UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Enron Power Marketing, Inc.	**)**	**Docket No. EL03-180-000**
and Enron Energy Services Inc.	**)**	
	)	
Enron Power Marketing, Inc.	**)**	**Docket No. EL03-154-000**
and Enron Energy Services Inc.	**)**	
	)	
Portland General Electric Company	**)**	**Docket No. EL02-114-007**
Enron Power Marketing, Inc.	**)**	**Docket No. EL02-115-008**
	)	
El Paso Electric Company	**)**	**Docket No. EL02-113-000**
Enron Power Marketing, Inc., and	**)**	
Enron Capital and Trade Resources Corp.	**)**	
		(consolidated)

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

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I. INTRODUCTION AND PURPOSE

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. Are you the same Robert McCullough who submitted Prepared Direct Testimony (Ex. SNO-58) earlier in this proceeding?

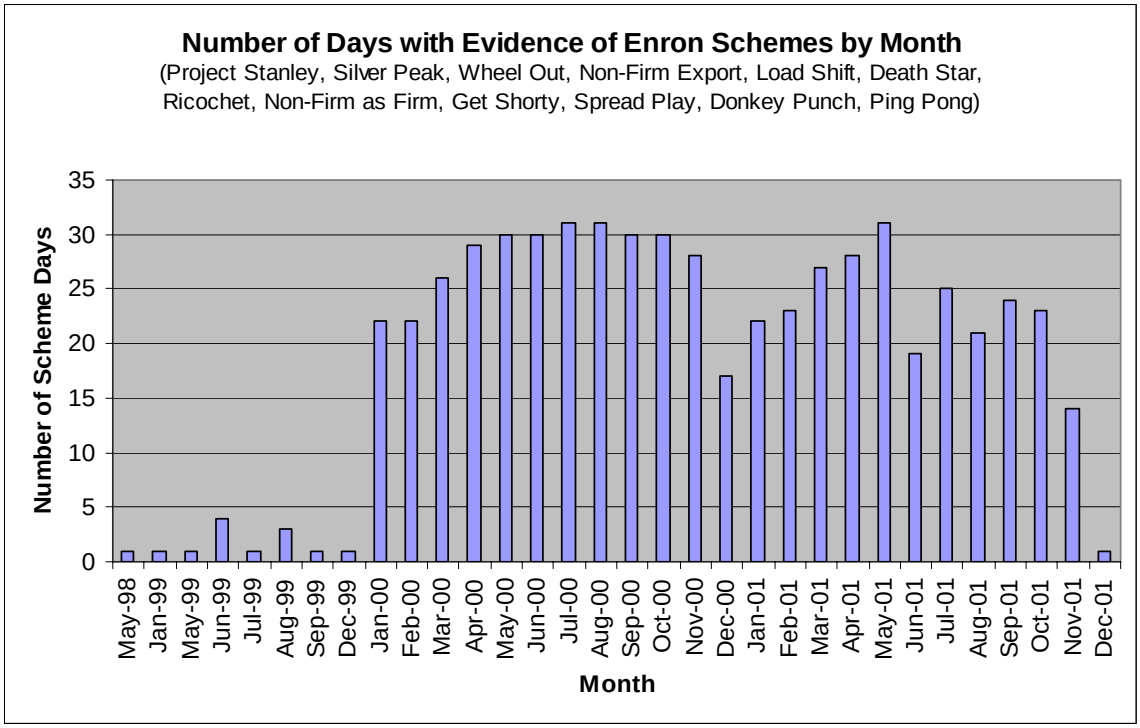
A. Yes.

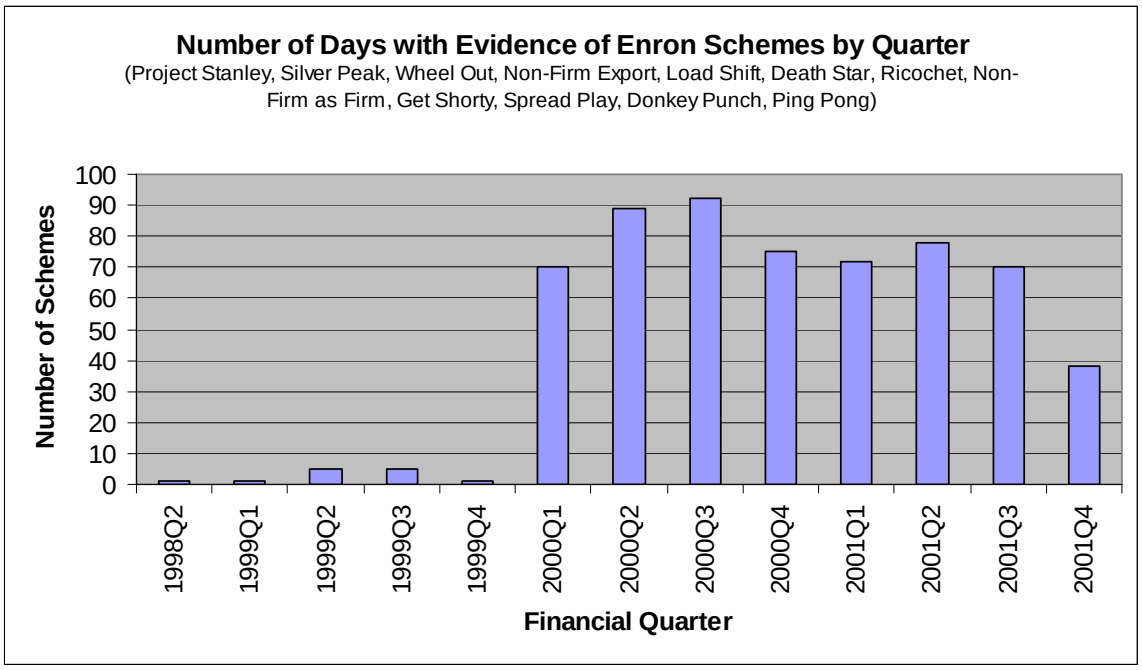
Q. What is the purpose of your supplemental testimony?

A. The purpose of my supplemental testimony is to further demonstrate Enron's violations of FERC tariffs and orders during the time frame of January 16, 1997 to June 25, 2003 established in the Commission's July 22, 2004 Order. (*El Paso Electric Co., et al*., 108 FERC ¶ 61,071 (2004) My supplemental testimony also addresses the level of Enron's costs and unjust profits during the period January 16, 1997 to June 25, 2003.

Evidence now exists demonstrating that Enron engaged in gaming or anomalous market behavior throughout the period at issue in this case. In addition to the reporting violations already found by the Commission, which begin with Enron's failure to report the El Paso contract on January 16, 1997, we now have evidence demonstrating that Enron engaged in schemes to game the Western markets throughout nearly all of the period at issue in this case. It is clear from the guilty pleas of Enron's power traders operating in the Western interconnection that they were engaged in fraudulent schemes designed to game the Western energy markets as early as 1998. Evidence we have uncovered from internal Enron documents demonstrates that Enron executed market

manipulation schemes on 597 days beginning on May 6, 1998. These schemes continued at least until Enron declared bankruptcy. The evidence from Enron's records shows schemes being carried out as late as December 2, 2001. Beginning in January 2000, at least one scheme was carried out nearly every day. It is important to note that, because we still have substantial gaps in the data available to us, the figures reported here are conservative and the actual numbers of schemes carried out and the days on which schemes occurred are both likely to be substantially underestimated.





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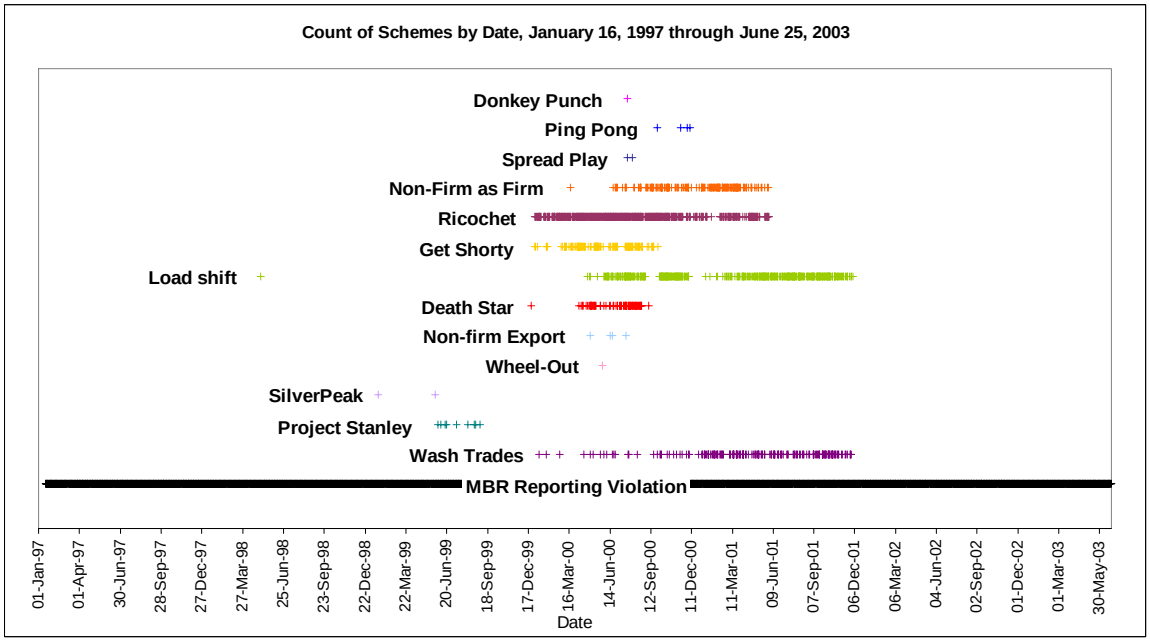

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3 Enron should therefore not be permitted the privilege of charging market-based
4 rates during the January 16, 1997 to June 25, 2003[1] period and all profits reaped by
5 Enron's West Trading Desk in excess of Enron's costs are unjust. Based on my analysis

[1] *Enron Power Marketing, Inc.*, et al., 108 FERC ¶61,071, at P 2 (2004) (" Enron potentially could be required to disgorge profits for all of its wholesale power sales in the Western Interconnect for the period January 16, 1997 to June 25, 2003").

of Enron's cost and revenue data, the full extent of Enron's unjust and unreasonable profits is at least $1,677,283,367.08.

Q. Is there one piece of evidence that you have received in the course of discovery that best summarizes the case against Enron?

A. In February 2001, Enron put together a script for a video intended to remind its traders of the perils of regulatory enforcement. In hindsight, the script is unintentionally humorous. The script included roles for executives like Jeff Skilling, Mark Palmer, Jim Derrick, and Greg Whalley. A central theme of the script was the danger that anticompetitive activities recorded on trader tapes would prove a threat to Enron. The opening scene in the script included the plaintiff's address to the jury:

> (Plaintiffs Lawyer) May it please the Court, counsel, and ladies and gentleman of the jury. This is a case about greed. Pure and simple. It is a case about a big corporation - one of the largest energy and communication companies in the world -- ignoring its legal and ethical obligations in a quest for the almighty dollar. What Enron did is wrong - no question about it. And that will be as clear as crystal by the end of this trial.
>
> What evidence will there be that Enron utilized anticompetitive methods to achieve and maintain its position in the market? Enron's trader's -- whom I am confident you will find incredibly cocky, arrogant and self-centered- will admit on this witness stand (pointing to witness stand) that "that Enron set the price," that Enron was out to "crush the little guy," and that Enron's ultimate goal was to "control the market." Unfortunately for Enron, the traders can't suppress the truth when they testify at this trial. They cannot look you in the eyes and lie. Why? Because, you see, each and every statement the traders made on the telephone was recorded, providing us with an unassailable record of Enron's anticompetitive and unlawful conduct.
>
> (Ex. SNO-711, page 2)

In a prescient moment, the producer, Beth Stier, asks Richard Sanders:

> Questions Regarding Scene 7:
>
> * What regulatory body would be involved? Securities & Exchange Enforcement Office? FBI? US Attorney General's Office?
>
> What circumstances would prompt a regulatory body to look at transcripts of Enron's traders' conversations?

What would these two say to each other to let the audience know that they're about to make an arrest?

* Would they arrest Greg Whalley? Or would they arrest the Main Character?

(Ex. SNO-711, page 58)

Q. Who apparently commissioned the script?

A. Richard Sanders, Enron's Vice President of litigation who was concurrently managing Enron's defense against Federal and state investigations in California. Perhaps it is his participation that makes the dialog in the script so similar to the actual dialog identified in the testimony of Dr. Pechman and recorded in the trader tape review conduct by Stephen Hall.

Q. When you first reviewed the script, did you check who the other Enron personnel were?

A. Yes. The second draft of the script was sent to Andrew Edison. The first document I reviewed to find out who Andrew Edison was a March 26, 2001 email from Richard Sanders to Andrew Edison entitled "re; project stanle[y] tapes." This email inquired if the incriminating trader tapes implicating John Lavorato in anti-trust violations had been destroyed. (Ex. SNO-712)

Q. Why did you find the script so remarkable?

A. Because the Enron trader tapes we have reviewed contain examples of nearly every kind of transaction identified by Enron as illegal in the script. Moreover, and ironically the plot of the script closely forecasted the actual outcome at Enron.

II. EVIDENCE OF PREVIOUSLY UNDETECTED SCHEMES

Q. Have you uncovered additional evidence of violations by Enron of FERC orders and tariffs since your Prepared Direct Testimony (Ex. SNO-58) was submitted on February 27, 2004?

A. Yes. As described in more detail in this testimony, I have uncovered extensive additional evidence of gaming schemes described by the Commission in its June 25, 2003 orders in these proceedings. For example, with respect to the congestion-related gaming schemes of Death-Star, or Circular Scheduling, and Load Shift, we now know that considerable documentation was generated by Enron in the course of plotting the networks of transactions that implemented these various schemes. Documentation boldly lays out patterns of deceitful transactions designed to fool other market participants and enrich Enron at the expense of others by collecting unjustifiable congestion revenues and by increasing market clearing prices. Enron's carefully deliberate actions forced non-economic prices and system operation, which is a patently unfair and unreasonable outcome for all market participants, and subsequently for the many millions of customers whose rates were affected by these prices.

A great quantity of this documentation has only recently been released by Enron—a considerable amount within the last two months—and that only under relentless persistence on the part of Snohomish. With respect to the ancillary service-related gaming scheme of Paper-Trading, also known as "Get Shorty", we now know that on multiple occasions Enron sold ancillary energy that it had not yet procured. Similarly, with respect to the False Imports schemes, we now know that Megawatt Laundering (also known as "Ricochet") involved an illegitimate from of arbitrage which raised the price

for which Enron was able to sell that particular energy into the CAISO control area. In addition, I have uncovered new evidence of gaming schemes described by Enron including but not limited to, Big Foot, Russian Roulette, Donkey Punch, Big Tuna, Little Tuna, Sidewinder, Spread Play, and Project Little Man. I will elaborate on these new schemes later in the testimony. In my expert opinion, all of these schemes constitute gaming and anomalous market behavior. The schemes violate not only the PX and ISO tariffs, but also Enron's market-based rate authority because they involve intentionally dishonest and fraudulent behavior.

Q. Was all relevant evidence available to FERC staff when it conducted its investigation of the Western market meltdown?

A. No. FERC has never had access to all of the necessary evidence needed to unearth the multitude of Enron schemes and the total West Wide Impact of Enron's market manipulations. As was the case in my Prepared Direct Testimony (Ex. SNO-58) filed in these proceedings, I am introducing even more "new" evidence we have received over the last few months which shows that Enron's misconduct dated back even earlier than we originally believed and that it encompassed a broader number of schemes, which took place even more often, than we originally believed.

Q. Can you give an example?

A. Yes. There are a multitude of examples. Either through indolence or recalcitrance Enron had not provided the vast majority of relevant pieces of evidence to investigators, to FERC and other agencies. Even the responses to discovery in previous proceedings at FERC were woefully inadequate.

Critical materials include:

1. Real Time Incremental Sheets outlining specific schemes
2. CAPS To Enpower Reconciliations including signed trader reviews of Load Shifts and Death Stars
3. CAPS, Enpower, Settlement and other databases
4. The working files for market manipulation from the computer servers used to support Enron's Western Power Trading's own servers
5. Documents in Enron's hands itemized on the CDMS and LiveLink document databases

I will address the question of missing Enron documents and the appropriateness of drawing negative inferences concerning specific critical missing documents later in this section.

Q. Why do you believe the new evidence uncovered by Snohomish is important?

A. The new evidence identifies several previously undisclosed schemes and the databases which Enron used in order to track and implement such schemes. The new evidence also demonstrates that Enron intended its schemes to drive up market prices not only in the California ISO and PX markets, but also in interconnected markets throughout the West and throughout all time periods. The clear and voluminous evidence that has been produced in this and other proceedings demonstrates that Enron's patterns of misconduct were deeply engrained within the institution itself. I will address this culture of misconduct in Section VIII of my testimony.

Q. Why is it so important to consider the interrelated nature of the markets in this proceeding?

A. The inter-relatedness of the market is crucial to enforcing a remedy which reasonably addresses the scope of Enron's conduct. Every credible expert on this subject (including, for example, the Commission and the FERC Staff who investigated the power crisis) agrees that the Western Interconnection operates as a single market. The link between spot market prices and forward market prices is likewise recognized by nearly every credible expert. If Enron is required to disgorge only those profits it obtained by gaming the ISO and PX markets, it will be allowed to retain unjust profits illegally obtained in other markets throughout the interconnected West and in the forward markets.

For example, the purpose of the Enron scheme Load Shift went beyond the simple increase in Firm Transmission Rights (FTR) revenues on Path 26. Enron also profited by adjustment bids designed to reduce their imaginary loads in SP-15. This is simply the start, however. When an FTR Load Shift was planned, Enron knew that it would raise prices in SP-15 relative to the normal course of supply and demand. This knowledge allowed Enron to purchase ahead and then sell at the manipulated prices. And, finally, since Enron knew that different regional prices as well as different transaction durations were correlated, Enron could profit from its manipulations in other regions as well.

Q. Does the ISO's Market Monitoring Information Protocols (MMIPs) contain language that proscribes anomalous practices involving imports and exports from adjacent markets?

A. Yes. The California ISO MMIP 2.1.1.5 is directs that:

> *unusual activity or circumstances relating to imports from or exports to other markets or exchanges*. 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 of other unacceptable practices.
>
> (Ex. SNO-127) (emphasis added)

Q. What does this mean in the context of the current proceeding?

A. This means that it is a violation of the MMIP to participate in "unusual activity or circumstances" related to other markets. The remaining sections of my testimony, especially the schemes sections, will detail how these schemes are in direct violation of the MMIPs.

Q. Do all of the schemes presented in this testimony constitute unusual activity or circumstances?

A. Yes. It is hard to imagine that undertakings with names like "Death Star", "Big Foot", "Donkey Punch", or "Ricochet" would not constitute unusual activity or circumstances.

Q. Are you aware of any other violations of FERC tariffs and orders by Enron, during the period January 16, 1997 to June 25, 2003, not already mentioned in testimony?

A. Yes. For example, Silver Peak. Two Silver Peak events have been identified that clearly violate the MMIP's, one on January 20, 1999 at 12:00 P.M. (hereafter referred to as Silver Peak I) and one on May 25, 1999 at 7:00 A.M. until 10:00 P.M. (hereafter referred to as Silver Peak II). In both events, Tim Belden scheduled more than 1,000 megawatts over the 15 MW line between southern California and a small town in central

Nevada - 1,000 megawatts in January, 1999 and 2,900 megawatts in May, 1999. These ploys were designed to manipulate both short term and long term prices.

III. FIRST EVIDENCE OF GAMING

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

A. We do not know precisely when the first schemes were launched, although the guilty please of Enron traders indicate this occurred in 1998. We do know 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 of the ISO's Imbalance Energy Market. At the same time, PerotSystems marketed its inside knowledge of the ISO's system to assist market participants, notably including Enron, in exploiting the market rules.

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 counterparties 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.
>
> (Ex. SNO-80)

Notably, the letter starts out:

> I am sending this to you via the fax because it may contain information that would require you to destroy it or to black out selected sections after you have read it. (I can edit it as you may request and then send an email version.).

(Ex. SNO-80)

This attempted cover up is evidence 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. Had George Backus also contacted Enron with offers to share potentially criminal information?

A. No. Mr. Backus had sent an even more outlandish offer to share proprietary information with Enron in November of 1997:

> Subject: ISO found one of the $1B loop-holes
>
> Date: Fri, 7 Nov 1997 12:27:14 -0700
>
> From: "George Backus" <gbackus@boulder.earthnet.net>
>
> To: <khannon@ect.enron.com>, <krice@ect.enron.com>,
>
> <skean@ect.enron.com>
>
> Sorry to bother you. Please treat this note as confidential. You did not hear this from me! And please make your corroborating inquires subtle. I cannot at present relay all the information, but to act imprudently on your part could be most detrimental to your current plans.
>
> I just read your release claiming to not (at least publicly) intend to market BPA power as I got off a telephone conversation regarding the "shock waves" within the ISO/PX on another matter. The ISO has finally become aware of one of the $1B loop-holes in the protocols (as I discussed at your conference). They are attempting to fix it but the cure will be worse than the "disease." We find no politically acceptable approach that can prevent the $1B black hole(s). We have now found and verified several $1B loop holes. Someone has to take the money. I talked to BPA at your conference and they agree that they must use a third party to process the "game" and avoid political fall-out. They have to limit their take. This may actually be a tough problem to avoid for BPA. You may have a worse problem

There are also stirrings within the ISO/PX that the $1B game provides a very illegal "protection game" opportunity. If, for example, "an ENRON," played the $1B game, the cost of energy would easily go to 100+mills to all others. But if the consumer or a utility went in with "an Enron," then "an Enron" could net back the money and guarantee low prices. Bottom line: "Go with 'an Enron' or go out of business." Despite your innocence, the legal and PR damage that could be done to you is significant.

I am aware of your activities (and hirings) to understand how the ISO and PX rules can be best used to your advantage, but I am also aware that the types of methods and people employed cannot provide you the answers you need.

For the moment, I just want you to be aware of what may transpire soon and thereby carefully plan your recommendations to the ISO/PX as they change the rules – so that as they make matters worse, you do not become the obvious villain – no matter what you do or don't do.

To put your thinking in check, it is true that I would have no problem consulting for you to get the $1B but that is not my purpose. Our work shows the as-designed IS/PX/SC system to have NO stability points.

The system design must (and will) fundamentally change. I want the system to work and I will then maximize my profits accordingly. Your actions or inaction will unfortunately determine the sequence of events and how painful (expensive) the process will be. You are in the best position to play the $1B game using BPA power and some IOU capacity in a manner that makes you good profits but does not damage the customer or the non-IOUs. It is, however, very easy for you to really make a mess.

If you did any checks on me, you would know that I am not joking or making up a story.

(Ex. SNO-713)

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:

PerotSystems' 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 PerotSystems for the ISO.

Article 31 of the Contract expressly prohibits the ISO Alliance, including PerotSystems, 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 PerotSystems on behalf of the ISO.

(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 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 presaged 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 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 PerotSystems 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." (Ex. SNO-87) In his notes, 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 PerotSystems staff?

A. Yes. PerotSystem's George Backus submitted an invoice to Enron for his services for the January 13, 1998 meeting and there is also a copy of his presentation to Enron from that day. (Ex. SNO-85 and Ex. SNO-84)

Q. Was the January 13, 1998 meeting significant?

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.

> 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.
>
> (Ex. SNO-86)

We know that these and other materials from PerotSystems were regularly distributed to several Enron executives, including Belden (Ex. SNO-87) (Ex. SNO-714)

Perot's January 13, 1998 presentation to Enron explains the use of early "pinging" tactics – "Micro-Bids As Probes" – to develop gaming strategies as well as "Combined Generation/Trading/Retail Over/Under-Booking Strategies. (Ex. SNO-84) Following this, Ed Smith's April 8, 1998 memo explains: "There is already evidence that participants in the ISO/PX are delivering micro-probes (small 'unusual' bids) designed to find the weaknesses in the system and the software … Both loads and supplies can be

strategically used to create local markets with added [Enron Capital and Trading] profitability." (Ex. SNO-86)

Q. When did Enron know about the potential to submit false schedules, such as to mix and match loads and generation from its clients, to game the market?

A. Although Enron has failed to provide us with much information about earlier activities, PerotSystems explained this potential to submit false schedules in its January 13, 1998, presentation to Enron, specifically the ability to "under and over book" both power and load. (Ex. SNO-84) This was followed by further explanation in Perot's letter of April 8, 1998 stating, "As George [Backus] described in his last visit, the rules for the schedule coordinators (SC) allow SCs to mix and match loads and generation after the fact without telling its clients. The SCs also have information and timing advantages…that allow added profitability — if used wisely." (Ex. SNO-86) A specific example used is "If [Enron Capital & Trading] – associated energy supplies or loads in Northern California help create congestion, [Enron Capital & Trading] – associated energy supplies in Southern California can be strategically used to create local markets with added [Enron Capital & Trading] profitability." (Ex. SNO-86)

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. (Ex. SNO-73) 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:

> Tim Belden advised me that the trading floor had used a similar technique in January and that no one was upset by it. Accordingly, he wanted to call the PX and use this as a defense. I advised against divulging this information to the PX at this time, especially since they have yet to ask EPMI for any discovery and have told Tim they are viewing this as an isolated event.
>
> (Ex. SNO-715)

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. (Ex. SNO-32)

Q. Was Enron aware of the type of harm they could inflict upon the ISO market through these manipulative strategies as outlined by PerotSystems?

A. Yes. In the 1998 Arthur Anderson LLP Enron Energy Services Business Audit Review, it was stated that:

> EES has understated actual volume flow to EPMI (and therefore the ISO) by approximately 600,000 MWH. As the ISO relies on self-reporting of actuals, underreporting actuals in an ISO unaccounted for. The unaccounted for is charged back to all service providers on a pro-rata basis. EES' underreporting to the ISO results in a lower expense as only a portion of EES related unaccounted for is charged back to EES (the remainder is charged to the other service providers). Potential significant legal issues exist as a result of this underreporting.
>
> (Ex. SNO-716)

This illustrates that it was known to Enron as far back as 1998 that their gaming had serious effects on the ISO. Despite this very clear statement, there are numerous examples of Enron's schemes that directly capitalize on this weakness.

Q. Is there other evidence of games in 1998 and 1999?

A. Yes. In the "Nite Report" for May 6, 1998, the comments included:

> Note for Tag# 155X
>
> **This is a PHONY import we showed to the ISO, so we could sell to the Power Exchange at the Day-Ahead price and show a balanced schedule to the ISO (Import = Sale to PX).
>
> We cut the LA schedule (Tim Belden called the ISO) and so now, we are effectively "short" our sale to the PX. Since the ISO will cover any imbalance (we refer to this as the "imbalance market") at the Ex-Post price, LA agreed to this "game."

> The ISO will call & tell us we're out of balance, so tell them we intend to correct the imbalance in the "Hour-Ahead" market. In fact, we really intend to do NOTHING in the Hour Ahead Market and let the ISO serve the imbalance at the Ex-Post Price.
>
> Our goal was to see if we could and take advantage of buying power at the Ex-Post price (which has been much lower than the day-ahead price) and sell to the PX at the Day-Ahead price.
>
> (Ex. SNO-717)

Q. Did Enron traders talk openly and specifically about gaming?

A. Yes. For example, in his accomplishments for 1999, Scott McKinney noted that he had,

> Along with Mike Driscoll and John Forney . . . actively and successfully pursued gaming California's congestion management system. With the use of our California loads and market forecasting techniques we have been able to capture significant value in the cong. Market. This will prove to be a low risk profit center for Enron as we head into next year.
>
> (Ex. SNO-797)

Silver Peak

Q. Please summarize the Silver Peak scheme?

A. Early in 1998 several consultants who were helping to develop the California ISO's congestion software noticed flaws in the software. They brought these flaws to the attention of a number of market participants, including Enron. The basic problem was that the California PX considered all proposed schedules as feasible during its initial calculations in the day ahead market. This allowed the filing of fraudulent schedules that would be cut by the ISO at the next step in the hour ahead market. The scheme appeared to Enron to be well suited to a small intertie between California and Nevada called Silver Peak. The Silver Peak line was built to carry power from a geothermal plant in rural Nevada to Southern California Edison.

Q. When did Enron first implement this scheme?

A. In January 1999 Enron scheduled 1,000 megawatts from Nevada to California over the 15 megawatt line.

Q. Why would a 1,000 megawatt schedule over a 15 MW power line violate the MMIPs?

A. A number of sections of the MMIPs are relevant, as follows:

> MMIP 2.1.1.3: Unusual trades or transactions;
>
> MMIP 2.1.1.4: 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
>
> MMIP 2.1.1.5: Unusual activity or circumstances relating to imports from or exports to other markets or exchanges.
>
> MMIP 2.1.3 Gaming: "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 periods 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 … or actions or behaviors that may otherwise render the system and the ISO Markets vulnerable to price manipulation to the detriment of their efficiency.
>
> (Ex. SNO-127)

In this case there is no possibility that Enron's January 20, 1999 schedule could possibly reflect a true transfer of power.

Q. Did the California PX agree with your analysis?

A. Yes, the California PX reacted strongly to the May 25, 1999 scheme. In its November 11, 1999 letter to Richard Sanders, David Jermain of the California PX concluded:

> Enron's actions were a violation of Power Exchange Scheduling and Control Protocol ("PSCP") Section 4.1.l(b) ("Supply Portfolio Bids") and Tariff Section 3.3.5 ("Closing the CaPX Auction"). Enron failed to discharge its obligations under PSCP Section 4. I. 1 (b) to identify the Scheduling Point for its successful bid "in order to fulfill the CalPX Participant's aggregate obligation to supply Energy." (quoting from PSCP Section 4. I. l la)) and under Tariff Section 3.3.5 to "convert" its portfolio bids to "resource specific information" as set forth in that Section.

(Ex. SNO-718)

Q. Didn't Enron often argue that it would have been feasible if another market participant had scheduled an equally unrealistic amount of energy into Silver Peak, Nevada?

A. Yes. This disingenuous defense is contradicted by the planning document we found concerning the Silver Peak scheme:

> Risks
>
> • Sierra Pacific, or someone else, could submit an adjustment bid to purchase energy at Silver Peak, thus creating a counterflow, thus allowing our energy to get into the ISO. As a result, we would be short against the PX DA zonal MCP. To fill this schedule we would have to do either a "Timed Removal" or purchase the energy from Sierra Pacific. With our "Timed Removal" the ISO would be short in real time and would have to INC for the entire volume that we were short, thus driving up Ex Post prices. We would then lose money on our "real" MW that we sold at a low price and our "fake" MW that we sold at a low DA MCP and bought at a high Ex Post.

(Ex. SNO-719)

Q. Why would Enron file impossible schedules over this small line?

A. There is extensive documentation on the Silver Peak market manipulation. Enron supplied an analysis of this scheme in a document called "Potential Games."

> Situation: PX sets initial MCP without considering whether or not power can actually be delivered; PX sets final price based on adjustment bids submitted to and accepted by ISO; if inter-SC trades were not accepted in initial auction because of low MCP, these resources are gone for good from Day Ahead Market; PX may have higher DA MCP than otherwise because all sellers are not allowed to or may fail to submit adjustment bids.
>
> Goal:
>
> Increase final zonal MCP to advantage cash position or send impression that forward prices will be higher.
>
> How:

> Submit DA Energy bid for large volume (5,000 to 10,000) of "fake" MW at a low price. Submit adjustment bid for entire quantity of "fake" MW at a small tie point such as Silver Peak at exactly the MCP. Since Silver Peak can only fit 20 MW, all of our MW except 20 MW will be adjusted down by the ISO. If our adjustment bid is higher than others submitting schedules at Silver Peak, all of our energy will be cut. The ISO will adjust other schedules up in SP15 or NP15 to make up for the MW cut at Silver Peak. Since the PX/ISO adjustment bid market is thinner than the 7:00 AM PX market, this may result in higher prices. If any of our MW are accepted to flow at Silver Peak, we do either a "Timed Removal" and take the imbalance risk or purchase the energy from Sierra Pacific.
>
> (Ex. SNO-719)

Q. What was the overall purpose for Enron's Silver Peak schemes?

A. Enron was setting prices in California and the Pacific Northwest by filing impossible bids that exposed the PX and ISO to additional adjustment costs. These bids were designed to manipulate short term and long term prices both in California and the Pacific Northwest.

This point is amply demonstrated by the goal in the Potential Games document above: "Increase final zonal MCP to advantage cash position or send impression that forward prices will be higher."

Q. Did Enron mislead the California PX about the Silver Peak scheme?

A. Yes. Tim Belden, senior manager of Enron's West Trading Desk in Portland, who has now pleaded guilty to fraud in connection with his activities on behalf of Enron, was interviewed by PX staff on December 14, 1999. An excerpt of this interview is as follows:

> When asked how he arrived at the decision to submit [Silver Peak schedules] he gave the following explanation:
>
> [Belden's] job is to manage risk for [Enron]. [Belden] read thousands of pages on the California market. He saw a loophole or opportunity to overschedule at an inter-tie. In such a case, [Belden] needed to ask himself what would happen if a participant exploited this opportunity? If he did not know the answer, [Belden] needed to investigate. [Belden] decided to submit a bid to overschedule at [Silver Peak] to find out what would happen.

> [Belden] agreed with the Acting Director of Compliance's characterization of Enron's actions as an "experiment" undertaken to see how the market would react to congestion caused by submitting an infeasible schedule, that is a schedule that greatly exceeded the capacity of the transmission line and any reasonable counterflow.
>
> [Belden] stated [Enron] had known about this loophole (tendering a schedule and then getting out of it by "dec'ing out" the same number of MWs through the adjustment bid process) for some time.
>
> He picked [5/25/1999] as the date on which to engage in this experiment because it was a mild day so that there would be less impact because loads were lower than if the weather had been hot.
>
> (Ex. SNO-720)

As we now know, Enron had already tested this "loophole" in January 1999.

Q. Is there additional evidence that the Silver Peak Incident took place?

A. Yes. Evidence exists both at the California ISO and in Enron's Enpower database. The analysis of Enpower shows the characteristic pattern of overscheduling constrained ties. Since the overschedule was subject to adjustment bids – conditional reductions in the schedule when the price was above a certain level – Enpower contains the remainder of the schedule that would in fact fit over the Silver Peak line:

Deal	Leg	Strip	Desk	Counter Party	Date	Direction	Volume	Price
175050	1	562242	EPMI Shor	Sierra Pac	1/19/1999 16:30	Buy	3	$ 21.00
175049	1	562241	EPMI Shor	California P	1/19/1999 16:28	Sell	3	

(Ex. SNO-721)

The 3 megawatt volume reflects the difference between the capacity of the line and the actual use of the line – 12 megawatts.

Page 3 of the daily report of the California ISO records the initial schedule. For clarity, I have highlighted the Silver Peak schedule, which is the last line of this table

BRANCH_GR	HOUR	INITIAL FLOW (MW)	FINAL FLOW (MW)	CHANGE	USAGE CHARGE
COI _BG	7	1836.90	1727.03	-109.87	$4.36
COI _BG	8	1750.00	1727.03	-22.97	$0.71
COI _BG	9	1748.00	1668.03	-79.97	$1.27
COI _BG	10	1751.00	1668.03	-82.97	$1.14
COI _BG	11	1854.00	1668.03	-185.97	$2.33
COI _BG	12	1755.00	1668.03	-86.97	$1.92
COI _BG	13	1568.20	1668.03	99.83	$0.01
COI _BG	14	1490.00	1668.03	178.03	$0.00
COI _BG	15	1491.00	1668.03	177.03	$1.24
COI _BG	16	1491.00	1668.03	177.03	$0.01
COI _BG	17	1742.00	1668.03	-73.97	$1.12
COI _BG	18	1758.00	1668.03	-89.97	$5.09
COI _BG	19	1759.00	1668.03	-90.97	$4.51
COI _BG	20	1767.00	1756.03	-10.97	$1.63
COI _BG	21	1765.00	1756.03	-8.97	$0.66
COI _BG	23	1166.00	1756.03	590.03	$0.10
COI _BG	24	1064.00	1756.03	692.03	$1.17
ELDORADO _BG	15	1457.80	1457.03	-0.77	$1.25
ELDORADO _BG	23	1806.20	1505.03	-301.17	$2.90
NOB _BG	7	1751.00	1746.03	-4.97	$0.02
NOB _BG	8	1751.00	1746.03	-4.97	$0.01
NOB _BG	9	1751.00	1746.03	-4.97	$0.02
NOB _BG	10	1761.00	1756.03	-4.97	$0.02
NOB _BG	11	1761.00	1756.03	-4.97	$0.89
NOB _BG	12	2061.00	1756.03	-304.97	$1.61
NOB _BG	13	2061.00	1756.03	-304.97	$0.03
NOB _BG	14	2066.00	1761.03	-304.97	$0.02
NOB _BG	15	2067.00	1762.03	-304.97	$1.26
NOB _BG	16	2067.00	1762.03	-304.97	$0.03
NOB _BG	17	2070.00	1765.03	-304.97	$0.46
NOB _BG	18	1982.00	1777.03	-204.97	$1.81
NOB _BG	19	1982.00	1777.03	-204.97	$0.96
NOB _BG	20	1782.00	1777.03	-4.97	$0.01
NOB _BG	21	1772.00	1767.03	-4.97	$0.01
NOB _BG	22	1751.00	1746.03	-4.97	$0.01
PATH15 _BG	23	2516.23	1690.03	-826.20	$0.12
PATH15 _BG	24	2639.84	1649.04	-990.80	$1.27
SILVERPK _BG	1	1012.00	15.03	-996.97	$0.00

Notes: Positive Final Flow represents congestion into the ISO; with the exception of Path 15 which represents S-N congestion.
Negative Final Flow represents congestion out of the ISO; with the exception of Path 15 which represents N-S congestion.

(Ex. SNO-722)

Q. Why does Enpower show 3 megawatts at Silver Peak instead of the 1,000 megawatt schedule submitted by Enron?

A. This is the result of the California ISO's congestion management program. When it recognized that it was impossible to fit 1,000 megawatts into the 15 megawatts of capacity available, it invoked adjustment bids to reduce the flow, and finally, if that did not work, reduced the schedule to 3 megawatts. Enpower records 3 megawatts since this is the final amount for settlements and the calculation of profits and losses.

Q. Why does Enpower show 3 megawatts for the Silver Peak schedule after the ISO's congestion program has provided final schedules?

A. The Silver Peak line has 15 megawatts. Of these, 12 megawatts are used for wheeling the Silver Peak geothermal contract. Only three megawatts are available for Enron, or any other scheduling coordinator to access. When CONG, the ISO's computer program runs,it reduces the schedule from 1,000 megawatts (or in the case of May 2 - 900 megawatts) to 3 megawatts.

Q. Wouldn't this information be available in Enron's California transaction database, CAPS?

A. Yes, but Enron has not provided 1999 data for CAPS.

Q. Is this a situation where it would be appropriate for the Hearing Officer to draw a negative inference due to the absence of what should have been readily available evidence?

A. Yes. If Enron had faced an audit, the disappearance of data from 1999 would have been a major issue. It is difficult to think of an innocent reason why this data is missing.

Q. Did Enron repeat this scheme?

A. Yes. On May 25, 1999 the Silver Peak scheme was repeated raising prices from $27/MWh to $52/MWh (Silver Peak II). The ISO daily report for May 24 shows that:

Congested Path Summary:

BRANCH_GR	HOUR	INITIAL FLOW (MW)	FINAL FLOW (MW)	CHANGE	USAGE CHARGE
ELDORADO _BG	1	1009.00	813.03	-195.97	$6.53
ELDORADO _BG	2	947.00	813.03	-133.97	$7.08
ELDORADO _BG	3	906.00	813.03	-92.97	$6.42
ELDORADO _BG	4	840.00	813.03	-26.97	$2.37
ELDORADO _BG	5	881.00	813.03	-67.97	$5.60
ELDORADO _BG	23	824.00	813.03	-10.97	$2.00
ELDORADO _BG	24	886.00	813.03	-72.97	$4.72
PALOVRDE _BG	2	2290.00	2256.03	-33.97	$2.07
PALOVRDE _BG	3	2373.00	2236.03	-136.97	$3.56
PALOVRDE _BG	5	2478.00	2236.03	-241.97	$5.45
PALOVRDE _BG	23	2425.00	2333.03	-91.97	$2.99
PALOVRDE _BG	24	2385.00	2293.03	-91.97	$2.50
SILVERPK _BG	7	2393.30	15.03	-2378.27	$18.06
SILVERPK _BG	8	2912.00	15.03	-2896.97	$13.10
SILVERPK _BG	9	2912.00	15.03	-2896.97	$25.01
SILVERPK _BG	10	2912.00	15.03	-2896.97	$10.01
SILVERPK _BG	11	2912.00	15.03	-2896.97	$20.00
SILVERPK _BG	12	2912.00	15.03	-2896.97	$20.00
SILVERPK _BG	13	2912.00	15.03	-2896.97	$20.01
SILVERPK _BG	14	2912.00	15.03	-2896.97	$20.01
SILVERPK _BG	15	2912.00	15.03	-2896.97	$20.01
SILVERPK _BG	16	2912.00	15.03	-2896.97	$21.89
SILVERPK _BG	17	2912.00	15.03	-2896.97	$21.80
SILVERPK _BG	18	2912.00	15.03	-2896.97	$20.01
SILVERPK _BG	19	2912.00	15.03	-2896.97	$12.42
SILVERPK _BG	20	2912.00	15.03	-2896.97	$10.01
SILVERPK _BG	21	2912.00	15.03	-2896.97	$10.22
SILVERPK _BG	22	2912.00	15.03	-2896.97	$12.51
SYLMAR-AC_BG	24	41.00	32.03	-8.97	$24.50

Positive Final Flow means Congestion into the ISO; for Path 15, it is S-N congestion.
Negative Final Flow means Congestion out of the ISO; for Path 15, it is N-S congestion.

(Ex. SNO-723)

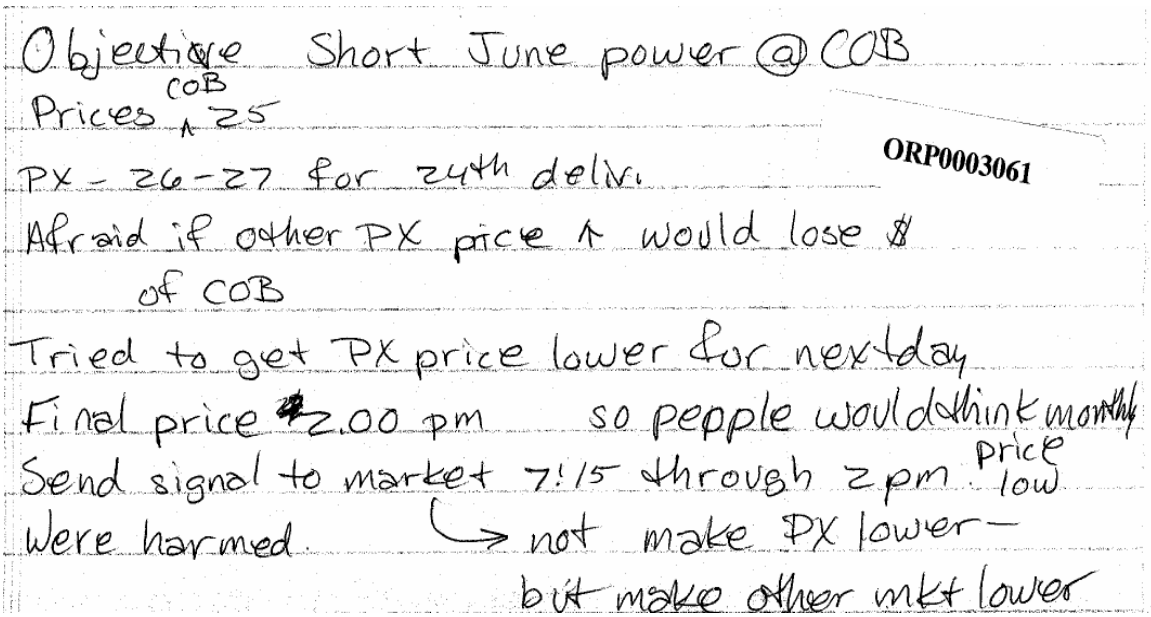
Q. Why did Enron enter the impossible schedules for May 25, 1999?

A. Enron has lost the financial information that would allow us to trace the transactions – a large number of detailed Daily Position Reports are missing for 1999, and no data from CAPS for 1999 has been produced – but a line in Mary Hain's memo on the incident – marked for erasure – gives a clue:

> On May 24, 1999, the West Desk was "short" June at the California Oregon border (COB). So, they figured out a way to sell a lot of power into the PX and then back out.
>
> (Ex. SNO-88)

Thus Enron was able to cover their "short" at the artificially low price due to the Enron Silver Peak schedule.

Mary Hain's handwritten notes expand on this explanation:



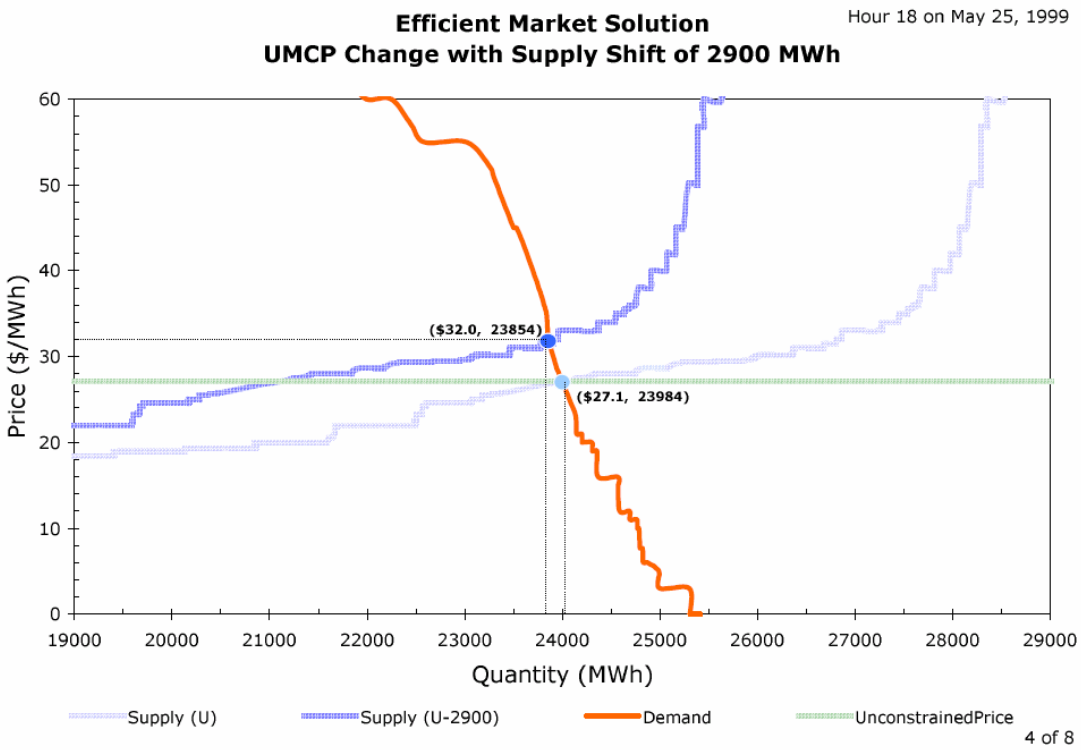
(Ex. SNO-724, page 88.)

Q. What does Mary Hain's note say about the shortfall position and Enron's attempts to purchase this shortfall at lower prices?

A. Mary Hain's note indicates that Enron was short at COB. For marketing reasons, Enron wanted the preferred day ahead prices at COB to be lower than they would have been if the market was not manipulated. To make the markets look "flush" Enron bid an extra 2,900 megawatts into the PX preferred market.

Q. Did Enron understand this would be the result of its actions?

A. Yes. Enron conducted an extensive analysis of the scheme on November 19, 1999. A good illustration of the effects of the imaginary 2,900 MW bid is shown in one of the graphs from their analysis:



(Ex. SNO-725)

This chart tells the story quite well. Tim Belden wanted to see a reduction in prices in the initial Day Ahead market. The true supply curve is marked "U-2900". The supply curve marked "U" is what the market saw. To use the terminology of an introductory economics course, Mr. Belden shifted the demand curve out by 2,900 megawatts.

Q. What impact did that have on the market?

A. It reduced prices from $32.00 to $27.10 per Megawatt-hour.

Q. How did that benefit Enron at the California Oregon Border?

A. Mr. Belden knew that prices were correlated between different regions and time periods. In this case he could have consulted a correlation matrix prepared by Enron:

COB (R8)	Corr.							
R8								
	COB	MC	SP 15 Delv	Sylmar	Victorville	MX	NP 15	SP 15
	R8	R9	B21	B23	B24	B25	R10	R11
May-99	100%	92%	90%	90%	90%	90%	90%	90%
Jun-99	100%	92%	90%	90%	90%	90%	90%	90%
Jul-99	100%	92%	90%	90%	90%	90%	90%	90%
Aug-99	100%	92%	90%	90%	90%	90%	90%	90%
Sep-99	100%	92%	90%	90%	90%	90%	90%	90%
Oct-99	100%	92%	90%	90%	90%	90%	90%	90%
Nov-99	100%	92%	90%	90%	90%	90%	90%	90%
Dec-99	100%	92%	90%	90%	90%	90%	90%	90%

(Ex. SNO-726)

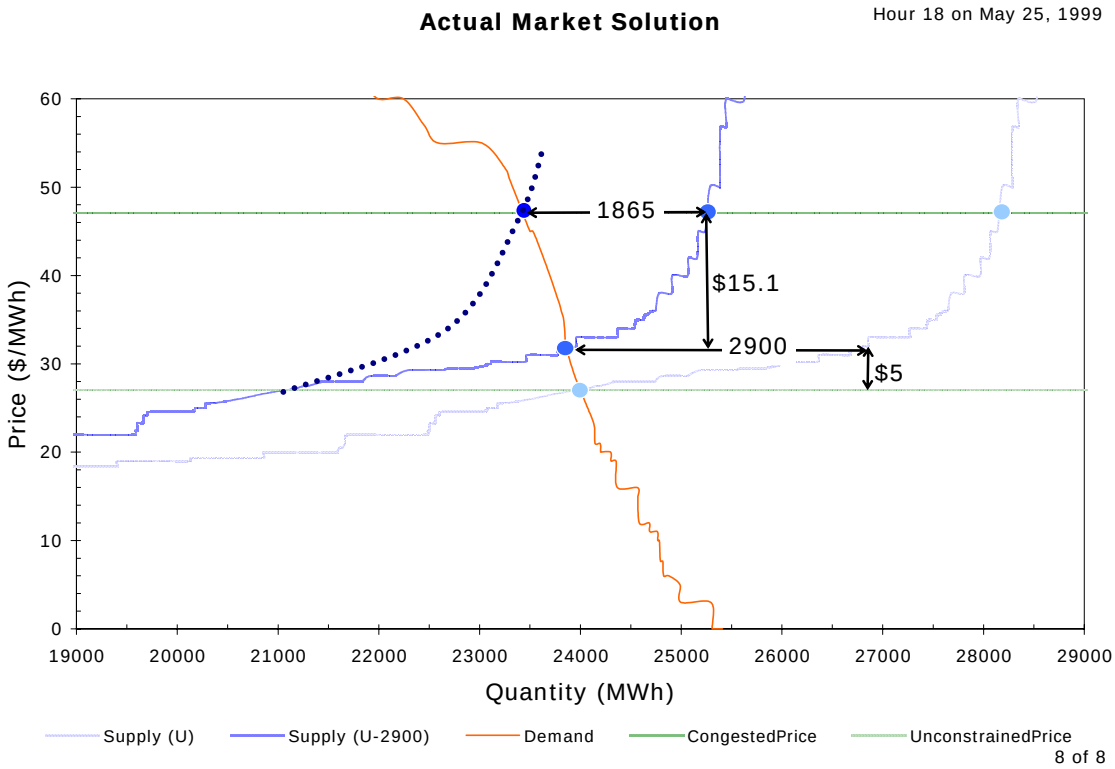
This particular correlation matrix was taken from the Portland servers. It was created the day after the second Silver Peak incident.

Q. What does this chart indicate?

A. With a correlation of .90 between NP-15 and COB, he would have expected to raise prices at the California Oregon Border by $4.90/MWh times .90 or $4.41/MWh.

Q. What was the eventual impact on the PX due to this imaginary Silver Peak II supply?

A. As you can see this is an Economics 101 example of supply and demand. Enron's next chart shows that the demand of 23,984 MWh crosses the demand at $27.10/MWh. Now compare the chart above to the next chart which shows the exact same hour and date only this time Enron removed the 2900 MWh and added the congestion fee of $15.10/MWh due to the removal of the imaginary Silver Peak Load resulting in a market price of almost $48.



(Ex. SNO-725)

Q. This is quite a detailed analysis. Did Enron supply it to the California PX or the California ISO? Did FERC staff receive this analysis?

A. Obviously, no one can be certain that it was not supplied. If it was, it was inadvertently overlooked by all three agencies. I believe that it is safe to assume that we were able to find it because we asked for the actual hard drives and then conducted an extensive electronic search.

Q. How much did Enron profit from Silver Peak?

A. As is frequently true for existing Enron records, Enron was unable to find any of the relevant records on profits and losses for 1999. In addition, Enron's data in the California database – CAPS – is also inexplicably missing.

Timothy Belden placed a substantial reserve for Silver Peak in his Schedule C in May and June of 2000 -- $10,000,000 in total. Since these amounts were far in excess of the $25,000 fine paid to the PX, it is a logical inference that the $10,000,000 reflected his profits from the manipulation of the unconstrained PX price. (Ex. SNO-727)

Q. What is Schedule C?

A. Schedule C is a report where Enron took a reserve against earnings for a risk event.

Q. Was there any question in Enron's mind that this practice both violated the MMIPs and would prove very embarrassing if it became public?

A. No. We now have a very extensive correspondence by Enron executives and counsel that contemplates asking FERC to set aside the MMIPs. The major issue that appeared to preclude this unusual approach was that it would become public that Enron had been behind the May 1999 Silver Peak incident. For example, Dan Watkiss, Enron's FERC counsel, writes:

> As requested, attached to this email (below) is a draft of a complaint against the PX that addresses two separate but interrelated matters: (1) a generic attack on the PMMIP that requests that the tariff be modified; and (2) an attack on the Compliance Unit's investigation of the Silver Peak matter and a request for a stay of the investigation (including a stay of publication of the Compliance Unit's findings and conclusions) pending the Commission's review of the complaint.

> While this approach is critical if we are to have a realistic hope of keeping the Silver Peak matter confidential, it is, in our view, largely self-defeating. All complaints filed with FERC must be publicly noticed. Thus, it is impossible to keep the fact that we filed a complaint confidential. Although we could file a redacted version of the complaint with the confidential information deleted, all interveners would be able to obtain a copy of the entire complaint if their "reviewing representatives" sign a confidentiality agreement under which they commit to comply with the terms of a proposed protective order that we must file along with the complaint. Moreover, while a protective order would, in theory, limit the use and dissemination of the confidential information discussed in the complaint to the reviewing representatives (typically attorneys and regulatory personnel), the parties would be free to argue that the protection should either be lifted or weakened, or that the protective order should not prevent discovery of the confidential materials in a civil proceeding. Finally, it is inevitable that at least some of the reviewing representatives under the protective order will leak the contents of the confidential information included in the complaint.
>
> Thus, by addressing the Silver Peak incident in the complaint, in all likelihood we will "let the cat out of the bag" and it will be just a matter of time before these facts are widely known.
>
> (Ex. SNO-728)

Q. Was Silver Peak a sudden impulse on Enron's part?

A. No. Enron was willing to act recklessly and illegally from the beginning of the California market in a variety of ways and Silver Peak was a central theme:

1. Even before the onset of the California market Enron was seeking to game the market. For example, Part of Tim Belden's notes on PerotSystems presentation from March 1998 read: "Result of this process is a game ~ to submit incs on congested side of the tie." (Ex. SNO-87)
2. Enron met with PerotSystems staff – later sanctioned by the PX and PerotSystems – seeking information on gaming. For example, On January 13th, 1998 representatives from Policy Assessment Corporation and from PerotSystems Corporation gave a joint presentation to Enron titled "Profit Under UK and US Deregulation." (Ex. SNO-84) This presentation identified several "Dynamic Phases of Deregulation" which included "Market Gaming" (pp 6). It also provided detailed examples of

gaming strategies and gaps in the PX and ISO protocols that allowed for market gaming and price control. For example, one slide titled "Another Protocol Gap" reads:

> PerotSystems discovered a "hole" in the PX's protocols for setting zonal energy prices when there is congestion. Adverse interaction with a hole in the ISO's protocols for setting congestion . . . allowed a strategy by which a small participant could control prices in CA and destabilize the market. (pp 21)

3. Enron used the PerotSystems materials to commit congestion related schemes – Silver Peak I and Silver Peak II in 1999. An undated Memorandum from Richard Sanders to Tim Belden states that Enron had overscheduled on the Silver Peak intertie and was not caught by the CAISO:

> Why was this scheduling practice allowed in January but not in May? Enron scheduled more than 1,000MW on the Silver Peak line in a similar manner during one hour in January. The PX never issued a warning to us nor did they give us any indication that this scheduling practice violated the PX rules in anyway.
>
> (Ex. SNO-729)

Q. Did the Silver Peak congestion imposed by Enron limit other uses of that line, artificially increase scarcity, and increase congestion prices?

A. The answer is yes to all the above. As PerotSystems expert Dariush Shirmohammadi of PerotSystems and KEMA Consultant Farrokh Rahimi had explained in their report dated April 4, 1997,

> Examples of gaming can already be found in the U.S. and has been happening mainly around reservation of transmission capacity without using it. An entity which can reserve transmission capacity for sale of energy to a lucrative market, preempts the ability of other suppliers to sell into that market. The entity may not even have the supply to sell, but can use its reservation right to sell the energy that it would purchase from other suppliers that are precluded from the demand market with a healthy profit.

(Ex. SNO-730)

Q. Did the Silver Peak incident have negative consequences for the market?

A. Yes. The PX Investigation into Silver Peak II found that:

> Enron's actions had the following negative consequences for the market: 1) California buyers had to pay higher prices to purchase energy in the Day-Ahead Market. 2) The demand for energy shifted into the Real-Time Market, pushing up prices and causing additional expense to whose who would have purchased power at a lower cost in the Day-Ahead Market but for the congestion. 3) CalPX participants whose energy bids were pushed out of the Day-Ahead Market sustained a loss in revenue.

(Ex. SNO-718)

Information Gathered From the New Sources & Evidence

Q. What source material has been instrumental in constructing your testimony and in understanding Enron's manipulation of the Energy Market?

A. Four general sources of information reveal the existence, structure, and implementation of Enron's schemes. First are what I'll call the Hall memos, several memoranda composed by Enron outside counsel at the Portland, Oregon law firm of Stoel Rives. The Hall memos not only name and discuss many of the schemes, but clearly reveal Enron's recognition that the schemes were at least ethically objectionable and probably illegal as well. Second are a large collection of Enron email messages and other memoranda that show the pervasive and ongoing pursuit of schemes by Enron personnel, and the routine recognition that the schemes exploited the trading systems used by Enron, and abused Enron's position of trust within those systems. Third, Enron maintained a set of database systems to keep track of various aspects of electric power trading, and those systems reveal considerable detail about the actual implementation of the schemes and their effects on market conditions in California and throughout the WECC.

Finally, after much effort, we have obtained access to some of the working documents that Enron had kept in Houston. These include the actual working files used for the market manipulations as well as a vast amount of textual materials – including instructions on how to manipulate the market. One particularly useful source is Stephen Hall's handwritten transcripts of trader tapes in the spring and early summer of 2000. (Ex. SNO-731)

Q. Why are the Yoder/Hall memo's so important?

A. They were, in some respects, the watershed event to understanding Enron's manipulation of the market. To this day they provide insight into Enron's schemes and highlight some of the basic tenets of these schemes, including their danger to both the physical reliability and economic integrity of the system. It should be remembered that Stephen Hall's original gaming memorandum dated from October. The Yoder/Hall memo discovered by FERC was a later and somewhat watered down version of the original analysis.

Q. What computer databases or logs are you referring to?

A. Primarily the Inc Sheets, EES Sheets, Enpower, CAPS, and Enpower to Caps Reconciliations. We have also worked with Enron's settlement database, but Enron was unable to supply a complete set of this information until just days before filing this testimony.

Q. What is an "Inc Sheet"?

A. The "Inc" or "Incremental" Sheet was developed by John Forney, who was also the creator of many of the Enron schemes (notably, "Forney's Perpetual Loop") to record Enron's schemes in detail in an efficient fashion. The entries

into the Inc Sheet are commonly color coded and many times provide notes that state what scheme was run on what day and under which Enpower Deal number. For example, the Inc Sheet for April 15, 2000 records a Death Star (then known as "Perpetual Loop") quite clearly.

HR END	TIME ZONE	TOT. HRS.	DEL. PT.	SUPPLY	MW PER HOUR	TOT. MW	BUY PRICE	MARKET	SELL PRICE	CONG RELIEF	EX-POST	Trans. Charge	Enpower Deal Numbers	LINE LOSSES	P/L	
					0	0	$ -		$ -	$ -	$-			$ -	-	
he 12	pdt	1	malin export		24	24				$ 29.00		2.74		$ -	630.24	
he 12	pdt	1	wwp buy/resale		24	24	$17.00		$16.00				#3235669,323570	$ -	(24.00)	
he 12	pdt	1	PGE T jd/malin		24	24	$ -		$ -	$ -	$-	1.50		$ -	(36.00)	
he 12	pdt	1	DWP T Malin/ Mead		24	24	$ -		$ -	$ -	$-	0.61		$ -	(14.64)	
he 12	pdt	1	mead import		24	24				$ (24.41)				$ -	(585.84)	Perpetual Loop

(Ex. SNO-732)

Evidence suggests that Inc Sheets were also used to determine billing amounts and profits. (Ex SNO-733)

We know that Enron continued to use Inc Sheets in 2001 as demonstrated in a August 30, 2001 email from Bill Williams to the Real Time Trading Group reminding them that "INC SHEETS MUST BE MAINTAINED, DEALS ENTERED EACH HOUR—only way to stay ahead." (Ex. SNO-734)

Q. What purpose did the "Inc Sheet" serve?

A. The Inc Sheet was one way to account for Enron's complex schemes. Unlike Enpower, which is discussed in more detail below, the Inc and Service sheets are organized by scheme. Death Stars and Load Shifts, for example, each have their own section within the Inc Sheets.

CONGESTION RELIEF

IR ENI	TIME ZONE	TOT. HRS	DEL. PT.	SUPPLY	W PE HOUR	TOT. MW	BUY PRICE	MARKET	SELL PRICE	CONG RELIEF	EX-POST	Trans. Charge	Enpower eal Numbe	TiePoint leterMu	LINE DSSES	P/L
DEATH STAR								105/100								-
12-17	PDT	6	Malin to Malin	PAC	10	60	$ 5.00	0					387279			(300.00)
12-17	PDT	6	LA T COB/mead	LADWP	10	60	Voltage Control ($.33 per mw)					0.33	292672			(19.80)
12-17	PDT	6	LA T COB/mead	LADWP	10	60	Trans Sunk Cost ($87.33 / MW's)									(87.33)
19	PDT	1	Malin to Malin	PAC	1	1	$ 5.00	buy/sell					387279			(5.00)
19	PDT	1	LA T COB/mead	LADWP	1	1	Voltage Control ($.33 per mw)					0.33	292672			(0.33)
									CONG RELIEF			Annuity to LTSW	#387288			
12	PDT	1	Mead/cob/mead	cong relief	10	10			$ -			2.74	387280			(27.40)
13	PDT	1	Mead/cob/mead	cong relief	10	10			$ 15.00			2.74	387280			122.60
14	PDT	1	Mead/cob/mead	cong relief	10	10			$ 76.00			2.74	387280			732.60
18	PDT	1	Mead/cob/mead	cong relief	10	10			$ 60.00			2.74	387280			572.60
This death star was cut on the LA(t) to 6 for HE 18. Did not show up for 4 mw's at mead in the hour. Sold the 4 to PAC $10 see above																
19	PDT	1	Mead/cob/mead	cong relief	10	10			$ 40.00			2.74	387280			372.60
This death star was cut on the LA(t) to 1 for HE 19. Did not show up for 9 mw's at mead this hour. Sold the 9 to PAC $100 see above																
LOAD SHIFT													EMAILED HEATHER			-
15	PDT	1	SP to NP	Cal Imb (SP)	25	25	$ -	Cal Imb (NP)	$ -	$ 246.00	$ -		load shift			6,150.00
16	PDT	1	SP to NP	Cal Imb (SP)	25	25	$ -	Cal Imb (NP)	$ -	$ 242.00	$ -		load shift			6,050.00
17	PDT	1	SP to NP	Cal Imb (SP)	50	50	$ -	Cal Imb (NP)	$ -	$ 378.00	$ -		load shift			18,900.00
18	PDT	1	SP to NP	Cal Imb (SP)	50	50	$ -	Cal Imb (NP)	$ -	$ 60.00	$ -		load shift			3,000.00
					TOTAL	#REF!								TOTAL BILAT:		$ 35,460.54

(Ex. SNO-732)

Q. How many Inc Sheets did Enron turn over on May 14, 2004?

A. Enron was asked to turn over Inc Sheets for the dates January 1st 2000 through June 20th 2001. Enron initially only supplied Inc Sheets for 2000, and January 2001. The Inc sheet provided for February of 2000 was incomplete, missing the dates February 15th through February 28th, 2000. Enron failed to provide any Inc Sheets for February, March, April, May, and June 2001.

Q. Has Enron provided any additional Inc Sheets?

A. Yes. Enron submitted another set of Inc Sheets on December 1st 2004. Enron was asked to turn over Inc Sheets for the dates January 16th, 1997 through June 25th 2003. (Ex. SNO-796) Enron supplied incomplete Inc Sheets for 1998, 1999, 2000, and 2001. For 1997 we only received December and 23 days were blank. For 1998, the Inc Sheets were divided into days and nights; a total of 97 days and 152 nights were blank. For the year 1999, a total of 9 dates supplied were blank. For the year 2000, the last half of February was blank. For the year 2001, the month of December was blank. In 1997,

Enron provided data for the 17th, 18th, 19th, 21st, 22nd, 28th, and 29th of December. Enron failed to provide any Inc Sheets for 2002, and 2003. (Ex. SNO-732)

Q. Did Enron produce any other documents on May 14, 2004?

A. Yes. Enron produced "Services Sheets" for August 2000 through January 2001.

Q. What is a "Services Sheet"?

A. Enron had agreements with certain counterparties in which they would carry out "services" with regards to the marketing of a counterparty's resources. Basically, Enron would take over a counterparty's trading desk in return for a portion of the profits, as was the case with El Paso Energy. Enron traders answered El Paso's calls and carried out the buying and selling of electricity on behalf of El Paso. (SNO-175)

Q. Can you give an example?

A. Yes. The following table is the supplemental transaction table for CRC for December 4, 2000 from the Service Sheet for that day:

SUPPLEMENTAL

	HR END	TIME ZONE	TOT. HRS.	DEL. PT.	SUPPLY	MW PER HOUR	TOT. MW	PRICE	MARKET	PRICE	MW PER HOUR	Transm Charge	A/S Charge	Enpower Deal Numbers	TiePoint MeterMult	LINE LOSSES	P/L
CRC	18	PST	1	Mead	CRC	30	30	$199.52	Cal Sup	$250.00	30			#473412,473414	$ 1.00	$ -	$1,514.40
CRC	19	PST	1	Mead	CRC	30	30	$199.52	Cal Sup	$250.00	30			#473412,473414	$ 1.00	$ -	$1,514.40
CRC	20	PST	1	Mead	CRC	30	30	$199.52	Cal Sup	$250.00	30			#473412,473414	$ 1.00	$ -	$1,514.40
CRC	21	PST	1	Mead	CRC	30	30	$199.52	Cal Sup	$250.00	30			#473412,473414	$ 1.00	$ -	$1,514.40
CRC	23	PST	1	Mead	CRC	15	15	$199.52	Cal Sup	$250.00	15			#473412,473414	$ 1.00	$ -	$ 757.20
							0	$ -		$ -	0					$ -	$ -
							0	$ -		$ -	0					$ -	$ -
							0	$ -		$ -	0					$ -	$ -
							0	$ -		$ -	0					$ -	$ -
							0	$ -		$ -	0					$ -	$ -
							0	$ -		$ -	0					$ -	$ -
						TOTAL	135									TOTAL:	$6,814.80

(Ex. SNO-735)

The profits for the Service Desk for this product and this date from this "services" customer, CRC, were $6,814.80.

Q. What is the importance of the Inc and Service Sheets?

A. The reports directly track Enron's schemes and show the time, date, quantity, and profits of specific schemes. We can use this information to gather a good view of Short-term or Real Time profit gained by Enron unjustly.

Q. Do the Inc and Service Sheets discriminate profits between regions?

A. No. The profits are by scheme and transaction. Enron profits were fungible – they simply reported the P&L by scheme. I will be citing the Inc Sheets in order to demonstrate profits earned through strategies in violation of the CAISO MMIP throughout my testimony. These examples represent individual transactions that show how much profit was earned. However, we cannot directly use these sheets in the analyses involving long-term profits made my Enron, as is discussed in section VII.

Q. Does Enpower allow you to track schemes?

A. Yes. With "Death Star", for example, we can trace a specific scheme through entries composed of a number of different Enpower "deals" and "strips". As discussed above, many of the actions initiating these transactions were recorded by Enron personnel in the Inc Sheets. The Enpower example shows a series of transactions related by their joint implementation of a particular scheme.

Start	Finish	Deal	Leg	Strip	INSTR_TY	UY_S	DEAL_CMT	SCHED_CMT	FULL_NM	CP_NM	INTER_PARTY	CP_ContactNa	CMD	IRMNE	LIVERY_I	DELIVERY_PT	LEGAL_NAI
4/15/00 11:00	4/15/00 12:00	292672	1	2078075	ANNUITY	B	Charges for scheduling transmission, includes losses, tags and reactive charges. For questions, see Kim Durham x5334 or Val	Used by Real	Matt Motley	Los Angeles D	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV	
4/15/00 11:00	4/15/00 12:00	292672	1	2078075	ANNUITY	B	LA did not charge EPMI for the extra hour in OCT caused by the time change, the original deal entry was not adjusted, so the mwh do	Used by Real	Matt Motley	Los Angeles D	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV	
4/15/00 11:00	4/15/00 12:00	292672	1	2078075	ANNUITY	S	annuity for sept. ia invoice #'s 1 /3,034.74, CARP =$ 182,096.3	Used by Real	Matt Motley	Los Angeles D	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV	
4/15/00 11:00	4/15/00 12:00	292672	1	2078075	ANNUITY	S	Charges for February related to transmission losses and curtailment refunds (netted out). See Kim Durham for details on the charges.	Used by Real	Matt Motley	Los Angeles D	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV	
4/15/00 11:00	4/15/00 12:00	292672	1	2078075	FORWARD	B	Add Sueyen Mao as a contact for this deal. Check with Monica Lande 834-3722 for any	Used by Real	Matt Motley	Los Angeles D	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV	
4/15/00 11:00	4/15/00 12:00	292672	1	2078075	FORWARD	B	questions on this deal. Thanks.	Used by Real	Matt Motley	Los Angeles D	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV	
4/15/00 11:00	4/15/00 12:00	292672	1	2078075	FORWARD	B	Add Sueyen Mao as a contact for this deal. Check with Monica Lande 834-3722 for any questions on this deal. Thanks.	Used by Real	Matt Motley	Los Angeles D	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV	
4/15/00 11:00	4/15/00 22:00	341128	1	2013113	INDEX-FOR	S			John Forney	Portland Gene	EPMI-ST-WHC	Bill Casey	24	FIRM	Portland	Portland General	System
4/15/00 11:00	4/15/00 22:00	341156	1	2013149	INDEX-FOR	B			John Forney	Portland Gene	EPMI-ST-WHC	Bill Casey	24	FIRM	Portland	Portland General	System
4/15/00 11:00	4/16/00 0:00	323569	1	1973149	FORWARD	S			Jeremy Morri	Avista Corpor	EPMI-ST-WHC		24	FIRM	Malin	Malin	
4/15/00 11:00	4/16/00 0:00	323570	1	1973150	FORWARD	B			Jeremy Morri	Avista Corpor	EPMI-ST-WHC		24	FIRM	Malin	Malin	

(Ex. SNO-721)

Looking over the entry it is possible to trace the first seven rows and see they describe the use of LA's transmission from COB to Mead. The last four rows describe the sleeving operation to avoid detection by BPA and the California ISO. While this is a record of the scheme, it is markedly different in organization from what we find in the Inc Sheets.

Q. How has Enpower been so effective in identifying schemes and profits?

A. Enpower has been a very good tool to help isolate various instances of schemes that Enron enacted or took part in. It helps us gain perspective on the many instances Enron gamed the market.

Q. What is CAPS or the CAPS database?

A. The CAPS Database is actually a set of Microsoft Access Databases that was used by Enron to record information regarding transactions within California. It was also used to produce reports that were submitted to the PX and CAISO in the course of the daily scheduling and dispatch process. The organization of the CAPS databases is convoluted. In fact, due to the size limitations inherent in Microsoft Access, it appears as though Enron was unable to store all of the relevant data in a single database. The reason for this is unclear, as Enron clearly used more robust database programs like Oracle for Enpower and Enron Online. However, the Microsoft Access CAPS databases that Enron has produced in this proceeding form a web of interconnected tables and reports. For example, settlement data is stored in over a half dozen different databases, each with a different and seemingly arbitrary range of dates. Schedules are kept in another database, and many of the reports produced by Enron concerning its activities in the California markets were stored in additional separate databases. Furthermore, data within the

multiple CAPS databases produced by Enron is not available for the entire period of this proceeding. In fact, no CAPS data has been provided by Enron for any dates before 2000.

Q. How has CAPS been useful in your research into Enron's market gaming schemes?

A. CAPS contains considerable detail about the information that Enron reported to the CAISO in the course of setting up transactions that were part of schemes. However, as mentioned above, this information is not available for any dates before 2000. In addition, the voluminous tables and reports contained in the over one dozen different inter-connected CAPS databases have been difficult to interpret. Despite this, it is clear that CAPS does contain some detailed information about transactions within California that is absent from Enpower. As such, it has allowed us to trace the course of schemes that caused Enron to receive congestion payments for transactions that were part of the various Death Star schemes. CAPS also contains information about actual congestion payments collected by Enron.

Q. Please describe the Portland servers and other computer data Enron has not previously released.

A. In September of this year we found out that the actual computers used by Western Energy Trading were operational at Enron's Ardmore computer server park. We requested access to this information at the time. However, Enron delayed access by a number of steps. Actual access to this material did not occur until late December. Enron has provided an index of the files contained on the Portland Servers. A limited amount of the material has been provided at this point, although we have no way of telling how

complete Enron's response has been. In addition, we have received the local hard drives for a number of traders.

Q. Is this material significant?

A. Yes. It is so significant that we were amazed that Enron had delayed turning it over for so long. The detailed analysis of Silver Peak discussed above, for example, was found on one of these computers. In addition, we have found instructions on how to conduct schemes, accounting for schemes, financial and accounting data not previously provided, and a wealth of performance appraisals and other business documents.

Q. Hadn't Enron turned over these materials before?

A. No. Enron's response to many data requests was unresponsive. For example, in December 2003 Snohomish issued SNO-ENR-89 requesting cost and revenue data. Enron responded with an Enpower query and less than a hundred pages of materials. For a huge corporation like Enron, this was obviously insufficient.

In later discovery we pursued Enron's Daily Position Reports, P&Ls, Flash reports and similar documents. When Enron finally responded on October 20, 2004 they had not produced more than one per month in 2001.

Q. Were the Portland server materials useful for estimating Enron's costs and revenues?

A. Yes. Apparently Enron had failed to review the Portland Servers for the thousands of documents that would have been responsive to this request. Indeed, Enron had failed to review directories that were the obvious, well labeled repositories of these materials during the more than three months between our initial request for access to the Portland Servers and Enron's response. (Ex. SNO-806)

Q. Is this an area where the Hearing Officer should draw a Negative Inference?

A. Yes. Enron should have provided these materials in response to our requests more than a year ago. Today, even with a very aggressive discovery effort, we still do not know whether Enron has additional materials on the Portland Servers that it has chosen to not review and turn over in response to data requests. It is appropriate for the Hearing Officer to question the appropriateness of new materials that Enron "finds" after the current round of discovery has closed.

IV. NEW SCHEMES

Q. Have you found any new schemes that would affect the west-wide impact of Enron's anomalous behavior on the WSCC and were not part of the Show Cause Orders?

A. Yes. Since the Show Cause orders we have found a variety of new schemes. They are Sidewinder, Donkey Punch, Russian Roulette, Spread Play, Big and Little Tuna, Ping Pong, and PX Time Removal. While we have more evidence on some than on others, it is important to discuss these new schemes because they were designed to derive unjust profits and increase the volatility of the market.

Q. Why did Enron continue to give such odd names to their trading practices?

A. I believe that the "project" names constituted "bragging rights" that were useful in Enron's unusual semi-annual review process. In Enron's "Rank or Yank" process, peer review was a critical component. The bizarre names allowed individual traders to take credit for projects like "Death Star", "Load Shift", and "Ping Pong."

Q. Did schemes only take place when they were explicitly named in the Inc Sheets?

A. No. Many more transactions were implemented without being explicitly named in the Inc Sheets. On numerous occasions, we know that Load Shifts or Death Stars occurred from the entries in the Reconciliation reports that were not entered in the Inc Sheets. For example, between January 1, 2000 and June 20, 2001, comments identifying Load Shifts appear in the Reconciliation reports that do not appear in the Inc Sheets on at least 128 days for which we have data. (Ex. SNO-732) (Ex. SNO-736) Similarly, comments identifying Death Stars appear in the Reconciliation Reports that do not appear in the Inc Sheets on at least 13 days for which we have data.

Donkey Punch

Q. What type of scheme was "Donkey Punch"?

A. Donkey Punch was a congestion type-scheme that appears in the Inc Sheet on July 22, 2000.[2] The name appears to refer to transactions that are violently terminated by one of the counterparties.

Q. How does "Donkey Punch" show up in the Inc Sheets?

A. The transactions for July 22, 2000 include:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
HR END	TIME	TOT.	DEL.	SUPPLY	MW PER	TOT.	CONG/ZONAL	MARKET	PRICE	MW PER	Total	Trans	Enpower	TiePoint	LINE	P/L
	ZONE	HRS.	PT.		HOUR	MW	PRICE			HOUR	MW's	Charge	Deal Numbers	MeterMult	LOSSES	
DONKEY PUNCH					0	0	$ -		$ -	0	0				$ -	$ -
1	PDT	1	back into	Cal Imb	50	50	$ 79.33	Cal Imb	$ 79.33	50	50	5.29	#377803, 804, 807	0.9819	$ 1.44	$ (336.29)
3	PDT	1	back into	Cal Imb	50	50	$ 94.20	Cal Imb	$ 94.20	50	50	8.24	#377803, 804, 807	0.9819	$ 1.71	$ (497.25)

(Ex. SNO-732)

Q. Can you explain further this "Donkey Punch" transaction?

A. From the entries, it would appear that this was a version of Load Shift. The Enpower deals show a purchase from the ISO in SP-15, transfer through NOB and Malin,

[2] The name of the scheme is apparently taken from a list of sexual perversions that appears in the Enron emails on FERC's website. I have not included this pornographic email as an exhibit in this proceeding because it would be needlessly offensive.

and finally back to NP-15. The violent termination suggested by the pornographic name of this transaction isn't clear from either the Enpower or the Inc Sheets. But combined we can make sense of this rather odd transaction.

Ping Pong

Q. What is Ping Pong and when did this strategy first appear?

A. The earliest date we have evidence for of the scheme Ping Pong being committed is on September 26, 2000. The September Inc Sheet reference to Ping Pong shows the scheme to have been a combination of the schemes Ricochet and Load Shift:

HR END	TIME ZONE	TOT. HRS.	DEL. PT.	SUPPLY	MW PER HOUR	TOT. MW	LONG/ZONA PRICE	MARKET	PRICE	MW PER HOUR	Total MW's	Trans Charge	Enpower Deal Numbers	TiePoint MeterMult	LINE LOSSES	P/L
Ping Pong																$ -
11	PDT	1	SP / NOB / Malin	Cal Imb (SP)	50	50	$ 52.47	Cal Supp	$ 143.00	50	50	14.79	47, 955, 949, 950, 146517, 95	1.0000	$ -	$ 3,787.00
13	PDT	1	SP / NOB / Malin	Cal Imb (SP)	50	50	$ 71.85	Cal Supp	$ 158.83	50	50	14.79	47, 955, 949, 950, 146517, 95	1.0000	$ -	$ 3,609.50
14	PDT	1	SP / NOB / Malin	Cal Imb (SP)	50	50	$ 162.10	Cal Supp	$ 227.17	50	50	14.79	47, 955, 949, 950, 146517, 95	1.0000	$ -	$ 2,514.00
15	PDT	1	SP / NOB / Malin	Cal Imb (SP)	50	50	$ 100.00	Cal Supp	$ 100.00	50	50	14.79	47, 955, 949, 950, 146517, 95	1.0000	$ -	$ (739.50)
17	PDT	1	SP / NOB / Malin	Cal Imb (SP)	50	50	$ 207.17	Cal Supp	$ 207.17	50	50	14.79	47, 955, 949, 950, 146517, 95	1.0000	$ -	$ (739.50)
21	PDT	1	SP / NOB	Cal Imb (SP)	50	50	$ 180.99	PSPL	$ 75.00	50	50	3.00	#421947, 421961, 421960	1.0000	$ -	$ (5,449.50)
21	PDT	1	Malin	PWRX	50	50	$ 175.00	Cal Supp	$ 180.99	50	50		#421968, 421948	1.0000	$ -	$ 299.50
22	PDT	1	SP / NOB / Malin	Cal Imb (SP)	50	50	$ 169.07	Cal Supp	$ 169.07	50	50	14.79	47, 955, 949, 950, 146517, 95	1.0000	$ -	$ (739.50)
23	PDT	1	SP / NOB / Malin	Cal Imb (SP)	40	40	$ 100.89	Cal Supp	$ 100.89	40	40	14.79	47, 955, 949, 950, 146517, 95	1.0000	$ -	$ (591.60)
23	PDT	1	SP / NOB	Cal Imb (SP)	10	10	$ 100.89	PSPL	$ 70.00	10	10	3.00	#421947, 421961, 421960	1.0000	$ -	$ (338.90)
24	PDT	1	SP / NOB / Malin	Cal Imb (SP)	40	40	$ 110.39	Cal Supp	$ 110.39	40	40	34.27	47, 955, 949, 950, 146517, 95	1.0000	$ -	$ (1,370.80)
24	PDT	1	SP / NOB	Cal Imb (SP)	10	10	$ 110.39	PSPL	$ 70.00	10	10	22.58	#421947, 421961, 421960	1.0000	$ -	$ (629.70)

(Ex. SNO-732)

Q. Hasn't the term "ping pong" been used in a California ISO document?

A. Yes, as a synonym for megawatt laundering as mentioned in the CAISO's June 17, 2003 Supplemental Analysis of Trading and Scheduling Strategies Described in Enron Memos. This is not simply megawatt laundering, however. Ping Pong as used by Enron had specific operational characteristics including the requirement of scheduling through the DC Intertie. I will explain this transaction when I address Spread Play later in this section.

Russian Roulette

Q. What is Russian Roulette?

A. Russian Roulette appears to be a version of Load Shift. The May 2, 2000 Inc Sheet has the entry:

HR END	TIME ZONE	TOT. HRS.	DEL. PT.	SUPPLY	MW PER HOUR	TOT. MW	BUY PRICE	MARKET	SELL PRICE	CONG RELIEF	EX-POST	Trans. Charge	Enpower Deal Numbers	TiePoint MeterMult	LINE LOSSES	P/L	
13	PDT	1	SP/NP Load Shift	Cal Imb	300	300	$214.98		$ 50.00	$ 112.39	$-		NA			(15,777.00)	Russian Roulette

(Ex. SNO-732)

Q. Has Russian Roulette shown up elsewhere in the investigation of the California Crisis?

A. Yes. In the transcript of a conversation we received from the press, Puget and Idaho Power traders have a discussion which indicates that they viewed this as the name of a scheme:

> Yeah, but, I don't know, maybe it doesn't sound like there's anything we can do to coordinate it. If you're not putting in daily bids into the PX--I guess that's what I'm trying to avoid is having both you and I put daily bids into the PX to the point where it pulls too much out of COB and then it forces that price to go up, or we just play Russian Roulette and see--try and zig and zag--like, since we have so much congestion for tomorrow, we're--Idaho's going to run in tomorrow and pull five hundred megawatts out of COB, and then it'll go backup and, you know, the old pendulum effect.
>
> (Ex. SNO-809, p.8)

Spread Play

Q. What is "Spread Play"?

A. The term is common in sports betting. From the Inc Sheet entries it seems likely that this is a version of Load Shift done in cooperation with NCPA.

Q. Where did "Spread Play" show up?

A. Enron traders identified a congestion relief operation in July and August of 2000 by this name.

On July 22, 2000 Mike Driscoll identified a "Spread Play" transaction:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
HR END	TIME ZONE	TOT. HRS.	DEL. PT.	SUPPLY	MW PER HOUR	TOT. MW	CONG/ZONAL PRICE	MARKET	PRICE	MW PER HOUR	Total MW's	Trans Charge	Enpower Deal Numbers	TiePoint MeterMult	LINE LOSSES	P/L
NP / SP spread play								115 / 100							$ -	$ -
1,3	PDT	2	NOB to Malin	PAC	50	100	$ 15.00	Buy / Resell	$ -	100	100		#377806			$(1,500.00)

(Ex. SNO-732)

On August 3, 2000 Jesse Bryson identified a "Spread Play" transaction:

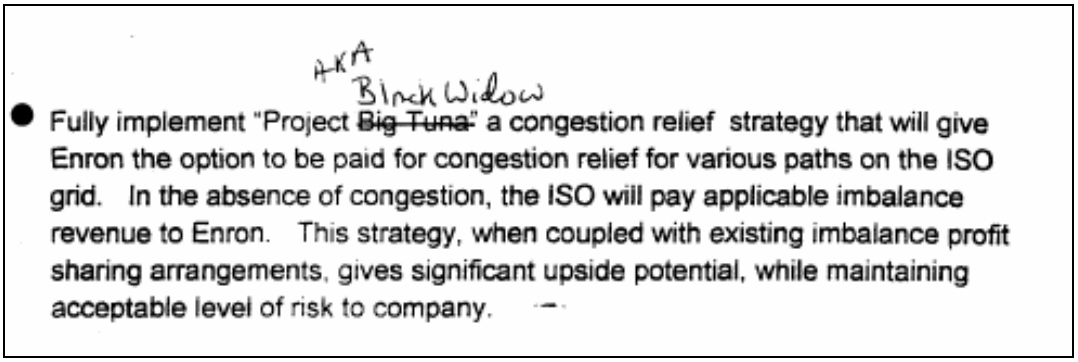
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
HR END	TIME	TOT.	DEL.	SUPPLY	MW PER	TOT.	BUY	MARKET	SELL	CONG	EX-	Trans.	Enpower	TiePoint	LINE	P/L
	ZONE	HRS.	PT.		HOUR	MW	PRICE		PRICE	RELIEF	POST	Charge	Deal Numbers	MeterMult	LOSSES	
SPREAD PLAY																-
3	PDT	1	ZP/NP	Cal Imb (ZP)	21	21	$ -	Cal Imb (NP)	$ 75.13	$ -	$-		NCPA SPLIT			1,577.73
4	PDT	1	ZP/NP	Cal Imb (ZP)	21	21	$ -	Cal Imb (NP)	$ 63.24	$ -	$-		NCPA SPLIT			1,328.04
5	PDT	1	ZP/NP	Cal Imb (ZP)	21	21	$ (100.00)	Cal Imb (NP)	$ 107.67	$ -	$-		NCPA SPLIT			4,361.07
6	PDT	1	ZP/NP	Cal Imb (ZP)	21	21	$ -	Cal Imb (NP)	$ 230.21	$ -	$-		NCPA SPLIT			4,834.41
7	PDT	1	ZP/NP	Cal Imb (ZP)	21	21	$ -	Cal Imb (NP)	$ 404.25	$ -	$-		NCPA SPLIT			8,489.25

(Ex. SNO-732)

Big and Little Tuna

Q. What is Big Tuna?

A. It is related to Circular Scheduling. As described by former Enron employee Michael Driscoll, Big Tuna was "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)."[3] Big Tuna is also mentioned in the Short Term West Desk Hourly Goals for the Year 2000.



(SNO-114)

Q. Do you have any additional evidence pertaining to Big Tuna?

[3] "Accomplishments of Michael Driscoll-year end 2000". Publicly available at http://fercic.aspensys.com/iconect247/iconect247.exe, Firsbates WAS016-0045.

A. Yes. On July 19, 2000, Michael Driscoll entered "Big Tuna" comments into the ISO comment fields for 1:00 P.M. (SNO-115). Below I have inserted an extract of the Inc Sheet for that particular July 19, 2000 transaction which was listed under the congestion relief portion of the worksheet.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
BIG TUNA																
HE13	PDT	1	Malin to PV	LADWP	50	50	$30.00	buy/sell	$ -	100/130			#376277			$ (1,500.00)
HE13	PDT	1	PV to PV	EPE	50	50	$ 5.00	buy/sell	$ -	100/105			#376278			$ (250.00)
									CONG RELIEF							
13	PDT	1	PV to malin	cong relief	50	50		Cal pool	$175.01				#376279			8,750.50
																-
																-
LITTLE TUNA																
HE15	PDT	1	malin to NOB	PWX	4	4	$ 5.00	buy/sell	$ -	300/305			#376298			$ (20.00)
									CONG RELIEF							
15	PDT	1	NOB to Malin	cong relief	4	4		cal pool	$ (20.00)				actually had to pay			(80.00)
					0	0	$ -		$ -	$ -	$ -		cal pool # 376299		$-	-

(Ex. SNO-732)

Enron has also recently provided detailed evidence regarding Big Tuna in response to California Parties Data Request 35 in this processing (see Response to CP-ENR-35). The document is dated November 24, 1999 and is a tutorial created by John Forney that gives instructions on how to enter a "Big Tuna" in order to profit from congestion revenues paid by the CAISO. Specifically he is teaching his traders how to isolate situations when Enron can capitalize on congestion revenues.

> HOUR AHEAD CONGESTION RELIEF – Project "BIG TUNA"
>
> If we acquire length in NP15 with Redding or via trade, we can place adjustment bids on our loads in the north and the south and try to relieve congestion across PATH 15. We will place an "inverse" congestion adjustment bid between load zones which indicates that we want to flow N>S to relieve S>N congestion on PATH 15.
>
> In our example below, we purchased 50mw's from Redding in NP15. First we enter an SC trade with Redding's SC, WAMP. We then Inc our load in NP15 by 50mw's. DO NOT INC SP in this case.
>
> (Ex. SNO-737, page 1)

The document concludes ominously:

In summary, we are inputting in CAPS the following:

SC trade with Redding's SC, WAMP

Adjust bid Congestion in North

Adjust bid Congestion in South

Let me know if you have specific questions regarding the above strategy. Remember to check finals to see what final load schedules are. It is likely that the ISO may use only a portion of your energy for Congestion Relief. The remainder in this case would go to NP15.

Think of how we can apply this type strategy system-wide. Let's discuss.

(Ex. SNO-737)

Q. What is Little Tuna?

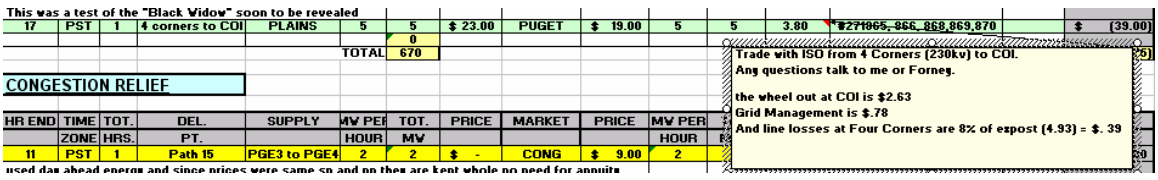
A. As the name suggests, I believe it is a smaller version of Big Tuna. Little Tuna shows up in the Inc Sheet for July 19, 2000 reproduced above.

Q. What is the relationship between Big Tuna and Black Widow?

A. A handwritten note on the Short Term West Hourly Desk Goals for Year 2000 indicates that these are the same scheme. (Ex. SNO-114)

Q. When does Black Widow first show up?

A. Instructions on how to enter Black Widow into Enpower were issued by Mike Driscoll on December 24, 1999. These instructions apparently reflect a test of Black Widow on December 18, 1999:


This was a test of the "Black Widow" soon to be revealed

17	PST	1	4 corners to COI	PLAINS	5	5	$ 23.00	PUGET	$ 19.00	5	5	3.80	$271865, 866, 868,869,870		$	(39.00)
						0										
					TOTAL	670										

Trade with ISO from 4 Corners (230kv) to COI.
Any questions talk to me or Forney.

the wheel out at COI is $2.63
Grid Management is $.78
And line losses at Four Corners are 8% of expost (4.93) = $. 39

CONGESTION RELIEF

HR END	TIME ZONE	TOT. HRS.	DEL. PT.	SUPPLY	MW PER HOUR	TOT. MW	PRICE	MARKET	PRICE	MW PER HOUR
11	PST	1	Path 15	PGE3 to PGE4	2	2	$ -	CONG	$ 9.00	2

used day ahead energy and since prices were same sp and np then are kept whole no need for annuity

(Ex. SNO-732)

The corresponding entry in Enpower was

DP_Deal_PeerID	DL_Deal_date	DL_Comment	DS_From_Delivery_Point	DS_To_Delivery_Point	DP_Primary_CP_Nam	DP_Scndry_CP_Name
271868	18-Dec-99		Four Corners-230KV	SP-15	California	EPMI California Pool
271865	18-Dec-99	RT deal wheeling power through the ISO from four corners to Malin, in an attempt to relieve cong. I bough from Plains and sold to Puget. There are three cal pool deals to show the movement through Cali.	Four Corners-230KV	Four Corners-230KV	EPMI Short Term California	Plains Electric Generation & Transmission Cooperative Inc.
271869	18-Dec-99		SP-15	NP-15	California	EPMI California Pool
271870	18-Dec-99		NP-15	Malin	California	EPMI California Pool
271866	18-Dec-99	See 271865.	Malin	Malin	California	Puget Sound Energy, Inc.

(Ex. SNO-721)

Sidewinder

Q. What is Sidewinder?

A. Sidewinder is a congestion scheme carried out in part with Washington Water Power and Enron affiliate Portland General Electric (PGE.) This schedule, which took place on June 6, 2000, lists the electricity changing product type from "Firm" to "Economy" or "Non-Firm" on the schedule leg taking place between Washington Water Power and PGE. This facet of the schedule is extremely important, because this transaction not only unjustly attempts to capture congestion payments from CAISO, but also compromises system reliability by misrepresenting "Non-firm" energy as "Firm". No evidence suggests that Enron procured ancillary services that would have made this electricity "firm." This is in clear violation of standard utility practice let alone the CAISO and PX MMIPs. I have inserted an extract of the Sidewinder listing from the June 6, 2000 Inc Sheet.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	OP	Q
14-15	PDT	2	T cob / mead		40	80	Voltage Control ($.33 per mw)			40	80	0.33	#292672		$ (26.40)
14-15	PDT	2	T cob / mead		40	80	Trans Sunk Cost ($87.33 / MW's			40	80	1.09			$ (87.33)
14-15	PDT	2	Malin	Sidewinder	40	80	$ 1.00	WWP		40	80		#350148		$ (80.00)
14-15	PDT	2	Malin	Sidewinder	40	80		PGE Sys		40	80	0.90	#350149,350150,146517		$ (72.00)

(Ex. SNO-732)

Roseburg Lumber and Smurfit Schemes

Q. What are the Roseburg Lumber and Smurfit Schemes?

A. On June 28, 2000, Michael Driscoll wrote "Real time position where we washed smurfit stone length through WWP for $5, then took for profit in ISO (200 @ 205)." This entry is quite similar to the narrative that Valerie Sabo, a Logistic Specialist at Enron's West Power Scheduling Desk, provided to PacifiCorp lawyers in June 2002 concerning Get Shorty.

Q. Explain the narrative that Valerie Sabo provided concerning Get Shorty and how it related to the Roseburg Scheme?

A. In her May 18, 2002 interview, Ted Plaznos, outside counsel for PacifiCorp, summarized Sabo's statement during a May 18, 2002 interview as follows,

> Enron had no generation to do the transaction at hand therefore, they needed to find other companies that would agree to sell Enron ancillary services but who would not necessarily know what Enron was going to do with them. Enron used other transmission providers to obtain ancillary services without paying for them. Sabo gave two examples where Enron did this, both involving PacifiCorp. They involved Roseburg (ph) and Willamette (ph).
>
> (Ex. SNO-738)

Q. Do you have an example of the Roseburg Scheme?

A. Again I will reference the May 18, 2002 Sabo interview where she described the Get Shorty transactions with Roseburg :

> The following is my best attempt at explaining the Roseburg example: PacifiCorp sells energy to Roseburg, who also has the capability of self generating power by steam (this would be considered non-firm since Roseburg cannot provide ancillary services for this self-generated power). Roseburg sells the excess generation (their non-firm self-generation) to Enron, who then schedules this energy to California which it sells as firm. Additionally, Enron schedules/bid ancillary services related to this energy that it did not ever have but used.
>
> (Ex. SNO-738)

Enron needed to supply an energy source for its non-firm as firm scheme. The use of cogeneration facilities at Smurfit and Roseburg Lumber for ancillary services in California is a clear impossibility (the facilities at Roseburg Lumber are not only

undispatchable due to the substantial ramp up time, they constitute some of the oldest units in the WECC.) The "wash" through PacifiCorp or Avista allowed them to sell unit contingent non-firm capacity as firm capacity to the California ISO.

Q. Do these additional "new" schemes take unfair advantage of rules and procedures in PX and ISO tariffs?

A. Yes. Each of these schemes is very similar to the previously investigated schemes of Load Shift, Death Star, and/or Ricochet – actually, as variants of Load Shift, Death Star, and/or Ricochet. Like Load Shift, Death Star and/or Ricochet, these schemes also fall within the definitions of gaming and anomalous market behavior and are in violation of the PX and ISO MMIP.

Q. Do these additional schemes take unfair advantage of transmission constraints during periods of substantial congestion?

A. Donkey Punch, Red Congo, Sidewinder, and Russian Roulette take unfair advantage of transmission constraints during periods of congestion. In the case of Red Congo, the scheme procured congestion payments from the California ISO.

Q. Were these additional schemes transacted to the detriment of the consumers?

A. Yes, these transactions inappropriately garner congestion payments and/or increase the price of electricity by artificial means to the detriment of consumers.

Q. Do these additional schemes depart significantly from normal behavior in competitive markets?

A. Yes. For example, John Forney's document describing the Red Congo strategy describes a fraudulent scheme intended to unjustly collect congestion payments. Regarding the additional schemes similar to Load Shift, I cannot classify these

transactions as normal market behavior. In short, these schemes are consistent with the schemes already determined by FERC Staff to be in violation of the PX and ISO MMIP.

Q. Would you classify these additional schemes as "unusual"?

A. Without a doubt, in my twenty-five years in the industry I cannot recall of any type of transactions of this type being considered to be ethical or legal.

Little Man

Q. What is Project Little Man?

A. Project Little Man was a scheme supplied on Friday, January 28th. We have not had the time to evaluate Project Little Man. Since the ISO settlement data was also provided on Friday, we have not had the chance to determine whether Project Little Man ever became operational. (Ex. SNO-800)

V. NEW EVIDENCE ON SCHEMES DISCUSSED IN THE SHOW CAUSE ORDERS

Q. Explain a few of the exhibits you are including this testimony?

A. I am submitting Enpower (Ex. SNO-721), Enpower to Caps Reconciliation sheets (Ex. SNO-736), the Inc Sheets (Ex. SNO-732), the Service Sheets (Ex. SNO-735) and the Death Star templates (Ex. SNO-740). We have submitted the Death Star materials in previous dockets that are incorporated in the Show Cause proceedings and as work papers in this proceeding.

Q. Are these exhibits unusual for a regulatory proceeding?

A. Yes. The Enpower database, in itself, is more than 160,000 pages of materials. I have chosen to submit these materials as exhibits, rather than workpapers, to ensure that

the basic evidence from which the conclusions in this testimony are drawn is filed in this proceeding.

Q. Have you found new evidence on schemes previously mentioned in the FERC Show Cause order and Final Staff Report?

A. Yes. The evidence further demonstrates Enron's engagement in strategies that are in violation of the MMIP and the subsequent profits earned from such schemes. I will go through each of the schemes mentioned in the FERC Final Staff report briefly explaining the schemes once again and presenting the new evidence.

Death Star

Q. What is a "Death Star?"

A. Enron used the term to refer to both a specific market-manipulation strategy, and to a family of strategies. The California ISO calls this family "circular schedules," which is a more descriptive name. In essence, a Death Star is any set of schedules that offset each other, using two or more different systems on which to file these schedules. The basic components in a "Death Star" are to offset import and export schedules on the ISO system, combined with offsetting import and export schedules on another system.

Q. Enron has stated that Death Star was actually a good thing. Do you agree?

A. No. After reviewing numerous tapes and Enron documents, the general sense was one of predation. In the following quote, John Forney states:

> FORNEY: Oh shit, we need to fire – well for the on peak is what I was looking at.
>
> DRISCOLL: Oh, OK, let me look – let me look [inaudible] off peak.
>
> FORNEY: [inaudible] repeat, we should be leaving money just laying around.
>
> DRISCOLL: Yeah, I know. [to self] To add for the fourteenth? [back to conversation] Yeah, it's stout. Well, yeah, It's really stout.

FORNEY: Start, north to south, so fire up the old Death Star.

(Ex. SNO-351)

Q. Is there more than type of Death Star?

A. Yes. Thus far, we've identified the schemes Black Widow, Big Tuna, Perpetual Loop, Cong Catcher and Red Congo as part of the Death Star Family.

1. Black Widow

Q. What is Black Widow?

A. Black Widow was the name used for circular schedules in 1999. As demonstrated in a December 24, 1999, email titled "Black Widow Enpower" Les Rawson instructs his trading team on how to properly enter a "Black Widow" schedule in order to maximize congestion payments received from the CAISO.

Subject : Black Widow Enpower

Teammates,

When entering Black Widow deals in Enpower use EPMI Short Term West Hourly as the Counterparty and NOT Short Term California. This will allow Risk to show these deals expensed against the Real Time book. Since these deals tend to lose money on the energy part of the transaction we don't want the California Book to have to carry the loss until we get paid for the congestion relief.

Also, when entering these deals in CAPS use .001 as the Mw schedule amount. Then use the adjustment bid to set the Mw values. This will allow the CISO to use the schedule from 0 Mw to the upper limit set with the adjustment bid to relieve congestion. The adjustment bids should be highest at the point of import and then lower at the export point with the delta you desire. Remember the CISO will look at the total delta including tie point congestion and the wheel congestion in determining how much of your schedule to award.

As always if there are questions please ask.

Regards,

Les Rawson

(Ex. SNO-741)[4]

Handwritten notes in the margin expound on the email stating "Hour Ahead Zonal Congestion Price Difference in ISO web page- look for cong. > $25 to relieve by scheduling wheels going the other way."

This is a clear reference to what we would now call a Death Star. Further evidence corroborates the above email. For example, the year end accomplishments for 2000 of Michael Driscoll state:

> Project "Black Widow'- a congestion relief strategy in California that incorporates a wheel product that relieves congestion in Enron's favor for profit through negative adjustment bids which tell the ISO to flow certain mw amounts if Congestion is a certain number (a low risk high upside trade).

(Ex. SNO-113)

2. Perpetual Loop

Q. What is "Forney's Perpetual Loop"?

A. "Forney's Perpetual Loop" is a congestion scheme named after none other than the head of Enron's West Real Time Trading Desk, John Forney, who has now plead guilty to criminal fraud for his role in carrying out these kinds of schemes. In my Prepared Direct Testimony (Ex. SNO-58), I submitted the now infamous diagram of "Forney's Perpetual Loop." (SNO-58) The diagram details how to carry out a circular schedule with the explicit instruction "No MW's flow, just call in Schedules."

3. Cong Catcher

Q. Why do the following scheme names, Red Congo and Cong Catcher contain the embedded word "cong?"

[4] Submitted as part of Enron's May 14, 2002 second response to the May 6, 2002 Data Request issued by FERC, p. 3

A. "Cong" apparently refers to the CAISO's CONG computer program, which was designed to manage congestion in the ISO's transmission system. Input to CONG was a balanced schedule without regard to transmission constraints. CONG was supposed to resolve any violation of those constraints by identifying a set of schedule adjustments that, when implemented, would result in a balanced schedule without unfeasible flows across any transmission path. The necessary adjustments would normally be selected from those proposed by schedule coordinators in the form of adjustment bids. CONG would also determine the rate for congestion charges and would compute zonal prices when congestion zones experienced fragmented, i.e. unequal, market clearing prices because transmission congestion required the dispatch of generating resources out of the normal economic order.

Q. Do any of these schemes have additional common characteristics?

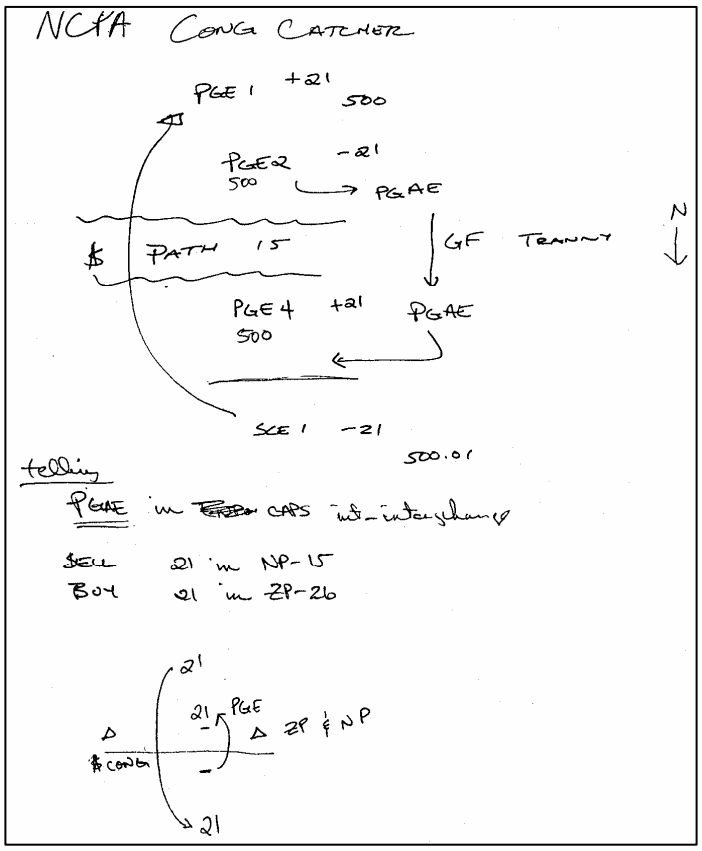
A. Yes. Both Cong Catcher and Red Congo depend for their effect on the use of existing transmission contract rights (ETCs) to which Enron had a contractual right. For Red Congo the underlying owner of those ETCs was the city of Redding, thus Red Congo. Cong Catcher relied on NCPA transmission. The use of such rights was critical because the CAISO performed its own balancing computations – using CONG – without considering that transmission capacity. Both schemes applied the common Death Star tactic of scheduling a set of transactions having no effective net power flow, but presenting the CAISO with the appearance of power flow across congested transmission paths. The apparent flow would be counter to the direction of congestion, and Enron would thus receive a negative congestion charge, i.e., a payment.

Q. Did these schemes require FTRs?

A. No. Both FTRs and ETCs allowed the owner to avoid congestion costs, but FTRs would not have been a good choice for a circular schedule. If Enron had purchased and used FTRs, the ISO would have quickly noticed the absence of any substance in these schedules. Using ETCs, on the other hand, "hid" half of the schedule from the ISO.

Q. Please describe Cong Catcher.

A. We are fortunate in having a very clear diagram made by an Enron employee to illustrate the workings of the Cong Catcher scheme, which is reproduced below.



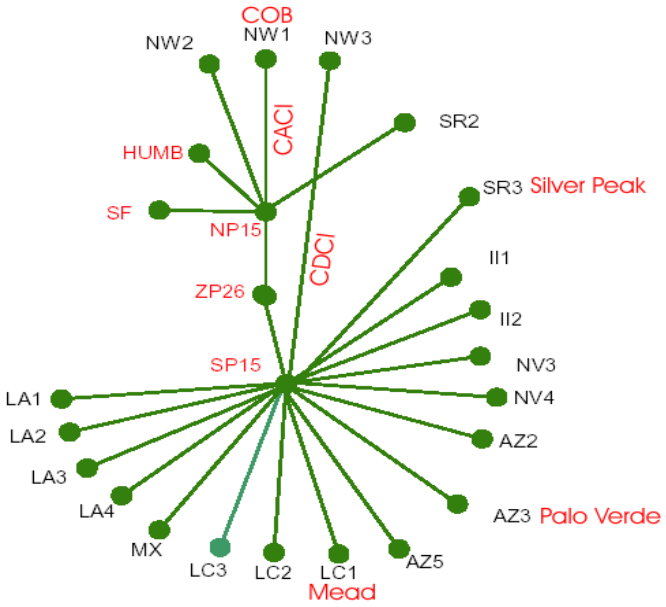
(Ex. SNO-813)

The diagram is a strikingly explicit schematic declaration of Enron's intent to take money from market participants without performing any economically useful function –

in fact, to take money while introducing confusing and misleading information into the regulated scheduling and dispatch process. As a very simplified description, "Path 15" is a collection of transmission lines in California's Central Valley that connect the area of California to the north of those lines with the area of California to the south of the lines. The name of the path really refers more to the movement of power between two areas rather than any particular route traveled by power flow. The two relevant areas are given the names "NP15" for the area to the north, and "SP15" for the area to the south. A part of SP15, called "ZP26," is sometimes considered separately because of transmission congestion for power flowing between that area and other areas. The CAISO has also carved up the major congestion zones into dozens of smaller zones, some of which are explicitly noted in the figure below (i.e. "PGE1," "PGE2," "PGE4," "SCE1."). At the bottom of the diagram are references to "ZP" and "NP," which are simply shorthand for ZP26 and NP15.

The first thing to notice in the diagram is the net absence of any real power flow or generation. Positive energy values, "+21," are matched with negative energy values, "-21." The scheme involves submitting several scheduled events that constitute much ado about nothing because the collective schedule is not intended to result in any generation or consumption of electric power. A power production of 21 MW in the SCE1 congestion zone together with a power delivery of 21 MW in the PGE1 zone appears to the CAISO to imply a power flow across the path from SP15 to NP15. At the same time, Enron would schedule a production of 21 MW in the PGE2 zone and a simultaneous delivery of 21 MW in the PGE4 zone, and would create the appearance of delivery through firm transmission rights not controlled by the CAISO – for example,

using NCPA firm transmission rights to which Enron had access. That transmission capacity would not be part of CONG calculations by the CAISO. An examination of a map of California transmission zones is helpful while interpreting the Cong Catcher diagrams; such a map is reproduced below.



PGE1 and PGE2 are areas within the NP15 area, and SCE1 and PGE4 are within the SP15 area, with PGE4 also located in the ZP26 area. Returning to the Cong Catcher Diagram, the downward pointing arrow on the right side of the diagram indicates that the scheme is intended to work when the north-to-south path is congested. The smaller drawing at the bottom of the page illustrates a similar set of scheduled events that would garner congestion charge payments to Enron when the south-to-north path was congested, i.e., when the transmission capacity from SP15 to NP15 is inadequate to accommodate net scheduled power production in the south that would, without congestion, be delivered to the north.

Q. Please describe the implementation of a Cong Catcher type of Death Star.

A. A Cong Catcher Death Star would be initiated if Enron believed, based on recent experience, that transmission congestion would exist between NP15 and SP15. For example, the prior day might have seen congestion southbound, relatively common in the late spring and early summer when surplus hydro generation was available to import from the north, sometimes beyond the capacity of the transmission system to carry the energy into Southern California. Enron would construct a Cong Catcher by submitting a schedule to the CAISO that included all the necessary elements. For example, one interpretation of the diagram above is that Enron might start by using 21 MW of NCPA transmission to schedule 21 MW of power ostensibly to be produced at PGE2 in NP15 and delivered at PGE4 in ZP26, which is normally in SP15. At the same time, Enron would schedule 21 MW of power to be ostensibly produced at SCE1 in SP15 and a matching amount to be consumed at PGE1 in NP15.

Consummating this schedule does not require that any power be generated or consumed; the power delivered at PGE1 seems to the ISO computer system to come from SCE1, which is connected without constraint to PGE4 where power is delivered that comes across NCPA transmission from PGE2, which is connected without constraint to PGE1, where power is being delivered in the first step of this loop. This snake-eating-its-own-tail system seems on the surface to represent a lot of system activity, but really involves no generation or transmission of energy. However, if the CAISO sees net congestion from NP15 to SP15 then the northbound segment of Enron's Cong Catcher schedule will represent flow on the CAISO's part of the transmission system that is in the direction opposite the congested flow. If the CONG program resolves congestion and issues a congestion charge to users of the NP15-to-SP15 path, then Enron's counter-flow

will receive a payment, in the amount of the congestion charge rate times the amount of counter-flow. A similar arrangement would reward Enron for conducting a looped schedule in the opposite direction if the path 15 congestion was in a south-to-north direction.

Q. But isn't this just a way to recognize a legitimate use of NCPA transmission rights to relieve congestion?

A. No. Enron's scheme caused Enron to receive congestion payments that should rightfully have gone to the owners of the CAISO's transmission facilities. Enron would see no reward for simply using or allowing its non-CAISO transmission rights to be used to carry more energy to SP15 when NP15 is awash in cheap hydro imports. Cong Catcher allowed Enron to reap rewards that should have been enjoyed by the other owners of the CAISO's congested transmission facilities.

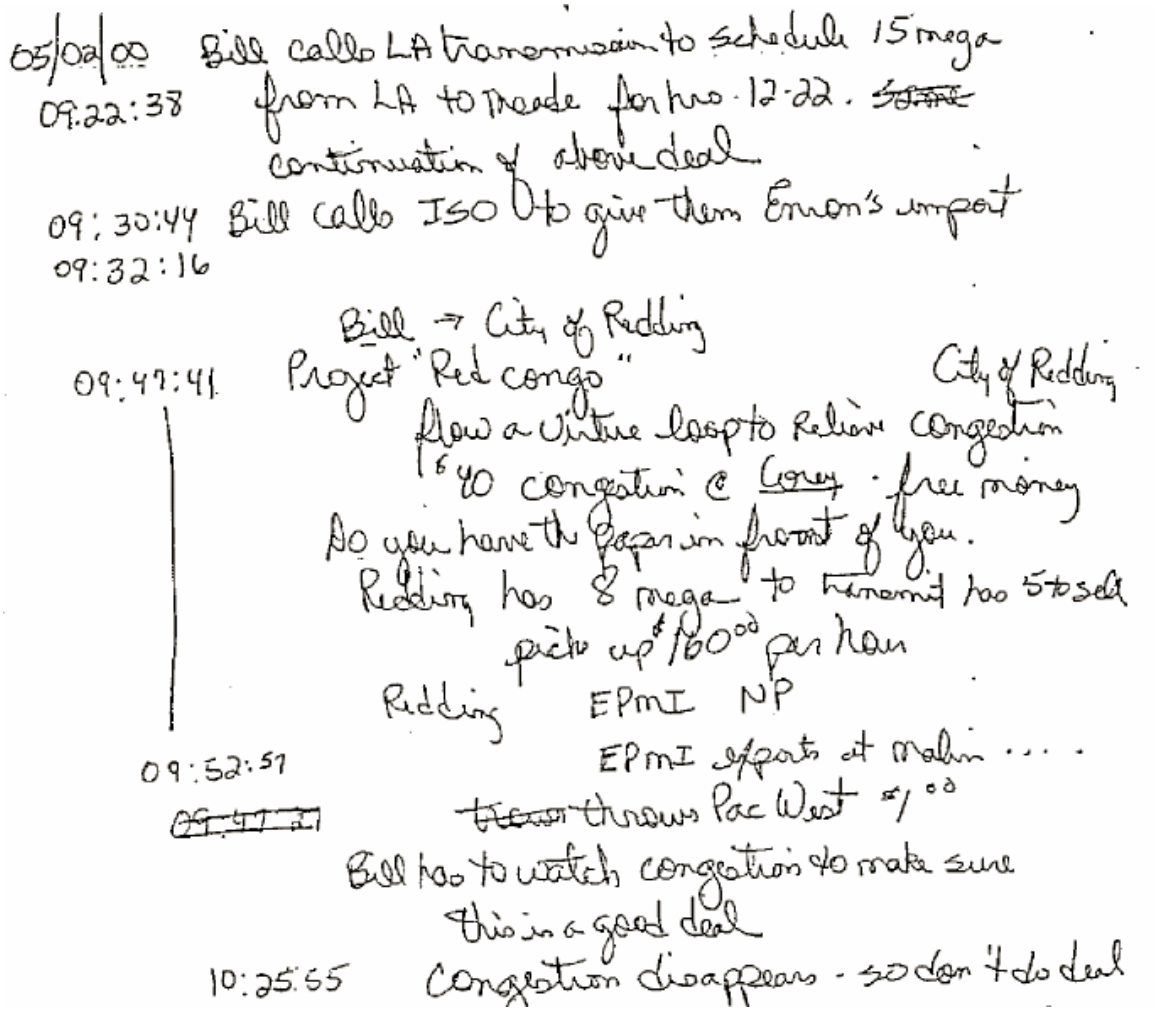
4. Red Congo

Q. What was the Red Congo scheme?

A. Red Congo was nearly identical to Cong Catcher in both execution and intent. The salient difference was the use of transmission rights owned by the City of Redding in Northern California. This was analogous to using NCPA transmission rights. Otherwise, Red Congo and Cong Catcher were implemented by and rewarded to Enron in essentially the same way.

Q. How did Stephen Hall relate the description of Red Congo during a Bill Williams III call on June 2, 2000?

A. When Stephen Hall was assembling his transcript of trader calls, Red Congo arose several times. The June 2, 2000 notes are quite illuminating:



(Ex. SNO-731, page 12)

In this case, Bill Williams III had to call off a proposed Red Congo because congestion disappeared at 10:00 A.M.

Q. How did other Death Star schemes work?

A. Most other Death Stars were designed to collect congestion payments related to transmission paths between California and regions outside California, primarily the Northwest. Congestion for other Death Stars occurred on these interties[5]. The functional difference between Cong Catchers and formal Death Stars was that the loop schedules

[5] The intertie lines to the Northwest are primarily the AC Intertie, usually referred to as COB for the California Oregon Border, and the DC Intertie, usually referred to as NOB for the Nevada Oregon Border. These names come from the locations of the relevant transmission lines as they cross the Oregon border.

involved had to use the same transmission path going both ways. This was unlike Cong Catcher, which used transmission rights that were not usable by the CAISO's schedules because they were owned and scheduled by third parties. Death Stars were simultaneous schedules going in opposite directions across both the LADWP and CAISO control areas that acted to cancel each other out. Both LADWP and CAISO saw only half of the picture so they believed that these transactions were legitimate. In reality the schedules did not flow any power, but rather were simply designed to cause imaginary congestion in one direction and simultaneously relieve congestion in the opposite direction, thus tricking the CAISO computer model to award them unjust congestion revenues. Some of the starkest evidence of Enron's duplicity in the Death Star schemes is found in recordings of trader conversations as the Enron traders attempted to schedule various and sundry Death Star components while concealing the sham intention behind the schedules. (Ex. SNO-316)

Q. How does Red Congo show up in the Inc Sheets?

A. On June 22, 2000 the following transactions show up.

15	PDT	1	RED-CONGO	REDDING	20	20	$50.00	$50.00	$-	$226.85	2.77	#358206,358204,358205,358207	$1.00	$-	(55.40)
16	PDT	1	RED-CONGO	REDDING	20	20	$50.00	$50.00	$-	$ 93.25	2.77	#358206,358204,358205,358207	$1.00	$-	(55.40)
17	PDT	1	RED-CONGO	REDDING	20	20	$50.00	$50.00	$-	$156.62	2.77	#358206,358204,358205,358207	$1.00	$-	(55.40)
18	PDT	1	RED-CONGO	REDDING	20	20	$50.00	$50.00	$-	$157.85	2.77	#358206,358204,358205,358207	$1.00	$-	(55.40)

(Ex. SNO-732)

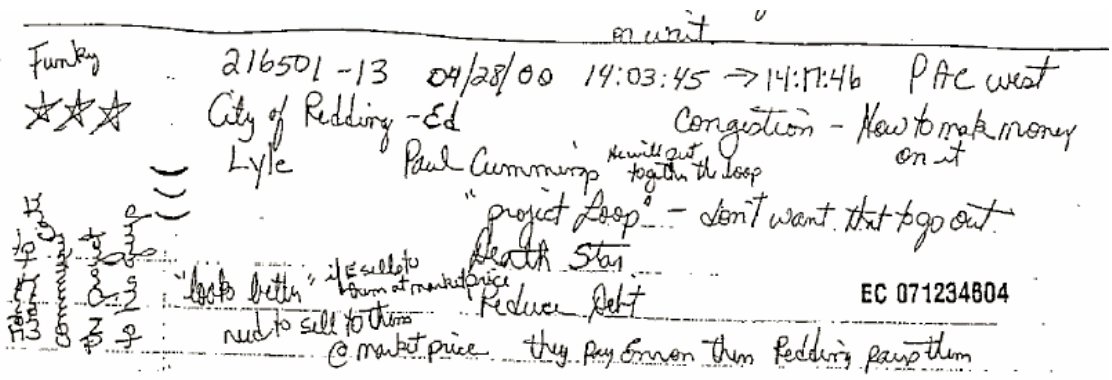
Q. Does Red Congo show up in the Enpower database?

A. Yes. As I mentioned in my Prepared Direct Testimony (Ex. SNO-58), Enpower reports 186 transactions with identical schedules transacted between Enron, Redding, and Pacific. (Ex. SNO-101) Red Congo, as revealed by a thorough study of the evidence, is a

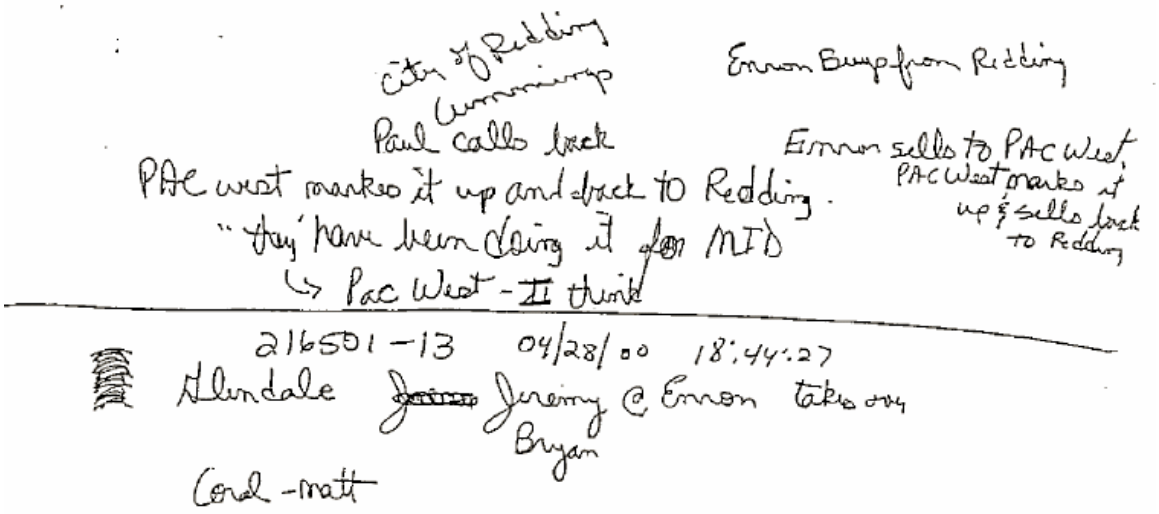
scheme related to Death Star, but the mechanics are different.[6] Forney's instructions are very precise and require the participation of three different counterparties in order to carry out the congestion relief scheme.

Q. Did Stephen Hall's trader transcript summaries reference Red Congo?

A. Yes, although he simply described the scheme rather than using the name:



And on the following page



(Ex. SNO-731)

Q. Can you translate Mr. Hall's rather informal notes?

[6] FERC Trail Staff Final Report, page VI-26.

A. Yes. As Stephen Hall puts it, a three star "funky" call was received from Lyle and Ed at Redding on project "Loop". He notes that they "don't want that to go out." It isn't clear whether the concern is for the phrase "Loop" or "Death Star" although both are mentioned. Paul Cummings of Redding will "put together the loop." The sideways text reads "John wants to communicate the project to his group." The material from the following page makes clear the mechanics – Enron buys from Redding; Enron sells to Pacific; and Pacific sells back to Redding.

The timing of these notes is consistent with Paul Cummings memo to his system operators on the same date. (Ex SNO-739)

5. General Points About Death Star Transactions

Q. Did Death Star have any other aliases?

A. Yes, according to FBI agent Steve Coffin, who investigated criminal misconduct at Enron's Portland trading desk, John Forney was worried that CAISO would find out about the Death Star scheme, so he instructed his traders to refer to Death Star as "Cuddly Bear." (Ex. SNO-744, page 13)

Q. Why the multiple names for a single scheme?

A. It is clear that the concept was introduced in the winter of 1999/2000 with Big Tuna and Black Widow. By the staff meeting of March 7, 2000, Enron was using the phrase "boomerang" for the scheme. Stuart Rossman kept his instruction on the scheme. These instructions show the gradually changing nature of the concept:

> Product Summary: The LOOP
>
> Objective: Enron would like to be in the position to be paid for congestion at both NOB and COB. In order to do this we need a partner (PGE) to allow us system support. The following is a description of two products.

Product One: The COB Loop ("Ricochet")

Situation: When the ISO experiences congestion at COB N-S

Description: Enron takes power at NP-15 and exports it to COB. Enron has several options in sourcing the energy:

1. Do a SC-SC trade with a counterparty at NP-15 (Especially a muni)

2. Dec our load and move the length to COB

Enron has several options in sinking the energy:

1. Remarket the COB S-N energy

2. Sell to PGE to cover load

3. Ricochet the energy and inject it into existing right transmission (Muni Transmission)

The procedure to ricochet the energy is as follows:

This product can be done on an hour ahead or day ahead basis. Municipal candidates who are eligible for this product include; NCPA (DA), Redding (DA,HA), Modesto, Turlock, CDWR.

Product Two: The NOB & COB Loop ("Boomerang")

Situation: When the ISO experiences congestion at NOB N-S

Description: Enron takes power at SP-15 and exports it to NOB. Enron has several options in sourcing the energy:

1. Do a SC-SC trade with a counterparty at SP-15 (Potentially a muni)

2. Dec our load and move the length to NOB

Enron has several options in sinking the energy:

1. Remarket the NOB S-N energy

2. Have PGE take the energy at NOB and move it to COB

The procedure to do this is as follows:

(Ex. SNO-801)

Q. How did Stephen Hall's memo describe Death Star?

A. The December 8, 2000 Yoder Hall memo describes, Death Star as follows:

> The strategy earns money by scheduling transmission in the opposite direction of congestion; i.e., schedule transmission north in the summertime and south in the winter, and then collecting the congestion payments. No energy, however, is actually put onto the grid or taken off.
>
> (SNO-64)

Q. What is FERC's definition of the scheme Death Star?

A. As defined in the Show Cause order for EL03-137, paragraph 43, pg. 23:

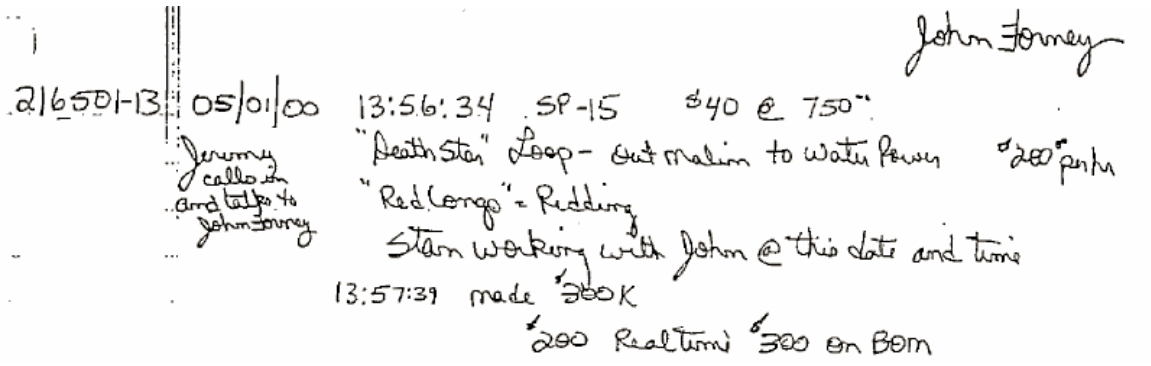
> The second Congestion-Related practice is Circular Scheduling, also sometimes referred to as "Death Star." The Circular Scheduling practice involved the market participant scheduling a counterflow in order to receive a congestion relief payment. In conjunction with the counterflow, the market participant 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.

Q. Did Stephen Hall's transcripts of trader calls in April and May 2000 mention Death Star?

A. Yes. Apparently this was a frequent subject between the traders. John Forney, Smith Day, and Bill Williams III all participated in frequent discussions on Death Star. Discussions of Death Stars took place in Hall's notes on April 27, 2000, April 28, 2000, May 1, 2000, May 2, 200, May 3, 2000, and May 4, 2000. (Ex. SNO-731, pages 23, 1-8, 11, 16, 50) A number of additional conversations also seem related to Death Stars.

Q. Please provide an example.

A. On June 1, 2000 Jeremy and John Forney discussed prospective Death Stars with Redding.



(Ex. SNO-731, page 7)

Q. Why did Death Stars require so much planning?

A. Since Death Stars were basically deceitful, it was necessary to organize counterparties to provide substance to the illusion.

Q. Can you explain the mechanics of a Death Star schedule?

A. Yes. The detailed materials authored by Michael Driscoll on April 5, 2000 describe how the hints in the Yoder/Hall memorandum actually worked. The following operating details are from his email:

> 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 .90
>
> 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.
>
> (Ex. SNO-99)

These are instructions on how to enter a Death Star transaction into Enron's scheduling computer program. The scheduler's jargon comprises shorthand instructions for the entry of the transaction into Enpower (Enron's California transaction software) or CAPS (software to submit schedules to the ISO.)

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.[7]
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 would create impression that energy is being exported out of California to the Pacific Northwest.[8] 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 the springtime.

Q. Were Death Stars referenced in Stephen Hall's transcripts of Portland trader calls?

---

[7] Malin is the physical location of the substation that connects PGE and BPA's 500 kV lines with California. Mead (not "Lake Mead") is a market hub in Nevada.

[8] An interesting facet to each of these schemes is that Enron was certain that the ISO would not connect the dots in these transactions. This is all the more surprising since the ISO schedules both sides of the transaction. Only the portions at Mead and within Oregon are outside of the ISO's scheduling.

A. Yes. This was a very frequent subject of conversation. Stephen Hall, apparently to signify their importance, flagged a number of them with stars. (Ex. SNO-731)

Q. Is there evidence that Enron scheduled counterflows in order to receive congestion payments?

A. Yes. Documents created by Enron's Real Time West Desk prove beyond a doubt that Enron was counterscheduling power in order to manipulate the CAISO computer model, thus receiving unjust congestion revenues from CAISO. These documents include Inc Sheets and signed Enpower to CAPS Reconciliations, both of which match data contained within Enpower. Not only does this evidence prove that Enron was counterscheduling to receive congestion payments, but also that Enron: a) submitted schedules simultaneously - importing energy in and exporting energy out of the ISO control area, b) submitted transactions that scheduled energy out of the ISO control area only to simultaneously schedule the energy back to its point of origin, c) submitted fictitious schedules - energy did not actually flow and therefore no congestion was actually relieved, and d) received congestion payments that were greater than the cost of scheduled transmission, therefore resulting in profits. (Ex. SNO-740) (Ex. SNO-721) (Ex SNO-732) (Ex. SNO-735)

Q. Was it necessary to submit circular schedules so the CAISO could "see" available out-of-state generation?

A. No. Simultaneously submitting schedules in opposite directions does not make economic sense and is not necessary. These false schedules did not flow power but tricked the CAISO congestion model into thinking it could not access native generation.

This caused the state to rely on out-of-state electricity—often this energy was priced higher than the native load thus resulting in an economic harm to market participants.

Q. Do circular schedules help relieve congestion?

A. No. CAISO's October 4, 2002 report (Ex. SNO-17) states that "ISO Grid Operations staff have expressed two concerns about such circular schedules." The report goes on to say:

> First, concerns have been raised that circular schedules do not actually relieve congestion due to the fact that the ISO's scheduling and congestion management system is based on a simplified model in which energy flows are represented by the scheduled or "contract path" flows used throughout the WSCC, rather than based on actual electrical system conditions. Because of this discrepancy between how power flows are modeled in the ISO's congestion model and power flows under a full network model, power may not (and often does not) actually flow as scheduled.
>
> (Ex. SNO-66)

The scheduling instructions and other materials created by Enron demonstrate that Enron submitted schedules for which they had no intention of physically supplying the energy. This practice misrepresents the amount of energy on CAISO's system causing the congestion model to allocate payments that are not deserved. Furthermore, this action caused economic harm to market participants who were forced to withdraw schedules or available generation due to false congestion on the transmission lines. Circular schedules also threatened reliability because they compromised the ability of the ISO's operations staff to manage flows. As the ISO explained:

> A second concern expressed by Grid Operations staff is that because of the circular nature of the source and sink of a circular schedule, such schedules may make it more difficult for Operators to manage actual power flows by adjusting import/export schedules in real time. For example, the import portion of a circular schedule could not be curtailed due to a contingency on one branch group without cutting the source of an export schedule that is providing a counterflow on another branch group. Enron's practice does pose a risk to system reliability since the simultaneity of flows could not be verified by the operators and therefore was not appropriate.
>
> (Ex. SNO-66)

This point is crucial—CAISO is directly stating that these circular schedules posed a risk to system reliability. A large-scale failure on the system could have caused disastrous effects to California, not to mention the possibility of a region wide failure as experienced in the Eastern United States in August of 2003.

Circular schedules made the system more vulnerable to price volatility and decreased reliability. In his March 31, 2003 deposition, Dr. Eric Hildebrandt states that, "the ISO certainly in their judgment, system reliability is increased by eliminating or reducing circular schedules." (Ex.SNO-745, page 163) Dr. Hildebrandt states further that his report was misinterpreted to say that circular schedules were beneficial to the system:

> the report has also been misinterpreted or misrepresented to suggest that circular schedules somehow benefited system reliability, but that's certainly not the case.
>
> (Ex. SNO-745, page 163)

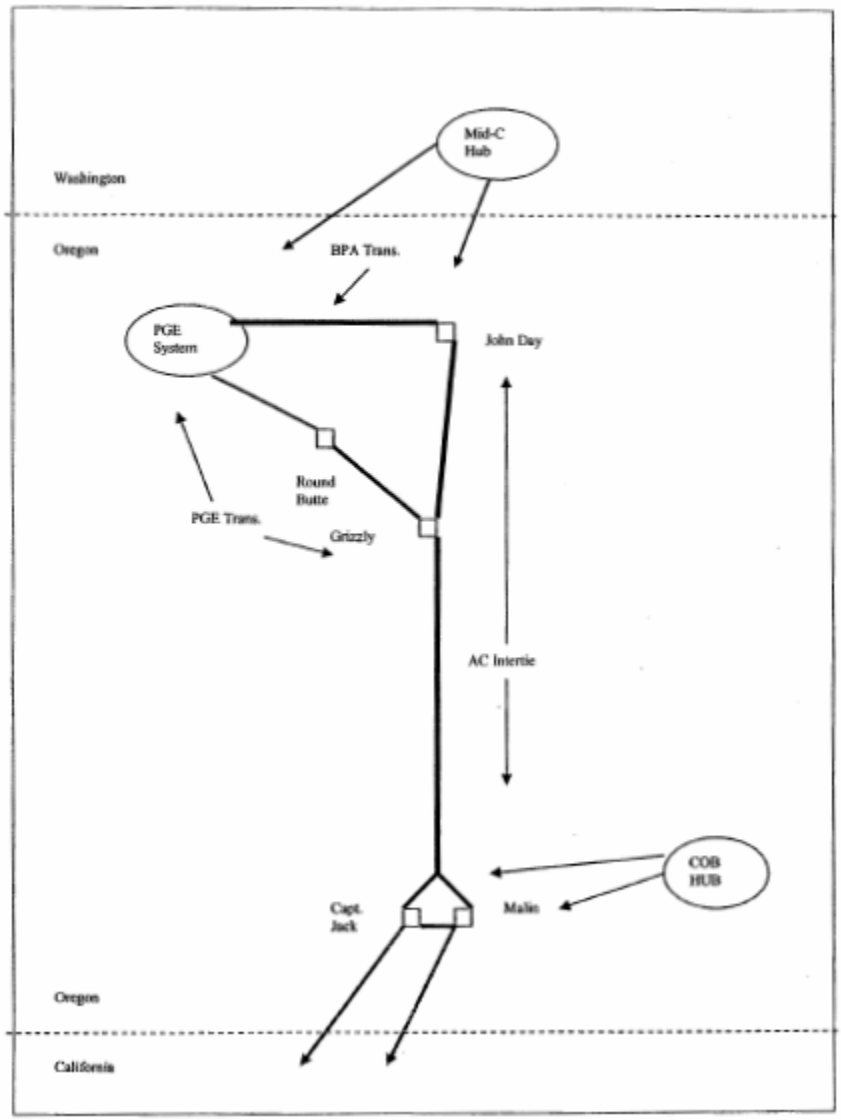
Q. What impact did Death Star have on the Western US Energy Markets?

A. Whenever schedules are in error (and these were totally in error) it puts the system at risk. In a crisis, the ISO would have had to assume that these were real schedules. If a major disturbance had occurred, they would have been operating the system as if these schedules were real. If the non-existent flows from Portland to John Day had been assumed as critical to maintain system stability in a crisis, the entire system might well have crashed.

Q. Did Death Star schedules involve NW transmission?

A. Yes. FERC Staff witness Richard Mabry testified that Enron used Portland General Electric's (PGE) transmission system to carry out the Death Star schedules. He included a transmission map that illustrates how this system is configured. He explains the transmission system in the following way:

The diagram in Exhibit No. S-14 identifies a PGE Owned transmission path connecting Grizzly substation to PGE System through Round Butte substation. As described above, this path consists of one 500kV line from Grizzly to Round Butte and one 230kV line from Round Butte to PGE System. This path essentially allows PGE to deliver and receive power to/from the AC Intertie at Grizzly. More specifically, the PGE AC Intertie Agreement with BPA specifies that PGE may deliver to the AC Intertie at Grizzly up-to the greater of 150MW or the actual generation at Round Butte and may receive from the AC Intertie at Grizzly up-to the actual east-west flow on the line from Grizzly to Round Butte.[9]



(Ex. S-14)

[9] Richard Mabry Testimony (S-13), pp 4.

Mr. Mabry explains how the transmission system was used to schedule energy into and out of CAISO control area simultaneously. He goes on to explain the agreement between Enron and PGE as follows:

> In general, PGE and EPMI devised a series of marketing transactions to be implemented in real time which scheduled power from California to the PGE System and from the PGE System back to California on an hourly basis using transmission capacity on the Combined System shown in Exhibit S-14. Since energy transactions are accounted for on an hourly basis in the Northwest and California, the marketing arrangement had the effect of simultaneously scheduling power north and south on the AC Intertie for import from and export to California, respectively.[10]

He concludes that:

> The transactions by themselves were not legitimate transactions and have not been demonstrated to serve any purpose other than to further the goals of Enron in capturing congestion revenues in the California energy markets.[11]

Q. Has your methodology for analyzing Death Stars been refined during the course of the FERC Western Market Investigation proceedings?

A. Definitely. As more information has become available we have refined our methodology. Let me briefly recap how we started to analyze Death Stars. In EL00-95 we had access to the CAISO and LADWP schedules for 2000 and 2001. In order to find the transactions that match the definition of a Death Star, we developed a mapping from LADWP's definitions of tie-points to the ISO's definition. This allowed us to match imports on one system to exports on another. We also developed a mapping of the ISO's abbreviations for scheduling coordinator to LADWP's codes for agents. This allowed us to identify when the same party was scheduling power on both systems. We eliminated schedules for ancillary services, because we wanted to match only those transactions that were eligible to receive payment in the event that a given line was congested. We then

[10] Ibid, pp 6-7.
[11] Ibid, pp 22.

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. We 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 Death Star.

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

Q. Did the ISO's methodology miss some Death Stars that fall within FERC's definition?

A. This is a frequent occurrence. On August 19, 2000, for example, the Reconciliation sheets show Death Stars that do not show up on the ISO records. (Ex. SNO-736) Since it is unlikely that Enron would inadvertently record Death Stars, this illustrates how only measuring half of the circular schedule can result in an under-estimate of the number of schemes committed by Enron.

Q. What does the Inc Sheet show for Death Stars on the 19th of August?

A. The Inc Sheet shows the typical Death Star configuration: buy/resale at COB, LADWP transmission to Palo Verde and ISO transmission back to COB.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
HR END	TIME	TOT.	DEL.	SUPPLY	MW PER	TOT.	BUY	MARKET	SELL	CONG	EX-	Trans.	Enpower	TiePoint	LINE	P/L
	ZONE	HRS.	PT.		HOUR	MW	PRICE	PRICE		RELIEF	POST	Charge	al Numb	MeterMult	LOSSES	
14	PDT	1	Malin to Malin	PAC	45	45	$ 10.00	buy/sell					396244			(450.00)
14	PDT	1	LA T COB/PV	LADWP	45	45	Voltage Control ($.33 per mw)					0.33				(14.85)
14	PDT	1	LA T COB/PV	LADWP	1	1	Trans Sunk Cost ($87.36 / MW's)					87.33	292672			(87.36)
												Annuity to LTSW		396251		
14	PDT	1	Mead/cob/	cong relief	45	45	holden: B/R with PAC 100@$110 = $5			$ -		2.74	396248			(123.30)

(Ex. SNO-732)

Q. Does this match Enpower?

A. Yes. This is one of the dates that Enpower's comments indicate a Death Star:

Deal	Leg	Strip	DEAL_INSTR_T	DEAL_BUY_SE	DEAL_CMT	FULL_NM	CP_NM	COUNTER_PAF	DP_CP_Contac	SCHED_CMDT	DEAL_FIRMNE
292672	4	2217118	ANNUITY	B	Charges for sch	Matt Motley	Los Angeles De	EPMI-LT-SW	Sueyen Mao	45	FIRM
292672	4	2217118	ANNUITY	B	LA did not char	Matt Motley	Los Angeles De	EPMI-LT-SW	Sueyen Mao	45	FIRM
292672	4	2217118	ANNUITY	S	annuity for sept	Matt Motley	Los Angeles De	EPMI-LT-SW	Sueyen Mao	45	FIRM
292672	4	2217118	ANNUITY	S	Charges for Feb	Matt Motley	Los Angeles De	EPMI-LT-SW	Sueyen Mao	45	FIRM
292672	4	2217118	FORWARD	B		Matt Motley	Los Angeles De	EPMI-LT-SW	Sueyen Mao	45	FIRM
292672	4	2217118	FORWARD	B	Add Sueyen Ma	Matt Motley	Los Angeles De	EPMI-LT-SW	Sueyen Mao	45	FIRM
292672	4	2217118	FORWARD	B	Add Sueyen Ma	Matt Motley	Los Angeles De	EPMI-LT-SW	Sueyen Mao	45	FIRM
396244	1	2217102	BUY-RESALE	B	death star	Holden Salisbu	Pacificorp	EPMI-ST-WHOL		45	FIRM
396248	1	2217106	BUY-RESALE	B	death star	Holden Salisbu	EPMI California	EPMI-ST-WHOL		45	FIRM

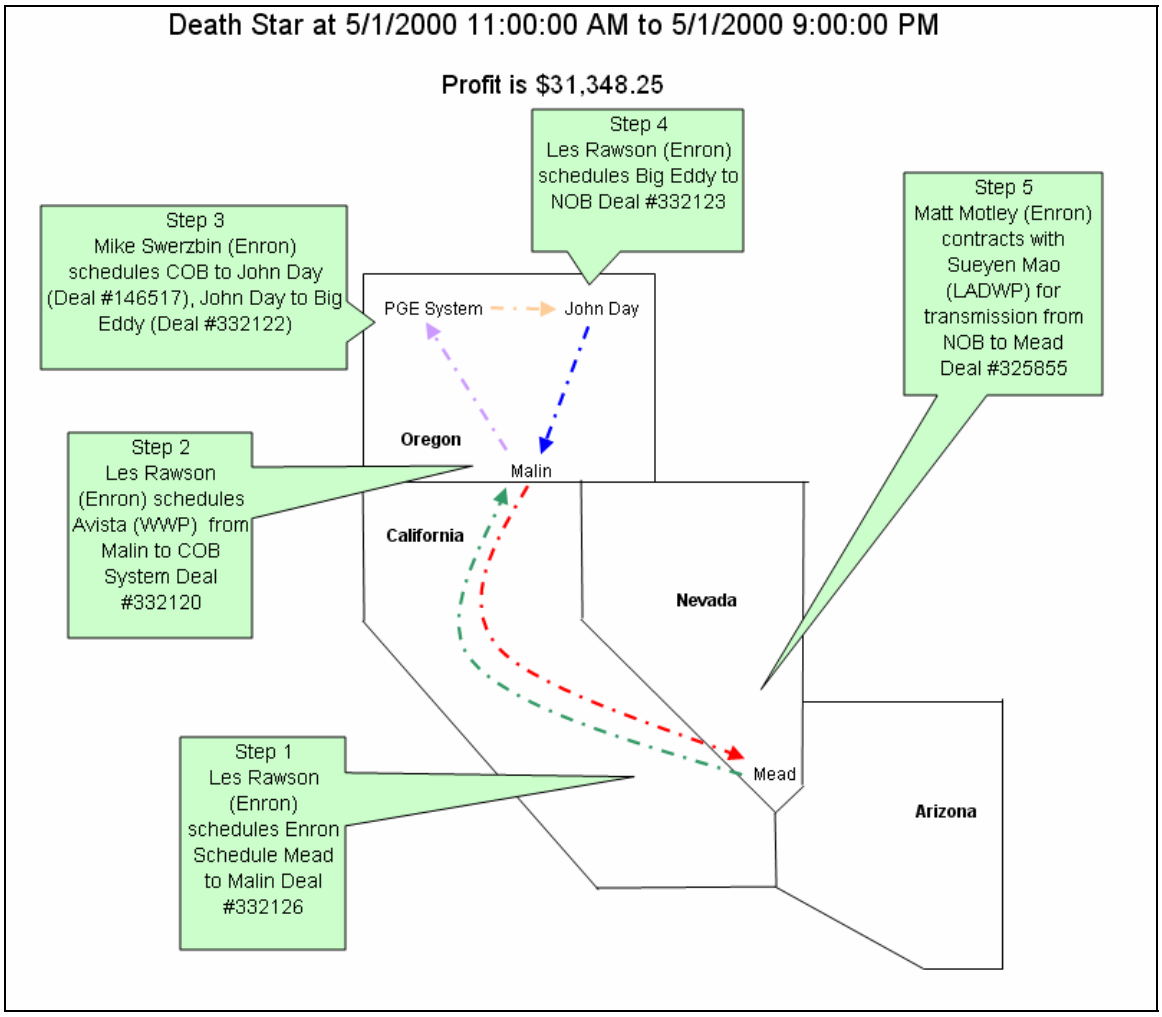
(Ex. SNO-721)

Q. Can you illustrate graphically the information contained in these Enron Death Star materials?

A. Yes. I hereby submit the Death Star templates as exhibit SNO-740. A Death Star template is a visual aid that illustrates the transaction from a geographic perspective and breaks the complex schedule into pieces that are documented step-by-step in the informational sources I discussed earlier such as: CAISO and LADWP schedule databases, CAPS, Enpower, Enpower to CAPS Reconciliations, and Inc Sheets. For the purposes of reproducing each of these various sources of evidence in my testimony, I have occasionally split individual images into multiple parts in order to fit them on the page. In these instances, I have indicated the continuation of a single image with arrows showing how two images fit together.

Q. Do you have an example of a Death Star template?

A. Yes. Let me explain, for example, the Death Star Enron scheduled on May 1, 2000 in detail. This Death Star is one of the admitted 17 Days Death Stars described in the testimony of FERC Staff Witness Richard Mabry in EL02-114. I have graphically depicted this Death Star in the diagram below.



Detailed evidence for this Death Star exists in multiple places, including the Inc Sheets, Enpower, CAPS, Enpower to CAPS Reconciliations, and PGE, LADWP, and CAISO transmission records, not to mention the handwritten notes of Stephen Hall. (Ex. SNO-731)

Q. What does the Inc Sheet for May 1, 2000 look like?

A. The Inc Sheet for May 1, 2000 provides detailed information about this circular schedule. We see schedules of 25 MWs for hours ending 12-22 going from Mead to Malin, from Malin to PGE's System at John Day and Big Eddy back to Malin, and on

LADWP transmission from Malin to Mead, thus completing the circular schedule. The entries for this day also include the comment "TRANNY for Project DEATHSTAR. formally[12] known as 'the loop'".

May 1, 2000 Inc Sheet

HA ISO

HR END	TIME ZONE	TOT. HRS.	DEL. PT.	SUPPLY	MW PER HOUR	TOT. MW	CONG/ZONAL PRICE	MARKET	PRICE	MW PER HOUR
1	PDT	1	Malin/NP	Puget	50	50	$ 25.00	Cal Imbal	$ 14.37	50
12--22	PDT	11	MALIN	deathstar	25	275	$ 1.00	WWP		25
12--22	PDT	11	Malin	deathstar	25	275		PGE Sys		25
12--22	PDT	11	jd	BPA(T)	25	275		big eddy	$ -	25
12--22	PDT	11	big eddy	BPA(T)	25	275		nob	$ -	25
12--22	PDT	11	LA T nob / mead		25	275	Voltage Control ($.33 per mw)			25
12--22	PDT	11	LA T nob / mead		25	275	Trans Sunk Cost ($87.33 / MW's)			25
					TOTAL	50				

CONGESTION RELIEF

HR END	TIME ZONE	TOT. HRS.	DEL. PT.	SUPPLY	MW PER HOUR	TOT. MW	BUY PRICE	MARKET	SELL PRICE	CONG RELIEF
12	PDT	1	Mead to Malin	Cal Imb	25	25	$ -	Cal Imb	$ -	$ 179.00
13	PDT	1	Mead to Malin	Cal Imb	25	25	$ -	Cal Imb	$ -	$ 225.00
14	PDT	1	Mead to Malin	Cal Imb	25	25	$ -	Cal Imb	$ -	$ 205.00
15	PDT	1	Mead to Malin	Cal Imb	25	25	$ -	Cal Imb	$ -	$ 224.00
16	PDT	1	Mead to Malin	Cal Imb	25	25	$ -	Cal Imb	$ -	$ 165.51
17	PDT	1	Mead to Malin	Cal Imb	25	25	$ -	Cal Imb	$ -	$ 20.00
18	PDT	1	Mead to Malin	Cal Imb	25	25	$ -	Cal Imb	$ -	$ 25.00
19	PDT	1	Mead to Malin	Cal Imb	25	25	$ -	Cal Imb	$ -	$ 20.00
20	PDT	1	Mead to Malin	Cal Imb	25	25	$ -	Cal Imb	$ -	$ 32.01
21	PDT	1	Mead to Malin	Cal Imb	25	25	$ -	Cal Imb	$ -	$ 75.41
22	PDT	1	Mead to Malin	Cal Imb	25	25	$ -	Cal Imb	$ -	$ 83.00
					TOTAL	275				

Total MW's	Trans Charge	Enpower Deal Numbers	TiePoint MeterMult	LINE LOSSES	P/L	
50		#331296,331305,331306	$ 0.96	$ 0.50	$ (556.72)	
275		#332120			$ (275.00)	
275	0.90	#146517			$ (247.50)	Tranny for project DEATHSTAR, formally known as "the loop."
275	2.52	#332122			$ (693.00)	Tranny for project DEATHSTAR, formally known as "the loop."
275	2.54	#332123, 325855 ,332126			$ (698.50)	Tranny for project DEATHSTAR, formally known as "the loop."
275	0.33				$ (90.75)	Tranny for project DEATHSTAR, formally known as "the loop."
275	0.32	#292672			$ (87.33)	Tranny for project DEATHSTAR, formally known as "the loop."
				TOTAL HA:	$ (2,648.80)	

EX-POST	Trans. Charge	Enpower Deal Numbers	TiePoint MeterMult	LINE LOSSES	P/L
$ -		NA			4,475.00
$ -		NA			5,625.00
$ -		NA			5,125.00
$ -		NA			5,600.00
$ -		NA			4,137.75
$ -		NA			500.00
$ -		NA			625.00
$ -		NA			500.00
$ -		NA			800.25
$ -		NA			1,885.25
$ -		NA			2,075.00
				TOTAL BILAT:	$ 31,348.25

Q. What does Enpower show for May 1, 2000?

[12] Probably Rawson meant "formerly" rather than "formally" since we have evidence that "the loop" was a predecessor of Death Star.

A. For May 1, 2000, Enpower provides transactional records of these schedules. In addition, the SCHED_CMT field contains a note from Les Rawson stating "Used 12-22 for Death Star".[13]

May 1, 2000 Enpower Query

Start	Finish	Deal	Leg	Strip	DEAL_INSTR_TYPE_CD	DEAL_BUY_SELL_CD	DEAL_CMT	SCHED_CMT
5/1/00 11:00 AM	5/1/00 12:00 PM	325855	1	1992444	FORWARD	B	Please add Sueyen Mao as a contact on this deal. Check with Monica Lande 834-3722 for any questions on this deal. Backdated from 4/19/00 to 4/6/00.	Used 12 - 22 for Death Star. les rawson
5/1/00 11:00 AM	5/1/00 12:00 PM	325855	1	1992444	FORWARD	B	The Transmission price consists of the scheduling charge(.145), reactive(.33), and the estimated loss return fee (3.50).	Used 12 - 22 for Death Star. les rawson
5/1/00 11:00 AM	5/1/00 10:00 PM	146517	1	1992443	FORWARD	B	PGE point of Receipt is John Day or Keeler, PGE point of Delivery is COB.	
5/1/00 11:00 AM	5/1/00 10:00 PM	146517	1	1992443	FORWARD	B	Transmission Transaction was attached to transmission agreement 96006433 & should have cleared under 96013723. Change made on 1/13/03.~CYN Unwind deal 900079	
5/1/00 11:00 AM	5/1/00 10:00 PM	332120	1	1992436	BUY-RESALE	B	wwp sleeve for Death Star deal	
5/1/00 11:00 AM	5/1/00 10:00 PM	332122	1	1992438	FORWARD	B		
5/1/00 11:00 AM	5/1/00 10:00 PM	332123	1	1992439	FORWARD	B		
5/1/00 11:00 AM	5/1/00 10:00 PM	332126	1	1992447	BUY-RESALE	B		
5/1/00 11:00 AM	5/1/00 10:00 PM	371441	1	2140035	INDEX-FORWARD	B		
5/1/00 11:00 AM	5/1/00 10:00 PM	371446	1	2140043	INDEX-FORWARD	S		

FULL_NM	CP_NM	COUNTER_PARTY_CD	DP_CP_ContactName	SCHED_CMDTY_VOL	DEAL_FIRMNESS_CD	Delivery Points.DELIVERY_PT_LEGAL_NAME	Delivery Points_1.DELIVERY_PT_LEGAL_NAME
Mike Swerzbin	Los Angeles Dept. of Water & Power	EPMI-LT-WTRANS	Sueyen Mao	25	FIRM	NOB N/S	Mead-230KV
Mike Swerzbin	Los Angeles Dept. of Water & Power	EPMI-LT-WTRANS	Sueyen Mao	25	FIRM	NOB N/S	Mead-230KV
Mike Swerzbin	Portland General Electric Company	EPMI-WEST-PERF		25	FIRM	COB	John Day
Mike Swerzbin	Portland General Electric Company	EPMI-WEST-PERF		25	FIRM	COB	John Day
Les Rawson	Avista Corporation - Washington Water Power Division	EPMI-ST-WHOURLY		25	FIRM	Malin	COB
Les Rawson	Bonneville Power Administration	EPMI-ST-WHOURLY		25	FIRM	John Day	Big Eddy
Les Rawson	Bonneville Power Administration	EPMI-ST-WHOURLY		25	FIRM	Big Eddy	NOB N/S
Les Rawson	EPMI California Pool	EPMI-ST-WHOURLY		25	FIRM	Mead-230KV	Malin
John Forney	Portland General Electric Company.	EPMI-ST-WHOURLY	Bill Casey	25	FIRM	Portland General System	Portland General System
John Forney	Portland General Electric Company.	EPMI-ST-WHOURLY	Bill Casey	25	FIRM	Portland General System	Portland General System

Q. What do PGE's transmission records show for May 1, 2000?

A. PGE's transmission records show these same transactions.

[13] The following Enpower query, PGE transmission records, ISO transmission records, LADWP transmission records and the historical CAPS records are presented in large images which have been linked by arrows. Read left to right following the arrows (when necessary) to complete the record.

May 1, 2000 PGE Transmission records as provided in May 22, 2002 affividavit in response to FERC Show Cause Order in Western Energy Market Investigation

	HE	Fr CISO WWPC Firm AC			To WWPC Sale MC Memo			Fr EPMI MC MEMO		
		MW		Price	MW		Price	MW		Price
05/01/2000	12	-25	@	$40.00	25	@	$40.00	-25	@	$34.46
	13	-25	@	$40.00	25	@	$40.00	-25	@	$34.46
	14	-25	@	$40.00	25	@	$40.00	-25	@	$34.46
	15	-25	@	$40.00	25	@	$40.00	-25	@	$34.46
	16	-25	@	$40.00	25	@	$40.00	-25	@	$34.46
	17	-25	@	$40.00	25	@	$40.00	-25	@	$34.46
	18	-25	@	$40.00	25	@	$40.00	-25	@	$34.46
	19	-25	@	$40.00	25	@	$40.00	-25	@	$34.46
	20	-25	@	$40.00	25	@	$40.00	-25	@	$34.46
	21	-25	@	$40.00	25	@	$40.00	-25	@	$34.46
	22	-25	@	$40.00	25	@	$40.00	-25	@	$34.46

To BPA PGE EPMI JD			To BPA EPMI (PGESYS)		
MW		Price			
			25**	@	$35.36
			25**	@	$35.36
			25**	@	$35.36
			25**	@	$35.36
			25**	@	$35.36
			25**	@	$35.36
			25**	@	$35.36
			25**	@	$35.36
			25**	@	$35.36
			25**	@	$35.36

Q. Are there similar transmission records for the ISO and LADWP for May 1, 2000?

A. Yes. In the ISO transmission records we see a firm import at Mead of 25 MWs with Interchange ID "EPMI_CISO_JAMES" and a non-firm export at Malin with Interchange ID "EPMI_CISO_DEAN". A 25 MW schedules for hours 12-22 also appears in LADWP's transmission records.

May 1, 2000 CAISO transmission records

SC_ID	OPR_DT	OPR_HR	MKT_TY	IE_TYPE	TIE_POINT	INTERCHG_ID	ENGY_TYPE
EPMI	01MAY2000:00:00:	12	H	E	MALIN_5_RNDMTN	CISO_EPMI_DEAN	NFRM
EPMI	01MAY2000:00:00:	13	H	E	MALIN_5_RNDMTN	CISO_EPMI_DEAN	NFRM
EPMI	01MAY2000:00:00:	14	H	E	MALIN_5_RNDMTN	CISO_EPMI_DEAN	NFRM
EPMI	01MAY2000:00:00:	15	H	E	MALIN_5_RNDMTN	CISO_EPMI_DEAN	NFRM
EPMI	01MAY2000:00:00:	16	H	E	MALIN_5_RNDMTN	CISO_EPMI_DEAN	NFRM
EPMI	01MAY2000:00:00:	17	H	E	MALIN_5_RNDMTN	CISO_EPMI_DEAN	NFRM
EPMI	01MAY2000:00:00:	18	H	E	MALIN_5_RNDMTN	CISO_EPMI_DEAN	NFRM
EPMI	01MAY2000:00:00:	19	H	E	MALIN_5_RNDMTN	CISO_EPMI_DEAN	NFRM
EPMI	01MAY2000:00:00:	20	H	E	MALIN_5_RNDMTN	CISO_EPMI_DEAN	NFRM
EPMI	01MAY2000:00:00:	21	H	E	MALIN_5_RNDMTN	CISO_EPMI_DEAN	NFRM
EPMI	01MAY2000:00:00:	22	H	E	MALIN_5_RNDMTN	CISO_EPMI_DEAN	NFRM

SC_ID	OPR_DT	OPR_HR	MKT_TY	IE_TYPE	TIE_POINT	INTERCHG_ID	ENGY_TYPE
EPMI	01MAY2000:00:00:	12	H	I	MEAD_2_WALC	EPMI_CISO_JAMES	FIRM
EPMI	01MAY2000:00:00:	13	H	I	MEAD_2_WALC	EPMI_CISO_JAMES	FIRM
EPMI	01MAY2000:00:00:	14	H	I	MEAD_2_WALC	EPMI_CISO_JAMES	FIRM
EPMI	01MAY2000:00:00:	15	H	I	MEAD_2_WALC	EPMI_CISO_JAMES	FIRM
EPMI	01MAY2000:00:00:	16	H	I	MEAD_2_WALC	EPMI_CISO_JAMES	FIRM
EPMI	01MAY2000:00:00:	17	H	I	MEAD_2_WALC	EPMI_CISO_JAMES	FIRM
EPMI	01MAY2000:00:00:	18	H	I	MEAD_2_WALC	EPMI_CISO_JAMES	FIRM
EPMI	01MAY2000:00:00:	19	H	I	MEAD_2_WALC	EPMI_CISO_JAMES	FIRM
EPMI	01MAY2000:00:00:	20	H	I	MEAD_2_WALC	EPMI_CISO_JAMES	FIRM
EPMI	01MAY2000:00:00:	21	H	I	MEAD_2_WALC	EPMI_CISO_JAMES	FIRM
EPMI	01MAY2000:00:00:	22	H	I	MEAD_2_WALC	EPMI_CISO_JAMES	FIRM

EXT_CN	LOSS_CI	CNG	FIN_MW	NO_OF_S	REC_ST	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	PR	PR	PR
BPA	OT	P	N	Y	N	25	25	2	0	25	0	0	0	0	0	0	0	0	0
BPA	OT	P	N	Y	N	25	25	2	0	25	0	0	0	0	0	0	0	0	0
BPA	OT	P	N	Y	N	25	25	2	0	25	0	0	0	0	0	0	0	0	0
BPA	OT	P	N	Y	N	25	25	2	0	25	0	0	0	0	0	0	0	0	0
BPA	OT	P	N	Y	N	25	25	2	0	25	0	0	0	0	0	0	0	0	0
BPA	OT	P	N	Y	N	25	25	2	0	25	0	0	0	0	0	0	0	0	0
BPA	OT	P	N	Y	N	25	25	2	0	25	0	0	0	0	0	0	0	0	0
BPA	OT	P	N	Y	N	25	25	2	0	25	0	0	0	0	0	0	0	0	0
BPA	OT	P	N	Y	N	25	25	2	0	25	0	0	0	0	0	0	0	0	0
BPA	OT	P	N	Y	N	25	25	2	0	25	0	0	0	0	0	0	0	0	0
BPA	OT	P	N	Y	N	25	25	2	0	25	0	0	0	0	0	0	0	0	0

EXT_CN	LOSS_CI	CNG	FIN_MW	NO_OF_S	REC_ST	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	PR	PR	PR
WALC	OT	P	N	Y	N	-25	-25	2	0	25	0	0	0	0	0	0	0	0	0
WALC	OT	P	N	Y	N	-25	-25	2	0	25	0	0	0	0	0	0	0	0	0
WALC	OT	P	N	Y	N	-25	-25	2	0	25	0	0	0	0	0	0	0	0	0
WALC	OT	P	N	Y	N	-25	-25	2	0	25	0	0	0	0	0	0	0	0	0
WALC	OT	P	N	Y	N	-25	-25	2	0	25	0	0	0	0	0	0	0	0	0
WALC	OT	P	N	Y	N	-25	-25	2	0	25	0	0	0	0	0	0	0	0	0
WALC	OT	P	N	Y	N	-25	-25	2	0	25	0	0	0	0	0	0	0	0	0
WALC	OT	P	N	Y	N	-25	-25	2	0	25	0	0	0	0	0	0	0	0	0
WALC	OT	P	N	Y	N	-25	-25	2	0	25	0	0	0	0	0	0	0	0	0
WALC	OT	P	N	Y	N	-25	-25	2	0	25	0	0	0	0	0	0	0	0	0

PR	PR	PR	PR	PR	PR	PR	PR	CA	RA	MIN	US	RE	ST	ST	UP	UP	CONTINGENCY_FLG	
0	0	500	500	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	500	500	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	500	500	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	500	500	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	500	500	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	500	500	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	500	500	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	500	500	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	500	500	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	500	500	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y

PR	PR	PR	PR	PR	PR	PR	PR	CA	RA	MIN	US	RE	ST	ST	UP	UP	CONTINGENCY_FLG	
0	0	494	494	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	494	494	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	494	494	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	494	494	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	494	494	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	494	494	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	494	494	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	494	494	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	494	494	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y
0	0	494	494	0	0	0	0	0	0	0	0	0	0	0	0		20JUN2000:14:23:58	Y

1

May 1, 2000 LADWP transmission records

dates	acct_name	agen	cntl_no	type_snar	in_tie	out_tie	acct_no	he01	he02	he03	he04	he05	he06	he07
5/1/00 00:00:00	EPM ZWTM	EPM	1	WHL	NOB	MED	2893	0	0	0	0	0	0	0

he08	he09	he10	he11	he12	he13	he14	he15	he16	he17	he18	he19	he20	he21	he22	he23	he24	he25
0	0	0	0	25	25	25	25	25	25	25	25	25	25	25	0	0	0

Q. What does CAPS show for May 1, 2000?

A. For May 1, 2000, CAPS shows these import and export schedules as both preliminary and final schedules. According to one of Enron's documents describing the Enpower to CAPS Reconciliation reports, "Preliminary" means Day Ahead and "Final" means Hour Ahead. (Ex. SNO-746) We see that the preferred schedules triggered CONG, the ISO's congestion management program.

May 1, 2000 CAPS Historical Schedules Query

TRANS_TYPE	SC_ID	MKT_TYPE_DESC	TRANS_DATE	TIE_POINT	PNT_OF_INTRC	INTERCHG_ID	ENGY_TYPE	Transaction Type	DEAL_NO
FINAL	ECTRT	Hour-Ahead	01-May-00	MALIN_5_RNDMTN	NP15	CISO_EPMI_DEAN	NFRM	Export	32454
FINAL	ECTRT	Hour-Ahead	01-May-00	MEAD_2_WALC	SP15	EPMI_CISO_JAMES	FIRM	Import	32452
PREFERRED	ECTRT	Hour-Ahead	01-May-00	MALIN_5_RNDMTN	NP15	CISO_EPMI_DEAN	NFRM	Export	32454
PREFERRED	ECTRT	Hour-Ahead	01-May-00	MEAD_2_WALC	SP15	EPMI_CISO_JAMES	FIRM	Import	32452

EXT_CNTRL_ID	HRLY_MW12	HRLY_MW13	HRLY_MW14	HRLY_MW15	HRLY_MW16	HRLY_MW17	HRLY_MW18	HRLY_MW19	HRLY_MW20	HRLY_MW21
BPA	25	25	25	25	25	25	25	25	25	25
WALC	25	25	25	25	25	25	25	25	25	25
BPA	25	25	25	25	25	25	25	25	25	25
WALC	25	25	25	25	25	25	25	25	25	25

HRLY_MW22	CNGS_MGT_FLG12	CNGS_MGT_FLG13	CNGS_MGT_FLG14	CNGS_MGT_FLG15	CNGS_MGT_FLG16	CNGS_MGT_FLG17
25	NO	NO	NO	NO	NO	NO
25	NO	NO	NO	NO	NO	NO
25	YES	YES	YES	YES	YES	YES
25	YES	YES	YES	YES	YES	YES

CNGS_MGT_FLG18	CNGS_MGT_FLG19	CNGS_MGT_FLG20	CNGS_MGT_FLG21	CNGS_MGT_FLG22
NO	NO	NO	NO	NO
NO	NO	NO	NO	NO
YES	YES	YES	YES	YES
YES	YES	YES	YES	YES

Q. Did other energy companies assist Enron in Death Stars as Washington Water Power did in the schedule you just explained?

A. Yes. Enron used Avista, PacifiCorp, and PGE assets to implement Death Stars.

Wash Trades

Q. Please describe the concept of a wash trade

A. FERC Staff reports have described Wash Trades to be "… defined as involving the sale of natural gas or an electricity product to another company together with a simultaneous purchase of the same product at the same price and at the same location." Wash trades are conducted strictly for the manipulation of reported prices and quantities, (i.e. the prices and/or quantities reported to the major market data collection enterprises, principally Dow Jones and Platts). From the beginning of the California crisis it was obvious that reported prices had diverged markedly from what would be expected given the revenues received by our utility clients. Since the reported prices were the basis for many contracts, it was clear that an incentive existed to manipulate price indices at Dow Jones and Platts through the manipulation of the underlying reported data.

As a simple example of a wash trade, consider a sale by Enron to a compliant counterparty of 10 MWh of energy at $250 per MWh, along with a simultaneous sale by the cooperative counterparty to Enron of 10 MWh of energy at $250 per MWh. Neither party experiences any financial consequence from this transaction, but the transactions could be reported to the data collection companies and would raise the market price indices published by those companies. If Enron held a corresponding net long position with contract prices indexed to the reported prices, then Enron would reap additional profits through the price index changes caused by the Wash Trades.

Q. Is there any evidence that Enron participated in Wash Trades?

A. Yes. Enron appeared to have made many trades where two identical trades were made at the same time, in opposite directions, for the same product, the same quantity, and the same price. In addition, it appears that Enron maintained something called a "Fake Trade Book."

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

Q. Can you provide a common sense legitimate explanation why Enron would have maintained a record entitled "Fake Trade Book"?

A. No. We do know that Enron's traders frequently kept informal records of their schemes. I would expect that the author of this document meant exactly what he or she said – that this was a book of fake trades.

Q. Can you provide an example of a wash trade?

A. Thousands. While Enron was one of the most voluminous and egregious practitioner of wash trading, we found the most glaring and illustrative example at the peak of prices during the crisis, specifically during the peak hours of December 12, 2000, when the Dow Jones price reached $818.75, and during the off-peak hours of December 11, 2000, when the Dow Jones price reached $1,187.50. These were the two most expensive Dow Index prices seen at COB. There has been considerable suspicion in the industry concerning these prices because they were so peculiar compared with normal price patterns. Since loads are much lower at night than during the day, prices for off-peak power are almost always lower than those at peak. On December 11th, this pattern was mysteriously reversed. In reality, the reversal was due to a day when only 400 Megawatt-hours determined the entire off-peak Dow Jones index. Only Avista, LADWP, PGE, Puget, Mirant, NCPA, and AEP reported selling firm off-peak power on December 11, 2000. The weighted average of the transactions reported to FERC was $764.11 per Megawatt-hour – a significant step down from the $1,187.50 reported to Dow Jones.

Only one reported transaction was above the Dow Jones price, so by the rules of arithmetic, it must have been included in the Dow Jones filing – a sale from Mirant to Duke at $1,500 per Megawatt-hours for 200 Megawatt-hours. This implies that the remaining sale included in the Dow Jones COB off-peak index was at $875.00 and there are two eligible sales from AEP to Snohomish at that price.

Q. How accurate was the Dow Jones index on December 11, 2000?

A. The index erred by 55%, reporting $1,187.50 rather than the $764.11 reported to FERC. Only one reported sale, Mirant to Duke, took place above the Dow Jones price. PacifiCorp bought a small block of off-peak power for $350.00 per Megawatt-hours. Enron and PGE also purchased blocks from NCPA and then resold the power at a sizable profit to the California ISO, a likely Ricochet.

Q. How honest was the Dow Jones index on December 11, 2000?

A. It is clear that Duke reported to Dow Jones that it had purchased power at twice the market price and three times the price they could have generated the power for themselves – and then apparently did not use. A reasonable person could well doubt the intention behind this transaction. If Duke's transaction with Mirant was fraudulent, the index would have been determined by AEP's sale to Snohomish and would have been set at $875.00.

Q. How many Wash Trades have you found?

A. The FERC short term database shows a significant number of Wash Trades in the western markets – 51,020 or approximately 3% of all transactions. The easiest filter for Wash Transactions is transactions at the same time, same place, same quantity, and same price. Many of these suspicious transactions are "physical" meaning that they were not

booked out. This would seem very unlikely except for the fact that the Dow Jones indices only include physical transactions. This is consistent with the intention of Wash Trades, to influence reported index prices. The distribution of Wash Trades is concentrated in California, but large amounts have also taken place at COB, Mid-C, Mead, Palo Verde, and Four Corners:

Hub	MWh	Revenues	Transactions
Four Corners	136,706	$14,389,149	1,456
COB	814,906	$108,609,258	1,994
Mead	251,362	$47,153,873	337
Mid-C	1,896,249	$217,472,397	3,968
NP-15	7,481,448	$880,526,677	11,889
PV	2,062,058	$243,694,207	8,785
SP-15	5,829,900	$599,705,738	12,313

Q. Did many counterparties participate in Wash Trades?

A. The following table shows total dollar amounts of Wash Trades for the ten most common counterparties. Enron is the leader of the pack in identical offsetting transactions, with Mirant close behind. Most of Enron's trades are with its subsidiaries, PGE, EES, and NewEnergy. Almost all of Mirant's Wash Trades are with outside parties.

Seller	Total	Enron
Enron	$479,766,486	$367,495,070
Mirant	$415,312,117	$90,498,281
Duke Energy	$21,411,755	$3,096,600
Idacorp Energy	$87,000,713	$2,572,000
Avista	$33,133,735	$2,281,200
William Energy Marketing and Trading	$26,235,806	$1,792,400
Constellation	$1,702,325	$1,398,325
Dynegy	$92,881,008	$1,366,400
Reliant	$32,955,291	$1,218,000
Aquila	$51,734,009	$1,209,600

Q. Explain the impact Wash Trades had on market prices?

A. The impact of Wash Trades on overall prices depends on several factors: first, to the degree the imaginary transaction affects reported prices; and second, the degree that the indexed price affects actual settlements. Platts' indices are often cited, but Platts has been highly resistant to any attempt to probe the actual calculation of their index. Platts may have been taking their prices directly off EnronOnline. If so, Platt's should have not reflected Wash Trades unless they had been made on Enron's web site. Dow Jones is another matter. Dow Jones has a rigid, highly transparent methodology. Submissions to Dow Jones are hourly physical transactions for firm on-peak and 8 hour physical transactions for non-firm. Deviations between actual trades and Dow Jones indices vary significantly by hub:

	FERC Trades Without Wash Trades	DJ Index	Ratio
4 Corners	$ 85.14	$ 95.43	12%
COB	$ 181.01	$ 175.10	-3%
Mead	$ 71.25	$ 90.82	27%
Mid-C	$ 129.96	$ 135.96	5%
PV	$ 94.59	$ 105.87	12%
NP-15	$ 116.32	$ 115.20	-1%
SP-15	$ 98.44	$ 90.89	-8%

Searching for manipulative Wash Trades requires some thought. Since access to Dow Jones submissions is only available through discovery, each data set is currently subject to confidentiality restrictions – somewhat ironic in Enron's case since the submissions are old, Enron has sold its trading business to UBS Warburg, and has lost its license to trade at FERC. Absent access to the submissions, a good rule is to follow a paraphrased FERC definition: manipulative Wash Trades are those that involve a simultaneous purchase and sale of the same product at the same price and at the same location which are far from the true market price and intended to move the index.

Q. Approximately how many wash trade transactions were manipulative?

A. We can look for the pernicious effect of Wash Trades by identifying dates and trading hubs for which index-raising Wash Trades occurred. On January 27, 2001, for example, Dow Jones reported an on-peak price of $295.84/MWh, based on a reported volume of 6,160 MWh. But Enron engaged an on-peak wash trade that day with Mirant of 480 MWh at a price of $550/MWh.

Seller	Purchaser	MWh	Price
Mirant	Enron	480	$ 550.00

If the effect of this wash trade is removed from the Dow Jones average then the average drops by about $21.48 per MWh. There is a good chance that this wash trade for the on-peak product was designed to change the index prices reported by Dow Jones and others. The following summary tables are example extracts from more lengthy tables – submitted as exhibit SNO-747 – that identify wash trade transactions at five WECC trading hubs that would have manipulated index prices, artificially increasing the indexes. The identification was performed in a conservative manner, so additional changes likely occurred and could be estimated with a deeper analysis.

Example Wash Trades Affecting DJ COB On Peak Index				
Date	Counterparty	MWh	Wash Trade Price Per MWh	Dow Jones Index Price Per MWh
16-Jan-01	Mirant	25	$ 275.00	$ 183.82
27-Jan-01	Mirant	480	$ 550.00	$ 295.84
05-May-01	Mirant	20	$ 230.00	$ 150.67
01-Jun-01	Mirant	48	$ 220.00	$ 148.35
09-Jun-01	Mirant	50	$ 120.00	$ 41.07

Example Wash Trades Affecting DJ Mid-C On Peak Index				
Date	Counterparty	MWh	Wash Trade Price Per MWh	Dow Jones Index Price Per MWh
29-Aug-00	Mirant	200	$ 126.00	$ 85.47
26-Dec-00	Duke Energy	400	$ 475.00	$ 451.15
18-Jan-01	Mirant	400	$ 500.00	$ 272.66
29-Jan-01	Mirant	400	$ 475.00	$ 420.48
06-Feb-01	Mirant	125	$ 250.00	$ 213.71

Example Wash Trades Affecting DJ NP-15 On Peak Index				
Date	Counterparty	MWh	Wash Trade Price Per MWh	Dow Jones Index Price Per MWh
30-Jan-01	Mirant	200	$ 300.00	$ 176.45
16-Feb-01	Mirant	50	$ 480.00	$ 437.90
19-Feb-01	Mirant	200	$ 380.00	$ 288.65
15-Mar-01	Mirant	50	$ 215.00	$ 190.53
20-Mar-01	Mirant	100	$ 515.00	$ 391.63

Example Wash Trades Affecting DJ PV On Peak Index				
Date	Counterparty	MWh	Wash Trade Price Per MWh	Dow Jones Index Price Per MWh
24-May-00	Mirant	400	$ 220.00	$ 193.33
01-May-01	Mirant	400	$ 330.00	$ 291.87
07-May-01	Mirant	400	$ 290.00	$ 248.01
07-May-01	Mirant	400	$ 285.00	$ 248.01
08-May-01	Mirant	400	$ 329.00	$ 295.57

Example Wash Trades Affecting DJ SP-15 On Peak Index				
Date	Counterparty	MWh	Wash Trade Price Per MWh	Dow Jones Index Price Per MWh
17-Jan-01	Mirant	22	$ 535.00	$ 232.50
17-Jan-01	Mirant	300	$ 285.00	$ 232.50
15-Mar-01	Mirant	50	$ 235.00	$ 184.07
22-Mar-01	Mirant	400	$ 325.00	$ 279.47
09-Jun-01	Mirant	100	$ 85.00	$ 44.96

Example Wash Trades Affecting DJ 4-Corners On Peak Index				
Date	Counterparty	MWh	Wash Trade Price Per MWh	Dow Jones Index Price Per MWh
12-Sep-01	Mirant	55	$ 48.00	$ 31.89
07-Nov-01	Pinnacle West	400	$ 31.00	$ 30.58

Obviously, this is not the only rule that can be used to search for manipulative transactions. The anomalous Duke purchase from Mirant was not accompanied by a simultaneous repurchase in the example cited above. Even though Dow Jones audit provisions were weakly enforced – Enron, for example, was never audited - only a foolish trader would use the same trick every time.

The following table shows examples of very conservatively estimated influences that our identified Wash Trades had on peak price index values around the WECC.

Dow Jones Index Prices Were Increased By Enron Wash Trades At WECC Hubs

On Peak

Four_Corner		COB		Mid-C		NP-15		PV		SP-15	
Date	DJ Price Increase From Wash Trades	Date	DJ Price Increase From Wash Trades	Date	DJ Price Increase From Wash Trades	Date	DJ Price Increase From Wash Trades	Date	DJ Price Increase From Wash Trades	Date	DJ Price Increase From Wash Trades
12-Sep-01	$ 0.19	10-Jan-00	$ 0.02	17-Apr-00	$ 0.03	09-Jan-01	$ 0.10	26-Jan-00	$ 0.00	09-Jan-01	$ 0.01
07-Nov-01	$ 0.02	01-May-00	$ 0.04	01-May-00	$ 0.01	30-Jan-01	$ 0.79	24-Feb-00	$ 0.00	10-Jan-01	$ 0.28
		08-May-00	$ 0.03	22-Jun-00	$ 0.01	01-Feb-01	$ 0.07	01-May-00	$ 0.01	13-Jan-01	$ 0.01
		14-Aug-00	$ 0.30	26-Jul-00	$ 0.06	05-Feb-01	$ 0.80	24-May-00	$ 0.82	17-Jan-01	$ 2.92
		02-Oct-00	$ 0.00	18-Sep-00	$ 0.05	12-Feb-01	$ 0.27	01-Jun-00	$ 0.06	22-Jan-01	$ 0.20
		04-Oct-00	$ 0.13	27-Sep-00	$ 0.05	16-Feb-01	$ 0.07	07-Jun-00	$ 0.01	31-Jan-01	$ 0.08
		05-Oct-00	$ 0.05	02-Nov-00	$ 0.02	19-Feb-01	$ 0.74	20-Jun-00	$ 0.13	06-Feb-01	$ 0.02
		19-Oct-00	$ 0.05	07-Nov-00	$ 0.01	12-Mar-01	$ 0.27	26-Jun-00	$ 0.02	14-Feb-01	$ 0.99
		04-Dec-00	$ 0.08	15-Nov-00	$ 0.03	15-Mar-01	$ 0.08	24-Jul-00	$ 0.11	06-Mar-01	$ 0.09
		13-Jan-01	$ 1.92	20-Nov-00	$ 0.08	19-Mar-01	$ 0.30	23-Oct-00	$ 0.00	07-Mar-01	$ 0.10
		16-Jan-01	$ 0.26	04-Dec-00	$ 0.65	21-Mar-01	$ 0.13	30-Nov-00	$ 0.04	13-Mar-01	$ 0.13
		18-Jan-01	$ 0.15	06-Dec-00	$ 0.30	26-Mar-01	$ 0.30	03-Jan-01	$ 0.06	14-Mar-01	$ 1.27
		27-Jan-01	$ 21.48	26-Dec-00	$ 0.93	04-Apr-01	$ 0.18	08-Jan-01	$ 0.02	15-Mar-01	$ 0.21
		05-Mar-01	$ 3.67	04-Jan-01	$ 0.04	09-Apr-01	$ 0.13	31-Jan-01	$ 0.05	19-Mar-01	$ 0.24
		06-Mar-01	$ 1.07	18-Jan-01	$ 3.09	01-May-01	$ 0.13	07-Mar-01	$ 0.31	21-Mar-01	$ 0.14
		12-Mar-01	$ 1.00	25-Jan-01	$ 0.17	08-May-01	$ 0.77	12-Mar-01	$ 0.21	22-Mar-01	$ 0.68
		13-Mar-01	$ 0.38	29-Jan-01	$ 1.12	14-May-01	$ 0.29	14-Mar-01	$ 0.06	26-Mar-01	$ 0.19
		15-Mar-01	$ 0.12	06-Feb-01	$ 0.43	12-Jun-01	$ 0.43	15-Mar-01	$ 0.04	02-Apr-01	$ 0.09
		20-Mar-01	$ 0.89	07-Feb-01	$ 0.81	13-Aug-01	$ 0.19	26-Mar-01	$ 0.28	03-Apr-01	$ 0.19
		21-Mar-01	$ 3.74	13-Feb-01	$ 0.44	14-Aug-01	$ 0.04	29-Mar-01	$ 0.04	04-Apr-01	$ 0.15
		23-Apr-01	$ 0.57	17-Feb-01	$ 0.00	27-Aug-01	$ 0.02	30-Apr-01	$ 0.13	05-Apr-01	$ 0.06
		02-May-01	$ 0.38	05-Mar-01	$ 0.58	29-Aug-01	$ 0.02	01-May-01	$ 0.64	16-Apr-01	$ 0.41
		05-May-01	$ 0.22	07-Mar-01	$ 0.11	05-Sep-01	$ 0.00	07-May-01	$ 1.15	30-Apr-01	$ 0.00
		07-May-01	$ 0.17	12-Mar-01	$ 0.35	25-Sep-01	$ 0.02	08-May-01	$ 0.35	02-May-01	$ 0.08
		08-May-01	$ 0.98	15-Mar-01	$ 0.01	01-Oct-01	$ 0.01	04-Jun-01	$ 0.20	07-May-01	$ 0.03
		09-May-01	$ 10.83	19-Mar-01	$ 0.31	02-Oct-01	$ 0.01	11-Jun-01	$ 0.18	05-Jun-01	$ 0.16
		14-May-01	$ 0.23	20-Mar-01	$ 0.06	10-Oct-01	$ 0.00	12-Jun-01	$ 0.04	09-Jun-01	$ 0.12
		15-May-01	$ 1.71	21-Mar-01	$ 0.07	15-Oct-01	$ 0.01	13-Jun-01	$ 0.01	12-Jun-01	$ 0.02
		16-May-01	$ 1.33	22-Mar-01	$ 0.54	19-Oct-01	$ 0.01	09-Jul-01	$ 0.02	13-Jun-01	$ 0.01
		21-May-01	$ 1.67	26-Mar-01	$ 0.17	22-Oct-01	$ 0.00	12-Jul-01	$ 0.04	19-Jun-01	$ 0.07
		01-Jun-01	$ 0.51	28-Mar-01	$ 0.05	25-Oct-01	$ 0.01	24-Jul-01	$ 0.02	20-Jun-01	$ 0.18
		09-Jun-01	$ 0.47	29-Mar-01	$ 0.20	29-Oct-01	$ 0.00	30-Jul-01	$ 0.01	21-Jun-01	$ 0.04
		22-Aug-01	$ 0.04	10-Apr-01	$ 0.12	30-Oct-01	$ 0.00	31-Jul-01	$ 0.07	25-Jun-01	$ 0.09
		27-Aug-01	$ 0.02	16-Apr-01	$ 0.00	07-Nov-01	$ 0.00	13-Aug-01	$ 0.06	27-Jun-01	$ 0.00
		19-Sep-01	$ 0.02	26-Apr-01	$ 0.07	09-Nov-01	$ 0.00	14-Aug-01	$ 0.02	28-Jun-01	$ 0.01
		11-Oct-01	$ 0.01	01-May-01	$ 0.03	15-Nov-01	$ 0.00	16-Aug-01	$ 0.01	24-Jul-01	$ 0.07
		15-Oct-01	$ 0.04	02-May-01	$ 0.12	16-Nov-01	$ 0.00	27-Aug-01	$ 0.00	02-Aug-01	$ 0.01
		17-Oct-01	$ 0.02	09-May-01	$ 0.50	26-Nov-01	$ 0.08	17-Sep-01	$ 0.00	27-Aug-01	$ 0.01
				21-May-01	$ 0.13	27-Nov-01	$ 0.01	27-Sep-01	$ 0.00	07-Sep-01	$ 0.04
				22-May-01	$ 0.16	28-Nov-01	$ 0.00	28-Sep-01	$ 0.00	12-Sep-01	$ 0.00
				02-Jul-01	$ 0.16			08-Oct-01	$ 0.00	14-Sep-01	$ 0.02
				10-Jul-01	$ 0.05			29-Oct-01	$ 0.00	25-Sep-01	$ 0.02
				23-Jul-01	$ 0.01			15-Nov-01	$ 0.01	01-Oct-01	$ 0.01
				24-Jul-01	$ 0.02			27-Nov-01	$ 0.02	03-Oct-01	$ 0.00
				26-Jul-01	$ 0.01					08-Oct-01	$ 0.01
				07-Aug-01	$ 0.00					16-Oct-01	$ 0.00
				08-Aug-01	$ 0.00					18-Oct-01	$ 0.01
				27-Aug-01	$ 0.00					24-Oct-01	$ 0.00
				05-Sep-01	$ 0.00					07-Nov-01	$ 0.00
				06-Sep-01	$ 0.00					15-Nov-01	$ 0.00
				11-Sep-01	$ 0.00					19-Nov-01	$ 0.00
				18-Sep-01	$ 0.01						
				25-Sep-01	$ 0.00						
				26-Sep-01	$ 0.01						
				01-Oct-01	$ 0.08						
				02-Oct-01	$ 0.02						
				03-Oct-01	$ 0.00						
				04-Oct-01	$ 0.04						
				08-Oct-01	$ 0.05						
				09-Oct-01	$ 0.06						
				10-Oct-01	$ 0.11						
				11-Oct-01	$ 0.07						
				15-Oct-01	$ 0.03						
				16-Oct-01	$ 0.05						
				17-Oct-01	$ 0.08						
				31-Oct-01	$ 0.01						

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(Ex. SNO-747)

Ricochet

Q. How are Death Stars and Ricochets similar?

A. A central element in both schemes was the need to disguise their origin from the California ISO and the Bonneville Power Administration.

Q. Why was this essential?

A. The California ISO's MMIPs were always a concern for Enron and other scheme perpetrators because they clearly outline their wrong-doing. The Bonneville Power Administration has traditionally forbidden use of their transmission system for transactions that do not reflect a clear engineering or economic basis.

Q. What is a Ricochet?

A. The FERC Final Staff Report defines a Ricochet as:

> The trading strategy known as "Ricochet" or "megawatt laundering" involved one entity buying energy from the Cal PX in the day-ahead market and exporting it to a second entity, which received a fee from the first company. The energy was later sold to the Cal ISO in the real time market (or as an out of market sale).[14]

Q. What was the impact on Western US Energy Markets?

The major impact of Ricochet schedules is that they were designed to fool the California ISO into believing that resources were short. In order to avoid disaster Enron would then enter the "Out of Market" process to buy emergency power from outside the state. In a 1999 email Kim Ward stated it this way:

> Our trading strategy is to export as much as we can, non-firm and then cut it hour ahead. the [sic] will give the same effect as parking in California without paying the ancillary services.
>
> (Ex. SNO-748)

[14] FERC Final Staff Report, page VI-17

The various Ricochets moved power out of the California markets so that it could be "discovered" in real time by emergency purchases by the ISO. Some Ricochet schedules were successful in breaking the price cap in California, but all were successful in creating an impression of shortage.

Q. Can you provide an example of a Ricochet transaction from the Inc Sheets?

A. Yes. Earlier in my testimony, I mentioned an additional Enron scheme, "Ping Pong", which is consistent with the Ricochet scheme. I have submitted a visual aid which may allow this scheme to be understood more clearly. (Ex. SNO-740) The Ricochet transaction in question took place on December 12, 2000 resulting in Enron's sale of energy into the California Out-of-Market for $800/MW, at a time when sales within California were subject to a price cap of $250. FERC's Final Staff Report states that the first week of December 2000 was an especially critical period in which several entities engaged in this practice that potentially generated $10 million in profits.[15]

Q. Was it necessary for Enron to actually export power out of state or ISO control area in order to successfully carry out a "Ricochet."

A. No. The exports were fictitious. Former Enron employee Valerie Sabo, stated that Enron could successfully transact a Ricochet transaction without physically sending the energy out of state (out of CAISO control area), but rather Enron simply deceived the CAISO into thinking the energy had left the state. Sabo stated:

> that what the [Yoder/Hall] memo refers to is not a "real Ricochet" which is when a company would schedule in California in such a way so as to make it look like the power left, when in fact, it never leaves the control area. Thus, in a real Ricochet the power never leaves the control area. Sabo stated that the counterparty in a Ricochet would not know about it or that they were participating in it.
>
> (Ex. SNO-738)

[15] FERC Final Staff Report, page VI-18

We have seen many examples in which Enron sold the energy back into the California market at the price cap or slightly below the price cap. During the crisis period, Enron was able to arbitrage the energy so that they could artificially increase the price to the detriment of the California energy market, its market participants, and consequently the ratepayers. The FERC Final Staff report corroborates this argument,

> Suppliers knew that the Cal ISO would pay any price in an effort to avoid blackouts. In the Initial Report, Staff concluded that this behavior (raising prices at the last minute, when buyers are unable or incapable of saying no) was not legitimate arbitrage, but was an exercise of market power. We reaffirm this conclusion and view it as inappropriate gaming of the system.
>
> (Ex. SNO-127)

Q. Is it possible to track Ricochets through Enron's Inc Sheets and Enpower Entries?

A. Yes. One of the most noted Ricochets occurred at the start of the crisis on May 22, 2000.

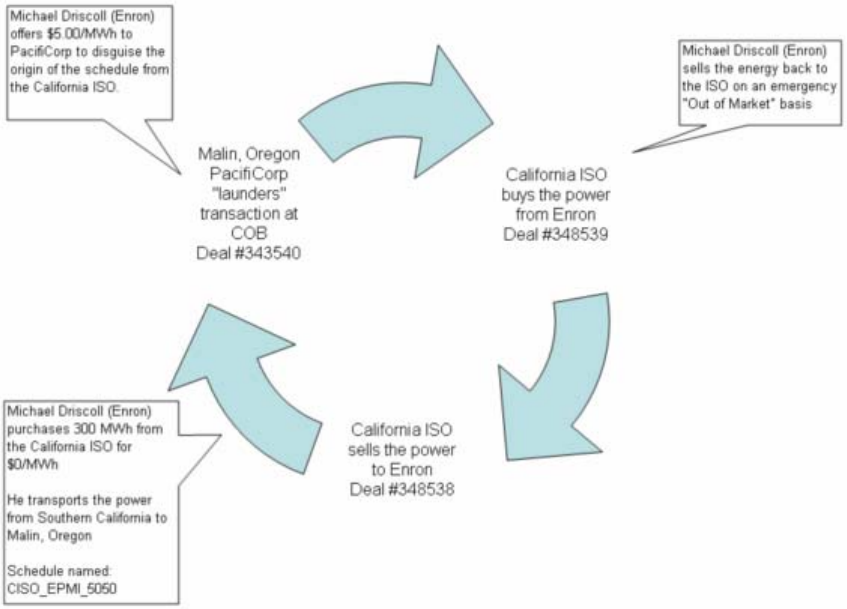
Q. What happened on this occasion?

A. Enron underscheduled in SP-15 – effectively purchasing energy from the ISO. In Enron's documents, this energy is carried at zero price. The energy was scheduled to the California Oregon Border and "parked" waiting for a call from the California ISO operators. When the need for Out of Market Energy (OOM) was received, Enron sold the energy back to the ISO for $750/Mwh.

Ricochet at 5/22/2000 4:00:00 PM To 5/22/2000 7:00:00 PM

In this Ricochet, Enron purchased undervalued real time energy from the ISO and then sold it back to them for $750/MWh

Profit is $222,678.00



May 22, 2000 "Inc Sheet" entry:

HA ISO

HR END	TIME	TOT.	DEL.	SUPPLY	MW PER	TOT.	CONG/ZONAL	MARKET	PRICE	MW PER	Total	Trans	Enpower	TiePoint	P/L
ENRON FLOOR POSITION sold to ISO out of market bounced it off PAC for $5 (B 88 @ S 75)															$ -
17	PDT	1	SP / Malin / ISO	Cal Imb	100	100	$ -	ISO (out mkt)	$ 750.00	100	100	7.74	#343538, 343539, 343536, 343540		$ 74,226.00
18	PDT	1	SP / Malin / ISO	Cal Imb	100	100	$ -	ISO (out mkt)	$ 750.00	100	100	7.74	#343538, 343539, 343536, 343540		$ 74,226.00
19	PDT	1	SP / Malin / ISO	Cal Imb	100	100	$ -	ISO (out mkt)	$ 750.00	100	100	7.74	#343538, 343539, 343536, 343540		$ 74,226.00
sale inputed zero price because Heather will get the money even though it is out of market per Stokely															$ -
					0	0	$ -		$ -	0	0			1.000000	$ -
					TOTAL	1,244									$ 222,678.00

CONGESTION RELIEF

May 22, 2000 Enpower comments on this transaction

DEAL_CMT
RT helping out the ENRON FLOOR, sold to ISO out of market for $750 at Malin for HE17 through HE19.
RT helping out the ENRON FLOOR, taking mw's out of the ISO, selling back to the ISO OUT OF MARKET, there is a buy resell is to give PACE $5 for flipping these mw's back to ISO.
RT helping out the ENRON FLOOR, taking mw's out of the ISO, selling back to the ISO OUT OF MARKET at $750 fixed price, this is inputed at a zero price because Heather will get the price from the ISO.
RT helping out the ENRON FLOOR, taking mw's out of the ISO, selling back to the ISO OUT OF MARKET, this buy resell is to give them $5 for flipping these mw's back to ISO.

(Ex. SNO-740)

Q. Was there anything anomalous about this transaction?

A. The real question should be "Was there anything credible about this transaction?" To begin with, even discounting any cooperation among sellers Enron possessed an asymmetric information advantage. Enron knew that its Fat Boy schedules would provide the ISO with unanticipated energy. The ISO could not know whether the

overscheduling in the California market was "fake load" until actual meter readings took place. Second, the maneuver that Enron used to procure the energy from the ISO is not well documented. Clearly, purchasing energy from the California ISO for zero in the course of a Stage 2 Emergency is unusual. Third, scheduling the energy to COB for delivery back into California is both inefficient and fraudulent. It was inefficient since it required scheduling on lines that might well have been put to real uses if other market participants had known that this was an imaginary schedule and it was fraudulent since money was received through deceit. Finally, Enron represented that it was "curing" an emergency that it was, at least in part, the cause of.

Q. What is the regional impact of such transactions?

A. The regional impact is quite large. Like Fat Boy, this is a way to withhold energy (in this case the ISO's own energy) from the ISO which increase prices throughout the WestOn May 22, 2000, everyone thought that the ISO was short on energy. Enron certainly did not reveal that it had been practicing a variety of market manipulating schemes on this date.

Q. Did this impact system reliability?

A. Yes. The problem with schemes like Ricochet, Death Star, and Load Shift, not to mention Fat Boy, is that they involved falsifying system schedules. Since this Ricochet is so well documented, it is a useful example. If the ultimate source of the Ricochet had suffered a forced outage a potentially disastrous sequence of events would have occurred. The California ISO operators would have had to identify the buyers and tell them that their schedules were being cut. The operators would not have known that they were cutting their own OOM purchase, since Enron had not explained to them that this was a

Ricochet. The ISO would have maintained the schedule from the California Oregon Border to NP-15 even if there was no energy at the California Oregon Border to serve the schedule.

Q. What would have happened then?

A. Logically, the schedulers should have been cutting load in California at that moment. Instead, they would be dispatching on the illusion that this 100 megawatts was being provided from PacifiCorp. Turning to the real world – not the fictitious world of Enron's schemes – California would have been short 100 megawatts. The Western Interconnect would have served the 100 megawatts at the speed of light – the electrons would be responding to the actual loads – not the schedules. Transmission lines would carry the flows. If these real life flows were above the rated limits, the lines could fail.

Q. Has anything like this ever occurred?

A. Yes. When lines carry more than their rated limits, they can and do fail – often spectacularly. One such failure occurred on the line used here – the Pacific AC intertie in the early 90s.

Q. Does this mean that the entire line fails – more than 4,000 megawatts?

A. Yes. Overloading the intertie is a catastrophic event – it doesn't fail "little by little."

Q. Did Enron's Ricochet scheme harm market efficiency and jeopardize reliability?

A. Yes. The risk to the system was vastly greater than the dollars involved in evading the cap. When a burglar smashes a shop window to steal merchandise, we would not forgive him if the merchandise turned out to be inexpensive. We would not forgive

him even if he left full payment for the merchandise. Smashing the window was a crime, as well as the theft of the merchandise.

Q. What should be the FERC enforcement action?

A. First, the perpetrators should face criminal charges. In this case some have already plead guilty. Second, the perpetrators should be forbidden to make a profit from the manipulation. My recommendation in this proceeding is that Enron's privilege to charge above cost should be rescinded.

Load Shift

Q. Please describe "Load Shift".

A. After Fat Boy, Load Shift was the most widespread and significant of the schemes described in the Yoder Hall memos. While the phrase "Load Shift" actually describes a method of manipulating California ISO schedules, the principal goal of the scheme was to create phantom congestion on Path 26 – the bottleneck for summer schedules between San Francisco and Los Angeles.

Q. Was Load Shift a logical successor to Silver Peak?

A. Yes. Both schemes exploited the limited ability of the California ISO to adjust to congestion on transmission lines. Silver Peak created congestion by scheduling impossible amounts of energy across a small line. Load Shift attempted to "squeeze," to the point of shutting out, one of the important lines into California. Both schemes exploited weaknesses in California ISO computer systems.

Q. How did Enron profit from Load Shift?

A. Enron had purchased the right to share in the ISO's congestion charges for Path 26. By artificially reducing capacity on Path 26, congestion charges increased, and, as a

holder of transmission rights, Enron enjoyed benefits from the increased congestion charges. Enron also was able to sell power at higher prices as the congestion charges increased prices in SP-15 and throughout the Western Interconnection.

Q. Is Load Shift easy to understand?

A. No. Load Shift is perhaps the most difficult of the schemes described in the Yoder/Hall memos to follow. Of the three memos prepared by counsel in the fall of 2000, only the final memo – the one prepared by Gary Fergus – comes close to describing the scheme.

The original Stephan Hall memo described Load Shift as:

> The profits here are earned by shifting load from a congested zone to a less congested zone, thereby earning payments for reducing congestion (unused FTRs).
>
> This strategy requires that we have firm transmission rights ("FTR") connecting the two zones.
>
> A trader will overschedule load in one zone, i.e., SP-15, and underschedule load in another zone, i.e., NP-15.
>
> By so doing, this will often raise the congestion price in the zone where load was overscheduled.
>
> The trader will then "shift" the overscheduled "load" to the other zone, and get paid for the unused FTR's [does this mean that we sells the FTRs to other market participants or does the ISO pay us for not using the FTRs?].
>
> 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.
>
> Following this strategy has resulted in profits of approximately $30 million for FY 2000.
>
> (Ex. SNO-62)

Q. Was this a very good description?

A. No. Stephan Hall was a newcomer to the California market and these concepts are very difficult to master. Load Shift exploited the scheduling at the California ISO. As such, it was designed to manipulate prices in the Day Ahead and Hour Ahead

markets, as well as the real-time market. Hall oversimplified the scheme when he suggested it involved only Real Time. By December 2000, his understanding was better:

> This strategy is applied to the Day-Ahead and the real-time markets.
>
> Enron shifts load from a congested zone to a less congested zone, thereby earning payments for reducing congestion, i.e., not using our FTRs on a constrained path.
>
> This strategy requires that Enron have FTRs connecting the two zones.
>
> A trader will overschedule load in one zone, i.e., SP-15, and underschedule load in another zone, i.e., NP-15.
>
> Such scheduling will often raise the congestion price in the zone where load was overscheduled.
>
> The trader will then "shift" the overscheduled "load" to the other zone, and get paid for the unused FTRs. The ISO pays the congestion charge (if there is one) to market participants that do not use their FTRs. The effect of this action is to create the appearance of congestion through the deliberate overstatement of loads, which causes the ISO to charge congestion charges to supply scheduled for delivery in the congested zone. Then, by reverting back to its true load in the respective zones, Enron is deemed to have relieved congestion, and gets paid by the ISO for so doing.
>
> One concern here is that by knowingly increasing the congestion costs, Enron is effectively increasing the costs to all market participants in the real time market.
>
> Following this strategy has produced profits of approximately $30 million for FY 2000.
>
> (Ex. SNO-64)

Q. Were either of these descriptions correct in every detail?

A. No. One of the obstacles facing analysis of Load Shift was that Mr. Yoder and Mr. Hall apparently never had access the basic training materials used to teach traders how to undertake Load Shifts. Hence, their explanations were generally correct, but were hardly complete.

Q. Do we now have access to the primary sources?

A. We have access to some data, but not all of it. Enron has still not provided ISO Settlement data – which is crucial for identifying the actual Load Shift transactions – and Enron has not turned over the primary source on Load Shift, Chris Mallory's log book.

(Ex. SNO-752) We do know Gary Fergus's detailed notes on how Load Shift operated, a manual on how the FTR charges operated, and a significant trader transcript where a junior trader, Smith Day, was taught how to operate the scheme. (Ex. SNO-750) (Ex. SNO-751) (SNO-204)

Q. How do we know that a formal "log" of Load Shifts existed?

A. Gary Fergus's contemporaneous notes include the entry "Chris Mallory – kept log book." (Ex. SNO-752) We found other examples that Mallory maintained a Load Shift book. (Ex. SNO-753) We know from review of a number of Enron schemes that the mechanics of these schemes were too complex to be simply remembered. Enpower and CAPS had no explicit mechanism to organize such complex operations, so the traders were forced to keep their own records. (Ex. SNO-753)

Q. Does Load Shift show up in other documents?

A. Yes. Load Shift is frequently referenced in the Final Enpower to CAPS Reconciliations and the Real Time Incremental Sheets. We know from these sources that Load Shift continued throughout the entire crisis and through 2001. Based on the materials that have been provided at this time, the last date for which we have evidence of Load Shift is December 2, 2001.

Q. How did Load Shift work?

A. The first thing to realize is that Enron used the phrase "Load Shift" to represent any scheme that falsified loads in order to manipulate congestion costs and market prices. The references to Load Shift in the Enpower to CAPS Reconciliations referred to two very different schemes:

1. A scheme to underschedule in one zone and overschedule in another zone to take advantage of the difference in real time prices. I refer to these as Real Time Load Shifts.

And;

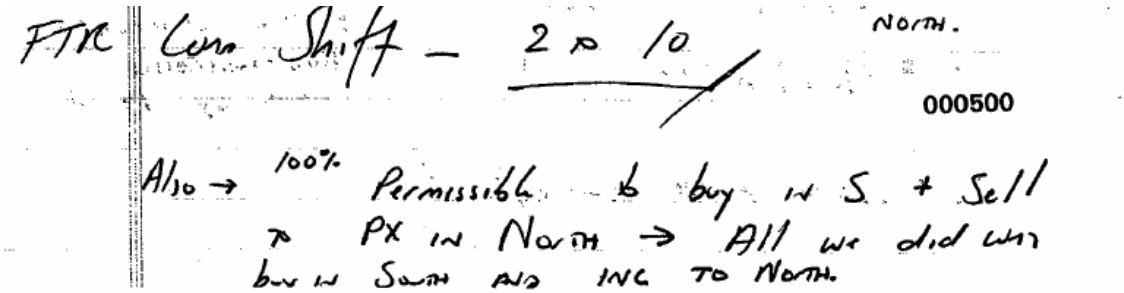
2. A scheme to create phantom congestion along Path 26 to take advantage of Enron's FTR rights on that path. I refer to these as FTR Load Shifts.

Q. Which type of Load Shift would you like to address first?

A. The vastly more important form of Load Shift is the scheme designed to raise prices in SP-15 and maximize Enron's FTR revenues.

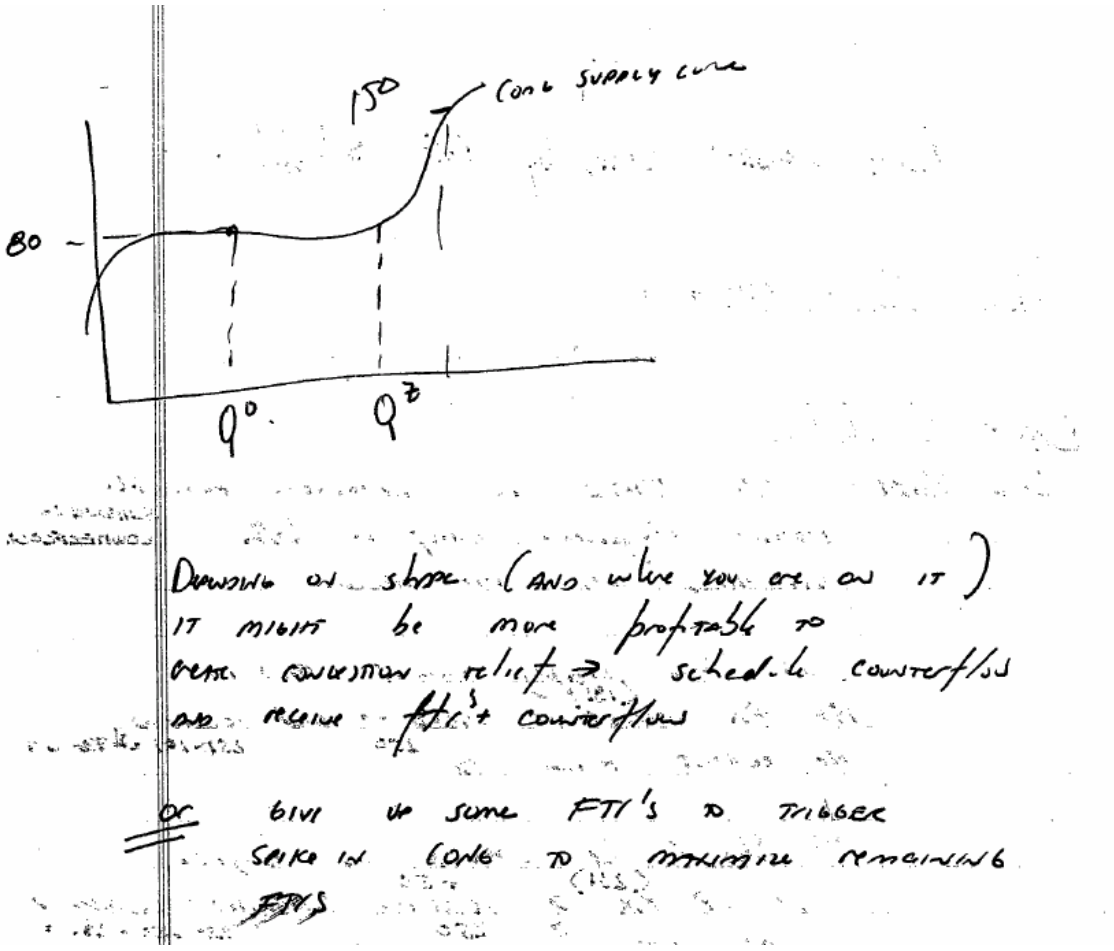
Q. Why did you name this type of Load Shift "FTR Load Shift"?

A. This name was used in the Gibbs and Bruns notes of their discussions with Portland Traders. The following excerpt from their notes describes the FTR Load Shift quite effectively:



(Ex. SNO-753, page 22)

And the following page continues:



(Ex. SNO-754, page 22)

Q. Can you translate the bad handwriting?

A. Yes. Gibbs and Brun is better at analysis than penmanship. The section says: "Depending on shape (and where you are on it) it might be more profitable to create congestion relief and schedule counterflows as receive ftr $ and counterflow".

Or

"Give up some FTR's to trigger spike in cong[estion] to maximize remaining FTR $."

Q. Is this a fairly good statement of the scheme?

A. Yes.

Q. What is a Firm Transmission Right?

A. The California ISO conducted an auction in 1999 to provide Firm Transmission Rights (FTR) on California's transmission system. Owners of the FTRs were given rights roughly analogous to those of existing transmission contract owners. The FTR was effectively a firm right to transmit power along a specific path.

In practice, the California ISO would allocate a pro rata share of congestion revenues to the owners of FTRs over the path where the congestion occurred. In effect, an owner of the FTRs was charged congestion costs for its use of the line and repaid them from the revenues collected including revenues from other users of the line.

Q. What did Stuart Rossman's instructions say about FTR Load Shift?

A. Rossman's memo recommended four different versions:

> FTR Strategy
>
> Option One: Have Service DA customer outside CA with access to ENA FTR paths put a schedule in with no adjusted bid at their minimum price to increase the likelihood of being awarded and create congestion.
>
> For Example:
>
> Puget enters a schedule in every day. They generally are price takers initially and then put an adjustment bid after the UMCP comes out. If Enron made them whole (ie paid them any DA congestion), this would increase the likelihood of congestion on the COB-NP-15 path and increase FTR value.
>
> This product could be mutually beneficial to both Puget and ENA – Puget gets to sell its power at the UMCP when congestion exists and ENA gets FTR value.
>
> Issues:
>
> Are we setting the congestion?
>
> Are we increasing congestion?
>
> Is the value of increasing congestion offsetting the cost of making Puget whole?
>
> Option Two: Increase EES Load and Import bids.
>
> For Example:

ENA takes 200 MW and imports it into the ISO at COB. Simultaneously we increase EES load by 200 MW to show a balanced schedule to the ISO. This increase in electrons causes congestion and increases FTR value.

ENA has two options with the electrons real time

1) take it to the ex post (this might be weak due to fake load)

2) export the electrons out and receive counter congestion real time plus real time bilateral prices

Option Three: Combine Option one and two.

For Example:

Puget submits a 200 MW schedule at COB through ENA to import into the ISO. In this case Puget is a price taker. Enron increases EES load by 200 MW so as to balance the ISO schedule. This should help create congestion. Puget does not have to generate power and will receive a % if congestion.

Option Four: Offer free services for DA PX scheduling to NW and SW customers who are currently not participating in the PX.

(Ex. SNO-798)

Q. Which Rossman option best fits Enron's FTR Load Shift scheme?

A. Option 2. In this option Enron would manipulate Path 26 by raising supplies in NP-15 and loads in SP-15.

Q. When did FTR Load Shifts occur?

A. They occurred in the Day Ahead and Hour Ahead markets from the onset of the FTR rights on February 1, 2000 through March 31, 2001.

Q. What happened in an FTR Load Shift?

A. Enron would create the appearance of loads in SP-15 and resources in NP-15. The Optimal Power Flow computer model would meet the imaginary loads in SP-15 by the use of transmission from NP-15 to SP-15.

Q. Why was this so profitable?

A. Other market participants with real loads in SP-15 would be forced to pay congestion fees under the California ISO's congestion fee system. To the degree that those market participants used Enron's FTRs Enron would receive a net payment.

For example, if total demand for transmission from NP-15 to SP-15 was 2,600 megawatts and available capacity was only 2,300 megawatts, the California ISO's CONG program would reduce congestion by adjusting loads and resources. The total congestion costs allocated to users of the line, net of Enron's loads on that path, would be recovered by Enron.

Enron, by creating phantom congestion, could force the ISO's computer program to respond to false schedules posted for north and south of Path 26. When the costs were allocated to transmission users, Enron would receive 1,000 megawatts of the total congestion costs that the ISO's computer program calculated.

Q. Was this equivalent to just shutting down a portion of Path 26?

A. Yes. Since the California ISO could not tell the difference between real load scheduled in Southern California and imaginary load, they effectively filled the line with imaginary megawatts that reduced the availability for real schedules.

Q. Can you give an example from actual operations during the period?

A. Yes. On August 5, 2000, Enron entered hours 10 through 22 short of needed capacity in SP-15 that averaged 124 MWs. During these hours Enron overscheduled load by 210 average megawatts, knowing full well that the California ISO would solve this imbalance by scheduling flows down Path 26.

Q. Then, in effect, Enron created an imaginary flow of 124 MWs during these hours to "squeeze" Path 26 and to raise congestion costs?

A. Yes. Furthermore, if Enron wanted to increase the "squeeze" they could add imaginary load in the hour ahead market as well.

Q. Did Enron traders discuss building a model to help them congest Path 26?

A. Yes. One conversation included the basic theory and an offer to help with the model:

> MALLORY. I mean, basically, I look at A) is it congested? If it is, like based on what NP would clear, do I think it has room to move up enough to move load, and then B) if it's not congested, how much room do I think that path has, and can we congest it?
>
> PERSON 1: Yeah. 1 would see also a building in here a, ah, building here a little model that would -would tier things for you.
>
> MALLORY : Ah, tier - yeah, we definitely - that's gotta be something we need to work out better too, because the trick yesterday that I discovered, is like, offer to send through like, you know, if it's two bucks, send through, like 4 hun - or 500 megs at like 10 dollars, just 'cause you want to get, um - I usually do 400, just 'cause you want to get it above hat, like 10,11,12 dollar hump and I want to make sun you have a lot of megs willing to do that, but then after that, like, I said like 300 at 64, three f - and two fifty at 64.50,200, so just havin' it that tight is going to cut you down so you're really efficient, so. That make sense?
>
> (Ex. SNO-204, page 7)

Q. Have you found the model they were discussing?

A. I believe so. Our discovery included a number of Excel files that seemed focused on analyzing Path 26 congestion. For example, Exhibit SNO-805 contains the following series of calculations designed to show the level of congestion on Path 26 and the resulting congestion costs:

Paste Flows			Paste Congestion				
Path 26 Flow	Path 15 Flow	UMCP	Congestion26	Difference	Cong Point 26	Path 26 Room	
80	-2004	65	0	65	2258	2178	
486	-1581	55	0	55	2258	1772	
241	-1809	52	0	52	2258	2017	
182	-1907	51	0	51	2258	2076	
327	-1889	52	0	52	2258	1931	
119	-2014	62	0	62	2258	2139	
-128	-2172	57	0	57	2258	2386	
-199	-2165	75	0	75	2258	2457	
758	-1136	87	0	87	2258	1500	
1611	-298	113	0	113	2258	647	
2247	503	155	0	155	2258	11	135.04
2253	532	200	88.89	111	2258	5	110.28
2253	401	300	171.455	129	2258	5	145.445
2253	431	412	172.49498	240	2258	5	227.355
2258	429	420	305.25	115	2258	0	84.15
2258	436	451	327.5	123	2258	0	102.36
2258	438	447	309.98999	137	2258	0	112.18
2258	428	383	171.435	211	2258	0	152.375
2253	360	250	138.37999	112	2258	5	88.20001
2253	358	190	40.61	149	2258	5	159.38
2145	348	151	0	151	2258	113	154.27
2022	237	108	0	108	2258	236	107.73
1459	-677	78	0	78	2258	799	
489	-1730	70	0	70	2258	1768.730011	

Q. How would such an analysis be used?

A. Referring back to the transcript above, the critical question is where adjustment bids will trigger to reduce congestion on Path 26. In order to know how much imaginary load to add to SP-15, it is important to know what adjustment bids – and what congestion costs – materialize at each level of congestion on Path 26. This spreadsheet appears designed to make those calculations. In the table above, an Enron trader, Chris Mallory, has indicated where different flows and costs should be inserted in order to identify the congestion costs that occurred when Path 26 was congested. The user, logically Smith Day – another of the participants in the conversation transcribed above, could then identify the returns that would occur if scheduled loads were increased in SP-15.

Q. Why do you think that Chris Mallory may have prepared this tool for the use of Smith Day?

A. The properties information on the spreadsheet identifies Chris Mallory as the author. The file name includes "Smith". This spreadsheet is the type of calculation that would have been prepared to help a less experienced trader in learning how and when to cause phantom congestion on Path 26. (Ex. SNO-805)

Q. Were there other facets to the scheme?

A. Yes. The data we have is accounting data – intended for use after the fact. We also believe that Enron submitted adjustment bids to reduce imaginary loads in SP-15. However, because Enron has thus far failed to provide ISO settlement and adjustment bid data, we have not yet been able to analyze this data.

Q. What happened on August 4, 2000?

A. The following tables trace the developments in both the Day Ahead market and the Hour Ahead market.

A	B	C	D	E	F	G	H	I	J
Date	Hour	Scheduling Coordinator	CNGS_Z ONE	Final Day Ahead Load	Hour Ahead Load	Actual Load	DA Deficit In SP-15	DA Thin Man In SP-15	DA FTR Load Shift in SP-15
Source:				California ISO Fat Boy Workpapers	California ISO Fat Boy Workpapers	California ISO Fat Boy Workpapers	August 4, 2000 Preliminary Reconciliation	=E-G	=Lesser of H and I
04-Aug-00	1	EPMI	SP15	132.2	132.2	417.9	0.0	0.0	0.0
04-Aug-00	2	EPMI	SP15	133.8	133.8	400.3	0.0	0.0	0.0
04-Aug-00	3	EPMI	SP15	126.7	126.7	390.1	0.0	0.0	0.0
04-Aug-00	4	EPMI	SP15	123.4	123.4	388.2	0.0	0.0	0.0
04-Aug-00	5	EPMI	SP15	141.3	141.3	396.6	0.0	0.0	0.0
04-Aug-00	6	EPMI	SP15	175.3	175.3	425.3	0.0	0.0	0.0
04-Aug-00	7	EPMI	SP15	78.8	78.8	461.2	0.0	0.0	0.0
04-Aug-00	8	EPMI	SP15	109.2	109.2	350.4	0.0	0.0	0.0
04-Aug-00	9	EPMI	SP15	150.3	125.2	387.4	0.0	0.0	0.0
04-Aug-00	10	EPMI	SP15	478.2	526.2	417.7	127.2	60.5	60.5
04-Aug-00	11	EPMI	SP15	488.9	488.9	439.2	166.9	49.7	49.7
04-Aug-00	12	EPMI	SP15	505.9	530.9	446.7	110.9	59.2	59.2
04-Aug-00	13	EPMI	SP15	515.3	466.3	448.1	68.3	67.3	67.3
04-Aug-00	14	EPMI	SP15	517.0	288.7	454.2	63.0	62.8	62.8
04-Aug-00	15	EPMI	SP15	513.2	314.6	456.5	73.2	56.7	56.7
04-Aug-00	16	EPMI	SP15	499.9	351.3	454.1	86.9	45.8	45.8
04-Aug-00	17	EPMI	SP15	482.1	305.2	442.8	101.1	39.3	39.3
04-Aug-00	18	EPMI	SP15	461.7	284.8	419.3	120.7	42.4	42.4
04-Aug-00	19	EPMI	SP15	442.6	364.7	399.8	172.6	42.8	42.8
04-Aug-00	20	EPMI	SP15	433.8	258.6	386.3	172.8	47.5	47.5
04-Aug-00	21	EPMI	SP15	414.8	345.8	378.7	173.8	36.0	36.0
04-Aug-00	22	EPMI	SP15	391.6	292.6	358.7	174.6	32.9	32.9
04-Aug-00	23	EPMI	SP15	503.3	404.3	330.3	0.0	173.0	0.0
04-Aug-00	24	EPMI	SP15	456.4	357.4	447.1	0.0	9.3	0.0

Enron's Day Ahead deficit in SP-15 was based, in part, on an imaginary load intended to create artificial congestion on Path 26.

A	B	C	D	E	F	G	H	I	J	K	L	M
Date	Hour	Scheduling Coordinator	CNGS_ ZONE	Final Day Ahead Load	Hour Ahead Load	Actual Load	HA Deficit In SP-15	HA Thin Man In SP-15	HA FTR Load Shift in SP-15	Reduction In Load DA-HA	Hand Written HA Load Shift	HA Adjustment Bid
Source:				California ISO Fat Boy Workpapers	California ISO Fat Boy Workpapers	California ISO Fat Boy Workpapers	August 4, 2000 Final Reconciliation	=F-G	=Lesser of K and L		August 4, 2000 Final Reconciliation	
04-Aug-00	1	EPMI	SP15	132.2	132.2	417.9	0.00	0.0	0.0	0.0	-	
04-Aug-00	2	EPMI	SP15	133.8	133.8	400.3	0.00	0.0	0.0	0.0	-	
04-Aug-00	3	EPMI	SP15	126.7	126.7	390.1	0.00	0.0	0.0	0.0	-	
04-Aug-00	4	EPMI	SP15	123.4	123.4	388.2	0.00	0.0	0.0	0.0	-	
04-Aug-00	5	EPMI	SP15	141.3	141.3	396.6	0.00	0.0	0.0	0.0	-	
04-Aug-00	6	EPMI	SP15	175.3	175.3	425.3	0.00	0.0	0.0	0.0	-	
04-Aug-00	7	EPMI	SP15	78.8	78.8	461.2	0.00	0.0	0.0	0.0	-	
04-Aug-00	8	EPMI	SP15	109.2	109.2	350.4	0.00	0.0	0.0	0.0	-	
04-Aug-00	9	EPMI	SP15	150.3	125.2	387.4	0.00	0.0	0.0	25.0	-	
04-Aug-00	10	EPMI	SP15	478.2	526.2	417.7	127.23	108.5	108.5	-48.0	-	
04-Aug-00	11	EPMI	SP15	488.9	488.9	439.2	166.90	49.7	49.7	0.0	-	
04-Aug-00	12	EPMI	SP15	505.9	530.9	446.7	110.90	84.2	84.2	-25.0	-	
04-Aug-00	13	EPMI	SP15	515.3	466.3	448.1	8.36	18.3	8.4	49.0	60	
04-Aug-00	14	EPMI	SP15	517.0	288.7	454.2	0.00	0.0	0.0	228.3	88	140
04-Aug-00	15	EPMI	SP15	513.2	314.6	456.5	13.19	0.0	0.0	198.7	73	150
04-Aug-00	16	EPMI	SP15	499.9	351.3	454.1	91.00	0.0	0.0	148.7	10	
04-Aug-00	17	EPMI	SP15	482.1	305.2	442.8	76.98	0.0	0.0	176.9	118	
04-Aug-00	18	EPMI	SP15	461.7	284.8	419.3	0.00	0.0	0.0	176.9	110	
04-Aug-00	19	EPMI	SP15	442.6	364.7	399.8	10.71	0.0	0.0	77.9	12	100
04-Aug-00	20	EPMI	SP15	433.8	258.6	386.3	160.47	0.0	0.0	175.3	110	100
04-Aug-00	21	EPMI	SP15	414.8	345.8	378.7	62.88	0.0	0.0	69.0	-	100
04-Aug-00	22	EPMI	SP15	391.6	292.6	358.7	173.39	0.0	0.0	99.0	100	100
04-Aug-00	23	EPMI	SP15	503.3	404.3	330.3	74.65	74.0	74.0	99.0	100	100
04-Aug-00	24	EPMI	SP15	456.4	357.4	447.1	0.00	0.0	0.0	99.0	100	100

At the end of the Hour Ahead market, actual loads had fallen. One reason for this fall was that the California ISO CONG model had accepted some of the Hour Ahead bids to reduce loads in SP-15 in order to reduce congestion on Path 26. Enron staff had to identify the differences in the Final Enpower to CAPS Reconciliation report, which allowed us to see how the transactions worked. In this case, the actual Load Shifts implemented on that day were signed for by "Stan", presumably Stanley Cocke.

Q. How did Enron profit from the various manipulations on August 4, 2000?

A. Enron profited in at least six different ways:

1. Enron received a share of the Day Ahead congestion revenues based on their FTR ownership.

2. Enron was paid for reducing imaginary load as part of their congestion bids in the Day Ahead market.

3. Enron received a share of the Hour Ahead congestion revenues based on their FTR ownership.

4. Enron was paid for reducing imaginary load as part of their contesting bids in the Hour Ahead market

5. Enron sold at the higher prices in SP-15 due to the congestion surcharges in the final PX prices.

6. Enron profited in other Western regions due to the higher SP-15 prices.

Q. Why is the August 4, 2000 Load Shift of particular interest?

A. August 4, 2000 is an example of how Enron traders cooperated to shift loads north while the California Desk was shifting loads south. During HE 1 through HE 8, the Real Time Desk was shifting 21 MW an hour north, attempting to take advantage of a "split BEEP stack" – a situation when the ex-post prices would be higher in Northern California than Southern California. This actually took place from HE 6 through HE 8. This is an Ex-post Load Shift.

The Reconciliation documents this as:

SubTotal	C	Wheelabrat	NP15	Generation	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00
Variance			NP15		-307.32	-300.31	-295.13	-293.91	-297.84	-317.60	40.13	23.82

20 MW
NCPA LOAD SHIFT

(Ex. SNO-736)

The Real Time Inc Sheet provides a similar summary:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
HR END	TIME	TOT.	DEL.	SUPPLY	MW PER	TOT.	BUY	MARKET	SELL	CONG	EX-	Trans.	Enpower	TiePoint	LINE	P/L
	ZONE	HRS.	PT.		HOUR	MW	PRICE		PRICE	RELIEF	POST	Charge	Deal Numbers	MeterMult	LOSSES	
1	PDT	1	ZP/NP	Cal Imb (ZP)	21	21	$ -	Cal Imb (NP)	$ -	$ -	$-		NCPA SPLIT			-
2	PDT	1	ZP/NP	Cal Imb (ZP)	21	21	$ -	Cal Imb (NP)	$ -	$ -	$-		NCPA SPLIT			-
3	PDT	1	ZP/NP	Cal Imb (ZP)	21	21	$ -	Cal Imb (NP)	$ -	$ -	$-		NCPA SPLIT			-
4	PDT	1	ZP/NP	Cal Imb (ZP)	21	21	$ -	Cal Imb (NP)	$ -	$ -	$-		NCPA SPLIT			-
5	PDT	1	ZP/NP	Cal Imb (ZP)	21	21	$ -	Cal Imb (NP)	$ -	$ -	$-		NCPA SPLIT			-
6	PDT	1	ZP/NP	Cal Imb (ZP)	21	21	$175.99	Cal Imb (NP)	$199.00	$ -	$-		NCPA SPLIT			483.21
7	PDT	1	ZP/NP	Cal Imb (ZP)	21	21	$163.15	Cal Imb (NP)	$198.00	$ -	$-		NCPA SPLIT			731.85
8	PDT	1	ZP/NP	Cal Imb (ZP)	21	21	$ 80.00	Cal Imb (NP)	$153.97	$ -	$-		NCPA SPLIT			1,553.37

(Ex. SNO-732)

On the same day, the California desk is shipping power from NP down to SP:

12	13	14	15	16	17	18	19	20	21	22	23	24	Total
25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	24.99	0.00	0.00	399.96
1215.00	1214.97	1265.00	1265.00	1264.97	1215.00	1215.00	1215.00	1214.97	1214.97	1235.29	528.97	495.00	23754.11
-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
-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
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
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
1.45	1.47	1.49	1.50	1.50	1.48	1.42	1.35	1.31	1.30	1.24	1.17	1.10	30.47
38.10	38.60	39.24	39.47	39.50	38.73	37.28	35.33	34.30	34.01	32.57	30.77	29.00	800.46
155.16	159.18	164.29	166.12	166.35	160.18	148.58	132.98	124.75	122.39	110.85	246.48	232.26	4011.20
194.71	199.25	205.02	207.09	207.35	200.39	187.28	169.66	160.36	157.70	144.56	278.42	262.36	4842.13
-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-5400.00
-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-225.00	-5400.00
-23.00	-23.00	-23.00	-23.00	-23.00	-23.00	-23.00	-23.00	-23.00	-23.00	-23.00	-21.00	-21.00	-528.00
-23.00	-23.00	-23.00	-23.00	-23.00	-23.00	-23.00	-23.00	-23.00	-23.00	-23.00	-21.00	-21.00	-528.00
-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-144.00
-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-6.00	-144.00
200.11	143.71	132.86	140.68	153.63	174.10	205.68	273.87	282.95	295.69	308.06	59.32	44.17	885.36
1	11	11	11	11	11	11	11	11	1	1	1	1	
DEATHSTAR													
-168.82	-66.96	-32.10	71.77	-134.96	-48.49	-66.96	-215.47	-117.31	-227.32	126.72	106.90	107.81	601.42
	60	89	60	110	110	12	10			100	100	100	
	LOAD SHIFT												

(Ex. SNO-736)

Q. Are the notations on the Reconciliations and the Inc sheets for August 4th an anomaly?

A. No. Enron traders frequently identified the names and quantities of the schemes they were running on both of these types of documents. For example, of the 330 days for which we have final Enpower to CAPS Reconciliation reports, we have handwritten

notes identifying Load Shift on 273 days. But Enron traders did not only identify Load Shifts in these reports; they also recorded variances for Death Star, Non-Firm Export, and Cong Catcher on approximately 86 of these 330 total days. Thus we find handwritten comments for approximately 88% of the days for which we have these Reconciliation Reports.

Q. Do Enron's documents support this analysis?

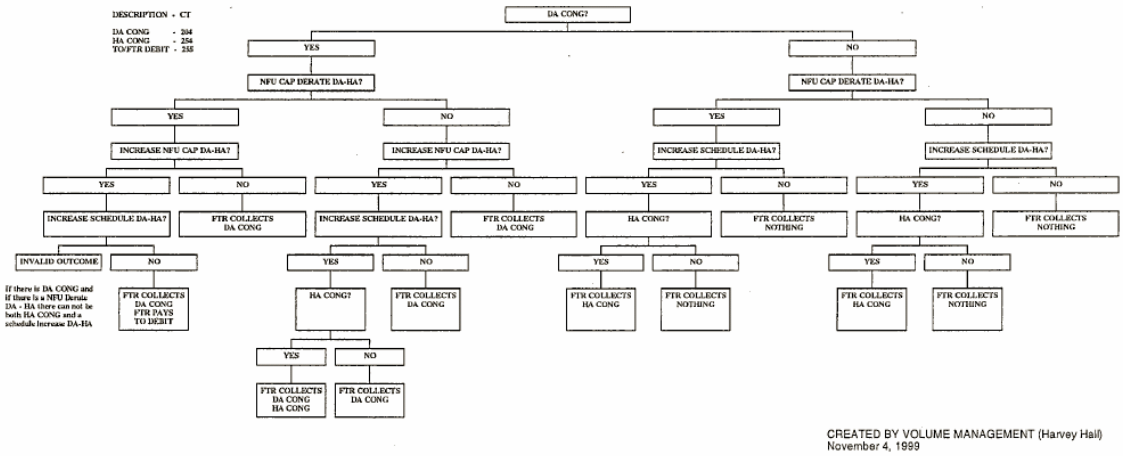
A. Yes, in some detail. A good starting point is the "General Principles of FTR's." This document was apparently written before the FTR auction – most likely in November 1999. The first page provides a set of maxims designed to guide Enron in choosing which transmission routes to pursue:

> 1. FTR's can not loose money strictly.
>
> 2. If there is no DA congestion there will be no TO Debit liability (CT 255) for FTR's.
>
> 3. FTR liability for TO Debit (CT 255) is always ≤ FTR revenues for DA congestion (CT 204).
>
> 4. If DA NFU capacity is ≥ FTR capacity on a line then all DA and HA congestion revenues (CT 204 & 254) and TO liabilities (CT 255) will be shared by FTR's only.
>
> 5. HA congestion revenue (CT 254) can only be collected by FTR's if there is both HA congestion AND an increase in schedules from DA to HA.
>
> 6. Congestion revenue potential is maximized when there is a DA NFU capacity derate to 5 FTR capacity and there is a rerate in the HA NFU capacity with both DA and HA congestion.
>
> Optimal Ties Lines to look for will have the following characteristics:
>
> 1. High instances of DA congestion.
>
> 2. Low instances of line derates between DA and HA finals.
>
> 3. High instances of HA congestion and increases of schedules from DA to HA.
>
> (Ex. SNO-751)

Q. Did the same document also contain operational instructions?

A. Yes. The following flow chart indicated how to operate under FTRs:

FTR COSTS & REVENUES



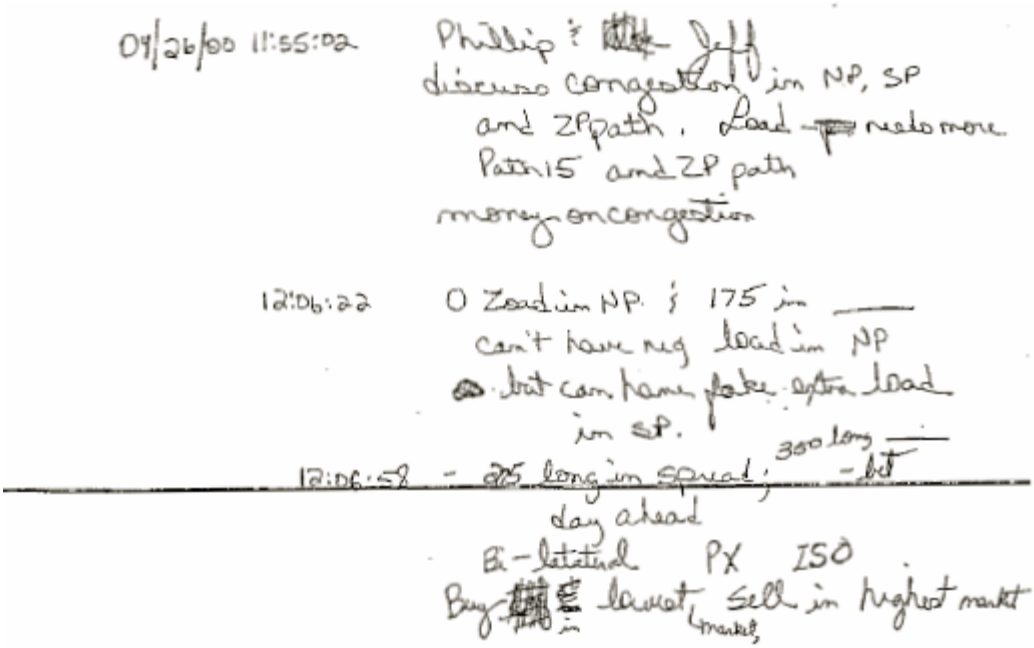
For example, a trader could trace his way through the various steps. If there was congestion in the Day Ahead market, he would take the far left branch. As events would take place during the day, he could find himself in the box marked "Increase Schedule Day Ahead – Hour Ahead." If so, he would know how to increase the amount of load scheduled for SP-15.

Q. Does this explain why Enron traders were singing "burn, baby, burn!" in one of the transcripts discovered by Dr. Pechman?

A. Yes. They had found themselves in the left box on the lowest level, where FTR holders were collecting both DA and HA congestion payments. This was a good place to be for potential FTR Load Shift profits.

Q. Do FTR Load Shifts show up in Stephen Hall's summaries of trader conversations?

A. Yes. On April 26, 2000, Jeff Richter and Phillip Allen had a conversation about the problems scheduling negative and fake loads:



(Ex. SNO-731, page 65)

The first sentence addresses the fact that "load needs more Path 15 and ZP path money on congestion." The problem arises that they cannot reduce load in NP-15 – it is already zero. They can, however, "have fake extra load in SP".

Q. Did Dr. Pechman discover a similar discussion in the Enron audio recordings obtained by Snohomish?

A. Yes. Exhibit SNO-204 contains an extensive discussion between Chris Mallory and Smith Day. The purpose of the discussion is to educate Mr. Day on the mechanics of causing congestion on Path 26:

> SMITH: You look at that - you look at that - that's a big difference all of sudden that pops out on that one hour and you also see that the line is -is right at the limit.
>
> MALLORY: Right-

PERSON 1: As we had them yesterday -

SMITH: And then y - is that - those the hour you pick on?

MALLORY: [Hr] 1 -well, mostly I - I pick on -

PERSON 1: That's what it looked like yesterday.

MALLORY: Yeah, basically that's it. And mostly it's just like, if the line's not congested-

PERSON 1: Mmhm.

MALLORY. - then I just look if I can congest it, 'cause then it's worth m - the - 'cause those are going to be your shoulder hours anyways, and that's when replacement is super cheap, right?

PERSON 1: Right, right

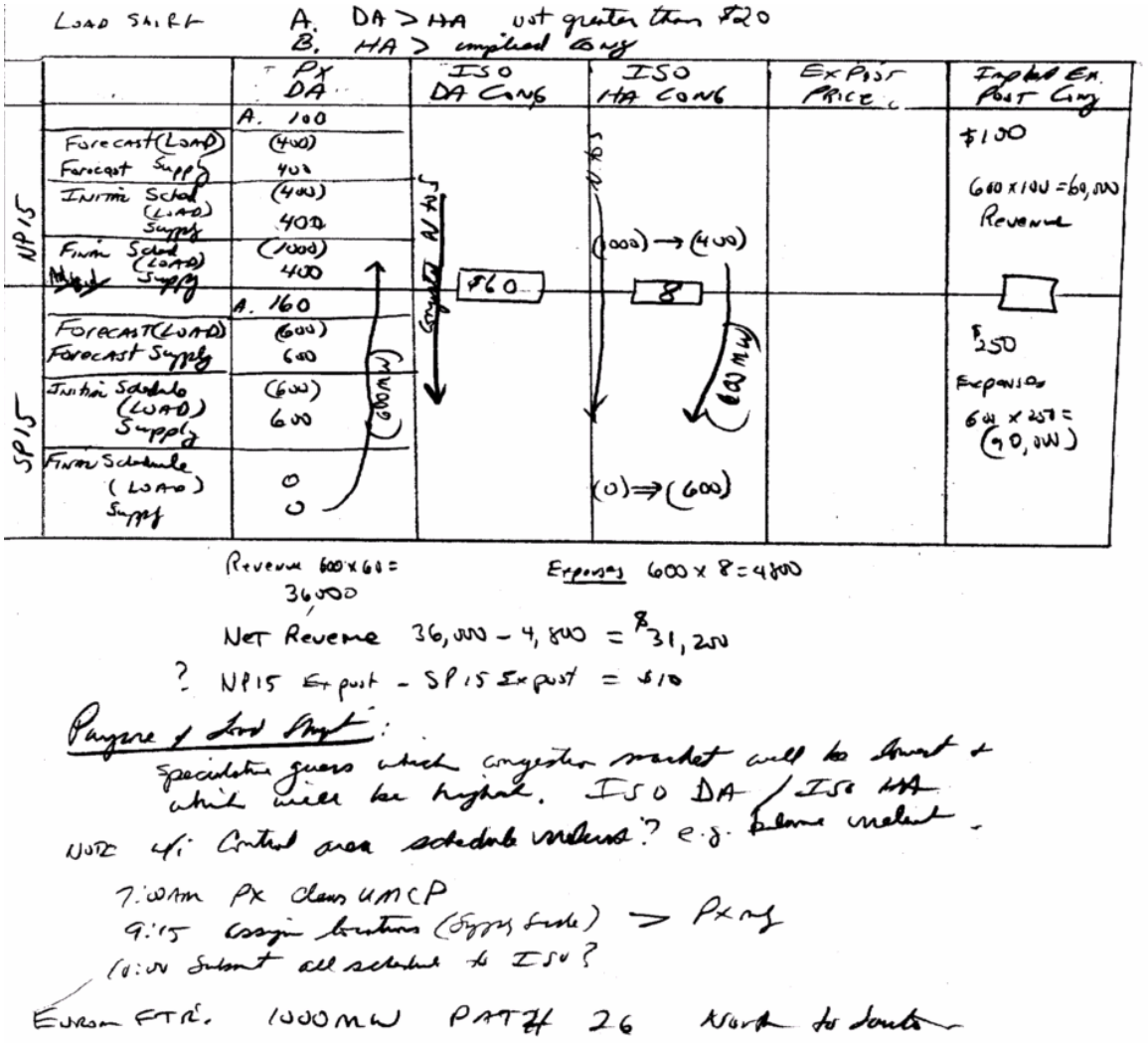
MALLORY: So, like those hours, if you can congest it, that's a money-maker no matter what, 'cause you're not losin' any money to move it down that line.

SMITH: Right, right

(Ex. SNO-204, page 9)

Q. Did the Gary Fergus notes contain comparable instructions?

A. Yes. The Fergus notes contained a similar table, although his penmanship requires some effort to decipher:



(Ex. SNO-750)

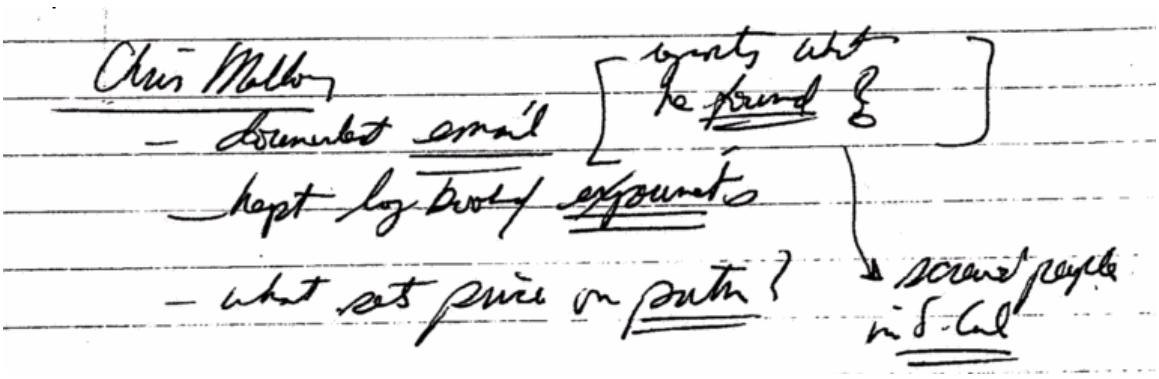
This diagram pages through the same decision matrix on Day Ahead and Hour Ahead FTR Load Shift.

Q. In Gary Fergus's memo on trading strategies he states that "Accordingly, it appears that the overall effect was to reduce the total cost to the California market as a whole." (Ex. SNO-749, page 3) Do you agree?

A. No. As a moment of reflection would make clear to any reader, Enron could not both profit and lower prices in California by "squeezing" transmission lines between NP-15 and SP-15. The California PX algorithm for determining zonal prices stated that zonal

prices at least as high as the highest accepted bid, plus any congestion cost for congestion from neighboring zones. The congestion costs raised prices in SP-15.

Mr. Fergus's own notes make this clear:



(Ex. SNO-752)

His answer to the question: "What sets price in south?" is "screws people in S. Cal."

Q. Does this note reflect economic theory?

A. Yes. This is a simple application of Economics 101. Tariffs – barriers to trade between two regions – diminish consumer welfare. Except in very unusual circumstances, prices do not get better by putting barriers up between trading partners.

Q. Have you been able to document the full extent of Enron's use of FTR Load Shift?

A. No. The situation is difficult because much of the data is now missing. Enron has provided us Preliminary Enpower to CAPS Reconciliation reports for 46 of the 455 days when they had FTR rights on Path 26. Enron has provided Final Enpower to CAPS Reconciliation reports for 178 days during this period when Enron had FTR rights. CAPS, Enron's database for transactions specifically dealing with California, does not contain a complete record of ISO Settlement data, and Enron did not provide the source

data for the Settle database, the most complete source for settlement data, until January 28th, 2005. Furthermore, perhaps the most important source for Load Shift documentation, Chris Mallory's log book, is also missing. Given that many of these crucial materials have to date not been produced by Enron, my analysis of Load Shift is ongoing.

Q. Is this the only scheme that Enron used the phrase "Load Shift" to describe?

A. No. Enron frequently used Real Time Load Shift to describe a scheme where a deficit was run in one region of California and a surplus in another.

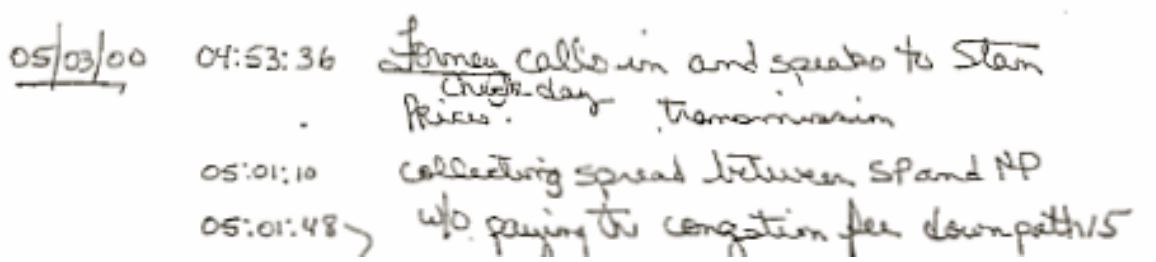
Q. Why did Enron bother to pay for NCPA transmission rights in this scheme?

A. Enron wanted to show the ISO a transaction that provided a surplus in NP-15 and a deficit in SP-15, for example. While FTR Load Shift's central theme was using up ISO transmission on ZP-26, Enron scheduled Real Time Load Shift to wheel power north in order to create a shortage in SP-15 and a surplus in NP-15.

Real Time Load Shifts can also occur in two flavors: those using third party transmission rights, for example as a partnership scheme with NCPA, which in this case had grandfathered rights on the CAISO's transmission lines; and those that involve direct use of the CAISO's transmission lines.

Q. Do Real Time Load Shifts show up in Stephen Hall's transcripts?

A. Yes. When John Forney notices a real time differential between northern and southern California, he asks "Stan" (mostly Stanley Cocke) to investigate an option to avoid paying congestion costs:



(Ex. SNO-731)

By using existing contract rights, Enron could run a deficit in the region, with low ex-post prices, and a surplus in the region with high ex-post prices. Of course, this required Enron to falsify their load data in both regions.

Q. Can you give an example of new evidence you have on a Real Time Load Shift?

A. Yes. On August 28, 2000, Enron started the day with an ex-post Load Shift from HE 1 through HE 11. The Real Time Inc Sheet describes the operation quite adequately:

HA ISO

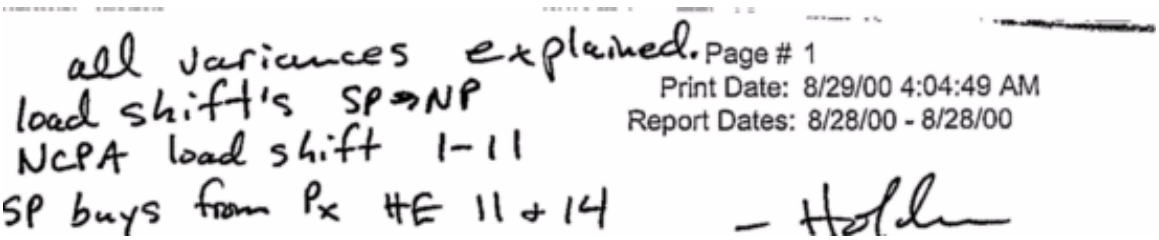
HR END	TIME ZONE	TOT. HRS.	DEL. PT.	SUPPLY	MW PER HOUR	TOT. MW	CONG/ZONA PRICE	MARKET	PRICE	MW PER HOUR	Total MW's	Trans Charge	Enpower Deal Numbers	TiePoint MeterMult	LINE LOSSES	P/L
1	PDT	1	ZP to NP	Cal Imb (ZP)	21	21	$ 3.37	Cal Imb (NP)	$ 240.12	$ -	$ -		NCPA 50/50 SPLIT			2,485.83
2	PDT	1	ZP to NP	Cal Imb (ZP)	21	21	$ 146.65	Cal Imb (NP)	$ 146.65	$ -	$ -		NCPA 50/50 SPLIT			-
3	PDT	1	ZP to NP	Cal Imb (ZP)	21	21	$ 100.00	Cal Imb (NP)	$ 100.00	$ -	$ -		NCPA 50/50 SPLIT			-
4	PDT	1	ZP to NP	Cal Imb (ZP)	21	21	$ 131.71	Cal Imb (NP)	$ 131.71	$ -	$ -		NCPA 50/50 SPLIT			-
5	PDT	1	ZP to NP	Cal Imb (ZP)	21	21	$ 149.00	Cal Imb (NP)	$ 149.00	$ -	$ -		NCPA 50/50 SPLIT			-
6	PDT	1	ZP to NP	Cal Imb (ZP)	21	21	$ 136.88	Cal Imb (NP)	$ 136.88	$ -	$ -		NCPA 50/50 SPLIT			-
7	PDT	1	ZP to NP	Cal Imb (ZP)	19	19	$ 249.17	Cal Imb (NP)	$ 242.73	$ -	$ -		NCPA 50/50 SPLIT			(61.18)
8	PDT	1	ZP to NP	Cal Imb (ZP)	19	19	$ 241.75	Cal Imb (NP)	$ 248.99	$ -	$ -		NCPA 50/50 SPLIT			68.78
9	PDT	1	ZP to NP	Cal Imb (ZP)	19	19	$ 116.51	Cal Imb (NP)	$ 248.92	$ -	$ -		NCPA 50/50 SPLIT			1,257.90
10	PDT	1	ZP to NP	Cal Imb (ZP)	19	19	$ 104.33	Cal Imb (NP)	$ 250.00	$ -	$ -		NCPA 50/50 SPLIT			1,383.87
11	PDT	1	ZP to NP	Cal Imb (ZP)	19	19	$ 133.68	Cal Imb (NP)	$ 133.68	$ -	$ -		NCPA 50/50 SPLIT			-

(Ex. SNO-732)

Enron's real time traders purchased power (actually ran a deficit) in ZP and "sold" the power to NCPA. In The Enpower to CAPS Reconciliation (Final) for this day, this transaction shows up as a "sale" and a negative load in ZP-26:

	Sys_	Customer	Location	Trans.Type	1	2	3	4	5	6	7	8	9	10	11
	C	EES	ZP26	Load	11.17	11.22	11.25	11.53	12.26	13.25	14.25	15.06	15.87	16.45	16.60
SubTotal	C	EES	ZP26	Load	11.17	11.22	11.25	11.53	12.28	13.25	14.25	15.06	15.87	16.45	16.60
Variance		EES	ZP26		-11.17	-11.22	-11.25	-11.53	-12.26	-13.25	-14.25	-15.06	-15.87	-16.45	-16.60
	C	ECT	ZP26	Load	-21.00	-21.00	-21.00	-21.00	-21.00	-21.00	-19.00	-19.00	-19.00	-19.00	-19.00
	C	ECT	ZP26	Load	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SubTotal	C	ECT	ZP26	Load	-21.00	-21.00	-21.00	-21.00	-21.00	-21.00	-19.00	-19.00	-19.00	-19.00	-19.00
	C	ECTRT	ZP26	Sale	21.00	21.00	21.00	21.00	21.00	21.00	19.00	19.00	19.00	19.00	19.00
SubTotal	C	ECTRT	ZP26	Sale	21.00	21.00	21.00	21.00	21.00	21.00	19.00	19.00	19.00	19.00	19.00
	C	ECTstCA	ZP26	Purchase	0.00	0.00	0.00	0.00	0.00	0.00	-50.00	-50.00	-50.00	-50.00	-50.00
SubTotal	C	ECTstCA	ZP26	Purchase	0.00	0.00	0.00	0.00	0.00	0.00	-50.00	-50.00	-50.00	-50.00	-50.00
	C	ECTsICA	ZP26	Sale	0.00	0.00	0.00	0.00	0.00	0.00	75.00	75.00	75.00	75.00	75.00
SubTotal	C	ECTstCA	ZP26	Sale	0.00	0.00	0.00	0.00	0.00	0.00	75.00	75.00	75.00	75.00	75.00
	C	PGES	ZP26	Load	12.33	12.05	11.94	11.93	12.25	13.36	14.73	15.72	16.77	17.61	18.23
SubTotal	C	PGES	ZP26	Load	12.33	12.05	11.94	11.93	12.25	13.36	14.73	15.72	16.77	17.61	18.23
Variance			ZP26		-33.33	-33.05	-32.94	-32.93	-33.25	-34.36	-58.73	-59.72	-60.77	-61.61	-62.23
Variance			ZP26		23.50	23.27	23.19	23.46	24.53	26.61	53.98	55.78	57.64	59.06	59.83

The cells marked in yellow are those that differ from the preliminary report. A corresponding sale shows up in the NP-15 section of the report. Note that no Enpower deal ID is included in either report – this transaction was only entered in CAPS as signified by the "C" in the "Sys" column. The handwritten comments on the first page of the final Reconciliation makes it clear that this is just one of the two Real Time Load Shifts on that day:



(Ex. SNO-736)

The detailed numbers on the variance page of the Reconciliation describes the second (and more significant) Load Shift:

13	14	15	16	17	18	19	20	21	22	23	24	Total
150 00	150.00	150.00	150.00	150 00	150 00	150.00	150.00	150 00	150.00	0 00	0 00	2400 00
500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	0.00	0.00	8000.00
105 80	109.36	110.09	109 67	103 13	93 87	84.16	80.01	74 07	59.33	185 00	169 15	2637 03
79 30	80.13	80.33	80.48	78 91	76 80	73 29	72.81	71.04	66.79	61 64	55 77	1605 76
185.10	189.51	190.42	190.15	182.04	170.67	157.45	152.82	145.11	126.12	249.64	225.92	4242.79
-180 00	-180 00	-180.00	-180 00	-180 00	-180 00	-180.00	-180.00	-180 00	-180.00	-50 00	-50 00	-3280 00
-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-50.00	-50.00	-3280.00
-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
-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
-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
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
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
-34.04	-63.90	-31.60	-39.39	-31.22	-11.50	-7.44	-1.66	35.71	54.14	276.80	1.76	2615.36

all load shifts SP→NP

-171.06	29.57	21.18	29.24	-170.82	-179.17	28.99	-171.16	-200.82	-200.26	-476.41	-277.65	-5093.10

200MW 200 MW's 200 MW's 100 MW's

(Ex. SNO-736)

This also shows up in the Real Time Inc Sheet:

HR END	TIME ZONE	TOT. HRS.	DEL. PT.	SUPPLY	MW PER HOUR	TOT. MW	CONG/ZONA PRICE	MARKET	PRICE	MW PER HOUR	Total MW's	Trans Charge	Enpower Deal Numbers	TiePoint MeterMult	LINE LOSSES	P/L
6	PDT	1	SP to NP	Cal Imb (SP)	50	50	$ -	Cal Imb (NP)	$ -	$ -	$ -	60.00	Load shift			(3,000.00)
8	PDT	1	SP to NP	Cal Imb (SP)	65	65	$ 241.75	Cal Imb (NP)	$ 248.99	$ -	$ -	38.40	Load shift			(2,025.40)
9	PDT	1	SP to NP	Cal Imb (SP)	24.34	24.34	$ 104.33	Cal Imb (NP)	$ 250.00	$ -	$ -	25.00	Load shift			2,937.11
13	PDT	1	SP to NP	Cal Imb (SP)	200	200	$ -	Cal Imb (NP)	$ -	$ -	$ -	0.00	Load shift			-
17	PDT	1	SP to NP	Cal Imb (SP)	200	200	$ 66.59	Cal Imb (NP)	$ 177.15	$ -	$ -	0.00	Load shift			22,112.00
18	PDT	1	SP to NP	Cal Imb (SP)	200	200	$ 77.92	Cal Imb (NP)	$ 243.83	$ -	$ -	0.00	Load shift			33,182.00
20	PDT	1	SP to NP	Cal Imb (SP)	200	200	$ -	Cal Imb (NP)	$ -	$ -	$ -	0.00	Load shift			-
21	PDT	1	SP to NP	Cal Imb (SP)	200	200	$ 218.63	Cal Imb (NP)	$ 250.00	$ -	$ -	0.00	Load shift			6,274.00
22	PDT	1	SP to NP	Cal Imb (SP)	200	200	$ 44.27	Cal Imb (NP)	$ 245.03	$ -	$ -	0.00	Load shift			40,152.00
24	PDT	1	SP to NP	Cal Imb (SP)	100	100	$ 49.57	Cal Imb (NP)	$ 214.07	$ -	$ -	28.99	Load shift			13,551.00

(Ex. SNO-732)

13	14	15	16	17	18	19	20	21	22	23	24	Total
150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	0.00	0.00	2400.00
500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	0.00	0.00	8000.00
105.80	109.36	110.09	109.67	103.13	93.87	84.16	80.01	74.07	59.33	185.00	169.15	2637.03
79.30	80.13	80.33	80.48	78.91	76.80	73.29	72.81	71.04	66.79	61.64	55.77	1605.76
185.10	189.51	190.42	190.15	182.04	170.67	157.45	152.82	145.11	126.12	249.64	225.92	4242.79
-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-50.00	-50.00	-3280.00
-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-180.00	-50.00	-50.00	-3280.00
-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
-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
-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
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
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
-34.04	-63.90	-31.60	-39.39	-31.22	-11.50	-7.44	-1.66	35.71	54.14	276.80	1.76	2615.36

all load shifts SP→NP

-171.06 29.57 21.18 29.24 -170.82 -179.17 28.99 -171.16 -200.82 -200.26 -476.41 -277.65 -5093.10

200MW 200 MW's 200 MW's 100 MW's

(Ex. SNO-736)

The basic objective is similar – overschedule in NP and underschedule in SP. In this case, Enron was exposed to congestion charges in HE 6, 8, 9, and 24, using up some, but not all, of its profits from HE 18 and 22.

The ECT "loads" in the NP and SP sections of the Reconciliation shows the transaction as positive and negative "loads."

	Sys_	Customer	Location	Trans.Type	1	2	3	4	5	6	7	8	9	10	11	12
	C	ECT	NP15	Load	46.00	46.00	46.00	46.00	46.00	46.00	19.00	19.00	19.00	19.00	19.00	0.00
Variance		ECT	NP15		-20.90	-21.00	-21.00	-21.00	-21.00	-71.00	-19.00	-83.94	-43.34	-19.00	-69.01	0.00
	C	ECT	SP15	Load	0.00	0.00	0.00	0.00	0.00	-50.06	0.00	-50.00	-4.00	0.00	0.00	0.00
Variance		ECT	SP15		-0.03	-0.03	-0.03	-0.03	-0.03	50.03	-0.03	64.97	24.37	0.00	49.99	0.00
					13	14	15	16	17	18	19	20	21	22	23	24
	C	ECT	NP15	Load	0.00	0.00	0.00	0.00	200.00	200.00	0.00	200.00	200.00	200.00	37.40	100.00
Variance		ECT	NP15		-200.01	-24.82	-0.47	0.00	-200.00	-200.47	0.00	-200.00	-200.00	-200.00	0.00	-100.00
	C	ECT	SP15	Load	-200.00	0.00	0.00	0.00	-200.00	-200.00	0.00	-200.00	-200.00	-200.00	0.00	-100.00
Variance		ECT	SP15		200.00	24.82	0.00	0.00	200.00	200.00	1.00	200.00	200.00	200.00	-0.03	99.97

As above, yellow marks changes from the preliminary Reconciliation.

Q. Have you been able to document the full extent of Enron's use of Real Time Load Shift?

A. No. As discussed above concerning FTR Load Shift, Enron has not produced a substantial amount of the data needed to complete this analysis. Some of the primary sources for information regarding Real Time Load Shifts are the daily Enpower to CAPS Reconciliation Reports. To date, Enron has not produced any of these reports before June 1, 2000. (Ex. SNO-807)

Selling Non-firm as Firm

Q. How frequently did Enron sell non-firm energy as firm energy?

A. The practice was endemic to Enron's power marketing efforts. We have discovered a large number of instances by looking at the transmission availability notation in Enpower. For example, transactions with Montana Power often occurred across non-firm transmission, even though later legs of the transaction were marketed as firm.

Q. Was selling Non-firm as Firm a facet of Death Stars?

A. Yes. John Forney made this clear in his initial Perpetual Loop diagram. (Ex. SNO-742) The diagram reads "No MW's flow, just call in Schedules." Checking Death Star schedules in Enpower against CAPS data shows that he did, indeed, create circular schedules out of a mixture of firm and non-firm segments.

Q. Can you give an example?

A. Very easily. The code for firm in a California ISO transmission schedule is "FIRM". The code for non-firm is "NFRM". These codes were supplied as part of the

CAPS output provided by Enron in December, 2004. A straightforward search in CAPS produces:

Date	Start	End	MW	Export ISO Interchange ID	Out of Californ	Import ISO Interchange ID	Into California
4/6/2000	10	12	25	CISO_EPMI_TROUT	NFRM	EPMI_CISO_QUAKE	FIRM
	16	16	40	CISO_EPMI_TROUT	NFRM	EPMI_CISO_QUAKE	FIRM
	17	17	25	CISO_EPMI_TROUT	NFRM	EPMI_CISO_QUAKE	FIRM
	19	19	40	CISO_EPMI_TROUT	NFRM	EPMI_CISO_QUAKE	FIRM
4/15/2000	12	24	24	CISO_EPMI_FORNEY	NFRM	EPMI_CISO_DANNY	FIRM
4/16/2000	3	3	24	CISO_EPMI_DANNY	NFRM	EPMI_CISO_FORNEY	FIRM
	13	16	24	CISO_EPMI_DANNY	NFRM	EPMI_CISO_FORNEY	FIRM
4/23/2000	11	22	29	EPMI_CISO_ANNE	NFRM		FIRM
5/1/2000	12	22	25	CISO_EPMI_DEAN	NFRM	EPMI_CISO_JAMES	FIRM
5/2/2000	12	19	15	CISO_EPMI_BURNSIDE	NFRM	EPMI_CISO_SPADES	FIRM
	20	20	3	CISO_EPMI_BURNSIDE	NFRM	EPMI_CISO_SPADES	FIRM
	21	22	15	CISO_EPMI_BURNSIDE	NFRM	EPMI_CISO_SPADES	FIRM
5/3/2000	10	11	13	CISO_EPMI_SUEDE	NFRM	EPMI_CISO_VELVET	FIRM
	12	15	20	CISO_EPMI_SUEDE	NFRM	EPMI_CISO_VELVET	FIRM
5/4/2000	16	19	10	CISO_EPMI_CHEVY	NFRM	EPMI_CISO_CLEAN	FIRM
	21	22	10	CISO_EPMI_CHEVY	NFRM	EPMI_CISO_CLEAN	FIRM
5/5/2000	12	12	45	CISO_EPMI_7078	NFRM	CISO_EPMI_7078	NFRM
	13	17	45	CISO_EPMI_7079	NFRM	EPMI_CISO_STAR	FIRM
5/9/2000	11	19	15	CISO_EPMI_KING	NFRM	EPMI_CISO_QUEEN	FIRM
5/10/2000	13	18	15	CISO_EPMI_TROUT	NFRM	EPMI_CISO_BASS	FIRM
5/11/2000	11	19	15			CISO_STAR	FIRM
5/12/2000	12	12	45	EPMI_CISO_JOEL	NFRM	EPMI_CISO_JACI	FIRM
5/15/2000	15	22	10	EPMI_CISO_VW	NFRM	EPMI_CISO_JETTA	FIRM
5/31/2000	23	23	55				
	24	24	66				
6/6/2000	14	15	40	EPMI_CISO_MERCURY	NFRM	EPMI_CISO_JUPITER	FIRM

(Ex. SNO-755)

Enron was creating loops where non-firm (see column titled Out of California above) was fictitiously turned into firm (see column titled Into California above).

Q. Can you confirm that Enron was buying non-firm energy from outside of California and selling this same energy as firm?

A. Yes. If you refer to the chart above, this is demonstrated very clearly. Each "Interchange ID" can be thought of as a party. On April 15, 2000, John Forney, using the interchange ID of "CISO_EPMI_FORNEY" exported 24 MW of non-firm electricity for hours 12 through 24 out of California. Simultaneously, "CISO_EPMI_DANNY" imports the same quantity, only the energy product was changed from non-firm to firm.

Q. Did Enron make money from this maneuver?

A. Yes. This reduced the costs of the Death Star by not paying for ancillary services. In other cases, it also allowed Enron to obtain a higher price than Enron likely would have received if Enron had revealed it was selling non-firm versus firm product. Firm energy typically is more expensive because it is more reliable. By falsely portraying energy as firm, Enron raised electricity prices.

Q. Was this a costly approach for other parties in the WECC?

A. Yes. The problem was that the California ISO did not know that the Death Star was an imaginary schedule. The ISO thought that these firm imports actually contained ancillary services. In an emergency, the ISO could have called upon the imaginary capacity.

Q. What would have happened then?

A. In a dire enough situation, the system could have collapsed. While Enron had filed the false schedule with the expectation that no energy would flow, they were creating an impression in the computer systems of the ISO that the imports carried capacity with them while the exports did not.

Q. Is there a way Enron could have been correcting this scheduling error elsewhere?

A. You mean by actually firming up the non-firm energy? In an honest transaction an energy company could buy ancillary services to ensure that power was delivered. However, Enron did not firm up their transactions.

Q. How can you be sure that Enron was not firming up their transactions?

A. First, this would have been a bit irrational. The schedule was already fraudulent, so firming it would have been difficult to achieve in an operational sense. Secondly, we

can check the Inc Sheet for the Death Star question to see if Enron had purchased the service:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
HR END	TIME	TOT.	DEL.	SUPPLY	MW PER	TOT.	BUY	MARKET	SELL	CONG	EX-	Trans.	Enpower	LINE	P/L		
	ZONE	HRS.	PT.		HOUR	MW	PRICE		PRICE	RELIEF	POST	Charge	Deal Numbers	LOSSES			
					0	0	$ -		$ -	$ -	$-			$ -	-		
he 12	pdt	1	malin export		24	24				$ 29.00		2.74		$ -	630.24		
he 12	pdt	1	wwp buy/resale		24	24	$17.00		$16.00				#3235669,323570	$ -	(24.00)		
he 12	pdt	1	PGE T jd/malin		24	24	$ -		$ -	$ -	$-	1.50		$ -	(36.00)		
he 12	pdt	1	DWP T Malin/ Mead		24	24	$ -		$ -	$ -	$-	0.61		$ -	(14.64)		
he 12	pdt	1	mead import		24	24				$ (24.41)				$ -	(585.84)	Perpetual Loop	

(Ex. SNO-732)

There is no indication that Enron was purchasing such a service in the Inc Sheet for April 15, 2000, for example (above). The Enpower entry is also silent on the issue (below):

Start	Finish	Deal	Leg	Strip	DEAL_INSTR_TYPE_CD	DEAL_BUY_SELL_CD	DEAL_CMT	SCHED_CMT	FULL_NM	CP_NM	COUNTER_PARTY_CD	DP_CP_ContactName	SCHED_CMDTY_VOL	DEAL_FIRMNESS_CD	Delivery Points.DELIVERY_PT_LEGAL_NAME	Delivery Points_1.DELIVERY_PT_LEGAL_NAME
4/15/00 11:00 AM	4/15/00 12:00 PM	292672	1	2078075	ANNUITY	B	Charges for scheduling transmission, includes losses, tags and reactive charges. For questions, see Kim Durham x5334 or Val Sabo x7756. May+ strips includes the charges for NOB and COB transmission use.	Used by Real Time JForney	Matt Motley	Los Angeles Dept of Water & Power	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV
4/15/00 11:00 AM	4/15/00 12:00 PM	292672	1	2078075	ANNUITY	B	LA did not charge EPMI for the extra hour in OCT caused by the time change, the original deal entry was not adjusted, so the mwh do not match LA, but the adjustment is contained in the annuity price for OCT	Used by Real Time JForney	Matt Motley	Los Angeles Dept of Water & Power	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV
4/15/00 11:00 AM	4/15/00 12:00 PM	292672	1	2078075	ANNUITY	S	annuity for sept, la invoice =$ 175,034.74, CARP =$ 182,096.30	JForney	Matt Motley	of Water & Power	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV
4/15/00 11:00 AM	4/15/00 12:00 PM	292672	1	2078075	ANNUITY	S	Charges for February related to transmission losses and curtailment refunds (netted out). See Kim Durham for details on the charges.	Used by Real Time JForney	Matt Motley	Los Angeles Dept of Water & Power	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV
4/15/00 11:00 AM	4/15/00 12:00 PM	292672	1	2078075	FORWARD	B		JForney	Matt Motley	of Water & Power	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV
4/15/00 11:00 AM	4/15/00 12:00 PM	292672	1	2078075	FORWARD	B	834-3722 for any questions on this deal. Thanks. the deal strips had to be changed b/c of a "fix" in enpower to correct	Used by Real Time JForney	Matt Motley	Los Angeles Dept of Water & Power	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV
4/15/00 11:00 AM	4/15/00 12:00 PM	292672	1	2078075	FORWARD	B	834-3722 for any questions on this deal. Thanks. the deal strips had to be changed b/c of a "fix" in enpower to correct	Used by Real Time JForney	Matt Motley	Los Angeles Dept of Water & Power	EPMI-LT-SW	Sueyen Mao	24	FIRM	COB N/S	Mead-230KV
4/15/00 11:00 AM	4/15/00 10:00 PM	341128	1	2013113	INDEX-FORWARD	S			John Forney	Electric Company	EPMI-ST-WHOURLY	Bill Casey	24	FIRM	Portland General System	Portland General System
4/15/00 11:00 AM	4/15/00 10:00 PM	341156	1	2013149	INDEX-FORWARD	B			John Forney	Electric Company	EPMI-ST-WHOURLY	Bill Casey	24	FIRM	Portland General System	Portland General System
4/15/00 11:00 AM	4/16/00 12:00 AM	323569	1	1973149	FORWARD	S			Jeremy Morris	Washington Water	EPMI-ST-WHOURLY		24	FIRM	Malin	Malin
4/15/00 11:00 AM	4/16/00 12:00 AM	323570	1	1973150	FORWARD	B			Jeremy Morris	Washington Water	EPMI-ST-WHOURLY		24	FIRM	Malin	Malin

(Ex. SNO-721)

Q. Were there other cases where Enron sold Non-Firm power as Firm?

A. Yes. The practice was so prevalent that an inspection of Enron's Inc Sheets comes across it frequently. For example, the comments in the June 1, 2000 Inc Sheet note that the PGE transmission is non-firm:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
HR END	TIME	TOT.	DEL.	SUPPLY	MW PER	TOT.	CONG/ZONAL	MARKET	PRICE	MW PER	Total	Trans	Enpower	TiePoint	LINE	P/L
	ZONE	HRS.	PT.		HOUR	MW	PRICE			HOUR	MW's	Charge	Deal Numbers	MeterMult	LOSSES	
11	pdt	1	JD/ Malin / SP	sno	35	35	$ 66.00	cal imb	$ 65.81	35	35	1.50	# 146517 , 347771 , 775 , 776	0.9633	$ 2.42	$ (143.68)
11	pdt	1	JD/ Malin / SP	SCL	15	15	$ 66.00	cal imb	$ 65.81	15	15	1.50	# 146517 , 347772 , 775 , 776	0.9633	$ 2.42	$ (61.58)
12	PDT	1	JD/ Malin / SP	sno	23	23	$ 66.00	cal imb	$100.17	23	23	1.50	# 146517	0.9593	$ 4.08	$ 657.64
12	PDT	1	JD/ Malin / SP	sno	27	27	$ 66.00	cal imb	$100.17	27	27	1.94	# 34777	0.9593	$ 4.08	$ 760.13
13	PDT	1	JD/ Malin / SP	sno	23	23	$ 66.00	cal imb	$ 21.49	23	23	1.50	# 146517	0.9573	$ 0.92	$ (1,079.34)
13	PDT	1	JD/ Malin / SP	sno	27	27	$ 66.00	cal imb	$ 21.49	27	27	1.94	# 34777	0.9573	$ 0.92	$ (1,278.93)
14	PDT	1	JD/ Malin / SP	sno	23	23	$ 66.00	cal imb	$ 98.32	23	23	1.50	# 146517	0.9530	$ 4.62	$ 602.58
14	PDT	1	JD/ Malin / SP	sno	27	27	$ 66.00	cal imb	$ 98.32	27	27	1.94	# 347773 , 771 , 775 , 776	0.9530	$ 4.62	$ 695.49
15	PDT	1	JD/ Malin / SP	sno	23	23	$ 66.00	cal imb	$101.37	23	23	1.50	# 146517 , 347771 , 775 , 776	0.9530	$ 4.76	$ 669.43
15	PDT	1	JD/ Malin / SP	sno	27	27	$ 66.00	cal imb	$101.37	27	27	1.94	# 347773 , 771 , 775 , 776	0.9530	$ 4.76	$ 773.97
16	PDT	1	JD/ Malin / SP	sno	23	23	$ 66.00	cal imb	$104.87	23	23	1.50	# 146517 , 347771 , 775 , 776	0.9534	$ 4.89	$ 747.11
16	PDT	1	JD/ Malin / SP	sno	27	27	$ 66.00	cal imb	$104.87	27	27	1.94	# 347773 , 771 , 775 , 776	0.9534	$ 4.89	$ 865.16
17	PDT	1	JD/ Malin / SP	sno	10	10	$ 66.00	cal imb	$108.41	10	10	6.50	# 146517 , 347771 , 775 , 776	0.9582	$ 4.53	$ 313.78
18	PDT	1	JD/ Malin / SP	sno	50	50	$ 66.00	cal imb	$100.61	50	50	1.50	# 146517 , 347771 , 775 , 776	0.9593	$ 4.09	$ 1,450.76
19	PDT	1	JD/ Malin / SP	sno	50	50	$ 66.00	cal imb	$ 72.20	50	50	1.50	# 146517 , 347771 , 775 , 776	0.9619	$ 2.75	$ 97.46
20	PDT	1	JD/ Malin / NP	sno	50	50	$ 66.00	cal imb	$103.08	50	50	1.50	# 146517 , 347771 , 775 , 776	0.9683	$ 3.27	$ 1,615.62
21	PDT	1	JD/ Malin / NP	sno	50	50	$ 66.00	cal imb	$ 79.40	50	50	1.50	# 146517 , 347771 , 775 , 776	0.9612	$ 3.08	$ 440.96
22	PDT	1	Malin / NP	WWP	50	50	$ 72.00	cal imb	$125.70	50	50		#348025, 347775, 347776	0.9712	$ 3.62	$ 2,503.99
23	PDT	1	Malin / NP	WWP	50	50	$ 66.00	cal imb	$ 75.32	50	50		#348025, 347775, 347776	0.9755	$ 1.85	$ 373.73
24	PDT	1	Malin / NP	WWP	50	50	$ 62.00	cal imb	$392.39	50	50		#348025, 347775, 347776	0.9901	$ 3.88	$ 16,325.27

Irawson:
Bought portland non firm tranny.

(Ex. SNO-732)

The corresponding entries for deals 347771, 347773, 347775, and 347776 indicate that the transactions were firm:

Deal	Strip	CP1.CP_NM	CP2.CP_NM	Start	Finish	AL_INSTR_TYPE_L	BUY_SELL	AL_FIRM_YN	DEAL_FIRMNE
347771	2071815	EPMI Short Term West Hourly	Public Utility District No. 1 of Snohomish County	6/1/00 10:00 AM	6/1/00 11:00 AM	FORWARD	B	Y	FIRM
347771	2071853	EPMI Short Term West Hourly	Public Utility District No. 1 of Snohomish County	6/1/00 11:00 AM	6/1/00 4:00 PM	FORWARD	B	Y	FIRM
347771	2072897	EPMI Short Term West Hourly	Public Utility District No. 1 of Snohomish County	6/1/00 4:00 PM	6/1/00 5:00 PM	FORWARD	B	Y	FIRM
347771	2073032	EPMI Short Term West Hourly	Public Utility District No. 1 of Snohomish County	6/1/00 5:00 PM	6/1/00 9:00 PM	FORWARD	B	Y	FIRM
347773	2071820	EPMI Short Term West Hourly	Portland General Electric Company	6/1/00 11:00 AM	6/1/00 4:00 PM	FORWARD	B	Y	FIRM
347775	2071823	EPMI Short Term West Hourly	EPMI California Pool	6/1/00 10:00 AM	6/1/00 4:00 PM	BUY-RESALE	B	Y	FIRM
347775	2072899	EPMI Short Term West Hourly	EPMI California Pool	6/1/00 4:00 PM	6/1/00 5:00 PM	BUY-RESALE	B	Y	FIRM
347775	2073029	EPMI Short Term West Hourly	EPMI California Pool	6/1/00 5:00 PM	6/1/00 7:00 PM	BUY-RESALE	B	Y	FIRM
347775	2073077	EPMI Short Term West Hourly	EPMI California Pool	6/1/00 7:00 PM	6/1/00 9:00 PM	BUY-RESALE	B	Y	FIRM
347775	2073081	EPMI Short Term West Hourly	EPMI California Pool	6/1/00 9:00 PM	6/2/00 12:00 AM	BUY-RESALE	B	Y	FIRM
347776	2071824	EPMI Short Term West Hourly	California Imbalance	6/1/00 10:00 AM	6/1/00 11:00 AM	FORWARD	S	Y	FIRM
347776	2071871	EPMI Short Term West Hourly	California Imbalance	6/1/00 11:00 AM	6/1/00 4:00 PM	FORWARD	S	Y	FIRM
347776	2072901	EPMI Short Term West Hourly	California Imbalance	6/1/00 4:00 PM	6/1/00 5:00 PM	FORWARD	S	Y	FIRM
347776	2073031	EPMI Short Term West Hourly	California Imbalance	6/1/00 5:00 PM	6/1/00 7:00 PM	FORWARD	S	Y	FIRM
347776	2073076	EPMI Short Term West Hourly	California Imbalance	6/1/00 7:00 PM	6/2/00 12:00 AM	FORWARD	S	Y	FIRM

(Ex. SNO-721)

Typically a designation of non-firm transmission meant that the energy would reach Malin on an "as available basis". If the transmission was not available, the energy simply wouldn't arrive. In contrast, firm energy would be guaranteed to be delivered because it is backed up with ancillary service.

Q. Have you come across a generic situation where Enron simply ignored non-firm transmission and sold the resulting power as firm?

A. Yes. Our review of transcripts of phone conversations involving Enron traders found a transaction on January 26, 2001 that was very interesting. During the phone call, Holden Salisbury of Enron avoids the question of the upstream source in a sale to AEP:

DAVID: Enron, David.

JOSIE: David, it's Josie at AEP again.

DAVID: Yes. Mm hm?

JOSIE: Yeah, I really do need to know what the gen source is on that, because my other parties aren't – how are they going to know, just looking – how's BPA going to know that this is our power that we purchased?

DAVID : Mm.

JOSIE: If it just is BPA transmission, it's not specific enough.

DAVID: Hold on a sec.

[pause]

HOLDEN: Hey, this is Holden.

JOSIE: Hi, Holden, this is Josie at AEP.

HOLDEN: Yeah, what's up?

JOSIE: Yeah, we just did a deal with you guys, about 20 megawatts off of you, and I need to know what the gen source is so that we can tell the other parties involved in the downstream –

HOLDEN: Are you selling it to California?

JOSIE: We're not selling it directly to the utilities, no.

HOLDEN: But are you – is it – is the power going to California?

JOSIE: It's ah – it's a deal at Malin.

HOLDEN: Right, so you going to tell me your downstream?

JOSIE: Yeah, eventually the sink, I believe is going to be California ISO. The ISO is going to see it.

HOLDEN: Right, so then, if you know it's [cut]

HOLDEN: -- BPA schedule, 20 megawatts real time. It – they'll match. If the BPA doesn't check out generators with the ISO, they check out nets at the border.

JOSIE: So, you're saying, by seeing the 20 megawatts they'll just be able to identify this deal.

HOLDEN: Yeah. Then if they're out, they'll go look deeper, but I mean we do deals like this all the time –

JOSIE: Yeah.

HOLDEN: And we don't t – and because we don't know the generator on this deal, we're going to have to go and hassle somebody else to get the generator, because it's a string.

JOSIE: OK. I just –

HOLDEN: So, I mean, the best – the way that this usually works is we – I mean, when we – when it comes around to tagging, then everybody has to divulge everything. But before tagging, nobody wants to give up upstreams or downstreams, because then [inaudible] just jump over the next hour.

JOSIE: Um, I – I see your point, but [inaudible] –

HOLDEN: But, I mean, we've – we've been doing deals like this for a long time and we just check nets with B – BPA just checks the nets.

JOSIE: OK. Yeah, [inaudible] –

(Ex. SNO-357)

Q. Why did you find this conversation so significant?

A. Clearly, Holden Salisbury is not going to tell Josie the source of the power. implying there is something wrong with the transaction that he does not want known by the buyer. Enpower has a record of the transaction:

Deal	Strip	CP1.CP_NM	CP2.CP_NM		Start	Finish	DEAL_INSTR_TYPE_CD	DEAL_BUY_SELL_CD	DEAL_FIRM_YN	DEAL_FIRMNESS_CD	SCHED_CMDTY_VOL	Delivery Points.DELIVERY_PT_LEGAL_NAME	Delivery Points_1.DELIVERY_PT_LEGAL_NAME	Contract Price	FULL_NM	DEAL_CTR_DOC_NO
505806	2599557	EPMI Short Term West Hourly	Montana Power Company, The		1/26/01 5:00	1/26/01 6:00	FORWARD	B	Y	FIRM	20	Hot Springs	Hot Springs	$ 275.00	David Porter	96030593
505806	2599957	EPMI Short Term West Hourly	Montana Power Company, The		1/26/01 5:00	1/26/01 6:00	FORWARD	B	Y	FIRM	20	Hot Springs	Hot Springs	$ 275.00	David Porter	96030593
505810	2599561	EPMI Short Term West Hourly	American Electric Power Service Corporation		1/26/01 5:00	1/26/01 6:00	FORWARD	S	Y	FIRM	20	Malin	Malin	$ 375.00	David Porter	96009967
505810	2599561	EPMI Short Term West Hourly	American Electric Power Service Corporation		1/26/01 5:00	1/26/01 6:00	FORWARD	S	Y	FIRM	20	Malin	Malin	$ 375.00	David Porter	96009967
505813	2599564	EPMI - West Performance	Bonneville Power Administration		1/26/01 5:00	1/26/01 6:00	FORWARD	B	N	EC	20	Hot Springs	Malin	$ -	David Porter	96004154

(Ex. SNO-721)

The problem that Mr. Salisbury was trying to keep from his customer was that the transmission from Montana was non-firm. This can be seen from the last line of the Enpower entry where the Bonneville Power Administration transmission has "N" in the column entitled "DEAL_FIRM_YN".

Q. Why would that be a problem?

A. Unlike the difficult to audit congestion in California during the California Crisis, the lines between Montana and the I-5 Corridor are often congested in the concrete engineering sense that additional flows will exceed the rated capacity of the line. There

just wasn't any other source for the energy in this case because California had declared a Stage III Emergency for the entire day. (Ex. SNO-756)

Q. Was selling Non-Firm as Firm like this a common practice at Enron?

A. Yes. In my Prepared Direct Testimony (Ex. SNO-58), I commented on the number of transactions rated firm by Enron that seemed to have an element of non-firm transmission. In this case, Enron frequently purchased non-firm transmission from Bonneville along this path. I checked whether other transactions along the Hot Springs/Malin path were also sold as firm, even though the path was non-firm. I was surprised to find that a number of such deals were present on January 26, 2001.

Q. What did you do next?

A. Since we knew the Enron identification for the BPA transmission contract, I submitted a query to identify all deals with non-firm transmission under this contract. I then asked Enpower how many of these deals matched downstream transactions by start, end, location, and quantity.

Q. How many did?

A. Over 3,000 deals resulted from this query. Of these, a large number apparently reflected very small transactions involving Portland General Electric. These I removed since they appeared to be entries reflecting losses. After these adjustments, we had 1,245 deals with non-firm transmission and firm sales.

Q. What was the revenue associated with these deals?

A. Using the cost/revenue data supplied to us in Enron's Responses to the Sixth Set of Data Requests of Snohomish on January 5, 2004, the total comes out to

$100,388,913.00. Although Enron has not documented this data, it seems logical to believe that this reflects revenues from these sales.

Q. What proportion of that amount was fraudulent?

A. If Enron had advertised the faulty nature of their product, no one would have bought the product. Hence, most or all of its profits from these transactions are fraudulent. That is particularly the case here because the product's flaw contains the seeds of a catastrophic result: a widespread system failure caused by the ISO calling upon power it believes to be firm but that turns out to be unavailable.

Cutting Non Firm/Non-Firm Export

Q. What is "Non-Firm Export"?

A. As described in the June 25, 2003 Order to Show Cause Concerning Gaming and/or Anomalous Market Behavior, non-firm export was defined as follows:

> This practice involved the scheduling of non-firm power by a market participant that did not intend to deliver or cannot deliver the power. Upon receipt of the congestion payment for cutting the schedule, the market participant then canceled the non-firm power after the hour-ahead market closed but kept the congestion payment. No power was transmitted and no congestion was relieved, but the market participant was paid for congestion relief. In some instances, the market participant may have submitted a schedule for non-firm power that it, in fact, had not acquired.[16]

Q. Do you have evidence that Enron engaged in non-firm export?

A. Yes. FERC Staff found that Enron engaged in this gaming strategy, as reported in their final report:

[16] *American Electric Power Service Corp.,* 103 FERC ¶ 61, 345 (2003).

> Staff concludes that the transmission congestion strategies not only involve gaming, but also may fall into the category of anomalous market behavior because they are departures from normal behavior in competitive markets and lead to unusual or unexplained market outcomes. Staff emphasizes that Enron, in conjunction with other parties, took intentional advantage of the market rules in creating and implementing these trading strategies. The Cal ISO Report, as discussed earlier, identifies Powerex, Coral, and Sempra as the largest recipients of revenues for such strategies.[17]

As you can see above, FERC Staff relies upon the June 17, 2003 CAISO Report. (SNO-17) Dr. Eric Hildebrandt, Director of Market Analysis for CAISO, determined that Enron cut non-firm schedules in 23 instances, thus collecting $79,497 in unjust profits from the CAISO. I have inserted Dr. Hildebrandt's summary table of revenues gained from cut schedules below.

Table 11: Counter-flow Revenues from Cut Schedules Compared by SC

ID	Company	pre_Refund	Refund	Total
MSCG	Morgan Stanley Capital Group		$633,415	$633,415
SETC	Sempra Energy Trading Corporation	$201,671	$198,319	$399,990
CRLP	Coral Power, LLC	$17,356	$95,470	$112,826
EPMI	Enron Energy Services, Inc.	$72,070	$7,428	$79,497
PWRX	British Columbia Power Exchange/Powerex	$28,777	$17,495	$46,273
AEPS	American Electric Power Service Corp	$45,240		$45,240
DETM	Duke Energy Trading and Marketing, L.L.C.		$41,701	$41,701
SCEM	Southern Company Energy Marketing, L.P.		$20,273	$20,273
PSE1	Puget Sound Energy	$17,044	$48	$17,092
ECH1	Dynegy Power Marketing Inc.	$14,980		$14,980
PORT	Portland General Electric	$1,440	$11,257	$12,698
CALP	Calpine Corporation		$4,376	$4,376
EPPS	El Paso Power Services Company		$4,084	$4,084
MID1	Modesto Irrigation District	$2,150		$2,150
IPC	Idaho Power Company		$2,060	$2,060
TEMU	TransAlta Energy Marketing (US)		$1,801	$1,801
WESC	Williams Energy Services Corporation	$609		$609
Total		$401,337	$1,037,728	$1,439,065

(Ex. SNO-761)

Dr. Hildebrandt explains his methodology for determining the participation in non-firm export as:

[17] FERC Final Staff Report, page VI-30.

> Total Congestion revenues paid for counterflow Schedules that were cut prior to real time were assessed based on real time Schedule changes made after the Hour-Ahead Market as recorded in the BITS database (used to track any import/export changes made after the close of the Hour-Ahead Market). The analysis included all counterflow Schedules that earned Congestion revenues in the Day-Ahead or Hour-Ahead Markets where the final real time Schedule was less than the final Hour-Ahead Schedule.[18]

Enron's participation in these schedules means that they: a) scheduled non-firm power that they did not intend to deliver or could not deliver, b) received a congestion payment for cutting said schedules, and c) cancelled the non-firm schedule after the hour-ahead market closed but kept the congestion payment. For these 23 instances, no power was actually transmitted and no congestion was actually relieved.

Q. Do you agree with Dr. Hildebrandt findings?

A. No.

Q. Why not?

A. After an extended discovery effort we received requested discovery on the Gibbs and Bruns/Fertitta litigation files late in January. These documents directly contradict the existing estimates.

Q. Who is Gibbs and Bruns? And who is Mr. Fertitta?

A. Gibbs and Bruns is a law firm that Enron retained as part of their litigation team. Julian Fertitta is a lawyer that Gibbs and Bruns retained to help with the document review. Previous discovery had indicated that they had done an extensive interview and document review effort.

Q. What relevant materials were supplied in response to this request?

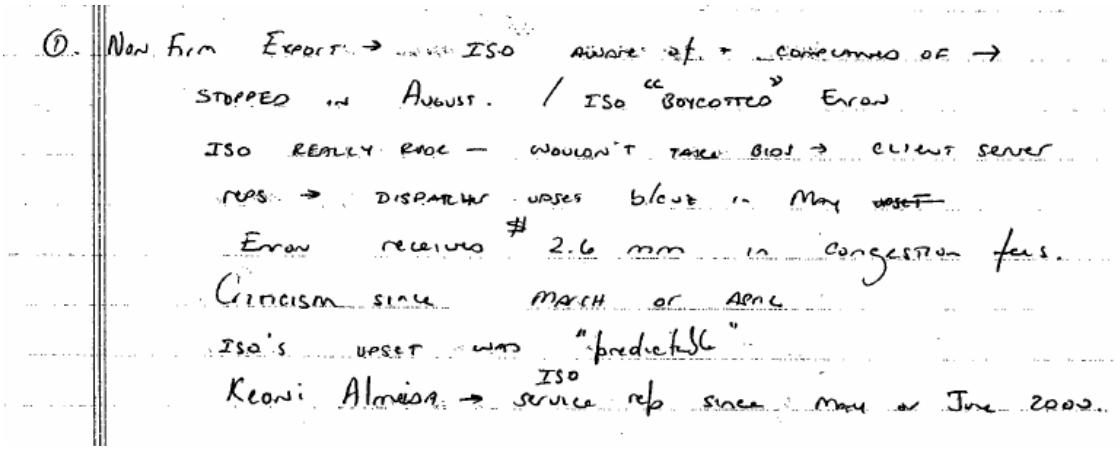
A. The most important were a series of handwritten notes from interviews with Portland traders. We do not know which Gibbs and Bruns lawyer made the notes.

---

[18] Supplemental Analysis of Trading and Scheduling Strategies Described in Enron Memos, Department of Market Analysis California ISO.

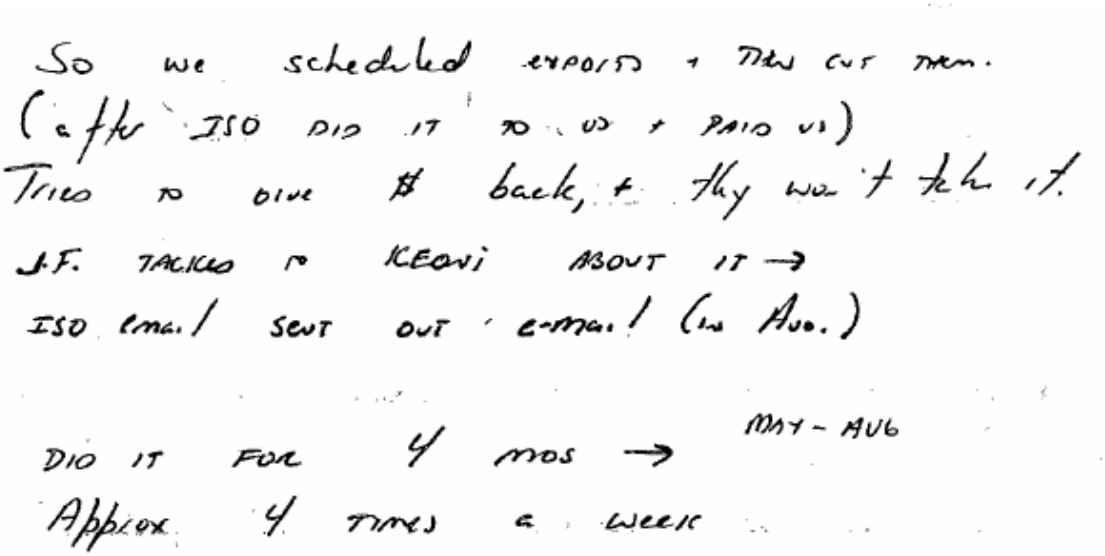
Q. Did the notes discuss Non-firm Export"?

A. Yes. Moreover, the notes included a clear statement of Enron's direct profits from this scheme.



(Ex. SNO-754, page 1)

And



(Ex. SNO-754, page 2)

Wheel Out

Q. What is Wheel Out?

A. Wheel Out as described by the FERC Advisory Staff in the Final Staff Report is when:

> [A] company, knowing that an intertie is completely constrained (that is, its available capacity is set as zero) or out of service, schedules a transmission flow over the facility, knowing that the schedule will be cut and that it will receive a congestion payment without actually sending energy over the facility.

Q. Is Wheel Out in violation of the CAISO and PX MMIP?

A. Yes. FERC Staff has also determined that engaging in Wheel Out is not only gaming, it is also an example of anomalous market behavior. In their Final Staff Report they state:

> Staff concludes that the transmission congestion strategies not only involve gaming, but also may fall into the category of anomalous market behavior because they are departures from normal behavior in competitive markets and lead to unusual or unexplained market outcomes. [Reference to CAISO MMIP 2.1.1] Staff emphasizes that Enron, in conjunction with other parties, took intentional advantage of the market rules in creating and implementing these trading strategies.

FERC Staff also added that Wheel Out is:

> a simple strategy that took advantage of a market design flaw. Knowing that an intertie is completely constrained or out of service, a company schedules a transmission flow over the facility. This strategy generates revenue because the schedule will be cut and it will receive a congestion payment without actually having to send energy over the facility.

Q. Do you have evidence that Enron engaged in Wheel Out?

A. Yes. Silver Peak is one of the first large scale examples of a "Wheel Out" by Enron for which we have the complete details. I submitted evidence pertaining to Enron's participation in Wheel Out via Enron's May 24, 1999 Silver Peak transaction (SNO-58, page 71-57) and believe the profits derived from Enron's Wheel Out scheme were significantly higher than Dr. Hildebrandt's profit figure of 225,075.03 for the May 28, 2000 Wheel Out cited in the CAISO's supplemental analysis of trading strategies.

Get Shorty

Q. What is Get Shorty?

A. In the Final Staff Report, FERC Staff described Get Shorty as follows:

> In this trading strategy, Enron would commit to provide the ancillary services in the Cal PX's day-ahead market and then cover its position by purchasing those services in the Cal ISO's hour-ahead market.[19]

In CAISO's June 17, 2003 memo, Dr. Hildebrandt further breaks Get Shorty into two distinct strategies:

> The Enron memo describes two distinct gaming "strategies" in the A/S markets:
>
> 1. Taking advantage of systematic differences in the Day-Ahead and Hour-Ahead Market prices for A/S by selling A/S in the Day-Ahead Market and buying them back, when possible, at a lower price in the Hour-Ahead Market.
>
> 2. Selling A/S in the Day-Ahead Market from imports for which resources are not actually available (with the intent to "buy back" these A/S in the Hour Ahead Market at a lower price).[20]

I will henceforth refer to Get Shorty as one scheme comprised of two individual steps in order to achieve unjust profits.

Q. Could you explain this strategy further?

A. Yes. In laymen's terms Enron sold insurance (energy) it could not honor by selling ancillary services it did not have. Once it had sold the ancillary services it would then wait and procure the necessary operating reserves in CAISO's real-time market where ancillary power is generally cheaper. It was gambling that there would be ancillary services available in the CAISO real-time market. As FERC Staff states, the troubling facet of this scheme is that Enron sold services it could not fulfill at the time of the sale. This type of behavior can lead to dire situations, when an especially heavy load

---

19 See March 26, 2003 FERC Final Report on Price Manipulation in Western Markets, p. 238

[20] CAISO Supplemental Analysis of Trading and Scheduling Strategies described in Enron Memos-Revised as of July 15, 2003, page 18.

would mandate calling upon the ancillary schedules to satisfy the load thus causing blackouts. As we have witnessed over the last 5 years, the ramifications of blackouts are grave.

Q. Is the Get Shorty scheme in violation of the CAISO and PX MMIP?

A. Yes. FERC Staff concluded that Get Shorty was in violation of MMIP 2.1.3:

> Staff concludes that the Get Shorty trading strategy falls within the scope of the antigaming provision because it makes the Cal ISO or Cal PX markets vulnerable to price manipulation.[21]

Q. Are there provisions of the WSPP Tariff that address Enron's false representations that it was delivering firm power?

A. Yes. Service Schedule C of the WSPP Agreement governs "Firm Capacity/Energy Sales" and Section C-3.3 of the Schedule C specifies that:

> Firm capacity transactions shall include buying, selling, or exchanging capacity between Parties with or without associated energy. Firm capacity is deemed a capacity sale *from the Seller's resources* and *backed by the Seller's capacity reserves*. (emphasis added)

Most transactions under the WSPP Agreement are Schedule C firm transactions and, by representing that these transactions were "firm", Enron invoked the requirements of Schedule C.

Q. Do Get Shorty and Nonfirm-as-Firm gaming schemes violate Section C-3.3 of the WSPP tariff?

A. Yes. The central feature of these schemes was that actual capacity was not available, either because it was never provided in the Get Shorty scheme, or because transmission constraints could have prevented delivery of capacity in the nonfirm-as-firm

[21] FERC Final Staff Report, page VI-33

schemes. Hence, these schemes violated the unambiguous requirements that firm transactions be backed by the *Seller's* resources and capacity reserves.

Q. Do you have evidence that Enron participated in Get Shorty?

A. Yes. We have found several documents that demonstrate Enron's participation in Get Shorty. I would first like to direct you to my Prepared Direct Testimony (Ex. SNO-58) where I cited several documents proving Enron's participation in Get Shorty (SNO-58, pages 114-117). These emails showed Tim Belden congratulating the west desk staff for the concept and then reproving them for their inadequate documentation of the scheme's details. Both documents were addressed to John Forney and Greg Wolfe. Greg Wolfe, of course, was the Enron manager responsible for negotiations to the long-term power sales contract Enron executed with Snohomish on January 26, 2001 with Snohomish while Enron was simultaneously engaging in market manipulations. In addition to the previously submitted evidence, we have recently discovered that this scheme was named after an Enron employee, Stewart Rossman. (Ex. SNO-758)

Also, former Enron employee, Craig Dean, stated that there was a shared folder named "Get Shorty" on the server used by Enron's West Desk. (Ex. SNO-758) Neither the shared Get Shorty folder, nor any of its contents has been provided to Snohomish despite several requests. (Ex. SNO-759)

Q. Enron Real Time trader, Craig Dean, stated he had seen the Get Shorty folder on the Portland server, but had never used it. How could this be?

A. By design, Get Shorty was a prescheduled scheme where non-existent reserves were sold in the Day Ahead market and then covered in the Hour Ahead market. The

only case in which a real time trader would have been involved is if the schemer had forgotten to "zero out" the Get Shorty.

Q. Have you been able to calculate Enron's earnings from participation in the Get Shorty scheme?

A. No. As I mentioned above, our requests for responsive materials have gone unanswered, preventing me from accurately analyzing Enron's profits pertaining to their participation in Get Shorty. However, I have discovered evidence that states there were earnings gained from Get Shorty. Mary Hain indicated in her deposition that Get Shorty earned $5 million dollars. (Ex. SNO-760)

Q. Have you reviewed Dr. Hildebrandt's analysis of Get Shorty?

A. Yes. ISO estimates are often restricted in their geographic scope, as is the case for Get Shorty. Dr. Hildebrandt states that out of 1,297 instances in which Enron participated in Get Shorty they earned a gross total of $4,266,400, and a net of $4,125,543, as shown in his table below. In my opinion, neither Ms. Hain's estimate nor Dr. Hildebrandt's estimate, capture all of Enron's financial gains in the west, stemming from its repeated acts of market manipulation.

Table 6: Sellback of Ancillary Services
Refund Period (October 2, 2000 – June 21, 2001)

ID	Name	Gains	Losses	Net Gains
EESI	Enron Energy Services Inc.	$4,266,400	-$140,857	$4,125,543
SETC	Sempra Energy Trading Corporation	$3,742,655	-$314,587	$3,428,068
CRLP	Coral Power LLC	$1,479,020	-$30,815	$1,448,205
PSE	Puget Sound Energy	$500,309	-$23,753	$476,556
BCHA	British Columbia Power Exchange Corporation	$271,072	-$213,770	$57,302
AZUA	City of Azusa	$42,800	$0	$42,800
MID	Modesto Irrigation District	$21,714	$0	$21,714
TCEP	Tuscon Electric Power	$16,714	-$110	$16,605
AVEI	Avista Energy Inc	$20,049	-$4,458	$15,591
GLEN	City of Glendale	$12,188	$0	$12,188
IPC	Idaho Power Company	$11,564	$0	$11,564
LDWP	Los Angeles Water and Power	$12,964	-$4,661	$8,304
VERN	City of Vernon	$7,268	$0	$7,268
PSNM	Public Service Company of New Mexico	$869	$0	$869
PASA	City of Pasadena	$29	$0	$28
APX	Automated Power Exchange Inc	$14	$0	$14
BPA	Bonneville Power Administration	$707	-$1,360	-$654

(Ex. SNO-757)

Q. Were Dr. Hildebrandt's estimates consistent with Enron's own estimates?

A. It is difficult to judge since Enron has only supplied a few relevant documents for April through August, 2000. The August summary indicates that total profits for August 2000 were $1,468,064.17. – for just one month.

Enron Short Term California AS Activity

	Total	Day Ahead	Hour Ahead	Total MTD	Total YTD
8/1/2000	$ 341,678.90	$ 611,493.10	$ (269,814.20)	$ 341,679	$ 4,195,853
8/2/2000	$ 355,849.21	$ 800,704.70	$ (444,855.48)	$ 697,528	$ 4,551,702
8/3/2000	$ 98,862.99	$ 430,225.94	$ (331,362.95)	$ 796,391	$ 4,650,565
8/4/2000	$ 133,846.30	$ 345,226.17	$ (211,379.87)	$ 930,237	$ 4,784,411
8/5/2000			$ -	$ 930,237	$ 4,784,411
8/6/2000			$ -	$ 930,237	$ 4,784,411
8/7/2000			$ -	$ 930,237	$ 4,784,411
8/8/2000	$ 61,091.49	$ 101,819.45	$ (40,727.96)	$ 991,329	$ 4,845,503
8/9/2000	$ 43,537.05	$ 82,756.00	$ (39,218.95)	$ 1,034,866	$ 4,889,040
8/10/2000	$ (2,214.39)	$ 19,958.40	$ (22,172.79)	$ 1,032,652	$ 4,886,825
8/11/2000	$ 46,751.26	$ 218,567.90	$ (171,816.64)	$ 1,079,403	$ 4,933,577
8/12/2000			$ -	$ 1,079,403	$ 4,933,577
8/13/2000			$ -	$ 1,079,403	$ 4,933,577
8/14/2000	$ 125,322.99	$ 159,046.95	$ (33,723.96)	$ 1,204,726	$ 5,058,900
8/15/2000	$ 69,642.52	$ 343,642.52	$ (274,000.00)	$ 1,274,368	$ 5,128,542
8/16/2000	$ 90,079.06	$ 390,895.10	$ (300,816.04)	$ 1,364,447	$ 5,218,621
8/17/2000	$ (341.85)	$ 64,158.15	$ (64,500.00)	$ 1,364,106	$ 5,218,279
8/18/2000	$ 20,562.71	$ 76,906.13	$ (56,343.42)	$ 1,384,668	$ 5,238,842
8/19/2000			$ -	$ 1,384,668	$ 5,238,842
8/20/2000			$ -	$ 1,384,668	$ 5,238,842
8/21/2000	$ -	$ -	$ -	$ 1,384,668	$ 5,238,842
8/22/2000	$ (2,940.40)	$ 96,663.60	$ (99,604.00)	$ 1,381,728	$ 5,235,902
8/23/2000	$ (4,355.50)	$ 122,885.95	$ (127,241.45)	$ 1,377,372	$ 5,231,546
8/24/2000	$ 45,599.24	$ 199,224.60	$ (153,625.36)	$ 1,422,972	$ 5,277,145
8/25/2000	$ 45,092.58	$ 265,113.95	$ (220,021.37)	$ 1,468,064	$ 5,322,238
8/26/2000	$ -	$ -	$ -	$ 1,468,064	$ 5,322,238
8/27/2000			$ -	$ 1,468,064	$ 5,322,238
8/28/2000			$ -	$ 1,468,064	$ 5,322,238
8/29/2000			$ -	$ 1,468,064	$ 5,322,238
8/30/2000			$ -	$ 1,468,064	$ 5,322,238
8/31/2000			$ -	$ 1,468,064	$ 5,322,238
TOTAL	$ 1,468,064.17	$ 4,329,288.62	$ (2,861,224.45)		

(Ex. SNO-761)

Q. Is the pattern of revenues and costs relatively predictable in these charts?

A. Yes. The pattern is very predictable. Enron would sell in the Day Ahead market and purchase in the Hour Ahead market.

Q. Is this consistent with Enron's instructions to its traders?

A. Yes. Enron's Summary of Ancillary Service Customers from July 17, 2000 is very explicit:

Customer	Main Contact	RT Contact	Rebid DA in HA if not awarded?	Comments
Enron Short Term	Stewart Rosman	Enron	NO!!!	This is a financial transaction. Always buy back amounts awarded and do not resubmit unawarded capacity in the hour ahead.

(Ex. SNO-762)

Q. Earlier, you questioned the scope of Get Shorty that Dr. Hildebrandt had analyzed. Why is that?

A. In the meetings where Mary Hain took notes, the discussion of Get Shorty was significantly more extensive than that summarized in the Yoder/Hall memos.

According to Mary Hain, the questions was asked "Include 10 year deals? No. don't volunteer." (Ex. SNO-763)

Q. Do you interpret this to mean that Enron was selling capacity it did not own and was not certain it could buy at a future date?

A. Yes. We know from a number of sources that Enron had made long term commitments it could not guarantee capacity for. For example, Enron's Schedule C reports maintained a reserve for "Reserve due to CSU firm sales backed with non-firm transmission at Rockies." (Ex. SNO-764)

Q. Do you have any evidence that Traders logged, tracked, or recorded Get Shorty Transactions?

A. No. However, it would not surprise me to find such documentation, similar to the Inc Sheets or Service sheets. Enpower is not set up to keep these complex schemes in an easy to comprehend fashion. For Get Shorty in particular, the transactions are effectively "booked out" every day. I have been unable to track Get Shorty transactions in Enpower.

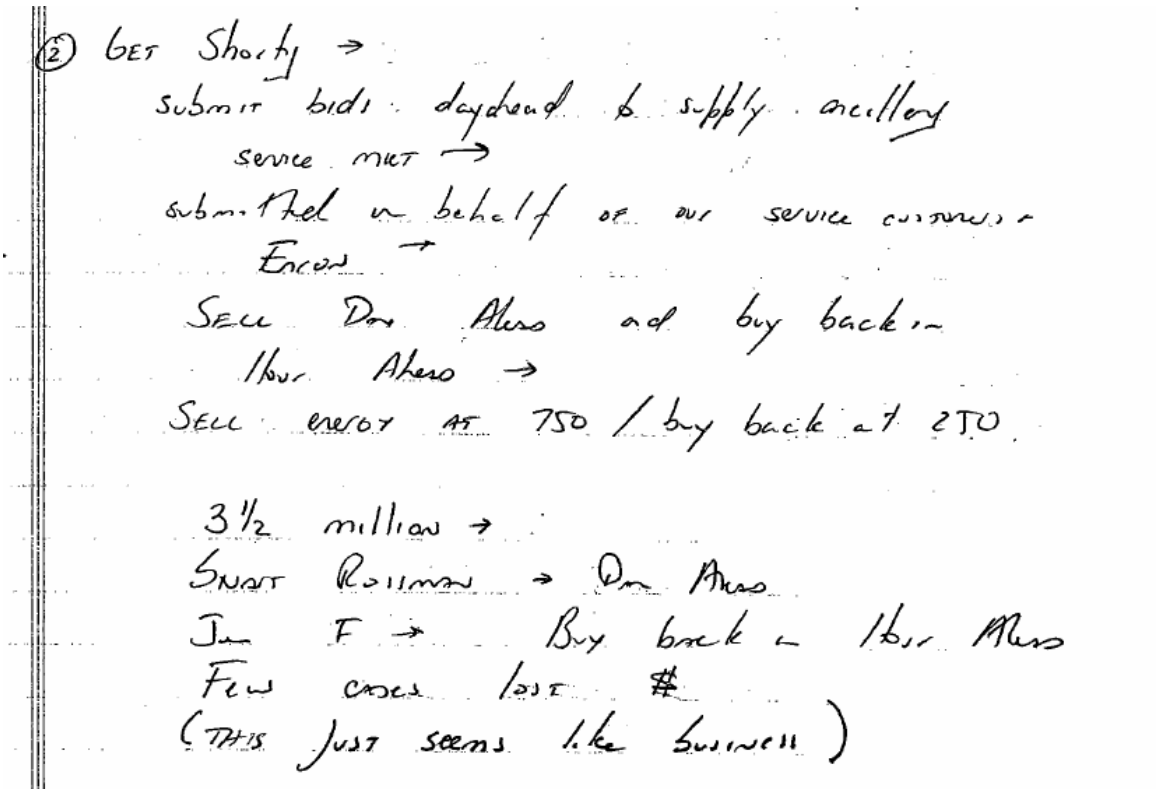
Q. Do we have any evidence on the value of profits in this Get Shorty database or documents?

A. Yes. The remarks of Mary Hain concerning the scheme Get Shorty in her May 2, 2002 deposition state Enron made $5 million dollars from Get Shorty:

> Q. Okay. Moving to page 0023, the term of the transaction is termed as Get Shorty and then you have 5 M, that refers to 5 million again?
>
> A. Yes.
>
> Q. As you look at the description of the transaction, do you know generally what this refers to?
>
> A. I think the strategy is pretty much laid out there. It says submit schedule in the day-ahead and then submit zero in the hour-ahead, and this says concerning ancillary services, we schedule into California for others.
>
> (Ex. SNO-760)

Q. Do we have any other evidence of additional earnings for Get Shorty?

A. Yes, the meeting notes from Buns and Gibbs indicates that earnings were $3.5 million:



Scan to RE 1 bookmarked.pdf, page 3

Q. Why do these notes make clear that Stuart Rossman was expected to file the Day Ahead schedules and John Forney was to conduct the buy back?

A. Enron had adopted a complex division of labor in Get Shorty. The initial schedules were assigned to Rossman. Cleaning up afterwards was assigned to John Forney's Real Time group.

Q. How do you know how Enron arranged these assignments?

A. Instructions for Get Shorty (Ex. SNO-802) and a presentation on the scheme (Ex. SNO-803) are on the Portland servers. The instructions included the following directions:

Shorting the Ancillary Service Market

Description:

Enron takes advantage of price differentials between day ahead and hour ahead prices. Generally hour ahead prices are very low which allows a participant to sell and buy back AS volumes for a profit.

Procedure:

1. Service Desk: Compiles historical pricing from the Fundamental Group and makes a recommendation on what short schedule to place.

2. Service Desk – Jeff Miller gets approval from John Forney and Jeff Richter. Jeff then schedules any short schedule using the short term california name as counterparty in CAPS.

3. Service Desk – When the market closes the service desk prints out the awarded schedules

4. Real Time – The evening before the schedule commences Real Time zeros out the schedules. Thus every Short Term Cal AS schedule in CAPS needs to get zeroed for volumes awarded and not awarded!

IT IS CRITICAL THAT ENRON FLATTENS ITS SCHEDULE OR ELSE IT RUNS THE RISK OF NONPEFORMANCE!

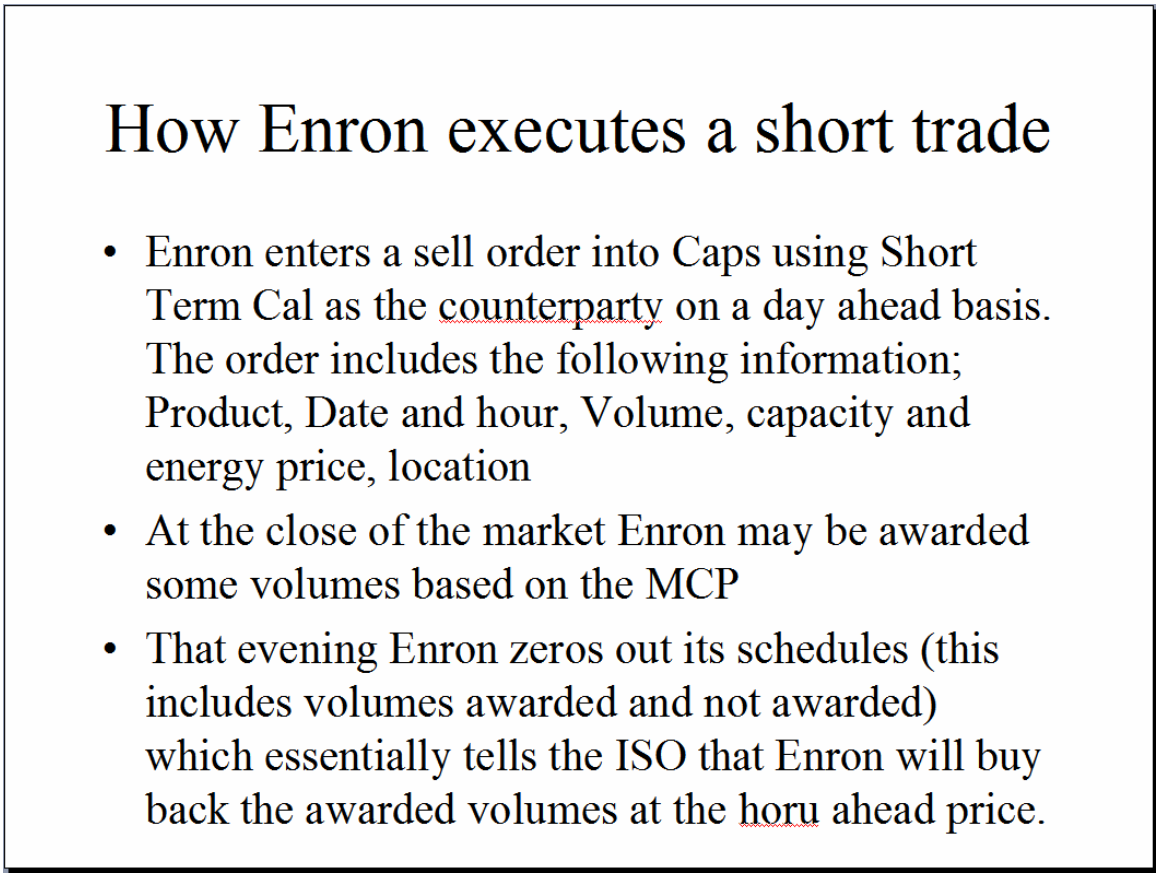
Contact:

Any questions call Stewart Rosman or Jeff Miller

(Ex. SNO-802)

Q. Does the PowerPoint presentation address the same issue?

A. Yes. On April 28, 2000 Stuart Rossman prepared a PowerPoint presentation for his colleagues that included the following slide:



(Ex. SNO-803)

Q. Can you estimate the actual proceeds from Get Shorty?

A. No, but with the instructions from the Portland servers, we will be able to trace the calculations now that Enron has provided ISO settlement data. This is an appropriate area for supplemental testimony.

Collusive Bidding Strategies to Manipulate Price

Q. How do collusive bidding strategies pertain to this proceeding?

A. Enron's purposeful collusion with other market participants is not only unethical but violates Commission approved Tariffs that establish the Market Monitoring and Information Protocols specifically MMIP Sections:

MMIP 2.1.1 Anomalous Market Behavior

MMIP 2.1.1.1 Withholding of Generation capacity under circumstances in which it would normally be offered in a competitive market.

MMIP 2.1.1.2 Unexplained or unusual redeclarations of availability by Generators.

MMIP 2.1.1.3 Unusual trades or transactions

MMIP 2.1.1.4 Pricing and bidding patterns that are inconsistent with prevailing supply and demand conditions.

MMIP 2.1.3 Gaming" or taking unfair advantage of the rules and procedures set forth in the PX or ISO Tariffs... taking undue advantage of other conditions that may affect the availability of transmission and generation capacity...or actions or behaviors that may otherwise render the system and the ISO Markets vulnerable to price manipulation to the detriment of their efficiency

And

MMIP 2.1.4 Design flaws and inefficiencies in the ISO Tariff, ISO Protocols and operational rules and procedures of the ISO, including the potential for problems between the ISO and other independent power exchanges including the PX

(Ex. SNO-127)

Q. Can you describe what you are referring to when you state "Collusive Bidding Strategies to Manipulate Price"?

A. Enron engaged in withholding and hockey stick bidding schemes designed to raise prices in the Western market through manipulations in Alberta. Enron was able to "peg" the market price higher than the competitive prices determined by the prevailing supply and demand conditions. Such "pegged" prices would be far greater than the traditional marginal cost of generation. Enron was able to achieve this higher price by colluding with other market participants to play along. They would make fraudulent bids seem reasonable to market representatives as well as other market participants not colluding with Enron. Enron dubbed this strategy as "Project Stanley." Due to Project Stanley, Enron was involved in litigation in Canada stemming from allegations of price fixing or collusive bidding strategies in the electricity market in Alberta. The

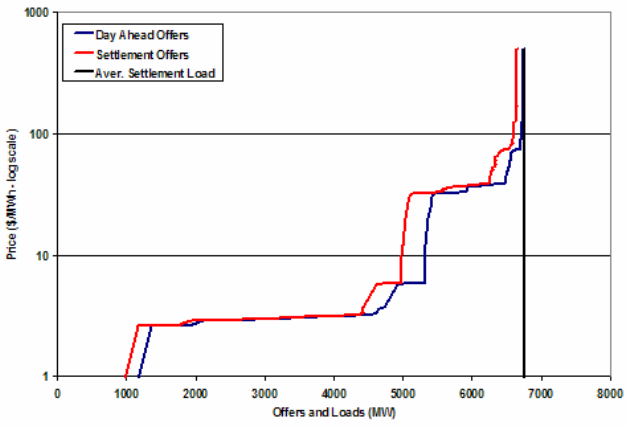
investigation initiated by the Competition Bureau was later closed and no further steps have been taken.

Q. Do you have evidence demonstrating Enron's participation in "Project Stanley"?

A. Yes. A detailed examination of the scheme is contained in an analysis written by Seabron Adamson, Vice President of Charles River Associates and founder of Frontier Economics, who worked for Enron at the time. I have inserted one slide of Dr. Adamson's presentation, which clearly describes the "strategy." He estimated that the cost to consumers due to this scheme was $45,488,540 on a single day.

frontier economics

Illustrative transaction - June 18th HE16



- **Pool price set at $998/MWh from Enron bid**
- **Very tight supply-demand balance - only 56 MW shift in day ahead supply will increase price from $80/MWh to $500/MWh**
- **Substantial contraction in supply at $0/MWh and at $3-5/MWh (TAU or EPCOR coal most likely) as well**

8

Privileged and Confidential - Communication with Counsel

(Ex. SNO-765)

Q. How does price manipulation in Canada apply to the current FERC proceedings?

A. This scheme should be of concern to the FERC and would be in violation of CAISO MMIP 2.1.1.5. Not only is Alberta a member of the WECC (Western region of the National Energy Reliability Council), but the following table from internal Enron documents indicates a strong correlation between Alberta and California: 93% for SP-15 and 88% for NP-15. Even though Alberta lies outside the United States, the markets are strongly correlated and price spikes due to Enron's manipulation in Canada inevitably affected the Western Energy Markets in the United States thus making it pertinent to the consolidated FERC Docket No. EL03-137/180.

	NP-15	SP-15	ZP-26	Alberta	Operating Alberta	Palo Verde	Rockies	COB	Mid-Columbia
NP-15	100%	96%	71%	88%	88%	91%	96%	77%	91%
SP-15	96%	100%	79%	93%	93%	96%	96%	77%	91%
ZP-26	71%	79%	100%	60%	60%	92%	77%	94%	86%
Alberta	88%	93%	60%	100%	100%	81%	90%	52%	82%
Operating Alberta	88%	93%	60%	100%	100%	82%	90%	53%	82%
Palo Verde	91%	96%	92%	81%	82%	100%	95%	90%	95%
Rockies	96%	96%	77%	90%	90%	95%	100%	79%	96%
COB	77%	77%	94%	52%	53%	90%	79%	100%	86%
Mid-Columbia	91%	91%	86%	82%	82%	95%	96%	86%	100%

(Ex. SNO-766)

Q. How would this correlation affect the contract between Snohomish and Enron?

A. Enron's contract with Snohomish provided Enron with significant additional capability to engage in power transactions in the WECC, especially in the Pacific Northwest. An entity possessing such capability can enjoy great profit if it can accurately predict price movements in the relevant electric power markets that are not expected by other participants in those markets. The correlation between Alberta markets and other WECC markets, especially with prices in the Northwest, gave Enron a direct connection

between its manipulation of Alberta prices with Project Stanley and the realization of profits from market transactions supported by the Snohomish contract. (Ex. SNO-767)

Q. Would this evidence also support revoking the Market Based Rate Authority?

A. Yes. The perverse influence on Alberta prices engendered by Enron's actions connected directly to equally unjust and unreasonable influence on prices in the U.S. portions of the WECC. Especially disturbing is the involvement of market disruption crossing international borders and the potential for adverse consequences to other aspects of beneficial trade between the U.S. and Canada.

Q. Do you have any additional information that suggests prices in Canada can have an effect on prices in the Western US electricity markets?

A. Yes. A draft affidavit composed by Alan Comnes, Director of Governmental Affairs, in response to the December 15, 2000 FERC order explained the opportunity costs associated with selling resources in particular markets.

> Opportunity cost is the revenue lost by selling a resource in a particular market and foregoing the opportunity to sell in an alternative markets. Although opportunity cost has a clear economic definition, it is difficult to define and document in a fast moving market. Alternative markets can vary in terms of geography, the character of contango/backwardation that is normal, and in the case of hydroelectric and other energy-limited resources, temporality of the market. In the interconnected WSCC, any generator has the option of selling into a non-California market. The opportunity cost to any generator is the cost of scheduling generation to an alternative market (e.g. mid-Columbia or Palo Verde), plus incremental transmission costs. For out-of-state resources, the choice of selling into local markets rather than selling to California is compelling when there are price caps and refund risk. In state generators will also find out of state markets to be attractive at times, even after factoring in the cost of transmission.
>
> (Ex. SNO-768)

Q. Do you have any evidence suggesting Enron knew that "Project Stanley" was illegal?

A. Yes. Internal Enron documents demonstrate that John Lavorato retained independent counsel in response to the Canadian investigation on Project Stanley. The following excerpt is a discussion between Lavorato and Tim Belden.

> JOHN: I'm just ah - fuck, I'm just trying to be an honest camper, so I only go to jail once.
>
> TIM: Well, there you go. At least only in one country. [laughs]
>
> JOHN: Yeah. [inaudible] fuck, this isn't a joke. I'm a little -- nobody else seems to be concerned anymore about it, except for me.
>
> (Ex. SNO-221)

Enron's Profits

Q. In your Prepared Direct Testimony (Ex. SNO-58) filed with the Commission last February, did you discuss the issue of Enron's unjust profits as a result of gaming activity and other market manipulations?

A. Yes.

Q. What do you believe is the correct approach to resolve the problem of Enron's unjust profits?

A. Enron's chief trader for the West Coast and their Chief Financial Officer have both pled guilty to criminal charges related to violations of federal law relevant to these proposed calculations. I believe the correct approach is to limit Enron to cost-based rates. 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 FERC orders and tariffs during January 16, 1997 to June 25, 2003 and be prohibited from charging any more than its actual, just, and reasonable costs for service.

Q. Has your approach changed over the months that have passed since your Prepared Direct testimony?

A. Only to the degree that we now have additional information. The testimony of Dr. Pechman indicates that Enron violated the conditions of its FERC market pricing license almost immediately when it dispatched El Paso Electric resources without FERC approval or knowledge. Given that fact, Enron should have been on a cost basis since 1997. Since FERC changed the scope of the proceeding this summer, I have also updated my previous analysis to include returning Enron to cost based prices on a daily basis whenever we have evidence of a violation of the MMIPs.

Q. What were your findings in your initial testimony?

A. At that time, Enron had provided very limited financial data demonstrating their profits. I calculated daily profits from Daily Position Reports for the period January 1, 2000 through June 20, 2001. I also corrected profits for the anomalous profit that occurred after the bankruptcy on December 3, 2001.

Q. But at that time you had part of Enpower, one of Enron's databases used to record transactions and schedules. Couldn't you just reconstruct the settlements from Enpower?

A. No. As I discussed in my initial testimony, there are substantial problems reconstructing the ISO settlement data from Enpower, including a stream of emails concerning congestion relief which indicate that Enron management was effectively negotiating these payments during the crisis. (Ex. SNO-154) In addition, Enpower was just one of the accounting systems that Enron used to calculate Daily Position Reports.

Q. Were you able to estimate the amount of unjust profits Enron earned as a result of gaming and market manipulations in your Prepared Direct Testimony? (Ex. SNO-58)

A. Yes. On each day where evidence exists that Enron was involved in gaming or market manipulation, I summed Enron's West Power DPR earnings for that day. Based on the evidence available at the time of filing for my Prepared Direct Testimony (Ex. SNO-58), I calculated this total unjust profit to be approximately $941,431,491 for the period January 1, 2000 to June 20, 2001.

Q. Have you been able to update this estimate for period January 16, 1997 to June 25, 2003?

A. Yes. Since the filing of my Prepared Direct Testimony (Ex. SNO-58), a vast quantity of new evidence has come to light. Specifically, we have found evidence of half a dozen new schemes not addressed in the FERC Show Cause Order going back into 1999 and earlier. In addition, the Project Stanley and Silver Peak schemes are now extremely well documented in 1999. Thousands of files have also been uncovered from Enron's Portland servers which provide some insight into Enron's accounting practices, although the vast majority of them are incomplete or are missing dates.

Q. Were Enron's DPR's located on the Portland servers?

A. Yes and no. A substantial number of DPR and other profit and loss accounting reports were located on these servers. However, Enron has still failed to provide DPR reports for all except for 5 days in 1997, for all of 1998, for a large number of dates in 1999, for March-December of 2002, and for January-June of 2003. The directories for 1998 daily DPRs only contained monthly Trader Performance Reviews, which I describe

below, and a text file stating that the DPRs had been moved to another server. The directory for the 1999 daily DPRs only contained a text file stating that the files had been moved to another server.

Q. Enron was a fortune 500 Company with global operations. Are you saying that a company of this size and stature did not keep track of its profits and losses?

A. Not in the least. Enron had numerous methods for meticulously tracking and reporting the operations of each of its desks to senior management. The DPRs for 2001 show detailed accounting for profits and losses for each day for each desk in its West Power operations. However, Enron so far has failed to produce a complete set of accounting records for its West Power operations for any year except 2001.

Q. Have you been able to calculate Enron's total profits for the period January 16, 1997 to June 25, 2003?

A. Yes. However, as discussed above and elsewhere in my testimony, Enron has failed to provide the necessary documents in order to fully prepare this calculation. As such, my analysis is ongoing and will continue to be updated as Enron continues to produce these important accounting documents.

Q. What is a Trader Performance Report?

A. Trader Performance Reports are spreadsheets that summarize the profit and loss situation by trader and desk. Using the Trader Performance Reports, it is possible to reconstruct total Enron profits. The sum of profits by desks approximates the profits in the Daily Position Reports for the periods we have available. Hence, using the Trader Performance Reports provides a reasonable method for filling in the gaps in the missing

DPRs. We used Trader Performance Reports to approximate profits for DPRs that are not available for 1998.

Q. Did you use other materials and methods to fill in gaps in the available data?

A. Yes. We found some Daily Position Reports for 1999 and 4 reports for 1997, including one report from December 31, 1997. These reports include Year-to-Date (YTD) profits and losses. Based on the available DPRs for 1997 and 1999, I interpolated the YTD profits across the year to get an estimate of Enron's profits per day for these years. For 1998, I used the YTD profits identified in the December 1998 Trader Performance Reports. (Ex. SNO-770) As in my Prepared Direct Testimony (Ex. SNO-58), I summed Enron's profits on each day for which we find evidence of Enron gaming or market manipulations.

Q. In 2000 and 2001 did you adjust for reserves that are held against Enron's profit?

A. Yes. As I mentioned in my Prepared Direct Testimony (Ex. SNO-58), I attribute Enron's substantial surge in profits at the end of 2001 to be the reserves from "Schedule C".

Q. Did you find transcripts that support your analysis of the treatment of reserves mentioned in your Prepared Direct Testimony (Ex. SNO-58)?

A. Yes. On August 8, 2000, a caller, presumably Lavorato, directs Tim Belden to remove $10 million in earnings from his book for "prudence" reserves:

> PERSON 2: Hey, when you've been taking prudency out, who's book have you been taking out of?
>
> TIM: Um, I've got ten, Motley's got 17.
>
> PERSON 2: Why don't you just create another line on my reports,

TIM: Mm hm.

PERSON 2: And just call it, ah, management.

TIM: Mm hm.

PERSON 2: And take ten million out. Redo last night's.

TIM: OK.

PERSON 2: Today's - whatever.

TIM: Yeah.

PERSON 2: Take ten . . . out, put it in the special C and call it that fuckin' - call it ah, BPA reserve.

TIM: Right. That's what we were thinkin'

PERSON 2: OK.

TIM: So, well, I'd rather just take it out of Mike's book.

PERSON 2: Urn.

TIM: That's where the deal sits.

PERSON 2: That's where it'll go back. Wow. Yeah OK. Ah - [pause] OK. But we'll - yeah, OK, just keep track of who you've taken from.

TIM: Well, I've got memos for every - every time we do that I have the trader write up a memo that says here's this and here's what's goin' out so if they know exactly what's in and out.

PERSON 2: Put ten mill - put ten million.

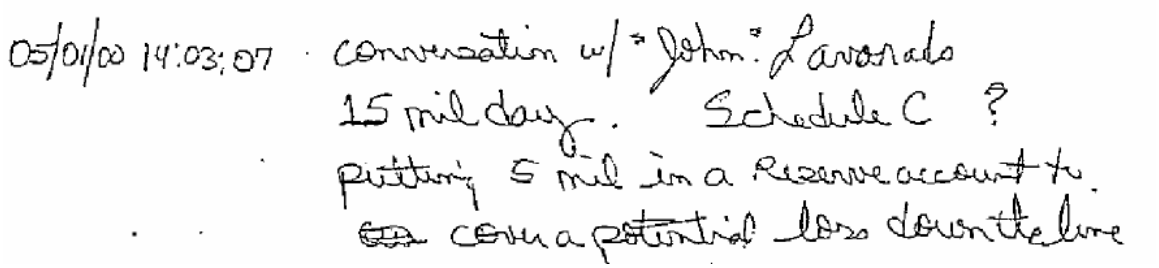
(Ex. SNO-222)

Q. What is really going on here?

A. Lavorato is directing Belden to hide profits by moving them into a reserve account rather arbitrarily named "BPA Reserve." I view this as a form of financial fraud, whereby Enron hid current earnings in order to cover up losses at some future period.

Q. Did the Stephen Hall's summary of trader conversations also document Lavorato directing Belden to move profits into Schedule C?

A. Yes. On May 1, 2000 Lavorato and Belden had the following conversation:



(SNO-731, page 62)

In this case, Mr. Lavorato made clear he was creating a reserve account to "cover a potential loss down the line."

Q. How did you calculate profits for 2002 and 2003?

A. Since Enron calculated its profits using mark-to-market accounting for the entire life of each transaction, the values at the end of 2001 contained the expected lifetime earnings of their transactions – including 2002 and 2003. If these calculations were undertaken carefully, the market value of Enron's contracts in 2002 should have been close to the estimates at the end of 2001. Since Enron was not making new transactions after the bankruptcy, no additional mark-to-market profits should have been booked after 2001.

Q. What is your estimate of the total profits Enron earned on days it engaged in one or more gaming schemes during the period January 16, 1997 to June 25, 2003?

A. The total is approximately $1,355,129,960.01.

Q. What is your current estimate for the total amount of unjust profits earned by Enron since Enron violated its Market Based Rate authority on January 16, 1997 through to June 25, 2003?

A. The total would be approximately $1,677,283,367.08.

VI. WEST-WIDE IMPACT DUE TO TRADING SCHEMES

Q. Did Enron's violations of FERC's tariffs and order have a West-Wide impact?

A. Yes. Enron's actions extended way beyond the borders of California and FERC must examine these impacts in order to get a complete picture of Enron's profits during the relevant period and the scope of harm imposed on consumers both inside and outside California.

General Scheme Principles

Q. How did schemes work to benefit Enron?

A. Generally, schemes caused Enron to earn more than would have been the case if the process of scheduling and realizing electric power generation and consumption had been conducted in an economically efficient and fair manner. There are a few particular processes, which I will call scheme paradigms, by which schemes played out to benefit Enron, and Enron's schemes used a variety of approaches to trigger scheme paradigms. Scheme paradigms depend for their effect on the overall conduct of the WECC trading environment and consequently, have a West-Wide impact on the market.

Q. Please describe the electric power trading environment's effects on the implementation of Enron's schemes.

A. Historically, the operation of electric power systems in the WECC has been characterized by an engineering orientation and a culture of trust, honesty and a combination of utility independence and interdependence. Utilities have historically owned independent generating resources adequate to serve their own loads. In the WECC that independence has long been tempered by the influence of large hydroelectric

plants, many owned by the Federal Government, requiring long high-capacity transmission lines and the concomitant interconnections. Large and complex hydroelectric systems require careful coordinated operation that must be adaptable to changing conditions of load and weather, especially the highly uncertain nature of precipitation and snow pack.

WECC utilities have a long tradition of power exchanges supported by long high voltage transmission lines and highly flexible hydroelectric operation and energy storage. Power has been bought and sold in effective markets in the WECC for many decades, with utility schedulers and dispatchers having considerable knowledge of alternative sources of power generation and the likely cost of those alternatives. In the WECC, "deregulation" or regulatory restructuring to admit more market influences has had little to do with efficient system operation, which has been conducted in a very economically efficient manner. Rather, the impetus behind regulatory change has been related more to efficient system expansion. Schedulers and dispatchers have long traded power in this environment of trust and shared information and a primary assumption has always been that schedules reflect expectations for actual system operation. This assumption is so fundamental that even people highly experienced in the details of electric power systems and complex contracts are puzzled by the idea that scheduled system operation might be far removed from physical system operation. And it is especially difficult to make sense of schedules that are intentionally unrelated to the needs of electric power consumers and the physical constraints of system operations.

Q. How did Enron profit from mounting its various schemes?

A. I believe that Enron expected three different rewards for engaging in schemes. First is the direct payment made by the CAISO (California Independent System Operator), with respect to a particular congested transmission path, to a scheduling coordinator whose apparent schedule results in a net flow for that scheduling coordinator on the congested path that is opposite the direction of overall net scheduled flow across that path. Second, is the payment the CAISO makes to owners of Firm Transmission Rights ("FTRs") for congestion resolved by the CAISO using those FTRs. And third, Enron benefited financially when spot and forward prices were artificially raised.

Q. Please explain the first method of payment, payment for apparent scheduled counter-flow across apparently congested transmission paths.

A. This is a key ingredient in a number of the schemes. Each day the CAISO conducted several rounds of scheduling and schedule adjustments. Generally, three steps led to the fully balanced schedule: first, the CAISO would receive generation, load and adjustment bid proposals from scheduling coordinators, possibly unbalanced[22], and the PX/ISO would analyze the results to compute proposed adjustments that would balance the schedules, without regard for transmission constraints. PX prices would be calculated at this point based on the initial proposed schedules and any adjustment bids that would have to be accepted to balance energy with load.

In the second step, the CAISO informed all scheduling coordinators of the results of the first step and scheduling coordinators were given the opportunity to modify their schedules from the CAISO's proposal. As a result of the proposed secondary

[22] California was very unusual in that scheduling coordinators were not required to submit balanced schedules. Balancing was the responsibility of the CAISO.

adjustments the CAISO would compute implied prices without considering transmission path congestion.

In the third step, the CAISO would examine the transmission implications of the schedule. If any transmission path would be loaded beyond its formal capacity the CAISO would examine all remaining adjustment bids and identify, through a formal algorithm, a set of the proposed adjustments that would bring all transmission path loads within the necessary limits. If the balanced and feasible – with respect to transmission – schedule required that the CAISO accept adjustment bids from schedule coordinators[23], then the total cost of energy production would increase, relative to the energy prices set at step 2. The CAISO uses a marginal cost calculation to determine a congestion charge that will be imposed on all scheduling coordinators using the relevant transmission path. A scheduling coordinator with a net flow of energy across the congested path in the direction of that congestion will pay the ISO's calculated "marginal" price times the amount of the net flow, while any scheduling coordinator with a net flow in a direction opposite that of the congested direction will be paid the product of that congestion price and the amount of the relevant energy flow.

Q. Please explain the second method of payment, the payment the CAISO makes to transmission owners for congestion on their lines that is resolved by the CAISO.

A. The net result of the positive and perhaps negative congestion charges will be a positive collection of money by the CAISO. Any net funds collected through the imposed congestion charge are allocated to the owners of rights on the relevant

[23] Adjustments could be necessary to avoid a schedule that would imply some transmission path flows greater than the stated capacity of the relevant path.

transmission facilities. Most significantly, Enron's ownership of 1,000 MW of Firm Transmission Rights allowed them to profit significantly from payments along Path 26.

Q. Please explain the third method of payment, the benefits received by Enron when market prices were raised as a result of uneconomic schedules.

A. The CAISO's scheduling process included points in time when prices would be changed to accommodate any acceptance of adjustment bids to balance schedules. When load or resource schedules changed during this process the cost of accepting adjustment bids were passed through to market participants through congestion charges. DA PX final prices as well as PX HA prices were increased to reflect congestion charges in the PX's zonal prices. The consequent increase in a zonal price could be dramatic. Enron's Load Shift schemes are an especially good example of how this payment method benefited Enron. Raising prices in one market hub had complementary impacts on neighboring hubs throughout the Western Interconnection – and on forward prices in this and neighboring hubs.

Q. Were Enron's schemes always designed to benefit Enron through one of these payment methods?

A. Some schemes could potentially collect beneficial payment to Enron through a combination of the three fundamental methods, but most schemes relied on either congested line counterflow or advantageous price changes. Load shift schemes were designed primarily to force prices higher where Enron held long positions, while the Death Star schemes intended to reap congestion payments for apparent flows counter to the net flow on a congested transmission path, and for Enron's owned FTRs.

Volatility

Q. How did Enron's gaming and anomalous market behavior affect the functioning of the competitive wholesale power market in the West.

A. Enron's gaming and anomalous market behavior clearly raised costs, diminished reliability, and increased volatility. Each of the schemes had a direct cost to other parties in the market. Given the vulnerability of the California ISO to manipulation, the ISO was often a victim. However, the ISO was not the only victim. Since the ISO used congestion payments as the basis of its calculation for congestion charges to other parties, any party using transmission where Enron was purposefully increasing congestion charges faced injury. Every time Enron manipulated the market price by exerting market power, they harmed Western Energy Market participants and their customers. Every time Enron used valuable transmission to carry out their imaginary transactions the resulting unavailability of that transmission to others hurt Western U.S. electricity generators who were trying to get their energy on the grid at those apparently congested interties.

Q. How did schemes in general affect market price volatility and system reliability?

A. Enron's schemes increased the volatility of market prices in at least two ways; first, by increasing the differences among the prices in various California congestion zones, but perhaps more significantly, by potentially moving actual system operation away from its most economically efficient conduct. Alterations to system operation also had the disturbing effect of moving the system closer to its reliable operating limits. Reliability effects were especially notable in regards to the misrepresentation of non-firm

power, which does not have any reliable margin of safety from accompanying ancillary services, as firm.

Q. What schemes were most notable for increasing price volatility in the WECC?

A. Load shift schemes, Fat Boy, and the infamous Silver Peak transactions, had especially large effects on price volatility.

Q. What schemes had the greatest effect on decreasing system reliability within the WECC?

A. The Death Star, Get Shorty, and selling non-firm as firm schemes that involved passing off non-firm power as firm had the greatest effect in distorting apparent system reliability.

Q. Explain how the scheme "Get Shorty" is a threat to reliability in the Energy Market.

A. Get Shorty is probably the single most dangerous scheme described in the Yoder/Hall memos with respect to reliability. Get Shorty provided reserves to the California ISO that would not have been available if a serious emergency had actually taken place.

Q. Can you give an example?

A. Yes. If Enron sold 500 megawatts of ancillary services to the ISO in the day ahead market without a dedicated resource, the ISO – and the WECC – would be fooled into believing that a specific resource existed to meet an emergency. If the emergency took place before the hourly market, it would have been impossible for Enron to purchase capacity to "zero out" their commitments at any price.

Q. Enron's schemes enriched Enron at the expense of others, but did participants in the WECC power markets suffer additional harm beyond the direct benefits to Enron?

A. Yes. Enron's clever deceits presented a very distorted view of market events to all other participants. Enron's influence not only had a magnified effect, as price distortions resulted in additional economically inefficient payments among other market participants; but that influence was also likely to lead to changes in system operation that could potentially bring down large segments of the WECC electric power system.

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 a NEG power trader, 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-141)

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. For example, as one Enron trader describes it,

> Geography. In the interconnected WSCC, any generator has the option of selling into a non-California market. The opportunity cost to any generator is the cost of scheduling generation to an alternative market (e.g. mid-Columbia or Palo Verde), plus incremental transmission costs. For out-of-state resources, the choice of selling into local markets rather than selling to California is compelling when there are price caps and refund risk. In state generators will also find out of state markets to be attractive at times, even after factoring in the cost of transmission.
>
> Tenor. A generator must choose which market to sell to: forward markets, day-ahead, day-of, or real time. Documentation of costs and refund risk apparently apply only to spot (nonforward) markets. However there will be times when a generator will have a market opportunity in a market of one tenor and that opportunity, adjusted for risk and carrying costs, is the opportunity cost for the generator in a spot market.
>
> (Ex. SNO-768)

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. 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 Washington through California to market hubs in Nevada and Arizona. As I have demonstrated in my previous Prepared Direct Testimony (Ex. SNO-58) in this proceeding, this is amply shown by Enron's training materials used to educate new traders on the operation of circular schedules. 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)

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. 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 memo, "By overscheduling load, the marketers are inflating the day ahead price". (Ex. SNO-62) Mr. Hall is explaining that Enron, which had a large market share in California, was essentially causing the market to appear out of balance by having too many resources allocated to one region while leaving other regions short of power. They did this purposefully because they knew that it would raise the price in the under-resourced region and that Enron would be in a position to provide the needed power for greater profit. This in an example of market power created through deception.

Q. Did Death Stars have on an impact on the Northwest?

A. Yes. The capping requirement created a skein of largely imaginary transactions across the Pacific Northwest. Enron used a variety of Pacific Northwest parties to defeat market surveillance by the California Independent System Operator and tests for engineering rationality by the Bonneville Power Administration.

Q. Please give an example.

A. One example is John Forney's perpetual loop, later known as Death Star. In each Death Star, he sleeved transactions with Avista at Malin, carried the power north to

Grizzly and then west to Portland. In Portland he again washed the power with Avista and then shipped the non-existent power to John Day where it was scheduled back to Malin. (Ex. SNO-742)

Q. Did he also combine this scheme with other schemes?

A. Yes. The CAPS data indicates that he also was "transforming" non-firm schedules into firm schedules to avoid paying ancillary service charges to the California ISO as a step in the Death Star. (Ex. SNO-740)

Q. Did these fraudulent acts affect other parties?

A. Yes. PGE, for example, was scheduling Forney's imaginary megawatts along their lines. BPA was doing the same. In each case, the imaginary flows were being scheduled, entered into line loading calculations, and entered into Oasis transmission availability calculations at the CAISO.

Q. Why was the WECC or CAISO unaware of the discrepancy between schedules and flows?

A. The WECC is a very complex system. Schedules and flows often differ. The operation of the system is based on a presumption of honesty. Until the Yoder/Hall memos were released in 2002, only a few individuals were worried about the differences between flows and schedules.

Q. Were you one of them?

A. Yes. I had flagged megawatt laundering as an issue as early as October 2000 as frequent ISO statements on congestion appeared inconsistent with actual BPA data. However, like most others, I assumed basic honesty on the part of schedulers and therefore vastly underestimated the scale of the problem.

Q. What about Forney's Non-Firm as Firm twist in his Death Stars?

A. This was also dangerous. The ISO would normally assume that he was bringing reserves into their system. He was taking up available transmission with his imaginary schedules. To add insult to injury, he misrepresented his imaginary schedules as being backed by ancillary services.

Q. What did this do to the system?

A. For each Death Star, he inflated the amount of reserves the ISO thought they could call on. If they depended on his imaginary reserves, it would have been the same as if they would have depended on the reserves from a Get Shorty.

Q. Did Enron's transcripts indicate why such schemes were common?

A. Yes. Enron's "Rank or Yank" mantra caused traders to try exceedingly hard to make money in order to earn kudos (and large bonuses) from their superiors. Often times these efforts were in violation of the laws governing the markets. The comment of Jeremy Morris below shows he would attempt to execute Death Stars as a first step. This is especially troubling that he first tried to break the law instead of simply trade electricity in an ethical manner.

> JEREMY– one of the first things I do is look at day ahead congestion and if it's big numbers, I throw – try and throw a perpetual loop around. And if it doesn't work, it doesn't work.
>
> (Ex. SNO-168)

Q. Did Enron frequently fail to meet its obligations to ensure system reliability?

A. Yes. Indeed, in a remarkably cynical memo from summer 2001, Bill Williams instructed his staff to treat its reserve obligations merely as call options: "We are basically buying a put or a call and should pay our counterparty appropriately." (Ex. SNO-771) In other words, he viewed non-firm supply as simply a "put" -- a delivery he

could make at his own convenience, if he chose to. In a transcript from November 2, 2000 El Paso is repeatedly denied access to their spinning reserves

> Chris - Yea, but I'm earring [sic] spinning reserves on those units.
>
> CC - I'm sorry. I'm not following you partner.
>
> Chris - Ok. So you're refusing to schedule my spin.
>
> CC - You got it.
>
> (Ex. SNO-772)

In 1997 in an El Paso assessment of their consulting agreement with Enron under disadvantages is listed

> Enron personnel continually second guess EPE marketing / operating personnel from a purely marketing perspective ignoring reliability concerns, i.e. taking units off or selling spinning reserve.
>
> (Ex. SNO-773)

Q. Did the frequent broken schedules convince other parties that the region was facing a crisis?

A. Yes. Obviously, the rest of the WECC viewed their activities as force majeure – not a "put". This was especially true when Enron often misled the California ISO on the quality of power it was supplying and cuts were communicated throughout the Western Interconnection.

Market Implications of Real Time Schemes

Q. Why was Enron committing such resources to real time schemes?

A. While the schemes were profitable in and of themselves, they also helped create an environment that distorted longer term transactions.

Q. Did Enron understand the relationship between their real time schemes and longer term market prices?

A. Yes. The following excerpt is taken from a June 17th, 1999 email from Kim Ward. In her daily recap of her tasks she states:

> Attended Thurs morning meeting. Loads haven't changed much and there were no additional outages to speak of. Weather wise, next Tuesday appears to be the next peak temperatures in California. Loads should be around 35-36000. (Neutral is 33000). Our trading strategy is to export as much as we can, non-firm and then cut it hour ahead. This will give the same effect as parking in California without paying the ancillary services. We want to do this to keep prices up for July. We also want to buy 150-250 mw additional BOm PV and 200 cob. Bob had already bought 200 mwhs at $35.25 (July was trading at 44-45) indicating that BOM would move up.
>
> (Ex. SNO-748)

Q. Was this a continuing theme in Enron's internal writings?

A. Yes. For example, in Enron's planning document that outlines the Silver Peak scheme, one of the reasons for implementing Silver Peak was:

> Goal:
>
> Increase final zonal MCP to advantage cash position or send impression that forward prices will be higher.
>
> (Ex. SNO-719)

Q. Did Enron have a set of internal studies that addressed the correlations between regional markets?

A. Yes. This was a central part of Enron's risk management process. Enron described this as the "correlation matrix." I discuss Enron's correlation matrix at length below.

Q. Did Enron have a set of internal studies that addressed the correlations between deals of different durations?

A. Yes. This was also a central part of Enron's risk management process. Enron's phrase to describe this was "Term Structure." I discuss Enron's Term Structure at length below.

Q. Is there considerable documentation of Enron's Risk Management methodology?

A. Yes. The documentation is extensive. Good examples of Enron's methodology can be found in:

Managing Energy Price Risk, Enron Capital and Trade, 1997;

Primer on Electricity Futures and Other Derivatives, Timothy Belden et al, January, 1998;

Power West, Risk Analysis and Controls, February 9, 1999;

EES Risk Management Overview, KPMG, October 27, 2000;

West Power Structuring, Enron, July 17, 2001; and

Enron Corporation Risk Management Policy, August 14, 2001.

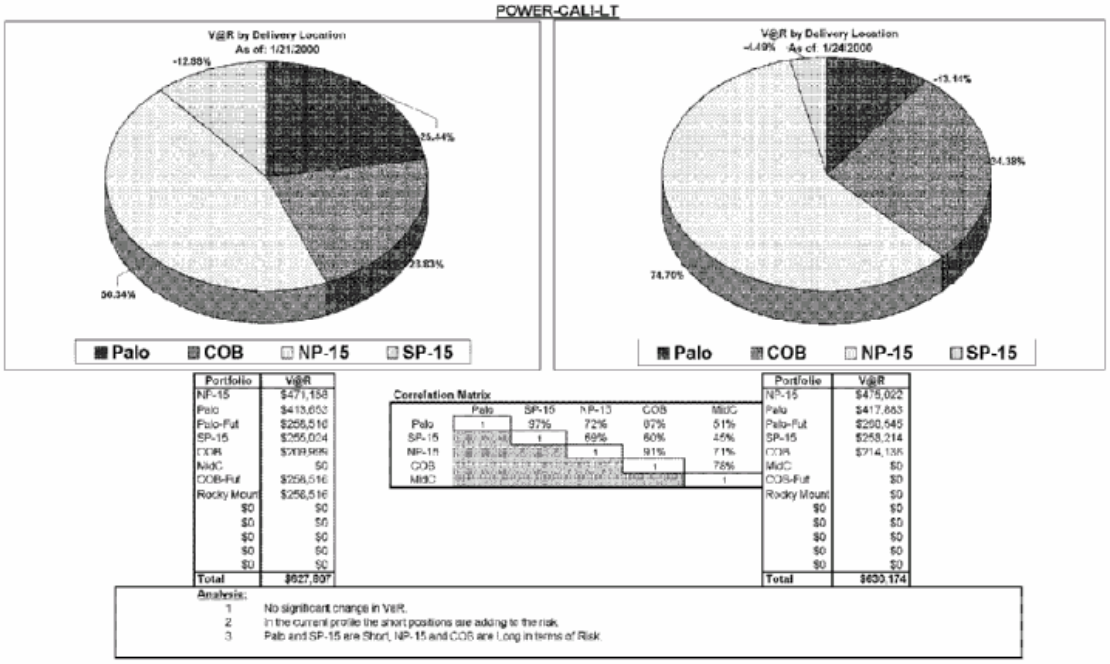
Q. Can you give a quick overview of the risk management methodology and its relationship to trading?

A. Yes. Enron management was concerned that undisciplined traders would expose them to large unhedged risks. They adopted a standard methodology called "Value At Risk" or VAR. VAR attempts to measure the amount of risk that each trader, desk, department, and the company as a whole was facing. Individual traders had VAR limits that they were expected to respect.

For example, if an individual trader had decided to commit Enron to a massive gamble, this would have exceeded his allowable VAR. Enron management could then intervene to control the exposure.

Q. How frequently were VAR reports issued?

A. Tim Belden, for example, apparently received a VAR report containing a correlation matrix on a daily basis. This report, for example, summarized VAR calculations for the Long Term California "book."



(Ex. SNO-774)

The small table in the center of this page included a "correlation matrix."

Q. Please describe the correlation matrix.

A. The correlation matrix is a table of correlations between recent prices in different markets. VAR reports often included similar tables for a wide variety of market locations.

Q. Did Enron keep correlation tables throughout their business?

A. Yes. Enron risk management staff analyzed correlations between almost every trading activity the company entered. Correlations between different fuels and different locations were common.

Q. Why all the attention to correlations between different markets?

A. Economic theory tells us that it is best not to keep our eggs in just one basket. Economists call this strategy "diversification." In trading, it is best if all trading activity is also not in one basket. When different traders are taking positions for different durations and different locations, it is critical to know how similar these positions are. When the prices are highly correlated, the total company risk is much higher. For example, the correlation matrix from the February 9, 1999 Power West report showed:

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
R7	1.00	0.71	0.55	0.32	0.42
R8	0.71	1.00	0.81	0.34	0.46
R9	0.55	0.81	1.00	0.34	0.38
R10	0.32	0.34	0.34	1.00	0.90
R11	0.42	0.46	0.38	0.90	1.00

(Ex. SNO-775)

Q. Why was the number ".90" so important that an Enron employee circled it?

A. The covariance between NP-15 and SP-15 was critical to Belden's ability to take similar positions in the two regions. If he was long for the same deal durations in both regions, this would create a larger VAR since the prices in the two regions were so closely correlated.

Q. Is .90 a high correlation between two markets?

A. Yes. It means that a trader could expect that 90% of change in price in one market to follow in the other.

Q. What was the meaning of the R numbers?

A. Enron's risk managers referred to markets by region numbers. Mid-Columbia was R9, for example. SP-15 was R11. Most correlation tables used the region designations as opposed to the names for trading hubs.

Q. Is there any evidence that Enron thought and acted upon the theory that COB, Mid-Columbia, and the California pricing points were not correlated?

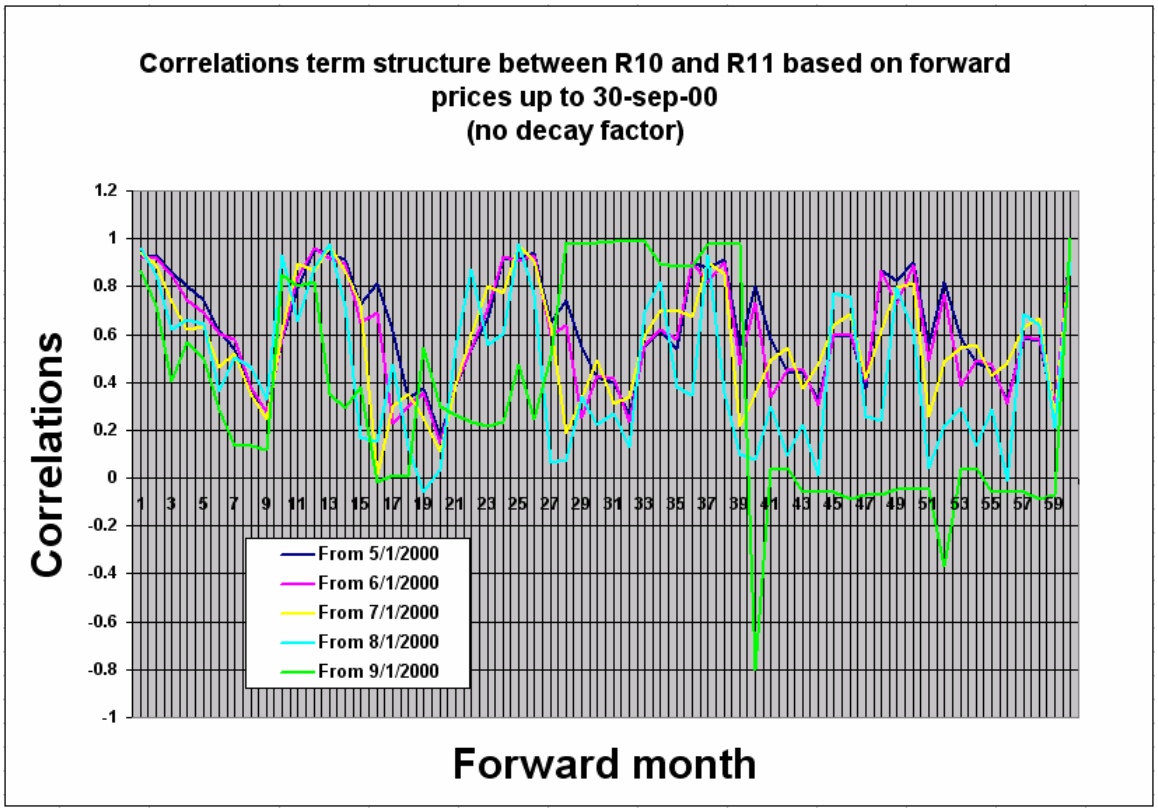
A. No. Enron issued daily VAR reports and disciplined traders who exceeded their VAR limits because they were concerned about the high degree of correlation.

Q. How about correlations between deals of different starting dates and durations?

A. This was also a central concern with "term structure." Enron's methodology was summarized in an internal paper entitled "Principal component analysis (PCA) for capturing term structure of correlations in Value-at-Risk. (Ex. SNO-776)

Q. Do we have examples of Enron's studies?

A. Yes. Exhibit SNO-777 is a study of term structure correlations for California – R10 and R11 in the language of risk management. This chart shows an example of this analysis:



(Ex. SNO-777)

Risk management studies were not always terribly easy to read, but this is relatively straightforward. Risk management had analyzed correlations between deals in different forward months. The five different colored lines showed data from different periods.

Q. What was the conclusion of this analysis?

A. The correlations were quite high on an "apple to apple" basis. The correlation between deals at one month, twelve months, twenty four months and so were extremely high – almost 100% percent. In practice, this meant that forward months of the similar seasons were highly correlated across regions and across forward months.

Q. Would risk management have concluded that forward periods were uncorrelated from this analysis?

A. No, the exact contrary was true. The correlation across term structure was just as important as correlation across regions. In both cases the correlations were high and were a serious obstacle to diversifying risk.

Q. Are Enron's studies consistent with the conclusions of Dr. Pindyck in Chapter V of the Final Staff Report?

A. Yes. Dr. Pindyck's methodology was more sophisticated, but the conclusions are comparable.

Q. Are Enron's studies comparable to the comments quoted above about current events being correlated with future prices?

A. Yes. It would be an unusual for a trader to not believe in the correlations that governed his trading activities within the company.

Q. Can you state a simple summary of your research into Enron's trading and risk management methodology?

A. Yes. Enron viewed the Western Interconnection as a single market. They also viewed the correlation between different term structures as significant. In every day words, they viewed the connections between regions and between deals of different maturities as so significant that they took steps to reduce the business risk of traders taking positions that were too correlated – hence the VAR limits.

VII. ANALYSIS OF PROFITS EMBEDDED IN SNOHOMISH CONTRACT AND ENRON'S 'TERMINATION PAYMENT' CLAIM

Q. Did Enron execute a long-term power sales contract with Snohomish in the Western Interconnection during the period in which Enron was in violation of FERC tariffs and orders?

A. Yes. The contract was executed on January 26, 2001. (Ex. SNO-4) Deliveries by Enron commenced, under the contract, on April 1, 2001. The contract contains an unjust and unreasonable price of $109 per Megawatt-hour for a term of nearly 9 years.

Q. Would you expect to see a long-term contract of this length at this price in a functionally competitive market?

A. Absolutely not. This contract is far above any reasonable measure of the long-run marginal cost of production in the Pacific Northwest, which is the price that would be expected in a properly functioning market. Extreme contract terms like these would never have occurred but for the gross dysfunction of the Western markets occurring at the time the contract was executed.

Q. Are you aware that Enron is still demanding Snohomish pay Enron unjust profits even though the contract between Enron and Snohomish was terminated?

A. Yes. The contract was terminated on November 28, 2001 and that termination was effective as of 5 p.m. November 29, 2001. (Ex. SNO- 4) Enron stopped delivering power to Snohomish on November 29, 2001. Even though the contract was terminated, Enron is still demanding that Snohomish pay Enron an approximately $117 million termination payment comprised wholly of unjust profits, plus interest. (Ex. SNO-1)

Q. Who, at Enron, was involved with the negotiation, execution or implementation of this contract with Snohomish?

A. Greg Wolfe, Enron's manager of service and real time trading, executed the contract. It is my understanding that Shari Stack, an Enron attorney, and Holli Krebs, a middle market trader, were also involved. This contract was part of the book managed by Michael Swerzbin, an Enron Power Trader. In addition, Enron Assistant Treasurer

Timothy Despain, who recently pled guilty to financial fraud, signed a corporate parental guarantee ostensibly guaranteeing the performance of Enron Power Marketing, Inc. under the contract with a guarantee of $50 million from the Enron Corporation.

Q. Was Enron manipulating the market at the time it was negotiating its contract with Snohomish in January of 2001?

A. Yes. For example, we have evidence of Load Shift, Ricochet, and Non-firm as Firm schemes in January of 2001.

Q. Is there evidence that Enron traders were gaming the market on January 26, 2001?

A. Yes. We have evidence of the Enron scheme Non-firm as Firm on January 26, 2001.

Q. Was Mr. Wolfe also involved with Enron's trading activities in California?

A. Yes. In his role as a manager of services and real time trading he was intimately involved in the supervision of continuing schemes like Real Time Load Shift and Fat Boy. Mr. Wolfe managed Bill Williams III, who directly supervised the real time traders. Mr. Wolfe was both congratulated and scolded by Mr. Belden for creating and then not smoothly accounting for Get Shorty.

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.

1

2 (Ex. SNO-121)

3 And

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.

4

5 (Ex. SNO-122)

6 Mr. Swerzbin also had involvement with such schemes. For example, on May 1, 2000 he

7 is the trader of record for a strip used in a 25 megawatt Death Star. (Ex. SNO-740)

Q. Was Enron's contract with Snohomish one of the most profitable sales contracts in Enron's portfolio?

A. Yes, as evidenced by the extremely large amount of unjust profits Enron is still demanding from Snohomish's consumers. One Enron spreadsheet reports the contract was worth $107 million on a mark-to market basis at the end of November 2001. (Ex. SNO-778) Considering the fact that the West Desk, as a whole, made approximately $2 billion dollars during 2000-2001, the Snohomish contract is obviously quite a substantial contract in Enron's portfolio. In fact, Enron's own middle market tabulations indicate that Enron's contract with Snohomish was the single largest contract in Enron's portfolio as of October 31, 2001. (Ex. SNO-779)

Q. What valuation did Enron put on the contract when it was originally signed?

A. This is not immediately clear. The January 26, 2001 P&L for LT-NW at Mid-Columbia shows a loss under new deals of $231,037. (Ex. SNO-780) The next business day shows a gain of $11,027,298. (Ex. SNO-781) While Enron policy dictates that the mark to market value of the transaction is booked on the date the contract is signed, it appears that the contract was booked on the next business day, January 26, 2001.

Q. Why did Enron's contract valuations change dramatically from the time the contract was executed in January of 2001 to the time the contract was terminated in November of 2001?

A. The valuations changed dramatically because the valuations were based on the difference between the grossly-inflated contract price and Enron's forward curves. At the time the contract was executed, the Western long-term power market was illiquid and infected by market manipulation. As a result, both the contract price and market prices

were extraordinarily high. Once FERC finally stepped in to correct the market dysfunctions, market prices dropped back down to their historical levels. As a result, there was a much larger difference between the excessive contract price and market prices in November of 2001.

Q. What type of financial information about Enron's contract with Snohomish would you reasonably expect to have been included in Enron's files?

A. I would expect there to be an "unwind analysis," project worksheets, and risk analyses.

Q. Did Enron provide this financial information to you?

A. No. Enron has not provided the "unwind" analysis, the project worksheets, or risk analysis, for this contract.

Q. Is it reasonable to conclude Enron would have prepared such materials for the Snohomish contract?

A. Yes. As mentioned above, this contract was a relatively large commitment for Enron. Enron risk management guidelines required approvals for such transactions. Enron personnel were required to evaluate the contract and provide their analysis up the chain of command. DPRs for the period of the contract were only supplied in response to discovery requests on January 13, 2005 following repeated requests for such materials over the previous year. (Ex. SNO-783)

Q. What is an "unwind" analysis?

A. "Unwind" is an Enron term used for termination valuations. Such termination valuations are standard, particularly after Enron's abrupt bankruptcy, and Enron should have this type of analysis because it was vital to their post-bankruptcy planning.

However, Enron has only responded to Snohomish's data requests on these issues over the past two weeks. Although these were the first responses that provided any materials on this issue, these materials had to be gleaned from hundreds of thousands of other files.

Q. During the discovery process in these proceedings, did Snohomish ask Enron what level of profits Enron derived from wholesale power contracts and transactions with customers in the Western Interconnect during the period January 16, 1997 to June 25, 2003?

A. Of course.

Q. What was Enron's response to Snohomish's request for information on the level of profits associated with Enron's wholesale power sales transactions in the Western Interconnect during the period January 16, 1997 to June 25, 2003?

A. Enron stated that it did not know the level of profits associated with Enron's wholesale power sales contracts and transactions in the Western Interconnect during the period January 16, 1997 to June 25, 2003. (Ex. SNO-784)

Q. During the discovery process in these proceedings, did Snohomish also ask what Enron's actual costs of serving wholesale power sales customers in the Western Interconnect were during the period January 16, 1997 to June 25, 2003?

A. Of course.

Q. What was Enron's response to Snohomish's request for information on the level of Enron's actual costs of serving wholesale power sales customers in the Western Interconnect were during the period January 16, 1997 to June 25, 2003?

A. Enron stated that it did not know the level of costs Enron incurred to serve wholesale power customers in the Western Interconnect during the period January 16,

1997 to June 25, 2003. (Ex. SNO-785) Enron also admitted that it did not maintain books and records in accordance with FERC's regulations pertaining to cost of service ratemaking. (Ex. SNO-782) Therefore, any belated attempt by Enron to reconstruct a high level of costs is highly suspect.

Q. How can costs be estimated based on historical data?

A. One approach is to review Enron's supply portfolio for the Long Term – North West (LT-NW) "book." As Enron stated in response to Data Requests to SNO-ENR-155(a)-(c) and SNO-ENR-156. Enron assembled a portfolio of contracts to supply its customers. (Ex. SNO-811)

Q. What is a book?

A. Enron maintained its accounting system on the basis of a multitude of different "books." In a colloquial sense, each book represented an accounting system where the revenues and costs for each set of transactions were placed in an envelope. The manager of the envelope was rewarded on the net profit in the envelope. Various risk measures were also calculated on the basis of this specific set of transactions. (Ex. SNO-794)

Q. Which book is appropriate for analysis of the Snohomish contract?

A. The Snohomish contract is part of the Long Term Northwest book – LT-NW.

Q. What was included in the LT-NW book?

A. The LT-NW book included long term transactions in the Pacific Northwest. The book was managed by Michael Swerzbin. (Ex. SNO-786) Enron financial reports, i.e. DPR's or "Fifty Books" files identified profits on a book basis. (Ex. SNO-787)

Q. How did Enron estimate profits for a specific book?

A. Each book had a portfolio of deals. The LT-NW book contained a number of deals that could have been used to supply the Snohomish contract. For example, Enpower lists four deals with Cinergy signed on February 28, 1997, that provided energy supplies from January 1, 1999 through December 31, 2001. Other supplies include a Mirant contract from January 1, 2001 through the end of 2006.

Q. What is a supply portfolio?

A. A supply portfolio is an account of the existing contracts that could be used to service future contract obligations. It includes, among other things, purchases of power, long term contracts to purchase power, exchanges of power in which Enron can call on the service of others. According to Enron doctrine, restrictions on open positions were quite tight. Enron frequently stated that it was not in the position of gambling on long term shifts in the market. (Ex. SNO-769, p.25) In practice this means that a major sale on January 26, 2001 should have been matched by long term purchases or resources that matched its proposed deliveries.

Q. Did Enron in fact make a number of long-term purchases for the LT-NW book?

A. Yes. Enron made a number of long term purchases for LT-NW book. We used Western contract data provided by Enron and other suppliers in response to FERC's data request in Docket PA02-02 as the primary source for determining what transactions were used for the Long Term Northwest book. (Ex. SNO-788)

While most of the responses matched Enron's own record keeping, a few entries showed different dates on which the contract was signed, quantity, and duration. In order to corroborate the FERC data, we checked deals for the date signed, the start of

deliveries, the end of deliveries, the megawatt and Megawatt-hours indicated, and the price.

Q. Did you use any other data source to verify the accuracy of the responses to FERC?

A. Yes. Each response was checked against Enron's Enpower data. Since Enpower data itself has a number of doubtful features, both the Enpower data provided by Enron as part of Data Request SNO-ENR-96 as well as data from the version of Enpower data available through Aspen were checked. The transaction data provided to FERC largely matched deals in Enpower. However, Enpower also contained deals that were not revealed by Enron in Enron's response to FERC's data request in Docket PA02-02.

Q. Did you add the Enpower deals to the FERC data set?

A. Yes, but the Enpower data apparently was edited by Enron after the transactions in question. A major change to the Enpower data was to terminate all transactions in December 2001 – apparently reflecting Enron's bankruptcy. Where the Enpower data showed contracts ending on random days in the month, we assumed the contract termination date to be the end of the given month.

Q. Did you attempt to find a solution to these data problems?

A. Yes. We have made numerous discovery requests to Enron. The most significant of these was for an updated copy of Enpower data for the scope of the proceeding (January 17, 1997 through May 25, 2003). Enron finally responded to this on January 13, 2005. I added Enpower deals signed before January 26, 2001 that provided service during the period of the contract.

Q. What resources did Enron's LT-NW book have on January 26, 2001 to serve the Snohomish contract?

A. FERC's data shows 128 contracts for long term supplies to Enron that were in effect on or before January 26, 2001 and provided deliveries between April 1, 2001 and December 31, 2009. These contracts included supplies from:

Suppliers
Avista Energy
Bonneville Power Administration
Cinergy Services Inc.
Colorado River Commission
Duke Energy Trading and Marketing, L.L.C.
EMMT
IDACORP Energy L.P.
MIECO Inc.
Mirant Americas Energy Marketing, LP
Morgan Stanley Capital Group Inc.
PPL Montana, LLC
SEMPRA ENERGY TRADING CORP.
TEMI

Enpower also contained contracts not present in the FERC data response for:

Sellers
Allegheny Energy Supply Company, LLC
American Electric Power Service Corporation
Aquila Energy Marketing Corporation
Arizona Public Service Company
Avista Corporation - Washington Water Power Division
Avista Energy, Inc.
BP Energy Company
Cinergy Services, Inc.
Constellation Power Source, Inc.
Duke Energy Trading and Marketing, L.L.C.
Dynegy Power Marketing, Inc.
Edison Mission Marketing & Trading Inc.
El Paso Merchant Energy, L.P.
Energy Services, Inc.
Enron Energy Services, Inc.
Entergy-Koch Trading, LP
EPMI Long Term California
EPMI Long Term Southwest
EPMI Long Term West Management
EPMI Short Term California
IDACORP Energy L.P.
Idaho Power Company, dba IDACORP Energy
Merchant Energy Group of the Americas, Inc.
Mieco Inc.
Mirant Americas Energy Marketing, L.P.
Morgan Stanley Capital Group Inc.
Pacificorp
Portland General Electric Company
Powerex Corp.
Public Utility Dist. No. 2 of Grant Cty
Public Utility District #1 of Chelan County
Puget Sound Energy, Inc.
Sempra Energy Trading Corp.
Tractebel Energy Marketing, Inc.
TransAlta Energy Marketing (US) Inc.
Williams Energy Marketing & Trading Company

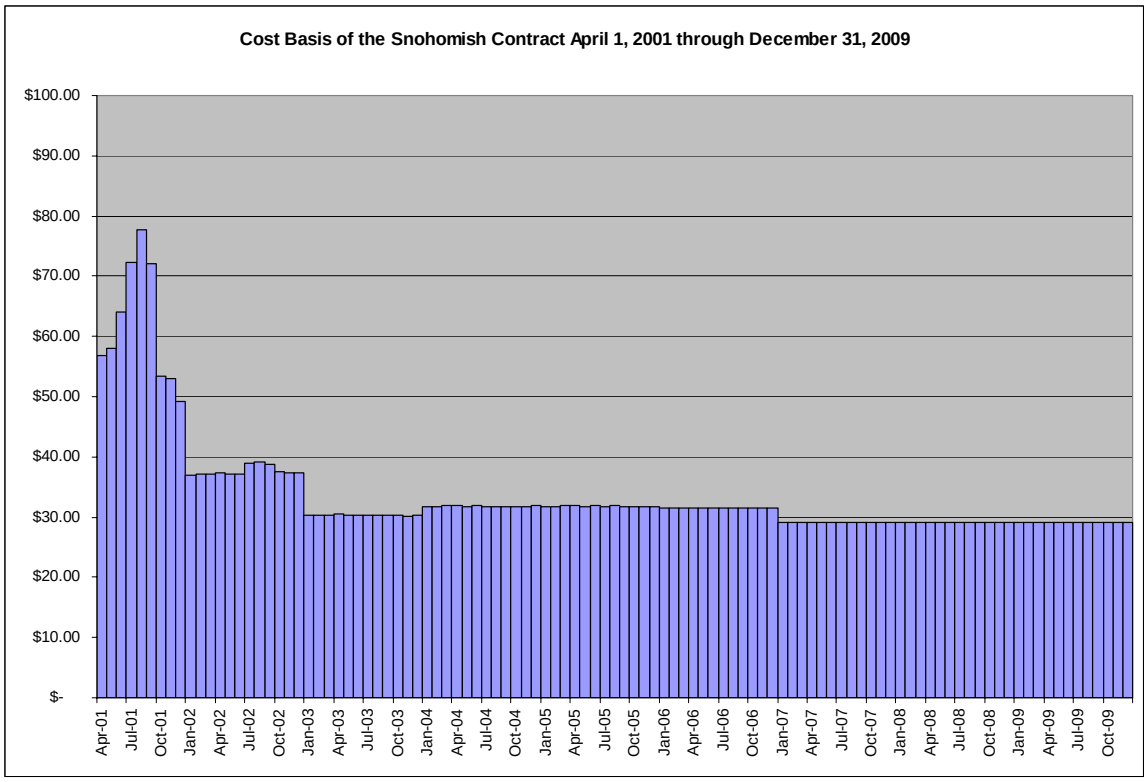
Q. Some of these contracts appear to be with other Enron desks and subsidiaries. Can the data relating to sales contracts between Enron entities be trusted?

A. Not always. Enpower frequently contains transactions between Enron desks. A number of these reflected arbitrary transactions needed to represent Enron's own accounting needs. There is no reason to believe that transactions, wherein Enron sold

power to itself, were arm's length, or even, in the case of Death Stars, reflect actual energy deliveries. Therefore, I removed the internal Enron transactions from the calculations.

Q. What was the melded cost for energy over the original term of the Snohomish contract?

A. The melded cost ranges from $77.74/MWh in 2001 to $29.13/MWh in 2009. The following chart shows how the melded cost changed over time:



Considering the period Between April 1, 2001, and November 29, 2001, when Enron actually delivered power under the contract, the melded cost was $44.17 per MWh.

Q. How can one tell which Megawatt-hours were sold to Snohomish and which were sold to other counterparties?

A. One cannot determine this precisely. Since Megawatt-hours are fungible, these supplies could have been used to serve many different customers in addition to Snohomish. Moreover, it is possible that Enron simply didn't plan to purchase energy to serve Snohomish until the actual day of delivery.

Q. What was Enron's plan to serve Snohomish under the long-term contract?

A. We cannot know, since Enron has not been able to find the original analyses for the contract. We do know that Enron did not have sufficient energy in its supply portfolio to serve all of its customers as of December 31, 2000 or February 7, 2001. These are the two nearest dates where Enron's position reports are available. (Ex. SNO-789)

Q. What was Enron's energy balance in LT-NW?

A. Enron's positions were summarized in daily West Position reports. For example, in the reports for the dates above, the balance corresponding to the Snohomish contract was the Mid-Columbia line in this report.

Q. Has Enron provided a full set of these West daily position reports?

A. No. After many data requests, Enron still has not provided a full set of the West DPRs.

Q. Which reports are available?

A. An Enron West Position report for December 21, 2000 and February 7, 2001. The detail for Mid-Columbia for 2002 as found in the December 21, 2000 report indicates a negative position of 353,385 MWh.

WEST POSITION All positions are PV'd 12/21/00	All Years total	2000 Dec-00	 Total-00	2001 Q1-01	 Q2-01	 Q3-01	 Q4-01	 Total-01	2002 Total-02
Peak									
MID-COLUMBIA	3,024,590	11,609	11,609	73,754	-26,293	199,102	-299,714	-53,150	-359,386
COB	-2,507,341	-53	-53	-149,985	30,280	-235,883	-71,755	-427,354	613,266
NP15	1,309,276	-2,900	-2,900	307,822	241,280	206,923	148,405	904,429	372,297
ZP26	0	0	0	0	0	0	0	0	0
SP15	2,163,927	11,169	11,169	186,210	167,279	61,719	162,983	578,191	371,747
Palo Verde	2,560,221	16,180	16,180	-382,588	267,744	-262,862	537,120	159,414	-287,231
ROCKIES	-365,839	-8,524	-8,524	30,128	-32,661	-34,226	-36,488	-73,137	-155,641
Total	6,185,024	27,481	27,481	65,330	647,738	-65,226	440,551	1,088,394	581,153

(Ex. SNO-789)

The corresponding value in the February 7, 2001 report is a negative 246,805 MWh.

WEST POSITION All positions are PV'd 02/07/2001	All Years total	2001 Q1-01	 Q2-01	 Q3-01	 Q4-01	 Total-01	2002 Total-02
Peak							
MID-COLUMBIA	3,101,022	154,873	-9,388	455,778	-114,080	487,184	-246,805
COB	-2,468,658	-87,848	-50,100	-268,398	-131,712	-538,058	281,713
NP15	1,427,132	99,753	137,208	101,980	227,146	566,086	605,956
ZP26	-38	-38	0	0	0	-38	0
SP15	1,211,719	-13,824	-130,942	-214,185	47,477	-311,474	434,183
Palo Verde	3,988,574	4,784	196,963	183,011	446,049	830,806	845,237
ROCKIES	-389,958	-18,355	-32,905	-11,097	-37,006	-99,362	-158,770
Total	6,869,792	139,345	110,837	247,088	437,875	935,145	1,761,514

(Ex. SNO-790)

Q. Are these substantial "short" positions?

A. No. The Snohomish contract involved the sale of approximately 219,000 MWh per year. In other words, Enron planned to be short in 2002 by approximately the size of the Snohomish contract.

Q. In his supplemental testimony, Dr. Pechman discusses the fact that Enron was financially insolvent at the time the Snohomish contract was executed. Dr. Pechman also discusses the fact that Enron officials anticipated Enron's financial collapse at the time Enron executed a financial guarantee for the Snohomish contract. What conclusions do you draw from these facts?

A. I conclude that Enron knew there was a significant likelihood Enron would not actually serve Snohomish for the full term of the contract and that Enron did not incur

any substantial new power purchase costs to serve Snohomish for the full term of the contract. Due to Enron's short position in the NW, Enron could not fully serve all of its forward contracts for the remainder of their terms. Moreover, Enron executives likely knew there was a significant risk that Enron would not even be in business at all in 2002.

Q. Has Enron admitted that Enron did not enter into any contracts to purchase energy to serve Snohomish after November 28, 2001?

A. Yes. Enron clearly admitted in its response to data request SNO-ENR-155 that no purchases were made to serve Snohomish after the termination of the contract. Therefore, Enron incurred no costs of serving Snohomish after November 28, 2001 at all and the "termination" payment Enron is still demanding from Snohomish's consumers is comprised entirely of unjust profits. (Ex. SNO-65A 791)

VIII. THE CRIMINAL ENTERPRISE NATURE OF ENRON

Q. Were Enron's criminal activities the work of just a few "rogue" traders or did they constitute a general policy for Enron's activities?

A. Our evidence in this proceeding is mainly drawn from documents and data for the Western Interconnection, but the conclusion is quite clear. Enron's criminal activities were pervasive, embedded in standard Enron procedures, and repetitive. For example, Enron used standard procedures to execute games such as Fat Boy, Death Star, and Parking in coordination with entities such as Las Vegas Cogeneration and Commission Federal de Electricidad. They were not the product of a few rogue traders.

Schemes were part of every day at Western Power Trading. The following excerpt from the daily chores directions makes this very clear:

Load: Summer/Winter
Resources
Transmission
Delivery Points
Deal Type
CA DA PX Energy
CA DA A/S
CA HA Energy
CA HA A/S
CA Supp Energy
Congestion Clearing
Fatboy (HA - incr load)
Thinman (Supp
Bilateral Trades
Locational Exchange
Parking
Gas Tolling
Gas

(Ex. SNO-792)

Greg Wolfe prepared this set of instructions for the Real Time and Services traders on January 20, 2000. California HA A/S and California DA A/S were an alternative way of referring to Get Shorty, as discussed above. Fat Boy and Death Star were part of numerous schemes as well.

Q. Does this indicate that every trader was expected to have mastered these schemes?

A. Yes. The April 7, 2000 Real Time Staff Meeting agenda, prepared by John Forney, includes:

> Proficiency Exams to be Administered
>
> Cuts – how to handle, our responsibility

Damages – entering annuities

Integration of curtailed schedules

Services – knowing which strategies are available

Trading Strategy – situational items , such as Congestion Relief, Fat Boy etc.

(Ex. SNO-792)

Q. What was the geographic extent of Enron's criminal activities?

A. We have seen evidence for the WECC – 11 western U.S. states and Canada – and Texas. All of the activities represent personnel within the chain of command of Enron North America. However, it is significant that certain criminal activities such as the per-se antitrust activities in Alberta involved senior management of Enron – all the way up to Jeff Skilling, Enron's CEO until fall 2001.

Q. Was Jeff Skilling involved in Project Stanley?

A. We know that he was involved in Enron's active defense against the criminal investigations in Canada. For example, one email states:

> Guys, we are working to put together the final team to manage this issue; however, it is Jeff Skilling's call to keep Delainey, Milnthorp and Keohane out of the day to day fray on this issue. I believe this is the right call. Commercial and legal resources from Houston will manage this issue on a go forward basis and may call on you as a resource if needed from time to time. You have done a very great job managing this issue to date and your efforts on that front are much appreciated. Our focus should return to growing the business and meeting our financial targets.
>
> Peter, I believe that Mark H. would like you to stay involved through the Friday conference call that is scheduled.
>
> (Ex. SNO-767)

Q. Who was the primary actor in Project Stanley?

A. John Lavorato. Mr. Lavorato was later promoted and was Tim Belden's superior throughout the California crisis.

Q. Is it unusual to promote an executive who is under investigation for criminal anti-trust?

A. It certainly does not appear to reflect a major concern with his trading behavior.

Q. Was this form of behavior secret within Enron?

A. No. Not at all. One of the more interesting transcripts is a call between John Lavorato and Tim Belden that took place on August 4, 2000 :

> TIM: Right I'm trying to balance things and we're -we've cleaned up our act on ah, um, anything that was gray, we're not doing that any more.
>
> JOHN: OK
>
> TIM: So-
>
> JOHN: OK.
>
> TIM: We're -you know, we're working it, but we're s - trying to find that right level.
>
> JOHN: I'm just ah - fuck, I'm just trying to be an honest camper, so I only go to jail once.
>
> TIM: Well, there you go. At least only in one country. [laughs]
>
> JOHN: Yeah. [inaudible fuck, this isn't a joke. I'm a tide -- nobody else seems to be concerned anymore about it, except for me.
>
> TIM: Yeah.
>
> (Ex. SNO-221, p.3)

Q. What was the "gray area" that had been cleaned up?

A. We don't know. Attempts to depose Tim Belden have been unsuccessful. We do know, however, that Tim Belden's staff was still actively running both Load Shifts and Death Stars on August 4, 2000. (Ex SNO-732) (Ex. SNO-736) (Ex. SNO-740) So, Enron's act had not been "cleaned up," as Mr. Belden purported, and Enron continued to operate in the so-called "gray area."

Q. Did Tim Belden discuss the "gray area" with other senior executives at Enron?

A. Yes. On the same day, he briefed Richard Shapiro, the Vice President of Government Affairs, using much the same words:

> TIM: Yeah, w - we are -well, let me tell you a couple of things that we've done.
>
> RICK: Yeah.
>
> TIM: Um, there arc um - a - and all of this stuff with - there's really two - two things that happened - two areas where we have risk with the ISO in terms of not getting along with them or - or things blowing up. Ah, one is our day-ahead scheduling practices and then the other one is our real-time operations.
>
> RICK: Mm hrn.
>
> TIM: Um, we've been doing and have been doing for two years a lot of activity in, you know, there's black, there's white and there's gray. Um, we have been endeavoring into the gray area when opportunities present themselves -
>
> RICK: Mm hm
>
> TIM: - to make money in real time. We have now moved out of the gray area into the clearly what's legal area, a - and I'm - not even legal, but what's, um, there's like the letter of the law, the letter of the rules and the spirit of the rules. Urn, we've been exploiting the letter of the rules, or - or literally interpreted - interpreting the letter of the rules, um, in California when we can make money. And - and an example is ah, non-firm -- non-firm wheels. Ah, there's - there are ways that you can go and run through the congestion process, ah, get paid
>
> for congestion and then cut your power and just collect money and have no obligations. Um, completely within the letter of the rules, not within the spirit of the rules. So, we have ceased doing that, and we've ceased doing every - there's like two other minor things that we're doing that - that were gray. So we've stopped that in real time. Um, the other thing that we have done is ah, on the day - on a day-ahead basis, we are, um, scheduling power – you know, we - we schedule power out, in and out of there all the time, as we have before.
>
> (Ex. SNO-220)

Q. Did Enron in fact stop engaging in these schemes?

A. No. The discussion quoted above occurred on August 4, 2000. As discussed earlier in my testimony, we know that Enron continued to engage in market manipulation

schemes during virtually every day of the crisis and, indeed, right up until its bankruptcy (see series of charts in Section I).

Q. Did Enron practice the same schemes in Texas?

A. Yes. Enron paid a fine for its Load Shift schemes in Texas. We know from Richard Sanders' CFTC deposition that John Forney had continued to practice these schemes when he moved to Texas.

> Q. What do you know about that?
>
> A. That our traders are being accused of under-scheduling its load in Texas in violation of, I'm not sure, CPUC -- I mean, Texas CPUC, FERC rules, the tariff.
>
> Q. When did you first learn of that?
>
> A. In a conversation with John Forney in the summer of 2001. I'm not entirely sure when.
>
> Q. How did that arise?
>
> A. Forney had been transferred to Houston. I would see him every once in a while in the elevator bank. At some point in time, I had to talk to him about California-related issues. And John told me that the play book from California, they were utilizing some of the same stuff in Texas. I alerted Elizabeth Sager and Harlan Murphy who was an electricity trading lawyer, and David Portz who is an electricity trading lawyer. And shortly thereafter, we had a meeting with Doug Gilbert Smith who was the head ERCOT trader, to find out what was being done.
>
> Q. Okay. Tell me about that meeting.
>
> A. It was in my office. David Portz was there. I believe Elizabeth Sager was there. Doug Gilbert Smith was there. Perhaps another trader. Definitely Doug Gilbert Smith. We talked about the submission of schedules that overstated load. And by this time, I understood some of the things in California a lot better and was able to determine that in order to implement this strategy, they had to submit something that contained information that was untrue.
>
> Q. So this is the deceptive information that you're talking about?
>
> A. Where does the word "deceptive," where does that come up?
>
> Q. I thought you had mentioned it.
>
> A. If I used the word "deceptive," I don't recall using it.
>
> Q. Untrue, deceptive.
>
> A. Yes. I think you had to describe where your load was in a particular zone in Texas. And they were submitting a schedule that had load that was inaccurate.

(Ex. SNO-793, pages 177-179)

Q. Was Mr. Forney fired for his trading strategies?

A. No.

Q. As far as you been able to determine was anyone was fired or demoted for this behavior?

A. No. John Forney, for example, continued to work for Enron even after the bankruptcy. Lavorato and Belden were promoted.

Q. Was Greg Whalley, the CEO of Enron North America, knowledgeable about these schemes?

A. We don't know how much he knew, but he did sign the understanding with the California PX that ended the Silver Peak investigation. Thus, I can safely say that Greg Whalley, CEO of Enron North America, John Lavorato, President of Enron North America, Tim Belden, Vice President of the Portland office, and Richard Shapiro, Vice President of Government Affairs, all had knowledge of embedded, repetitious Enron practices that constituted criminal activities in the Western Interconnection.

Q. What was the starting point for these criminal activities?

A. Enron engaged PerotSystems and Policy Analysis Corporation on January 13, 1998, to further understand gaming strategies and the "Competitive Industry Gaming Model" (CIGMOD). In February of 1998 this was followed up with proposals to provide advanced gaming capabilities to Enron. This included a fully calibrated, operational version of CIGMOD.

Q. Did Enron purchase the CIGMOD gaming software and other capabilities of PerotSystems and Policy Analysis Corporation?

A. We can find no records of this. But Enron did proceed to create its own software and management systems to implement games, including Enpower, CAPS, and Inc Sheets, Service Sheets, Enpower to CAPS Reconciliations, the as yet missing Get Shorty and Load Shift logs, and a variety of training materials.

Q. What was the beginning point for Enron in terms of actual execution of these games?

A. We know that Belden and other Portland executives were interested in games from the beginning. Belden's hand-written notes in the PX manual indicated an interest in "games." (Ex. SNO-87) Tim Belden and Rich Davis, Vice President, apparently communicated with the PerotSystems consultants about Silver Peak. (SNO-87) In addition, we have a variety of materials which use similar terminology – including the "Potential Games" document authored by Jeff Miller, an Enron West Desk Employee, in May of 1998. (Ex. SNO-719)

> Potential Games
>
> Situation: Congestion creates negative prices at tie points
>
> Goal:
>
> Get paid to take power.
>
> How:
>
> • Submit demand adjustment bid at a tie point.
>
> • Ask Px how to submit a demand adjustment bid at a tie point where we have zeros in our IPS
>
> • If accepted find a sink for the power.
>
> • If you can't find a sink, accept the schedule and find a sink in the HA 24 or do timed removal.
>
> • Ask ISO how DA and HA markets will handle this.

- Ask ISO what happens when an SC who creates a counterflow on a congested tie doesn't take the power at that tie.

Situation: PX sets initial MCP without considering whether or not power can actually be delivered; PX sets final price based on adjustment bids submitted to and accepted by ISO; if inter-SC trades were not accepted in initial auction because of low MCP, these resources are gone for good from Day Ahead Market; PX may have higher DA MCP than otherwise because all sellers are not allowed to or may fail to submit adjustment bids.

Goal:

Increase final zonal MCP to advantage cash position or send impression that forward prices will be higher.

How:

- Submit DA Energy bid for large volume (5,000 to 10,000) of "fake" MW at a low price.

- Submit low DA energy bid for actual MW with goal of getting MW accepted, perhaps at a low price at first, but eventually receiving a high price.

- Submit adjustment bid for entire quantity of "fake" MW at a small tie point such as Silver Peak at exactly the MCP. Since Silver Peak can only fit 20 MW, all of our MW except 20 MW will be adjusted down by the ISO. If our adjustment bid is higher than others submitting schedules at Silver Peak, all of our energy will be cut.

- The ISO will adjust other schedules up in SP15 or NP15 to make up for the MW cut at Silver Peak. Since the PX/ISO adjustment bid market is thinner than the 7:00 AM PX market, this may result in higher prices.

- If any of our MW are accepted to flow at Silver Peak, we do either a "Timed Removal" and take the imbalance risk or purchase the energy from Sierra Pacific.

Risks

- Sierra Pacific, or someone else, could submit an adjustment bid to purchase energy at Silver Peak, thus creating a counterflow, thus allowing our energy to get into the ISO. As a result, we would be short against the PX DA zonal MCP. To fill this schedule we would have to do either a "Timed Removal" or purchase the energy from Sierra Pacific. With our "Timed Removal" the ISO would be short in real time and would have to INC for the entire volume that we were short, thus driving up Ex Post prices. We would then lose money on our "real" MW that we sold at a low price and our "fake" MW that we sold at a low DA MCP and bought at a high Ex Post.

(Ex. SNO-719)

Q. Was Jeff Miller penalized for this behavior?

A. No.

Q. Is this theme clear from the beginning of the California market?

A. Yes. As Brian Hunsucker wrote to his colleagues on April 21, 1998, "The expectation is that if gamed properly, the ISO and PX will give the 24-Hour Group a tool to generate significant income to the bottom line and become a revenue generator rather than a cost center." (Ex. SNO-812)

I believe that their expectation was fully realized. As noted above, Silver Peak I was implemented in January 1999 and Silver Peak II as well as Project Stanley were implemented in May and June 1999. The pilot for Death Star shows up in the December 1999 Real Time Incremental Sheet.

Q. Is there additional evidence of such behavior?

A. Yes. The evidence is actually too voluminous to list. As a general rule, traders bragged about the creation of schemes in their performance appraisals, mentioned it in normal business documents, and conferred about gaming in emails.

Q. Can you give another example from 1998?

A. Yes. This quotation is taken from the "Night Report" of May 6, 1998 – also the product of Jeff Miller.

> Note for Tag# 155X
>
> **This is a PHONY import we showed to the ISO, so we could sell to the Power Exchange at the Day-Ahead price and show a balanced schedule to the ISO (Import = Sale to PX).
>
> We cut the LA schedule (Tim Belden called the ISO) and so now, we are effectively "short" our sale to the PX. Since the ISO will cover any imbalance (we refer to this as the "imbalance market") at the Ex-Post price, LA agreed to this "game."
>
> The ISO will call & tell us we're out of balance, so tell them we intend to correct the imbalance in the "Hour-Ahead" market. In fact, we really intend to do NOTHING in the Hour Ahead Market and let the ISO serve the imbalance at the Ex-Post Price.
>
> Our goal was to see if we could and take advantage of buying power at the Ex-Post price (which has been much lower than the day-ahead price) and sell to the PX at the Day-Ahead price.
>
> (Ex. SNO-717)

Q. Did upper management monitor the activities of the traders?

A. Yes. Upper Management, monitored the traders on a daily basis. Indeed, this was one of the purposes of the DPRs, as is pointed out in a DPR training manual. (Ex. SNO-794, p.7)

Q. Enron was a closely managed company. Didn't management curb such behavior?

A. Apparently not. To the contrary, all evidence is that management encouraged such activities. Tim Belden's "1998 accomplishments" memo to his then superior Phil Allen includes the comment:

> Needs Work
>
> • California gaming – we always say that we need to increase this activity yet we never do. Need to work more closely with cash, scheduling, and real time to maximize opportunities.
>
> (Ex. SNO-795)

Q. When did Enron's schemes end?

A. We know that Load Shifts and Fat Boys continued until the end of 2001. As was Enron's fashion, different schemes were used at different times. However, throughout the entire period, it is clear that they viewed the California market as rife with opportunities for fraudulent schemes. We have explicit evidence of Fat Boy until September 30, 2001 (Ex. SNO-808) and Load Shift until December 2, 2001. (Ex. SNO-736)

Q. How broad was involvement in the various schemes?

A. Very broad. The following table shows that the majority of the personnel in Western Power were involved in schemes.

Trader Name	Enpower	INC Sheets	Reconcilliations	Convictions	E-mail + Other Document
Bert L. Meyers			x		x
Bill Williams III	x	x	x		x
Brett Hunsucker					x
Brian Robinhold	x	x			
Carey Morris	x	x			
Chris Mallory					x
Colin Whitehead		x			x
Craig Dean			x		x
David Porter			x		x
Diana Scholtes	x				x
Donald Robinson	x	x			x
Eric Linder			x		x
Geir Solberg	x	x	x		x
Greg Wolfe					x
Holden Salisbury	x	x	x		x
Jeff Richter				x	x
Jeffrey Miller	x				x
Jeremy Morris	x	x			
Jesse Bryson	x	x			x
John Forney	x	x		x	x
John Zufferli					x
Kate Symes					x
Kim Ward	x				x
Larry Daugherty	x				x
Leaf Harasin	x	x	x		
Les Rawson	x	x			x
Mark Fischer	x				
Mark Guzman	x		x		x
Matt Motley	x				x
Mike Driscoll	x	x			x
Mike Swerzbin	x				x
Monika Causholli	x	x			x
Phil Platter	x				x
Phillip Allen					x
Ryan Slinger		x	x		x
Sean Crandall					x
Smith L. Day					x
Stanley Cocke	x	x			x
Steve Merris			x		x
Tim Belden				x	x
Tom Alonso	x				
Valerie Sabo	x				x
Caroline Emmert		x			x
David Olander					x
Joshua Bengson					x
Christian Yoder					x
Mary Hain					x
Chris Stokely					x
Paul Choi					x
Timothy Despain				x	x

Q. How did you determine involvement?

A. Our first step was to look for trades which mentioned schemes in Enpower. If a trader was involved in a scheme such as Death Star, Donkey Punch, et cetera, we

identified them. We also added traders who had been indicted and plead guilty, traders referenced in specific emails with schemes, traders who approved Enpower to CAPS Reconciliations with schemes, and Inc sheets

Q. Did the pervasive nature of the Enron culture show up in the trader tape transcripts?

A. Yes. Enron traders complained that they were being pressured to meet management expectations. For example, in one conversation, an Enron person:

> constantly, constantly wanted to cook the fuckin' book . . . [and a person who did not want to help cook the Enron books feared he] might get fired for marking the book correctly
>
> (Ex. SNO-552)

IX. REMEDY: FORCEFUL ACTION IS ESSENTIAL TO ENSURE THAT THE WESTERN POWER CRISIS IS NOT REPEATED

Non-monetary Remedies

Q. What non-monetary Remedies do you recommend?

A. As I stated in my Prepared Direct Testimony (Ex. SNO-58), first and foremost, Enron's market based rate authority should be revoked effective as of the date it began violating that authority. I also agree with the direct testimony of Dr. Carl Pechman on behalf of Snohomish on this point.

Q. How far back do you think Enron's market-based rate authority should be revoked?

A. To January 16, 1997. Enron's first documented violation, its failure to report its affiliation with the El Paso Electric, occurred on that date and was a continuing violation thereafter. After that date, Enron's violations multiplied. It designed and tested its

gaming schemes in 1998 and 1999. By the beginning of 2000, Enron was violating both the MMIPs and the conditions of their market-based rate authority on almost a daily basis.

Q. What is the benefit of starting at January 16, 1997?

A. This start date protects consumers concurrently with the date that Enron's violations began. Allowing criminals to retain their profits from crime is very bad policy. In this case, Enron's violations of both the MMIPs and its MBR nullify its agreement with the FERC and merit revocation of its MBR effective when those violations occurred. FERC should not honor Enron's MBR in light of the wealth of evidence demonstrating Enron's incessant violations of the market protocols. In addition, all profits garnered during this time period should be rescinded based on the fact that Enron was transacting deals with an invalid market-based rate privilege predicated on deceit and withholding of information.

Q. Does Enron know how much profit it made during the period between January 16, 1997, and June 25, 2003?

A. No. In its Supplemental Response to Data Request SNO-ENR-305, Enron states that "it does not presently know what, if any, profits it derived from contracts and transactions executed with wholesale power sales customers in the Western Interconnection during the period January 16, 1997 to June 25, 2003."[24]

Q. Does Enron know what its costs were for serving its wholesale customers in the Western Interconnection during the period relevant to this case?

A. No. In its Supplemental Response to Data Request SNO-ENR-304, Enron states that "it does not presently know what its total costs of serving wholesale power sales

[24] See Data Request SNO-ENR-305

customers in the Western Interconnect were during the period January 16, 1997 to June 25, 2003."[25]

As we would expect, the market showed extreme prices, withholding by major market participants, and extreme volatility. This is exactly the situation where cost based regulation is most required.

Q. Was Enron responsible for these market flaws?

A. At this point we can safely conclude that Enron was a major cause of any number of market problems. They routinely lied to counterparties (Death Star, Load Shift, Fat Boy, Non-firm as Firm, Ricochet, and a wealth of additional schemes we have only able to begin investigating with the production by Enron of new information in this proceeding). A number of their schemes intentionally or incidentally interfered with other parties or the reliability of the system. They frequently withheld energy from the market or caused the energy to appear to be withheld from markets.

Q. Did Enron profit from these actions?

A. This is no longer in any doubt. The allegation that some schemes did not succeed is now clearly contradicted by the discovery of the hitherto secret Forney/Williams accounting documents released by Enron on May 14, 2004. (Ex. SNO-732)

Q. Had Enron routinely lied to FERC in its filings and presentations?

A. Yes. Enron routinely falsified their actual activities and understated their market power. In fact in Docket EL02-113, the Presiding Judge found that Enron had violated its market-based rate authority by failing to report changes in the control of resources in their FERC mandated Market Power Analysis.

[25] See Data Request SNO-ENR-304

> . . . investigate whether Enron and El Paso should have made certain filings pursuant to Section 203 and/or 205 of the FPA. This was based on the finding that these entities had entered into a contractual relationship which may have resulted in ENRON acquiring control of El Paso's assets without prior Commission approval.[26]

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 violated that privilege as early as January 16, 1997. 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 16, 1997, will advance FERC's goal of fostering competitive regional markets operated by RTOs or ISOs?

[26] 104 FERC ¶ 63,010 at P 2 (2003)

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. Is it appropriate to cancel Enron's market rate authority for dates only after Enron have left the market?

A. No. Enron sacrificed its right to market based pricing when it violated its market-based rate privilege, not when the abuses were discovered. Allowing Enron to retain unjust profits generated by its market manipulation schemes prior to the time it was caught only encourages future manipulators to gamble that they can hide their manipulation schemes among the intricate mechanics of modern electricity markets and that they will be able to retain those profits even if the schemes are eventually discovered.

Q. Does this complete your testimony?

A. Yes.