

**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
and 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)



**INITIAL AUDIO TAPE TESTIMONY  
OF  
PATRICK R. CROWLEY**

WITNESS FOR THE STAFF OF THE  
FEDERAL ENERGY REGULATORY COMMISSION  
OFFICE OF ADMINISTRATIVE LITIGATION

Washington, DC  
March 1, 2005

**Initial Audio Tape Testimony  
of  
Patrick R. Crowley**

Summary

Mr. Crowley describes the process by which the Commission Trial Staff examined Enron Power Marketing, Inc. (EPMI) energy trader audio tapes. The review and assessment of the EPMI Audio Tapes were done by Mr. Crowley or under his direction by numerous litigation staff colleagues.

Mr. Crowley's direct testimony is divided into seven broad categories:

Page 3: "Preliminary Matters" discusses his qualifications.

Page 8: "Exhibit List" lists the attached exhibits.

Page 11: "EPMI Audio Tapes" describes the nature of and salient statistics of the tapes.

Page 18: "Possession and Authority" discusses possession and control of the tapes.

Page 22: "Portland Trading operation" describes the Portland energy trading desk.

Page 35: "Processing & Assessments" describes the tape review process.

Page 48: "Comments & Recommendations" -- discusses his recommendations regarding further analysis of the EPMI Audio Tapes.

**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
and 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)

**Initial Audio Tape Testimony of  
Patrick R. Crowley**  
Witness for the Trial Staff of the  
Federal Energy Regulatory Commission

1 **Q. Please state your name and business address.**

2 A. My name is Patrick R. Crowley. My business address is 888 First Street,  
3 Northeast, Washington, D.C. 20426.

4 **Q. By whom are you employed and in what capacity?**

5 A. I am employed by the Federal Energy Regulatory Commission (FERC or  
6 Commission) as an Economist in the Office of Administrative Litigation.

7 **Preliminary Matters**

8 **Q. Please summarize your qualifications.**

9 A. I graduated from DePaul University in Chicago, Illinois, in 1976  
10 with a Bachelor of Arts in Economics. In 1978, I received a Master of Arts in  
11 Economics from DePaul University. I began work at the Commission in 1979 as  
12 an Industry Economist in the Pipeline Rates Division of the Office of Pipeline  
13 Rates. As an expert witness with the Staff litigation team from 1979 to 1992, I  
14 prepared pipeline depreciation studies, long-term forecasts of natural gas reserves  
15 and production, mortality studies of plant retirements, cost behavior studies for  
16 pipeline facilities, and Mcf/mile studies. From 1992 through 1994, I led a team  
17 through the restructuring of the Tennessee Natural Gas Pipeline Company and  
18 worked on the operational aspects of the Texas Eastern Natural Gas Pipeline  
19 Company restructuring in Order No. 636 proceedings. From 1994 through 1998, I

1 worked on the advisory side of the Commission where I prepared reports for  
2 Commission orders regarding proposals for revised tariff terms; new services, rate  
3 designs, and tariff rates; and a wide variety of utility reports and cost studies. In  
4 1998, I returned to the litigation side of the Commission where I now work on  
5 electric utility, natural gas and oil pipeline rate cases and section 206 complaint  
6 cases. My work includes analysis of market power allegations, contract  
7 interpretation disputes, oil cost-of-service cases, affiliate interaction issues, and  
8 market manipulation allegations.

9 In regard to the investigations into the Western energy crisis of 2000/2001,  
10 I directed a team of eight Trial Staff investigators in the inquiry into allegations  
11 market manipulation irregularities against Avista Utilities and Avista Energy in  
12 Avista Corporation & Avista Energy, Docket No. EL02-115-000. I interviewed  
13 energy traders at Avista Energy and at Avista Utilities regarding the nature of the  
14 western energy markets, the daily routine of energy traders, the development of  
15 energy portfolios, the process of scheduling energy and settling discrepancies, and  
16 the tracking of real time changes to energy trading portfolios. I prepared the Trial  
17 Staff report summarizing the findings of the Trial Staff investigation into Avista's  
18 alleged participation in gaming practices and testified before an Administrative  
19 Law Judge (ALJ) regarding the Trial Staff investigation into allegations regarding  
20 Avista Energy and Avista Utilities.

1           In conjunction with the Gaming Practices cases (Docket No. EL03-137-  
2           000, *et al.*), I examined evidence regarding alleged gaming practices of Death Star,  
3           Ricochet, Load Shift, Double Selling, Paper Trading, Non-Firm Exports, Wheeling  
4           on Out-of-Service Lines, and Selling Non-Firm as Firm. I prepared the Trial Staff  
5           report summarizing the findings of the Trial Staff investigation into PowerEx's  
6           alleged participation in gaming practices.

7   **Q.   Have you previously filed testimony before the FERC?**

8   A.   Yes, I filed testimony before the Commission in the following cases:

9           Black Marlin Pipeline Company, Docket No. RP81-67-000;  
10          Tarpon Transmission Company, Docket No. RP84-82-000;  
11          National Fuel Gas Supply Corporation, Docket No. RP86-136-000;  
12          Pacific Gas Transmission Company, Docket No. RP87-62-000;  
13          Sea Robin Pipeline Company, Docket No. RP88-181-000;  
14          Natural Gas Pipeline Company of America, Docket No. RP88-209-000;  
15          Paiute Pipeline Company, Docket No. RP88-227-000;  
16          Southwest Gas Storage Company, Docket No. RP89-60-000;  
17          Montana Power Company, Docket No. ER98-2382-000;  
18          Big West Oil Co. & Chevron Products Co. v Anschutz Ranch East Pipeline Co.  
19                  & Express Pipeline Partnership, Docket No. OR02-1-000 & OR02-3-000;  
20          Big West Oil Co. & Chevron Products Co. v Frontier Pipeline Inc.  
21                  & Express Pipeline Partnership, Docket No. OR02-2-000 & OR02-4-000;  
22          Boston Edison Company, Docket No. ER01-890-000;  
23          Avista Corporation & Avista Energy, Docket No. EL02-115-000; and  
24          Ameren Services Company, Docket No. ER02-929-000.

25   **Q.   What is the purpose of your testimony?**

26   A.   The purpose of this testimony is to describe the process by which the Commission  
27           Trial Staff examined Enron Power Marketing, Inc. (EPMI) energy trader audio

1 tapes (EPMI Audio Tapes)<sup>1</sup> and to present my recommendation regarding the need  
2 for further investigation of the EPMI Audio Tapes. The review and assessment of  
3 the EPMI Audio Tapes was done by me or under my direction by numerous  
4 litigation staff colleagues.

5 **Q. Did you previously file testimony in this proceeding?**

6 A. No. My testimony in this proceeding grows out of the Commission Order  
7 affirming the initial decision in El Paso Electric Company, *et al.*, and consolidating  
8 that docket with the ongoing proceedings in Docket Nos. EL03-180-000 and  
9 EL03-154-000 involving Enron's relationships and practices in the West  
10 (Consolidation Order) [108 FERC ¶ 61,071, July 22, 2004]. In that order the  
11 Commission found that Enron violated its market-based rate authority by failing to  
12 notify the Commission of its expanded *de facto* control of El Paso Electric  
13 Company's generation assets and load requirements. The Consolidation Order  
14 further recognized that the El Paso relationship was just one of several such  
15 arrangements with generators in the California and Western markets. Paragraph  
16 32 of the Consolidation Order directed the ALJ (and Trial Staff) to review the  
17 totality of evidence from the consolidated dockets EL02-113-000, EL03-154-000,

---

<sup>1</sup> The EPMI Audio Tapes incorporates two sets of tape: the "Snohomish Tapes" and the "Enron Tapes."

1 and EL03-180-000, and determine an appropriate remedy. Footnote 53 of

2 Paragraph 32 notes that:

3 The ALJ is considering any and all evidence of potential market  
4 manipulation including the recently discovered ‘Enron trader  
5 tapes.’

6 It is these audio trader tapes that are the subject of my testimony.

7 **Q. What information did you review in preparation for your testimony in this**  
8 **proceeding?**

9 A. In preparation for this testimony I listened to and assessed over 300 hours of EPMI  
10 Audio Tapes; I perused over 300 boxes of internal EPMI memoranda in the Enron  
11 warehouse in Houston, Texas and over 200 boxes of internal EPMI memoranda  
12 here at the Commission’s headquarters; I examined trader hand-written daily  
13 diaries; I examined EPMI’s various accounting data bases (EnPower, CAPS, Inc  
14 Sheets, and Reconciliations Sheets); I studied the Commission’s March 26, 2003  
15 Final Report; and I studied the California Independent System Operator reports  
16 issued in October 2002, June 2003, and July 2003, regarding trading and  
17 scheduling strategies described in EPMI memoranda. The boxes of documents  
18 referred to above and the documents referred to in the exhibits attached to my  
19 testimony are generally drawn from the “CDMS List” of documents provided in  
20 response to Snohomish Public Utility District (Snohomish PUD) data request  
21 SNO-ENR No. 203.

1 **Exhibits List**

2 **Q. Are you sponsoring any exhibits in addition to this prepared testimony?**

3 A. Yes. I am sponsoring several exhibits in this proceeding. These include:

4 Exhibit No. S-85 – **[Protected]** EPMI Audio Tape Recording Policy Memoranda  
5 Source: Enron response to data request SNO-ENR-203

6 Exhibit No. S-86 – **[Protected]** Nice Log Channel Assignments Chart  
7 Source: Enron response to data request SNO-ENR-203

8 Exhibit No. S-87 – Portland Tape Salient Statistics  
9 Source: Generated by Trial Staff

10 Exhibit No. S-88 – Justice Department Protective Order

11 Exhibit No. S-89 – **[Protected]** Enron North America Diagram  
12 Source: Enron response to data request SNO-ENR-203

13 Exhibit No. S-90 – **[Protected]** West Desk Seating Chart  
14 Source: Enron response to data request SNO-ENR-203

15 Exhibit No. S-91 – **[Protected]** West Desk Department Descriptions  
16 Source: Enron response to data request SNO-ENR-203

17 Exhibit No. S-92 – **[Protected]** West Desk Organization Charts  
18 Source: Enron response to data request SNO-ENR-203

19 Exhibit No. S-93 – **[Protected]** West Power Trading Personnel  
20 Source: Enron response to data request SNO-ENR-203

21 Exhibit No. S-94 – **[Protected]** Originator Position Report  
22 Source: Enron response to data request SNO-ENR-203

- 1 Exhibit No. S-95 – **[Protected]** Originators Job Description  
2 Source: Enron response to data request SNO-ENR-203
- 3 Exhibit No. S-96 – **[Protected]** West Desk Services Group Brochure  
4 Source: Enron response to data request SNO-ENR-203
- 5 Exhibit No. S-97 – **[Protected]** Real Time Staff Meeting Agendas  
6 Source: Enron response to data request SNO-ENR-203
- 7 Exhibit No. S-98 – Belden ENA Presentation on West Power  
8 Source: Enron response to data request SNO-ENR-203
- 9 Exhibit No. S-99 – A Day in the Life Chart  
10 Source: Enron response to data request SNO-ENR-203
- 11 Exhibit No. S-100 – **[Protected]** Audio Channel Assignments by Market  
12 Source: Generated by Trial Staff
- 13 Exhibit No. S-101 – **[Protected]** Energy Traders by Channel  
14 Source: Generated by Trial Staff
- 15 Exhibit No. S-102 – Fergus/Marsh Tape Inventory  
16 Source: Enron response to data request SNO-ENR-203
- 17 Exhibit No. S-103 – Enron Audio Review Team  
18 Source: Generated by Trial Staff
- 19 Exhibit No. S-104 – **[Protected]** California EHV Transmission System Map &  
20 Congested Paths within California EHV Transmission System Map
- 21 Exhibit No. S-105 – **[Protected]** Western Systems Coordinating Council Map
- 22 Exhibit No. S-106 – Glossaries of Energy Trader Terminology  
23 Source: Generally available material
- 24 Exhibit No. S-107 – EPMI Trading Scheme Definitions



1 Exhibit No. S-119 – Enron Tape Assessments for Year 2000 - Redacted  
2 Source: Generated by Trial Staff

3 Exhibit No. S-120 – Enron Tape Assessments for Year 2001 - Redacted  
4 Source: Generated by Trial Staff

5 Exhibit No. S-121 – Enron Tape Assessments for Year 2002 - Redacted  
6 Source: Generated by Trial Staff

7 Exhibit No. S-122 – Observation Matrix  
8 Source: Generated by Trial Staff

9 Exhibit No. S-123 – Snohomish Tape Files Recommended for Evidence  
10 Source: Generated by Trial Staff

11 Exhibit No. S-124 – Enron Tape Files Recommended for Evidence  
12 Source: Generated by Trial Staff

13 **EPMI Audio Tapes**

14 **Q. Describe the EPMI Audio Tapes.**

15 A. The EPMI Audio Tapes are magnetic recording tapes known as Digital  
16 Data Storage (DDS) that were used on Digital Audio Tape (DAT) recorders at  
17 Enron's trading offices in Houston, Texas, and Portland, Oregon. DAT is used  
18 only for audio recording, while DDS tape is used for both audio and data storage.  
19 These DAT/DDS tapes were used to record energy trader phone conversations by  
20 Enron. As described by internal Enron tape recording policy memoranda  
21 (Protected Exhibit No. S-85), each recording node (trading desk) was equipped  
22 with two DAT tape decks; when one tape became full, the second tape

1           automatically began recording. The DAT recorders are voice activated machines  
2           so that whenever any noise occurs within the vicinity of the recording devices, the  
3           DAT begins recording. Each tape is capable of recording scores of channels  
4           simultaneously; in this case, Enron recorded 48 trading channels simultaneously.  
5           The channels were numbered 1 through 62, with channels 33 through 48 unused  
6           (Protected Exhibit No. S-86).

7                       Each DAT/DDS tape holds approximately 370 hours of real time audio  
8           recording. The recording date range on each tape suggests that each tape was  
9           capable of holding approximately 10 days of recordings. Because the DAT  
10          recording devices are voice activated, the DAT recorder stops recording in  
11          between conversations – they do not run 24 hours non-stop. Although Enron’s  
12          tape retention policy required that all audio tapes be destroyed after four months,  
13          the Trial Staff had access to tapes covering a period from April 26, 2000, to  
14          February 28, 2002. <sup>2</sup>

15   **Q.   How many audio tapes did the Trial Staff investigate for this proceeding?**

16   A.           The Trial Staff investigated 129 DDS audio tapes, excluding those  
17          mentioned by the Snohomish PUD in their January 31, 2005 Supplemental

---

<sup>2</sup>           Some tapes or tape segments within the two year period were defective or blank and unable to be examined.

1           Testimony. These 129 DDS tapes represent approximately 47,730 hours of real  
2           time audio recordings. These tapes were recorded in both the Houston and the  
3           Portland Enron offices; 74 recoverable tapes (*i.e.*, the sound was audible) came  
4           from Houston and 55 recoverable tapes came from Portland. The 55 Portland  
5           tapes constitute approximately 23,971 hours of recorded audio material (Exhibit  
6           No. S-87).

7                     The 74 Houston tapes (27,380 hours) recorded non-Western energy trades  
8           and non-energy commodity trades, which are not the subject of the activities set  
9           for investigation by the Consolidation Order, and the Trial Staff devoted no staff  
10          resources to reviewing these tapes.

11                    The Portland office tapes recorded all the Western energy market energy  
12          trades covering marketing transactions in Arizona, California, Colorado, Idaho,  
13          Montana, Nevada, New Mexico, Oregon, Washington, and Wyoming. Because  
14          this investigation relates only to the western markets pursuant to the Gaming and  
15          Partnership Orders (Docket No. EL03-137-000, *et al.* and Docket No. EL03-180-  
16          000, *et al.*), and the Consolidation Order, only the Portland tapes are relevant to the  
17          investigation and, accordingly, were the only audio tapes investigated by the Trial  
18          Staff.



1 A. The recorded material on the tapes is made up of tens of thousands of  
2 separate conversations encoded in an encrypted electronic format. In order to be  
3 heard and assessed, each tape had to be converted from the encrypted format into  
4 electronic “wav” files. This procedure was done by Aspen Systems, Inc., acting as  
5 a contractor to the Trial Staff.

6 Generally, each wav file contains one conversation. However, a single  
7 conversation can stretch over several wav files; conversely, some wav files contain  
8 several separate conversations. Wav files may be as short as 4 seconds or as long  
9 as 30 minutes; a few were over 2 hours long. There are 1,586,631 wav files in the  
10 23,971 hours of Portland trading operation tapes.

11 **Q. Were the 23,971 hours of Portland tapes treated as one set?**

12 A. No. The Portland audio tapes were divided into two categories. The first  
13 set, which we refer to as “Snohomish Tapes,” is made up of eight DDS tapes  
14 acquired by the Snohomish Public Utility District in July 2004 from The United  
15 States Department of Justice (Justice Department). These eight tapes contain  
16 approximately 2,966 hours of recorded material, comprising 173,508 audio wav  
17 files (Exhibit No. S-87). The Snohomish Tapes covered several periods in 2000  
18 and 2001 as follows:

19 Tape 10009 – 8/2/2000 – 8/14/2000

- 1                   Tape 10012 – 9/8/2000 – 9/19/2000
- 2                   Tape 10019 – 11/29/2000 – 12/8/2000
- 3                   Tape 10020 – 12/8/2000 – 12/19/2000
- 4                   Tape 10101 – 12/19/2000 – 1/3/2001
- 5                   Tape 10102 – 1/3/2001- 1/11/2001
- 6                   Tape 10104 – 1/11/2001 – 1/21/2001
- 7                   Tape 10105 – 1/23/2001 – 1/31/2001

8                   Trial Staff under my direction listened to all 2,966 hours of “Snohomish Tapes”  
9                   and assessed the material, as described below.

10                   The second set, the remaining 47 DDS tapes from the Portland office, is  
11                   referred to by the Trial Staff as the “Enron Tapes.” The Enron Tapes contain  
12                   approximately 21,000 hours of recorded material comprising 1,413,123 audio wav  
13                   files (Exhibit No. S-87). Given the enormity of the database of Enron Tapes with  
14                   over 1,413,123 wav files, the Trial Staff decided that a proper methodological first  
15                   step was to statistically sample the whole database to get a sense of the likelihood  
16                   of suspect activity throughout the period. My colleague, Dr. David Savitski,  
17                   determined an appropriate statistical sampling technique to assure that the sample  
18                   taken was representative of the population of Enron Tapes as a whole, and that any  
19                   conclusions derived from the sample would apply to the whole population of  
20                   Enron Tapes. Dr. Savitski’s testimony describes this sampling technique in  
21                   Exhibit No. S-82. The sampling approach had the added advantage of conserving

1 time and resources; given the time constraints of the procedural schedule and  
2 manpower resources of the Office of Administrative Litigation, a full review of all  
3 21,000 hours would not be possible.

4 **Q. Did the Team consider other methods of investigating the Enron Tapes?**

5 A. Yes. Other sources of information provided Trial Staff with numerous  
6 leads to follow in its investigation of the EPMI Audio Tapes (both Snohomish  
7 Tapes and Enron Tapes). These include the responses by Portland General  
8 Electric and Avista Energy to the Commission's Show Cause Order [PA02-2-000, 99  
9 FERC ¶ 61,272], which brought to light 17 days in 2000 on which Enron arranged  
10 and carried out Death Star transactions. In addition, the California Independent  
11 System Operator (CAISO) provided Trial Staff with databases of transactions that  
12 it believed were evidence of various violations of the CAISO Market Monitoring  
13 and Information Protocol (MMIP) regulations. These databases included  
14 transactions suggesting market manipulation practices such as Death Star  
15 (Protected Exhibit No. S-43 and S-50), Cutting Non-Firm (Exhibit No. S-53),  
16 Load Shift (Exhibit No. S-62), and Selling Non-Firm as Firm (Exhibit No. S-63).  
17 The dates and times associated with these transactions provide a guide for targeted  
18 investigation into specific audio tape dates.



1 appear on *lists* of DDS tapes but have been found either to be duplicates of other  
2 tapes or simply have not been found. The total number of tapes is 250 as noted  
3 earlier.

4 The 237 DDS and analogue tapes were placed in FBI custody and remain  
5 evidence relevant to the ongoing criminal investigation of certain Enron energy  
6 traders. The 237 tapes are currently in the possession of Aspen Systems, Inc. in  
7 Rockville, Maryland. Aspen Systems, as more fully explained below, is a  
8 litigation support consulting firm providing tape conversion and processing  
9 services to the Trial Staff.

10 **Q. How did the Trial Staff gain access to the tapes?**

11 A. The Trial Staff obtained access to the tapes in two ways. Access to the  
12 eight “Snohomish Tapes” was obtained on July 15, 2004 as the result of  
13 discussions with the Snohomish Public Utility District. While awaiting a response  
14 from the Justice Department regarding access to the 195 tapes seized in the search  
15 warrants, the Snohomish PUD permitted Trial Staff quick access to the eight tapes  
16 to which it had access in exchange for a promise that Trial Staff would listen to the  
17 *entirety* of the eight tapes to which Snohomish PUD had access. This obligation  
18 placed an enormous strain on Trial Staff’s resources.

1           Access to the remaining EPMI Audio Tapes came about in August of 2004.  
2           Under the terms of the Stipulation and Protective Order Re Production of Tapes  
3           (Protective Order), Trial Staff obtained permission from the Justice Department to  
4           use the tapes in the Trial Staff's ongoing investigation into the Western energy  
5           crisis of 2000/2001. The Justice Department agreed to allow Trial Staff access to  
6           the tapes only after Trial Staff signed a Protective Order with the following  
7           conditions: 1) that FERC must pay to have the tapes processed into a listenable  
8           format, 2) only the Trial Staff (and anyone else who signed the Court's Protective  
9           Order) would have access to the tapes, 3) the FBI would be provided with copies  
10          of any transcripts and/or notes regarding the tapes, and 4) that FERC Trial Staff  
11          would not disclose the tapes or any information about the contents of the tapes  
12          without prior approval from the United States Attorney's Office for Northern  
13          California to avoid compromising the ongoing criminal investigations (Exhibit No.  
14          S-88).

15   **Q.   How did the eight tapes come into the possession of Snohomish?**

16   A.   Snohomish sought and obtained specific tapes from the Justice Department in  
17          February 2004 labeled 10009, 10012, 10019, 10020, 10101, 10102, 10104, and  
18          10105.

19   **Q.   Did the Snohomish Public Utility District tape reviewers sign the same**  
20   **Protective Order as did the Trial Staff?**

1 A. To the best of my knowledge, the Snohomish Public Utility District was not  
2 required to sign the same Justice Department Protective Order containing the  
3 conditions that were imposed upon Trial Staff. The fact that the Snohomish PUD  
4 has placed into the public record hundreds of pages of tape transcripts would  
5 suggest that the Justice Department did not impose condition #4 on the Snohomish  
6 PUD, as it did on the Trial Staff.

7 **Q. What was Aspen System's role in the current investigation?**

8 A. Aspen Systems, Inc. is a consulting firm that, among other things, specializes in  
9 state-of-the-art forensic document management, document processing, and  
10 litigation support. Aspen Systems was contracted by the Trial Staff to convert the  
11 encrypted DDS tapes into audible wav files, prepare a secure internet accessible  
12 listening mechanism, assist the litigation staff in setting up a tape review  
13 recordation mechanism, and prepare certain exhibits under my direction.

1 **Portland Trading Operation**

2 **Q. Describe Enron's Portland energy trading operation.**

3 A. Enron North America was divided into seven major markets (Protected Exhibit  
4 No. S-89), one of which was its electric power operations in the United States.  
5 The western U.S. power markets were managed by Enron's "West Power" in  
6 Portland, Oregon. All other energy markets were managed out of Enron's Houston  
7 offices. The Portland energy trading operation was carried out in a trading room  
8 with many trading desks arranged side by side as reflected in the seating chart  
9 shown in Protected Exhibit No. S-90. Due to frequent personnel changes, the  
10 seating chart in Protected Exhibit No. S-90 is just a snapshot in time of the seating  
11 arrangements so that while the personnel may shift over time, the department  
12 locations on the floor are readily apparent. The seating chart shows the proximity  
13 of traders to each other and to the other West Power departments. The center of  
14 the trading floor was dedicated to the energy trading desks while the side areas  
15 were dedicated to various functions that either gave rise to energy trades or  
16 handled administrative matters that resulted from the trades. The right side was  
17 dedicated to IT, legal, and administrative affairs, and the left side was dedicated to  
18 volume management and fundamentals analysis.

19 **Q. How was West Power organized?**

1 A. Enron's West Power trading operation was divided into eight departments  
2 covering various aspects of the trading operation (Protected Exhibit No. S-91).

3 The departments included the following:

4 Western Origination – developed business in the western U.S. relating to  
5 large commodity, asset, and service customers.

6 West Power Trading – bought and sold wholesale power in the western U.S.  
7 in forward markets and options markets; group divided into three regional  
8 desks: Northwest, California, and Southwest

9 Scheduling – scheduled all of Enron's WSCC power deals, verified day-  
10 ahead balances with counterparties, determined bookout and physical flows,  
11 created NERC tags, purchased transmission when needed, entered daily  
12 deals in accounting systems, and balanced the deal accounting system

13 Middle Market – developed information about utility and industrial market  
14 participants, and provided outsourced services such as energy trading,  
15 scheduling, and accounting for other market participants

16 Real Time Trading – handled physical and financial integrity of  
17 prescheduled energy transactions, maintained hourly balanced energy trade  
18 portfolios to compensate for curtailed schedules, changes in load and  
19 generation fluctuations, recorded supply and market disruptions to settle  
20 potential customer billing problems, and handled hourly trading in the Cal  
21 ISO and bi-lateral markets

22 Settlements – estimated expenses and revenues generated by both scheduled  
23 and actual energy volumes with the Cal ISO and Cal PX, settled differences  
24 with the Cal ISO, and provided accounting to reconcile differences between  
25 scheduled and actual volumes

26 Risk Management – development of the West Desk daily position reports,  
27 daily profit and loss statements, trading risk analysis for each counterparty,  
28 and management reports

1                    Fundamental Analysis – collected and evaluated fundamental data from  
2                    commercial and public sources to develop analysis on topical trading issues,  
3                    supply and demand conditions, and potential price movements

4                    The personnel assigned to each West Power Trading group is shown on Protected  
5                    Exhibit Nos. S-92 and S-93.

6    **Q.    Describe the West Origination Group.**

7    A.    The West Origination group, whose activities were not recorded, appears to have  
8                    been the group that developed contracts with larger customers to buy and sell  
9                    energy (Protected Exhibit No. S-94). The origination group developed deals with  
10                    counterparties to supply (or sell) power over some long-term period. Enron's  
11                    challenge then was to manage its portfolio more efficiently and profitably than the  
12                    counterparty would have and thus make a profit on the trading operation. The  
13                    origination group worked closely with the traders and middle market groups  
14                    (Protected Exhibit No. S-95). The West Origination group was essentially the  
15                    marketing arm of West Power, selling Enron's energy trading services to other  
16                    entities throughout the west. The day-to-day trades with these customers would be  
17                    handled by the trading desks within the West Power Trading group.

18   **Q.    Describe the West Power Trading Group.**

19   A.    The West Power Trading group was a subset of West Power. Managed by  
20                    Timothy Belden, West Power Trading encompassed most of the business of

1 actually trading energy under the West Power group. West Power Trading  
2 personnel developed the longer term buys from generators and marketers  
3 necessary to fulfill the contracts established by the Origination Group. West  
4 Power Trading also arbitrated price spreads between market entities while  
5 conducting the business of matching buys and sellers in the marketplace. The  
6 energy traders were divided into real time traders and three regional groups:  
7 Northwest, California, and Southwest (Protected Exhibit No. S-92). Each group  
8 was responsible for handling trades in those geographic regions, but not strictly  
9 limited to those areas depending on the trade at hand. The three regional trading  
10 groups developed the Enron energy portfolio over the near-term to long-term  
11 horizon.

12 **Q. Describe the Scheduling Group.**

13 A. Schedulers were responsible for coordinating transactions with counterparties.

14 Energy, as a commodity, is traded in the Western Interconnect in large blocks from  
15 one to 100 MWs. For example, a given contract may specify that 10MW are to be  
16 delivered at the Mid-C in October. Between the time that the energy contract is  
17 first created and its final delivery, it may change hands several times from one  
18 energy trading entity to another, depending on the needs of each entity's portfolio.  
19 The scheduler's job is to make certain on the date of delivery that the buyers and

1 sellers in the chain are in agreement as to the volumes and delivery point, and to  
2 schedule the transmission. Another important element of the job is to determine  
3 when transmission is not needed. If two parties determine that they have mirror  
4 buy and sell positions at a point, they can simply net out the financial positions and  
5 avoid the transmission costs – a process known as “booking out.” Thousands of  
6 hours of the EPMI Audio Tapes relate to schedulers’ booking out conversations.

7 Based on personnel charts, the individual scheduling group members appear  
8 to have been closely associated with particular regional trading units and the Real  
9 Time Group (Protected Exhibit Nos. S-92 and S-93). Employees listed under the  
10 Pre-Scheduling Group in Protected Exhibit No. S-93 are shown as being within the  
11 regional trading groups in the West Desk Organizational Charts in Protected  
12 Exhibit No. S-92.

13 **Q. Describe the Middle Market and Services Group.**

14 A. The Middle Market group was an operation that provided full energy trading  
15 services to other entities. Mr. Ballard’s Exhibit No. S-65 provides numerous  
16 examples of the broad reach of the Middle Marketing and Services groups (see  
17 Exhibit No. S-65, Schedule 3, in particular). The Middle Market group provided  
18 scheduling services, ancillary service management, generation management, and  
19 load/resource balancing management. The August 2000 Quarterly Review shown

1 in Exhibit No. S-65 touts the Middle Market group as the “economic decision  
2 maker” for generation management alliances with Willamette, Valley Electric,  
3 Saguaro, and LV Cogen. The Quarterly Review also touts Enron’s “buyback  
4 strategy” for ancillary services – otherwise called “Get Shorty.” The Middle  
5 Market acted in a sense as the trading operation for the counterparties in the  
6 alliances and acted, in theory, independently of the Enron trading operation. These  
7 traders, however, sat in close proximity with the Enron energy traders, as can be  
8 seen on Protected Exhibit No. S-90. The Middle Market desks were on the fifth  
9 row from the bottom, just above the Enron trading desks in the third and fourth  
10 row.

11 The Services Group was a two-person group whose function appears to be  
12 somewhat duplicative of the Middle Marketing group (Protected Exhibit No. S-  
13 96). The focus of the Services Group was to help customers access the California  
14 market in particular where the Middle Market group had a wider geographic range.

15 The two members of the group sat in the center of the Middle Marketing group on  
16 the trading floor (Protected Exhibit Nos. S-90 and S-92).

17 **Q. Describe the Real Time Group.**

18 A. The Real Time Group handled the day-to-day management of the Enron West  
19 energy portfolio. The real time traders responded to hour-ahead purchase or sale

1 requests by utilities reacting to weather fluctuations, rerouted energy transmission  
2 when schedules were cut, and made sure the market obligations in real time were  
3 neither long nor short by purchasing or selling energy as needed to balance the  
4 portfolio. The Real Time Staff Meeting agenda for March 7<sup>th</sup> (unknown year)  
5 states that real time traders will be subject to proficiency exams testing, among  
6 other things, knowledge of what strategies are available, specifically mentioning  
7 Congestion Relief and Fat Boy (Protected Exhibit No. S-97). The agenda includes  
8 directions for setting up a Death Star deal, although it does not use that term

9 **Q. Describe the Settlements Group.**

10 A. The Settlements Group, sometimes called Volume Management, followed up on  
11 transactions within the CAISO to reconcile scheduled volume flows with actual  
12 volume flows.

13 **Q. Describe the Fundamentals Group.**

14 A. Mr. Belden, Vice President in charge of West Power Trading, set up the  
15 Fundamentals group to provide a strong capability in analyzing market trends,  
16 demographic economic forces, and the fundamental details of the components of  
17 the energy market such as historic patterns of hydro power spills, forward price  
18 curves by trading hub, and “tactical” research into regional generation capabilities  
19 to support the West Origination and West Trade desks. A sense of the group’s

1 reach can be seen from a presentation Mr. Belden made in May 2000 in which he  
2 lays out an analysis of several fundamental aspects of the western energy markets  
3 (Exhibit No. S-98).

4 **Q. Describe a typical day in the West Power Trading operation.**

5 A. The specific tasks of each of the departments of the West Power Trading took  
6 place at specific times during the day in coordination with all the market  
7 participants' trading operations. Exhibit No. S-99 contains a chart called A Day in  
8 the Life that lays out the West Power Trading operations over the course of the  
9 day. On row one - the term trading desks (Northwest, California, and Southwest)  
10 begin trading at 4:00 am (0400 hours) and close up shop at 7:00 pm (1900 hours).  
11 On row two – the services desk begins Cal PX trading for customers at 5:30 am,  
12 CAISO trading at 7:00 am, adjustment and ancillary services bids at 10:30 am, and  
13 final schedules to customers at 2:00 pm. On row three - the Day-Ahead  
14 Scheduling desk begins at 6:00 am sending in Cal PX schedules, then CAISO  
15 schedules at 7:00 am, NERC Tags at 10:30 am, CAISO Day-Ahead schedules at  
16 1:00 pm, and forward market positions at 3:00 pm. On row four – the real time  
17 traders are active all day long. On row five – the Settlements group begins  
18 checking market volumes and profit & loss estimates for the day at 7:00 am and  
19 works to reconcile trade differences for the remainder of the day.

1 **Q. How did these departments relate to the audio tapes Staff investigated?**

2 A. Because a trader's verbal agreement constituted a "done deal," the recordings were  
3 the only means to verify trades if a misunderstanding developed down the road.  
4 Operations that did not involve energy trades, the scheduling of the transmission,  
5 or the settlement of discrepancies, did not need to be recorded. The Fundamentals  
6 Analysis, Western Origination, and Risk Management departments do not appear  
7 to have been recorded. The others, Middle Markets, Real Time, Scheduling,  
8 Settlements, and West Power Trading, all involved making trades, scheduling  
9 transmission, or resolution of billing discrepancies, and thus were recorded. The  
10 audio file channels relating to each service desk are noted on Protected Exhibit No.  
11 S-100.

12 **Q. Describe a trader's job.**

13 A. The trader's job is to link sellers of energy with buyers of energy. A successful  
14 trader must be attuned to the fluctuations of the market, weather forecasts, and any  
15 information that might impact generators' output and load variances. Thousands  
16 of hours of the EPMI Audio Tapes record traders keeping in touch with the market  
17 – checking on power availability to buy or sell and asking about prices at various  
18 hubs – with no power actually changing hands. When a deal is made, the traders  
19 have agreed on a volume, price, delivery point, and date, and period of the day,  
20 although the shorthand jargon and pace of the traders can easily disguise these

1 details from a listener. Again, thousands of hours of the EPMI Audio Tapes record  
2 traders making routine energy trades at trading hubs all across the Western  
3 Interconnect.

4 **Q. What is a sleeve?**

5 A. A common term heard on the audio tapes is “sleeving.” Often, a deal  
6 between traders can’t be consummated directly with the counterparty; traders then  
7 seek to “sleeve” the deal. Sleeving is a mechanism whereby one entity steps in  
8 between two others to facilitate a trade. A sleeve transaction moves from Party A  
9 to Party B to Party C. Common reasons for sleeves include credit limitations and  
10 contract form differences. Credit limit sleeves arise when one side of a deal finds  
11 that his/her company has reached its credit limit with the intended counterparty.  
12 The trader may note he’s got a “bad name” and begin a series of calls to find  
13 another party willing to step in and, not unimportantly, assume the credit risk if the  
14 other party defaults. This was a common cause for sleeving heard on the audio  
15 tapes.

16 **Q. What is a buy/resell?**

17 A. Another term similar to a sleeve is a buy/resell, meaning the counterparty buys  
18 from the first party and sells it immediately back to the first party. A buy/resell

1 moves from Party A to Party B back to Party A. Hundreds of conversations on the  
2 audio tapes include traders seeking counterparties to enter into buy/resells.

3 **Q. What is the significance of the audio discussions regarding sleeving and**  
4 **buy/resell?**

5 A. Sleeves were often used to facilitate the Enron gaming strategies. The early  
6 Death Star transactions used a sleeve to route power from Enron to an affiliate and  
7 back to Enron. The market manipulation allegations against Avista Utilities were  
8 all instances in which Enron had asked Avista to sleeve a transaction between  
9 Enron and its affiliate Portland General Electric. Enron later incorporated the City  
10 of Redding and PacifiCorp into its Death Star strategy sleeves.

11 Buy/Resells appear to have been done to hide the true nature of some  
12 transactions. For example, the Ricochet strategy involved exporting power out of  
13 California (contractually, not physically) to “ricochet” off another party and  
14 bounce back to Enron and then into the California market. As noted by Witness  
15 Tingle-Stewart in Exhibit No. S-45, Ricochets required a buy/resell to create the  
16 appearance that power imported into California was from sources outside the state  
17 when, in fact, the source was in-state generation. The EPMI Audio Team  
18 highlighted over 600 such conversations that involved sleeving or buy/resells. The  
19 Commission found that sleeving for Ricochet purposes did not violate the MMIP if  
20 the sale back to the CAISO was below the price cap.

1 **Q. Describe the phone recording system.**

2 A. Each energy trading, scheduling, and settlements desk on the Portland West Desk  
3 trading floor was fitted with telephones or broker boxes connected to audio  
4 recording DAT machines. All recorded telephone lines were marked with red  
5 phones or telephone cords. Each trader was assigned a channel. Enron's  
6 recording policy statement states that recording channels are permanently assigned  
7 to individuals to facilitate tracking of audio files, however; there appears to have  
8 been many deviations from that policy, as some channels captured several traders  
9 and some traders are on several channels (Protected Exhibit No. S-101).

10 **Q. Did Enron attempt to inventory the audio tapes in any fashion?**

11 A. Yes. An Enron attorney named Dion Marsh appears to have begun the process of  
12 reviewing the EPMI audio tapes in October 2001. Exhibit No. S-102 contains  
13 several documents reflecting the progress of that inventory. Page 1 of Exhibit No.  
14 S-102 notes "There are 25 audio tapes. The tapes begin in April 2000 and end in  
15 February 2001." Mr. Marsh notes several characteristics of the Nice recording  
16 system in the email. Page 3 is an October 17, 2001 memorandum from Julian  
17 Fertitta summarizing the logistics for producing documents relevant to the  
18 California power litigation; it notes in Step 5 (on page 4) regarding the audio tapes  
19 that "We have already heard several conversations that should not be produced."  
20 Mr. Fertitta notes that the Nice system does not have any way to remove specific

1           conversations from the tape. On page 6, in an email dated October 22, 2001, Mr.  
2           Marsh notes that it will take him at least a month to listen to the first tape. On  
3           page 7, in an email dated November 28, 2001 (over a month later), Mr. Marsh  
4           states that he is almost finished with the first tape. Finally, on page 8 of Exhibit  
5           No. S-102 is a memorandum from Mr. Marsh to Mr. Gary Fergus noting his  
6           enclosure of two legal pads of attorney's notes regarding the review of the audio  
7           tapes from Portland's traders. I believe these may be the notes included in Exhibit  
8           No. SNO-731 (which Mr. McCullough attributed to Stephen Hall in Exhibit No.  
9           SNO-710).

10   **Q.    What is reflected in Mr. Marsh's notes?**

11    A.    Mr. Marsh reviewed an unknown number of tapes and took extensive notes  
12           regarding the content of those audio tapes. These notes appear to represent tapes  
13           from the same inventory of tapes that the Trial Staff is calling "Enron Tapes." The  
14           Marsh notes contain many examples of EPMI traders engaging in activities and/or  
15           discussions that suggest violations of the CAISO MMIP regulations. Trial Staff  
16           witness Mr. Sullivan's review of these notes turned up numerous Death Star  
17           transactions involving several counterparties who knowingly engaged in efforts to  
18           manipulate the CAISO MMIP regulations through fraudulent energy schedules.  
19           Mr. Sullivan discusses his review of these notes in Exhibit No. S- 129. Some of



1 behavior. These meetings were led by Ms Natalie Tingle-Stewart, our case team  
2 leader. Background information on the individual strategies and consequences  
3 was provided by the Trial Staff members filing testimony in this proceeding. The  
4 EPMI Audio Team held weekly meetings from June 29, 2004, through February 1,  
5 2005, to discuss specific energy flow issues, internet assessment editing tools,  
6 trader desk organization, trader jargon, and other information updates.

7 **Q. What materials were provided to the EPMI Audio Team to help prepare them**  
8 **for the tape assessments?**

9 A. The EPMI Audio Team members were provided numerous documents to assist  
10 them in understanding the nature of the conversations on the tapes. These  
11 materials included three maps: the California EHV Transmission System Map and  
12 the Congested Paths within California EHV Transmission System Map (Protected  
13 Exhibit No. S-104), and a large scale Western Systems Coordinating Council map  
14 (Protected Exhibit No. S-105). The team was provided with two glossaries  
15 defining terminology used in the energy commodity trading industry and a market  
16 participant acronym guide (Exhibit No. S-106). The EPMI Audio Team was  
17 provided a set of documents describing the Enron trading schemes: Forney Loop  
18 Handwritten Memorandum (submitted as Protected Exhibit No. S-21); Terms Used  
19 to Describe Enron Schemes and Gaming Practices for Which Disgorgement of is  
20 Sought (Exhibit No. S-107); the “Yoder and Hall” Memoranda (submitted as

1 Exhibit No. S-20); and Handwritten Gaming Notes (submitted as Exhibit No.  
2 SNO-79).

3 **Q. Describe Exhibit No. S-104 [Protected Material – Critical Energy**  
4 **Infrastructure Information].**

5 A. Protected Exhibit No. S-104 contains two CAISO maps. The EHV map shows the  
6 main CAISO “Paths” for high voltage lines. The Congestion map shows the Paths  
7 which regularly experience congestion during the period under review. Path 15  
8 was a frequent congestion point in the CAISO system separating northern  
9 California markets from southern California markets. Areas north of Path 15 are  
10 referred to as NP15, those south are referred to as SP15. A great many  
11 conversations on the tapes make reference to buying and selling, and scheduling,  
12 power into or out of NP15 and SP15. These maps helped the EPMI Audio Team  
13 become familiar with the CAISO system.

14 **Q. Describe Exhibit No. S-105 [Protected Material – Critical Energy**  
15 **Infrastructure Information].**

16 A. Protected Exhibit No. S-105 is a large scale map of the western U.S. showing  
17 generation and transmission facilities comprising the Western Interconnect. The  
18 map shows all the major tie points, generation sources, and loads (sinks). It also  
19 lists the major transmission line owners and shows where their lines are located.

1           This map helped the EPMI Audio Team become familiar with the western electric  
2           market as a whole and helped them find the locations referenced in the tapes.

3   **Q.   Describe Exhibit No. S-106.**

4   A.   Exhibit No. S-106 is a set of two energy terminology glossaries and an acronym  
5           chart. The glossaries and acronym chart provided the EPMI Audio Team with  
6           quick reference guides for terminology used in the audio tapes.

7   **Q.   Describe Exhibit No. S-107.**

8   A.   Exhibit No. S-107 is a set of descriptions of the Enron trading schemes.

9   **Q.   Describe Exhibit No. SNO-79.**

10  A.   Exhibit No. SNO-79 is a copy of hand-written notes taken by Enron attorney Mary  
11           Hain that describe the Enron trading schemes, as they were described to her by  
12           Enron Vice President Timothy Belden, head of the West Power Trading operation.  
13           The notes describe the practice and effect of under-scheduling and over-scheduling  
14           load, congestion revenue strategies, schedule cutting strategies, and Belden's list  
15           of eight major gaming strategies.

16  **Q.   How did you instruct the audio team to listen for suspect behavior?**

17  A.   I instructed the audio team to listen to the EPMI Audio Tapes for evidence of  
18           behavior that might indicate energy trades not in conformance with the CAISO

1 market monitoring rules. This “suspect” behavior fell roughly into five categories:  
2 1) references to specific gaming practices by name, e.g., “ricochet,” 2) confusion  
3 on the part of energy traders as to the nature of the transactions or the routing of  
4 the energy, 3) references to code phrases, unusual descriptions, or requests to call  
5 on unrecorded lines, 4) the presence of caginess or deviousness in the voices of  
6 traders, and 5) callous indifference to the damage done to the market or to end  
7 users due to market fluctuations caused by the traders’ activities. While  
8 admittedly subjective, the purpose of the guidelines was to flag for further review  
9 instances of conversations that appeared to represent intentional violation of the  
10 MMIP. Using these guidelines, the EPMI Audio Team highlighted over 3,200  
11 conversations that suggest that Enron traders were systematically engaging in  
12 activities that violated either the CAISO market monitoring rules or the market  
13 based rate authority granted by the Commission, or both.

14 **Q. How did you direct the audio team to record their assessments of the tapes?**

15 A. I directed the EPMI Audio Team members to record their assessments in two  
16 ways. To review the 173,508 wav files contained on the eight DDS “Snohomish  
17 Tapes,” I created a check-off form on which the listeners could designate  
18 categories of subject matter on the tapes. To review the 42,719 wav files extracted  
19 from the “Enron Tapes” for sampling (out of a total of 1,413,123 Enron Tapes wav

1 files), I created a more simplified on-line form, with the assistance of the Aspen  
2 Systems Corporation, in which listeners recorded whether they thought the sample  
3 required further review,<sup>3</sup> which of the specific observation wav files should be  
4 examined further, and under what subject category those particular wav files fell.  
5 The form also included a comment field in which the reviewer could note anything  
6 he or she wished to bring to my attention about the particular recording.

7 **Q. Describe the Snohomish Tape review sheets.**

8 A. The Trial Staff assessments of the Snohomish Tapes established a database  
9 of subject matter assessments of over 4,500 pages. The assessment sheets included  
10 check-off categories that I hoped, *a priori*, would be most useful in sorting through  
11 the enormous number of audio files. The check-off categories on the assessment  
12 sheets included: Power Sale Transaction, Schedule Inquiry/Changes, Non-  
13 Relevant Discussions, Market Conditions, Strategy Discussions, Buy-Resell  
14 Transactions, Hiding Information, Partnership (Alliances) Discussions, Congestion  
15 Management, Callous Indifference, Trading Desk, Enron Speaker, Other Speaker,  
16 and the name of the reviewer.

---

<sup>3</sup> As described in Exhibit No. S-82, the “Enron Tapes” were sampled in half-hour segments that contained as many as 30 or more wav files within the half hour.

1 I note here the difficulty of this assignment for the listeners. As mentioned  
2 above, the wav files varied in length from 4 seconds to 30 minutes, with the great  
3 majority being one to three minutes in duration. The audio files for the Snohomish  
4 Tapes were organized by tape, then by day, then by channel. Audio listening  
5 assignments were allocated by channel grouping such that any given assignment  
6 may have included between 100 and 700 audio files. The listener then determined  
7 whether the call was incoming or outgoing (on the assumption that the first  
8 speaker, generally, is either an outside party receiving the call or an Enron  
9 employee receiving the call), who was the Enron employee speaking, was the other  
10 party also within Enron, what trader desk was being recorded, what regional  
11 market was being served, what did the jargon mean, what was the nature of the  
12 call, and did it warrant further review – all within the space, generally, of under  
13 one minute. This process was repeated hundreds of times for each audio  
14 assignment. (In the time it took you to read this paragraph, two or three audio files  
15 could have elapsed, each one requiring the above analysis and recordation.)

16 **Q. What was recorded in the comment field?**

17 A. In practice, the comment field of the assessment sheets became the primary  
18 assessment tool. The assessments included over 51,435 comments written into the  
19 comments field. A majority of these comments were repetitive. For example the

1 ditto symbol - “ - appeared 40 times; “balance Palo” appeared 24 times; “calling  
2 out bids” appeared 920 times; “ringing” appeared 66 times; “2Q NP Bid” appeared  
3 24 times; “defective tape” appeared 303 times; and “price bid” appeared 1294  
4 times. In all, there were 16,866 *unique* comments entered into the comments field.  
5 Exhibit No. S-109, Unique Comments on Snohomish Tapes, lists each of the  
6 16,866 unique comments, the number of times the comment appeared in the review  
7 forms, and whether the comment was designated for further review.

8 The comments included in Exhibit No. S-109 are the same comments as  
9 found in Exhibit Nos. 111 through 118. However, Exhibit No. S-109 provides a  
10 more readily searchable database for phrases such as “congestion,” “Death Star,”  
11 “buy/sell,” and “sleeve.” Exhibit Nos. S-111 through S-118 are part of a huge  
12 database broken into eight files, making a search for terms more difficult. The  
13 comments field provided a wealth of information about the content of the tapes, as  
14 described below.

15 **Q. Why does Exhibit No. S-109 only show a redacted comments field?**

16 A. As noted earlier, the Trial Staff was given permission by the Justice Department to  
17 access the Houston and Portland tapes subject to the terms and conditions of  
18 Justice Department Protective Order. The Protective Order prohibits disclosure of  
19 the tapes or any information about the content of the tapes without prior approval

1 of the Justice Department. The Justice Department has not consented to allow  
2 Trial Staff to use all the Trial Staff's comments about the conversations at this time  
3 because of the pendency of criminal charges. Consequently, the comment field of  
4 the exhibit was redacted.

5 **Q. Were the EPMI Audio Team assessments of the Snohomish Tapes reviewed**  
6 **by other Trial Staff members?**

7 A. Yes. The first tier audio file assessment sheets described above were  
8 merely the first step in the EPMI Audio Tape investigation. The audio files were  
9 subjected to three further layers of review. After the initial review of the 173,508  
10 audio files by the Audio Team, Aspen Systems, under my direction, sorted the  
11 51,000 comments into the set of 16,866 unique comments noted above.

12 As a second tier review, I assessed the comments and designated those that  
13 warranted further review. The second tier review culled the number of wav files  
14 under review from 51,000 to 3,240 by deleting from consideration the comments  
15 which appeared to reflect normal energy business activities, matters of strictly  
16 personal information, or matters simply unrelated to the matters set for  
17 investigation. It may be that there are many more audio wav files that might have  
18 qualified for further review but which the first tier reviewer simply didn't catch or  
19 that the shorthand comment didn't quite capture the import of the conversation.  
20 Nevertheless, the EPMI Audio Team did capture a large number of suspect

1           conversations. In preparation for the third tier review, I categorized these 3,240  
2           audio files into 50 broad categories of subject matter based on the nature of the  
3           comments (Exhibit No. S-108).

4           As a third tier review, several colleagues, who were active in the Gaming  
5           and Partnership cases, listened to the 3,240 audio files to determine whether, in  
6           their expert opinion, the content of the audio files warranted the concern expressed  
7           by the initial reviewer. This third tier review found 311 files still thought to be  
8           representative of suspect behavior and set them for possible use in testimony being  
9           filed concurrently on March 1, 2005 (Exhibit No. S-123). The Trial Staff  
10          comments on these audio files have been used by permission of the Justice  
11          Department. These files were categorized into the relevant gaming strategies  
12          (some fell into more than one category):

13                   Affiliate Issues – 4 files  
14                   Alliance – 170 files  
15                   Congestion Gaming – 19 files  
16                   Death Star – 66 files  
17                   Fat Boy – 8 files  
18                   Firm as non-Firm – 2 files  
19                   Get Shorty – 17 files  
20                   Load Shift – 9 files  
21                   Market Control – 13 files  
22                   Ricochet – 38 files

1 Callousness – 31 files

2 As a fourth tier review, each Trial Staff expert witness examined the audio  
3 files relevant to his or her testimony and made a final determination as to whether  
4 the suspect activity met the criteria established by the Commission for the named  
5 strategies.

6 **Q. Which audio files were dropped during the review process?**

7 A. The process of reviewing and culling the 713,508 Snohomish Tape audio wav files  
8 can be seen in Exhibit Nos. S-111 through S-118. These exhibits contain an  
9 extraction and summary of the review process. Each exhibit contains the audio  
10 files captured on each DDS tape as designated below:

11 Exhibit No. S-111 – Snohomish Audio Tape 10009 Assessment  
12 Exhibit No. S-112 – Snohomish Audio Tape 10012 Assessment  
13 Exhibit No. S-113 – Snohomish Audio Tape 10019 Assessment  
14 Exhibit No. S-114 – Snohomish Audio Tape 10020 Assessment  
15 Exhibit No. S-115 – Snohomish Audio Tape 10101 Assessment  
16 Exhibit No. S-116 – Snohomish Audio Tape 10102 Assessment  
17 Exhibit No. S-117 – Snohomish Audio Tape 10104 Assessment  
18 Exhibit No. S-118 – Snohomish Audio Tape 10105 Assessment

19 The Assessment Summary Sheets in Exhibit Nos. 111 through 118 contain a  
20 description of each audio file including the date on which the recording was made,  
21 the trader channel recorded, the start time and end times for each wav file, the

1 duration of the file, the service desk, the regional market served, the name of the  
2 Enron trader, whether the first tier review designated the file as needing further  
3 review, the comments made by the first tier reviewer, whether the second tier  
4 review designated the file as needing further review, and whether the third tier  
5 review designated the file as needing further review. As noted earlier, the  
6 comments on the conversations have been removed because the Justice  
7 Department has not given approval to Trial Staff to use the comments about the  
8 conversations at this time due to the pendency of criminal charges.

9 **Q. What does the Subject Matter field on Exhibit Nos. S-111 through S-118**  
10 **represent?**

11 A. To give some sense of the nature of the conversation in lieu of the Trial Staff  
12 comments redacted by order of the Justice Department, I added a subject matter  
13 field using very broad categories. Many conversations cross more than one  
14 category but are only listed in one category. A great many of these audio files  
15 involve complicated energy trade discussions that are difficult enough to  
16 summarize in a paragraph, let alone in a one word subject field; nonetheless, the  
17 subject matter categories provide a broad sense of the nature of the calls. Those  
18 without subject matter designations relate to routine energy trading transactions,  
19 inquiries, or other idle phone conversations. The list of categories is shown on  
20 Exhibit No. S-108.

1 **Q. How did the “Enron Tape” review process differ from the “Snohomish Tape”**  
2 **review process?**

3 A. Although the Enron Tapes and Snohomish Tapes are all part of the Portland office  
4 tapes, they were handled differently, in part, because of commitments made by  
5 Trial Staff to Snohomish to obtain access to the Snohomish tapes and, in part,  
6 because of the size of the Enron Tapes. The review of the Enron Tapes was done  
7 by means of a sample, as described above. The sample was allocated to the  
8 listeners in 1,082 half-hour sets totaling 42,719 wav files. Of the 1,082 half-hour  
9 observations, fifty were deemed to have contained suspect conversations  
10 embedded within the series of conversations contained in the half hour set. These  
11 fifty observations were then reviewed by the Trial Staff members who are filing  
12 testimony regarding the various gaming practices and categorized by subject  
13 matter. The 50 observations and embedded wav files are shown in the following  
14 exhibits:

15 Exhibit No. S-119 – Enron Tape Assessment Year 2000

16 Exhibit No. S-120 – Enron Tape Assessment Year 2001

17 Exhibit No. S-121 – Enron Tape Assessment Year 2002

18 **Q. Which of the “Enron Tape” audio files were recommended for evidence in**  
19 **this proceeding?**

1 A. The Enron Tapes recommended for evidence in this proceeding are listed on  
2 Exhibit No. S-124. The Trial Staff comments on these audio files have been used  
3 by permission of the Justice Department. The Trial Staff witnesses who are filing  
4 testimony regarding the various gaming practices selected representative files from  
5 this list for inclusion in their testimony.

### 6 **Comments & Recommendations**

7 **Q. Did the Trial Staff investigation into the EPMI Audio Tapes look for patterns**  
8 **of behavior over time?**

9 A. Yes. The Trial Staff looked for patterns of behavior over time by creating an  
10 Observation Matrix. The audio assessment sheets reflect the examination of 48  
11 channels of information over a two year period. To determine whether there were  
12 “hot spots” of suspect activity over that period, Aspen Systems, under my  
13 direction, constructed an Observation Matrix to highlight days and channels on  
14 which suspect conversations took place (Exhibit No. S-122). It was hoped that  
15 such a matrix would direct further investigatory efforts towards days and channels  
16 most likely to reveal suspect behavior most efficiently, given the weight of  
17 evidence to sort through.

18 The Observation Matrix is constructed to highlight suspect conversations by  
19 day and by channel. Each sheet of Exhibit No. S-122 contains one month of

1 observations; each cell of the matrix represents an entire channel for an entire day,  
2 so that if any one conversation sounded suspect on that day, the whole day was  
3 highlighted. Green colored cells represent days when no conversations survived  
4 the three tier review process, red cells represent days where at least one suspect  
5 conversation was still thought to be suspect after three tiers of review.

6 **Q. Did the Observation Matrix reveal any “hot spots” on particular channels?**

7 A. Yes. The hot spots tend to be found on certain channels, suggesting that gaming  
8 activities were relegated to certain employees and certain trading desks. Exhibit  
9 Nos. S-110a and S-110c contain a frequency list of the number of times each  
10 channel was annotated as needing further review. Exhibit No. S-110a reflects the  
11 Snohomish Tapes hot spots list by channel for 310 files that the third tier reviewers  
12 found to suggest a pattern of violations of the CAISO MIP regulations. Channels  
13 one and thirteen stand out as having an extraordinary number of suspect  
14 conversations. Channels one and thirteen are Real Time desks. Exhibit No. S-101  
15 shows which traders worked Channels one and thirteen over the two year period of  
16 the investigation.

17 Exhibit No. S-110c reflects the Enron Tapes hot spots list by channel for the  
18 50 observations found to contain evidence of violations of the CAISO MMIP. It  
19 should be noted that the Enron Tapes were investigated, at this point in the

1 investigation, as half-hour sets of wav files. A highlighted hot spot sometimes  
2 captures numerous wav files within the half-hour set. Consequently, while the file  
3 count in Exhibit No. S-110c is disproportionately high, making a conclusion from  
4 the frequency list difficult.

5 **Q. Did the Observation Matrix reveal any “hot spots” on particular days?**

6 A. Yes. As with the channel frequency list above, hot spots tend to be found on  
7 certain dates as well, suggesting that gaming activities were clustered around  
8 certain periods of time. Exhibit Nos. S-110b and S-110d contain a frequency list  
9 of the number of times each date was annotated as needing further review. The  
10 Observation Matrix in Exhibit No. S-122 highlights any given cell only once,  
11 obscuring days on which that channel may have more than one suspect  
12 conversation. Exhibit No. S-110b reflects the Snohomish Tapes hot spots list by  
13 day for the two year period. For example, August 11, 2000, stands out as a day on  
14 which an extraordinary number of suspect conversations – 27 suspect audio files  
15 on that day alone. December 17 and 18, 2000 also stand out with high numbers of  
16 suspect conversations on those days. Exhibit No. S-110d reflects the Enron Tape  
17 hot spots by day. As noted above, the structure of the sampling technique for the  
18 Enron tapes makes drawing conclusions from the chart of Exhibit No. S-110d  
19 difficult.

1 **Q. Did you discover any audio files that helped put the organizational structure**  
2 **you discussed earlier into perspective as it relates to the market manipulation**  
3 **investigation?**

4 A. Yes. One of the audio files in the Enron Tapes group, which was not included in  
5 the statistical sample, is an extended conversation in which Mr. Belden discusses a  
6 presentation he is to make in Houston regarding how the various departments  
7 within West Power Trading worked in a coordinated fashion, particularly the Real  
8 Time, Services, and Fundamentals. The presentation referred to is contained in  
9 Exhibit No. S-98. Mr. Belden notes that the Middle Market and Services desks  
10 make extensive use of their knowledge of other market participants' resources to  
11 expand Enron's knowledge of the marketplace and reap substantial profits for the  
12 West Power Trading desks. This conversation was captured by Enron attorney  
13 Dion Marsh in his handwritten notes on an audio tape recorded on May 1, 2000,  
14 that he reviewed (Exhibit No. SNO-371, page 62). The content of this audio file  
15 has not been released by the Justice Department for Trial Staff's use in this  
16 proceeding.

17 **Q. Mr. Ballard states in his testimony, Exhibit No. S-64, Page 12, that Enron's**  
18 **use of swaps was used to mask potentially dangerous gaming practices. What**  
19 **is a swap and why are these transactions not highlighted by the review**  
20 **process?**

21 A. Swap trades are generally trades in which entities swap power at two  
22 locations. For example, if an entity has power at Point A but needs it at Point B

1           and has no transmission to get it there; it might seek another entity with a mirror  
2           problem: an obligation at the Point A but resources at Point B. A swap gives each  
3           entity the resources it needs at the same location as its obligations, and avoids the  
4           need for transmission. As Mr. Ballard points out, a problem arises when power  
5           blocks of unequal quality (the underlying generation and load configurations) are  
6           swapped; the resulting source/sink combinations may pose hazards to the system.

7           The Snohomish Tape assessment sheets highlighted 41 wav files related to  
8           swap transactions or conversations. The price of a swap is immaterial to the two  
9           parties since the trades are offsetting transactions intended merely to reposition  
10          resources. There were also 68 wash trades highlighted in the review process. The  
11          wash trades may have been variations on swaps or efforts to make trades that had  
12          no other purpose than to drive up prices. Some transactions labeled as swaps may  
13          have been wash trades. Unfortunately, the time constraints confronting the Trial  
14          Staff prevented us from fully investigating these potential violations of MMIP  
15          rules. Swaps and wash trades require a high level of expertise in understanding the  
16          electric grid and the repercussions such transactions could have on the system.  
17          Swap and wash trades should be examined to determine whether the prices agreed  
18          upon were within reason of prevailing market prices or whether there is an  
19          indication that the prices were set specifically to impact index prices and thus

1           make other indexed contracts more profitable. Up to this point in the Trail Staff  
2           investigation, we have not been able to follow-up on these leads. Furthermore,  
3           because swaps and wash trades are not the subject of the gaming allegations in this  
4           proceeding, I removed them from consideration in the third tier review.

5   **Q.    Has the Trial Staff begun the targeted investigation you spoke of earlier?**

6   A.    Yes. Despite the limited resources and time constraints, the Trial Staff has begun  
7           the targeted investigation that was at the center of its investigation strategy from  
8           day one. Using the Observation Matrix, the databases described earlier, and  
9           handwritten Marsh notes submitted in the Snohomish Exhibit Nos. SNO-731, Trial  
10          Staff has found numerous specific conversations that lead to clarification as to the  
11          intent of the EPMI energy traders when they entered into the deals. Trial Staff  
12          believes it can have a substantial and significant compendium of documentary  
13          evidence in-hand in a short time to connect the audio files with the transaction  
14          databases to establish that the transactions were indeed intended to be violations of  
15          the CAISO MMIP regulations.

16 **Q.    In light of your comments above, do you recommend further investigation of**  
17 **the EPMI Audio Tapes?**

18 A.    Yes. Although the Trial Staff and EPMI Audio Team have spent thousands of  
19          hours auditing and analyzing the EPMI Audio Tapes, we have only scratched the  
20          surface of the amount of material in hand. I believe there is sufficient public

1 benefit to be garnered from further review to warrant the time and resources  
2 required. Trial Staff has filed testimony in this docket recommending the  
3 revocation of Enron's market-based rate authority, requiring Enron to disgorge all  
4 revenues above their costs (Exhibit No. S-76). It is my understanding that at the  
5 pre-hearing conference on September 22, 2004, Trial Staff explained to Judge  
6 Benkin that the soundest way to approach the Enron Tapes was to conduct a  
7 survey, which would take several months, and then inform the Presiding Judge  
8 what the findings of the survey portend. We are now prepared to inform the  
9 Presiding Judge of the results of that survey for the record.

10 **Q. What did the sampling suggest regarding the whole of the Enron Tapes?**

11 A. The sampling of the Enron tapes suggests we can expect to find almost 1,550  
12 conversations in which the traders may have engaged in or discussed violations of  
13 the CAISO MMIP regulations.

14 **Q. How did you arrive at that estimate?**

15 A. As noted in Dr. Savitski's testimony, a properly conducted sample will form a  
16 representative reflection of the universe population with a high degree of accuracy.  
17 Our assessment of the Snohomish Tapes found 310 wav files containing suspect  
18 conversations out of a population of 173,508 wav files; a "hit" rate of 0.13%. The  
19 Enron Tape sampling found 50 observations out of 1082 that contained suspect

1           conversations; a “hit” rate of 4.6%. However, that figure must be adjusted for the  
2           difference in the number of wav files per observation. The Enron Tape  
3           observations contain about 40 wav files per observation, so that our sample  
4           covered approximately 42,720 wav files. Of that we found fifty observations with  
5           at least one suspect conversation, a “hit” rate of 0.11%. When this percentage is  
6           multiplied by the 1,413,123 Enron Tape wav, we find an expected hit estimate of  
7           1,553.

8   **Q.   How long would you anticipate it would take to complete the Trial Staff**  
9   **investigation into the Enron Tapes?**

10   A.   Given the leads discussed earlier, the CAISO databases indicating MMIP violation  
11   dates and times, the Observation Matrix indicating specific channels and dates, and  
12   the Marsh notes highlighting specific conversations, I would anticipate Trial Staff  
13   could complete its investigation by mid-March 2005. The Trial Staff would then  
14   submit its selection of audio tapes found to be relevant to the FERC Western  
15   markets investigation to the Justice Department for review. When permission to  
16   incorporate the audio files into this proceeding is granted, Trial Staff would  
17   provide the Presiding Judge with a complete listing of all relevant files and the  
18   associated supplemental testimony explaining the import of the audio files as they  
19   may relate to the CAISO databases and other evidence in hand. Supplemental

1 testimony based on the targeted investigation would be filed with sufficient time  
2 for Enron to respond without changing the hearing date.

3 **Q. Does this complete your prepared direct testimony?**

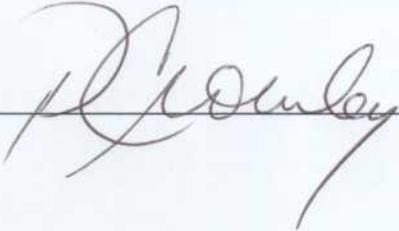
4 **A. Yes, it does.**

**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
and 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)

AFFIDAVIT OF Patrick R. Crowley

I, Patrick R. Crowley, declare under penalty of perjury that I am the author of the foregoing testimony, that the facts set forth herein are true and correct to the best of my knowledge, and that if asked the questions contained in the text, I would give the answers contained in the testimony.

  
\_\_\_\_\_

March 1, 2005