345 at PP 19, 25; 103 FERC ¶ 61,346 at PP 19, 25).

Q. Have different names been used for these gaming practices?

A. Yes. To ensure the record is clear and assist the decision-making of the ALJ, I have set forth below a chart illustrating the alternative names used for the gaming practices FERC concluded were unlawful in its show cause orders:

GAMING PRACTICE	**ALTERNATIVE NAME(S) FOR PRACTICE**
Cutting Non-firm	Non-firm Export
Circular Scheduling	Death Star; Perpetual Loop; Black Widow Schedules; Big Tuna.

Scheduling Counterflows on Out of Service Lines	Wheel Out
Load Shift	
Paper Trading	Get Shorty
Double Selling	Get Shorty
Selling Non-firm as Firm	
False Import	Ricochet; Megawatt Laundering, Boomerang, Ping Pong.

Q. What monetary and non-monetary remedies did the Commission direct the parties and the ALJ to address in these proceedings?

A. For each entity that engaged in gaming practices, either individually or jointly, the Commission directed the ALJ to hear evidence quantifying the "full extent" to which the entity has been enriched unjustly by its conduct. The Commission stated that it will "require that any and all such unjust profits for the period January 1, 2000 to June 20, 2001 be disgorged in their entirety." (103 FERC ¶ 61,345 a P 71). The Commission further stated that the ALJ should determine what non-monetary remedies are appropriate to address the entity's conduct during the period January 1, 2000 to June 20, 2001, including the revocation of market-based rate authority. Recently, in an Order revoking Enron's privilege to sell at market-based rates prospectively as of June 26, 2003, FERC Docket No. EL03-77, the Commission affirmed that a remedy revoking Enron's market-based rate authority as of an earlier date is appropriately within the scope of these gaming and partnership show cause proceedings. (106 FERC ¶ 61,024 at PP 45, 47 & n. 13).

2. Did Enron Engage in Gaming and Anomalous Market Behavior?

Q. In your expert opinion, did Enron engage in gaming practices the Commission found to violate the ISO and PX tariffs?

A. Absolutely. Enron wrote the proverbial book on gaming practices, as evidenced by the "smoking gun" memoranda on Enron's trading strategies released by FERC in Docket No. PA02-2-000. (Ex. SNO-62). As explained later in my testimony, there is now an abundance of evidence demonstrating that Enron engaged in gaming practices. In fact, in Docket No. EL03-77 where the Commission prospectively revoked Enron's market based-rate authority, the Commission itself found that Enron:

> engaged in gaming in the form of inappropriate trading strategies: (1) False Import (i.e., Ricochet or Megawatt Laundering); (2) congestion-related practices such as Cutting Non-Firm (i.e., Non-Firm Export), Circular Scheduling (i.e., Death Star), Scheduling counter flows on out of service lines (i.e., Wheel Out), and Load Shift; and (3) ancillary services-related strategies known as Paper Trading and Double Selling; and (4) Selling Non-firm Energy as Firm.

(103 FERC ¶ 61,343 at P 53).

Thus, at least with respect to Enron, the issues remaining for decision by the ALJ in this current phase of the Enron gaming show cause proceeding are: (1) how often did Enron engage in gaming practices during the particular period of January 1, 2000 to June 20, 2001 at issue in this proceeding; (2) what is the full extent to which Enron was enriched unjustly by its conduct during January 1, 2000 to June 20, 2001; and (3) what non-monetary remedies, such as the revocation of Enron's market-based rate authority, are warranted to address Enron's conduct during this historical period. In the partnership show cause proceedings, issues remaining for decision in this current phase include: (1) which respondents acted jointly with Enron to carry out gaming practices during January 1, 2000 to June 20, 2001; (2) what is the full extent to which Enron and the other respondents with which Enron acted jointly were enriched unjustly by their conduct

during January 1, 2000 to June 20, 2001; and (3) what non-monetary remedies, such as the revocation of the market-based rate authority of Enron and others acting jointly with Enron, are warranted to address their conduct during this historical period.

Q, To your knowledge, when will the issue of distributing the unjust profits that must be disgorged by Enron be addressed?

A. I understand the Chief ALJ deferred this issue to a later phase of the case when dollar amounts are better known and settlements have been approved.[1]

3. Summary of Recommendations for Gaming

Q. Please summarize your recommendations on the issues to be decided by the ALJ in this current phase of the Enron gaming show cause proceeding.

A. I recommend the ALJ find that Enron engaged repeatedly in gaming practices during the period of January 1, 2000 to June 20, 2001. Specifically, the evidence shows that Enron engaged in several gaming practices: Congestion-related practice of Cutting Non-firm (Non-firm Export), Congestion-related practice of Circular Scheduling (Death Star), Congestion-related practice of Scheduling Counterflows on Out-of-Service Lines (Wheel Out), Congestion-related practice of Load Shift, Ancillary Services-related practice of Paper Trading , False Import (Ricochet), and buying non-firm energy from outside California and then selling it to the ISO as firm energy.

I also recommend that the ALJ should find the full extent by which Enron was enriched unjustly by its conduct during this period is $950 million. In my opinion,

[1] Order of Chief Judge Granting Clarification, Consolidating Distribution Issue for Hearing and Decision, and Designating Presiding Administrative Law Judge, Docket Nos. EL03-152-002, et al. (Nov. 13, 2003); Order of Chief Judge Consolidating Distribution Issue for Hearing and Decision and Granting Clarification, Docket Nos. EL03-152-002 and EL03-180-003, et al., (Dec. 22, 2003).

Enron's blatant acts of market manipulation – which the evidence shows began as early as 1998 – warrant the revocation of Enron's market-based rate authority at the earliest possible date in this proceeding. Thus, I concur with Dr. Pechman's recommendation that Enron's market-based rate authority be revoked as of January 1, 2000.

To restore faith in free-market competition and FERC's market-based rate policies, FERC must act forcefully to rectify Enron's misconduct. If FERC does not act forcefully against Enron, it will send a signal that market manipulation is "good business" and discourage the growth of dependable, credible markets. It will also send a signal that FERC is not serious about fulfilling its responsibility to protect consumers from unjust and unreasonable practices, rates, terms and conditions of service in a market that is infected with manipulation and fraud.

4. Summary of Recommendations for Partnership

Q. Please summarize your recommendations on the issues to be decided by the ALJ in this current phase of the Enron partnership show cause proceeding.

A. I recommend the ALJ find that: (1) Enron acted jointly with other entities, through partnerships, alliances or other arrangements, to engage in gaming practices during the period January 1, 2000 to June 20, 2001; (2) the entities Enron acted jointly with include, but are not necessarily limited to, the Colorado River Commission of Nevada ("CRC"), the City of Redding, California ("Redding"), the City of Glendale, California ("Glendale"), Las Vegas Cogeneration, L.P. ("Las Vegas Cogen"), Northern California Power Agency ("NCPA"), and Valley Electric Association, Inc. ("VEA"); and (3)

Enron's market-based rate authority should be revoked as of January 1, 2000, the earliest date possible within the scope of the Enron partnership show cause proceeding.

Q. Why did you state that the entities Enron acted jointly with include, but are not necessarily limited to, CRC, Redding, Glendale, Las Vegas Cogen, NCPA, and VEA?

A. I made this statement because many of the entities originally identified in the partnership show cause order did not provide all the information required to demonstrate their partnerships, alliances or other arrangements with Enron and the revenues derived therefrom. Although the Commission's partnership show cause order stated that all identified entities were required to file an inventory of all revenues from their partnerships, alliances or other arrangements, as well as all related correspondence, e-mail, memoranda, tapes, phone logs, transaction data, billing statements and agreements as part of their show cause responses, many entities did not file the requisite information. In addition, since the issuance of the Commission's partnership show cause order, many entities have either settled or persuaded the FERC Trial Staff to file a motion to dismiss them (but not Enron) from the case. The Commission has not required entities that are the subject of a settlement or motion to dismiss to produce information and, in many instances, these entities have been severed from the case and are no longer a party subject to discovery. As a result, there may be other entities with which Enron acted in concert, but all relevant information has not been provided for the record.

5. Organization of Testimony

Q. Please explain how your testimony is organized.

A. My testimony is organized in eight parts:

First, my testimony includes an introduction and summary of my recommended findings, as provided above.

Second, I describe the Market Monitoring and Information Protocols ("MMIP" or "Protocols") adopted by the California ISO and PX .

Third, I describe the type of gaming practices the Commission has concluded violate the California ISO or PX tariffs. Also, I describe in which of those gaming practices the Commission has concluded Enron has engaged.

Fourth, I address the evidence demonstrating that Enron engaged repeatedly in gaming practices. My analysis shows that Enron's misconduct started even earlier and was even more widespread than previously uncovered by FERC Staff and the California ISO.

Fifth, I address the interrelation between Enron's schemes and the impact on the Western market.

Sixth, I address the additional evidence demonstrating that Enron entered into partnerships, alliances or other arrangements to facilitate Enron's gaming practices. For ease of reference and identification purposes, I refer to the entities with which Enron formed partnerships, alliances or other arrangements as "partnership" entities.

Seventh, I address the impact that Enron's conduct had on the Western market during July 1, 2000 to June 20, 2001.

Eighth, I discuss the evidence demonstrating the full extent by which Enron was enriched unjustly by its conduct and the conduct of others with which Enron formed partnerships, alliances or other arrangements.

Ninth, I explain why, in my opinion, it is appropriate to revoke Enron's market-based rate authority as of January 1, 2000, the earliest possible date within the scope of these proceedings.

II. MARKET MONITORING AND INFORMATION PROTOCOLS

Q. Have you reviewed the Market Monitoring and Information Protocols adopted by the California ISO and PX?

A. Yes.

Q. Please describe those Protocols.

A. The objective of the Protocols is to protect against activities or behaviors which have the effect of, or potential for, undermining market efficiency, workability or reliability or which give some market participants an unfair competitive advantage over other market participants, including, but not limited to, abuses of market power in both the short and the long term.[2] As the Commission recognized in its gaming and partnership show cause orders, the Protocols are intended specifically to deter "gaming" or "anomalous market behavior." (103 FERC ¶ 61,345 at PP 16-19; 103 FERC ¶ 61,346 at PP 16-19). I have attached the relevant ISO and PX Protocols as Ex. SNO-63.

1. Gaming

Q. How do the ISO Protocols define "gaming"?

A. The ISO Protocols define gaming to include:

> taking unfair advantage of the rules and procedures set forth in the PX or ISO Tariffs, Protocols or Activity Rules, or of transmission constraints in periods in which exist substantial Congestion, to the detriment of the efficiency of, and of consumers in, the ISO Markets.[3]

[2] See ISO MMIP 1.1, 2.3.2; PX MMIP 1.1, 2.3.1, 2.3.2.
[3] ISO MMIP 2.1.3.

The ISO Protocols also define gaming to include

> taking undue advantage of other conditions that may affect the availability of transmission and generation capacity, such as loop flow, facility outages, level of hydropower output or seasonal limits on energy imports from out-of-state, or actions or behaviors that may otherwise render the system and the ISO Markets vulnerable to price manipulation to the detriment of their efficiency.[4]

Q. How do the PX Protocols define "gaming"?

A. Similar to the ISO, the PX Protocols define gaming similarly to include:

> taking unfair advantage of the rules and procedures set forth in the PX or ISO Tariffs, Protocols or Activity Rules, or of transmission constraints in periods in which exist substantial Congestion, to the detriment of the efficiency of and of consumers in the PX Markets.[5]

As defined in the PX Protocols, gaming also includes:

> taking undue advantage of other conditions that may affect the availability of transmission and generation capacity, such as loop flow, facility outages, low hydropower output or seasonal limits on energy imports from out-of-state, or actions or behaviors that may otherwise render the system and the PX Markets vulnerable to price manipulation to the detriment of their efficiency.[6]

3. Anomalous Market Behavior

Q. How do the ISO Protocols define "anomalous market behavior"?

A. Anomalous market behavior is defined in the ISO Protocols as "behavior that departs significantly from the normal behavior in competitive markets that do not require continuing regulation or as behavior leading to unusual or unexplained market

[4] ISO MMIP 2.1.3.
[5] PX MMIP 2.1.4.
[6] PX MMIP 2.1.4.

outcomes."[7] Evidence of anomalous behavior may be derived from a number of circumstances, including:

(1) withholding of Generation capacity under circumstances in which it would normally be offered in a competitive market;

(2) unexplained or unusual redeclarations of availability by Generators;

(3) unusual trades or transactions;

(4) pricing and bidding patterns that are inconsistent with prevailing supply and demand conditions, e.g., prices and bids that appear consistently excessive for or otherwise inconsistent with such conditions; and

(5) unusual activity or circumstances relating to imports from or exports to other markets or exchanges.8

Q. How do the PX Protocols define "anomalous market behavior"?

A. Similar to the ISO Protocols, the PX Protocols define anomalous market behavior similarly to the PX Protocols as "behavior that departs significantly from the normal behavior in competitive markets that do not require continuing regulation or as behavior leading to unusual or unexplained market outcomes."[9] Evidence of anomalous behavior may be derived from a number of circumstances, including:

(1) withholding of Generation capacity under circumstances in which it would normally be offered in a competitive market;

(2) unexplained or unusual redeclarations of availability by Generators;

(3) unusual trades or transactions;

(4) pricing or bidding patterns that are inconsistent with prevailing supply and demand conditions, *e.g.,* prices that appear consistently excessive for or otherwise inconsistent with such conditions; and

[7] ISO MMIP 2.1.1.
[8] ISO MMIP 2.1.1.1, 2.1.1.2, 2.1.1.3, 2.1.1.4 and 2.1.1.5.
[9] PX MMIP 2.1.1.

(5) unusual activity or circumstances relating to imports from or exports to other markets or exchanges.[10]

Q. Did the Commission conclude in the gaming and partnership show cause orders that it is a violation of the ISO's and PX's filed tariffs if a market participant, such as Enron, engages in gaming or anomalous market behavior?

A. Yes. The Commission reached the conclusion that gaming or anomalous market behavior violates the ISO's and PX's filed tariffs. (103 FERC ¶ 61,345 at PP 19, 25; 103 FERC ¶ 61,346 at PP 19, 25).

Q. Have attorneys for Enron also concluded that it is a violation of the ISO tariff to engage in gaming or anomalous market behavior?

A. Yes. In Docket No. PA02-2-000, FERC released two memoranda authored by Enron attorneys Christian Yoder and Stephen Hall that discuss Enron's trading strategies and the Protocols in the ISO's tariff. These now infamous, smoking gun memoranda expressly state at page 8:

> The ISO tariff prohibits "gaming," which it defines as follows:
>
> "Gaming," or taking unfair advantage of the rules and procedures set forth in the PX or ISO Tariffs, Protocols or Activity Rules, or of transmission constraints in period in which exist substantial Congestion, to the detriment of the efficiency of, and of consumers in, the ISO Markets. "Gaming" may also include taking undue advantage of other conditions that may affect the availability of transmission and generation capacity, such as loop flow, facility outages, level of hydropower output or seasonal limits on energy imports from out-of-state, or actions or behaviors that may otherwise render the system and the ISO Markets vulnerable to price manipulation to the detriment of their efficiency." ISO Market Monitoring and Information Protocol ("MMIP"), Section 2.1.3.
>
> The ISO tariff also prohibits "anomalous market behavior," which includes "unusual trades or transactions"; "pricing and bidding patterns

[10] PX MMIP 2.1.1.

that are inconsistent with prevailing supply and demand conditions"; and "unusual activity or circumstances relating to imports from or exports to other markets or exchanges." MMIP, Section 2.1.1 et seq.

Should it discover such activities, the ISO tariff provides that the ISO may take the following action:

(1) Publicize such activities or behavior and its recommendations thereof, "in whatever medium it believes most appropriate." MMIP, Section 2.3.2 (emphasis added).

(2) The Market Surveillance Unit may recommend actions, including fines and suspensions, against specific entities in order to deter such activities or behavior. MMIP, Section 2.3.2.

(3) With respect to allegations of gaming, the ISO may order ADR procedures to determine if a particular practice is better characterized as improper gaming or "legitimate aggressive competition." MMIP, Section 2.3.3.

(4) In cases of "serious abuse requiring expeditious investigation or action" the Market Surveillance Unit shall refer a matter to the appropriate regulatory or antitrust enforcement agency. MMIP, Section 3.3.4.

(5) Any Market Participant or interested entity may file a complaint with the Market Surveillance Unit. Following such complaint, the Market Surveillance Unit may "carry out any investigation that it considers appropriate as to the concern raised." MMIP, Section 3.3.5.

(6) The ISO Governing Board may impose "such sanctions or penalties as it believes necessary and as are permitted under the ISO Tariff and related protocols approved by FERC; or it may refer the matter to such regulatory or antitrust agency as it sees fit to recommend the imposition of sanctions and penalties." MMIP, Section 7.3.

Copies of the Yoder/Hall memoranda are attached as Ex. SNO-20.

Q. Was Enron on notice that conduct such as the gaming practices defined in the show cause orders would be a violation of the ISO and PX tariffs?

A. Yes. the Commission also ruled that “market participants cannot reasonably argue that they were not on notice that conduct such as the gaming practices discussed [in the show

cause orders] would be a violation of ISO and PX tariffs" (103 FERC ¶ 61,345 at P 23; 103 FERC ¶ 61,346 at P 23). Furthermore, we have found additional evidence demonstrating that Enron was aware of the ISO tariff provisions restricting gaming. For example, a computer print out of the ISO's MMIP on gaming, dated July 25, 2000, was located among the documents stored in Enron's warehouses, along with a message from the ISO concerning congestion-related gaming schemes. (Ex. SNO-65). The message states:

> Several market participants have been engaged in a practice of scheduling large amounts of non-firm counter flows on congested branch groups in order to earn hour-ahead congestion revenues and then not providing those counter flows in real time. This occurred during a Stage 1 emergency on 7-20-00. This practice creates a significant reliability problem for the ISO and is to the detriment of market efficiency. This notice is intended to inform Market Participants that the ISO Department of Market Analysis considers this a potentially serious "gaming" practice as defined in the ISO Tariff MMIP 2.1.3. The ISO DMA will be investigating any Market Participant found to be engaging in this activity and will take appropriate corrective actions.

Thus, Enron clearly was aware of the ISO's Protocols and knew it could be investigated or prosecuted if Enron engaged in any gaming.

III. UNLAWFUL GAMING PRACTICES

Q. Has FERC described the types of trading practices that constitute "gaming" or "anomalous market behavior?"

A. Yes. In March of 2003, the FERC Staff released its "Final Report On Price Manipulation In Western Markets," in FERC Docket No. PA02-2-000. ("Final Price Manipulation Report"). A copy of the Staff's Final Price Manipulation Report is available on FERC's website at http://www.ferc.gov/industries/electric/indus-act/wem/pa02-2.asp This

Report discussed an October 4, 2002 study by the ISO, in which the ISO identifies trading activities that fall within the ISO's definitions of gaming and/or anomalous market behavior, and which occurred during January 1, 2000 to June 20, 2001. A copy of the ISO's October 4, 2002 Analysis of Trading and Scheduling Strategies in Enron memos, as well as subsequent studies prepared by the ISO regarding Trading Strategies in Enron memos, are attached as Ex. SNO-17.

The Final Price Manipulation Report concluded that many trading activities constitute gaming or anomalous market behavior in violation of the ISO and PX Protocols. The Commission agreed, concluding that these gaming practices fall within two broad categories: (1) congestion-related gaming practices; and (2) ancillary services-related gaming practices. 103 FERC ¶ 61,345.

Q. Please describe the congestion-related gaming practices.

A. The congestion-related gaming practices involved fraud, deception or misrepresentation in connection with payments by the ISO to market participants for congestion relief. Congestion relief payments were collected by market participants, such as Enron, even though no energy actually flowed, no congestion actually was relieved or the market participant was responsible for creating congestion that was relieved. FERC concluded there were four basic congestion-related gaming practices.

The first congestion-related practice is described by FERC as "Cutting Non-firm." It is also sometimes called "Non-firm Export." This practice involved the scheduling of non-firm power by a market participant that did not intend to deliver or could not deliver the power. Upon receipt of the congestion payment for cutting the schedule, the market

participant canceled the non-firm power after the hour-ahead market closed but kept the congestion payment. The market participant was paid for congestion relief even though no power was transmitted and no congestion was relieved. In some instances, the market participant may have submitted a schedule for non-firm power that it, in fact, had not acquired.

The second congestion-related practice is described by FERC as "Circular Scheduling." This practice is also sometimes called "Death Star." Circular Scheduling involved the market participant scheduling a counterflow in order to receive a congestion relief payment. In conjunction with the counterflow, the market participant scheduled a series of transactions that included both energy imports and exports into and out of the ISO control area and a transaction outside the ISO control area in the opposite direction of the counterflow back to the original place of origin. With the same amount of power scheduled back to the point of origin, however, power did not actually flow and congestion was not relieved.

The third congestion-related practice is described by FERC as "Scheduling Counterflows on Out-of-Service Lines." This practice is also sometimes called "Wheel Out." It involves a market participant submitting a schedule across an intertie line at the ISO border that was known to be out of service and had been derated to zero capacity, thus creating artificial congestion. The market participant would then schedule a counterflow export, a "wheel out," and be paid for congestion relief in the day-ahead or hour-ahead market. However, because the line was completely constrained, the initial

schedule would be cut by the ISO in real time and the market participant would receive a congestion payment for energy it did not actually supply.

The fourth congestion-related practice is described by FERC as "Load Shift." This practice involved a market participant underscheduling load in one zone in California and overscheduling load in another, thereby increasing congestion in the direction of the overscheduled zone. Congestion "relief" occurred when the market participant later adjusted the two schedules to reflect actual expected loads. This adjustment created a counterflow toward the underscheduled zone, earning the market participant a congestion relief payment from the ISO. The market participant had to own Firm Transmission Rights ("FTRs") in the direction of the overscheduled zone to cover its exposure to ISO congestion charges, but any of the FTRs that it did not use may have earned artificially high FTR payments from the ISO.

Q. Has the Commission already found that Enron engaged in congestion-related gaming practices?

A. Yes. The Commission found that Enron engaged in congestion-related practices in its Revocation Order in Docket No. EL03-77. (103 FERC ¶ 61,343 at P 53).

Q. Please describe the ancillary services-related gaming practices.

A. The ancillary services-related gaming practices involved fraud, deception or misrepresentation in connection with the availability of resources for sale to the ISO. The first ancillary services-related practice is described by FERC as "Paper Trading." It is also sometimes called "Get Shorty." This practice involved selling ancillary services in the day-ahead market even though the market participant did not have the required

resources available to provide the ancillary services. The ISO's tariff requires any bid for the provision of ancillary services to specify the generating unit, system unit, load or system resource which will be used to provide the ancillary service. Additionally, a scheduling coordinator must identify the specific operating characteristics of that resource which would qualify it to provide ancillary services. A market participants engaging in Paper Trading falsely represented that resources were available to provide ancillary services when they were not actually available.

The second ancillary services-related practice is described by FERC as "Double Selling." This practice is also is sometimes called "Get Shorty." This practice involved selling ancillary services in the day-ahead market from resources that were initially available, but later selling those same resources as energy in the hour-ahead or real-time markets. Market participants misled the ISO by selling capacity that was already committed to reserve as ancillary services, thus making that capacity no longer available in real time if the ISO were to call upon that resource to provide ancillary services. [11]

Q. Has the Commission already found that Enron engaged in ancillary services-related gaming practices?

A. Yes. The Commission found that Enron engaged in ancillary services-related gaming practices in its Revocation Order in Docket No. EL03-77. (103 FERC ¶ 61,343 at P 53.)

Q. Please describe the gaming practice of selling non-firm energy as firm.

[11] In addition to violating the MMIP, the Commission found those market participants that engaged in Double Selling violated Section 2.5.22.11 of ISO tariff.. ISO Tariff §2.5.6.1 (applicable to generation within California); ISO Tariff §§2.5.7.4.2 and 2.5.7.4.3 (applicable to resources outside of California).

A. This practice involved fraud, deception or misrepresentation in connection with purchases of non-firm energy from outside California and sales of the same energy to the ISO as firm energy. As the name of this practice implies, non-firm energy was sold as firm energy to the ISO.

Q. Has the Commission already found that Enron engaged in selling non-firm energy as firm?

A. Yes. The Commission found that Enron engaged in selling non-firm energy as firm in the Revocation Order in Docket No. EL03-77. 103 FERC ¶ 61,343 at P 53. The Commission also found in the gaming show cause order that Enron was the main culprit of this particular gaming practice and that: "The practice of Selling Non-Firm Energy as Firm was a flagrant false representation by Enron to the ISO. Thus, it was a violation of the MMIP.'' (103 FERC ¶ 61,345 at P 55).

Q. Please describe the gaming practice of False Import, Ricochet or "Megawatt Laundering."

A. This practice involved fraud, deception or misrepresentation in connection with the fictional export of power to an entity outside of California and the re-import of power into California to take advantage of price differentials that existed between the day-ahead or day-of markets and out-of-market sales in the real-time market. As described by FERC, a market participant made arrangements to export power purchased in the California day-ahead or day-of markets to an entity outside the state and to repurchase the power from the out-of-state entity for a fee. The "imported" power was then sold in the California real-time market at a price above the cap.

According to FERC, the essence of the False Import practice was to "park" day-ahead or day-of California energy with a company outside of California, buy it back for a small fee and then sell it to the ISO as "imported" out-of-market power. When power was parked under this practice no power actually left California. One reason for creating this fictional transaction was to take advantage of the fact that the ISO was making out-of-market purchases that were not subject to the price cap during real time whenever there was insufficient supply bid into its market. [12] The ISO buyers responsible for obtaining the energy needed in the real-time market were willing to pay a price above the cap for energy imported from outside of California and accepted offers from sellers engaging in the False Import practice.

The Commission concluded that those market participants which engaged in the False Import practice violated the MMIP by unfairly taking advantage of rules permitting energy to be purchased out-of-market at prices above the cap during real time and the ISO's practice of permitting such uncapped purchases for imported power. Market participants engaging in False Import deceived the ISO by falsely representing that their available power had been imported in order to receive a price above the cap. In fact, however, the generation, and no power had left the state in the fictional export-import parking transaction.

Q. Has the Commission already found that Enron engaged in False Import?

[12] "Out-of-market purchases" refers to all generation purchased by the ISO that was not bid into the market or was bid at a price above the effective price cap. Out-of-market purchases were especially frequent prior to the implementation of the "must offer" requirement effective on May 29, 2001, which mandates that all generators with participating generator agreements with the ISO provide available generation to the ISO unless the ISO grants a waiver. See San Diego Gas & Electric Co, et al.., 95 FERC ¶ 61,115 (implementing the must offer requirement), clarified, 95 FERC ¶ 61,275 (2001).

A. Yes. In its Revocation Order in Docket No. EL03-77, the Commission found Enron engaged in False Import (103 FERC ¶ 61,343 at P 53). Judge Cintron also found that the record in EL02-113 "supports a finding that Enron engaged in 'Ricochet' activities." (104 FERC ¶ 63, 010 at P 126).

IV. EVIDENCE DEMONSTRATING ENRON ENGAGED IN UNLAWFUL GAMING PRACTICES

Q. Does the evidence show that Enron engaged in gaming practices throughout the period at issue in this case?

A. Yes, indisputably. In fact, the evidence demonstrates that Enron began to develop and implement schemes to manipulate the market as early as 1998 and continued to engage unabashedly in gaming practices during the period January 1, 2000 to June 20, 2001, even after Enron knew its trading practices were under investigation, attorneys had apprised Enron that gaming is prohibited by the ISO tariff, and attorneys claim to have instructed Enron traders to cease their practices.[13] (Ex. SNO-67)

Q. Does the evidence show that Enron engaged in gaming practices repeatedly or were there only a very few isolated instances of gaming practices?

A. The evidence shows that Enron engaged in gaming practices repeatedly. Enron did not simply manipulate the market once and then stop. In fact, an Enron attorney named Stephen Hall – who originally investigated the Enron trading strategies at issue in these show cause proceedings and personally interviewed Enron traders – admitted under oath that Enron's practices did not occur just once, but were "of a recurring type."[14] A copy of Mr. Hall's sworn testimony is attached as Ex. SNO-67. As discussed later in my

[13] Deposition of Stephen C. Hall at 80-81, Docket No. EL02-26, et al., (July 11, 2002).
[14] Id. at 51.

testimony, we uncovered a large volume of transactions in Enron's Enpower data base that constitute gaming.

A. THE ENRON MEETINGS

Q. Please describe the Yoder/Hall Memoranda released by FERC in Docket No. PA02-02-000.

A. In the fall of 2000, Richard Sanders, the Vice President and Assistant General Counsel for Enron Wholesale Services, asked attorneys for Enron to review the trading strategies in use in California in response to investigations launched by the California Senate and the California Attorney General. As acknowledged in Ex. SNO-68, starting in October of 2000, a series of meetings were held with Enron attorneys and traders about Enron's trading practices. Stephen Hall, in particular, was given the responsibility to interview traders and write up a description of their trading practices. Based on his discussions with traders, Mr., Hall determined there were "deceptive aspects" of Enron's trading practices.[15] *See* Ex. SNO-69.

Q. Did Mr. Hall write up a description of Enron's trading practices?

A. Yes, based on the results of his research and interviews with traders, Mr. Hall, drafted a report entitled "Trading Strategies" in October of 2000. A copy of this report is attached as Ex. SNO-62.

This report formed the basis of the now infamous smoking gun memoranda on Enron's trading strategies that were released in Docket No. PA02-02-000. In the original

[15] Hearing before the Committee on Natural Resources United States Senate, Energy Market Manipulation, Testimony of Stephen Hall at 52 (May 15, 2002).

document Hall outlines Load Shift, Get Shorty, Death Star, Non-firm Export, Wheel Out, and Fat Boy but begins this document by stating, "This memorandum summarizes some of the trading strategies that the traders are using in the Cal PX and CAISO markets. Each of these strategies is identified by the traders' nickname for it." The first report was far more outspoken than its successor, the Yoder/Hall memos of December 6 and 8, 2000. Stephen Hall's October memorandum makes clear that these are actual strategies and specifically quotes traders' comments.

In December, there were two smoking gun memoranda authored by Mr. Hall and another attorney at Enron named Christian Yoder memorializing the trading schemes used by Enron to manipulate the market. The memoranda, entitled "Traders' Strategies in the California Wholesale Power Markets/ISO Sanctions," are addressed to Richard Sanders. The content of both is similar; however, the memoranda have different dates of December 6 and 8, 2000. A copy of this report is attached as Ex. SNO-20.

Importantly for purposes of these proceedings, the Yoder/Hall memoranda admit point blank that Enron traders actually used the congestion-related gaming strategies of "Wheel Out," "Non-firm Export," "Load Shift, " and "Death Star" (aka Circular Scheduling) and the ancillary service-related gaming strategy of "Get Shorty" (aka Paper Trading). The Yoder/Hall memoranda also admit point blank that Enron traders actually used the trading strategies of "Selling Non-Firm Energy as Firm" and "Ricochet" (aka False Import or MW Laundering).

Q. The Yoder/Hall memoranda have received much attention in the press and at FERC, but Mr. Hall's October 2000 report has not been discussed frequently. What is interesting about this earlier report?

A. Mr. Hall's October 2000 report is interesting for two reasons. First, the report further demonstrates the fraud, deception or misrepresentation associated with Enron's trading schemes. For example, the report states clearly that no electrons flow in Death Stars. (Ex. SNO-62).[16] Second, while Enron has suggested that Mr. Hall's work was unsanctioned and unexpected, both Richard Sanders and Christian Yoder clearly saw the October 20002 report and even forwarded it to other members of the Enron team to be discussed together in a meeting with Yoder, Hall, Sanders and Fergus.[17] (*See* Ex. SNO-68). Indeed, Messrs. Yoder, Hall and Fergus testified before the U.S. Senate that, in fact, they were at the October 2000 meeting where the issue of deceptive practices was revealed.[18] (Ex. SNO-69). This proves that not only was Yoder and Hall's work authorized, but also that several members of Enron's counsel were aware that these gaming practices violated the PX and ISO tariffs.

Q. Did Stephen Hall find additional schemes that were not recorded in his memos?

[16] Trading Strategies, October 30, 2000, pages 1 and 3. It appears that Stephen Hall is directly quoting traders in several cases.
[17] October 30, 2000 Email from Stephen Hall to Elizabeth Sager and Richard Sanders was forwarded on November 1, 2000 from Richard Sanders to Gary Fergus.
[18] Hearing before the Committee on Natural Resources United States Senate, Energy Market Manipulation, at 59, (May 15, 2002).

A. Yes. We know that Stephen Hall was writing periodic status reports to Enron legal. These reports have not been found. On occasion, however, Christian Yoder quoted from the missing reports.

> 10/30/2000
> To: Richard Sanders and Elizabeth Sager
> Subject: ISO
> CONFIDENTIAL
> ATTORNEY CLIENT PRIVILEGE
> While I was away on vacation, Steve Hall included this statement in a status report to me; " >While you were gone I learned a new one from Smith Day, which involves submitting bids for less than one MW, i.e., .0005 MW. Because of a glitch in the ISO's rounding system, the MW get rounded down, but the payment gets rounded up. Playing this game is worth about $9000/day. " 9,000 X 365 = 3,250,000.
>
> Let's discuss. ----cgy

(Ex. SNO-19).

Q. What importance was the Rounding Scheme to the California crisis?

A. Little, since Enron management quickly brought the scheme to a halt and apparently returned the proceeds. It does display the general approach Enron traders had been encouraged to take. Each review of Enpower for specific schemes reveals a dozen different alternative approaches.

Q. Are there any other reports or memoranda outlining the gaming strategies in which Enron engaged?

A. Yes. There were two smoking gun memoranda authored by Mr. Hall and another attorney at Enron named Christian Yoder memorializing the trading schemes used by Enron to manipulate the market. The December 6th and 8th, 2000 memoranda contain similar content and are entitled "Traders' Strategies in the California Wholesale Power Markets/ISO Sanctions." The memoranda are addressed to Richard Sanders.

Importantly for purposes of these proceedings, the Yoder/Hall memoranda admit point blank that Enron traders actually used the congestion-related gaming strategies of "Wheel Out," "Non-firm Export," "Load Shift, " and "Death Star" and the ancillary service-related gaming strategy of "Get Shorty." The Yoder/Hall memoranda also admit point blank that Enron traders actually used the trading strategies of "Selling Non-Firm Energy as Firm" and "Ricochet."

Moreover, the memoranda evidence that Enron's congestion-related trading strategies involved fraud, deception or misrepresentation. For example, when describing Enron's Load Shift scheme, the memoranda state that the effect of this strategy "is to create the appearance of congestion through the deliberate overstatement of loads, which causes the ISO to charge congestion charges to supply in the congested zone." (Ex. SNO-20. When describing Enron's Wheel Out scheme, the memoranda state that to earn a congestion payment, Enron traders schedule transmission over an intertie "knowing that the intertie is completely constrained." (Ex. SNO-20). Similarly, with respect to Enron's Death Star scheme, the memoranda acknowledge that Enron traders schedule transmission in the opposite direction of congestion to collect congestion payments, knowing that no energy would be "actually put onto the grid or taken off." Ex. SNO-20.

The memoranda likewise evidence that Enron's ancillary services-related trading strategy of Get Shorty as well as Enron's Selling Non-Firm as Firm and Ricochet strategies involved fraud, deception or misrepresentation. With respect to Enron's Get Shorty scheme, the memoranda admit that Enron sells ancillary services in the Day-Ahead market even though Enron "does not actually have the ancillary services to sell."

Ex. SNO-20. Likewise, with respect to Enron's Selling Non-Firm as Firm scheme, the memoranda admit that "traders commonly sell non-firm energy to the PX as 'firm'" and that the "ISO pays EPMI for ancillary services that Enron claims it is providing, but does not in fact provide." Ex. SNO-20. Regarding Enron's Ricochet scheme, the memoranda show that Enron buys energy from the PX in the day-of market, exports the energy out of state to another party and then buys the same energy back to sell to the ISO solely to get the ISO to pay a higher price for energy imported from out of state, and "not to serve load or meet contractual obligations." Ex. SNO-20.

An undated third memorandum, apparently written some time after the first two by a separate set of attorneys including Gary Fergus and Jean Frizzell, was also released by FERC in Docket No. PA02-02. The third memorandum, which is marked "DRAFT DRAFT DRAFT," essentially contains an apology for the earlier memoranda and attempts to undo, after the fact, the damning admissions contained in the Yoder/Hall memoranda. *See* Ex. SNO-71.

Q. Did Enron hold any meetings to discuss these memoranda?

A. Yes. Enron held meetings in December 2000 to discus the memoranda.

Q. What was the outcome of these meetings?

A. According to the May 15, 2002 testimony of Stephen Hall to the Senate Commerce Committee, the outcome of these meetings was the legal instruction to stop the schemes.[19] Ex. SNO-69. Additionally, Richard Sanders testified that he directed that the trading practices described in the memoranda be suspended.[20]

[19] Stephen Hall Testimony to the Senate Commerce Committee, May 15, 2002 at 53.
[20] Statement of Richard B. Sanders, Esq. before the U.S. Senate Commerce Committee (May 15, 2002)

Q. Did Enron follow the instructions of Hall and Sanders to cease its gaming practices?

A. No. Death Stars, for example, continued to take place after the December meetings, as evidenced in the email trail discussed below.

As explained subsequently in my testimony, Enron's transactional database shows 48,995 Death Star schedules, many of which took place after the December 2000 meetings. Enron's email trail further proves this point, including for example the following email sent by Geir Solberg to the "Portland Shift" of traders on April 7, 2001:

> FROM : Geir Solberg <Geir Solberg/PDX/ECT@ECT>
> TO : Portland Shift <Portland Shift@ECT>
> DATE = 04/07/2001
> TIME : 03:41:00
> ORIGIN : WILLIAMS-W3
> SUBJECT : NCPA BR IS BACK
> FOLDER : \ExMerge - Williams III, Bill\RT strat
> BODY : Hey Guys.
> I had a long talk with NCPA today and set up so that we again can do the ZP26/NP15 Buy-Resale on a Realtime basis. We are not doing a profit split this time, we are paying them $25/MW instead. This basically enables us to shift 21MW across PATH15 and not be subject to Congestion as NCPA has Grandfather Rights across the path. This is a sweet strategy when the SP15/NP15 spread is there and PATH15 is congested. NCPA's capacity is 21MW, but I would not recommend doing more than 20MW. There are others who know about this opportunity but are not currently using it (WESCO especially). So by doing only 20MW we do not remind them of NCPA.
>
> The way this works is that we call NCPA and ask their capacity across PATH15. And tell them you want to schedule the BR through whatever hour.
>
> IN CAPS:
> We sell to NCPA in ZP26.
> We buy from NCPA in NP15.
> We can buy SP15 to fill our ZP26 sale (we just shift the load from SP15 to ZP26, so enter a EPMI CALPOOL).
> PG&E is NCPA's SC, so if you are not passing Phase two give them a call.
> NCPA's tel#: (916) 786-3520
> PG&E tel# : (415) 973-1969

If you guys have any questions just ask me.

Geir

(Ex. SNO-72).

This is an example of Enron's internal communication demonstrating that Enron engaged in Death Star, *i.e.,* the use of other entities' transmission rights in order to schedule energy in the opposite direction of congestion in order to collect congestion relief payments from the California ISO. Even though Enron had agreed to pay NCPA $25/MW, they would profit from any ISO's congestion payments in excess of $25. FERC has found that this practice is profitable "as long as the congestion relief payments were greater that the cost of the scheduled transmission."[21] In that same show cause order, FERC states that these gaming practices "constitute gaming and/or anomalous market behavior in violation of the California Independent System Operator Corporation's (ISO) and California Power Exchange's (PX) tariffs.[22]

Q. Weren't Enron traders afraid of getting caught if they continued to engage in Death Stars?

A. Apparently not. As indicated in the Yoder/Hall memoranda, Enron traders could continue to get away with Death Stars because the ISO "cannot readily detect this practice." The ISO "only sees what is happening inside its control area, so it only sees half of the picture." (Ex. SNO-20).

The "Death Star" scenario described in the Enron memos is an example of what the ISO refers to as a "circular" Schedule, or a series of Energy Schedules that appear as

[21] 103 FERC ¶ 61,645 at P 43.
[22] Id. at P 1.

import and export Schedules through the ISO control area, but actually include additional Schedule(s) outside the ISO control area which form a closed "loop" of scheduled Energy with no specific, physical, beginning (source) or end (sink). Thus, the type of circular Schedule described under the "Death Star" strategy would appear in ISO Scheduling records simply as an import and export from the ISO control area (earning Congestion revenues by creating a counterflow), with the "return" portion of the Schedule being outside the ISO control area.[23]

B. CRIMINAL INDICTMENTS AND GUILTY PLEAS

Q. Have Enron's traders admitted they engaged in fraudulent trading schemes?

A. Yes. In criminal proceedings instituted by the U.S. Department of Justice, two of Enron's traders – Timothy Belden and Jeffrey Richter – admitted that they and other individuals at Enron devised and implemented a series of fraudulent schemes in markets operated by the ISO and PX beginning as early as 1998 and continuing through 2001. They pled guilty to, among other things:

- intentionally submitting false information to the PX and ISO;
- intentionally scheduling energy that Enron did not have or did not intend to supply;
- artificially increasing congestion on California transmission lines; and
- exporting and then importing electricity generated within California to receive higher, out-of-state prices.

[23] California Independent System Operators Supplemental analysis of Trading Strategies described in Enron memos at [Ex. SNO-66]

A third trader, John Forney, is currently under criminal indictment for fraudulent acts committed during the period June 1999 to January 2001. Specifically, he is charged with wire fraud in connection with:

(1) Enron's selling Non-Firm as Firm energy trading scheme;

(2) Enron's Non-Firm Export trading scheme;

(3) Enron's Get Shorty trading scheme;

(4) Enron's Death Star trading scheme;

(5) Enron's Ricochet trading scheme;

(6) Enron's Off-Line Hub trading scheme; [24] and

(7) Enron's Load-Shift trading scheme.

Copies of the indictments and plea agreements of Enron traders are attached as Ex. SNO-13 and SNO-14.

C. THE INSTITUTIIONAL NATURE OF ENRON'S GAMING PRACTICES

Q. Were other employees involved in Enron's gaming practices?

A. Yes. As Messrs. Belden and Richter admitted in their plea agreements, they and "other individuals" at Enron were involved in Enron's fraudulent trading schemes. (See Ex. SNO-73). The abuse was widespread within Enron, and not limited to a single rogue trader. Simply by tabulating the traders who have pled guilty, been indicted, or entered trades in Enron's Enpower data base, which I describe in more detail later, we came up with a list of 72 names of Enron employees. Several of these employees were involved in Enron's gaming practices, as indicated in the "Evidence" column of the table below, including but not necessarily limited to, Tim Belden, John Forney, Michael Driscoll, Jim

[24] Off-line Hub trading scheme is also known as Wheel Out

Miller, Diana Scholtes, Brian Robinhold, Carey Morris, Donald Robinson, Jeremy Morris, Jesse Bryson, Les Rawson, Mike Swerzbin, Stanley Cocke, Valerie Sabo, Bill Williams III, and Holden Salisbury. These traders were involved in approximately a third of Enron's deals and 60% of their strips. When a trader made references in comments regarding any of the schemes at issue in this proceeding, we have captured that fact in the "Evidence" section of the chart below.

Trader Name	Deals	Strips	Evidence
Al Pollard	6	846	
Bert L. Meyers	363	3406	
Bill Williams III	1700	4752	Enpower Citations
Bill Greenizan	1	1	
Bill Reed	18	2664	
Bob Badeer	6451	186827	
Brett Hunsucker	54	156	
Brian Robinhold	677	2136	Enpower Citations
Cara Semperger	86	290	
Carey Morris	277	817	Enpower Citations
Carla Hoffman	2804	24443	
Chris Foster	595	2574	
Chris Mallory	7141	53028	
Colin Whitehead	739	2172	
Cooper Richey	4	4	
Craig Dean	342	1215	
David Braat	3	307	
David Porter	1003	3443	
Diana Scholtes	14766	48474	
Donald Robinson	480	1420	Enpower Citations
Elliott Mainzer	10	588	
Eric Linder	375	1409	
Geir Solberg	2243	7077	
Greg Wolfe	20	223	
Greg Woulfe	3	531	
Holden Salisbury	1876	7479	Enpower Citations
Holli Krebs	81	7197	
Jeff Richter	14202	106855	Guilty Plea
Jeffrey Miller	55	516	
Jeremy Morris	1043	4445	Enpower Citations
Jesse Bryson	1253	3798	Enpower Citations
John Forney	533	1303	Enpower Citations and U.S. DoJ Indictment
John Malowney	66	4830	
John Zufferli	11	11	
Kate Symes	1222	11067	
Kevin McGowan	1705	67403	
Kim Ward	466	4324	
Kristian Lande	2	12	
Kysa Alport	32	65	
Larry Daugherty	110	412	Enpower Citations
Larry Jester	1	2	
Laura Podurgiel	1	1	
Laurel Bolt	6	19	
Leaf Harasin	1498	5086	
Leaf Harrison	2	2	
Les Rawson	1770	6556	Enpower Citations
Lisa Gang	68	437	
Mark Fischer	9717	75192	
Mark Guzman	962	3359	
Matt Motley	4746	180952	Enpower Citations
Mike Carson	2	163	
Mike Driscoll	1881	9795	Enpower Citations
Mike Purcell	6	16	
Mike Swerzbin	15252	620740	Enpower Citations
Monika Causholli	1516	4606	
Patrick Hanse	2	15	
Paul Mead	370	13894	
Phil Platter	4409	33614	
Phillip Allen	60	4828	
Rudy Acevedo	1	1	
Ryan Slinger	1700	5377	
Scott M. Neal	48	10428	
Sean Crandall	7155	53920	
Smith L Day	1024	8958	
Stanley Cocke	1226	4033	Enpower Citations
Steve Merriss	325	1139	
Stewart Rosman	76	6645	
Theresa Allen	3	3	
Thomas McAndrew	6	751	
Tim Belden	859	54834	Guilty Plea
Tom Alonso	8468	66215	
Valerie Sabo	119	421	Enpower Citations
Total	126697	1741194	
Implicated Traders	37.89%	58.05%	

1

Copies of the comments entered by these traders in Enpower about Enron's implementation of Death Star, Wheel Out and Get Shorty, are attached as Ex. SNO-74.

Q. How institutionalized were the gaming practices?

A. The evidence suggests that Enron's management, including Tim Belden, the chief trader for Enron's West power desk, organized the dissemination of schemes and encouraged their use. Enron managers were not shy about their plans. A significant document illustrating this point is the agenda from a March 7, 2000 Real Time Staff Meeting, which is attached as Ex. SNO-75.

After introducing several new traders to the team, including Mr. Cocke and Mr. Robinhold, all later implicated in schemes, the meeting turns to five important issues:

- What we do: Make an outrageous amount of money for Enron with appropriate level of risk

- Minimum Expectations: Learn terms of service arrangements

- Proficiency Exams: Trading Strategy - situational items, such as Congestion Relief, Fat Boy etc.Services: Pass out the Miller Report

- Trading Strategy: We own LADWP transmission (ref. No LDWP0000003) that can be used for real time. The path is Malin > Mead and currently we own 45mw's RTC. 45 mw's available light load, but ST SW uses heavy load.

BPA N-F transmission account no. set up to go from Nob, PGE System - use when beep splits PGE: redelivers to Enron at Malin via new PGE parking service available - details to be provided.

1. We can sell back to Redding for profit sharing into NP15 (if congestion prohibitive at Malin). Or the Boomerang:

2. Buy NP from Redding, export/relieve congestion at Mailin, send to PGE/PGE sells back to Redding at Mailin/Redding uses their transmission (Malin/Tracy) to do SC trade with Enron.

3. Or Enron just imports at Malin to get high NP price relative to low SP

As illustrated by this meeting agenda, Enron traders were given proficiency exams on Enron's trading schemes, including apparently the congestion relief schemes at issue in these proceedings, and instructed on how to "boomerang," i.e., False Import, energy out and then back into California.

Q. Is this meeting agenda consistent with other evidence?

A. Completely. The trading strategy section of the meeting agenda outlines the use of Los Angeles Department of Water & Power ("LADWP") transmission, Portland General Electric's ("PGE's") cooperative efforts, and the relationship with the City of Redding that occurs frequently in Enpower. Our research shows over 48,000 Death Stars using the LADWP contract, and through extensive cooperative efforts with PGE and a number of transactions with the City of Redding.

In the Section below, I review how the Enron Real Time Services Handbook, included as Ex. SNO-46, fit into PX and ISO schedules. This Handbook also served as instructional material designed to educate inexperienced Enron traders about Enron's schemes.

Q. Is there other evidence of schemes available from Enron?

A. Yes. Enron traders often described their schemes in internal documents, traders' logs, and in the comment fields of their submissions to Enpower and the California ISO. Enpower has numerous references to various Enron schemes. I feel it is important to

mention that we have evidence that comments initially entered into the Enpower database were removed at the request of Enron counsel. Ex. SNO-77.

Dunton, Heather

From: Thompson, Virginia
Sent: Wednesday, August 01, 2001 8:52 AM
To: Dunton, Heather
Cc: Chang, Fran; Law, Samantha
Subject: FW: Deal # 394349.1

Heather, Fran and Samantha,

John zero'd out this deal. Can any of you tell me why?

Virginia

-----Original Message-----
From: Thompson, Virginia
Sent: Tuesday, July 31, 2001 3:39 PM
To: Swerzbin, Mike; Page, Jonalan
Subject: Deal # 394349.1

Mike and JonAlan,

Can either of you shed any light on this...

Deal # 394349.1 (on-peak 25 MW's per hour x $80.50 x Monday thru Saturday) has a note on it stating "July - Sept volumes deleted per legal. JP".

PowerEx is still recognizing this deal for July 2001.

Any information you can provide will be extremely helpful.

Thanks,

Virginia

Q. What evidence is available now that was not available to you during the hundred days proceedings and the Western long-term contract complaint proceedings?

A. A vast amount of new materials has become available. For example, FERC released responses to the May 2002 interrogatories in Staff's Fact-Finding Investigation in Docket No. PA02-2-000 concerning transactions made in the WECC during 2000 and 2001 as well as many Enron documents and emails. In my view, the most important evidence currently available is a subset of the Enpower database, which Snohomish received in response to a data request.

D. ENPOWER

Q. What is Enpower?

A. Enpower is a relatively simple SQL-Server based database designed for deal entry.

Q. When did you receive the Enpower database?

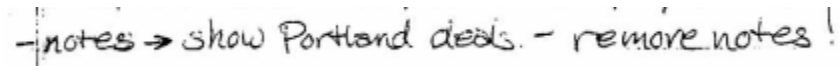
Ironically, Snohomish only became aware of this database in November, 2003. During a meet-and-confer conference call to resolve a discovery dispute in this proceeding, counsel for Snohomish learned that Expert Witness Jan Acton on behalf of Enron was given two CDs worth of Enpower Data in this docket. Upon learning this information we asked for the same material.

Q. Do you have any questions concerning the accuracy or thoroughness of Enpower?

A. To the degree we were able to cross-check Enpower data with external sources, the data appears largely consistent. However, several pieces of evidence exist which indicate Enron's books possibly may have been "cooked" to cover up its gaming practices, calling into question the ethics of Enron staff who have maintained the database both before and after Enron's bankruptcy. For example,

. A "to do" list was found among the documents in Enron's warehouse and at the top of the list was an entry referring to "fake trade book" (Ex. SNO-78).

. Further, the notes of an Enron attorney named Mary Hain from the Enron meetings in the fall of 2000 reflect that Enron staff were given the direction to "remove notes!" (Ex. SNO-79).



The Enpower data provided to us is missing a number of deals that were identified on the FERC web site. Because these deals were simple Enpower queries, a similar query on the data provided to us by querying the FERC database should identify the same data. The Enpower data set supplied to us apparently has had Death Stars removed since the FERC query on November 18, 2002. You will notice four transactions are missing from the "Current EnPower Query" column when compared to the deal numbers in the "FERC Query" column which consists of data from in the Death Star database posted by the FERC .

Date	FERC Query	Current Enpower Query	DL_Comment
5/1/2000	332120	332120	wwp sleeve for Death Star deal
5/3/2000	334471	334471	WWP buy/resale to PGE, $32 to WWP and $33 to PGE...deathstar
5/4/2000	334741	334741	RT group doing the Death Star trading strategy this buy resell gives WWP the $1 for the service.
5/9/2000	337119	337119	Project deathstar. ISO export at Malin to WWP, sold to PGE at system.
5/9/2000	337121	337121	Project deathstar
5/10/2000	337882	337882	Death Star.
5/10/2000	337883	337883	Death Star buy resell with WWP, we sell to WWP and they sleeve through PGE to give back to us at PGE system.
5/11/2000	338685	338685	Death Star, giving WWP the $1 for buying Malin and reselling to us at PGE system with the help of PGE.
6/13/2000	353545	353545	deathstar
6/13/2000	353546	353546	deathstar
6/30/2000	367113	367113	bought for Deathstar Robinhold
6/30/2000	367116	367116	bought for Deathstar Robinhold
7/1/2000	367172	367172	Deathstar: import in SW and export NW.
7/6/2000	369208	369208	Deathstar PV/Malin/PV
7/15/2000	373848	373848	Deathstar play Salisbury
7/15/2000	373849	373849	Deathstar play Salisbury□□
7/17/2000	374586	374586	Deathstar RT nonfirm export at Malin, Pac B/R, LA trans to import at PV Robinhold
7/17/2000	374587	374587	Deathstar RT nonfirm export at Malin, Pac B/R, LA trans to import at PV Robinhold zeroed this to use 292672 instead.
7/17/2000	374589	374589	Deathstar RT nonfirm export at Malin, Pac B/R, LA trans to import at PV Robinhold
7/27/2000	381519		RT reimburses LTSW for LA tranny for Deathstar Robinhold□□
7/29/2000	382612	382612	RT Robinhold Deathstar
7/29/2000	382615		RT Robinhold Deathsta
7/29/2000	382617	382617	RT Robinhold Deathsta
7/29/2000	382618		RT Robinhold Deathsta
8/9/2000	390072		Annuity to long term southwest death star.□□Leaf Harasin
8/19/2000	396244	396244	death star
8/19/2000	396248	396248	death star

The Enpower comment field appears to include edits of the database taking place in 2003. Since Enron had been in bankruptcy for over a year by this time, the edits seem

very unlikely a product of standard accounting reviews. The following table illustrates the problem:

LAST_MODIFIED_BY	LAST_MODIFIED	CountOfLAST_MODIFIED_BY
CEVANS_PC	14-Jan-02	1
CEVANS_PC	15-Jan-02	2
CEVANS_PC	23-Jan-02	15
CEVANS_PC	25-Jan-02	2
CFOSTER	24-Jan-02	20
HDUNTON2	27-Aug-02	7
JTHOME	21-May-02	2
JTHOME	14-Jun-02	2
JTHOME	10-Sep-02	1
LBOLT	02-Jul-02	5
LBOLT	21-Aug-02	20
LBOLT	01-Oct-02	1
MGILBER2	16-Oct-02	6
NLEE	11-Jan-02	2968
NLEE	14-Jan-02	3
NLEE	15-Jan-02	241
RGRACE	11-Feb-02	8
SRANCE	28-Mar-02	2
TCHAPM2	04-Mar-02	17
TCHAPM2	20-Mar-02	1
TCHAPM2	11-Apr-02	1
VTHOMPSO	23-Jun-03	4
VTHOMPSO	10-Jul-03	8

While V. Thompson appears to have restricted her edits of the materials to a limited number of times, Anlee apparently has entered changes 3,212 times since Enron's bankruptcy.

Q. What is the significance of this evidence to the current proceedings?

A. The Presiding Judge should recognize that Enron's efforts to deceive may apparently continue to this very day. Moreover, to the extent data are missing or have been changed by Enron, a negative inference should be drawn against Enron that the data would have

shown Enron engaged in gaming practices and that Enron profited from such gaming practices to a greater degree than Enron has admitted.

Q. How is Enpower organized?

A. The basic data structure is a set of "Deals" identified by deal number. A deal can be associated with other "Deals" by "Legs". For example, a specific deal could have a number of legs – other deals that are part of the overall transaction. Each deal has one or more "Strips" – *i.e.,* schedules. Thus a Death Star is simply a number of deals that correspond to a circular set of schedules.

Q. Can you give an example?

A. Yes. During our Enpower queries, we found that a number of Enron personnel liked to personalize their schemes. Some Enron employees would include references to Death Stars in the comment fields when they would submit transmission schedule request to the California ISO. On July 21, 2000, for example, Jesse Bryson submitted import and export schedule requests to the California ISO with the interchange_id_imp field set to"EPMI_CISO_DEATH" and the interchange_id_exp field set to "EPMI_CISO_STAR."[23]

[23]Jesse Bryson is the trader associated with the non-LADWP legs of the Death Star. We do not have the actual submission to the California ISO, so it is possible that another Enron trader could have been involved at this stage.

Deal	Strip	Start	Finish	DEAL_INSTR_TYPE_CD	DEAL_FIRMNESS_CD	SCHED_CMDTY_VOL
292672	2160683	7/21/00 10:00 AM	7/21/00 7:00 PM	FORWARD	FIRM	10
377786	2160679	7/21/00 10:00 AM	7/21/00 7:00 PM	BUY-RESALE	EC	10
377787	2160680	7/21/00 10:00 AM	7/21/00 7:00 PM	BUY-RESALE	EC	10

Deal	Strip	DEAL_BUY_SELL_CD	DEAL_CMT	From	To
292672	2160683	B	Add Sueyen Mao as a contact for this deal. Check with Monica Lande 834-3722 for any questions on this deal. Thanks.	Malin	Mead-230KV
377786	2160679	B		Mead-230KV	Malin
377787	2160680	B		Malin	Malin

Deal	Strip	FULL_NM	CP_NM	COUNTER_PARTY_CD	BuySale Buy Price	BuySale Sell Price
292672	2160683	Matt Motley	Los Angeles Dept. of Water & Power	EPMI-LT-SW		
377786	2160679	Jesse Bryson	EPMI California Pool	EPMI-ST-WHOURLY	$ -	$ -
377787	2160680	Jesse Bryson	Pacificorp	EPMI-ST-WHOURLY	$ 55.00	$ 50.00

The table above shows the results of an Enpower query that looks for the "deals" that reflected this Death Star. By definition, a Death Star has no starting point, so it is logical to look at the first "deal" entered into Enpower, #292672. This deal shows the LADWP transmission used to carry the energy from Malin to Mead. The next deal, #377786, moves the power back from Mead to Malin. The need for a control area at Malin required the participation of PacifiCorp. The PacifiCorp deal, #377787, was a "Buy-resale" with the purchase price of $55.00/MWh and a sale price of $50.00/MWh. PacifiCorp received $5/MWh, net, to act as the control area in the Pacific Northwest.

As with many Enron transactions, this Death Star was both "firm" and "economy" simultaneously. Obviously, Enron was unconcerned about the inconsistency between the entries – indeed, no power was represented by this transaction, so the actual quality of power was irrelevant to Enron.

Each Enpower entry identifies the traders involved – Jesse Bryson and Matt Motley in this instance – as well as the contact person for the counterparty. LADWP's representative was Sueyen Mao. In this case, there is no indicated contact for PacifiCorp.

One interesting facet of the Enron deal making universe was the use of artificial counterparties to represent nodes of the Death Star. The counterparty holding up the Mead end of the transaction was EPMI-ST_WHOURLY, one of thirty four possible "desks" at Enron.

Q. Why is the ability to access Enpower so significant?

A. In the absence of Enpower we have been tracking Enron's schemes by the records they have left with their counterparties. The ISO and LADWP, for example, have Enron transmission schedules that we can use to identify Death Stars. With Enpower, we can see how the Death Stars were organized and look for other schemes. We know from the December 6, 2000 Yoder/Hall memo that Enron made a practice of selling non-firm as firm. A simple Enpower query can test just how widespread this practice was. A common transmission service in the Pacific Northwest is BPA's Hourly Non Firm (HNF). As a general rule, it is difficult to reliably wheel firm power over non-firm transmission, so the 1,961 strips where Enron identifies reliance on HNF transmission for firm deals would be suspect.

Q. How have you implemented Enpower?

A. Although Enron provided the data in its most "raw" form, it is possible to enter it into either SQL-Server or Microsoft Access – in effect, reversing the process Enron went through in providing the data. In spite of Enron's claims concerning the complexity of working with Enpower, any moderately experienced individual can perform the task of returning the data to a functioning database in a day. Our first step was to import the data into Access, and split the data into a number of smaller databases – deals, strips,

counterparties, delivery points, and other logical groups. We also parsed the Enpower strip comment field back into its original parts, so that we could review the frequent circular schedules that appear in Enron deals.

Q. What do you mean by "Circular schedules"?

A. It is not unusual for a strip to have a comment like "-PWX–E--PWX-". This curious notation would seem to indicate that on 1,045 different occasions Enron purchased power from Powerex for delivery to Powerex. Since the actual transactions are not always very clear, these comments in the strips are often the best clue to what the Enron trader actually had in mind.

Q. Following FERC Staff's investigation of Enron's trading practices, what did the FERC Staff's Final Report on Price Manipulation conclude with respect to Enron?

A. FERC Staff's final Report on Price Manipulation concluded that Enron's trading strategies "clearly fall within the scope of MMIP's antigaming and anomalous market behavior prohibitions."[24] Specifically, Enron's various trading strategies including non-firm exports, death stars, wheel out, load shift, ancillary service sales without the necessary resources, megawatt laundering, and selling non-firm energy as firm energy constitute gaming and were in violation of the ISO and PX tariffs.

E. PerotSystems

Q. To your knowledge, when did gaming of the ISO or PX market rules begin?

A. We do not know when the first schemes were launched, but substantial evidence exists that Enron was interested in schemes from the very beginning. Indeed, PerotSystems helped design both the ISO and PX tariff and protocols including operational procedures

[24] FERC Final Report on Price Manipulation , March 26, 2003, at VI-12.

of the ISO's Imbalance Energy Market. PerotSystems also marketed its inside knowledge of the ISO's system to assist market participants in exploiting the market rules before the market opened.

On June 20, 2002, PerotSystems released numerous documents demonstrating a broad effort on the part of PerotSystems employees and associates to market gaming services to industry participants before the ISO and PX even started operations. One of the best examples of how PerotSystems marketed its gaming services to couterparties is a 1997 letter from George Backus, a consultant with Policy Assessment Group who was associated with PerotSystems to PG&E where Mr. Backus offered information on gaming strategies:

> Gaming may be a dirty word to FERC and the California commission, but the sooner the market clears out the distortions, the better it works for everyone. The "gaming" defeats the flaws in the system and ultimately removes the players or features that lead to market distortions. There may be ethical issues related to "the end justifying the means" but there is a large region of opportunities between what is ethically viable (profitable) and ethically dangerous (illegal) . It is prudent to understand the full spectrum of possibilities, and through the understanding of market dynamics that it provides, to select that appropriate subset of strategies which best serve the long-term interests of PG&E

A copy of Mr. Backus' letter is attached as Exhibit SNO-80. Notably, the letter starts out: "I am sending this to you via the fax <u>because it may contain information that would require you to destroy it or to black out selected sections after you have read it.</u> (I can edit it as you may request and then send an email version.)" (Emphasis added). This attempted cover up evidences that PerotSystems knew that the gaming practices it was marketing could subject a market participant to regulatory sanctions before FERC or the California Commission.

Q. How did the ISO respond to the marketing of inside information about its system?

A. The Chief Executive Officer of the ISO said at the time:

> Perot Systems' marketing of its inside knowledge of the ISO's system to third parties so that they may economically exploit the new California energy market, in addition to being a flagrant violation of basic norms of business ethics and indicative of bad faith dealing, could seriously erode the integrity of the new California energy market and materially compromise the work being performed and the system being produced by the ISO Alliance and Perot Systems for the ISO. Article 31 of the Contract expressly prohibits the ISO Alliance, including Perot Systems, ABB and Ernst & Young, from performing services for others which may create a material conflict of interest with the ISO or in any way otherwise materially compromise the work being performed by the ISO Alliance and Perot Systems on behalf of the ISO.[25]

Ex. SNO-81.

A new ethics policy was adopted by PerotSystems to avoid future conflicts with the ISO, but consultants affiliated with PerotSystems continued to approach market participants, including Enron, and SDG&E with offers to provide them special information on the structure of the California market Ex. SNO-82.

Q. How did PerotSystems' marketing of inside information about the ISO's system affect Enron's manipulation of the market?

A. The briefings by PerotSystems prestaged schemes later described by Christian Yoder and Stephen Hall in their memo to Richard Sanders at Enron. The PerotSystems staff clearly had an idea of the importance of this information. For example, in an email to George Backus at Policy Assessment Group, Paul Gribik of PerotSystems, one of the designers of zonal congestion mathematics in California said:

> I think that several areas of the protocols have large potential for gaming. I don't know if we want to try to get the CPUC, FERC, ISO and PX to try to

[25] Jeffrey Tranen letter to Ronald Nash, October 22, 1997.

plug the holes. I am afraid that it may be too late. It may be best to help SCE guard against attacks and develop profitable strategies under the existing protocols.

Ex. SNO-83

Notably, the recommendations made by PerotSystems to Enron are the same that later showed up in Enron's congestion-related gaming practices.

Q. Did Enron know about the PerotSystems games?

A. Yes. Enron executives like Rich Davis and Tim Belden paid close attention to PertoSystems employees like Paul Gribik and Dariush Shirmohammadi. Tim Belden's marginal notes on the Gribik/Shirmohammadi tutorial on zonal market clearing prices includes notations like, "Result of this process is a game to submit incs on congested side of the tie."[26]

Belden also speculates on Enron's ability to get copies of the PX's internal mathematics – a precursor of his successful ability to take advantage of flaws in later years.

Q. Did Enron ever meet with the Perot Systems staff?

A. Yes. Ex. SNO-84 is a copy of the PerotSystem's presentation materials[27] and Ex.SNO-85 is a copy of the invoice on February 6, 1998 that George Backus submitted to Enron for his services for the January 13, 1998 meeting[28].

Q. Was the January 13, 1998 meeting significant?

[26] January 13, 1998 Backus, Gribik, Smith, & Lall Presentation to Enron

[28] December 31, 1998 Invoice from George Backus to Enron

A. Yes. Follow up correspondence between Ed Smith of PerotSystems and Rich Davis of Enron contained an extensive discussion of Silver Peak, Enron's highly successful scheme in 1999. Ex. SNO-86.

> A party with generation on both sides of a small interface could have devised a strategy to control the PX energy prices in CA under these protocols. For example, the Silver peak interface has a limit of around 30 MW. Suppose that a party bid to sell 100 MWh in the PX auction at $O/MWh. It will likely win the right to sell 100 MWh. That party could schedule an import of 35 MWh at Silver peak and 65 MWh of generation in CA. If it did not provide a decremental adjustment bid on its 35 MWh import, the ISO would reduce the import by 5 MWh and set a default usage charge of $250/MWh on the intertie. Under the old PX protocols, the energy price in CA would have been set at $250/MWh. In this way, the party could ensure that it received $250/MWh for its 65 MWh generated in CA.[31]

We do not know whether Tim received this letter, although we do know that Rich Davis forwarded previous PerotSystems materials to Belden. Ex. SNO-87, which includes handwritten notes of Tim Belden.

Q. When did Enron begin to fraudulently manipulate the ISO or PX market?

A. In their plea agreements, Enron's traders admit that they devised and implemented fraudulent schemes beginning in 1998. As a defense in the PX investigation of Silver Peak Tim Belden wanted to call the PX and point out that Enron traders had used a similar technique in January 1999 and no one had been upset about it then. Since the PX had not noticed any earlier incidents and was treating Silver Peak as an isolated event it was decided not to use this gambit. Silver Peak is one of the first large scale examples of a "Wheel Out" by Enron for which we have the complete details. Ex. SNO-32.

F. Silver Peak

Q. When did Silver Peak occur?

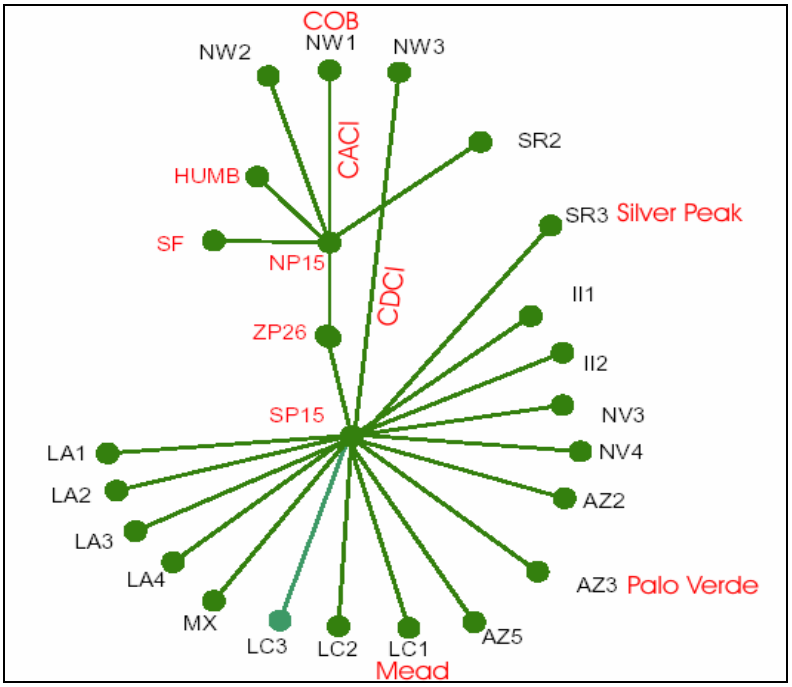
A. Silver Peak was launched on May 24, 1999, when Enron Power Marketing Incorporated (EPMI) submitted four bids into the CA PX totaling 2,900 megawatts during on-peak hours. The path identified for the power to be sold was the Silver Peak line from Nevada. Ratings for Silver Peak vary, but the consensus appears to be that the line had a capacity of 15 megawatts. This impossible schedule went largely unnoticed by the California Independent System Operator (ISO), but two complaints spurred an investigation by the PX compliance unit. Ex. SNO-89. The investigation dragged on for twelve months, and, in spite of a finding that Enron had cost consumers $4.6 million to $7 million, was settled for a fine of $25,000 and a commitment by Enron to not "substantially repeat" the behavior. We now know that Enron had taken a financial reserve of $10 million for a scheme they convinced the California PX brought Enron no profits. *See* Ex. SNO-90.

Q. What is "Silver Peak"?

A. The Silver Peak line consists of two 55 kV lines that stretch from the town of Silver Peak into California. It was built to facilitate generation at a Nevada geothermal unit. While the theoretical landscape of the California ISO allows it to be treated as an intertie, its actual operation is closely tied to this one power project. The line is not capable of carrying more power than the project's generation.

Q. Please describe the Silver Peak scheme.

A. On May 24, 1999, at 6:10 A.M., Enron submitted four bids of 725 megawatts for the heavy load hours of May 25th at prices from $18 to $20 per MWh. Ex. SNO-89. An hour later, the California PX notified Enron that it was the successful bidder.



At 7:29 A.M. Enron identified Silver Peak as the delivery point for the energy. At 11:17 A.M. the California ISO called Enron to ask if the bid (and delivery point) were in error. The conversation makes it clear that the ISO's reaction had been expected:

> TIM: Um, there's a -- there -- we. just, um -- we did it because we wanted to do it. And I don't -- I don't mean to be coy.
> KAREN: 'Cause, I mean, it's -- it's -- it's a -- I mean --
> TIM: It's probably --
> KAREN: -- it's a pretty interesting schedule.
> TIM: It -- it's how we -- it makes the eyes pop, doesn't it?
> KAREN: Um, yeah. I'll probably have to turn it in 'cause it's so odd.
> TIM: Right.
>
> Ex. SNO-92.

The ISO triggered CONG, their congestion model, which, in turn, accepted the adjustment bids filed by Enron. The Power Exchange had provided a balanced schedule to the ISO. Once the congestion on Silver Peak was taken into account, the PX schedule

was 2,885 megawatts below projected loads. The ISO balanced the loads by increasing imports, using reserves, and providing considerably higher prices back to the PX. The higher PX prices reduced day-ahead loads. Ex. SNO-89.

Q. What was the impact of Enron's actions?

A. Since actual loads did not change, the primary impact of the Silver Peak incident was to increase imports and to move loads from the day-ahead market to hour ahead markets and the ISO. The ISO's estimates of the market adjustments were:

Source	MW
Needed Adjustment to Silver Peak	2,897
Increased Import from other Branch Groups	1,038
Internal Production Increases	182
Internal Load Decreases	1,676

Ex. SNO-93.

The line entitled, "Internal Load Decreases," is a misnomer. The increased price at the PX from the distortion caused the supply curve to meet the demand curve at a lower level – 1,676 MW lower. While this has been labeled as "underscheduling" by the California utilities, the situation is a bit more complex. The California utilities priced their bids into the PX based on the opportunity cost of ISO real time replacement costs. If the costs were too high, as was the case here, the nature of the PX bid left it for the ISO to make up the differential from reserves and real time purchases.

Q. Were these actions observable?

A. The ISO market surveillance unit apparently did not notice the excursion. However, the market immediately observed what had happened.[43] Ex. SNO-94 Another Energy Market Report noted:

> Speaking of the PX, much of the hubbub on Tuesday surrounded the $44/MWh congestion adjusted prices. Rumors circulated that an unnamed party had manipulated the PX on Monday by bidding 3000 MW of power on a 20 MW line between Nevada and California. Someone played a game yesterday which caused everyone's adjustment bid schedules to come into play, and that resulted in the higher prices throughout the system," said one market pundit. Other players did not believe that someone could consciously manipulate PX prices from a UMCP of $27.25/MWh to an adjusted price of $44.31/MWh, and blamed human error for the high price. Nonetheless, sources indicated that the PX was going to look into the matter to determine if "market manipulation" had actually taken place. Ex. SNO-95.

In the course of the subsequent investigation of this event, the Power Exchange staff estimated that the Silver Peak incident cost consumers $4.6 million to $7.0 million. They also estimated that Enron lost $102,000 in the day-ahead market as a result of the imaginary resource bid. Ex. SNO-89.

Q. Was that a reasonable estimate?

A. I do not believe so. Tim Belden's risk management materials for west coast trading (schedule C) lists reserves for a number of different schemes including selling non-firm energy as firm. It contains two entries on Silver Peak:

> Cover potential liability associated with scheduling at Silver Peak on May 24, 1999. $4,000,000
>
> Increase reserve associated with PX schedule at Silver Peak. Reserve for total potential in Day Ahead & Real Time markets, includes actual damages & opportunity cost. $6,000,000. Ex. SNO-97.

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43. The ISO Weekly Market Watch's only mention of the Silver Peak incident was a statement that "Price spikes of $177/MW and $162/MW occurred on May 25 at hours ending 1600 & 1700 due to significant incremental energy requirements that exceeded 2400 MW," El03-114 Exhibit SEATAC-417.

These entries imply that Enron felt that Silver Peak had caused $10 million worth of damage, not the $7 million estimated by the PX.

Q. Why, in your opinion, did Enron take the risk of Silver Peak?

A. It is my opinion that this was a "proof of concept" scheme designed to see what happened when energy was removed from the PX markets.

Q. Does the Silver Peak episode resemble any aspect of the subsequent California crisis?

A. Yes. It closely resembles the first day of that crisis – May 22, 2000.

Q. Please explain.

A. In both cases vast amounts of potential on-peak energy was withdrawn from the California PX with a significant impact on energy prices in California, and through surrounding markets, running the length and breadth of the WSCC. In Silver Peak the shortage was arranged by sending imaginary power into the California PX. In the course of the May 22, 2000 emergency, a similar amount of power was withdrawn from the PX using the Fat Boy scheme.

Q. What elements in the Silver Peak incident resemble later Enron schemes?

A. The 2900 MWh 'sale' to the PX market was not backed by generation or by an existing contract. See Ex. SNO-88. After it was cut by 2897MWh by the ISO Enron had to buy 3MWh from Sierra Pacific and sell to the PX. Similar to this instance filing schedules without resources is a key part of both the Death Star and Wheel Out Schemes.

Enron's traders developed a number of finely tuned schemes that manipulated the California ISO's computer systems in order to receive congestion fees. The schemes

appear to be simple commercial fraud since, by design, no actual generation was ever envisaged as running to support the schedules filed with the California ISO. One scheme in particular, the Forney Perpetual Loop, discussed in more detail below, is designed to create an illusion of power flowing in a circle from John Day in Oregon through Mead in Nevada, through the critical congested pathways in California, without any input of energy whatsoever.

Each of these schemes is a subset of the generic scheme, Death Star, where an imaginary schedule is filed with the ISO that elicits payments for the alleviation of congestion. Since the ISO is rule based rather than results based, no actual generation is required for the right to file schedules. The only issues within the ISO pertained to whether the schedules met the rules – even if they failed to meet any engineering logic.

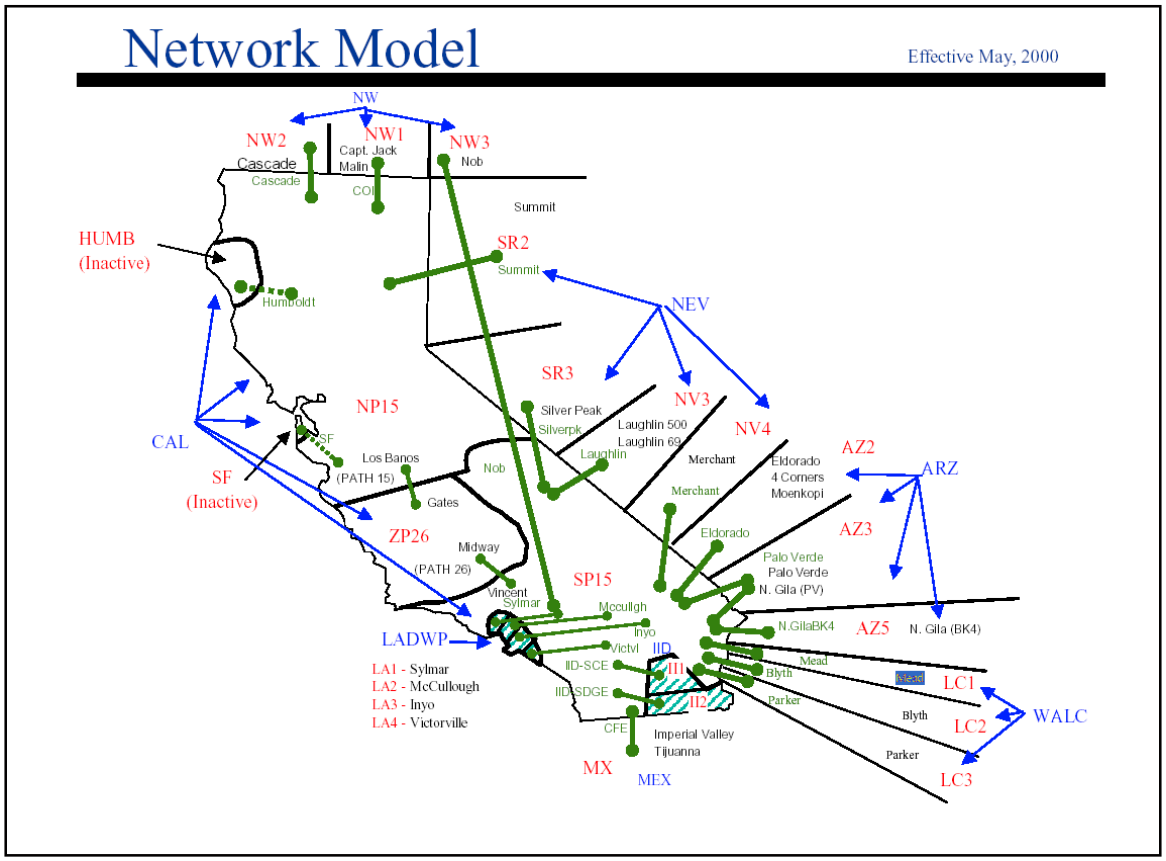
Each scheme is based on the fact that schedules are only plans that are filed days and hours before energy flows take place. This allowed Enron to create an imaginary cycle of trades through the ISO. A good analogy to this scheme is the common form of financial fraud known as "check kiting." In this fraud, a con man writes checks between a cycle of bank accounts. The frequent deposits and withdrawals lull the bank into believing that real transactions are taking place. Eventually, the con man withdraws all the deposits at once, leaving the bank to discover that recently deposited checks will bounce since the accounts they were written on have been closed.

Q. Are these schemes easy to explain and measure?

A. No. The problem is compounded by the complexity of ISO terminology. The following diagram shows both the ISO's basic areas and the transmission routes that connect them.

The specific locations that are central to the Death Star schemes are indicated both in ISO terminology and in more traditional industry defined geographic names.

The schedules of importance to Death Star and its related schemes are those that flow over the COI in the north, the flows between San Francisco and Los Angeles (NP-15 and SP-15) and lines to the east which allow imports from the Desert Southwest – Silver



Peak, Mead, and Palo Verde.

Q. After Enron was investigated by the PX, did Enron continue to engage in market manipulation?

A. Yes. Enron developed a series of new manipulations that extended the techniques pioneered in the Silver Peak incident. The Enron Real Time Handbook outlines the Fat Boy and Thin Man schemes intended to manipulate the market. See Ex. SNO-46. The handbook gives detailed instructions on how to carry out the schemes including interties and counterparties. This document demonstrates that Enron had decided to empower all their energy traders to schedule fraudulent transactions. Documents in Ex. SNO-46 illustrate that Enron continued to refine and carry out gaming practices even after the PX began its investigation. Below are the instructions for the "Valley Electric Fat Boy" from the Enron Real Time Handbook that provide details enabling traders to carry out the fraudulent schedules.

Valley Electric Real-Time "Fat Boy"

CAPS:

Submit under VEA counterparty in CAPS
Inc Load in SP15 (ECTRT)

EnPower:

□ Buy from Valley Electric
Index-Forward
Counterparty: Valley Electric
Use ISOHASP15 as the Index, and -.25 as the Offset
Delivery Point: Mead 230 Kv

□ Import into California:
Buy/Resale
Counterparty: EPMICALPOOL
From:
To: SP15

□ Sale to California Imbalance
Forward (No price, as all CalImbalance deals are)

Communication:

NEVADA POWER:
WAPA (LOWER COLORADO) / CONTROL AREA @ MEAD: (602) 352-2511

□ Call Nevada Power (t) to give them a "heads up" VERY EARLY as to what you are planning.
We are increasing hydro to serve load and re-direct the pre-scheduled energy to the ISO.
It is very important NOT TO SAY "Increase our HYDRO gen & send it into the ISO."!!

□ Create a NERC tag that indicates which hours are re-scheduled in (WAPA, NEVP & ISO all receive this tag) -- you can use tag# 556Z in the CA tag directory to copy from.

□ Communicate Final Schedules for each hour to NEVP & WAPA

***** **WE WILL EVENTUALLY GET A LARGER, FIXED OFFSET. VOLUME MGT WILL HANDLE SETTLEMENT OF THIS DEAL!!**

The next set of instructions provides traders with the counterparties, type of scheme, recommended pathways, and market condition to carry out either the Fat Boy or Thin Man scheme.

Services Customers Reference

Who do you call and what action to take?

I. Ex-Post Pricing: see "CA Model" and other market tools for determining profitability

1. HIGH EX-POST*:

A. Fat Boy (Generate or Import and fake, or increase, load) - GET PAID THE EX-POST PRICE

Customer	Delivery Options	Pricing Structure
a. Glendale	Imports at Mead 230, NOB, Sylmar, Victorville-Lugo	Enron receives 50 % of Profit/Loss
b. El Paso	Imports at Palo Verde, Four-Corners 345	Enron receives 50 % of Profit/Loss
c. CRC	Imports at Mead 230	STRUCTURE NEED FROM CHOI
d. Valley Electric	Imports at Mead 230 / Use Nightly Valley Availability, tag required	.25 /Mwh per transaction, 40 % of end-of-month re-market value
e. Redding	Generates within NP15 , SC trade with WAMP	Enron receives 50 % of Profit/Loss
f. Tosco	Generation within NP15, no CAPS entries needed	Enron receives 50 % of Profit/Loss

** High enough, in the scheduler's opinion, to cover the customers' cost basis*
***Be aware of potential congestion and always use an adjustment bid*
****Use PMI to look at current congestion, TTC, ATC both DA & HA*
RISKS: CONGESTION, LOW EX-POST PRICE
ALSO CHECK FOR: HIGH A/S Prices - If so, call Glendale, Puget, El Paso to try to get A/S bids in!!

B. Supplemental Energy' (does not require a balanced supply/load portfolio) nor is it included in Phase II Validation

a. Powerex
b. Washington Water Power
c. Puget?
d. El Paso?
e. Valley?
f. CFE?
g.

jmiller:
EPE must use the bi-lateral index or bilateral deals to benchmark the cost basis. This is to be used ONLY WHEN EPE IS LONG ON AN HOUR-AHEAD BASIS!!!

2. LOW EX-POST*:

B. Thin Man (Artificially reduce load and export) - PAY THE EX-POST PRICE

Customer	Delivery Options	Pricing Structure
a. Glendale	Mead 230, NOB, Sylmar, Victorville-Lugo	Enron receives 50 % of Profit/Loss
b. El Paso	Palo Verde, Four-Corners 345	Enron receives 50 % of Profit/Loss
c. CRC	Mead 230	STRUCTURE NEED FROM CHOI
d. Valley Electric	Mead 230	.25 /Mwh per transaction, 40 % of end-of-month re-market value
e. Redding	NP15	Enron receives 50 % of Profit/Loss

** Low enough, in the scheduler's opinion, that the export fee will still be lower than the sale price in the bi-lat market*
***Be aware of potential congestion and always use an adjustment bid*
RISKS: CONGESTION, HIGH EX-POST PRICE
****Use PMI to look at current congestion, TTC, ATC both DA & HA*

B. Supplemental Energy' (does not require a balanced supply/load portfolio) or is it included in Phase II Validation

a. Powerex
b. Washington Water Power
c. Puget?
d. El Paso?
e. Valley?
f. CFE?
g.Glendale
****Standing bid of 40 Mwh at $5 for Glendale (Mead?)**

jmiller:
EPE must use the bi-lateral index or bilateral deals to benchmark the cost basis. This is to be used ONLY WHEN EPE IS LONG ON AN HOUR-AHEAD BASIS!!!

Q. Why do you believe evidence that Enron plotted its manipulation of the market as early as 1998 is relevant to these proceedings?

A. Evidence related to Enron's early acts of market manipulation demonstrates that Enron did not simply make an innocent mistake when Enron engaged in gaming practices during the period January 1, 2000 to June 20, 2001, but in fact Enron purposefully engaged in market manipulation during such period. Enron's pattern of behavior demonstrates that it had a motive and intent to manipulate the market and that revocation of Enron's market-based rate authority is warranted at the earliest possible date in these proceedings of January 1, 2000. The CAISO MMIP tariff defines Anomalous Market Behavior as any behavior "designed to or has the potential to distort the operation and efficient functioning of a competitive market."[29] By designing these gaming practices Enron was in violation of the MMIP by purposefully deceiving the CAISO. This finding is supported by the FERC in their March 26, 2003 Final Staff report that "Staff believes that numerous participants in the Cal ISO and Cal PX markets violated the terms of the Cal ISO's or Cal PX's tariff, specifically the MMIP."[30]

G. Wheel Out

Q. Previously, you stated that the Silver Peak incident was one of the first large scale examples of Enron's Wheel Out gaming practices. What evidence are you aware of that demonstrates Enron continued to engage in the practice of Wheel Out during the period January 1, 2000 to June 30, 2001?

A. The Yoder/Hall memo includes a detailed write-up on "Wheel Out" that states Enron earned congestion payments from the ISO without having to transmit energy through the intertie:

[29] CAISO MMIP 2.1.1.5
[30] FERC Final Staff Report, March 26, 2003 page VI-11.

"Wheel Out"

This strategy is used when the interties are set to zero, i.e., completely constrained.

First, knowing that the intertie is completely constrained, Enron schedules a transmission flow through the system. By so doing, Enron earns the congestion charge. Second, because the line's capacity is set to "0," the traders know that any power scheduled to go through the inter-tie will, in fact be cut. Therefore, Enron earns the congestion counterflow payment without having to actually send energy through the intertie.

As a rule, the traders have learned that money can be made through congestion charges when a transmission line is out of service because the ISO will never schedule an energy delivery because the intertie is constrained.

Ex. SNO-20.

Q. Did Enron engage in the gaming practice of "Wheel-Out"?

A. Yes.

Q. What evidence demonstrates that Enron partook in the practice of "Wheel-Out"?

A. As outlined in the California Independent System Operator's, July 15, 2003 *Analysis of Trading Strategies report*, a total of $3,464,528 million in congestion revenues were earned.

Table 9. Counterflow Revenues on Out-of-Service Tie Points
January 1, 2000 – June 19, 2001

ID	Name	Pre-Refund Period	Refund Period	Total
ECH1	Dynegy Power Marketing	$1,876,571		$1,876,571
PWRX	British Columbia Power Exchange Corporation	$789,491		$789,491
SETC	Sempra Energy Trading Corporation	$485,895		$485,895
EPMI	Enron Energy Services, Inc.	$225,075		$225,075
CRLP	Coral Power, LLC	$53,938		$53,938
DETM	Duke Energy Trading and Marketing, L.L.C.	$33,558		$33,558
Total		$3,464,528	$0	$3,464,528

Q. Was "Wheel Out" referenced in the October 30, 2000 Stephen Hall memo?

A. Yes. Stephen Hall stated:

"Wheel Out"

1. This strategy is used when the interties are set to zero, i.e., completely constrained.

2. First, knowing that the intertie is completely constrained, we schedule a transmission flow through the system. By so doing, we earn the congestion charge.

3. Second, because the line's capacity is set to "0," our traders know that any power scheduled to go through the inter-tie will, in fact be cut. Therefore, we earn the congestion counterflow payment without having to actually send energy through the intertie.

4. As a rule, the traders have learned that money can be made through congestion charges when a transmission line is out of service because the ISO will never schedule an energy delivery because the intertie is constrained.

See Ex. SNO-62.

Q. How do these practices show up in Enpower?

A. We have not been able to identify them in Enpower. There are numerous instances in which the comments section contains 'wheel to relieve congestion' however, it is not made clear whether the transaction is a congestion wheel or a wheel out. Therefore, at this time we are unable to determine what Enpower entries are a wheel-out.

Q. How often did this happen?

A. ISO work papers indicate that Enron had only one "Wheel-out" during the period of this proceeding -- July 28, 2000.

Q. Do we know when Enron started this practice?

A. No, I do not have sufficient data to estimate when this began occurring. However, we do have an email dated from February 4, 2000 from John Forney in which he states:

> Today, we got advance notice that the Eldorado line would be derated, which tells us that there will be congestion in from Four Corners. Any time you hear of a unit outage, such as Four Corners you should expect a deration causing congestion. Be wary that other parallel lines, such as Mead may be derated or congested as well due to unscheduled flow. In the case mentioned above, we would look to wheel out at FC or maybe even do a non-firm export from SP15. We would adjust bid SP>4C345,but remernber you will be short at expost either ST Cali or EES. Ex. SNO-98.

Q. Did Enron also engage in the congestion-related gaming practice of "cutting non-firm" or "non-firm export?"

A. Yes.

Q. What evidence demonstrates that Enron engaged in the gaming practice of "cutting non-firm" or "non-firm export?"

A. The Yoder/Hall memo admits that Enron had engaged in this activity but stopped in August of 2000 after a ISO posting prohibiting this Non-Firm Export.

"Non-firm Export"

The goal is to get paid for sending energy in the opposite direction as the constrained path (counterflow congestion payment). Under the ISO's tariff, scheduling coordinators that schedule energy in the opposite direction of the congestion on a constrained path get paid the congestion charges, which are charged to scheduling coordinators scheduling energy in the direction of the constraint. At times, the value of the congestion payments can be greater than the value of the energy itself.

This strategy is accomplished by scheduling non-firm energy for delivery from SP-15 or NP-15 to a control area outside California. This energy must be scheduled three hours before delivery. After two hours, Enron gets paid the counterflow charges. A trader then cuts the non-firm power. Once the non-firm power is cut, the congestion resumes.

The ISO posted notice in early August prohibiting this practice. Enron's traders stopped this practice immediately following the ISO's posting.

The ISO objected to the fact that the generators were cutting the non-firm energy. The ISO would not object to this transaction if the energy was eventually exported.

Ex. SNO-20.

Q. Was the original Stephen Hall memo even more outspoken?

A. Yes.

"Non-firm Export"

According to one trader, the strategy here is to "dec load at SP-15 and ride it all the way north." We would use this strategy when we anticipates transmission congestion. The goal is to get paid for sending energy in the opposite direction as the constrained path (counterflow congestion payment).
This strategy is accomplished by (1) scheduling non-firm energy for delivery from SP-15 to NP-15. By scheduling non-firm energy, we do not have to pay for spinning and non-spinning ancillary services. This energy must be scheduled three hours before delivery. After two hours, we get paid the counterflow charges. We then cut the non-firm power. Once the non-firm power is cut, the congestion resumes.

The ISO posted notice in early August prohibiting this practice. Our traders stopped this practice immediately following the ISO's posting. What the ISO objected to was that generators were cutting the non-firm energy. The ISO would not object to this transaction if the energy was eventually exported.

Before it stopped this strategy, we earned approximately $3 million dollars through this technique.[31]

See Ex. SNO-62.

H. Death Star

Q. Did Enron engage in the congestion-related gaming practice of "Death Star" or "Circular Scheduling?"

A. Yes. Death Star is one of the most significant gaming tactics engaged in by Enron.

Q. Please describe the family of Death Star schemes.

[31] Trading Strategies, October 4, 2000, Stephen Hall, page 2.

A. Enron's traders developed a number of finely-tuned schemes that manipulated the California ISO's systems in order to receive congestion fees. The schemes are clearly fraudulent because, by design, no actual generation was envisaged as running to support the schedules filed with the California ISO. One scheme in particular, the Forney Perpetual Loop creates an illusion of power flowing in a circle from John Day in Oregon through Mead in Nevada, through the critical congested pathways in California, without any input of energy whatsoever. Each of these schemes is a subset of the generic, "Death Star" scheme, where an imaginary schedule is filed with the ISO that elicits payments for the alleviation of congestion. The FERC defines a Death Star as:

> The second Congestion-Related practice is Circular Scheduling, also sometimes referred to as "Death Star." The Circular Scheduling practice involved the market participant scheduling a counterflow in order to receive a congestion relief payment. In conjunction with the counterflow, the market participant scheduled a series of transactions that included both energy imports and exports into and out of the ISO control area and a transaction outside the ISO control area in the opposite direction of the counterflow back to the original place of origin. With the same amount of power scheduled back to the point of origin, however, power did not actually flow and congestion was not relieved. Circular Scheduling was profitable as long as the congestion relief payments were greater than the cost of scheduled transmission.[32]

Q. How did Stephen Hall describe Death Stars?

A. His presentation was somewhat more colorful:

II. Death Star"

> This strategy is used in the ISO hour-ahead market and a common counterparty is the Los Angeles Department of Water & Power. First, we would import non-firm energy at Lake Mead for export to Malin. Because the energy is traveling in the opposite direction of a constrained line, we get paid for the counterflow. We also avoid paying ancillary service charges for its export because the energy is non-firm.

[32] 103 FERC ¶61,345.at P 43

> Second, we buy transmission from COB to Lake Mead at tariff rates to serve the import. If the export is cut, we have to cover at Lake Mead.
> There is no hour ahead commodity market."

a. "Virtual transmission"
b. "Virtual energy"
c. "No electrons flow"
d. "We are selling muni (LADWP) transmission to the ISO."

Ex. SNO-62.

Q. When was the first Death Star?

A. It is impossible to know with the evidence currently available, but it is telling that Enpower contains a set of schedules highly similar to a Death Star on January 2, 2000.

Q. Do all Death Stars always cross the entire length and breadth of the West Coast?

A. No. The complexity of the concept has caused some confusion over the definition of a Death Star. The definition adopted in this proceeding is:

> The second Congestion-Related practice is Circular Scheduling, also sometimes referred to as "Death Star." The Circular Scheduling practice involved the market participant scheduling a counterflow in order to receive a congestion relief payment. In conjunction with the counterflow, the market participant scheduled a series of transactions that included both energy imports and exports into and out of the ISO control area and a transaction outside the ISO control area in the opposite direction of the counterflow back to the original place of origin. With the same amount of power scheduled back to the point of origin, however, power did not actually flow and congestion was not relieved. Circular Scheduling was profitable as long as the congestion relief payments were greater than the cost of scheduled transmission. (103 FERC ¶ 61,345 at P 43)

The definition requires entry and exit from the ISO control area – not a specific geographic area. Thus "small" Death Stars like Red Congo are just as illegitimate a practice as "big" Death Stars like Forney's Perpetual Loop.

Q. How did Enron get away with these schemes?

A. The schemes take unfair advantage of the ISO's rules and procedures. Since the ISO is rules-based rather than results-based, no actual generation is required to file schedules. Each scheme is based on the fact that schedules can be broken before energy flows take place. This allowed Enron to create an imaginary cycle of trades through the ISO.

Industry practice has been to preschedule plant operations and transmission use. The schedules are constructed a week in advance. As the data of delivery approaches, the schedules are updated on a daily basis, and eventually on an hourly basis. During the hour of consumption, adjustments to make the schedules match reality, usually caused by changes in weather or equipment failure are made by the system operators in "real time."

The California ISO attempted to automate as much of this process as possible. Generators and consumers file schedules a day ahead. The ISO compares these schedules with transmission constraints and develops a feasible schedule of generation that matches the capacity of the transmission lines between the generating plants and the ultimate consumer.

Congestion fees are a product of schedules – no actual electricity flows until real time. In theory, the ISO will have adjusted the schedules to transmission constraints hours before actual operations commence.

The California ISO's use of congestion fees to manage schedules is entirely a theoretical operation. The ISO's CONG computer program calculates the degree of congestion and derives the appropriate level of payment to induce generators to adjust their proposed generation schedule to the needs of the transmission system. After CONG has adjusted the generation schedule operators can enter "real time" knowing that the basic operation of the system is consistent with the physical constraints of the transmission lines.

The schedules of importance to Death Star and its related schemes are those that flow; over the COI in the north, the flows between San Francisco and Los Angeles (NP-15 and SP-15) and lines to the east which allow imports from the Desert Southwest – Silver Peak, Mead, and Palo Verde.[33] These interties are important to the scheme Death Star because they include scheduled energy that flows in and out of the borders of California. As identified so far there are four Death Star schemes. To be clear about how these four compare I will address them in the following four sections and then, in section V of my testimony, I will relate them to the use of counterparties.

Q. Please describe the Driscoll Death Star.

A. Michael Driscoll, an analyst at Enron, was a trader at Enron's Portland office. A detailed e-mail authored by Michael Driscoll on May 5, 2000 and attached as Ex. SNO-99, describes how the congestion-related trading strategies discussed in the Yoder/Hall memorandum actually were implemented in practice. The following operating details are from Mr. Driscoll's email:

[33] Enron used El Paso's ETR to transmit phantom power to and from Four Corners to Mead.

Project Death Star has been successfully implemented to capture congestion relief across paths 26, 15 & COI .

We input the deals as follows:

1. EPMICAL POOL MEAD230 / MALIN
2. ONE DEAL TICKET, A BUY/RESALE WITH WASHINGTON WP SELLING AT MALIN, REPURCHASING AT PGE SYSTEM, (PAYING WWP $1 DIFFERENTIAL)
3. SELL INDEX FWD TO PGE AT PGE SYSTEM. INPUT AT DOW JONES MID C INDEX.
4. BUY INDEX FWD FROM PGE AT JOHN DAY AT DOW JONES MID C INDEX PLUS .
5. USE EXISTING PGE CONTRACT #146517 FOR TRANSMISSION FROM JD/MALIN
6. USE EXISTING LADWP TRANSMISSION #292672 FROM MALIN>MEAD230

Everything will link up, with the buy from PGE(JD) on top, all the trans and buy/resells in the middle, and the sell to PGE(system) at the end.

Q. What do we know about Death Stars?

A. Even though eighteen months have passed since my original description of Death Stars before the California Select Committee, relatively little work has been done on Death Stars. Although FERC deferred to an unusual definition of Death Stars proposed by the California Independent System Operator on a number of occasions, the ISO definition is neither sufficient – the ISO's definition cannot be relied upon in detail to actually be Death Stars – nor necessary – the definition misses the vast majority of Death Star activity.

Q. What materials are there to identify Death Stars?

A. Let's start with the definition. We have the two documents that I identified in June of 2002 as architectural blueprints for Death Stars – Forney's Perpetual Loop and Driscoll's Final Instructions.

	Driscoll's Final Procedures	Forney's Perpetual Loop
1	EPMICAL POOL MEAD230/MALIN	Submit Firm Import and non-firm export (adjust bid to pay, for example, $5) Don't touch load
2	ONE DEAL TICKET, A BUY/RESALE WITH WASHINGTON WP SELLING AT MALIN, REPURCHASING AT PGE SYSTEM (PAYING WWP $1 DIFFERENTIAL)	Sell to WWP at Mailin (Buy/Resale for $1)
3	SELL INDEX FWD TO PGE AT PGE SYSTEM. INPUT AT DOW JONES MID C INDEX	WWP sells to PGE at Malin
4	BUY INDEX FWD FROM PGE AT JOHN DAY AT DOW JONE MID C INDEX PLUS .90	PGE takes to their system
5	USE EXISTING PGE CONTRACT #146517 FOR TRANSMISSION FROM JD/MALIN	We use own transmission to go to JD/Malin
6	USE EXISTING LADWP TRANSMISSION #292672 FROM MAIL>MEAD230	Hand to LADWP (T) Malin/PV (We only have 24 MW due to COI deration)
7		Import via LADWP at PV

Q. What is the defining characteristic of a Death Star?

A. Both blueprints make the point that the Death Star is simply a scheme without any energy attached.

Q. Does this mean that the Death Star doesn't disrupt legitimate operations?

A. No. If the Death Star was only a creature of the California ISO, it would simply have been a question of fraud. Unfortunately, each set of instructions makes it clear that on the Pacific Northwest side of the scheme, schedules are filed to use transmission. These schedules would normally exclude alternative uses of the lines involved.

Q. Wouldn't the schedulers know that this was only a fraud?

A. Only if they could see the full picture. BPA schedulers, for example, could not. They would have turned down legitimate users in favor of the fraudulent Death Star uses.

Q. Were any of the comments specifically suspicious?

A. Yes. Enron apparently was unconcerned that he ISO would puzzle out the scheme by matching the comments on the import and export legs of the Death Star.

Q. Can you give examples?

A. Yes, the following table extracted by query from Enpower shows a variety of suspicious comments. On a number of days, Enron simply filed schedules with the words "Death" and "star" embedded in the file.

OPR_DT	tie_point_imp	tie_point_exp	interchg_id_imp	interchg_id_exp	SC_ID
05-May-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_CISO_STAR	CISO_EPMI_7078	EPMI
14-Jun-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_DEATH	EPMI_STAR	EPMI
14-Jun-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_DEATH	EPMI_STAR	EPMI
15-Jun-00	VERDE_5_DEVERS	MALIN_5_RNDMTN	CISO_EPMI_STAR	PMI_CISO_DEATH	EPMI
15-Jun-00	VERDE_5_DEVERS	MALIN_5_RNDMTN	CISO_EPMI_STAR	PMI_CISO_DEATH	EPMI
27-Jun-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_DEATH	EPMI_STAR	EPMI
06-Jul-00	VERDE_5_DEVERS	MALIN_5_RNDMTN	EPMI_CISO_MOON	EPMI_CISO_STAR	EPMI
19-Jul-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_DEATH	EPMI_STAR	EPMI
20-Jul-00	CORNR_5_PSUEDO	MALIN_5_RNDMTN	EPMI_CISO_PARK	EPMI_STAR	EPMI
20-Jul-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_DEATH	EPMI_STAR	EPMI
21-Jul-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_CISO_DEATH	CISO_EPMI_STAR	EPMI
28-Jul-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_DEATH	EPMI_DEATH	EPMI
02-Aug-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_STAR	EPMI_STAR	EPMI
03-Aug-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_STAR	EPMI_STAR	EPMI
04-Aug-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_CISO	EPMI_STAR	EPMI
04-Aug-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_STAR	EPMI_STAR	EPMI
04-Aug-00	MEAD_2_WALC	SYLMAR_2_NOB	EPMI_STAR	EPMI_CISO	EPMI
21-Aug-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_STAR	EPMI_STAR	EPMI
22-Aug-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_STAR	EPMI_STAR	EPMI
07-Sep-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_CISO_STAR	EPMI_CISO_STAR	EPMI
07-Sep-00	MEAD_2_WALC	MALIN_5_RNDMTN	EPMI_CISO_STAR	EPMI_CISO_STAR	EPMI

Q. How can we tell when a Death Star takes place?

A. Until December, this was a very complex undertaking. The central villain, Enron, had repeatedly stated that its accounting systems – notably Enpower – were too complex to be provided in response to requests by the investigations and FERC discovery requests. We should not be surprised to find that this was simply untrue. In December we requested –

and with substantial delays and difficulties – a copy of the Enpower data from January 1, 2000 through June 11, 2001.

For the first time this allows an analyst to actually check the steps in the instructions against Enron's actual activities. Until now, there were only two methodologies employed to look for times when Enron (and other death Star players) had counterscheduled in a suspicious manner or, in the case of the California ISO, look for schedules that crossed its system that earned congestion payments.

Q. What is the first step in using Enpower to search for Death Stars?

A. Both sets of instructions (Forney's and Driscoll's) indicate that the Enron trader should enter a Buy/Sell with the Buy/Sell Buy Price greater than the Buy/Sell Sell price. This is made clear in an email from Caroline Emmert to John Forney, September 7, 2000:

> Caroline Emmert 09/07/2000 12:22 PM
> To: John M Forney/HOU/ECT@ECT
> cc: Chris Stokley/HOU/ECT@ECT
> Subject: Buy/Resells - What We Learned
>
> John,
>
> From our research into Avista and others, here is what we have learned about using Buy/Resells:
>
> Whether to select "Buy From" or "Sell To" upon deal entry is determined by the ultimate purpose of the BR, as shown here:
>
> Purpose:
> Pay the Customer (sleeve or other service they have provided to EPMI)
>
> Type is Buy From
> Pricing is: Buy = EPMI price
> Sell = Customer price
>
> Charge the Customer (services or other, like transmission recapture)

Type is Sell To
Pricing is: Buy = Customer price
Sell = EPMI price

I hope this helps to determine the correct way of entering a buy/resell, and will alleviate settlement discrepancies in the future. If you agree with this, feel free to share it with the real time group.

Caroline

Ex. SNO-100.

Q. Was using buy/sells a common procedure in Death Stars?

A. Yes. One of the interesting things we have learned about Enron is that their procedures were haphazard at best. Even the quickest review of Enpower indicates that the Enron traders made many errors in both data entry and theory.

Q. Please describe the Driscoll Death Star.

A. The six steps translated into normal English are as follows:

1. File a schedule over ISO transmission paths from Mead to the California Oregon Border.

2. Washington Water Power (Avista) sells at COB and repurchases at Portland.

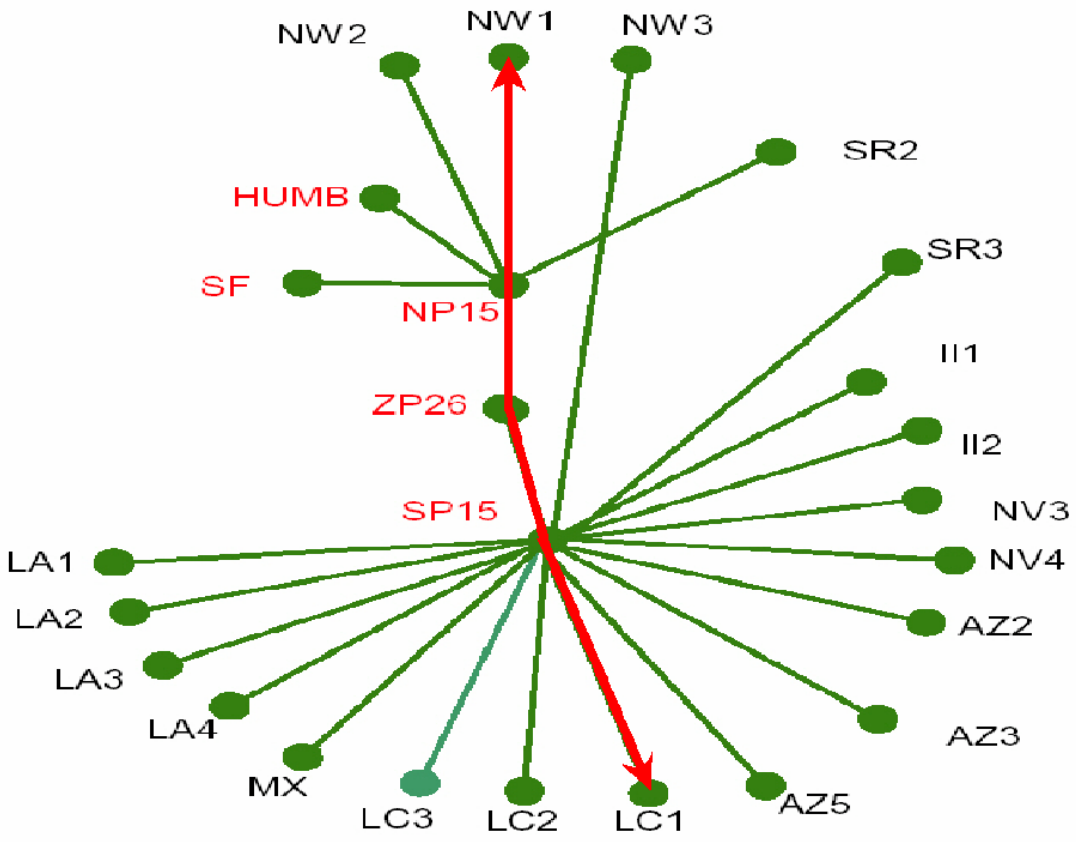
3/4. Enron buys and sells based on Dow Jones Mid C Index.

5. PGE transfers the power to John Day.

6. Transfer the power back to Mead over LADWP existing transmission rights on the ISO system.

This transaction will increase the ISO's perception that energy is being exported out of California to the Pacific Northwest. As designed, this will "capture" congestion fees at Path 15, Path 26, and the California Oregon Intertie. For this to work, power flows must be generally southward – a standard situation in May of 2000 due to the increased demand in the Southwest as the temperature begin to rise.

The chart below shows a schematic of Mr. Driscoll's schedules:



I. Forney's Perpertual Loop

Q. Please describe Forney's "Perpetual Loop."

A. John Forney was head of Enron's real-time west desk trading operations and is currently under indictment by the U.S. Government for criminal fraud.

The Perpetual Loop is similar to the Driscoll's Death Star scheme summarized above however a few differences do exist. The Forney Perpetual Loop reduces Washington Water Power's transaction to a simple buy/sell at Malin. Washington Water Power's role at Malin seems to lack substance compared to Driscoll's Deathstar. There are two reasons why they may have been included in the design: First, they might have been present to avoid the attention of the Oregon Public Utility Commission, since they would stand between Enron and PGE. Second, a key feature of Forney's Perpetual Loop is the export of non-firm power from California. Since Mr. Forney has added the legend "No MW's flow, just call in schedules" to the upper left hand corner of his memo, the role of Waterpower might be to "firm" the non-firm export. Mr. Forney's diagram describing the perpetual loop is presented below.

The southern terminal of the Perpetual Loop is Palo Verde. Both Mead and Palo Verde are market hubs, so this shift would seem to be tactical, rather than strategic. Boiled down to plain English, I interpret Forney's trading instructions as follows:

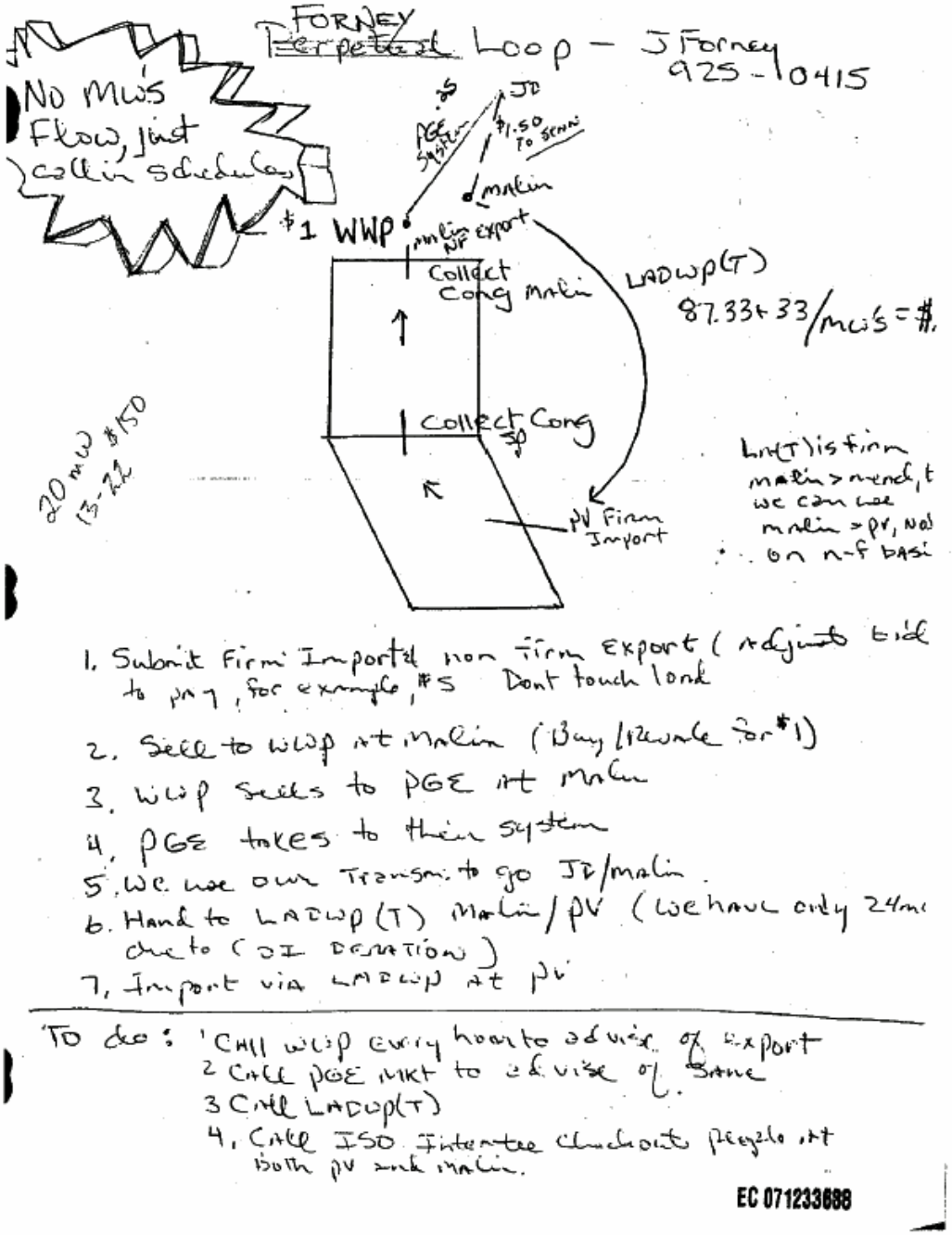
1. Export non-firm to Malin
2. Have WWP buy/sell at Malin
3. PGE transaction from Malin to John Day
4. Enron transmission to Malin

5. LADWP to Palo Verde

6. Import firm from Palo Verde to California

This was clearly a plan for hourly trades, since it closes with the instruction, "To do: Call WWP every hour to advise of export."

The following chart, taken from Forney's notes, illustrates the full Perpetual Loop:



Q. Do we have any evidence that Red Congo ever took place?

A. Yes, a number of transactions are recorded in Enpower that would seemingly match Red Congo very closely. Enpower reports 186 transactions where identical schedules were

transacted between Enron, Redding, and Pacific. A frequent notation for these transactions was "Redding--E--PAC-RDNG" or "25MWs PACW-Redding--E--PAC-". Ex. SNO-101.

Q. How would you interpret this notation?

A. The obvious interpretation would be a schedule sold to Enron and then sold to Pacific with resale to Redding. The second notation would involve a sale from Pacific to Redding to Enron and then back to Pacific.

Q. Please describe "Red Congo."

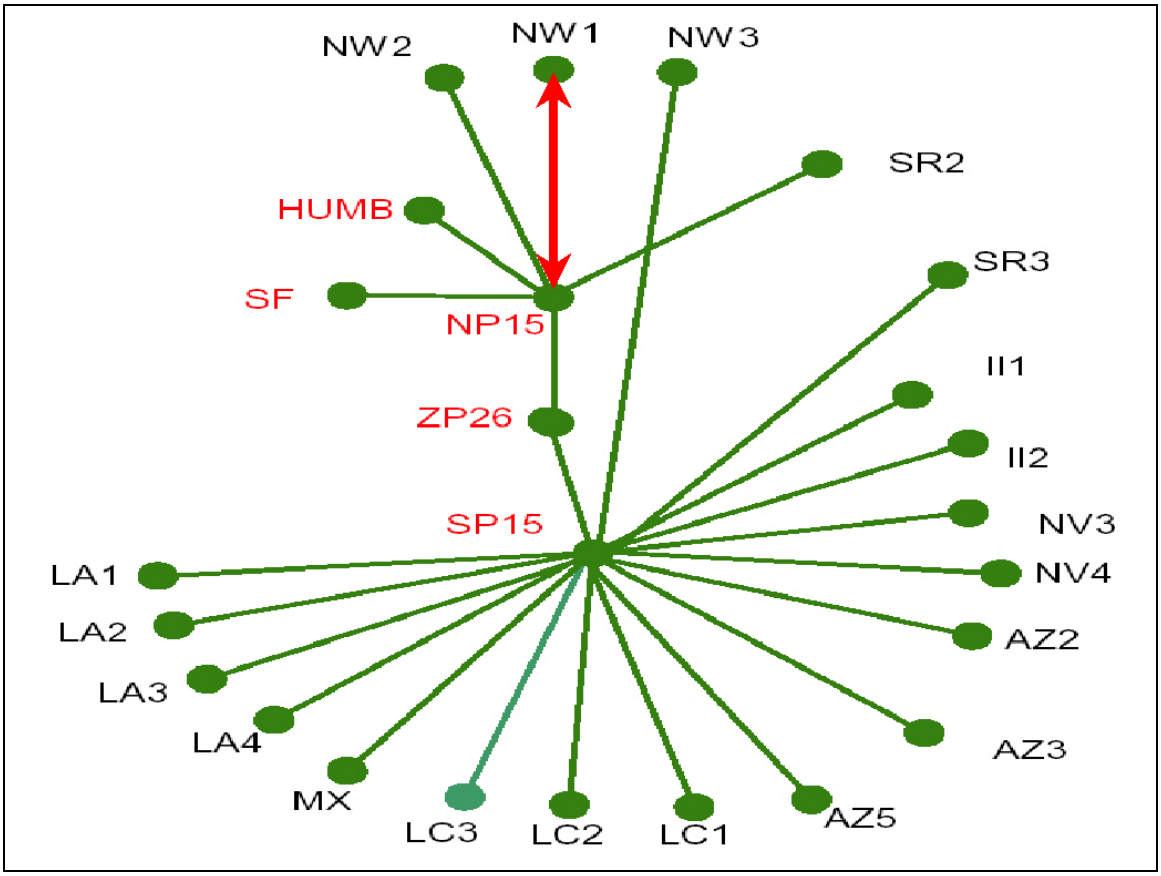
A. Red Congo is another creation of John Forney. According to Forney's notes, attached as Ex. SNO-102 Red Congo has the following steps:

1. SC trade with WAMP on behalf of Redding . Don't adjust load;
2. NF export with sale to PACW at $20;
3. Redding buys energy from PACW at COB at $21; and
4. Redding uses their ETC (existing transmission capacity) to take energy from Cob to Tracy, where we traditionally transact via SC trade.

Mr. Forney's notes can be translated as a schedule through WAPA. Redding's transactions are with PacifiCorp (west) at Malin and the resulting energy is "delivered" to Tracy. The chart on the next page shows the geography of this arrangement as described in Forney's notes.

This virtual loop is similar in concept to Driscoll's Death Star and Forney's Perpetual Loop. Unlike those variants, the virtual loop only provides an opportunity to relieve congestion on the CACI.

The following chart shows the geography of Red Congo:



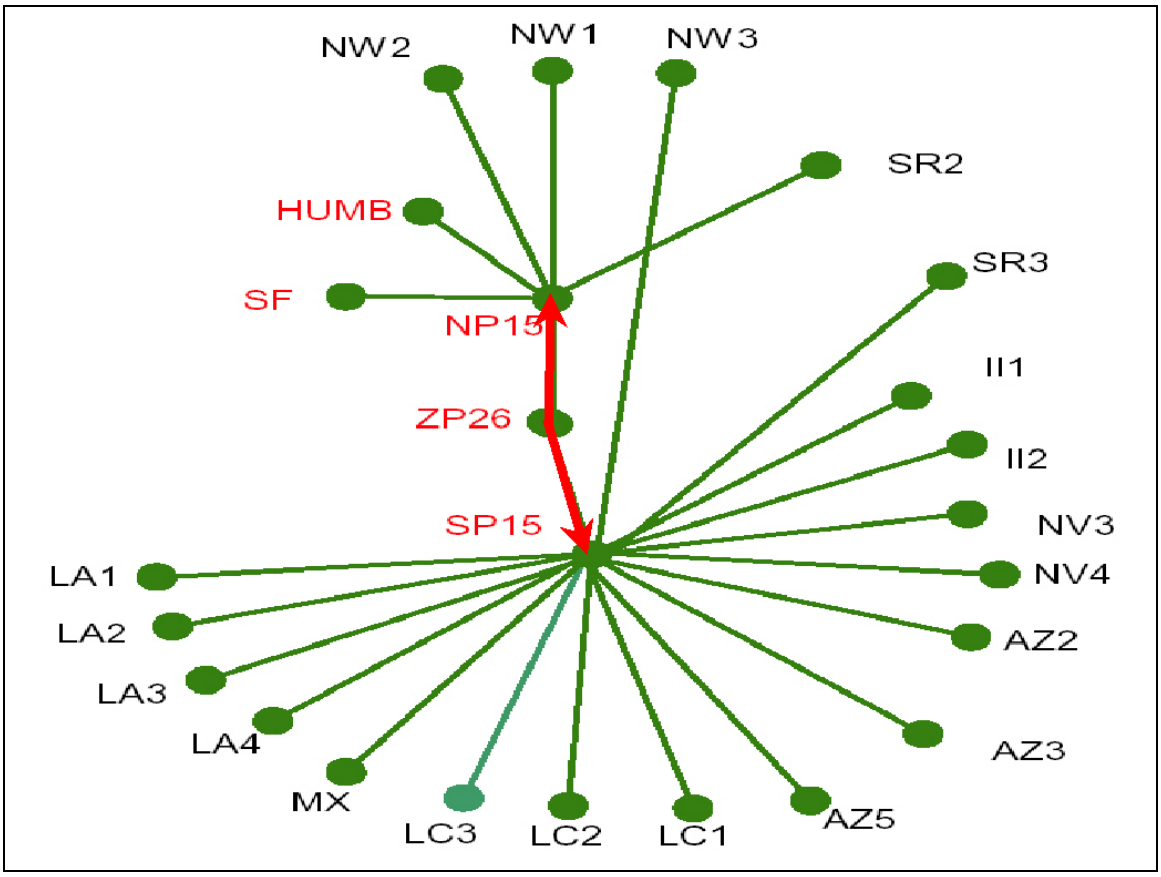
Q. Please describe Cong Catcher.

A. The information on Cong Catcher is based on a hand written diagram showing the trading relationships between NCPA, PGE, and PG&E. A copy of this diagram follows .. The basic premise appears to use PGE to make transactions across Path 15 and then to use NCPA transmission rights to return the energy.

As with Red Congo, this is a localized scheme designed to capture congestion payments over a single path.

A related, but slightly different concept is contained in an NCPA/Enron Transmission Management Proposal. Ex. SNO-103.

This concept would appear to allow a third party to "manage" NCPA's rights from COB through NP-15 and ZP-26.



Q. Does the Death Star family of schemes involve the use of counterparties?

A. Yes. In the context of Death Star type schemes, there is both a customer and supplier for the same imaginary energy. A number of firms figure significantly in the Enron trading documents: PGE, Redding, LADWP, and Avista. Avista, following industry practice, is referred to as Washington Water Power.

PGE has admitted that it has found some suspicious transactions with Enron in its Docket No. EL02-114 affidavit of Richard D Tabors. Ex. SNO-104. Enron's affiliate transactions with PGE are governed by FERC Order accepting PGE's market-based rates in Docket Nos. ER98-3671 and ER98-1643. In practice, such rules outlined by FERC orders were easily circumvented by using transactions with third parties. PGE has submitted attachments with its affidavits in EL02-114 that indicate explicit involvement in "sleeving" to avoid FERC and OPUC affiliate restrictions.

Q. Are there specific cases where PGE facilitated Enron transactions?

A. Yes. On the first page of the April 6, 2000 trader transcripts attached as Ex. SNO-105, the following dialog between Terry Findley of PGE and an Avista trader is memorialized:

> PGE: Do you know anything about an account that we need to talk about, for 25 megawatts, for hour ending 10?
>
> WWP: Well, umm . . . yeah . . . what it is, is that I guess we are going to do a sleeve, but with Enron.
>
> PGE: A what?
>
> WWP: A sleeve.
>
> PGE: I've never heard of that term.
>
> WWP: Okay. Well; basically it's a buy and resale .
>
> PGE: Okay.
>
> WWP: Umm. .. they didn't call you on it? I guess they can't, huh. Okay, what they, what it is, is I'm going to buy, here's the path, 25 megawatts of generating at the ISO.
>
> PGE: Correct.
>
> WWP: It's going to Enron, then to me, then to you,at Malin, then I'm picking it back up from you at Malin, and it's going back to Enron.

PGE: Okay, Enron, to Water Power, to me . . .

WWP: Then back to me . . .

PGE: Now this is one account.

WWP: Right.

At another point in the same month, April 15, 2000, Judy Madsen of PGE had the following conversation with Avista

PGE: Oh, I didn't know I was buying anything, because nobody has said anything to me about prices or anything.

WWP: Okay, what it is . . .

PGE: My understanding was it was strictly a transmission transaction.

WWP: Maybe you better talk to Enron because he said that I'm sleeving it just because you can't buy it. They can't sell it to you. And I don't know what the deal is cause I told him well, [expletive], I don't have transmission if I have to buy -the transmission then I gotta go buy it for 16 sell it for 19. And I don't know if you really want to do that.

PGE: Yeah, I don't know that I want to be in the middle of that.

John Forney's intervention with the PGE trader's superior cleared up the uncertainty at PGE. Ex. SNO-106. PGE shows up as a key player in various schemes in three different Enron documents. First, PGE is a critical part of the Forney Perpetual Loop. In this scheme, PGE is used as a conduit to take power from the California Oregon Border to PGE's service territory. Since the imaginary energy is first transferred through Washington Water Power, the transactions were not reported under PGE's market based rates granted in the Orders in Docket Nos. ER98-3671 and ER98-1643. Moreover, Washington Water Power's presence in the transaction avoided scrutiny by the Oregon

Public Utility Commission. Second, PGE shows up as a very central player in the Cong Catcher as an intermediary between Enron and NCPA. Third, PGE's role in Driscoll's Death Star instructions appears similar to PGE's role in the Perpetual Loop. *See* Ex. No. SNO-99.

In addition to PGE's role in Death Star transactions, the costs for using PGE's transmission for any scheme is cited in a memo concerning Big Foot. Ex. SNO-107. Another illustration of the cost of using PGE's transmission is cited in Forney's February 17, 2000 Real Time Opportunities email. Ex. SNO-108.

Death Star Counterparties

Q. How about market participants, other than PGE, who were involved in Death Stars?

A. Enron used a variety of counterparties in Death Stars. The counterparties provided either transmission – LADWP primarily – or an apparent northern control area for the Death Star. We have coined the term "cap" for the northern control area required to avoid ISO scrutiny. The simplest statement of the necessity of a cap is given in a memo written to NEG traders in December of 2000:

> If LA agrees to wheel power to Malin on your behalf, you must make sure that the power is delivered on the other side of the California border (i.e., in BPA's control area). The ISO is savvy to LA's attempts to circumvent ricochets by showing an export and import of equal megawatts an the California side of the tie in order to hide the ricochet nature of the transaction. Ex. SNO-109.

Enron's major caps were PGE and PacifiCorp, although on at least one occasion Puget provided the service of "sleeving." Ex. SNO-110.

A key objective of this strategy was to receive fees from the ISO for relieving congestion, without having to provide any actual electricity at all. The ISO charges congestion fees to parties scheduling power in the congested direction, and pays those fees to parties scheduling power in the opposite direction. The holders of existing transmission contracts are exempt from congestion fees. Therefore, when a scheduling coordinator schedules power in the congested direction using the system of an ETC holder, and simultaneously schedules power in the opposite direction on the ISO's system, that scheduling coordinator will receive payments from the ISO, and will pay the ISO nothing.

Q. Have you been able to identify instances in which Death Stars actually occurred?

A. Some of the most valuable transmission contracts are held by the Los Angeles Department of Water and Power (LADWP). By comparing the information from LADWP's scheduling files and the ISO's scheduling records, it is possible to match up transactions with offsetting schedules that match this profile.

Q. How many Death Stars have we identified using ISO and LADWP transmission data?

A. 48,995.

Q. Can you describe the steps involved?

A. Specifically, to find LADWP transactions that match the definition of a Death Star, I developed a mapping from LADWP's definitions of tie-points to the ISO's definition. That made it possible to match imports on one system to exports on another. I also developed a mapping of the ISO's abbreviations for scheduling coordinator to LADWP's

codes for agents. This made it possible to identify when the same party was scheduling power on both systems. I eliminated schedules for ancillary services, because I wanted to match only those transactions that were eligible to receive payment in the event that a given line was congested.

I then searched the data for transactions that matched imports on the LADWP system with exports on the ISO system, by date, hour, scheduling coordinator, and tie-point. Such a match would meet the definition of a Small Death Star (as described below). I also searched for the opposite case, i.e., for transactions that matched exports on the LADWP system with imports from the ISO system, by date, hour, scheduling coordinator, and tie-point. Such matches would also meet the definition of a Small Death Star. Combining the results of these two searches by date, hour, and scheduling coordinator yields matches that meet the definition of a full Death Star.

Occasionally, as in the case with Enron, I included more than one scheduling coordinator at a time to see if they were acting together. It is clear from this analysis (as further described below) that Enron and Portland General Electric were working together on transactions that match the definition of a Death Star.

When I could not find accurate matches, I dropped information from the dataset, so there are undoubtedly more. To avoid double counting, I generally looked only at the hour-ahead market, although it is quite possible to have a Death Star in both the day-ahead and hour-ahead markets for the same date, time, and tie-point.

Q. What is the source of the LADWP scheduling records you used for this purpose?

A. I used files called "All Schedules and Prices for 2000.csv" and "All Schedules and Prices for 1-1-2001 to 9-6-2001.csv" provided by LADWP to the California Senate Select Committee to Investigate Price Manipulation of the Wholesale Energy Market. These files include detailed records of wholesale power transactions between LADWP and its counterparties involving use of LADWP transmission assets. Each record shows the date, counterparty, type of transaction (e.g., purchase, sale, wheeling), tie-points at which the power entered and/or exited LADWP's system, various accounting information, hourly volumes, and, in some cases, hourly prices.

Q. What is the source of the ISO scheduling records you used for this purpose?

A. I used quarterly files called "Imp_Exp_Sch_2000Q2.csv" through "Imp_Exp_Sch_2001Q4.csv," provided by the ISO to the California Senate Select Committee to Investigate Price Manipulation of the Wholesale Energy Market. These files include detailed records of the schedules filed for imports and exports from the ISO system in the day-ahead, hour-ahead, and real-time markets. Each record shows the scheduling coordinator, date, hour, market type (i.e., day-ahead, hour-ahead, or real-time), designation of import or export, tie point, interchange ID, energy type (e.g., firm, non-firm, wheeling), external control area to/from which the power is scheduled, various accounting information, volume, adjustments to volume based on congestion model output, and prices.

Q. Are the schedules filed at the ISO and LADWP subject to the FERC confidentiality orders?

A. No. The California Senate Select Committee has released this information as part of their investigation into Enron's activities during the California crisis.

Q. Can you provide an example of such offsetting transactions?

A. Yes. Table 1 shows hourly transactions scheduled by Enron in the ISO Hour-Ahead market for April 15, 2000. As we can see, Enron scheduled an import of 24 MW for one hour (the hour ending at 12:00 noon) at Mead. For each of the hours ending between 13:00 (1:00 PM) and midnight, they scheduled 24 MW to be imported at Palo Verde. For each of the hours ending between noon and midnight, they also scheduled an export of 24 MW at Malin. In effect, they told the ISO they would bring 24 MW into California from Nevada and Arizona, ship it across the state, and export it at the California-Oregon border.

Table 1: ISO Side of Enron Death Star Transactions for 4/15/2000

			Transactions (MW)		
Scheduling Coordinator	Date	Hour Ending	Import at Mead	Import at Palo Verde	Export at Malin
EPMI	4/15/2000	12	24	0	24
EPMI	4/15/2000	13	0	24	24
EPMI	4/15/2000	14	0	24	24
EPMI	4/15/2000	15	0	24	24
EPMI	4/15/2000	16	0	24	24
EPMI	4/15/2000	17	0	24	24
EPMI	4/15/2000	18	0	24	24
EPMI	4/15/2000	19	0	24	24
EPMI	4/15/2000	20	0	24	24
EPMI	4/15/2000	21	0	24	24
EPMI	4/15/2000	22	0	24	24
EPMI	4/15/2000	23	0	24	24
EPMI	4/15/2000	24	0	24	24

What they were not telling the ISO was that at the same time, using LADWP's transmission rights, they were scheduling this same transaction in reverse. Table 2 shows hourly transactions scheduled by Enron on the LADWP system. As we can see, Enron scheduled a wheeling transaction for one hour (the hour ending at 12:00 noon) to import 24 MW at Malin, and to export 24 MW at Mead. For each of the hours ending between 13:00 and midnight, they scheduled a wheeling transaction to import 24 MW at Malin, and to export 24 MW at Palo Verde. In effect, they told LA they would bring 24 MW into California from Oregon, ship it across the state, and export it to Nevada and Arizona. This transaction exactly offsets, hour by hour and MW by MW, the transaction they filed along the same paths at the ISO.

Table 2: LADWP Side of Enron Death Star Transactions for 4/15/2000

			Transactions (MW)	
Agent	Date	Hour Ending	Wheel from Malin to Mead	Wheel from Malin to Palo Verde
EPM	4/15/2000	12	24	0
EPM	4/15/2000	13	0	24
EPM	4/15/2000	14	0	24
EPM	4/15/2000	15	0	24
EPM	4/15/2000	16	0	24
EPM	4/15/2000	17	0	24
EPM	4/15/2000	18	0	24
EPM	4/15/2000	19	0	24
EPM	4/15/2000	20	0	24
EPM	4/15/2000	21	0	24
EPM	4/15/2000	22	0	24
EPM	4/15/2000	23	0	24
EPM	4/15/2000	24	0	24

Q. If these transactions offset, did Enron make any money doing this?

A. Yes. Table 3 shows the congestion prices for the Hour Ahead market on the relevant ISO "Branch Groups." The branch group called "COI_BG" includes Malin. At the time of these offsetting transactions, the ISO was effectively paying scheduling coordinators to schedule exports at Malin to relieve congestion. For example, during the first hour of the transactions outlined in Tables 1 and 2 above, Enron would have received $29 per MW for scheduling an export at Malin on the ISO system. Table 3 also summarizes the total amount of revenue Enron should have received that day, according to these publicly-

available sources. For the simple expedient of filing these schedules with the ISO and LADWP, we conclude that the ISO paid Enron $6,629.52.

Table 3: Revenues from Enron Death Star Transactions for 4/15/2000

Scheduling Coordinator	Date	Hour Ending	Export at Malin	Congestion Price	Total Revenue
EPMI	4/15/2000	12	24	$ 29.00	$ 696.00
EPMI	4/15/2000	13	24	$ 31.00	$ 744.00
EPMI	4/15/2000	14	24	$ 28.99	$ 695.76
EPMI	4/15/2000	15	24	$ 20.00	$ 480.00
EPMI	4/15/2000	16	24	$ 20.00	$ 480.00
EPMI	4/15/2000	17	24	$ 20.00	$ 480.00
EPMI	4/15/2000	18	24	$ 22.38	$ 537.12
EPMI	4/15/2000	19	24	$ 20.00	$ 480.00
EPMI	4/15/2000	20	24	$ 20.00	$ 480.00
EPMI	4/15/2000	21	24	$ 21.92	$ 526.08
EPMI	4/15/2000	22	24	$ 19.00	$ 456.00
EPMI	4/15/2000	23	24	$ 23.94	$ 574.56
EPMI	4/15/2000	24	24	$ -	$ -
					$ 6,629.52

Q. Did Enron have to deliver any electricity to earn this payment?

A. No.

Q. Didn't Enron have to show the ISO where this power was going?

A. Technically, Enron needed to show there was a source and a sink for the power being scheduled. Since the power was being imported and exported from the ISO system, Enron needed to explain where the power came from, and where it was going. For this step, for this set of transactions, Enron made use of its subsidiary, Portland General Electric (PGE). Table 4 shows the set of transactions undertaken by PGE on 4/15/2000,

at the same times as those shown in Tables 1 through 3. In this table, we can see the set of schedules in the Northwest used to "cap" the Death Star transactions. Enron sells 24 MW to Washington Water Power (WWP) at COB. WWP sells 24 MW to PGE at COB. (This step appears to have been used to avoid affiliate trading restrictions between Enron and PGE.) PGE takes delivery on the power into its own system. WWP buys 24 MW from PGE on PGE's system. WWP sells 24 MW to Enron on PGE's system. Enron moves the power to John Day, for delivery back to Malin on the LA system.

Table 4

Date	Hour Ending	MW	Initial Control Area	Marketer	Marketer	Marketer	Sink-Source Control Area	Marketer	Marketer	Marketer	Marketer	Sink Control Area
4/15/2000	12	24	CAISO	EPMI @COB	WWP @COB	PGE@ COB	PGE SYS	WWP @SYS	EPMI @SYS	PGE@ SYS	EPMI @JD	LADWP
4/15/2000	13	24	CAISO	EPMI @COB	WWP @COB	PGE@ COB	PGE SYS	WWP @SYS	EPMI @SYS	PGE@ SYS	EPMI @JD	LADWP
4/15/2000	14	24	CAISO	EPMI @COB	WWP @COB	PGE@ COB	PGE SYS	WWP @SYS	EPMI @SYS	PGE@ SYS	EPMI @JD	LADWP
4/15/2000	15	24	CAISO	EPMI @COB	WWP @COB	PGE@ COB	PGE SYS	WWP @SYS	EPMI @SYS	PGE@ SYS	EPMI @JD	LADWP
4/15/2000	16	24	CAISO	EPMI @COB	WWP @COB	PGE@ COB	PGE SYS	WWP @SYS	EPMI @SYS	PGE@ SYS	EPMI @JD	LADWP
4/15/2000	17	24	CAISO	EPMI @COB	WWP @COB	PGE@ COB	PGE SYS	WWP @SYS	EPMI @SYS	PGE@ SYS	EPMI @JD	LADWP
4/15/2000	18	24	CAISO	EPMI @COB	WWP @COB	PGE@ COB	PGE SYS	WWP @SYS	EPMI @SYS	PGE@ SYS	EPMI @JD	LADWP
4/15/2000	19	24	CAISO	EPMI @COB	WWP @COB	PGE@ COB	PGE SYS	WWP @SYS	EPMI @SYS	PGE@ SYS	EPMI @JD	LADWP
4/15/2000	20	24	CAISO	EPMI @COB	WWP @COB	PGE@ COB	PGE SYS	WWP @SYS	EPMI @SYS	PGE@ SYS	EPMI @JD	LADWP
4/15/2000	21	24	CAISO	EPMI @COB	WWP @COB	PGE@ COB	PGE SYS	WWP @SYS	EPMI @SYS	PGE@ SYS	EPMI @JD	LADWP
4/15/2000	22	24	CAISO	EPMI @COB	WWP @COB	PGE@ COB	PGE SYS	WWP @SYS	EPMI @SYS	PGE@ SYS	EPMI @JD	LADWP
4/15/2000	23	24	CAISO	EPMI @COB	WWP @COB	PGE@ COB	PGE SYS	WWP @SYS	EPMI @SYS	PGE@ SYS	EPMI @JD	LADWP
4/15/2000	24	24	CAISO	EPMI @COB	WWP @COB	PGE@ COB	PGE SYS	WWP @SYS	EPMI @SYS	PGE@ SYS	EPMI @JD	LADWP

Key: JD=John Day; PGE SYS=PGE Transmission System; COB=California Oregon Border

Q. Was this difficult for Enron to execute?

A. Not at all. Despite the number of steps involved, this scheme, once invented, was apparently quite simple to execute. Each of these transactions can be completed in a minute or two by a competent trader. So for the investment of a few minutes' time, Enron was able to pocket hundreds, thousands, or tens of thousands of dollars.

An even more interesting set of transactions took place on 5/5/2000. On that day, PGE's affidavit shows PGE doing a 45 MW "top half" transaction from hour-ending 12 through hour-ending 17. On that day, PGE also filed a LADWP schedule to wheel power from COB to Mead -- 45 MW from hour 12 through hour 16. For hour ending 17, Enron filed a single additional hour for the same path, and the same number of megawatts. On the same day, for hours 12 through 17, Enron filed exactly offsetting ISO schedules -- import 45 MW at Mead, export 45 MW at COB. This set of transactions speaks volumes about how tightly their trading desks were integrated. We can envision no way that this set of transactions could have taken place without close coordination between the two companies and the full knowledge of the implications of the transactions being known to PGE staff and management.

Table 5 presents several more examples of Enron's Death Star transactions during the summer of 2000.

Table 5: Example Enron "Death Star" Events, Summer 2000

			CAISO			*LADWP*		
Date	**Time**	**MW**	**Party**	**From**	**To**	**Party**	**From**	**To**
6/6/2000	14-15	40	EPMI	COB	Mead	EPMI	Mead	COB
6/13/2000	17-20	45	EPMI	COB	Mead	EPMI	Mead	COB
7/14/2000	15-19	35	EPMI	COB	Palo Verde	EPMI	Palo Verde	COB
7/15/2000	16-17	35	EPMI	COB	Palo Verde	EPMI	Palo Verde	COB
7/17/2000	16-21	45	EPMI	COB	Palo Verde	EPMI	Palo Verde	COB
8/2/2000	11,13-20	25	EPMI	NOB	Mead	EPMI	Mead	NOB
8/11/2000	12-17	45	EPMI	COB	Mead	EPMI	Mead	COB
8/14/2000	13-19	45	EPMI	COB	Mead	EPMI	Mead	COB
8/15/2000	12-15	45	EPMI	COB	Mead	EPMI	Mead	COB
8/17/2000	11-18	45	EPMI	COB	Mead	EPMI	Mead	COB
8/18/2000	11-18	45	EPMI	COB	Mead	EPMI	Mead	COB
8/19/2000	14	45	EPMI	COB	Mead	EPMI	Mead	COB
8/21/2000	12-19	45	EPMI	COB	Mead	EPMI	Mead	COB
8/22/2000	13-19	45	EPMI	COB	Mead	EPMI	Mead	COB
9/7/2000	17-20	45	EPMI	COB	Mead	EPMI	Mead	COB

Q. Did Enron have a system for keeping track of its Death Star transactions?

A. Apparently so. The ISO requires that the scheduling coordinator provide an "Interchange ID" as part of its methods for identifying schedules. Enron often used suggestive entries for interchange ID values. Some are obscure (e.g., "CISO_EPMI_5001"), but others are far more transparent. In the example provided above (4/15/2000), the interchange ID's used include CISO_EPMI_FORNEY, and EPMI_CISO_DANNY. Forney is almost certainly Enron trader John Forney, inventor of Forney's Perpetual Loop. Mr. Forney appears in another transaction under the name "FORNDOG." Other pairs of transactions include portions of interchange ID values such as "KING" and "QUEEN," "BASS" and "TROUT," "VW" and "JETTA," "BERT" and "ERNIE," and the self-explanatory "DEATH" and "STAR."

Q. Are all of these steps necessary to earn congestion revenues through offsetting schedules?

A. No. I said earlier that the term Death Star was applied to both a specific scheme (as described above), and to a family of schemes. As we have reviewed the ISO and LADWP data, it is clear that a "Small Death Star" will accomplish much the same goal.

Q. Please describe what you mean by a "Small Death Star."

A. In a Small Death Star, a scheduling coordinator files a schedule with the ISO to import power at a given tie point, and files an offsetting schedule on LADWP's system to export power at the same tie point (or vice versa). Figure 2 shows how two different versions of how a Small Death Star can work..

Figure 2: Example Small Death Star Transactions

Q. Did you find examples of this type of transaction as well?

A. Yes. For example, on June 17, 2000, during the hour ending at 5:00 PM, Enron scheduled an export of 50 MW at Malin on the ISO system. For the same hour, PGE scheduled an import of 50MW at Malin on the LA system.

In addition to the example above, it is not even necessary for the amount of power scheduled in each direction to match. For example, if the scheduling coordinator schedules 50 MW in one direction and 30 MW in the other, this can be considered a 30 MW Small Death Star.

Q. Is this the only example of a Small Death Star you found?

A. No, actually we found tens of thousands, looking at the period between January 1, 2000 and June 20, 2001. Table 6 provides the number of matching transactions we detected just looking at some of the parties named in various FERC investigations. The number of

transactions given here represents the hour-ahead schedules at a given tie point, date, and hour matching the description of a Small Death Star provided above. Given that the universe of Death Stars are so large, we could have taken a much longer list of scheduling coordinators than these. This list was based on the major generators and several other major market participants.

Table 6: Small Death Star Transactions for Selected Scheduling Coordinators

Party	In	Out
AEP	1025	5
Coral	218	826
Duke	1059	194
Dynegy	16	0
Enron	6169	3369
Idaho Power	491	6930
Reliant	24	1291
Powerex	5592	12269
Mirant	634	323
Williams	254	8306

Q. Can you provide an example of how AEP filed schedules that match the description of a Small Death Star?

A. Yes. We found over 1000 tie-point-hours of such transactions. On July 21, 2000, AEP scheduled an import of 50 MW at Palo Verde on the ISO system for the hour ending at 7:00 AM. For the same date and time, they scheduled an export of 25 MW on the LADWP system. This pair of transactions meets the definition of a 25 MW Small Death Star.

Q. Can you provide an example of how Coral filed schedules that match the description of a Small Death Star?

A. Yes. We found over 1000 tie-point-hours of such transactions. On April 27, 2000, Coral scheduled an import of 50 MW at Palo Verde on the ISO system for the hour ending at 16:00. For the same date and time, they scheduled an export of 50 MW on the LADWP system. This pair of transactions meets the definition of a 50 MW Small Death Star.

Q. Can you provide an example of how Duke filed schedules that match the description of a Small Death Star?

A. Yes. We found over 1000 tie-point-hours of such transactions. On July 5, 2000, Duke scheduled an import of 150 MW at Palo Verde on the ISO system for the hour ending at 9:00 AM. For the same date and time, they scheduled an export of 50 MW on the LADWP system. This pair of transactions meets the definition of a 50 MW Small Death Star.

Q. Can you provide an example of how Dynegy filed schedules that match the description of a Small Death Star?

A. Yes. We found 16 tie-point-hours of such transactions. On July 12, 2000, Dynegy scheduled an import of 25 MW at Palo Verde on the ISO system for the hour ending at 11:00 AM. For the same date and time, they scheduled an export of 25 MW on the LADWP system. This pair of transactions meets the definition of a 25 MW Small Death Star.

Q. Can you provide an example of how Idaho Power filed schedules that match the description of a Small Death Star?

A. Yes. We found over 7000 tie-point-hours of such transactions. On March 12, 2001, Idaho Power scheduled an export of 100 MW at Malin on the ISO system for the hour

ending at 7:00. For the same date and time, they scheduled an import of 70 MW on the LADWP system. This pair of transactions meets the definition of a 70 MW Small Death Star.

Q. Can you provide an example of how Powerex filed schedules that match the description of a Small Death Star?

A. Yes. We found over 17000 tie-point-hours of such transactions. On May 1, 2001, Powerex filed an export of 50 MW at Malin on the ISO system for the hour ending at 15:00. For the same date and time, they scheduled an import of 50 MW on the LADWP system. This pair of transactions meets the definition of a 50 MW Small Death Star.

Q. Can you provide an example of how Reliant filed schedules that match the description of a Small Death Star?

A. Yes. We found over 1000 tie-point-hours of such transactions. On June 29, 2000, Reliant scheduled an export of 114 MW at Mead on the ISO system for the hour ending at 19:00. For the same date and time, they scheduled an import of 54 MW on the LADWP system. This pair of transactions meets the definition of a 54 MW Small Death Star.

Q. Can you provide an example of how Mirant filed schedules that match the description of a Small Death Star?

A. Yes. We found over 900 tie-point-hours of such transactions. On August 17, 2000, Mirant scheduled an export of 25 MW at Palo Verde on the ISO system for the hour ending at 14:00. For the same date and time, they scheduled an import of 25 MW on the

LADWP system. This pair of transactions meets the definition of a 25 MW Small Death Star.

Q. Can you provide an example of how Williams filed schedules that match the description of a Small Death Star?

A. Yes. We found over 8000 tie-point-hours of such transactions. On January 8, 2001, Williams scheduled an export of 100 MW at Mead on the ISO system for the hour ending at 22:00. For the same date and time, they scheduled an import of 75 MW on the LADWP system. This pair of transactions meets the definition of a 75 MW Small Death Star.

Q. Are these schemes inter-regional?

A. Yes. The basic premise of these schemes is to take advantage of the ISO's congestion management methodology by filing circular schedules that pass through the ISO to another control area. In practice, thousands of these schedules involve Death Stars that rotate "power" through the Pacific Northwest.

Q. Has the ISO undertaken its own investigation into detecting Death Stars?

A. Yes. In December, 2002, the ISO released a report, dated 10/4/2002, from its Market Analysis Group. This report included analysis of several of the Enron schemes, including Death Stars. In January, the ISO updated their calculations. This report was posted on the ISO Web site. In addition, it was provided to the California Senate Select Committee mentioned above.

Q. Have you reviewed the report provided by the ISO describing its efforts to detect Death Stars?

A. I have. The methods described in the report may detect certain types of Death Star transactions, but will almost certainly miss a great many more. In particular, the report states that:

> The potential frequency and financial gains from circular schedules were analyzed by identifying import/export schedules (of equal quantities) by the same SC that generated congestion revenues from counterflows on interties and/or internal paths within the ISO. It should be noted that this approach may underestimate circular schedules since the analysis only includes import/export schedules that can be matched because they are of (approximately) equal quantities by the same SC.
>
> Ex. SNO-17.

The report correctly identifies two deficiencies in the ISO's methodology. First, the ISO method matches on MW quantities, so any party attempting to hide its Death Star transactions by combining them with other transactions will be missed. Second, the ISO method requires matching schedules to be filed by the same scheduling coordinator. While this is usually a good assumption, Enron and PGE were separate scheduling coordinators, and sometimes filed schedules that offset one another. To the extent this excerpt from the report is accurate, however, the more important deficiency is that the ISO method completely ignores the case of Small Death Stars, requiring that both an import and an export appear in the ISO's records.

Q. Even though they may have missed some, did the ISO find many potential Death Star transactions?

A. Yes. The following table is reproduced from the ISO report; this table provides a summary of the ISO's work on Death Star transactions.

Table 4. Total Congestion Revenues from Counterflows Created by Import/Export Schedules (Matched by MW Amount)

ID	Company	Pre-refund Period	Refund Period	Total
EESI	Enron Energy Services, Inc.	$1,783,157	$379,328	$2,162,485
CRLP	Coral Power, LLC	$337,982	$1,213,017	$1,550,999
SETC	Sempra Energy Trading Corporation	$348,020	$900,377	$1,248,397
APX	Automated Power Exchange, Inc	$0	$726,099	$726,099
SCEM	Southern Company Energy Marketing, L.P.	$95,419	$9,650	$105,069
DETM	Duke Energy Trading and Marketing, L.L.C.	$10,600	$85,381	$95,981
IPC	Idaho Power Company	$1,980	$81,393	$83,373
AQPC	Aquila Power Corporation	$75,975	$0	$75,975
WESC	Williams Energy Services Corporation	$4,972	$35,115	$40,087
BCHA	British Columbia Power Exchange Corporation	$1,882	$29,574	$31,456
MID	Modesto Irrigation District	$10,059	$4,245	$14,304
SCEC	Southern California Edison Company	$10,200	$1,380	$11,580
PGE	Portland General Electric	$5,750	$0	$5,750
CPCO	Calpine Corporation	$0	$4,376	$4,376
PSE	Puget Sound Energy	$0	$2,982	$2,982
APS	Arizona Public Service Company	$1,174	$0	$1,174
HFET	Hafslund Energy Trading, LLC	$425	$0	$425
		$2,687,595	**$3,472,917**	**$6,160,512**

Q. Do you have examples of transactions that the ISO may have missed?

A. Yes. The example I gave above for June 17, 2000 at the hour ending at 17:00 is not identified in the ISO data. This event is particularly interesting, since the congestion price at Malin for that hour was $685.09. The 50 MW Small Death Star filed by Enron and PGE provided them with over $34,000 in revenue in a single hour that day.

Another example of a Small Death Star not found in the ISO report is found on October 21, 2000 in the hours ending at 19:00 and 20:00. During those two hours, Enron scheduled an export of 50 MW at Palo Verde, while the Palo Verde branch group was congested in the import direction. At the same time, Enron scheduled an import of 50 MW at Palo Verde on the LADWP system. The net effect to relieving an true congestion was, of course, zero, but the ISO had to pay Enron over $1,500 just the same.

The point here is that the ISO method, if we understand it correctly, is bound to miss almost all Small Death Stars, because it is not designed to catch them. The ISO's method, according to the description found in the report, will also miss transactions in which the megawatt volumes do not match. By missing what appears to be the majority of all Death Star and Small Death Star transactions, we can safely conclude that their estimates of the dollar impact are too low as well.

Q. Can you estimate the dollar impact of the Death Star and Small Death Star schemes?

A. No.

Q. Why not?

A. I don't have the data necessary to prepare an accurate estimate.

Q. Was such data requested from the ISO?

A. The ISO simply replied that these schemes were irrelevant to the question of refunds. The request and complete ISO response, in Docket No. EL01-10, to a data request made by the City of Tacoma is as follows

> TAC/CAISO 2.2Please refer to the document entitled Analysis of Trading and Scheduling Strategies Described in Enron Memos, a report by California ISO Department of Market Analysis, dated October 4, 2002, available on the ISO's website at www.caiso.com (hereinafter "CAISO Report").
>
> (a) Please provide any information, studies, or analyses that the CAISO has performed or that it has in its possession concerning congestion payments to the entities listed in tables 2, 6, 7, 9, 11, and 12 of the CAISO Report.
>
> (b) Please provide any information, studies, or analyses that the CAISO has performed or that it has in its possession concerning overscheduling of power by entities listed in the CAISO Report, and the associated economic impacts.
>
> (c) Please provide all studies the CAISO has performed regarding manipulation or potential manipulation of markets in the northwestern

United States and/or involving use of the AC Intertie by the entities listed in tables 2, 6, 7, 9, 11, and 12 of the CAISO Report.

(d) Please provide all workpapers used in creating the CAISO Report.

Response:

The ISO objects to the entirety of question 2.2 because it seeks information that is not relevant to the claim or defense of any party, is not reasonably calculated to lead to the discovery of admissible evidence, and seeks data regarding activities/parties that are not relevant to the subject matter of this proceeding.

The October 4 Report deals with conditions in and analysis of spot markets operated by the California ISO. Therefore, none of the information requested is relevant to claims "concerning potential refunds for spot market bilateral sales transactions in the Pacific Northwest for the period January 1, 2000 through June 20, 2001," December 19 Discovery Order at P 1 (emphasis added), and is not likely to lead to the discovery of relevant information.

Notwithstanding this objection, the ISO notes that some information responsive to this question has been provided by the ISO in Docket Nos. EL02-113 (on December 16, 2002 and February 4, 2003), EL02-114 (on November 4, 2002 and January 30, 2003), and EL02-115 (on November 19, 2002) in response to discovery posed on the ISO by the Commission Staff in each case.

Respondent: Eric Hildebrandt
Manager, Market Investigation
Date: February 6, 2003

Ex. SNO-111.

The ISO's refusal to provide information in these show cause proceedings was less eloquent but just as unhelpful.

SNO-ISO-1

Please provide congestion (in Megawatts), congestion price and congestion payments for all of the transactions listed in the attached zip file created by McCullough Research [entitled "MR Death Star Records.xls," as was carried out by the CAISO in their July 15, 2003 submittal on Enron transactions. The congestion (in Megawatts), congestion price, and congestion payments were listed in columns P through CP in CAISO's July 15, 2003 Enron Transactions CD 1 in a

excel file titled "Death Star Data.xls" contained within the Circular Schedules-Death Star Work Files folder].

Response:

To the extent that the information requested (columns P through CP from the ISO's file "Death Star Data.xls" from the July 15, 2003 response to FERC) is not present in the "Death Star Data.xls" file, it can be constructed using the following files that were also provided in the July 15 response. These source data files were submitted for the specific purpose of allowing parties to perform their own analysis of the various strategies covered by the ISO report. The files relevant to Circular Scheduling are on Disk 1 in the folder "Circular Schedules - Death Star\Source Data" (note that the column references below are for the reference file submitted with the data request, "MR Death Star Records.xls"):

ISO File	"MR Death Star Records.xls" Columns
BG_TP_ZN_CZ_REGION.csv	AF, AG, AH, AI, AJ
CONG_PRC.zip	P,Q, CE, CF, CG, CH, CI, CJ
CONTRACTS_IN_USAGES_ETC.zip	Z, AA, AB, AC, AD, AE
SOURCE_SINK_INTERCHG_ETC.zip	Z, AA, AB, AC, AD, AE
I_INTERCHANGE_SCH_200?Q?.zip	R through Y, AM through CD.

The remainder of the data requested by Snohomish can be calculated using the data above. Note that field descriptions for these files were also included in the July 15 response.

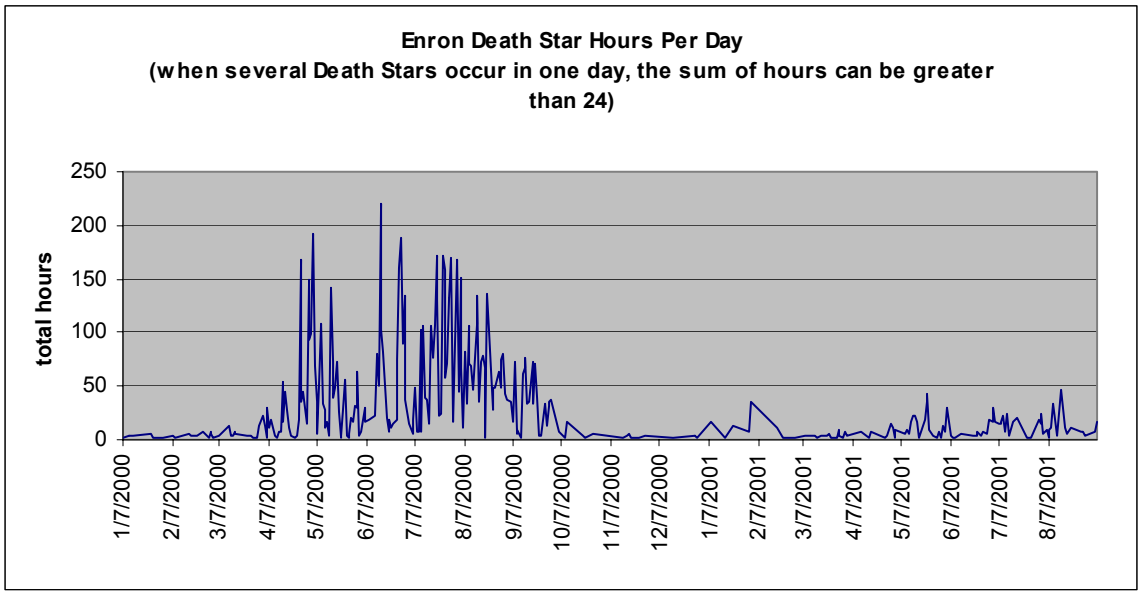
Person Responsible: Jeffrey McDonald, Department of Market Analysis
Date: December 15, 2003

Ex. SNO-112.

Our understanding of this cryptic response was that they intended for us to reproduce the California ISO's complex settlement calculations from scratch. If possible, this is certainly beyond the scope of this proceeding.

Q. What does the pattern of Enron Death Stars look like over time?

A. The following chart shows Death Stars by day:



Q. What is a Big Tuna?

A. This question has puzzled me since our first review of the discovery material from the California Senate Select committee in the spring of 2002. We know about Big Tuna from a number of materials:

1. Mike Driscoll's Achievements in which he is commended for his project "big Tuna:"

Project "Big Tuna" – a congestion relief strategy in California that nets congestion in Enron's favor for profit through adjustments on our loads (a low risk high upside trade).

Ex. SNO-113.

2. Short Term West Hourly Desk – Goals for Year 2000:

Fully implement "Project Big Tuna" a congestion relief strategy that will give Enron the option to be paid for congestion relief for various paths on the IS0 grid. In the absence of congestion, the IS0 will pay applicable imbalance revenue to Enron. This strategy, when coupled with existing imbalance profit sharing arrangements, gives significant upside potential, while maintaining acceptable level of risk to company.

Ex. SNO-114.

A hand written note over "Big Tuna" notes "Aka Black Widow"

3. On July 19, 2000, Michael Driscoll entered "Big Tuna" comments into the ISO comment fields for 1:00 P.M Ex. SNO-115.

We know from Enpower that July 19, 2000 was a standard Death Star day with schedules filed between Malin and Palo Verde with a PacifiCorp cap at Malin. Each of the Enpower deals was attributed to Mike Driscoll.

Q. Was Big Tuna the only scheme that describes a simple classification under the terms devised by Stephan Hall in the fall of 2000?

A. No. It must be understood that these schemes were techniques, not specific transactions. Enron traders were being trained in the ability to defraud the California ISO and other counterparties. They were not required to duplicate every transaction exactly. One important example is the scheme "congestion wheel."

Q. When did Congestion Wheels occur?

A. The first mention of the scheme is in a email by Geir Solberg to his colleagues in July of 2001:

The ISO cutting our off-peak imports from PV has been an ongoing problem. Now that we are doing congestion wheels again we can finally do something to avoid these cuts using congestion wheels.

Normally the ISO will cut our Import and shift our load from NP15 (PGE1&2&3) across the path to relieve the congestion. If you submit a congestion wheel there cannot be $30 cong, thus they will not cut your schedule going in at PV. Instead of shifting your load the ISO will award your congestion wheel and everybody will be happy. It is mportant to make your wheel larger then your import to ensure that part of your import not getting cut. I would recommend to put in the max number of MW's you think you can buy in the North and get rid of in the Desert. Go big in the off-peak, we submitted 200MW wheels Saturday and I think its safe to do similar size most nights.

Geir

Ex. SNO-116.

Q. How did congestion wheels work?

A. A congestion wheel was a Death Star that simply offset the congestion costs of a legitimate transaction going in the opposite direction. If the ISO charged congestion costs to the legitimate transaction, the congestion wheel would offset those charges.

Q. Would Enron have undertaken the transaction in the absence of the Congestion Wheel?

A. Probably not. This is another case where actual operations would not have fit smoothly into the classifications recorded by Stephan Hall.

J. Load Shift

Q. Did Enron engage in the congestion-related gaming practice of "Load Shift?"

A. Yes. Enron created the illusion of additional loads in areas likely to suffer from congestion. The ISO's Firm Transmission Rights (FTRs) allow market players first right to use transmission along specific paths. Yielding FTR back to the ISO allows the market participant to receive congestion fees for the path. This scheme is possible for any party with FTRs along constrained paths.

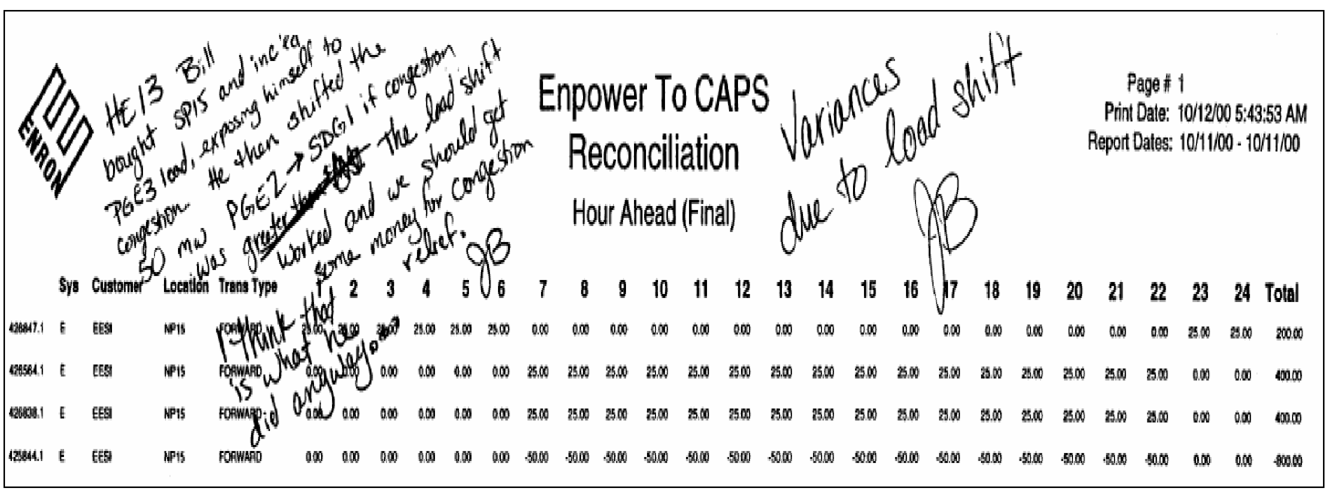
Q. Has Enron acknowledged it engaged in the practice of load shift?

A. Yes. The Enron memoranda released in Docket No. PA02-02-000 acknowledges a nominal $30 million dollar profit for the practice of load shift as of December 8, 2000.[34] *See* Ex. SNO-20.

Q. Does other evidence exist demonstrating that Enron engaged in this gaming practice?

A. Yes. Included in Ex. SNO-117 is a page from Enron's August 5, 2000 trading manual. This page shows a series of load shift transactions in the center of the page.[35]

Handwritten comments on Enpower to CAPS (California Power System) Reconciliation sheets also show that traders repeatedly explained variances between these two databases using load shift transactions. For example, the comment on one of these reports, shown below, is exemplary.[36]



ENRON

Enpower To CAPS
Reconciliation
Hour Ahead (Final)

Page # 1
Print Date: 10/12/00 5:43:53 AM
Report Dates: 10/11/00 - 10/11/00

HE13 Bill bought SP15 and inc'ed PGE3 load, exposing himself to congestion. He then shifted the 50 mw PGE2 → SDG1 if congestion was greater ~~than~~ the load shift worked and we should get some money for congestion relief. JB

I think that is what he did anyway.

Variances due to load shift JB

	Sys	Customer	Location	Trans Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
426847.1	E	EESI	NP15	FORWARD	25.00	25.00	25.00	25.00	25.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	25.00	200.00
426564.1	E	EESI	NP15	FORWARD	0.00	0.00	0.00	0.00	0.00	0.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	0.00	0.00	400.00
426838.1	E	EESI	NP15	FORWARD	0.00	0.00	0.00	0.00	0.00	0.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	0.00	0.00	400.00
425844.1	E	EESI	NP15	FORWARD	0.00	0.00	0.00	0.00	0.00	0.00	-50.00	-50.00	-50.00	-50.00	-50.00	-50.00	-50.00	-50.00	-50.00	-50.00	-50.00	-50.00	-50.00	-50.00	-50.00	-50.00	0.00	0.00	-800.00

As this and numerous other notes reveal, the strategy of load shift was used on an almost daily basis. Ex. SNO-118.

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[34] Traders' Strategies in the California Wholesale Markets/ISO Sanctions, Stephan Hall and Christian Yoder, December 8, 2000.
[35] 20000805 Enron West Power Marketing
[36] Enpower to Caps Reconciliation, October 11, 2000.

Q. Do we have detailed evidence on Enron engaging in load shift?

A. Yes, from two sources. First, Enron's computer systems were not able to smoothly account for load Shift. At the end of every day, an Enron trader had to reconcile the differences between CAPS and Enpower. The Enpower to CAPS reconciliation sheets have been lost or destroyed. Second, the ISO has undertaken an analysis of load shift.

Q. Is there an inconsistency between these two approaches?

A. Yes. The ISO is uncertain whether load shift was a major factor in congestion on Path 26. However, we have found that load shift was a very frequent activity for Enron.

Q. Why is this an inconsistency?

A. Enron was apparently investing substantial resources in a scheme that was bringing relatively little profit. However, our review of the Reconciliation pages indicate Load Shifts on a frequent basis.

Q. Based on these Enpower to CAPS reconciliation reports, on how many days have you been able to observe load shift?

A. Load shift comments appear on 32 of the 36 days for which we have reconciliation reports. These reports are included as Ex. SNO-118. The comments from the first pages of these reports are reproduced in the following table.

Report Date	Handwritten Comment on First Page of Report
6/17/2000	All Variances explained! Due to Load Shits and Nfirm export cut in HE 24 atMalin. -Holden
7/1/2000	variances explained by loadshift and deathstar
7/6/2000	Heather, deathstar HE 16-18; Load shift HE 7-8; NCPA HE 14-19
7/14/2000	ST cali shifted load. Deathstar cong play. Imbalance cuts explained -BHR
7/19/2000	
7/25/2000	1) cut import at PV 2) LoadShift 3) Death Star
7/26/2000	Checked out MMP explained variance 1)NCPA Load Shift Profit Cong 2)Death Star 3)Load Shift
8/7/2000	Explained variances due to load shifting + deathstar + day ahead guys
8/12/2000	Checked out MMP total variance <1 explained 1)NCPA Load/profit share 2) deathstar-pv to malin cong relief
8/13/2000	Checked out MMP total variance explained Load shifts
8/14/2000	Checked out MMP total variance <1 explained Load shifts and wheels
8/15/2000	Load Shift HE 1,4,9,10; Deathstar 12,13; Exports 14,15, taken to zero NP variance sunk SP so variance due to load SP; export HE 18 export from NP to Palo Verde. Variance due to this -JB
10/9/2000	variance due to RT load shift. HE 9 40 MW HE 10 39 MW variance due to harbor schedule not in Enpower. Les said he will put the deal in this morning. CAPS OK!! -JB
10/10/2000	No variances except load shift -JBM
10/11/2000	HE 13 Bill bought SP15 and inc'ed PGE3 load, exposing himself to congestion. He then shifted the 50 mw PGE2 to SDG1 if congestion was greater . . . The Load shift worked and we should get some money for congestion relief. I think that is what he did any
10/16/2000	MW variances are a result of load shift p 29, p 52 -Bill Williams
10/18/2000	variances due to load shifts and lack of Willamette schedule pulling in -holden
10/19/2000	All variances from DA are a result of Load Shift South to North p 29 and p 52
10/20/2000	Variances explained 8 MW shifted load NP to SP for HE 10
10/22/2000	variance due to lack of Willamette (240 MW's) not pulling in. Also SP to NP load shifts 366 MW's -Holden
10/28/2000	No variances, only on RT load shift of 20 MW for HE 23 -JBM
10/30/2000	explained variances. RT load shift (where noted on NP15 total variances) Variance due to Harbor transfer in SP 15. -Jesse
11/2/2000	recovered, variances explained . . . 100 MWs shifted for HE 7 and HE 9 NP to SP. -Bill Williams
11/3/2000	Report has variances HE 24, p 30, p50, p57, other variances (HE 4,10,22) are from load shift (HE4) and "new" PX load zone (HE10, 22). HE 24 variances appear to be the result of bad finals from CISO, had to make changes as circled to make customer finals,
11/5/2000	variance due to lack of Willamette (240 MW's) load zone and SP to NP load shifts 1775 MW's -Holden
11/6/2000	all variances are a result of load shift from HE 1,2,3, and 8,9,10 -Bill W
11/16/2000	Variances Explained Real Time load shifts see pg 107. -Eric L
11/20/2000	variances due to load shift -Bill Williams
11/21/2000	100 MW load shift for HE 18 & 19 S to N. Variance from day ahead with harbor for HE 8-20, 65 mws p 64 on HA, p 62 on DA - Bill W.
12/12/2000	All explained variances load shifts OK. -Mark Guzman
1/11/2001	HE 2, 3 5 MW ISO load shift. He 24 incorrect finals in CAPS
1/21/2001	zones match only variance due to sale made to imbalance to inc load after NOB cut. Deal # 501606. -

Q. Was Enron successful at implementing load shift, and did it increase profits?

A. Yes. The CAISO report concluded that load shift may have increased Enron's profits by as much as $3.2 million and was estimated to have increased congestion on Path 26 "during about 57% of the hours in which congestion occurred on Path 26 in the north to south direction (about 571 out of about 998 hours) (426 hours)."[37] See Ex. SNO-17.

[37] CAISO Report, page 18.

Furthermore, in an email from Susan Mara in September 2000 concerning the FTR (Firm Transmission Rights), Tim Belden explained his involvement in influencing the ISO decision to release some FTR's that upcoming April.[38] Ex. SNO-119. Enron subsequently became the single largest purchaser of these FTR's, which enabled the company to execute load shift and other congestion-related strategies. Belden estimated the 2000 NPV (Net Present Value) of his FTR efforts to be $20M.

We also have Phil Platter's year 2000 accomplishments, in which he prides himself on making substantial profits for the company by engaging in congestion relief strategies such as load shift.[39] Ex. SNO-120.

Phil Platter
2000 Accomplishments

I. **Took profitable positions by Spec bidding hour ahead ,day ahead, maximizing FTR Revenue, and relieving congestion.**

- Have done well at spec bidding, having a view every day and not being afraid to play it.
- Did especially well in the summer. Recall making an average of $1.0 to $1.5 Million per day engaging in these activities.
- Contributed to the desk p/l by learning from others and coming in early and staying late to get hour ahead bids in for the 6am and 4pm deadlines
- Developed an excel spreadsheet to help make hour ahead bids and related decisions faster and easier.

Furthermore, in an email to John Forney, Collin Whitehead brags about his accomplishments, which include "load shifted and wheeled NP-SP, all day, $42,500 profit" on November 11, 2000.[40]

[38] Email from Susan Mara, September 21, 2000.
[39] Philip Platter Performance Review, 2000.
[40] Email from Collin Whitehead to John Forney, November 12, 2000.

Collin Whitehead
11/12/2000 05:29 PM

To: John M Forney/HOU/ECT@ECT
cc:
Subject: Goals- Accomplishments

Goals

-continue development of profeciency at ECTRT trading within reasonable time frame, (2mos)
-become more explicit in documenting details and data in each communication event
-learn about and assist, one or more groups, with side projects over the next few months, developing career path

Accomplishments

-acquired strong grasp of El Paso services
-10/18 day shift, traded under direction of Bill, $33,888 profit
-11/11 day shift, traded under direction of Monika, load shifted and wheeled NP-SP, all day, $42,500 profit

-I have learned and utilized load shift and wheel strategies to arbitrage and hedge congestion and beep splits
-learned to fix and completed Sept/Oct EnPower settlements inconsistancies for Caroline on 11/10

-Collin

Load shift was a well known congestion relief strategy frequently used by Enron traders.

K. Get Shorty

Q. Did Enron engage in the gaming practice of Paper Trading or Get Shorty?

A. Yes.

Q. Please describe the evidence demonstrating that Enron engaged in this gaming practice.

A. The Enron memoranda released in Docket No. PA02-02 admits that:

a. Under this strategy, Enron sells ancillary services in the Day-ahead market.

b. Then, the next day, in the real-time market, a trader "zeroes out" the ancillary services, i .e ., cancels the commitment and buys ancillary services in the real-time market to cover its position .

Enron internal emails also prove that they were implementing "Get Shorty". In the following email, Tim Belden praises the "textbook Enron performance" of two of his colleagues for earning "a bag of money" by manipulating a "weird" part of the market.[41] Ex. SNO-121.

From: Tim Belden/HOU/ECT
Sent: Monday, July 10, 2000 10:19 AM
To: Chris H Foster/HOU/ECT; Greg Wolfe/HOU/ECT; Stewart Rosman/HOU/ECT; John M Forney/HOU/ECT
Subject: Get Shorty

First, congratulations on earning so much money on shorting ancillary services last month. It is a beautiful thing. That is textbook Enron. Find a wierd part of the market, try a few things, a bag of money drops out. It is truly impressive.

Second, we need to ensure that proper controls are in place. It has come to my attention that we had some performance issues last week in terms of zeroing out the schedules. We have to get a handle on this. By the end of the week I would like a written procedure outlining a failproof procedure. As part of this procedure, I would like to see a daily log that illustrates what schedules we have in, who put them in, and who is accountable for zeroing them out.

Once again, amazing job on the A/S plays over the last few weeks. I don't mean to rain on your parade or place blame for past mistakes. But I am serious about getting this procedure ironed out and air tight. Once the procedure is ready let's have a meeting to discuss.

In another email Belden suspends the practice of "Get Shorty" because trader's input errors are causing accounting variances. He states he will resume this practice as soon as a failproof procedure is created. Furthermore, Belden warns that he does not want to provide the California Attorney General with a "smoking gun" proving Enron's gaming of the California ISO.[42] Ex. SNO-122.

[41] Get Shorty, Tim Belden, July 10, 2000.
[42] Get Shorty Suspended, Tim Belden, August 28, 2000.

From: Tim Belden/HOU/ECT
Sent: Monday, August 28, 2000 12:36 PM
To: Greg Wolfe/HOU/ECT; Chris H Foster/HOU/ECT
Cc: John M Forney/HOU/ECT; Jeff Richter/HOU/ECT
Subject: Get Shorty Suspended

It has come to my attention that we failed to zero out a "Get Shorty" schedule on Friday. Fortunately, the real time desk was able to fill it. Kim Ward tried to zero it out and put in blanks rather than zeros which doesn't work. This highlights the need to clearly document exactly what is supposed to be done to implement these schedules. For several months I have asked for a written procedure on ancillary service schedules. Nobody has listened to me and mistakes keep happening. Such a mistake occurred in June and is now requiring a $900k prior month adjustment. On top of that, the California Attorney General is in search of a smoking gun and is looking to find someone who is "gaming" the market. I don't want to provide them with any fuel for their fire.

I AM TEMPORARILY SUSPENDING ALL GET SHORTY ANCILLARY SERVICE ACTIVITY. When I see a written procedure that will be fail proof, and an airtight log that assigns accountability I will be happy to reinstate. The procedure needs to be thorough and thoughtful. The test will be whether someone who knows almost nothing about ISO scheduling can implement the procedure. This is long overdue. Chris or Greg, please let me know how you plan to proceed.

Q. What dangers or risks to reliability did this Enron scheme pose?

A. A simple example can show just how dangerous such a scheme can be. Assume for a moment that the California crisis had actually represented a capacity shortage. If Enron was selling ancillary services that it had not yet procured, a true crisis – a system collapse – could well have occurred if Enron's bid was accepted but it could not find a buyer. For example, if you need a can of paint and the paint hasn't been delivered to the hardware store in time, you can easily paint tomorrow. The choice of the hardware store to "go short" is of little concern. On the other hand, if you go to a restaurant for dinner and they then have to go procure the food, the evening can easily be ruined if they can't find the food to serve you. Electricity exemplifies a commodity where reserves are not negotiable – if the reserves are not present, the lights may actually go out or in the case of the metaphor dinner won't be served.

Q. Did Stephan Hall address Get Shorty?

A. Yes. His fifth point is very important.

"Get Shorty"

1. Under this strategy, we sell ancillary services in the Day-ahead market.
2. Then, the next day, in the real-time market, a trader "zeroes out" the ancillary services, i.e., cancels its commitment (can you say "closes out its position" or "buy to close"?).
3. The profit is made by shorting the ancillary services, i.e., sell high and buy back at a lower price.
4. One concern here is that the traders are doing this strategy without having the ancillary services on standby. In the event that we were actually called upon to provide ancillary services, the traders would scramble to meet those commitments.
5. This is obviously a sensitive issue because of reliability concerns. It would be difficult to justify our position if the lights go out because ancillary services were not available, and the reason the ancillary services were not available was because we were selling them without actually having them in the first place.
6. Also, this strategy might be characterized as "paper trading," since the seller does not actually have the ancillary services to sell. FERC recently denied Morgan Stanley's request to paper trade on the New York ISO.[43] See Ex. SNO-62.

L. Selling Non-Firm Energy as Firm

Q. Did Enron engage in the gaming practice of Selling Non-firm Energy as Firm?

A. Yes.

Q. What evidence demonstrates that Enron sold non-firm energy as firm?

A. Evidence is available from a number of sources. First, the Yoder/Hall memo described this scheme :

> 8. Selling Non-firm Energy as Firm Energy
>
> a. The traders commonly sell non-firm energy to the PX as "firm." "Firm energy," in this context, means that the energy includes ancillary services. The result is that the ISO pays EPMI for ancillary services that Enron claims it is providing, but does not in fact provide.
>
> b. The traders claim that "everybody does this," especially for imports from the Pacific Northwest into California.

[43] Trading Strategies, Stephan Hall, page 1. Emphasis added.

c. At least one complaint was filed with the ISO regarding Enron's practice of doing this. Apparently, Arizona Public Service sold non-firm energy to Enron, which turned around and sold the energy to the ISO as firm. APS cut the energy flow, and then called the ISO and told the ISO what Enron had done.

See Ex. SNO-20.

The practice was not restricted to short term transactions, however. Schedule C also indicates a case where Enron sold a long term transaction as firm without the ability to deliver. CSU firm load sales backed with non-firm transmission in the Rockies. Ex. SNO-123.

Q. What happened in the CSU contract?

A. Enron sold a long term contract for firm energy without a firm path for delivery. The contract was the subject of a substantial reserve on Enron's books.

Q. Do we know when Enron first started this practice?

A. No. It is not difficult to find examples in Enpower of firm sales made with non-firm supplies. The first transaction we have found in Enpower that clearly illustrates this was made at 11:00 A.M. on January 8, 2000.

Deal	Start	Finish	DEAL_CMT	Deal Type	Buy or Sel
278132	1/8/00 11:00	1/8/00 12:00	RT deal non firm export from the ISO at Malin, filling the short side by buying from the NP imbalance market, relieving CONG at Malin, and selling to Puget.	FORWARD	B
278133	1/8/00 11:00	1/8/00 12:00	RT nonfirm export at Malin selling to Puget and buying imbalance to relieve cong.	BUY-RESALE	B
278134	1/8/00 11:00	1/8/00 12:00	see 278132 & 278133.	FORWARD	S
Deal	MW	Buy/Sale Sell Price	CP_NM	Firmness?	
278132	20		California Imbalance	FIRM	
278133	20	0	EPMI California Pool	FIRM	
278134	20		Puget Sound Energy, Inc.	FIRM	
Deal	Contract Price	FULL_NM	Delivery Point	Delivery Point	
278132	0	Mike Driscoll	NP-15	NP-15	
278133	0	Mike Driscoll	NP-15	Malin	
278134	22	Mike Driscoll	Malin	Malin	

In this case, Mike Driscoll, a trader who frequently appears in Enpower schemes has purchased 20 MWs from the California imbalance market. We don't know whether this was a "Thin Man" an intentional overstatement of loads in order to buy at the Ex-post

market or a more traditional purchase. We do know that the description of the transaction makes it clear that it is non-firm. The quality of the power sold is entered as firm. Puget, in this case, purchased non-firm energy which it thought was firm.

Q. Is this unusual?

A. Not at all. A simple Enpower query is to search for firm deals that relay to some degree on HNF – BPA's hourly non-firm transmission schedule. In 1,454 cases, a firm "deal" has a component of non-firm transmission.

Q. What did Enron have in mind?

A. Instructions for Enron's traders make the objectives very clear:

> Portland Shift
> 04/04/2001
>
> 07:44:00 GMT
> GUZMAN -M
>
> California Schedules
>
> Group,
>
> When doing an import or an export from California there are a few important guidelines to remember.
>
> IMPORT -This must be FIRM. A firm import is required so that we provide the spinning reserves to California (we do this by buying firm energy for the import). If the import is non-firm, California will charge us their price for spinning reserve margins. This could easily be $400 per mw come this summer.
>
> EXPORT -This must be NON-FIRM. A non-firm export allows us to provide spinning reserves to our bilat trading partners (or to simply sell the energy without spinning reserves as "non-firm"), and NOT have to pay the California price for spinning reserve margins. Conversely if we do a firm export, we would have to pay for California to supply spinning reserves. And because California will sometime use actual purchased energy for spinning reserves,

this could easily be $400 per mw this summer.
California has also proposed cutting firm exports this summer, so a "firm" export does not imply that the energy would actually be exported anymore than nonfirm.
If you have other questions. Please let me know

Ex. SNO-124

Q. How did Enron get away with this fraudulent practice?

A. Traditionally utilities placed a very high value on personal credibility. This type of manipulation is very easy if these values are not taken to heart. The Enron memo released in Docket No. PA02-02 evidences that Enron unfairly took advantage of complexities and problems within the ISO market for its own profit.

One Example of Enron's manipulation of the market is in their representation of power being firm versus non-firm. Verification of the nature of a deal is difficult, since often the final purchasers have to take the word of the seller on the source. Evidence exists that Enron simply did not inform buyers that their supplies might be interrupted under certain conditions.

Elsewhere within the WSCC, “non-firm” is often intended to mean schedules that can be broken on short notice without explanation. Within the ISO, the term means energy not backed by ancillary services. Put quite simply Enron exploited these differences found within the ISO rules and industries practices.

Q. Is there any mechanism to detect such abuse?

A. Yes, and no. NERC has developed a series of tags designed to identify specific schedules across control areas. The plan, though good in theory, is cumbersome in practice.

Reconciling schedules with tags is highly labor intensive and leaves many opportunities for abuse. The major transmission provider in the Pacific Northwest, the Bonneville Power Administration, still has not successfully implemented the computers systems – three years after these schemes identified above.

M. Ricochet

Q. Did Enron engage in the gaming practice of False Import, Ricochet or Megawatt Laundering?

A. Yes. This strategy has been in use since the beginning of the crisis and the Enron memoranda released in Docket No. PA02-02 evidences that Enron engaged in such practice. During the summer of 2000, a large increase in schedules filed for shipment of power from California to Oregon occurred. The irony of these schedules is that the needed loads in the Pacific Northwest were much lower during the summer, so the probability that such exports were substantive is very low in the summer. I believe the first time this practice came to the attention of the California ISO and PX is when Sam Van Vactor and I apprised California PX and ISO staff of the situation during the summer of 2000.

Q. How do these practices show up in Enpower?

A. The appropriate entry into Enpower for this type of transaction is to indicate that this is a "buy/sell". The following memo describes the by/sell methodology.

> Caroline Emmert
> 09/07/2000 12:22 PM
> To: John M Forney/HOU/ECT@ECT
> cc: Chris Stokley/HOU/ECT@ECT
>
> Subject: Buy/Resells - What We Learned

John,

From our research into Avista and others, here is what we have learned about using Buy/Resells:

Whether to select "Buy From" or "Sell To" upon deal entry is determined by the ultimate purpose of the BR, as shown here:

Purpose:
Pay the Customer (sleeve or other service they have provided to EPMI)

Type is Buy From
Pricing is: Buy = EPMI price
Sell = Customer price

Charge the Customer (services or other, like transmission recapture)

Type is Sell To
Pricing is: Buy = Customer price
Sell = EPMI price

I hope this helps to determine the correct way of entering a buy/resell, and will alleviate settlement discrepancies in the future. If you agree with this, feel free to share it with the real time group.

Caroline

Ex. SNO-100

Q. Why was it necessary for Enron staff to "research" Enpower settings?

A. With the exception of the senior managers, many of the Enron traders were inexperienced – often new to the industry. Errors in entering deals into Enpower were very common. Many, many records either reference errors which occurred or reference apparent efforts to repair errors. Even the "seventeen day" Death Stars show a large variation in deal entry with some Death Stars following the correct Enpower rules and others failing to do so.

Q. What is the significance of the June, 2003 CA ISO memorandum for the investigation of megawatt laundering?

A. It is relatively difficult to rebuild a Ricochet in Enpower since many of the informational links appear to be missing. Logically, paired transactions that move power to Malin and then back out should be marked as "legs." This appears to be exception rather than the rule. When the deals were correctly entered into Enpower we would expect to see a "buy from" buy/resale with at least one delivery point at Malin.

Q. How often did his happen?

A. Very frequently. We found 1,753 buy/resells where Enron paid for the service at Malin. The vast proportion of these were to the south – 1,636 occasions.

A very small number of counterparties dominated this practice.

Deal Type	Direction	Counterparty	Count
BUY-RESALE	B	EPMI California Pool	964
BUY-RESALE	B	Pacificorp	680
BUY-RESALE	B	Avista Corporation - Washington Water Power Division	59
BUY-RESALE	B	Dynegy Power Marketing, Inc.	25

Q. Wasn't this a very costly practice?

A. Yes. On occasion, the fee was as high as $75/MWh.

Q. What was Enron receiving for their payments?

A. We already know that a number of these buy/resell deals reflected caps for Death Stars. Death Stars before mid-June of 2000 were often capped by PGE with Avista providing a sleeve to avoid FERC rules on transactions with Enron affiliates. This is often true of PacifiCorp after June 2000.

It is harder to explain the presence of EPMI California Pool as a counterparty to these arrangements since they neither owned transmission nor provided a cap for Death Stars. Almost all the buy/resell transactions with EPMI's California Pool involved shipments to NP-15 or SP-15. A smaller number involved shipments north from California.

A careful review of Enpower reveals that Enron purchased power from the California Power Exchange on 61 separate occasions from January 7, 2000 through September 9, 2000 and then resold the energy in California – first stopping with a buy/resale at Malin.

Q. Please describe the evidence demonstrating that Enron engaged in the practice of False Import, Ricochet or False Import?

A. The Yoder/Hall memoranda give instructions on how to carry out a "Ricochet:"

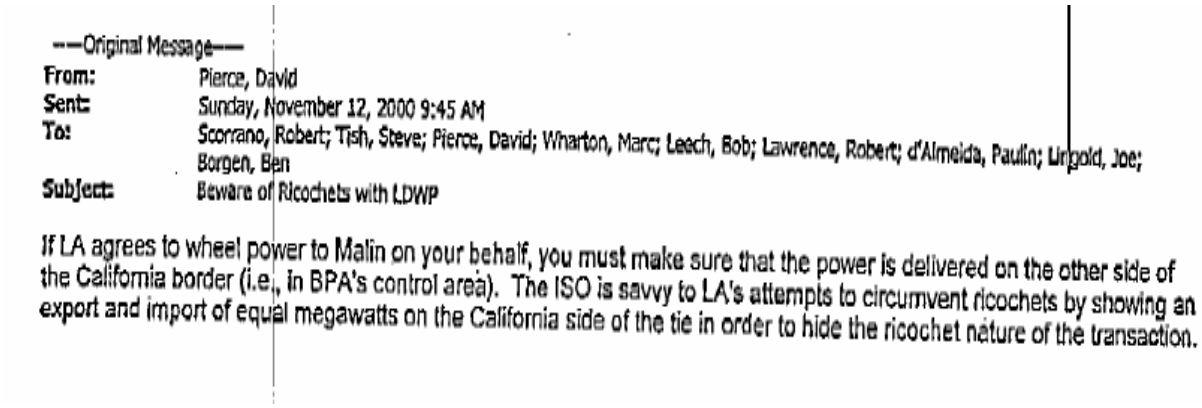
> "Ricochet"
>
> Enron buys energy from the PX in the Day Of market, and schedules it for export. The energy is sent out of California to another party, which charges a small fee per MW, and then Enron buys it back to sell the energy to the ISO real-time market.
>
> The effect of this strategy on market prices and supply is complex. First, it is clear that Enron's intent under this strategy is solely to arbitrage the spread between the PX and the ISO, and not to serve load or meet contractual obligations. Second, Ricochet may increase the Market Clearing Price by increasing the demand for energy. (Increasing the MCP does not directly benefit Enron because it is buying energy from the PX, but it certainly affects other buyers, who must pay the same, higher price.) Third, Ricochet appears to have a neutral effect on supply, because it is returning the exported energy as an import. Fourth, the parties that pay Enron for supplying energy to the real time ex post market are the parties that underscheduled, or underestimated their load, i.e., the IOUs. Ex. SNO-20.

The following internal Enron emails show Enron's knowledge and participation in Ricochets. On January 7, 1999, Harvey Hall sent Tim Belden a spreadsheet of Ricochet transactions involving Williams. SNO-141

From: Harvey Hall/HOU/ECT
Sent: Thursday, January 07, 1999 2:54 PM
To: Tim Belden/HOU/ECT
Subject: Willimams (WESCO) Ricochets

Here are the ricochets related to Williams. Please let me know if you have any questions.

The following email warns traders to make sure the schedule power outside of California so that the ISO does not realize that the schedule is a "Ricochet". By sending power to the BPA control area and bringing back to California Enron was able to hide it's "Ricochet" transactions from the ISO. SNO-143



---Original Message---
From: Pierce, David
Sent: Sunday, November 12, 2000 9:45 AM
To: Scorrano, Robert; Tish, Steve; Pierce, David; Wharton, Marc; Leech, Bob; Lawrence, Robert; d'Almeida, Paulin; Lingold, Joe; Borgen, Ben
Subject: Beware of Ricochets with LDWP

If LA agrees to wheel power to Malin on your behalf, you must make sure that the power is delivered on the other side of the California border (i.e., in BPA's control area). The ISO is savvy to LA's attempts to circumvent ricochets by showing an export and import of equal megawatts on the California side of the tie in order to hide the ricochet nature of the transaction.

Transcripts also document Enron's influence over the trading practices of Portland General Electric. The following transcript demonstrates confusion on the part of a PGE trader who is asked to transmit an Enron Schedule. The trader is then educated that the schedule in question is called a "Ricochet" and that he should accept the schedule.

Conversation between Matt Richards (Pre-scheduling) and Glenn Taylor (Real-Time)

MR Portland Transmission, this is Matt.

GT: I have a question. I have a schedule for our boys, friends, downstairs in Enron, that goes

from TCL to PAC, but to be picked up at Malin.

MR: Yeah?

GT: How do I put that in?

MR: You put it in the from BPA-Tacoma account.

GT: I got that part, it's the other end that I don't know what ...

MR: The Enron? It's Enron to PacCorp at COB?

GT: Oh, OK.

MR: It goes from the to BPA PCW.

GT: so it's going to be to PAC EPM, something like that?

MR: To BPA, PacCorp.

GT: Why would it be BPA on the south, out of Malin?

MR: Where is it really going to? PacCorp, it's going to PacCorp, right?

GT: So it is going to be at BPA?

MR: Where is PacCorp, they're in the Northwest, which means it has to go through the BPA control area. That's why it says, "to BPA."

GT: Well, they're picking it up at Malin.

MR: Well, I know. I just told you, anything at Malin that's going to stay up here in the North has to go through the BPA control area. Say that to me, "anything that goes to Malin . . . "

GT: I'm having a conceptual problem here. Malin is south.

MR: Right.

GT: And it's being generated in the North.

MR: Right. They're called "ricochet schedules." Have you heard that term before?

GT: No, I haven't heard that particular teen before.

MR: They go down there, and they bounce right back up, and when they do that, they stay in BPA. [phone ringing] I gotta go.

GT: It's "to BPA, PAC, EPM."

MR: Right, at C.

GT: OK, bye. Thanks. Ex. SNO-126.

In addition, the California ISO reported that Enron scheduled 48,620 MW worth of Ricochets schedules from January of 2000 to June 21st of 2001. *See* Ex. SNO-17.

Table 10. Potential Real Time Energy Imports Exported in Day-Ahead/Hour-Ahead Schedules (MW)

ID	Name	Jan 1, 2000 - Oct 1, 2000	Oct 2, 2000 - June 21, 2001	Total (MW)
PSE	Puget Sound Energy	140,304	148,479	288,783
PAC	PacificCorp	132,393	35,537	167,930
APS	Arizona Public Service Company	97,239	12,944	110,183
BCHA	British Columbia Power Exchange Corporation	40,748	58,648	99,396
EESI	Enron Energy Services Inc.	25,388	23,232	48,620
SETC	Sempra Energy Trading Corporation	34,738	6,865	41,603
IPC	Idaho Power Company	0	36,681	36,681
BPA	Bonneville Power Administration	15,879	6,828	22,707
AVEI	Avista Energy Inc	3,592	16,184	19,777
AQPC	Aquila Power Corporation	15,357	0	15,357
SRVP	Salt River Project	8,648	1,858	10,506
LDWP	Los Angeles Water and Power	1,975	7,882	9,857
PGE	Portland General Electric	5,406	4,368	9,775
PSNM	Public Service Company of New Mexico	2,427	25	2,452
WESC	Williams Energy Services Corporation	520	1,380	1,900
GLEN	City of Glendale	0	1,388	1,388
DETM	Duke Energy Trading and Marketing, L.L.C.	0	1,350	1,350
SCEM	Southern Company Energy Marketing, L.P.	673	328	1,001

V. THE INTERRELATION OF ENRON'S TRADING SCHEME WITH THE EFFECT ON THE WESTERN MARKET

Q. How and why did Enron's games increase market volatility and price?

A. In Table 1 below, I summarize how and why the various games played by Enron made the market more volatile, less efficient and increased prices.

Table 1: How and Why Enron Games Increased Volatility and Prices

Gaming Practice	**How** game made market more volatile, less efficient, and increased prices: falsely representing supply, demand, and congestion	**Why** game made market more volatile, less efficient, and increased prices: strategies falsely defined available supply and demand, pushing more demand into the spot
Ricochet and False Import:	Enron falsely scheduled exports and imports to artificially increase prices which is inefficient and increases volatility	Misrepresented the availability and loads – created artificial differences between forward and real-time market -- disturbing prices in all regions[44]
Congestion-Related: cutting non-firm; circular scheduling, scheduling counter-flows on out-of-service lines	Enron caused congestion by falsely scheduling and representing generation and loads, which distorts market signals and increases prices	Misrepresented the actual loads and supply availability to meet loads[45] (supply and demand curves)
Ancillary Services Related: Paper trading and double selling	Artificial trading at both high and low prices and demand levels over-emphasized daily and seasonal swings	Misrepresented the supply availability of ancillary services and misrepresented the performance of said services[46]
Selling Non-Firm as Firm:	False representation by substituting a less valuable product (non-firm) for a more valuable product (firm)	Scheduling and bidding of power labeled as firm, with full knowledge that if cut (or forced out) that back-up power would not be provided[47]

[44] Either increasing or decreasing prices from the competitive equilibrium causes dead weight loss. In this case the added uncertainty and unexplained volatility seen by the other market participants increased risk (a real cost) and lowered efficiency.

[45] In addition to the effects explained above, creating congestion causes two different prices in a single market where there should be only one price. This artificially splits the single market into two markets with two prices. Both of the new prices are inefficient with respect to the single price that would have existed without the game—both sides suffer efficiency losses from this.

[46] This can make the ISO think that it has less reserves than it does and therefore pay more. It adds to the uncertainty and volatility of prices.

[47] This increases the risk to the whole system, with the concomitant increase in costs.

Q. Can you define a set of linkages that show the magnitude of Enron's excessive influence and manipulation?

A. Yes. Figure 1 reflects the set of critical Enron linkages to market structure and prices, which can be summarized as follows:

1.) Enron used a set of sophisticated manipulation mechanisms, most notably its deceptive SC practices, its tactics with EnronOnline, its Partnership agreements, its unauthorized use of its customer data, and its gaming of the natural gas market;

2.) In order to opportunistically manipulate markets, Enron designed and executed an entire portfolio of electricity market schemes, including Ricochet, congestion schemes (Death Star, Scheduling Counterflows, and Load-Shift), paper trading of ancillary services, and wash trades;

3.) The most obvious results were extreme market volatility and rising electricity prices, which have produced devastating impacts on consumers throughout the West; and,

4.) These results are all linked to Enron's direct influence on market structure and on prices through overt manipulation, anomalous market behavior that is prohibited gaming according to the FERC's decisions, and affiliate abuse, as I discuss below.

Q. Did the California model of many separate markets further enable market gaming?

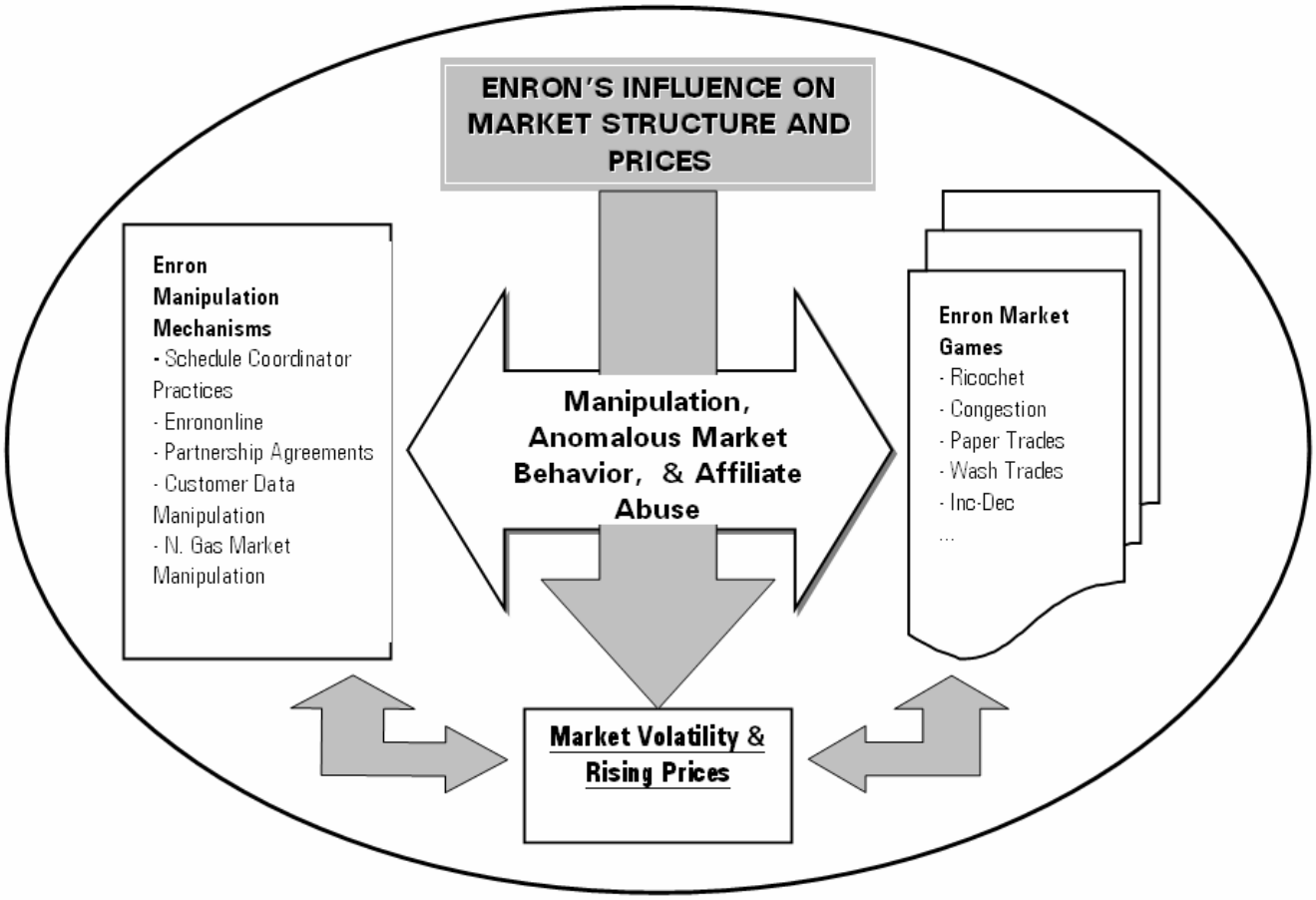
A. Yes. The California model of many separate markets as promoted by Enron, *de facto*, resulted in thinner, less robust sub-markets that were more susceptible to gaming strategies such as Ricochet and Death Star. Enron was able to use gaming strategies such as Ricochet and Death Star to increase prices even though it was not an extremely large player. Enron's market manipulation was made more successful through the information advantages conferred by EnronOnline and the partnership agreements that I discuss

below. Enron's False Export, provided multiple gaming opportunities, particularly during tight supply and ISO Emergency conditions.

Q. How complex was the actual market structure?

A. It was very complex. The sequence of fragmented but related ISO and PX markets determined by ISO tariffs, protocols, and operating requirements was very complex. The ISO's Tariff identifies 38 information and operational steps just for the ISO DA market. (See Attachment 1, CAISO's Scheduling Process) Ex. SNO-127.

Figure 1: Enron's Influence on Market Structure and Prices



Q. Was the interrelationship of the PX and the ISO important?

A. Yes. The Commission has recognized that understanding the interaction of the PX and ISO spot markets with all their complexities, together with the different market operations outside of California, is crucial to understanding and analyzing the impact of the various conduct discussed below.[48]

Q. Please describe the different markets.

A. The ISO and PX formed a series of sequential markets, including forward bilateral contracts, Day-ahead, Hour-ahead, Real-Time, and Out-of-Market (OOM). The day-

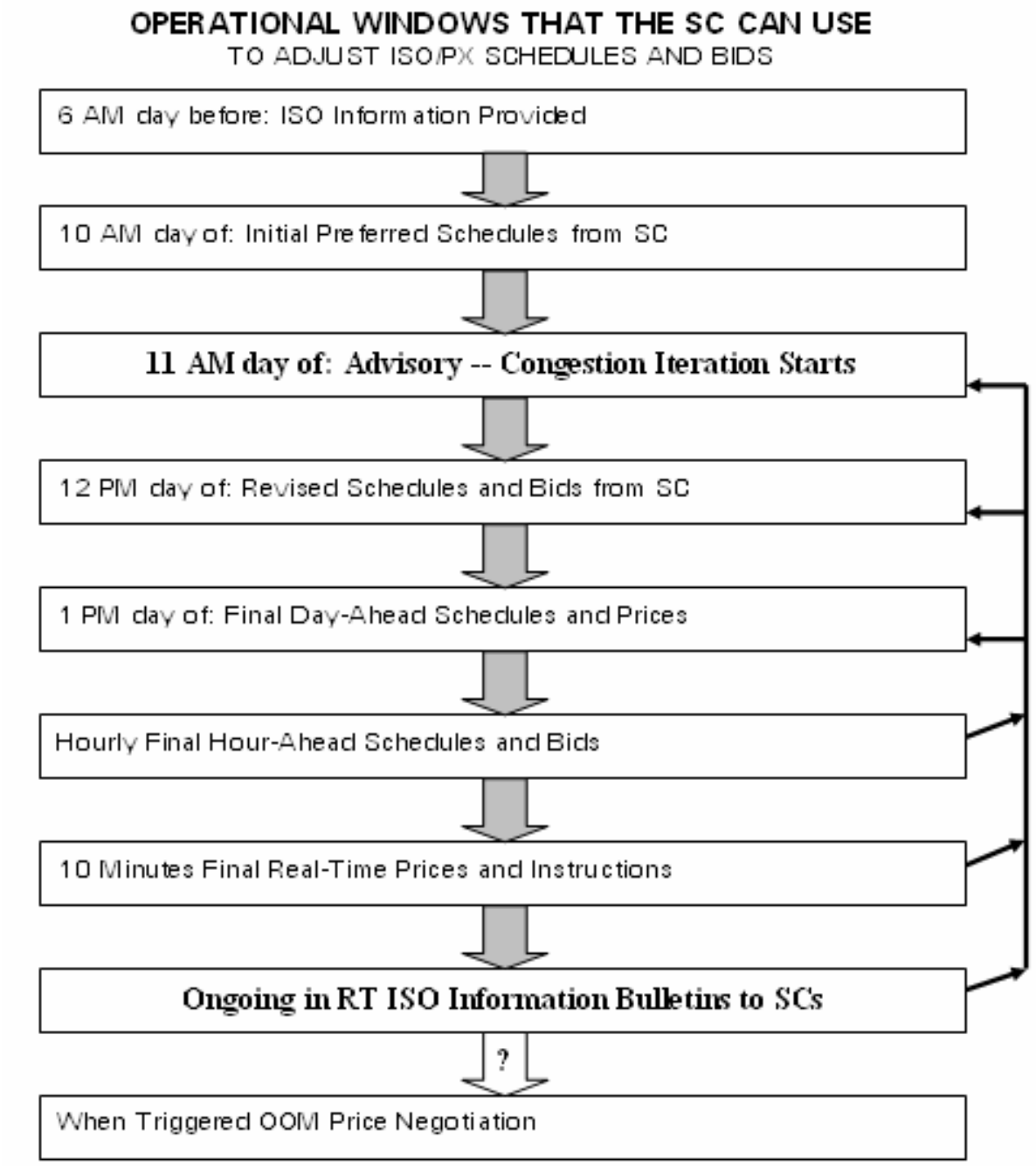
[48] Final FERC Staff Report, Docket No. PA02-2-000 at VI-6.

ahead market was important in determining which generating units would be committed (turned-on) for generation the next day. The hour-ahead market theoretically provided Schedule Coordinators the ability to further optimize schedules and bids. The real-time market was critical for balancing supply and demand and maintaining system security.

Q. What aspects of market structure facilitated Enron's schemes?

A. Within the ISO and PX, there were operational windows that SCs could use to adjust ISO and PX schedules, bids and prices. Figure 1 shows how each SC had a number of operational windows to adjust schedules (generation and loads) and to submit bids (respond to prices in ISO/PX markets and bilateral markets). SCs were able to participate in all markets (DA, HA, RT and, when necessary, the Out-of Market (OOM) process). An SC could assess the advantages of adjusting to the DA market by later purchase and/or sale in either or both the HA and the RT markets.

Figure 2


OPERATIONAL WINDOWS THAT THE SC CAN USE
TO ADJUST ISO/PX SCHEDULES AND BIDS
6 AM day before: ISO Information Provided
10 AM day of: Initial Preferred Schedules from SC
11 AM day of: Advisory -- Congestion Iteration Starts
12 PM day of: Revised Schedules and Bids from SC
1 PM day of: Final Day-Ahead Schedules and Prices
Hourly Final Hour-Ahead Schedules and Bids
10 Minutes Final Real-Time Prices and Instructions
Ongoing in RT ISO Information Bulletins to SCs
?
When Triggered OOM Price Negotiation

Ricochet, Death Star, and other schemes were designed to take advantage of the market scheduling process to withdraw power from day-ahead and hour-ahead markets, to alter real-time markets, and finally to sell the power to the ISO as OOM.

Q. Did some schemes require the initiation of other schemes?

A. Yes. The Ricochet scheme, for example, was linked to numerous other schemes. The initial part of the Ricochet scheme, to short California markets by false export, enabled Enron to prepare to execute other transmission congestion schemes. Enron executed Death Star by creating counter-flow for power coming back into the state in day-ahead ("DA"), hour-ahead ("HA") or real-time ("RT") markets. The beginning of the Ricochet scheme – false export – could be used to obtain counter-flow congesting payments with Death Star, while shorting the California markets, i.e., increasing market scarcity and driving up prices in California. The power claimed to be re-imported in the Ricochet scheme never actually left the State, so it is possible that no congestion was created thereby in RT.

The conditions initiated to create false export, the first part of the Ricochet scheme, also provided the opportunity to schedule counter-flows. This enabled Enron to obtain congestion fees with the Schedule Counterflows scheme when lines were out-of-service.

Q. Please explain the major steps that are required for an entity to schedule, bid and execute Ricochet gaming?

A. I can summarize the execution of the Ricochet Scheme in twelve steps. To define the essential steps for Ricochet Gaming, I first develop a simplified CAISO's scheduling process. I then associate that sequence with the actions that would be taken to initiate Ricochet schemes. I present these twelve steps in Figure 3.

Q. Please explain figure 3.

A. The first and second columns of Figure 3 show the "normal market operation" sequence of 12 basic SC steps to participate in the DA, HA, RT, and out-of- market ("OOM") processes. The third column of Figure 3 shows how an entity such as Enron could have executed ricochet gaming and other gaming strategies as an associated twelve-step process.

Figure 3: Detailed steps to Execute Ricochet Through ISO, PX, and Bilateral Markets

Steps in the Market Time Frame		Normal Market Operation	Enron's Use of Ricochet (w/ EOL & Partnerships)
1	Day-Ahead (DA) –6 PM two days ahead	SC receives ISO forecast of market, grid & load conditions	Models market conditions, forward prices, and transmission constraints
2	DA Market – 6 AM, one day ahead	SC receives ISO update on market, grid, load, and ancillary services (AS)	Defines targets to "false export" power, shift load, and apply gaming tactics
3	DA Market – 7 AM, one day ahead	SC submits PX bids and preliminary ISO bids (energy, congestion, AS)	Preplanning to test PX and ISO conditions, prices, & create signals
4	DA Market 9:30 - 10 AM, one day ahead	SC decides to accept PX commitments & receives PX prices	Determine whether some part of Ricochet schedule is to be PX export
5	DA Market – 10 AM	SC submits initial "preferred" schedules and bids to ISO	Determine best ISO schedules and bids to test ISO grid conditions and prices
6	DA Market – 11 AM to 12 PM	SC receives ISO "advisory dispatch" in the "congestion iteration window"	Determines initial ISO schedules & prices to assess false export and gaming
7	DA Market – 12 PM	SC submits final DA schedules and bids (energy, congestion, AS) to ISO	Determines final DA schedules and bids, including DA false exports and loads
8	DA Market – 1 PM	SC receives final schedules and bids from ISO	Evaluates DA schedules and prices to define HA/RT conditions for gaming
9	Hour-Ahead (HA) Market – each hour	SC submits HA bids and schedules to ISO	Submits HA schedules and bids to increase prices in RT and trigger OOM
10	Real-Time (RT) Market - each 10 minutes	SC submits RT bids and changes generation and loads (incs/decs)	Adjusts bids, generation, and loads to increase RT and trigger OOM
11	Ongoing ISO Notices	SC obtains ongoing ISO electronic notices about grid and market conditions	Changes DA/HA/RT schedules, bids, and gaming tactics in response to notices
12	Out-of Market (OOM) – ISO determines	SC negotiates with ISO to provide OOM needs	Negotiates OOM prices (using EOL) & receives profits from partners

Q. Please explain Figure 3 by discussing the steps that Enron could have used to carry out its Ricochet gaming activity.

A. With regard to Figure 3, the twelve steps to execute the Ricochet scheme are as follows. Please note that for clarity of exposition, I will explain the steps in the present tense.

Step 1. At 6:00 PM two days ahead, Enron receives published forecasts of ISO grid conditions, including load forecasts on specific transmission lines, scheduled transmission outages, congestion, available transmission capacity (ATC), expected energy prices, and expected congestion prices. Ex. SNO-128, at pages 826-827. This enables Enron to model market conditions, including spot and forward market prices, and to evaluate import/export conditions, congestion, and possible ISO contingencies (e.g., plant and transmission outages).

Step 2. By 6:00 AM, one day ahead of final DA schedules and prices, Enron receives from the ISO an update of system load forecasts. Ex. SNO-128, at pages 827-827A. This allows Enron to evaluate market and grid conditions, congestion, possible constraints, and gaming opportunities. This gives Enron further opportunity to examine targets for false export of power, opportunities to shift generation and load, and ways to apply gaming tactics. Enron then provides the ISO with its initial load forecasts for its customers.

Step 3. At 7:00 AM, the PX accepts Enron's hourly bids for power and loads for the next-day energy market. At this stage, Enron submits PX bids and schedules to test (diagnose) the PX and ISO markets. Enron can later revoke (unwind) these commitments by simply rescheduling in later ISO and bilateral markets.

Step 4. Between 9:30 and 10:00 AM, Enron submits individual generation and load schedules to the PX, including ISO incremental/detrimental prices for congestion. These bids for PX power are then processed to determine final day-ahead prices. This provides another opportunity for Enron to diagnose price impacts and to assess expected

market effects. By 10:00 AM, Enron is notified of final PX DA market clearing prices. The PX then submits its joint initial preferred schedule of generation and loads to ISO. Ex. SNO-128, at pages 827A to 828.

Step 5. At 10:00 AM, Enron and all other SCs submit initial preferred DA energy schedules and bids to the ISO. Ex. SNO-128, at pages 828A to 830 Enron uses this to evaluate the ISO system, obtain preliminary congestion prices, and evaluate the viability of scheduling and bid strategies. This step is also used to further test false exports as well as generation/load shift strategies to accomplish Ricochet and other schemes.

Step 6. At 11:00 AM, the ISO provides Enron with advisory dispatch schedules for energy, ancillary services, and inc/dec (congestion) prices, including exports. This advisory dispatch is advanced information for Enron to pursue specific bidding and scheduling strategies. If there is congestion, this gives SCs an opportunity between 11:00 AM and 12:00 PM to revise all schedules and bids, Ex. SNO-128, at pages 830 to 831A including congestion and exports, in the one-hour "congestion iteration window." Most importantly, this gives Enron advanced information about how to opportunistically resubmit schedules and bids for ISO markets (energy, congestion, and ancillary services), including false exports. Ex. SNO-128, at pages 827A to 833 and Ex. SNO-129 at pages 861.

Step 7. At 12:00 PM, Enron submits to the ISO its revised final preferred schedules, bids, and bids for congestion. Ex. SNO-128, at pages 831 to 831A. This enables Enron to prepare for and execute gaming strategies later in the sequence of

market steps. False exports in the DA market affect DA prices as well as the availability of power in subsequent HA and DA markets.

Step 8. At 1:00 PM, Enron is told of final DA dispatch schedules, congestion prices, and ancillary services prices for the 24 hours starting at midnight, eleven hours ahead of actual DA market operation.[49] Ex. SNO-128, at pages 833 to 834-A. At this point, DA schedules and prices are fixed. This better defines Enron's opportunities to schedule additional false exports through HA and RT so that it can further increase RT prices and later trigger OOM purchases by the ISO.[50]

Step 9. The HA market provides Enron with a scheduling and bidding window each hour (24 x7). [51] Ex. SNO-128, at pages 835 to 836-A . Every hour Enron can revise and resubmit its package of power schedules (including exports), loads, congestion prices, and ancillary services schedules/bids.52 Additional Enron false exports in the HA market act to increase power scarcity in California and to increase RT prices. Hour-ahead information provided to Enron in Steps 6, 7, and 8 further enables it to submit false schedules and bids.

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[49] SCs do not need to comply with these DA schedules or face the DA prices, as SCs can liquidate positions in the Hour-Ahead (HA) market or face settlements based on the difference between DA and HA or Real-Time market prices.

[50] Opportunistically Enron's commitments to the DA market were liquidated in the HA and RT markets. This enabled Enron to reschedule power and resubmit bids, such as when supply-demand balance was tight, transmission lines were out, exports increased ISO/PX prices, or when exports would trigger OOM price negotiations. One consequence is that the SC must pay the differences in settlement costs, between DA and HA, where PX energy market, ISO ancillary services markets, or congestion prices were involved. Strictly speaking, bilateral schedules, such as for exports, did not affect settlement between DA and HA markets.

[51]

[52] HA schedules and bids are required 2 hours and 15 minutes prior to the operating hour. ISO returns final schedules to SCs within 1 hour and 15 minutes prior to the operating hour.

Step 10. Enron uses current RT ISO market prices to forecast RT prices in future periods, as changes occur in actual electricity generation or load levels. Enron then submits inc/dec bids in response to RT prices and congestion, or to increase exports. Ex. SNO-128 at pages 863 to 864; Ex. SNO-129, at pages 676 to 677. Real-time market information also allows Enron to position itself in Steps 6, 7, 8 and 9 to submit false schedules and bids.

Step 11. The ISO provides Enron with electronic notice during any significant contingency, including (a) a plant suddenly out, (b) a transmission line failure, or (c) emergency ISO conditions that trigger Stage I, II, or III alerts. Ex. SNO-129 at page 707. In emergency conditions Enron is given notice to comply with ISO scheduling and dispatch instructions.[53] Ongoing ISO notices about grid and market conditions enable Enron to position itself in Steps 6, 7, 8, 9, and 10 to submit additional false schedules and bids.

Step 12. Lack of power availability in the RT market, such as by false export, can trigger ISO to procure OOM power based on negotiated purchase prices.[54] At this stage, RT prices are inevitably very high and power is scarce, by definition, which gives Enron the opportunity to negotiate OOM prices with ISO.

Q. Can you summarize the Ricochet scheme in diagrammatic form?

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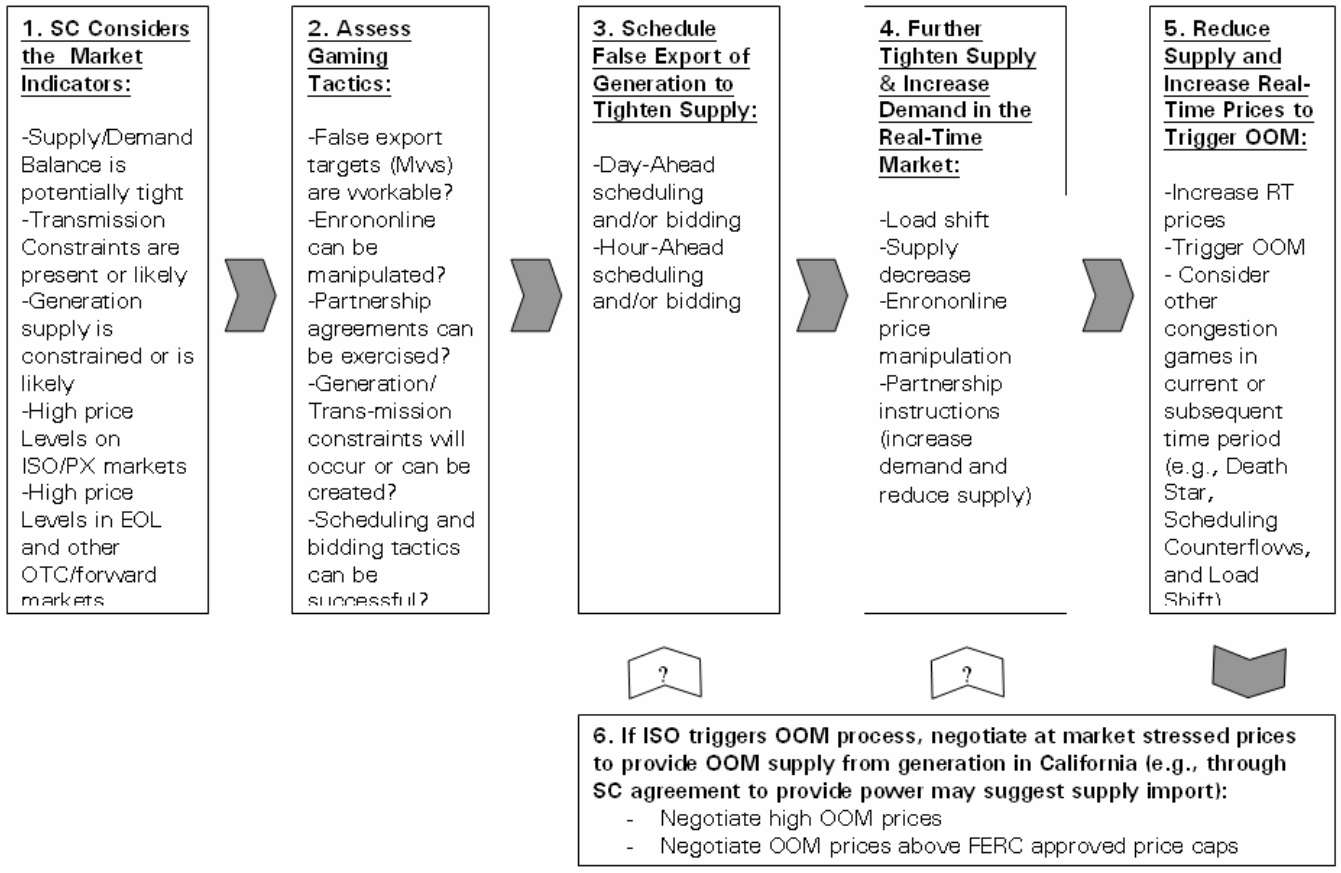
[53] All SCs have obligations to comply with ISO dispatch instructions and operating orders, pursuant to DP 2.1 (Sheet 674); http://www.caiso.com/docs/2000/05/05/2000050515503014035.pdf., and ISO Tariff sections 2.3.1.2.1, ISO Tariff (Sheet 27); and 5.6.2 ISO Tariff (Sheet 147)

[54] During emergency circumstances, this placed Enron in a position to negotiate with the ISO to sell power under stress OOM conditions. When the ISO called for OOM, the FERC's authorized price caps no longer applied and Enron was positioned to charge prices up to or above authorized price limits.

A. Yes. Consistent with the above 12 steps, I show a diagram of the execution of Ricochet in Figure 4.

Figure 4:
SC STEPS TO EXECUTE THE RICOCHET GAME



Q. Following your Figure 4, can you explain how Enron executed the Ricochet scheme in violation of the MMIP?

A. Yes. To begin the Ricochet scheme, Enron would schedule exports of power in some combination of (a) PX energy, (b) SC-to-SC trades, (c) bilateral trades, (d) ancillary services, or (e) congestion relief. In a given day or hour, Ricochet was but one of a set of interlocking schemes that Enron could use, given the plethora of trading options, over-the-counter markets, and partnership arrangements at Enron's disposal.

As a SC in the DA market, Enron obtained hourly information from the ISO about forecasted grid conditions and load forecasts, including expected congestion and energy prices. Enron's information position was then enhanced by HA price and congestion information and RT price and congestion information, as well as routine ISO bulletins to SCs about specific transmission conditions, loop flow conditions, congestion, and supply.

In the Ricochet scheme, the primary effects were to a) reduce energy supplies in all markets by falsely exporting power, and b) preclude prices from falling in markets in the West and ISO/PX through concerted actions with partners and EnronOnline. This made it profitable for Enron to park power on paper outside the ISO under agreements with other SCs or in "shell" transactions (wash-trades), so that the increased supply was kept secret to marketers and buyers in the other parts of the West. Enron's risk was that power, falsely exported, would not be sold thus causing losses in revenue and profits. During emergency conditions or even Power Alerts, however, Enron could reduce that

risk by creating artificial scarcity, in order to enhance profits.[55] Ex. SNO-130. Thus, to profit from the Ricochet scheme, Enron submitted false information about the actual export of power and the availability of power, particularly in response to stress conditions.

Q. Should Enron's efforts to increase RT or OOM prices be considered gaming, in violation of the ISO's MMIP?

A. Yes. MMIP Section 2.1.5, applies directly to Enron's efforts to increase RT prices and to Enron's attempts to trigger OOM prices.[56] *See* Ex. SNO-63.

Q. Do Ricochet and the related congestion schemes exhibit the characteristics of these MMIP violations?

A. Yes. Ricochet and the related congestion schemes -- Death Star, Counter-Flow Scheduling, and Load Shift – exhibited the gaming characteristics that violated the ISO's MMIP, particularly when combined with EnronOnline and partnership activities. Enron's violation rests on the fact that its actions caused RT prices to increase and triggered OOM.

Q. Did the FERC Staff consider Enron's execution of the Ricochet scheme to be in violation of the ISO's tariffs and protocols?

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[55] In 2000, intentional exports used to execute the Ricochet scheme had the potential to trigger some of the ISO's declared 85 Power Watch days, 77 No Touch days, and 55 Emergency days when power supplies were below acceptable minimums. Total Number of No Touch, Alert, Warning, Emergency, and Power Watch for 1998-2001, California ISO. Prepared by Emergency Operations, 28 August 2001. Acceptable minimums are determined by NERC and WSCC, based on generation operating reserves (spinning and non-spinning reserves).

[56] MMIP 2.1.1.5 further provides that: "The Market surveillance Unit shall evaluate, on an ongoing basis, whether the continued or persistent presence of such circumstances indicates the presence of behavior that is designed to or has the potential to distort the operation and efficient functioning of a competitive market, e.g., the strategic withholding and redeclaring of capacity, and whether it indicates the presence and exercise of market power or other unacceptable practices." ISO Market Monitoring & Information Protocol (Tariff Sheets 717); http://www.caiso.com/docs/2000/05/05/2000050515513914079.pdf.

A. Yes. The FERC Final Report on Price Manipulation in Western Markets (March 2003) concludes that Ricochet "at a minimum, is an example of anomalous market behavior – that is, "behavior that departs significantly from the normal behavior in competitive markets that do not require continuing regulation or behavior leading to unusual or unexplained market outcomes."[57] As the FERC report explained,

> Suppliers knew that the ISO would pay any price in an effort to avoid black-outs…that this behavior (raising prices at the last minute), when buyers were unable or incapable of saying no, was not legitimate arbitrage, but was an exercise of market power…as inappropriate gaming of the system.[58] In addition, the Commission's Order revoking Market Based Rates further explain Enron's violation of the MMIP as a result of Ricochet gaming. 103 FERC ¶ 61,343 at P 53.

Q. Can You Explain How Certain Enron Schemes Are Linked?

A. Yes. One sequence of linked Enron schemes involves False Export, Death Star, Scheduling Out, Ricochet, and EnronOnline. As explained in Enron's Services Trading Handbook, Ex. SNO-76, describing partnership actions, when Enron's Scheduling Coordinator and its specific partners expected high RT ISO prices and congestion, a series of actions followed. Enron and its partners used False Export to park (on paper) power outside of California in the ISO's DA and HA markets. False Export enabled Enron to execute Death Star (Circular Scheduling); falsely scheduling transmission to create apparent congestion on a line and to also schedule counterflow so as to obtain undue congestion relief revenues.

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[57] Final Staff Report, at VI-18, citing ISO MMIP Section 2.1.1.

[58] *Id.* at VI-18.

False Export also enabled Enron to apply the Schedule-Out scheme; opportunistically scheduling power either out of the State or back into the State on lines that were out-of-service, thereby obtaining undue congestion revenues. False Export was also used to thin California's market by parking power out-of-state (on paper), which with the concerted actions of Enron's partners, triggered higher ISO RT prices and ultimately OOM power needs – the Ricochet Scheme. Enron and its partners were then prepared to provide additional RT or OOM power at artificially increased prices.

Q. Did Enron Seek to Execute These Schemes, in Conjunction with its Partnership Agreements and EnronOnline, as a Linked Set Of Options Within The ISO's Timeline For Scheduling And Bidding?

A. Yes. When Enron and its partners were able to forecast high RT ISO prices and acted to increase RT, OOM, and congestion prices through coordinated actions, Enron used False Export, Death Star, Scheduling-Out, and Ricochet in combination. Before the DA market, Enron received preliminary information from the ISO and ongoing price information from EnronOnline as well as from the ISO's HA and RT markets. Enron used this information to opportunistically execute this set of schemes as a package, depending on the expected profitability from doing so. Thus, Enron with help from its partners initiated False Export to position itself and its partners to subsequently execute Death Star, Scheduling Out, and Ricochet gaming options in order to increase prices in the ISO's DA, HA, RT, and OOM markets.

Q. Did Enron Use Elements Of The SC Operational Windows that You Explain In Figure 2 to accomplish aspects of this linked combination of schemes?

A. Yes. Enron's execution of schemes involved the same elements that an SC could have used within the ISO's scheduling and bidding process.

Q: Did Enron's Execute These Linked Schemes Within The 12 Operational Steps For SC Scheduling And Bidding Described In Figure 2.

A: Yes.

Q: Did Enron use all of the combination of schemes – False Scheduling, Death Star, Scheduling-Out, and Ricochet – in any one period of time (e.g., a 32 hour forecasting and scheduling/bidding period).

A: Enron and its partners used false scheduling and bidding to position themselves to maximize profits from this set of schemes, which were executed opportunistically, but not necessarily all in combination at one period of time.

Q: Does Enron's Services Handbook describe the actions of specific partners to falsely schedule and bid to accomplish False Export, Death Star, Scheduling Out, and Ricochet gaming options?

A: Yes. It even specifies the specific products traded, transmission lines that were used by certain partners to initiate a sequence of gaming opportunities (e.g., with "High RT Prices"), and profit-sharing arrangements from this collusion. *See* Ex. SNO-46.

Q: Is there a general pattern to the tactics orchestrated by Enron to scheme the market using its partnership agreements?

A: Yes. Enron's tactics with partnership entities included (1) false DA/HA export – false scheduling – by Enron and its partnership entities, particularly to park power with other partnership entities, (2) false DA/HA scheduling of power over specific transmission

lines to facilitate congestion gaming opportunities; (3) use of bilateral indices and bilateral deals, including EnronOnline, to establish reference points for trading and profit sharing among Enron and its partners; 4) scheduling of DA/HA ancillary services to achieve paper trading; (5) intentional changes in RT generation patterns to increase (decrease) prices.

Q. Can you explain, using your 12 step description of Enron's scheduling process, how specific aspects of Enron's schemes are linked with respect to the services handbook?

A. Yes. The Enron Services Handbook illustrates how conditions for high ex post (RT) ISO prices, forecast by Enron and its SC partners, trigger the following set of actions through the instructions of Enron:

Enron and its partners were able to "Generate or Import and fake, or Increase Load [to] GET PAID THE EX-POST PRICE" (*See* Ex.SNO-46).

Steps 1 to 4 provide Enron and its partners the opportunity to evaluate market conditions and forecast high (low) ex post or RT ISO prices. Enron could compare the forecasts of ISO ex post prices to its EnronOnline bilateral price indices and Enron could engage in artificial EnronOnline price manipulation to further increase (decrease) the markets perception of prices. On an ongoing basis, Enron and its partners could also compare ISO ex-post prices and EnronOnline prices to PX prices (in Steps 6, 7, or 8) and to ISO HA prices (in Step 10); In Steps 5 through 7, City of Glendale would achieve "Day-Ahead Parking" of power and ancillary services with El Paso Electric (EPE) across Mead, Sylmar, and Lugo-Victor transmission lines.

In Steps 5 through 7 Enron's other partners (El Paso Electric, City of Redding, Puget Power & Light, Colorado River Commission, Plains Electric, Commission Federal de Electricidad, and Washington Water Power) would schedule DA power over specific transmission lines to Park power and represent false schedules;

Having accomplished DA false export and other DA false scheduling, in Step 8, Enron and its partners could be paid DA congestion prices for false scheduling to execute the Death Star scheme or false scheduling to execute the Counter-Flows scheme on transmission lines that were scheduled off or derated;

In Step 9, City of Glendale would bid in Replacement Reserves on an Hour-Ahead (HA) basis, for example over Mead transmission through Nevada Power which also could be used to "park" additional power outside California;

In Step 9, Enron's other partners (El Paso Electric, City of Redding, Puget Power & Light, Colorado River Commission, Plains Electric, Commission Federal de Electricidad, and Washington Water Power) would bid in Replacement Reserves, Ancillary Services, or Supplemental Energy on an Hour-Ahead (HA) basis, over specific transmission links (Exhibit-RM-105 at page 1), creating additional capability to "park" power outside of California;

Having accomplished HA false export and other HA false scheduling, in Step 9, Enron and its partners could be paid HA congestion prices for again scheduling power to execute the Death Star scheme or the Scheduling Counter-Flows scheme on transmission lines that were scheduled off or derated. Further false export would also allow Enron and

its partners to get paid higher ex-post ISO prices and possibly trigger OOM, i.e., to execute Ricochet.

In Step 10, to take advantage of false export and obtain high Ex Post CAISO prices City of Glendale and others59 would then falsely import over specific lines in RT, including import of the power that these same entities falsely exported in the DA/HA in Steps 5 to 7. Enron and its partners could also turn down-generators to further increase RT prices and attempt to trigger OOM

In Step 11, Enron and its partners would respond to specific ISO notices, particularly notices that transmission lines were turned off or derated because of maintenance or forced-outage, and possibly execute the Death-Star scheme, the Schedule Counter-Flows scheme, or trigger OOM (Ricochet).

In Step 12, Enron and its partners would take advantage of the ISO's declaration of the need for OOM power, created by false scheduling and parking that triggered the ISO's perception of declining power reserves and declared ISO emergencies (Stages 1, 2, and 3), to then sell power back to ISO at inflated OOM prices – the Ricochet scheme.

Q. Does this suggest that Enron's gaming tactics were executed opportunistically as an integrated sequence of schemes that could be executed as grid and market conditions changed?

A. Yes. The intergrated relationship of Enron's schemes are most obvious under conditions where ISO ex-post (RT) prices are forecast to be high, false import and false scheduling can create artificial scarcity in the West, and Enron is positioned to take advantage of

[59] Others included El Paso Electric, Colorado River, Valley Electric, and Redding.

transmission line outages, plant outages, and transmission counter-flow conditions. For example, during periods of high ISO ex-post prices false export by Enron and its partners was an initial step to execute any one or more of a set of schemes, including Counter-Flow (with lines out), Death-Star, Non-firm Exports, Paper Trading, and Ricochet. (Final Staff Report at VI-17 to VI-38) Similarly, during periods of expected low ISO ex-post prices, Enron and its partners acted to falsely import and schedule in DA/HA (Steps 5 to 9) in order to turn around and "Artificially reduce load and export [to] PAY THE EX-POST PRICE." (Ex. SNO-46)

Q. Are Enron's gaming tactics to execute interlocking schemes also directly tied to its use of partnership agreements and Enrononline?

A. Yes. As the sequence of actions above explain in relationship to the 12 Steps, Enron's interlinked gaming tactics made direct and explicit use of its partnership agreements and EnronOnline.

Q. Are there partnership transactions that indicate Enron traded with its affiliate and relied on EnronOnline?

A. Yes. Enron's Services Handbook explains arrangements between EnPower, EPMI, and its partnership entities, including Enron's use of its "Services Desk" and "Real Time Desk" to book energy transactions, "quote them a price," and the like. The Commission's Final Report on Market Manipulation also explains the relationships between EnronOnline, Enron, and partnership entities.

FERC staff attributes the "one to many" trading platform design of EOL that led to trading abuses while giving Enron "unprecedented influence" over the markets.

> The design of EOL alone greatly lends itself to trading abuses and gave Enron unprecedented influence over energy markets. Using choice markets, wash trading, and other strategies, EOL's one-to-many trading platform (in which EOL was the counterparty on every trade) enabled Enron to send false signals, including volume and pricing, to the marketplace. Because the platform was operated entirely under Enron's discretion, Enron was able to present or influence the market in any way it wished. Specifically, Enron used its wash trading activities to deceive EOL users by giving the impression of a much deeper and more developed market, thus increasing the industry's faith in EOL. Overall, these false signals increased Enron's ability to unilaterally manipulate industry data and price indices under EOL's guise as a legitimate exchange measuring real market activity.[60]

FERC Staff found that this influence invited counterparties to wash trades that caused artificial price volatility and ultimately raised the prices.

> EnronOnline (EOL), which gave Enron proprietary knowledge of market conditions not available to other market participants, was a key enabler of wash trading. This created a false sense of market liquidity, which can cause artificial volatility and distort prices. Enron's informational trading advantage on EOL was lucrative; the company took large positions and was an active, successful speculator. Staff estimates Enron's speculative profits from EOL exceeded $500 million in 2000 and 2001. These peculative profits in financial instruments allowed Enron to sustain trading losses in physical trading. Staff further finds that Enron manipulated thinly traded physical markets to profit in financial markets. The Report recommends that the Commission prohibit the use of one-to-many trading platforms such as EOL and explicitly prohibit wash trading.61

In conclusion, Staff recommended "that the Commission establish specific rules banning any prearranged trades that wash and prohibiting the reporting of affiliate trades to

[60] Id at VII-13.
[61] FERC Final Staff Report at ES-2.

industry indices."62 In addition, the Staff urged the Commission to "disallow market-based rates for public utilities that use trading platforms unless the owners or operators of those platforms agree to provide the Commission Staff with full access to trade reporting and order book information for the trading systems.63

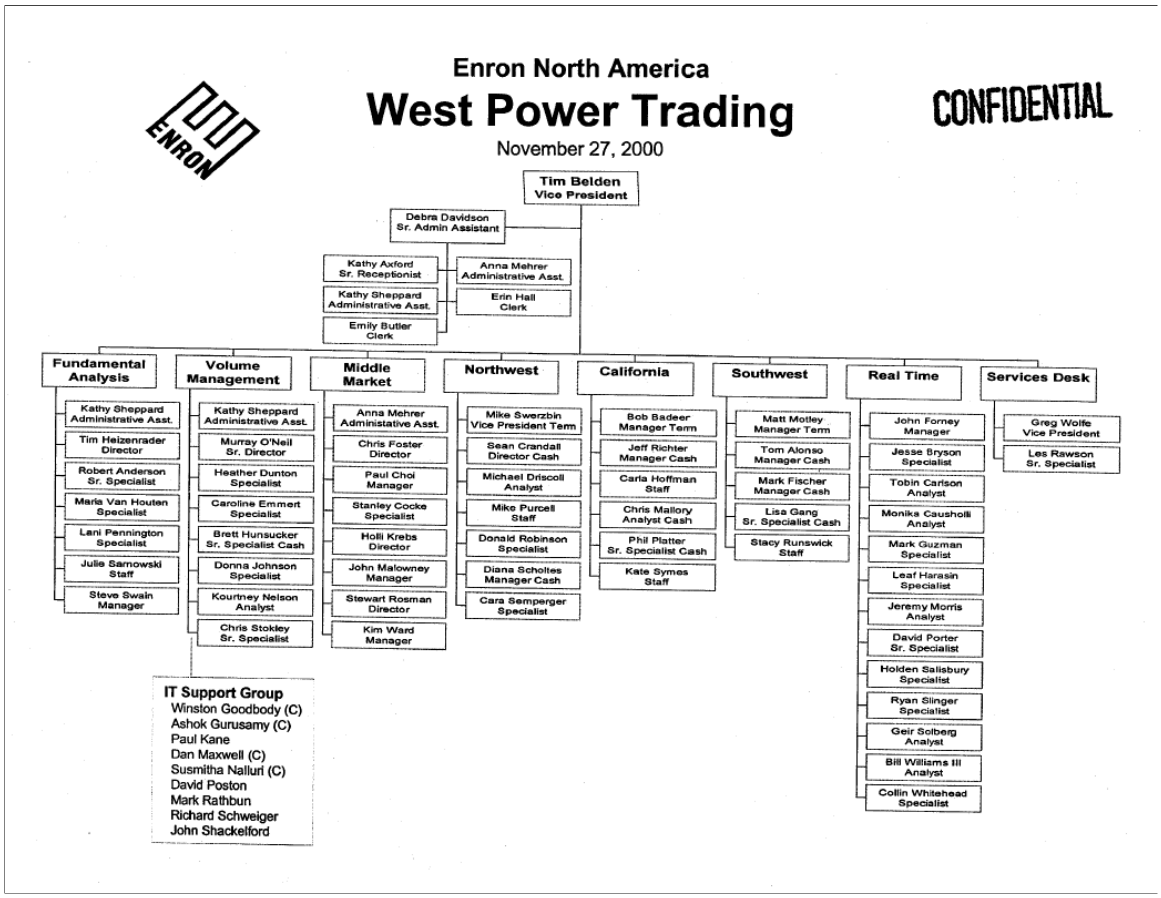
VI. RESPONDENTS WITH WHOM ENRON ENTERED INTO PARTNERSHIPS, ALLIANCES OR OTHER ARRANGEMENTS TO FACILITATE GAMING PRACTICES

Introduction

Q. How was Enron's western electricity operation organized?

A. The "West Desk" was situated in Portland, Oregon. The office was organized as a series of departments as indicated below in a document we obtained from Enron's warehouse.

[62] Id. at VII-15.
[63] Id. at VII-15



While various Enron schemes were implemented from any number of the "desks", the specific partnership arrangements had been assigned to the Services Desk on January 13, 2000.

> As regulatory changes, competitive markets, and institutions such as the California IS0 increase the complexity of power trading, scheduling and settlements, more and more organizations are outsourcing certain tasks rather than manage these tasks themselves. EPMl is increasingly being called on to provide these services. Services transactions generally include ongoing EPMl performance obligations and greater daily customer interaction. Examples of these types of transactions include El Paso Electric, Valley Electric, Glendale, Enron Energy Services, and many others that are currently being contemplated or finalized.

Ex. SNO-131.

West Power's Services Desk continued a number of existing relationships that had been in place in 1999. The chart below is from the "1999 Final Summary."

1999 Middle Market Results

Service Book Transactions

Customer	Customer Type	Transaction Type	Outside of CA DA Scheduling	CA DA Scheduling	CA HA Scheduling	DA Commodity	HA Commodity	Settlements	Fee Structure: Monthly Fee	Fee Structure: Commodity Charge	Fee Structure: Shared Equity
Enron Energy Services	ESP	CA SC Services		X		X		X	5,000.00		
El Paso Electric	IOU	CA SC Services/System Optimization	X	X	X	X	X	X			
Valley Electric	Public Power	CA SC Services/System Optimization	X	X	X	X	X	X			
CFE	IOU	CA SC Services									
Powerex	IOU	CA SC Services									
Puget Energy	IOU	CA SC Services			X			X			
WWP	IOU	CA SC Services									
Mega	Marketer	CA SC Services		X					3,000.00		
CRC	Public Power	CA SC Services									
Glendale	Public Power	CA SC Services									
Plains	Public Power	CA SC Services									
Redding	Public Power	CA SC Services									
Tosco	IPP	CA SC Services/Generation Optimization		X	X	X	X	X	Embedded in Commodity		
Louisiana Pacific	IPP	CA SC Services/Generation Optimization		X	X	X	X	X	Embedded in Commodity		
Thermo Ecotek	IPP	CA SC Services/Generation Optimization		X	X	X	X	X	Embedded in Commodity		
Montana Power Co	IOU	Real Time Commodity					X		Embedded in Commodity		

Note: El Paso and Redding HA activity includes taking price risk.

This chart indicates that at the start of the time period under analysis fifteen different counterparties were customers of the Services Desk.

At the end of 1998, Enron legal recommended three different deal structures:

Product 1:	ECT is asked to provide "consulting services" to a Customer. The Customer would like ECT to be its "window" to the trading world. ECT is asked to provide Customer its ideas or proposals on how the Customer can manage its power needs/capacity. Individual transactions would not necessarily be conducted through ECT; rather ECT would tell Customer all the options, make a recommendation and then let Customer decide what it wanted to do. This structure was proposed in the Ormet deal. When ECT is merely providing "consulting services", I believe the CFTC risks of being deemed an advisor are high. Accordingly, I do not believe this is the preferred structure.
Product 2:	ECT is asked to provide information concerning the market place and market quotes from third parties when requested. Customer has the ability to require ECT to enter into trades with such third parties, in which case ECT and Customer will be deemed to have entered into a similar trade. While this structure is preferable to one where ECT enters into trades under its paper for the benefit of Customer with risks and losses "passed through" to Customer, it represents significant potential issues relating to conflicts/corporate opportunity, and depending on the structure, CFTC/CEA concerns. This structure was proposed in the Panda deal.
Product 3:	ECT is asked within clearly defined limits to execute trades as agent for Customer. ECT provides specific operational and administrative functions such as hourly/day ahead trading, scheduling, deal clearing, portfolio reporting, settlements, etc. The bulk of the value to ECT in this structure is the fixed fee, rather than any incentive fee. This is the structure currently being discussed with PP&L.

Ex. SNO-132.

This recommendation also provided a series of instructions on monitoring the relationship between Enron and its services clients. Clearly, few of these recommendations were followed. The current proceeding is reviewing, in effect, just how far Enron traders departed from these instructions – in effect becoming the master rather than the servant in the services relationship.

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Q. How seriously should we take Dr. Acton's inability to find documents memorializing the partnership agreements?

A. I would recommend giving little weight to his inability to find documents for several reasons.

First, Enron had never organized a central repository for contracts. Second, it isn't at all clear that Enron was very systematic in accumulating signed contracts. Several documents found in Enron's warehouse indicate that Enron had not received signed contracts or was willing to proceed on a verbal basis. Ex. SNO-133.

On July 29,1999, Christian Yoder sent his superior, Elizabeth Sager, a memo entitled "Scheduling Coordination Services." SNO-134

> Attached are a family of scheduling coordination services confirmations we have sent out to a growing group of counterparties. These deals represent a new line of business the West Desk is trying to develop. Although we are providing the services described in the documents, we have not yet had any success in getting a counterparty to sign any of the paper, not to mention negotiate seriously with us. I would, as usual, appreciate your thoughts and any guidance you could give with respect to these deals.

Ex. SNO-134.

Other documents from Enron's warehouse contain a number of recommended contracts. For example, Puget's recommended terms and conditions were:

> Hourly ancillary services.
>
> Enron will serve as Puget Energy's scheduler coordinator for submitting ancillary services to the CISO.
> Puget Energy will notify Enron 3 hours before the start of the hour to be scheduled. Ex. For HE 4 notification to take place by 0100.
> Revenue received for awarded ancillary services capacity will be allocated as follows. Enron will receive 25% of the capacity payment. Puget Energy will receive 75% of the capacity payment
> Revenue received for the energy componet of any ancillary service bid will be allocated as follows. Enron will receive 25% of the energy payment. Puget Energy will receive 75% of the energy payment.
> Enron will sell Puget Energy losses at the PX settlement price times the CISO loss factor for the day (on imports).
>
> Day of transactions with CALPX.

Enron will serve as Puget Energy's scheduler coordinator for submitting Day of schedules with the CALPX.
Puget Energy will notify Enron one hour before the schedule deadlines (0600,1200,1600) for any transactions to be scheduled.
Puget Energy will pay the ancillary services (cost is not known until after the fact).
Enron will sell Puget Energy losses at the PX settlement price times the CISO loss factor for the day (on imports).
Enron will charge $2.50 per Mw to schedule at tie points.
Puget Energy will pay for export wheels.

Canadian markets.

Enron will serve as Puget Energy's liason to sell/purchase from Canadian markets.[64] SNO-135

Q. What sources did you use to review the partnership relationships?

A. We have reviewed the materials available in discovery and through Enpower. We have been specifically interested in the "routing" comments in Enpower.

Q. What is "routing"?

A. Enpower was not set up to connect the dots very well. For that reason, Enron staff would add routing information to the comments on each strip or schedule. The "route" would show exactly what the transaction entailed, step by step. Some of the routes were quite complex – showing a chain of counterparties and transmission arrangements that could cross the WECC. Others were quite simple including only a few counterparties.

Q. Can you give an example?

A. Yes. NCPA, for example has a number of routes with just one or two counterparties. Deals 322000 and 379444 showed "10 Mws - SEMP-E-NCPA-SEMP" for 29 separate schedules from August 2, 2000 through August 31, 2000. A common sense interpretation

[64]PUGET.DOC

is a set of transactions involving sales from Sempra to Enron to NCPA and back to Sempra.

Q. Why would anyone repeat a transaction like that? Isn't that a bit of a "perpetual motion machine"?

A. Yes. This is probably why John Forney named his Death Star the "Forney Perpetual Loop." Of course this pattern would match the "Cong Catcher" model of Death Star described above in Section 3 of my testimony. If I can be allowed a small joke, this is also a "perpetual motion machine" since regulators, market surveillance officials, and other counterparties would naturally believe that these transactions had an economic purpose if it included a number of counterparties. This is the reason why Ricochets and Death Stars needed to be "capped" with a visit to a Pacific Northwest control area.

Q. Were these "perpetual loops" frequently a part of Enron's arrangements?

A. Yes. Our review of the strip comments indicated that routes of this peculiar nature were present in Enpower comments on 23,130 occasions. Frequent counterparties for these transactions were Avista (1230 times), Duke (1399 times), PacifiCorp (over 500 times), Sempra (478 times), and Powerex (587 times).

Q. Did these curious transactions automatically violate the MMIP?

A. No. We can all see a situation where changing market conditions could lead to the repurchase of previously scheduled energy. When my brother in law buys Blazer tickets from me, he may well sell them back if he finds that he has to work that night. If this happened day after day, I would begin to wonder if he was involving me in a money laundering racket.

Q. How reliable are the "routing" comments?

A. Enpower was hardly a precision tool. This part of the program was quite primitive and employee training varied dramatically. Misspellings are frequent, counterparties are named differently in different comments, and other comments are often inserted into the routing comments. Hence, searches of the routing comments may miss transactions fitting the pattern of the gaming practices discussed here but that did not use the expected "routing" notation.

Colorado River Commission of Nevada

Q. Did the Colorado River Commission have a services agreement with Enron?

A. Jan Acton, an Enron witness in this proceeding, has testified that he is unaware of any written services agreement between CRC and Enron. Ex. ENR-1 (EL03-180, *et al*).

Q. Would Dr. Acton be aware of such an agreement?

A. Actually, there is little indication that he has sought out evidence either pro or con on this matter. Given Enron's secretive nature, the absence of many routine business documents, and the risk that documents have been lost or destroyed, a simple survey is hardly conclusive.

Q. Is there any evidence that CRC materials may be missing or destroyed?

A. This is a hard question to answer. Obviously, finding missing materials is a challenge. It is interesting to note that [redacted]

[redacted]

[redacted]

CHART REDACTED

Q. Is this proof that materials have been removed?

A. Absolutely not. It does cast doubt, however, on the relevance of statements from outside experts who were not a party to the original agreements. Enron's documents are in disarray. For all we know, the documents sought by Dr. Acton are sitting in a mislabeled carton in Portland or Houston.

Q. What was CRC's relationship with Enron?

A, Paul Choi's 1999 Performance Review indicates the following:

> 5. Developed Services Relationship with Colorado River Commission;
> a. IS0 ancillary services - Enron receives 25% of the capacity & 50% of the energy profits.
> b. IS0 supplemental energy - Enron receives 50% of profits.
> c. PX Day-Ahead scheduling - Scheduling fee.

Ex. SNO-137.

Q. What does the Service Handbook RT have to say about CRC?

CRC	Day-Ahead Bi-lateral trades at Mead	Non-Awarded DA Replacement reserves bid in on HA24 schedule
	Replacement Reserves bid in DA	Fat Boy?
		Thin Man / will take energy around $15

A. CRC was identified as a participant in replacement reserves, Fat Boy, and Thin Man. Ex. SNO-46.

Q. What does the 2000 Hourly Desks Goals say?

A. Page 4 states:

> CRC -We submit decremental supplemental energy bids, when expost is near zero. We sink energy within Nevada's Control Area on behalf of CRC. CRC personnel not notified until next day. Imbalance length in Nevada's system cashed out at, basically, Nevada's lambda. Enron and CRC split profits based upon Expost price, export fees and Nevada's

imbalance price.--Settled with Volume Mgmt on a 90 day basis. Low risk, high return. Ex. SNO-27.

Q. Is this consistent with Dr. Acton's testimony?

A. Clearly, the comment that "CRC personnel not notified until next day" makes the total independence of CRC from Enron somewhat questionable. If Enron was able to make decisions and notify CRC later, then they were in effective control of CRC's market activities.

Q. Did you come across any instructions pertaining to CRC in your Enron discovery?

A. Yes. One set of Enron notes sets out the daily cycle for CRC:

CRC
- They call us in the morning, and we get 25% of everything above $70.
- Tim Clemmons (Cell), (Home)
- Bill Miller (Office), (Cell), (Pager).
- PX auction is at noon.
- sample bid: HE 12-16 10 MW, capacity $75, Energy $149.99, Basis $70
- HE 17-22 10 MW PX Day-of, price taker.
- Capacity is a call premium. Capacity = Replacement, and must be submitted by the top of the hour

Ex. SNO-138.

Q Were you able to find the operating scheduling agreement that Dr. Acton could not?

A. Yes. We have identified an unsigned agreement between CRC and Enron. Ex. SNO-138.

Q. Does this give Enron control of CRC's trading into CAISO?

A. The agreement states that Enron and CRC shall agree "from time to time" on the scheduled quantity of energy delivered at Mead for PX Day Ahead Market, CASIO Supplemental, Hour Ahead Market, Day Ahead and Hour Ahead Ancillary Energy

Markets. The agreement includes the following language regarding the Buyer's (Enron) responsibilities.

Settlement and Payment Responsibilities of Buyer:

1. Buyer shall maintain hourly price and volume models indicating estimated amount owed Seller.
2. Buyer shall obtain and reconcile ISO settlement statements to Buyer's models to assure accuracy of ISO settlement calculations.
3. For any energy or capacity purchased by Buyer pursuant to transactions requiring settlement with the CAISO, Buyer shall pay Seller according to the deadlines established by the CAISO.
4. Buyer and Seller understand that any prior period adjustments made by the CAISO that are associated with Seller's generation shall be reflected in billing adjustments between Buyer and Seller.
5. Buyer and Seller understand and agree that certain strategies employed by Buyer and Seller pursuant to this agreement could result in CAISO charges being assessed against Buyer and that any such charges will be incorporated in the calculations documenting shared revenue as described herein.

Q. Does the agreement stipulate profit sharing?

A. Yes, the agreement states that Enron and CRC will split the revenues 50/50 less the Time Meter Multiple (Line Loss) and any associated CAISO charges.

Q. Is there significant evidence that CRC was a major player in Enron schemes?

A. No. CRC is a small player and relatively distant from major WECC hubs. Clearly, CRC was involved in Fat Boy and Thin Man. In addition, CRC routing data indicates that they took part in circular routes on 80 different occasions.

City of Redding

Q. What was the City of Redding's relationship to Enron?

A. The relationship appears to have had a strong profit sharing component. The City of Redding denies this, leaving a mystery as to why Enron traders continued to discuss profit sharing opportunities with Redding.

Q. How often did the profit sharing concept arise in Enron documents?

A. Quite frequently. Out of the 433 comments made on Redding transactions in Enpower, 104 comments referenced profit sharing of some form.

Deal Comment	Number of Times	Profit Sharing
RT buy from Redding in NP-15, basis is 27-Bill Williams	6	
50% split fatboy Jesse set up RT Robinhold	7	7
50%/50% fatboy with Redding Morris/Robinhold	24	24
50/50 profit sharing with Redding NP15	5	
Basis is 40 dollars	3	3
Basis price of $65, 80/20 split of upside...Bill Williams	9	
confirmed with 474219	78	
confirmed with 474220, 474221, 474222	26	
data entered by Jeremy Morris	8	
Data entered by Jeremy Morris. THIS IS NOT A FATBOY.	9	
deal was entered to zero out deal 325339 (eol deal mistake of city of Redding)	26	
FATBOY	17	
Fatboy with Redding	15	
Fatboy with Redding, 20% cut for EPMI Salisbury	12	12
Fixed price of $65, 70/30 split with Alan at Redding.	2	2
Flat purchase from Redding, for HE 1-8...Bill Williams	1	
Holden Salisbury made this deal.	2	
Issued to account for rounding differences between Redding and the Big E for the month of November.	1	
Profit sharing with Redding. LRD	5	5
Profit sharing with Redding.	1	1
Purchase from Redding, fatboy 70/30(not so fat really)...with a 65 dollar basis. Bill Williams	9	
Real-time purchase from Redding going into the ISO.	3	
Redding Fatboy 30/70 split basis of 65 Robinhold	2	2
Redding fatboy at 30%/70%	11	11
Redding fatboy basis of $60, 80%/20% split, robinhold	11	11
RT deal buying from Redding and taking to imbalance market in a profit/loss sharing deal.	3	3
RT deal buying from Redding in a profit/loss deal 25mw's in NP15.	4	4
RT deal buying from Redding in a profit/loss sharing deal in NP15.	4	4
RT deal buying from Redding in an SC trade and taking to Cal imbalance in NP15 in profit/loss sharing deal.	15	15
RT firm sc trade at np-15.	11	
rt firm sc trade with redding at np-15.	2	
rt purchase from redding to np-15.	4	
rt sc trade at np-15	27	
RT SC trade at NP-15 with Redding.	8	
rt sc trade at np-15.	6	
rt sc trade with Redding at NP-15	13	
SC TRADE AT NP-15	10	
sc trade at np-15 purchased from redding.	6	
sc trade at np-15 with redding. HE8-9pst basis @ $32, HE10-12 basis @ $30.	5	
SC trade at np-15.	9	
SCE trade with Redding to NP15	9	
see comments above	1	
This is a fat boy deal. les rawson	3	
	433	104

Q. How do you interpret this inconsistency?

A. We know that other Enron relationships appear to have existed on an "off the books" basis. One document from August 2000 lists verbal profit sharing agreements with Willamette, Harbor, Saguaro, and LV CoGen. *See* Ex. SNO-133.

Q. Were you able to find additional circular schedules in addition to those listed in the settlement?

A. Enpower lists a significant number of transactions that would appear to fit the Red Congo model.

CP_NM	Start	Finish	Deal	L_INSTR_TYPE	DEAL_BUY_SELL_CD	Strip	SCHED_CMT	Redding From	Redding To	Pacific From	Pacific to
Pacificorp	5/2/01 6:00 AM	5/2/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/2/01 6:00 AM	5/2/01 10:00 PM	598514	FORWARD	S	3237665	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/3/01 6:00 AM	5/3/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/5/01 6:00 AM	5/5/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/7/01 6:00 AM	5/7/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/8/01 6:00 AM	5/8/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/9/01 6:00 AM	5/9/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/10/01 6:00 AM	5/10/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/11/01 6:00 AM	5/11/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/12/01 6:00 AM	5/12/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/14/01 6:00 AM	5/14/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/15/01 6:00 AM	5/15/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/16/01 6:00 AM	5/16/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/17/01 6:00 AM	5/17/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/21/01 6:00 AM	5/21/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/22/01 6:00 AM	5/22/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/23/01 12:00 AM	5/23/01 6:00 AM	409653	FORWARD	S	2267733	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/23/01 6:00 AM	5/23/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/23/01 10:00 PM	5/24/01 12:00 AM	409653	FORWARD	S	2267734	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/24/01 6:00 AM	5/24/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/24/01 10:00 PM	5/25/01 12:00 AM	409653	FORWARD	S	2267734	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/25/01 6:00 AM	5/25/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/26/01 6:00 AM	5/26/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/30/01 6:00 AM	5/30/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	5/31/01 6:00 AM	5/31/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	6/1/01 6:00 AM	6/1/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	6/1/01 6:00 AM	6/1/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	NP-15	NP-15	COB N/S	COB N/S
Pacificorp	6/1/01 6:00 AM	6/1/01 10:00 PM	627482	FORWARD	S	3409179	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	6/1/01 6:00 AM	6/1/01 10:00 PM	627482	FORWARD	S	3409179	25MWs -Redding--E--PAC-RDNG	NP-15	NP-15	COB N/S	COB N/S
Pacificorp	6/2/01 6:00 AM	6/2/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	6/2/01 6:00 AM	6/2/01 10:00 PM	371334	FORWARD	S	2139595	25MWs -Redding--E--PAC-RDNG	NP-15	NP-15	COB N/S	COB N/S
Pacificorp	6/2/01 6:00 AM	6/2/01 10:00 PM	627482	FORWARD	S	3409179	25MWs -Redding--E--PAC-RDNG	COB N/S	COB N/S	COB N/S	COB N/S
Pacificorp	6/2/01 6:00 AM	6/2/01 10:00 PM	627482	FORWARD	S	3409179	25MWs -Redding--E--PAC-RDNG	NP-15	NP-15	COB N/S	COB N/S

These are not the only transactions that appear to constitute a loop. Enpower shows 185 strips where PacifiCorp and Enron are counterparties, all of which have transactions at COB or NP-15. These transactions range from March 24, 2000 through June 9, 2001.

Q. What does the Service Handbook RT have to say about Redding?

A. Redding was identified as a participant in Fat Boy.

City of Redding	Day-Ahead trading at NP15 with Marvin Briggs	Fat Boy at NP15

See Ex. SNO-46.

City of Glendale

Q. What does the Service Handbook RT have to say about Glendale?

City of Glendale	Ancillary Services: Spin, Non-Spin, Replacement	Ancillary Services: Spin, Non-Spin, Replacement
	Mead, Sylmar, Lugo-Victorville	Mead, Sylmar, Lugo-Victorville
	Day-Ahead Parking (for Fat Boy)	Fat Boy, Thin-Man (Standing Supplemental Bid)

A. Glendale was identified as a participant in Fat Boy, Thin Man, and ancillary services.

Ex. SNO-46.

The small red triangle in the handbook signifies a comment. The comment reads "EPE DA Parking: EPMI receives 50% of the difference between DA & Ex-Post. EPE receives everything if EX-Post is less than DA Index, but more than cost basis. EPMI pays 50% of cost if Ex-Post is less than cost basis."

Q. Do we have any other evidence of this profit sharing arrangement?

A. On July 29, 1999, Christian Yoder sent his superior, Elizabeth Sager, a memo entitled "Scheduling Coordination Services." The second page of Yoder's memo characterizes the Glendale "deal" as:

A. Glendale
1. Doing Day Ahead and real Time Ancillary Services. No energy bidding.
2. "At risk" for all the above
3. Collecting 25% of Capacity Payment
Collecting 20% of "Profit" on Energy Exercised

See Ex. SNO-134.

Q. Did Glendale also have a partnership relationship with Coral?

A. Coral produced a document remarkably similar to the Service Handbook RT which we obtained from FERC's website.

3) Phantom Ancillary Services : This strategy works best when Capacity is being purchased at near its cap price by the ISO, and should be used when the generation is not actually available to back the capacity offer. In the Day Ahead Ancillary Services Market offer the capacity at or near the cap price, but never lower than $10 below the cap price . Buy the capacity back in the Hour Ahead Ancillary Services Market, and arbitrage the value. Generally, your worst downside is the amount by which you set your DA offer below the cap price.

Ex. SNO-139.

Q, Does this sound identical to Get Shorty?

A. Yes.

Q. Did Coral also propose Death Stars to Glendale?

A. Yes.

> An example of a tie-point congestion play might be to come into the ISO on ISO transmission at Mead (against congestion) with Glendale power, and then take it out on Glendale Transmission at Sylmar and into Glendale's system.

See Ex. SNO-139.

Las Vegas Cogeneration

Q. What was Enron's contractual relationship with Las Vegas Cogeneration?

A. Enron's Temporary Data Sheet - August 2000 indicates a verbal contract with LV-CoGen to receive a 20% net profit with up to 50 megawatts scheduled firm with non-firm transmission:

Temporary Data Sheet - August 2000

Counter party LV-CoGen
Contract verbal
West Desk 20% net profit
includes fee of .50 per mw

Expenses: Nevada tranny, offset in deals paid to Nevada through invoice/annuity?

Energy Type non firm (T) scheduled firm

MW shaped up to 50mw net of QF obligations

Delivery Pt. Nevada System

Energy Mkt PX DA
ISO
Bilateral

Desks ST-CALI gets .50 fee, has tranny offset
ST Whrly has tranny offset

Tools PX trade app
enpower
CAPS
VMS
INC SHEETS
OATI
SERVICES SHEETS

Operational Details:

Settlements: 45 days@PX
90 days@ISO
20 days after close of month@bilat.

P: Trading/Calis/CAS scheduling/
Cash/Customers/LV Cogen

P/X
Buy LC1 < 4.60>
Sell P/X LC1

Ex post RT
Buy LV ⊃ SP15 < 4.60>
sell Calibal SP15

Q. How significant is this "verbal contract"?

A. It is hard to judge. Clearly, a verbal contract is a contradiction in terms. Equally clearly, the concept was reasonable enough to a trader at Enron that at least four of these "temporary data sheets" were compiled.

Northern California Power Agency

Q. What was Enron's relationship with NCPA?

A. Enron's documents indicate a profit sharing arrangement called "Cong Catcher." Ex. SNO-140.

Q. When did Cong Catcher end?

A. This is a subject of some debate. On April 7, 2001, Geir Solberg sent an email entitled "NCPA BR IS BACK":

> I had a long talk with NCPA today and set up so that we again can do the ZP26/NP15 Buy-Resale on a Realtime basis. We are not doing a profit split this time, we are paying them $25/MW instead. This basically enables us to shift 21MW across PATH15 and not be subject to Congestion as NCPA has Grandfather Rights across the path. This is a sweet strategy when the SP15/NP15 spread is there and PATH15 is congested. NCPA's capacity is 21MW, but I would not recommend doing more than 20MW. There are others who know about this opportunity but are not currently using it (WESCO especially). So by doing only 20MW we do not remind them of NCPA.
>
> The way this works is that we call NCPA and ask their capacity across PATH15. And tell them you want to schedule the BR through whatever hour.
> IN CAPS:
> We sell to NCPA in ZP26.
> We buy from NCPA in NP15.
> We can buy SP15 to fill our ZP26 sale (we just shift the load from SP15 to ZP26, so enter a EPMI CALPOOL).
> PG&E is NCPA's SC, so if you are not passing Phase two give them a call.

Ex. SNO-72.

Q. Does Enpower contain evidence on Cong Catcher?

A. Enpower shows 262 buy/sells with LADWP during this period. In the summer of 2000, five transactions included the notation "-NCPA--E--NCPA-". This notation was also reproduced in the spring of 2001.

Deal Start	CP_NM	Expr10	NCPA Buys.SCHED_CMT	DEAL_INSTR_TYP	DEAL_B	SCHED_CMDTY_	NCPA Sells.SCHED_CMT
9/11/2000	Northern	10	10MWs -NCPA--E--NCPA-	FORWARD	S	10	10MWs -NCPA--E--NCPA-
7/21/2000	Northern	25	25MWs -NCPA--E--NCPA-	FORWARD	S	25	25MWs -NCPA--E--NCPA-
7/21/2000	Northern	25	25MWs -NCPA--E--NCPA-	FORWARD	S	25	25MWs -NCPA--E--NCPA-
7/28/2000	Northern	25	10MWs -NCPA--E--NCPA- ,	FORWARD	S	25	10MWs -NCPA--E--NCPA-
7/28/2000	Northern	25	10MWs -NCPA--E--NCPA- ,	FORWARD	S	25	10MWs -NCPA--E--NCPA-

Q. How would you interpret this notation?

A. NCPA is selling to Enron and then purchasing the energy back from Enron.

Q. Are there a history of "BR"s between NCPA and Enron?

A. Yes, although Enron staff did not use the "buy/resale" code in Enpower. Instead, there are sales ranging from January 15, 2000 through May 9, 2001 where identical strips are bought and sold at both COB and NP-15.

Q. Are these transactions consistent with the Cong Catcher or NCPA BR IS BACK documents?

A. Yes, although some of the transactions would appear to be actual transactions. In the majority of cases, the net proceeds from these transactions appear to be small – consistent with the fee for service approach Enron favored for counterparties aiding in Death Stars.

Q. Did you find other evidence of a profit sharing agreement between Enron and NCPA?

A. Yes. Our review of the Enpower and CAPS Reconciliation worksheets discovered references to the relationship on three different days – July 6, 2000, July 26, 2000, and August 12, 2000.[65] The comments are:

[65] Load Shift Comments - Enpower to CAP Reconciliations

Report Dates	Handwritten Comment on First Page
7/6/2000	Heather, deathstar HE 16-18; Load shift HE 7-8; NCPA HE 14-19
7/26/2000	Checked out MMP explained variance 1)NCPA Load Shift Profit Cong 2)Death Star 3)Load Shift
8/12/2000	Checked out MMP total variance <1 explained 1)NCPA Load/profit share 2) deathstar-pv to malin cong relief

Valley Electric Association, Inc.

Q. What was the relationship with Valley Electric?

A. Paul Choi's 1999 Performance Review summarizes the relationship as:

> Agreed to an arrangement for a profit-sharing structure (60% - Valley/40% - Enron) based on re-marketing value for the term of the energy sale. Working with term, cash & real-time desk on procedures to make the right marketing decisions to benefit Valley and Enron. Coordinate with settlements to account for PX, ISO and bi-lateral transactions at Mead 230 and how profits will be divided. Working with legal and assets services to get contract in place and metering services.
>
> *See* Ex. SNO-137.

Q. Is Valley mentioned in Enpower?

A. Yes. On 153 occasions, beginning on 12/14/2000 and ending on 6/4/2001, Valley Electric was the counterparty to Enron with routes entered as "-VALLEY--E--VALLEY-." It is not clear what Enron's traders meant by this notation.

VII. WESTWIDE SCOPE AND IMPACTS OF GAMING STRATEGIES

A. INTRODUCTION

Q. Were the abuses in the ISO or PX market simply a California problem?

A. No. The gaming practices, and the impacts of those practices, did not end at the California border. Many of the gaming practices – such as Death Star, False Import and Selling Non-firm Energy as Firm – by definition involved transactions throughout the West. The raison d'etre of Death Star, for example, is the creation of a circular flow of

transactions that reaches across transmission lines to the north and the east of the ISO. To quote David Pierce's November 12, 2000 email, "If LA agrees to wheel power to Malin on your behalf, you must make sure that the power is delivered on the other side of the California border (i.e., in BPA's control area)." Ex. SNO-143.

In any event, even when transactions are confined within the California border, their impacts can be felt throughout the West. California is part of a single marketplace that spans the western half of North America. In a practical sense, just one market exists for the WECC. The high degree of interconnection between the subregions of the WECC makes it possible for a market participant to purchase power in Alberta for a retail load in Los Angeles and vice versa.

Within this marketplace, prices are closely related by the process of arbitrage. If prices are low in one area, the forces of supply and demand will quickly bring them in balance.

Problems in any one area quickly communicate themselves to adjoining regions, because market participants will bring their supplies to the market with the highest prices. During the California crisis, for example, high prices at the California PX and ISO quickly changed prices throughout the WECC.

Q. Have FERC Commissioners recognized the close relationship between electricity transactions in California and other parts of the West?

A. Yes. For example, the Commission has stated that "historical relationships and the events of [2000-01] leave *no doubt* of the interstate nature of the electric systems in the

Western Interconnection. *California has been part of a West-wide market since 1962*."[66] The Commission also has found that "deficient market mechanisms" in California, in conjunction with an imbalance of supply and demand, "resulted in a dysfunctional marketplace both in California and the remainder of the West."

Q. Have FERC ALJs made findings regarding the impact of market events in California on electricity transactions in other Western states?

A. Yes. For example, Judge Benkin found, in Docket Nos. EL02-80, *et al.*, that dysfunction in the California spot market spread to other Western states and that events in the California economy tended to become very influential in determining what happens through out the Western Electric Coordinating Council (now the Western Systems Power Pool) region (102 FERC ¶ 63,030 at P 39). He also noted that there were enormous fluctuations in spot prices throughout out the region following soon after the destabilization of the California spot market. *Id*.

Q. Was this regional market a central feature of Enron's market manipulations during the Western market crisis of 2000-2001?

A. Absolutely. For example, Enron's Death Star scheme ranged from Oregon through California to market hubs in Nevada and Arizona. This is amply shown by Enron's training materials used to educate new traders on the operation of circular schedules reproduced in Section 3 of my testimony. Almost every scheme has an "out-of-ISO" component. Even the schemes that only exploited ISO programming problems, like Smith Day's rounding scheme, raised prices in California which increased prices throughout the WECC. Ex. SNO-144.

[66] *Avista Corp. et al*., 96 FERC ¶ 61,058, at p.61,179 (2001) (*emphasis added*).

Q. Which schemes had an explicit "out-of-ISO" feature?

A. Most of the schemes in the Yoder/Hall memo – Fat Boy, Death Star, Selling Firm as Non-firm, and Get Shorty either had a direct impact outside of the ISO or, in worst case scenarios, could have triggered a system collapse throughout the WECC. A cascade of discoveries that firm energy was either non-firm – or worse, non-existent – could easily have triggered a major blackout.

Q. Were there schemes that only depended on manipulating holes in the computer programs at the California ISO?

A. Yes. Smith Day's rounding scheme, for example, almost certainly had little effect outside of the California ISO.

Q. Did schemes designed to take advantage of real time markets also affect other markets?

A. Yes. As Stephen Hall noted in his first trading strategies memorandum. By overscheduling load, the marketers are inflating the day ahead price". Ex. SNO-62 In a more academic and less colorful vein, Eric Hirst's monograph on real time prices reports

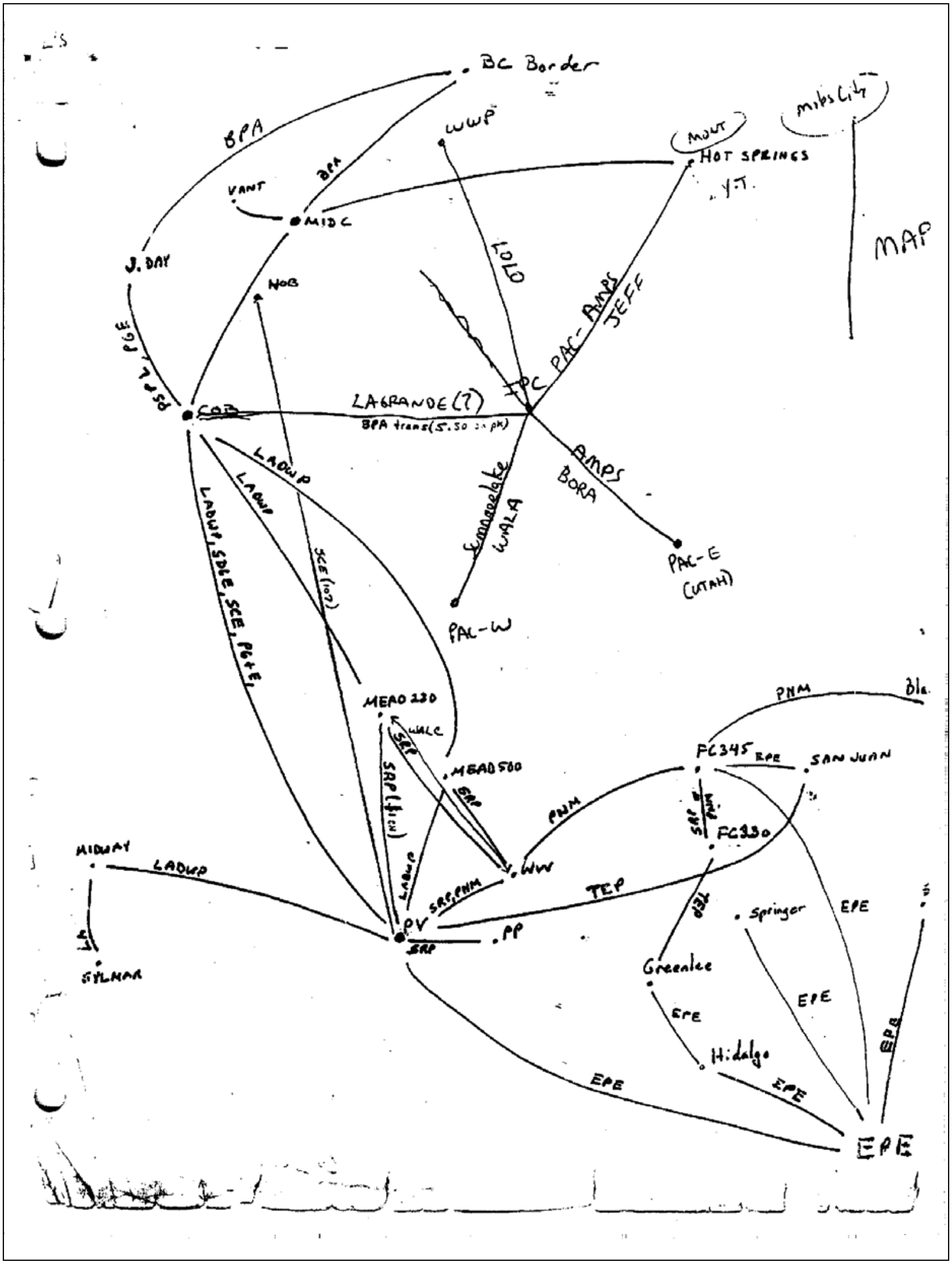
> In PJM, the day-ahead and real-time prices are modestly correlated, with a correlation coefficient of 0.65. For both northern and southern California, the correlation coefficients are roughly the same, 0.66 and 0.68, respectively. In New York, on the other hand, the two sets of prices are only weakly correlated, with a correlation coefficient of 0.32.
>
> Ex. SNO-145.

In sum, Enron's schemes affected prices and operations throughout the WECC.

Enron Training Materials

Q. Did Enron training materials make it clear that there was one seamless market throughout the WECC?

A. Yes, on many occasions. The following transmission map, for example, was part of one trader's toolkit.


BC Border
BPA
WWP
MONT
HOT SPRINGS
Y.T.
Miles City
MAP
VANT
BPA
MIDC
J. DAY
NOB
PAC-AMPS
JEFF
FPC
COB
LAGRANDE (?)
AMPS
BORA
LADWP
LADWP
LADWP, SDG&E, SCE, PG&E,
WALA
PAC-E
(UTAH)
PAC-W
MEAD 230
WALC
SRP
MEAD500
SRP
PNM
Bla.
FC345
EPE
SAN JUAN
FC330
WW
TEP
MIDWAY
LADWP
SYLMAR
PV
SRP
PP
Springer
EPE
Greenlee
EPE
Hidalgo
EPE
EPE
EPE
EPE

This chart, from the binder of an Enron trader, shows the transmission paths that were used by Enron's traders in their day to day operations.

Q. Is the California ISO depicted on this chart?

A. No. Enron knew, as we should, that the California ISO is simply a very complicated subset of market hubs within the WECC market.

Is 3GE S-N COB→John Day

Can we wait until bottom 57 hr.

ISO 3 contingent transm.

Metropolitan

west matrix

PK Edison Puget SNO

MAJOR DELIVERY POINTS

	SAN ONOFRE	SYLMAR	PALO VERDE	[redacted]	[redacted]	[redacted]	NAVAJO	MEAD 230	MEAD 500	SAN JUAN 345	WESTWING	GREENLEE	CRAIG	WESTPLAINS	TRACY	MIDWAY PG&E	MIDWAY PSC	MALIN/COB	NOB	MID COLUMBIA	VANTAGE	ROCKY REACH	HOT SPRINGS	CONKELLEY
	SOUTHWEST									CENTRAL								NORTHWEST						
AEP																								
ANHM		X						X																
APS *			X	X	X			X			X	X												
AZUZA		X																						
BPA																		X	X				X	
BURB *		X						X								X	X							
CDWR *		X													X	X	X	X						
CHPD *																				X		X		
CRC								X																
CULTON								X																
EWEB																X				X	X			
FARM				X	X																			
GLEN *		X	X					X		KMX	X								X					
GCPUD																				X				
IID			X																					
IPC					X															X				
LAC			X	X						X														
LASSEN															X			X						
LDWP *		X	X				X	X	X		X					X		X	X					
MID																		X						
NCPA only COB and Midway															X	X	X	X						
NEVP							X	X	X															
PACE PACE			X		X	X		X		X	X	X	X	X				X		X				
PASA ~~ISO 7/21/99~~		X						X											X					
PG&E															X	X		X						
PGE																	X	X	X					
PNM*			X	X	X					X	X	X												
PSC *				X	X					X			X											
RSPL																		X		X				
CITY OF REDDING			X					X		X	X				X	X		X						
RVSD		X																						
~~SCE *~~ SCE		X	X		X	X		X										X	X					
SNOHOMISH *																NEX		X		X				
SDGE *	X		X															X						
SMUD															X		X	X						
~~SNCL~~ SNCL	X	X	X						X		X				X	X	X	X	X					
SRP *			X	X	X	X		X			X		X	X										
TACOMA																		X		X				
TEP *			X		X		X	X		X	X	X												
TRI-STATE *				X	X					X														
UAMP				X	X					X			X											
VERN		X														X	X		X					
WALC								X			X													
WAUC				X	X													X						
WPE																	X							
WWPC *																				X	X	X	X	
SCL																		X		X				

no b/s ... BPA

Avista — CHPD

Can wheel COB $6

96 ... — IPC

250 ... — NCPA

SPS = CSW, Westplains, Eddy Co

Mona — UAMP

Pan ... — WAUC

Montana
Garneon
Yellowtail

grays harbor - mi&c
425-462-9517
71hrs, ...

City of Redding (RT) ~~916~~ 530 -245-70...

Track to IV if space available

NW Delivery — BPA

PG&E no ... — PG&E

Shiprock 230 — PSC

... = CPT ... — CITY OF REDDING

Cap ... — SNCL

On the above page of Enron's training materials the California ISO isn't even shown as a counterparty – although a number of utilities within their control area are.

Q. What is the significance of Enron's training materials?

A. Simply to illustrate that FERC's "ISO-centric" picture of the universe is very, very distant from the real market. While the ISO was the location of many of the market manipulations, it is actually a small part of the overall market.

Q. What is the breakdown of the regional energy markets?

A. Given the wide diversity of different forms of ownership and market organization on the west coast of the U.S., Canada, and Northern Mexico, there is no simple "right" answer. Peak loads do give a general sense, however. For calendar year 2000, for example, the California ISO control area was less than a third of total WECC peak loads

Q. Does this mean that the California ISO and PX were relatively unimportant to western markets?

A. Hardly. Since the West Coast is tied together by extensive transmission links the price spikes in California became the basis for market prices throughout the entire region. The relationship between prices in different WECC markets is widely understood. My article in the Public Utilities Fortnightly in 1996 was one of the first efforts to calculate a correlation matrix for the entire region. Ex. SNO-146.

B. CORRELATIONS

Q, What is a "correlation"?

A. Correlation is a statistical term representing the relationship between two sets of data. Correlation analysis is a central part of risk management, mark-to-market estimation, and forward curve construction.

Q. Can you provide an example?

A. The most pertinent example is the calculation of risk when a firm holds a positive position in two different markets – COB and Palo Verde for example. Only a very naive risk manager would assume that it was likely that the two markets are unrelated. In calculating the value at risk, the risk manager would calculate the relationship between prices at these two hubs.

Q. Did market participants use similar tools?

A. Yes. With the release of the PA02-2-000 investigation materials we now know that market participants used exactly the same tools. The February 9, 1999 Risk Analysis and Controls presentation on Power West reproduces a correlation table almost identical in concept to my 1996 article. Ex. SNO-147.

Power West Value-at-Risk
Regional Correlation Matrix

Risk Analysis and Controls
Feb-9-99

As of January 31, 1999

		R7	R8	R9	R10	R11
PV	R7	1.00	0.71	0.55	0.32	0.42
COB	R8	0.71	1.00	0.81	0.34	0.46
MC	R9	0.55	0.81	1.00	0.34	0.38
NP	R10	0.32	0.34	0.34	1.00	0.90
SP	R11	0.42	0.46	0.38	0.90	1.00

Q. How is this table interpreted?

A. Region 7 (R7) – Palo Verde – has a very high correlation with Region 8 (R8) – the California Oregon Border. In practice this means that similar positions taken at the two trading hubs were regarded as risky – prices at both hubs tended to increase or decrease in tandem.

Q. Where is the California ISO on this chart?

A. The California ISO's control area is signified by Regions 10 and 11.

Q. Is there any market relevance to the extensive calculations that show up in risk management calculations by Enron and others?

A. Yes. Everything from trader's positions to their bonuses are affected by the risk calculations. An example of the significance of these calculations can be seen in an exchange between Tim Belden and his superior John Lavorato on April 30, 2001.

From: John J Lavorato/ENRON@enronXgate on 04/30/2001 09:40 AM CDT

To: Tim Belden/HOU/ECT@ECT, David Port/ENRON@enronXgate

cc:

Subject: FW: West VAR

Tim

You will get stopped out. I talked to David Port today because last year we spent a lot of time cleaning up gas var and now we must spend the time fixing power var. However, until its fixed I have no choice but to use the reported numbers.

---- Original Message ----
From: Belden, Tim
Sent: Monday, April 30, 2001 9:19 AM
To: Lavorato, John; Kitchen, Louise; Gorny, Vladimir
Cc: Presto, Kevin

Subject: West VAR

the numbers being generated for the west's var do not comport with what I believe our risk to be. I think that it may have to do with the correlation across months and across locations. for example, the ltnw book has a grant total of <3,000> MWh from now through September On-Peak and 194,000 MWh from now through September Off-Peak. the var report shows mike with $20 million of var -- about $16 million of it coming between now and September. we have a total var of $30 million, with about $20 million between now and September. by my rough calculations, we would have to have the entire curve move roughly $100/MWh in one day for this var to be accurate. that means that once every 20 days the entire summer curve -- peak and off - peak -- would have to move in excess of $100/MWh. I might add that we are short q4 which I'm not giving us any credit for as an offset.

I understand that there is a lot of risk on our books. I just don't think that it is as much as the var model is spitting out. weird things happen in the var model and option valuation models due to the interaction

of the blending formula on the volatility and the correlations as we approach delivery. we see the same thing with option valuations. we see option model valuations (e.g., transmission spread options) going through the roof when they are trading for fractions of our model valuations in reality. similarly, the var model valuations move up really fast as the summer approaches.

bottom line. I need to know what you want us to do. we are chewing up a lot of var. if we are going to get stopped out I need to know now. I think that it would be a shame to close out of a largely spread position that wouldn't necessarily have any practical impact on our real profitability but would make the "model" happy.

SNO-141

Q. What does the term "stopped out" mean in this email?

A. Enron's West Desk – one of the few profitable operations in Enron's entire empire – would be restricted from taking any additional positions until they came back within their risk conditions. Colloquially put, Tim Belden was being told "meet the risk standards or take the rest of the month off."

Q. Have you reviewed the Modesto Risk Management Policy?

A. Yes. On page 55, the authors report very high correlations between forward markets at COB and Palo Verde. Ex. SNO-148.

	COB					PV				
	9-96	10-96	11-96	12-96	1-97	9-96	10-96	11-96	12-96	1-97
C 9-96										
C 10-96	0.991									
C 11-96	0.992	0.991								
C 12-96	0.991	0.994	0.976							
C 1-97	0.981	0.978	0.985	0.968						
P 9-96	0.985									
P 10-96	0.992	0.985				0.956				
P 11-96	0.993	0.986	0.980			0.982	0.956			
P 12-96	0.950	0.951	0.945	0.931		0.913	0.917	0.919		
P 1-97	0.985	0.975	0.963	0.978	0.953	0.650	0.943	0.962	0.896	

Modesto is simply another user of a very common – perhaps universal – set of risk management, forward curve generation, and mark-to-market tools.

C. SPOT AND FORWARD PRICES

Q. Did Enron and its subsidiaries ever comment on the relationship between spot and forward prices?

A. Yes. The quotation from an Enron Trader Handbook is:

> The two markets, cash and futures, tend to parallel one another and converge as each delivery month expires. The parallel movement occurs because factors that bring about a rise or a fall in cash prices usually affect futures prices in much the same manner. It is this correlation between cash and futures that makes hedging possible.

And

> Cash and Futures Prices In Time Under normal circumstances of adequate supply, the price of a physical commodity for future delivery will be approximately equal to the resent cash price plus the amount it costs to carry or store the commodity from the present to the month of delivery. These costs, known as carrying charges, determine the normal premium of futures over cash and have a profound effect on changes in the basis.
>
> Ex. SNO-149.

Q. What position do FERC staff take on this issue?

A. Months after the order in EL02-26, the FERC investigative staff came to the opposite conclusion. Unlike the ALJ in EL02-26, they had access to actual data. In addition, they retained the services of a renowned expert, Dr. Robert S. Pindyck. As they noted,

> Our analysis shows that there is a statistically significant relationship between spot and forward power prices during the period from January 1, 2000 through June 30, 2001. This relationship is somewhat unexpected in a market for a commodity with little storability and reflects the fact that market participants used current spot prices to form expectations about future spot prices during the period in question.
>
> Although estimated elasticities vary by hub and time to delivery, the results show that the influence of spot on forward power prices declines with longer times to delivery. This pattern is consistent with the notion that current spot prices convey more information about spot prices in the near future than the distant future.
>
> If, as we maintain in earlier chapters, spot power prices were distorted, these results imply that the price distortion flowed through to forward power prices, particularly those for contracts of short (1-2 years) time to delivery.
>
> Our analysis shows clearly (Tables V-2 and V-3) that the elasticity of forward power prices with respect to spot power prices is much greater for forward contracts of 1-2 years (about 33 percent) than for contracts of 3-4 years (about 12 percent) and is very small for contracts of longer average time to delivery.
>
> Because spot gas prices influence spot power prices, the manipulation of spot gas prices could have led to power prices that were distorted above and beyond the levels established in the refund hearing. According to the analysis in this chapter, this additional distortion would have influenced forward power prices. The magnitude of such an effect can be calculated in the manner illustrated in Table V-6.
>
> In addition, because spot and forward gas prices are linked through arbitrage, spot gas manipulation may have influenced forward power prices by inflating the price of forward gas. We have made no estimate of the magnitude of this second effect.

> Given the finding that forward power prices were distorted and a detailed statistical analysis providing estimates of the extent of the distortion based on a certain level of distortion in spot power prices, we present the following recommendation:
>
> For contracts that are subject to a just and reasonable standard of review in the ongoing complaint proceeding (see footnote 2), the Commission should send this analysis to the Administrative Law Judges to use as they see fit to resolve the complaints.[67]

Q. Did this conclusion also show up in PGE's training materials?

A. Yes.

[redacted]

67 Final Staff Report at V-18 and V-19.

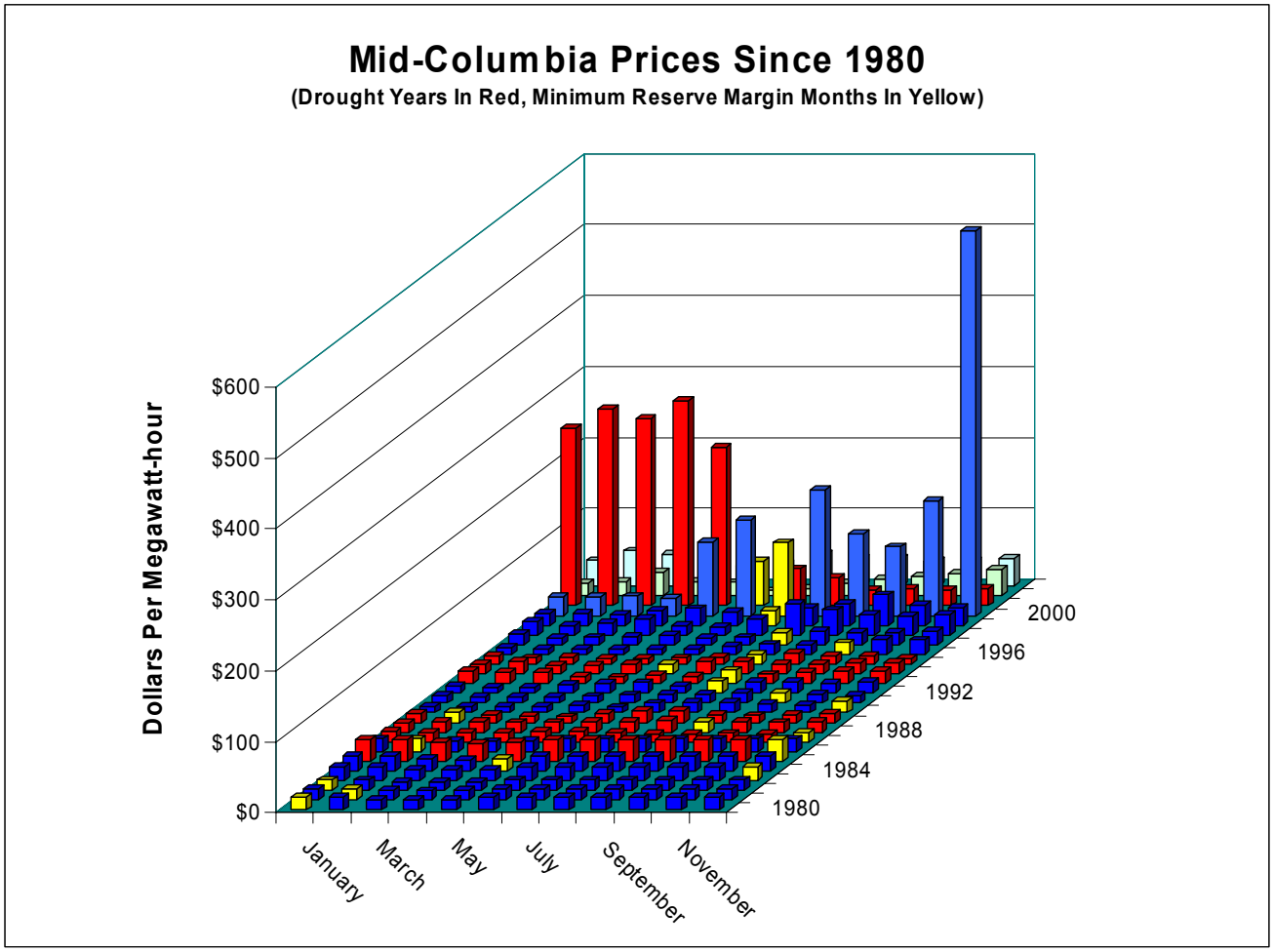
[redacted]

D. VOLATILITY OF MARKETS BEFORE MAY 2000

Q. How volatile were the markets before May 2000?

A. The wholesale market was surprisingly stable before May 2000. In spite of three major droughts, fossil fuel price spikes, and true resource shortages in the early 1980s, prices, on a monthly basis, reflected the operating costs of the least efficient units currently operating. In the past twenty-two years, this rule was only violated from May 2000 to June 2001.

The chart below shows prices from January 1980 through January 2004:



Years in red reflect droughts. The specific months when the reserve margin was lowest in each year are yellow.

Overall, monthly prices were very stable before May 2000. Prices were higher during periods of high fossil fuel prices, droughts, and resource shortages. However, since the WECC never faced a period when demand actually exceeded resources, prices higher than the running cost of the most expensive unit operating were unheard of during the twenty years before the summer of 2000.

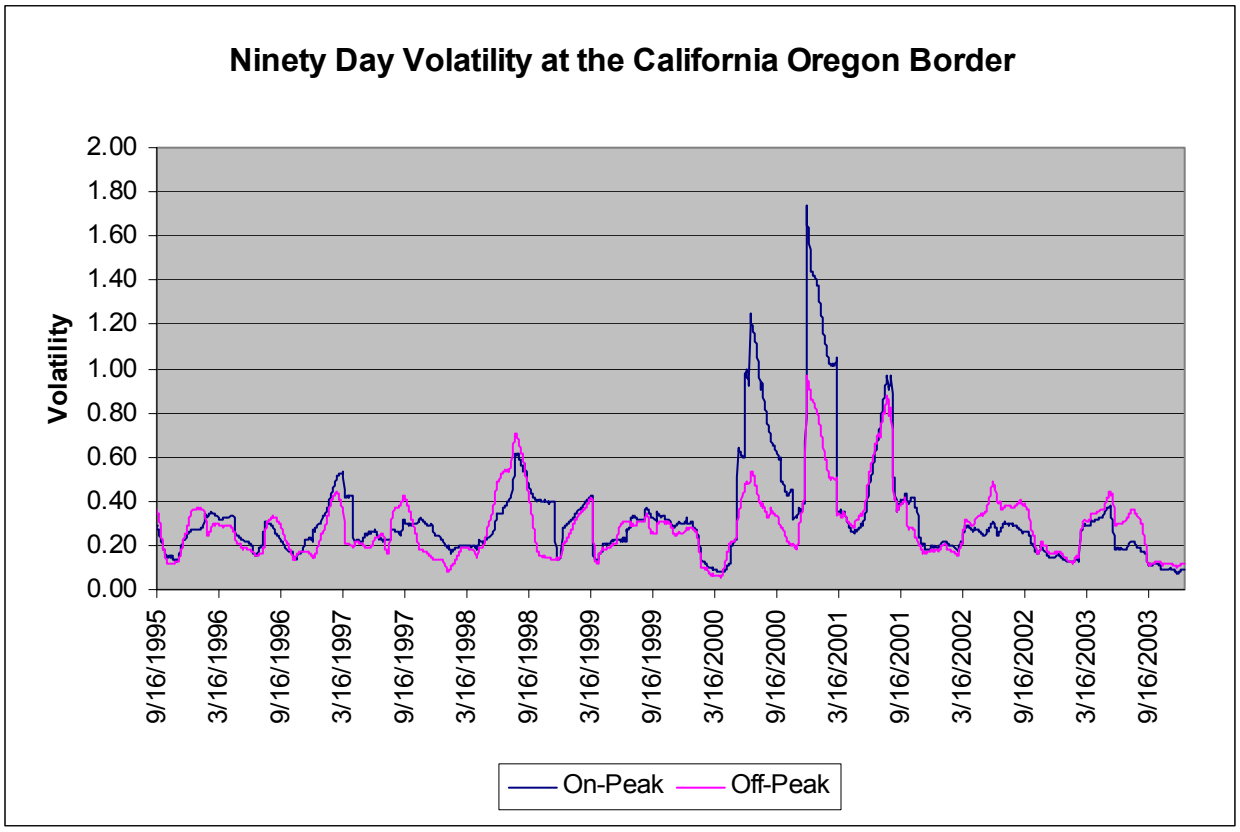
Q. What impact did the volatility have on the liquidity of forward markets on the West Coast?

A. The presence of high levels of volatility reduced the amount of supply offered to consumers like Snohomish. At the start of the crisis we had two organized forward markets, the Power Exchange's Block Forward Market and the NYMEX markets at COB and Palo Verde. The Block Forward Market was cancelled as part of FERC's decision to discontinue Power Exchange's operations in the December 15, 2000 order.

Q. Why did the market become so volatile over this period?

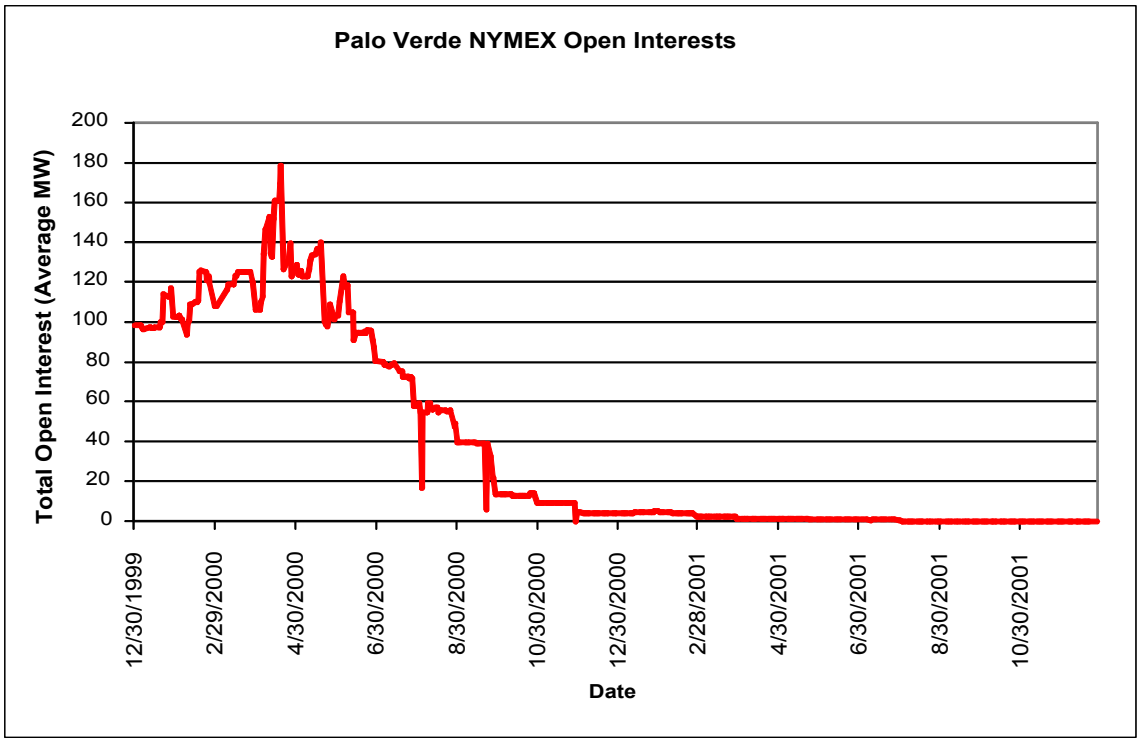
A. We actually don't know. The best explanation is that actual market forces had been almost entirely preempted by the decisions of the California ISO and the market participants who were manipulating the PX and ISO markets. We do know that any measure of volatility increased dramatically during the crisis and has gradually returned to normal now that the crisis has disappeared.

The following chart shows a moving estimate of volatility of 90 day increments based on the Energy Market Report's Mid-Columbia on-peak prices from 1995 to date.



Q. What happened to the NYMEX markets?

A. The NYMEX markets gradually declined. By the winter of 2000/2001, no open positions were present on either market. The following chart shows the number of open interests over time.



Q. What caused the gradual decline in the NYMEX markets?

A. The increased volatility in the market raised the costs of participating in the NYMEX to all parties. As time went on, market participants simply withdrew from the market. If the risks had been quantifiable – such as the historical risks of hydroelectric flows and weather – the traditional methods could have been applied to manage risk. Unfortunately, during the crisis the risks were due to market power and the political responses to market power. These were not predictable and posed enormous risks for investors in the NYMEX.

Q. Did you try to use the NYMEX to hedge power market risk over this period?

A. Yes, McCullough Research contacted a number of NYMEX brokers during the summer and fall. In each case we were advised that the purchase of a large position on the COB NYMEX would simply be impractical – the market simply didn't have the depth to accommodate a 50 to 100 MW purchase.

Q. Where did this place clients of McCullough Research?

A. They were forced to go with the bilateral market. Very few market participants were interested in the business. Enron, for example, simply hung up on one of our clients one day when they said that they were going to check prices with other vendors.

Q. Did Enron's internal documents comment on this?

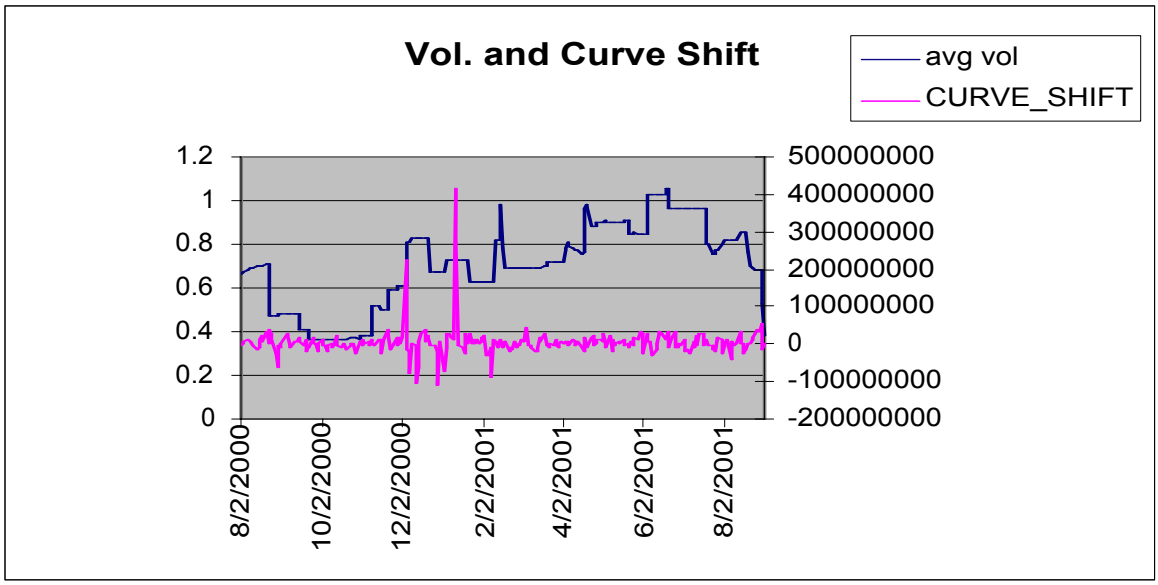
A. Yes. West Desk's Exhibit C for June 14, 2001 contains a comment, apparently by no less a figure than John Lavorato, the officer to whom Tim Belden reported to:

> (2) Liquidity, index, and physical delivery risk. There is very little trading in the western power markets now. We have existing positions that are difficult to get out of. We have short physical positions offset by long swaps. It may be difficult to procure physical supply through this winter in the NW. There may be a large disparity between the price that we pay for the physical power and the revenue we receive on our index swaps due to lack of liquidity. We have purchased a variety of transmission paths to close out positions where there is a distinct possibility that the paths could be curtailed.

Ex. SNO-123.

Q. Did Enron's own estimates of volatility mirror yours?

A. Yes. One analysis, performed at the point when Enron declared bankruptcy showed exactly the concerns that I had raised with my clients. This chart, for example, indicates the massive increase in volatility that occurred during the winter of 2000/2001.



Q. What impact does the increased volatility have on the long term market for electricity?

A. Increased volatility adds costs. While the risk management presentations often tend to make this effect obscure, the problem is actually very simple. When making a sale for a number of years, suppliers must be able to assure themselves that they will make a profit compared to simply selling their power in the hourly market. If swings in the hourly market are small this is a very easy demonstration to make. If swings in the hourly market are huge, then it is difficult to prove that the risk is worthwhile without demanding a much higher profit on the long term deal.

The term, Value At Risk, or VAR, is a measure that firms use to establish how much risk they are willing to take relative to the market. When volatility increases, the VAR increases as well. Most firms operate with a fixed VAR limit. As volatility

increases the size of transactions that a firm is allowed to make must fall to compensate for the increased risk unless profit margins are allowed to increase.

During the crisis, the number of vendors declined and the apparent margin on each sale climbed dramatically. This is a textbook response to increased volatility.

After FERC staff commenced its investigation in February 2002 it recognized that the best evidence would be provided by actual transaction data. FERC staff issued discovery requests and developed such a database. This database is the basis of Chapter V of the Final Staff Report.

Q. Why didn't you use this data in earlier testimony before FERC?

A. This data was not available to experts until April last year. Other sources, TFS daily sheets, NYMEX estimates (after December 2000), and Platt's simply constitute surveys of trader's opinions and were vulnerable to substantial manipulation. Actual market data – real transactions – is the best tool for a careful analysis.

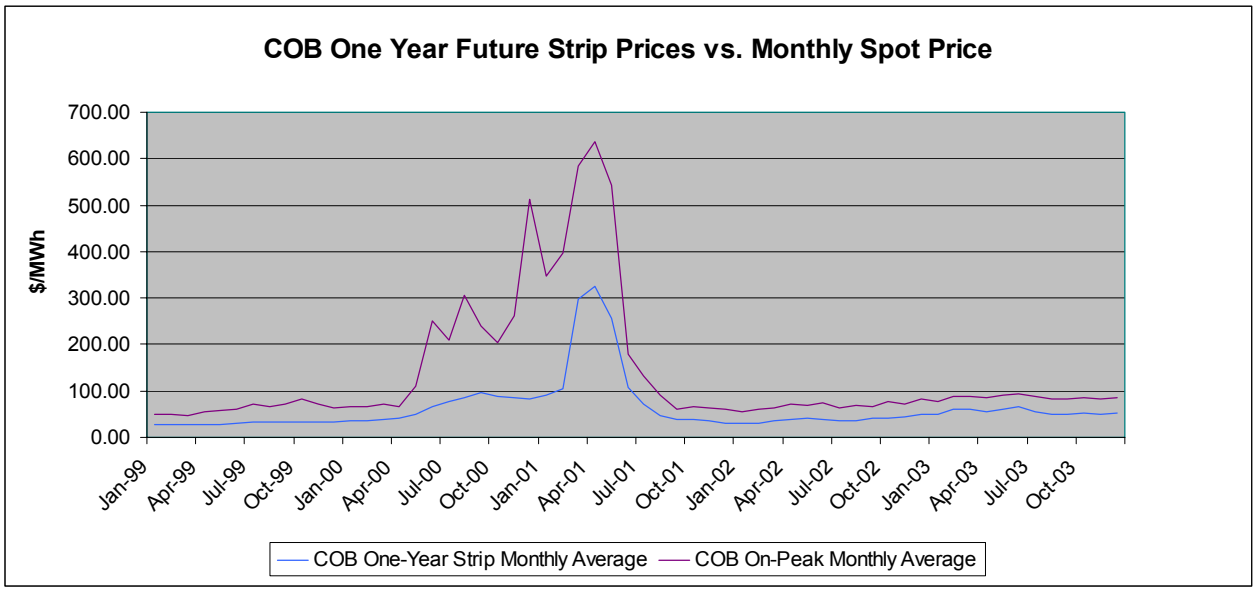
The long term database supplied by FERC through Aspen Systems contains data on 29,249 actual transactions. As expected from the decline in NYMEX transaction over the period of the crisis, the actual number of long term transactions is very small. To describe the market for long term transactions as thin is an understatement. Of the 29,249 transactions provided by FERC from their discovery, 2,193 transactions took place at market locations including the word "mid."[68] Only 1,732 of these took place during the California Crisis and 17 of these had durations of 60 months or longer.

One of these transactions took place at Midway and two (Mirant Americas)

68FERC's data base as supplied only includes the raw responses to discovery. Different market participants used a variety of different terms to describe Mid-Columbia.

reported prices of zero. The entire universe of long term transactions at Mid-Columbia during the crisis is only fourteen transactions. Of these, three are transactions entered into by Snohomish.

The economic theory of opportunity costs would lead us to expect that the cost of longer duration transactions during the crisis would have tracked the manipulated spot prices. Critics of this approach have argued that they did not track spot prices.



Q. How likely is it that opportunity costs of spot transactions would not be a factor in long term pricing?

A. The negative hypothesis that opportunity cost would not be a factor in longer term transactions would require that there not be a close relationship between the spot prices in the month when the transactions were signed and the prices in the contract. This negative hypothesis can be rejected because statistical analysis shows that such relationships exist. The most complete statistical analysis to date, which has the fullest set of data, has been

presented in Chapter V of FERC's PA02-2 Final Report.

A logical hypothesis based on economics and market knowledge has been tested and found consistent with the facts. The alternative hypothesis, that there is not relationship, has been rejected. There is no confusion of causality with correlation – the statistical evidence continues to closely match economic theory.

E. SIGNIFICANCE OF THIS SECTION OF TESTIMONY

Q. Please summarize the significance of this section of your testimony.

A. Because the effects of its schemes were not confined to California, Enron was able to profit from these schemes in transactions cover the entire scope of the Western Interconnection. In addition, because the manipulation schemes increased spot market prices and volatility, the drove up forward prices and Enron was therefore able artificially inflate is profits in the forward markets, as well.

In other words, Enron was able to rely upon schemes to manipulate the highly structured submarket in California to raise prices throughout the entire West Coast of the U.S. and Canada and throughout all spot and forward markets.

VIII. EVIDENCE DEMONSTRATING THAT ENRON WAS UNJUSTLY ENRICHED BY ITS CONDUCT AND ITS CONDUCT WITH OTHERS

Introduction

Q. Has Enron's witness Dr. Acton provided any evidence of unjust profits associated with its gaming practices in these proceedings?

A. No. Dr. Acton has chosen instead to argue that Enron's activities were actually good for the market, or at least, not seriously harmful. Dr. Acton addresses each of the eight schemes under discussion in the case and finds a reason that these are a normal business practice.

Q. Do you agree with any of these points?

A. No. In general, Dr. Acton has simply adopted an extreme position without common sense or economic logic. Some of his positions are humorous they are so exaggerated.

Q. What is Dr. Acton's position on Ricochet?

A. Dr. Acton argues that evading price caps in California might have even benefited consumers since "California consumers are better off if the energy is returned to California markets or, in this case, not exported on net, since this alternative yields a greater supply of energy to meet California load."[69] This absurd argument makes a number of unsupported assumptions:

1. The Pacific Northwest had a demand for summer energy that it would normally have imported from California. As Dr. Acton should know, flows are from the Pacific Northwest to California and the Desert Southwest during summer months. In 2000, when we first noticed the increased schedules from California to Malin, we were having a mild summer with reduced loads. As prices increased in California, loads dropped in the Pacific Northwest, not increased.

2. The price caps in California were able in some way to create or destroy energy. From the beginning, it was recognized that the prevailing prices were above the cost of generation.

3. The existence of a shortage of some sort. As we now know, capacity was plentiful during this period – even after physical withholding by California generators.

Q. What is Dr. Acton's analysis of the impact of Death Stars?

A. Dr. Acton takes the position argued by Tabor and Cardells that deceptive practices were required to fully utilize transmission owned by utilities outside of the California ISO. He uses an especially evocative phrase – getting out-of-state transmission into the "congestion model calculus." In other words, these deceptive practices were required for transmission access on LADWP's lines.

[69] ENR-1 at 24, Docket No. EL03-137, *et al.*

Q. Was deception necessary to utilize LADWP's transmission?

A. Certainly not. If a market participant wanted to utilize the LADWP transmission, there was a perfectly practical way to go about it. LADWP has been in the transmission business for many years – years when the industry did not file fraudulent schedules.

Q. Are there reasons why filing fraudulent schedules poses costs to the system?

A. Of course, the non-existent energy flows occupied capacity on lines used to "cap" the Death Stars. In addition, if an emergency had taken place during the period of the California crisis, operators would have had a very distorted picture of actual flows.

Q. Could Enron have approached this in an open and honest manner?

A. Certainly, if there was merit to this argument, there would have been no reason for a secretive approach.

Q. What is your opinion of Dr. Acton's paper trading analysis?

A. Creative, but ultimately irrelevant. The question of selling reserves that you do not own is not primarily economic. The issue primarily affects reliability. One of the reasons that prices were so high in California was that the ISO was unable to procure sufficient bids to meet its reliability standards – even though the WECC studies indicate that no reserve shortage existed. If a real shortage had existed, selling reserves that were to be purchased later would have been a recipe for disaster. The ISO would have found itself depending on reserves that would not have existed. Luckily, the California crisis did not have to face a major outage that would have brought the system close to the edge.

Q. Did Dr. Acton undertake an analysis of load shift?

A. Only in the most superficial sense. Dr. Acton concludes that it was "successful and therefore caused no discernible harm to California consumers, nor did it benefit market participants who may have engaged in it."[70] While it is possible that this powerful, technically adept firm might well have failed to profit from this strategy that it pursued with dogged persistence again and again, but it requires a closer review than simply a hopeful statement. Dr. Acton would have us believe that the conclusions of Stephen Hall's memoranda were simply incorrect:

1. One concern here is that by knowingly increasing the congestion costs, we are effectively increasing the costs to all market participants in the real time market.

2. Following this strategy has resulted in profits of approximately $30 million for FY 2000.

See Ex. SNO-20.

Q. Is this credible?

A. No. Three years after the fact, Dr. Acton is dismissing both his client's actions and extensive internal documentation as a delusion.

Q. What comments does Dr. Acton have on the practice of selling non-firm as firm?

A. Dr. Acton simply assumes the problem away with the sentence "In the case of Enron supplying imports from a variety of out-of-state sources, the company achieves a high degree of reliability of supply through diversification. In effect, Enron self-insures the reliability of these imports."[71]

Q. Is this a credible assumption?

[70] ENR-1 at 65, Ex. EL03-137, *et al.*.
[71] ENR-1 at 66, Docket No. EL03-137, *et al.*

A. No. The theory that there was more energy in California because Enron misstated the firmness of its supplies simply ignores the real problem. The California ISO and other control areas were encouraged to believe that reserves existed that actually did not. The cost to the system if the reserves had been needed would have been enormous – the lights might simply have gone out across the entire West Coast.

Q. Doesn't the fact that Enron was broadly active in western markets allow it to "self-insure"?

A. This is an interesting concept and one that has never been seriously entertained anywhere in the industry. Reliability planning simply doesn't encompass the possibility that reserves aren't needed if the scale of operations is sufficiently large. I would recommend that we proceed very carefully before we eliminate standard reliability standards.

Q. Overall, how would you characterize Dr. Acton's conclusions?

A. Carefully crafted to rebut the California ISO's conclusions, but very far from normal business practice or industry standards. Electric systems are intolerant of deception and mismanagement, simply because reliability problems occur instantaneously and recovery is expensive and difficult.

Q. Do you believe Mr. Acton's numbers reflect the "full extent" to which Enron has been enriched unjustly?

A. Absolutely not. Dr. Acton has corrected some California ISO estimates and simply dismissed other schemes entirely. Missing from his approach are several critical elements:

1. Enron was operating a pervasively fraudulent operation with a substantial fraction of its resources dedicated to schemes ranging from taking

advantage of rounding errors in computer software on one extreme to scheduling enormous amounts of energy and transmission under false pretences on the other. He would have us believe that this extensive exercise was in pursuit of $7 million out of $1.8 billion of total earnings during 2000 and 2001. If so, Enron would simply have prohibited this rewardless criminal sideline and returned to normal business practices.

2. Mr. Acton overlooks the absence of facts and figures from Enron in his calculations. Enron's accounting is the subject of numerous convictions and guilty pleas. Enron's chief financial officer has plead guilty, its accounting firm has been convicted and is banded, and the vast majority of its records destroyed or lost. Even where information is available, Mr. Acton has simply disregarded documents and records that are not consistent with his conclusions.

3. The fundamental question should not be the calculation of specific settlement level values – especially in the face of the concerns raised elsewhere in my testimony – it is whether Enron should be allowed to enjoy the fruits of market based pricing when it failed to respect the rules and regulations of the market.

Unjust profits throughout the West

Q. Has Enron admitted that it profited from the trading strategies at issue in the Enron gaming show cause proceeding?

A. Yes. For example, the Yoder/Hall memoranda state that Enron's Load Shift strategy "produced profits of approximately $30 million for FY 2000." *See* Ex. SNO-20. Another attorney for Enron, named Mary Hain, testified under oath that she took notes during an internal Enron meeting in the Fall of 2000 where profit amounts associated with Enron's trading strategies were discussed for purposes of analyzing Enron's litigation risks. She admitted that her notes showed the following profit amounts: (1) thirty million dollars for Load Shift; (2) six million dollars for Deathstar; (3) five million dollars for Get Shorty; (4) three million dollars for Non-firm Export; and (5) twelve

million dollars for Wheel Out . (*See* Ex. SNO-35, Deposition Tr. at 113, 120, 128, 177-179). Her notes are contained in Ex. SNO-79.

Q. In FERC's gaming and partnership show cause orders, the Commission "direct[ed] the ALJ to hear evidence and render findings and conclusions quantifying the full extent to which the entities named [in the orders] may have been unjustly enriched as a result of their conduct." (103 FERC ¶ 61,346 at P 48; accord 103 FERC ¶ 61,345 at P 71). In your opinion, do the profit amounts described in your preceding answers reflect the "full extent" to which Enron was enriched unjustly as a result of its conduct during the period January 1, 2000 to June 20, 2001?

A. No, in my opinion these amounts are understated. These amounts are incomplete with both respect to the number of gaming practices and time period at issue in these proceedings, and the amounts do not reflect fully all of the unjust profits in the Western spot and forward markets stemming from Enron's acts of market manipulation. In fact, the ISO itself has admitted that its analyses of revenues derived from the Enron trading strategies do not reflect fully the ill-gotten gains derived from the implementation of each strategy.

Q. Please explain the position taken by the ISO further.

A. In the 100 days evidence proceeding, for example, the ISO stated:

> It is virtually if not absolutely impossible to disentangle the effects of the various strategies engaged in by disparate sellers in order to assign discrete market effects and discrete ill-gotten gains to each instance of each seller's implementation of each given strategy. The effects were simply too interwoven and too cumulative, both within an hour and over time.

Q. Have any of Enron's traders admitted that Enron generated substantially more revenues from the execution of Enron's gaming schemes?

A. Yes. The Managing Director in charge of Enron's West Power Trading Division – Tim Belden – has pleaded guilty to an information charging him with a conspiracy to commit wire fraud in connection with Enron's gaming schemes and this information states at P 13:

> In 2000, West Power generated approximately $500 million in profits. In 2001, West Power generated approximately $800 million in profits. This increase in Enron's revenues was attributable to the dramatic rise in electricity prices during the California energy crisis in 200 and 2001 and to the execution of the schemes described below.

The Information, which is attached as *See* Ex. SNO-13, then goes on to describe Enron's congestion-related gaming schemes, ancillary services-related gaming schemes, and False Import scheme, as well as Enron's misrepresentations related to the nature of electricity Enron proposed to supply, which would encompass Enron's Selling Non-firm as Firm scheme.

Q. How should the ALJ determine the level of Enron's unjust profits ?

A. This is not an easy question. Enron's books were "cooked" on any number of levels – at the senior executive level in order to assure step ladder earnings, by middle managers adjusting earnings to reflect specific schemes, and by traders attempting to outsmart the California ISO and other counterparties. Wholesale energy trading earnings fraud was the first item in last week's indictment of Enron's CEO Jeffrey Skilling:

> 16. Skilling, Causey, and others employed various devices in furtherance of this fraudulent scheme, including but not limited to:

manufacturing and manipulating earnings through improper use of reserve accounts to mask volatility in Enron's wholesale energy trading earnings and conceal and retain large amounts of those trading earnings for later use in order to achieve desired earnings results.

Ex. SNO- 14.

Q. Does evidence exist that West Desk was conscious of these manipulations?

A. Amazingly, yes. The following email exchange openly discusses the use of what are known in Enron parlance as "Schedule C" financial reserves to make financial targets.

From: Arnold, John
To: Hayden, Frank
Date: 09/19/2001
RE: schedule C
Agree with the first paragraph.
Bets get tougher from here. Not so obvious and require much larger size to get same juice. Generally not a good position considering the current world order, or disorder. Not much juice in gas basis either. This is where we see whether we are good traders or just great fundamentalists.
-----Original Message-----
From: Hayden, Frank
Sent: Tuesday, September 18, 2001 5:25 PM
To: Arnold, John; Presto, Kevin M.; Belden , Tim; Zufferli, John
Subject: FW: schedule C
Is there any truth to my thoughts or am I showing my ignorance?
I appreciate your feedback.
Thanks
Frank
-----Original Message-----
From: Hayden, Frank
Sent: Tuesday, September 18, 2001 5:02 PM
To: Gorny, Vladimir; Port, David
Subject: schedule C
Looks like all the schedule C activity, we will make quarterly earnings. That being said, we've lost a lot of cushion and I predict that fourth quarter we will carry some large VAR going into year end. Let me know if you think we should revisit limits, particularly if we need to offer up to Lavo and crew the best bet for Enron's risk capital.

As an aside, I think the best bet may be gas. Regarding gas, I'm thinking the "basis" bet is probably more likely than huge NYMEX bet given current NYMEX

> level may not have enough juice to provide required profit , this being said both price and basis horizon don't appear to have much trading topography… In East power, we are dog piling length in the Pennsylvania area, an area without a significant gas fired stacks, shorting the Midwest, net ending up long. In the West , shorts are still driving risk and in the words of Chuck Berry -how low can it go? Limbo alone suggest we have to hit the dirt sometime, it is trading sub $40 handle
>
> Frank SNO-141

John Arnold and Tim Belden were Enron's two leading traders in gas and electricity.

Frank Hayden was a risk manager in Enron's natural gas and power division.

Q. Is there any other evidence of this problem?

A. An email to Vince Kaminsky, Enron's risk manager, noted:

> This analysis was another swag at p&l components. We took the numbers from the daily position reports , backed out the big originations that we new about (e.g. peakers sales) and the other "mistakes" (e.g. the EES $700MM loss), then took out the curve-shift P&L from the backtest data, the balance we said must be some form of "new deal" P&L plus realized p&l etc. It shows that 2000 was the prop trading year, whereas 2001 was mainly new deals. Of course the whole thing is poisoned by reserve movements.

Ex. SNO-153.

Q. Do you believe ISO and PX settlement data accurately reflect the "full extent" of Enron's unjust profits?

A. No.

Q. Why do you believe the ISO and PX settlement data do not accurately reflect the "full extent" of Enron's unjust profits?

A. Reliance only on profits calculated using ISO or PX settlements is inappropriate because we simply do not have reliable data on which to make these calculations. This is akin to returning any cash in the bank to bank robbers unless the victims can provide proof of ownership. Luckily, this is not a standard that is widely applied to criminal enterprises.

It is easy to imagine that being a witness to a bank robbery might well end up with your own cash being turned over to the robbers if this was the case (and you were not carrying a receipt.)

The problem is actually worse than returning the victims' cash to the robbers – in this case Enron broadly misrepresented its actual activities to its investors, tax authorities, employees, and its trading counterparties. Reconstructing Enron's books is simply impossible given the current state of the data.

The correct issue is whether Enron is able to justify its profits above cost – not whether the victims can identify the specific settlements attached to each scheme.

Q. Notwithstanding the accounting issues, how relevant is a detailed settlement- level calculation?

A. Not very. It is impossible to easily separate schemes from each other and transactions with schemes from normal transactions.

Q. How can FERC recover Enron profits due to gaming?

A. FERC should simply return Enron to cost based pricing on every day when they implemented a scheme.

Q. Can't we just rebuild ISO settlements from Enpower data?

A. No. Leaving aside the vast effort and cost of such an endeavor, it isn't clear that Enpower or ISO data is terribly reliable. A stream of emails concerning congestion relief indicates that Enron management was effectively negotiating these payments during the crisis.. Ex. SNO-154 We are not aware of any evidence that the corrections were entered into Enpower, or for that matter, systematically recorded at the ISO.

A somewhat more serious problem is illustrated by the Big Tuna scheme. In Big Tuna, a Death Star was assembled around a Fat Boy. If congestion payments were not sufficiently high, the energy would simply stay in California and be "sold" to an imaginary load.[72] Enron staff were exhorted to pursue these schemes. Unfortunately, they had no reason to separate the schemes from normal transactions, nor from other illegal schemes. .

Q. Are there any other examples?

A. Yes. In the beginning of Enron staff refined their Death Stars into Congestion Wheels. The Congestion Wheel scheme is nearly identical to the Death Star scheme except that, like Big Tuna, the Congestion Wheels were conditional – they were designed to eliminate congestion costs that a "normal" transaction would otherwise face at the California ISO. Again, it is virtually impossible to figure out which of Enron's transactions were legitimate and which were fraudulent.

Q. Would the otherwise legitimate transactions that depend on illegitimate methods also be illegitimate?

A. I am not a lawyer, nor do I have a legal opinion on the matter. Common sense says that they are – when embezzled money is recaptured, the authorities also require the return of profits from the embezzled funds. I believe the same common sense principle would apply here. Enron should not be allowed to profit from transactions that market participants who were unwilling to violate the MMIP could not have made.

Schedule C

Q. What was a Schedule C?

[72] Hourly Desk Goals 2000

A. Schedule C was one of a set of special forms used by Enron to keep track of special transactions-related information. Enron instructions listed four non-standard transactions and adjustments:

Schedule B:	To value transactions outside the main trading system
Schedule C:	To hold non-standard valuation adjustments with the exception of prudency reserves
Schedule D:	To provide additional prudency to the calculated reserve
Schedule E:	To adjust liquidated balances from prior periods.

Ex. SNO-155 As a general rule, Schedule C documents have been found among Enron's emails and documents. The other schedules have not been provided and apparently are no longer available.

Q. What is the significance of Schedule C?

A. Schedule C was a bank for earnings to be used in later periods. , Schedule C documents often list Enron "sins" for which financial reserves are required. The 1999 Silver Peak incident and the sale of non-firm power as firm to Colorado Springs Utilities, for example, were entered in Schedule C. Ex. SNO-156

Q. Were these the only entries?

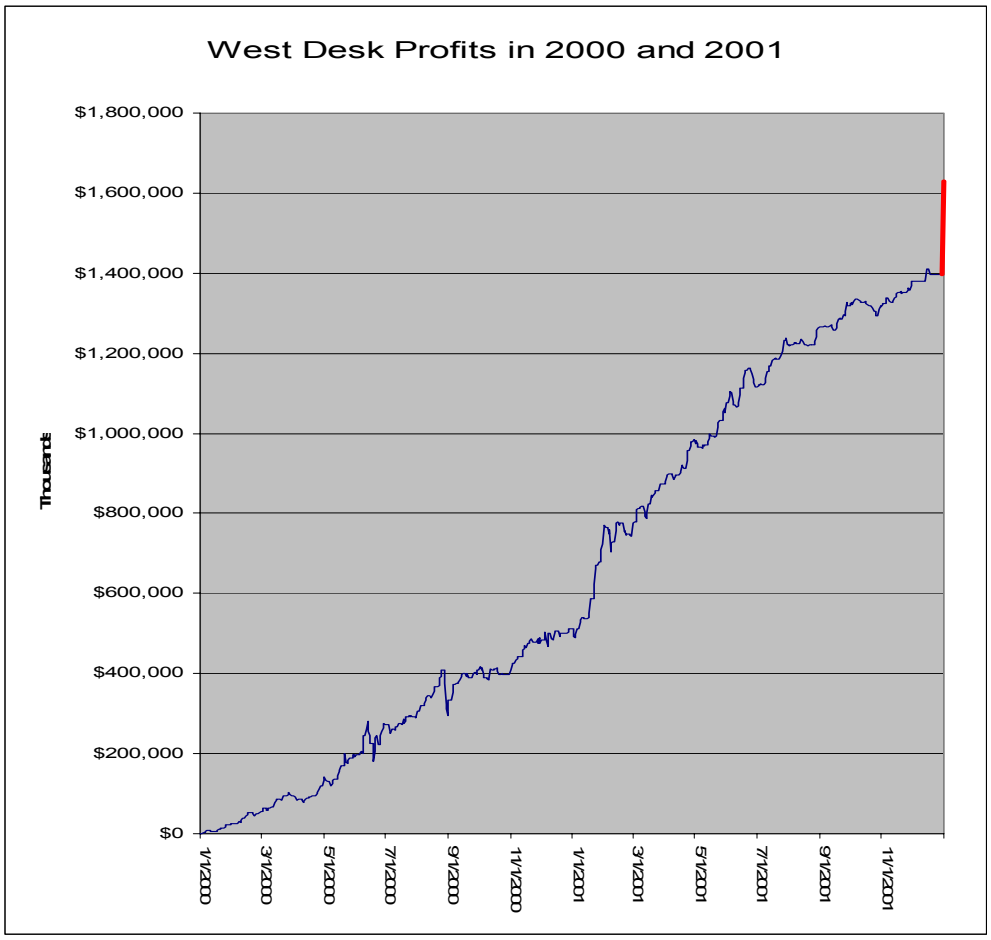
A. No, many of the entries were largely theoretical. Reduced liquidity in California was valued at $107,522,264 as of May 7, 2001. This was almost half of the total $267,081,464 in reserves on Schedule C. Ex. SNO-157

Q. Should this quarter billion dollars be part of the disgorged profits?

A. Yes, but since the dollars were removed from elsewhere in Enron's books, a settlements-based methodology will be unlikely to ever find their source.

Q. Is this likely to make a difference?

A. Yes. A quarter billion dollars makes quite a substantial bulge in West Desk's profits over this period. The chart below shows daily earnings at Enron's West Desk in 2000 and 2001. The blue line represents cumulative earnings until the very end of 2001. I have indicated the final step in earnings at the end of 2001 in red --$220,787,000 – because this burst in earnings is so surprising.



Q. Why have you highlighted the $220,787,000 in profits made at the end of 2001?

A. These would appear to be the Schedule C amounts both by size and timing. Their magnitude is quite similar to the size of the Schedule C tables we have been able to discover. More importantly, since Enron entered bankruptcy on December 2, 2001 and had largely ceased trading activities in November, it is very unlikely that a major profit would have occurred at the end of the month. These are profits taken as reserves from earlier periods, including profits derived from Enron's trading in violation of the MMIP. If Enron had not gone bankrupt in 2001, these Schedule C reserves would most likely have been taken to even out the "stair steps" of future earning results.

Q. Is there evidence that manipulation of earnings reached down to the "West Desk"?

A. Yes. Ex. SNO-158 shows an email where John Lavorato has directed the change in the PG&E bankruptcy reserve in time for a $25,000,000 million boost in second quarter 2001 earnings.

Q. Was Tim Belden ever directly involved in earnings manipulations?

A. Yes, Belden increases the Silver Peak reserve due to a non-existent lawsuit on 6/13/2000. Since Silver Peak had been settled already, this reserve seemingly would only change reported earnings during the California crisis[73]. Ex. SNO-159.

Estimating the Scale of Unjust Profits

Q. If the settlements based-approach is unwieldy, unlikely to provide either justice or accuracy, and would result in substantial transfers from victims to Enron, how would you approach the problem of disgorging unjust profits?

[73] June 13, 2000 Tim Belden Schedule C Documentation Form

A. There is no perfectly accurate accounting approach. Enron's chief trader for the West Coast and their Chief Financial Officer have both plead guilty to criminal charges related to violations of federal law relevant to these proposed calculations. I believe the correct approach is to return to the concept behind market-based pricing. When markets provide transparency and credibility, we should and do use them for the appropriate price signals. When they don't, we usually fall back on a cost- based approach. Enron should be forced to disgorge its West Desk profits above cost on each day it violated the MMIPs during January 1, 2000 to June 20, 2001.

Q. Isn't this draconian?

A. Not at all. It is only asking that Enron return to the economic situation it would have been placed in if it had not abused the privilege of buying and selling electricity at market-based prices. In a sense, it is very moderate, since it does not seek disgorgement of profits for days when no evidence exists of market manipulation.

Q. How would you treat the Schedule C amounts?

A. Since the $220, 787,000 amount simply reflects a form of accounting manipulation for profits taken from previous periods, I would allocate these amounts over the period from January 1, 2000 through December 2, 2001.

Q. Once that adjustment is made, what proportion of Enron West Desk profits would apply to the period from January 1, 2000 through June 20, 2001?

A. The total would be approximately $941,431,491.

Q. How did you calculate this value?

A. I summed Enron's DPR earnings for each day where evidence existed that a violation of the MMIP had taken place.

Significance of This Section of Testimony

Q. Please summarize the significance of this section of your testimony.

A. Enron's accounting practices have been a major issue in the investigations and prosecutions. A central issue in the disgorgement of profits is which Enron data can be taken at face value. Enron's settlement level data and profits are all subject to concerns over Enron's fraudulent accounting practices. In the face of evidence of criminal fraud and accounting manipulations by Enron, all inferences should be drawn in favor of consumers and against Enron when determining the "full extent" by which Enron was enriched unjustly.

IX. NON-MONETARY REMEDIES

Q. What non-monetary remedies are warranted in these gaming and partnership show cause proceedings?

A. Enron's market-based rate authority should be revoked at the earliest possible date in these proceedings of January 1, 2000. The manipulative trading practices engaged in by Enron were unjust and unreasonable and it would be a poor public policy to permit Enron to have the privilege of selling power at market-based rates at a time when Enron was engaged in market manipulation.

Q. Has the Commission already found that revocation of Enron's market-based rate authority is warranted?

A. Yes. In Docket No. EL03-77, the Commission revoked Enron's market-based rate authority prospectively, as of June 25, 2003, based upon findings that Enron engaged in a range of "unreasonable practices (i.e., gaming and wash trading)" in violation of the Federal Power Act, including gaming practices that are the subject of these show cause proceedings. (106 FERC ¶ 61,024 at PP13, 2, 9).

Q. Has the Commission recognized that it may be appropriate to revoke Enron's market-based rate authority as of an earlier date in these gaming and partnership show cause proceedings?

A. Yes. As the Commission found in Docket EL03-77, authorization to sell power at market-based rates is a "privilege." (106 FERC at P 13). Enron abused that privilege by engaging in fraudulent schemes to manipulate the market starting as early as 1998. While the Commission found that the scope of Docket No. EL03-77 involved a prospective remedy, the Commission also found that a retroactive remedy of revocation of Enron's market-based rate authority is an appropriate subject of these gaming and partnership show cause proceedings. (106 FERC at P 47).

Q. Do you believe that revoking Enron's market-based rate authority, as of January 1, 2000, will advance FERC's goal of fostering competitive regional markets operated by RTOs or ISOs?

A. Yes. To the degree FERC wants to centralize markets into ISOs and RTOs, FERC is going to be cast in the role of an aggressive regulator of market abuses. The record, not only in California, but also in England and Alberta, shows that centralized markets are easily manipulated. If FERC wants centralized markets to succeed, FERC must take

meaningful action against entities, such as Enron, that repeatedly engage in purposeful acts of market manipulation.

Q. Does this complete your testimony?

A. Yes.