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July 6, 2007

BY ELECTRONIC MAIL (*PUC.FilingCenter@state.or.us*)
AND HAND DELIVERY

Public Utility Commission of Oregon
Attention: Filing Center
550 Capitol Street NE #215
PO Box 2148
Salem, OR 97308-2148

Re: *Wah Chang, Petitioner v. PacifiCorp, Respondent*
Wah Chang's Rebuttal Testimony and Exhibits
Docket UM 1002

Dear Sir or Madam:

Enclosed for filing are the original and five copies of Wah Chang's rebuttal testimony and exhibits, including the Rebuttal Testimony of Robert McCullough (WC/869) and Rebuttal Testimony of Berne Martin Howard (WC/1200). The enclosed Certificate of Service provides a listing of the enclosed testimony and exhibits.

The Rebuttal Testimony of Robert McCullough and the Rebuttal Testimony of Berne Martin Howard reference or include information that has been designated by PacifiCorp as Confidential Pursuant to Protective Order. Accordingly, we are filing all of the Rebuttal Testimony of Robert McCullough, pages 13-16 of the Rebuttal Testimony of Berne Martin Howard and Wah Chang Exhibit 1203 under seal and on yellow paper. We are also filing the Deposition of Charles Cicchetti (WC/1011), the PacifiCorp witness, as an exhibit under seal and on yellow paper.

Consistent with Commission filing rules, I am also enclosing a compact disk containing electronic versions of the enclosed testimony and exhibits, other than the testimony and the exhibit filed under seal.

Very truly yours,

Richard H. Williams

Richard H. Williams

Enclosures
cc (w/enc): Service List
ALJ Patrick Power

006854.0164/635446.1

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

UM 1002

Wah Chang, Petitioner, v. PacifiCorp, Respondent.	)	**CERTIFICATE OF SERVICE OF WAH CHANG'S REBUTTAL TESTIMONY AND EXHIBITS**

I certify that on July 6, 2007, I served the documents listed in the two-page Attachment to this certificate, constituting Wah Chang's Rebuttal Testimony and Exhibits, upon all parties of record in this proceeding, by delivering a copy in person or by mailing a copy properly addressed with first class postage prepaid, or by electronic mail pursuant to OAR 860-013-0070, to the following parties or attorneys of parties:

Paul Graham
Department of Justice
Regulated Utility & Business Section
1162 Court St NE
Salem, OR 97301-4096
<*paul.graham@state.or.us*>

James M. Van Nostrand
Perkins Coie LLP
1120 NW Couch Street, 10th Floor
Portland, OR 97209-4128
<*JVanNostrand@perkinscoie.com*>
By Hand Delivery

Natalie Hocken
PacifiCorp
825 NE Multnomah, Suite 2000
Portland, OR 97232
<*Natalie.Hocken@PacifiCorp.com*>

Dated at Portland, Oregon, this 6th day of July, 2007.

Richard H. Williams

Richard H. Williams, OSB No. 72284
Of Attorneys for Petitioner Wah Chang

LANE POWELL PC
601 SW 2ND AVENUE, SUITE 2100
PORTLAND, OREGON 97204-3158
(503) 778-2100

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON
UM 1002

Wah Chang, Petitioner v.
PacifiCorp, Respondent

WAH CHANG'S REBUTTAL TESTIMONY AND EXHIBITS

Exhibit 800 series.
Rebuttal Testimony of Robert McCullough and accompanying Exhibits:

Ex. No.	Description	Confidential
WC/869	Rebuttal Testimony of Robert McCullough	Yes
WC/870	Table 3 – WSCC Actual Loads and Resources for 2000	No
WC/871	Table 3 – WECC Actual Loads and Resources for 2001	No

Exhibit 1000 series.
Transcript of Deposition of PacifiCorp witness:

Ex. No.	Description	Confidential
WC/1011	Deposition Testimony of Charles Cicchetti, taken June 14, 2007	Yes

Exhibit 1100 series.
Other Exhibits:

Ex. No.	Description	Confidential
WC/1130	Proof of Claim filed October 20, 2003, by the Oregon Department of Justice in the bankruptcy of Enron Corp., et al., U.S. Bankruptcy Court, Southern District of New York, 01-16034 (AJG)	No
WC/1131	Prepared Direct Testimony of Dr. Timothy D. Mount on behalf of PacifiCorp, submitted before the Federal Energy Regulatory Commission in Docket Nos. EL02-80-000, EL02-81-000, EL02-82-000 and EL02-83-000 (PacifiCorp v. Reliant Energy Services, et al.)	No

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Ex. No.	Description	Confidential
WC/1132	Excerpts from Brief on Exceptions of PacifiCorp, dated March 28, 2003, before the Federal Energy Regulatory Commission in Docket Nos. EL02-80-000, EL02-81-000, EL02-82-000 and EL02-83-000 (PacifiCorp v. Reliant Energy Services, et al.)	No
WC/1133	Motion to Reopen the Record, Motion to Take Official Notice, and Motion for Sanctions dated March 13, 2003, filed by PacifiCorp before the Federal Energy Regulatory Commission in Docket Nos. EL02-80-000, EL02-81-000, EL02-82-000 and EL02-83-000 (PacifiCorp v. Reliant Energy Services, et al.)	No
WC/1134	PacifiCorp's Supplemental Motion to Reopen the Record and Motion to Take Official Notice, dated May 7, 2003, before the Federal Energy Regulatory Commission in Docket Nos. EL02-80-000, EL02-81-000, EL02-82-000 and EL02-83-000 (PacifiCorp v. Reliant Energy Services, et al.)	No
WC/1135	PacifiCorp's Response to Petitioner's Nineteenth Data Request (Request Nos. 204-209)	No

Exhibit 1200 series.
Rebuttal Testimony of Berne Martin Howard, and accompanying Exhibits:

Ex. No.	Description	Confidential
WC/1200	Rebuttal Testimony of Berne Martin Howard	Pages 13-16 only
WC/1201	Curriculum Vita of Berne Martin Howard	No
WC/1202	Technical Exhibit to Rebuttal Testimony of Berne Martin Howard	No
WC/1203	Description of Study by Berne Martin Howard of PacifiCorp Reports to Dow Jones	Yes

* * *

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CONFIDENTIAL PURSUANT TO PROTECTIVE ORDER N0. 01-149
OPUC Docket UM 1002

Exhibit WC/869

Rebuttal Testimony of Robert McCullough

July 6, 2007

Information in Exhibit WC/869
has been designated as confidential by PacifiCorp.
Wah Chang reserves the right to contest PacifiCorp's designation.

**BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON**

WAH CHANG

Rebuttal Testimony of Robert McCullough

July 6, 2007

Docket UM 1002
WC/870

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

Table 3 – WSCC Actual Loads and Resources for 2000

Wah Chang Exhibit 870
Accompanying Rebuttal Testimony of Robert McCullough

July 6, 2007

Table 3 - WSCC Actual Loads and Resources for 2000

PEAK DEMAND – MW		JAN	FEB	MAR	APR	MAY	JUN
Loads -	Firm	110063	105410	104091	106299	115892	123799
	Interruptible & Load Mgt	3779	3824	3800	3848	3957	3868
	Total	113842	109234	107891	110147	119849	127667
	Forecast Deviation - %	-3.5	-3.8	-1.4	1.5	6.6	2.7
Generation -	Hydro	64272	63900	64394	64442	64893	65456
	Thermal	88667	88660	89077	88959	88676	89083
	Other	4122	4122	4122	4076	4120	4184
	Total	157061	156682	157593	157477	157689	158723
Total Unavailable Generation *		13400	16945	20735	26303	18049	15047
Net Firm Transfers -	MAPP **	-250	-320	-250	-88	-163	-359
	SWPP **	-225	-250	-250	-250	-300	-300
	Total Net Firm Transfers	-475	-570	-500	-338	-463	-659
Net Generation & Firm Transfers		144136	140307	137358	131512	140103	144335
Margin Over Firm Loads - MW		34073	34897	33267	25213	24211	20536
Margin Over Firm Loads - Percent		31.0	33.1	32.0	23.7	20.9	16.6
ENERGY – GWH							
Total Load		66717	60743	63387	59766	64765	67649
	Forecast Deviation - %	-0.9	-0.6	-0.3	-0.4	4.0	5.1

PEAK DEMAND – MW		JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Loads -	Firm	129030	128696	121640	109886	109042	113525	
	Interruptible & Load Mgt	1862	2174	2214	4044	4065	2579	
	Total	130892	130870	123854	113930	113107	116104	
	Forecast Deviation - %	-1.2	-0.1	0.2	1.6	1.2	-4.3	
Generation -	Hydro	65376	65192	65411	65323	64668	64353	
	Thermal	89104	89102	89218	89635	90005	90128	
	Other	4235	4235	4235	4292	4292	4292	
	Total	158715	158529	158864	159250	158965	158773	
Total Unavailable Generation *		10790	13234	15233	21137	26838	20886	
Net Firm Transfers -	MAPP **	-162	-476	-417	-601	-621	-629	
	SWPP **	-290	-290	-290	-300	-200	-50	
	Total Net Firm Transfers	-452	-766	-707	-901	-821	-679	
Net Generation & Firm Transfers		148377	146061	144338	139014	132948	138566	
Margin Over Firm Loads - MW		19347	17365	22698	29128	23906	25041	
Margin Over Firm Loads - Percent		15.0	13.5	18.7	26.5	21.9	22.1	
ENERGY – GWH								
Total Load		71118	72640	64939	62890	64026	67447	786087
	Forecast Deviation - %	-0.3	0.7	-2.2	-0.7	3.3	-0.8	0.6

* Includes Maintenance, Forced Outages, and Inoperable Capability.

** Minus (-) indicates transfer into WSCC Region.

Docket UM 1002
WC/871

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

Table 3 – WECC Actual Loads and Resources for 2001

Wah Chang Exhibit 871
Accompanying Rebuttal Testimony of Robert McCullough

July 6, 2007

Table 3 - WECC Actual Loads and Resources for 2001

PEAK DEMAND – MW		JAN	FEB	MAR	APR	MAY	JUN
Loads -	Firm	112506	110086	102906	104421	115715	119199
	Interruptible & Load Mgt	1571	1084	1332	1336	529	1862
	Total	114077	111170	104238	105757	116244	121061
	Forecast Deviation - %	-2.8	-1.7	-4.3	-7.4	-3.8	-8.0
Generation -	Hydro	61781	61265	61292	61252	62015	62306
	Thermal	90412	90430	90402	90254	90363	92463
	Other	5569	5568	5619	5645	5693	5721
	Total	157762	157263	157313	157151	158071	160490
Total Unavailable Generation *		26100	23165	28420	30475	26807	16678
Net Firm Transfers -	MAPP **	-189	-89	-140	-139	-112	-160
	SWPP **	-303	-318	-303	-303	-200	-303
	Total Net Firm Transfers	-492	-407	-443	-442	-312	-463
Net Generation & Firm Transfers		132154	134505	129336	127118	131576	144275
Margin Over Firm Loads - MW		19648	24419	26430	22697	15861	25076
Margin Over Firm Loads - Percent		17.5	22.2	25.7	21.7	13.7	21.0
ENERGY – GWH							
Total Load		67195	59816	62404	57740	63493	63812
	Forecast Deviation - %	-3.0	-3.3	-4.2	-7.1	-3.7	-7.0

PEAK DEMAND – MW		JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Loads -	Firm	122501	123193	115235	113564	108803	112716	
	Interruptible & Load Mgt	1877	1847	1883	1219	1297	1288	
	Total	124378	125040	117118	114783	110100	114004	
	Forecast Deviation - %	-7.2	-7.5	-8.1	-1.6	-2.9	-6.3	
Generation -	Hydro	60588	60229	59992	59748	59621	61846	
	Thermal	94754	95004	95691	96949	97518	98343	
	Other	5740	5803	5876	5871	5872	5722	
	Total	161082	161036	161559	162568	163011	165911	
Total Unavailable Generation *		19062	15525	20632	25609	29965	27589	
Net Firm Transfers -	MAPP **	-82	-109	16	-55	-246	-25	
	SWPP **	-153	-278	-303	-200	-303	-232	
	Total Net Firm Transfers	-235	-387	-287	-255	-549	-257	
Net Generation & Firm Transfers		142255	145898	141214	137214	133595	138579	
Margin Over Firm Loads - MW		19754	22705	25979	23650	24792	25863	
Margin Over Firm Loads - Percent		16.1	18.4	22.5	20.8	22.8	22.9	
ENERGY – GWH								
Total Load		66950	67676	61792	62292	60090	65577	758837
	Forecast Deviation - %	-8.6	-10.1	-9.1	-6.4	-8.1	-7.4	-6.6

* Includes Maintenance, Forced Outages, and Inoperable Capability.
** Minus (-) indicates transfer into WECC Region.

CONFIDENTIAL PURSUANT TO PROTECTIVE ORDER N0. 01-149
OPUC Docket UM 1002

Exhibit WC/1011

Deposition Testimony of Charles Cicchetti,
taken June 14, 2007

Wah Chang reserves the right to contest
the confidentiality designation of Exhibit WC/1011

Docket UM 1002
WC/1011

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

Deposition Testimony of Charles Cicchetti,

Taken June 14, 2007

July 6, 2007

Docket UM 1002
WC/1130

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

Proof of Claim filed October 20, 2003, by the

Oregon Department of Justice in the bankruptcy of

Enron Corp., et al., U.S. Bankruptcy Court,

Southern District of New York, Case No. 01-16034 (AJG)

July 6, 2007

UNITED STATES BANKRUPTCY COURT FOR THE SOUTHERN DISTRICT OF NEW YORK

Enron Corp. et al., Case Number: 01-16034 (AJG)

STANDARD PROOF OF CLAIM

Debtor Name and Case Number as Scheduled: ENRON CORP. et al.

Indicate Debtor Name and Case Number, if other than above (see Exhibit A to the Bar Date Notice for a complete list of debtors and case numbers): ______________

NOTICE OF SCHEDULED CLAIM: Your claim is scheduled by the Debtor as:

NOTE: This form should not be used to make a claim for an administrative expense arising after the commencement of the case. A request for payment of an administrative expense may be filed pursuant to 11 U.S.C. § 503.

Name and Address of Creditor (The person or other entity to whom the debtor owes money or property):

The Oregon Department of Justice
c/o Jaspan Schlesinger Hoffman LLP
300 Garden City Plaza
Garden City, New York 11530

Attn: Harold D. Jones, Esq.
516-246-8000

Creditor's Telephone number:

☐ Check box if you are aware that anyone else has filed a proof of claim relati[ng] ... Attach cop[y] ... particulars.

☐ Check box ... received a[ny] ... bankruptc[y] ...

☐ Check bo[x] ... informati[on] ... or incomplete. Please pro[vide] correct information by striking through the preprinted address and writing the correct information.

Filed: USBC - Southern District of New York
ENRON, Et Al.
01-16034 (AJG)
0000024387

FILE THIS PROO[F] ... [E]PT ... T ... TO AS FOLLOWS: If the amount shown above is listed as DISPUTED, UNLIQUIDATED, or CONTINGENT, a proof of claim MUST be filed.

Creditor's Tax Identification or Social Security Number:

Check here if this claim ☐ supplements ☐ replaces ☒ xxx amends a previously filed claim, dated: 10/14/02

1. **Basis for Claim**
   - ☐ Goods sold/Services performed
   - ☐ Contract/Lease (other than trading contracts)
   - ☐ Trading contract
   - ☐ Money loaned
   - ☐ Litigation
   - ☐ Guarantees
   - ☐ Taxes
   - ☒ xxxxx Other See Attached

   If your claim is for retiree benefits, wages, salary, or compensation, you should complete the Employee Proof of Claim Form rather than this form.

2. **Date debt was incurred:** See attached

3. **If court judgment, date obtained:**

4. **Total Amount of Claim at Time Case Filed:** $336,500,000.00

   If all or part of your claim is secured or entitled to priority, also complete Item 5 or 6 below.

   ☐ Check this box if claim includes interest or other charges in addition to the principal amount of the claim. Attach itemized statement of all interest or additional charges.

5. **Secured Claim.**

   ☐ Check this box if your claim is secured by collateral (including a right of setoff).

   Brief Description of Collateral: ______________

   Value of Collateral: $______________

   Amount of arrearage and other charges at time case filed included in secured claim, if any: $______________

6. **Unsecured Priority Claim.**

   ☐ Check this box if you have an unsecured priority claim
   Amount entitled to priority $______________
   Specify the priority of the claim:
   ☐ Taxes or penalties owed to governmental units - 11 U.S.C. § 507(a)(8).
   ☐ Other – Specify applicable paragraph of 11 U.S.C. § 507(a)(_____).

7. **Credits:** The amount of all payments on this claim has been credited and deducted for the purpose of making this proof of claim.

8. **Supporting Documents:** *Attach copies of supporting documents*, such as promissory notes, purchase orders, invoices, itemized statements of running accounts, contracts, court judgments, mortgages, security agreements, and evidence of perfection of lien.

   DO NOT SEND ORIGINAL DOCUMENTS. If the documents are not available, explain. If the documents are voluminous, attach a summary.

9. **Date-Stamped Copy:** To receive an acknowledgment of the filing of your claim, enclose a stamped, self-addressed envelope and a copy of this proof of claim.

THIS SPACE IS FOR COURT USE ONLY

RECEIVED
OCT 20 2003
CLAIMS PROCESSING CENTER
USBC, SDNY
4

Date: 10/17/03

Sign and print the name and title, if any, of the creditor or other person authorized to file this claim (attach copy of power of attorney, if any): Susan T. Egnor, AAG

Penalty for presenting a fraudulent claim: Fine of up to $500,000 or imprisonment for up to 5 years or both. 18 U.S.C. §§ 152 and 3571.

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Attorneys for State of Oregon

UNITED STATES BANKRUPTCY COURT
SOUTHERN DISTRICT OF NEW YORK

In re **ENRON CORP., et al.**	**Chapter 11** **Case No. 01-16034 (AJG)** **Jointly Administered**

SUPPLEMENTAL STATEMENT IN SUPPORT OF PROOF OF CLAIM OF THE STATE OF OREGON

The State of Oregon (Claimant), submits this Supplemental Statement in support in its Proof of Claim in the bankruptcy proceedings of Debtors, Enron Corp., Enron North America Corp., Enron Power Marketing, Inc., Enron Energy Services Operations, Inc., Enron Energy Marketing Corp., Enron Energy Services, Inc., Enron Energy Services, LLC, Enron Energy Services North America, Inc., Enron Capital & Trade Resources International Corp., *et al.* (Debtors).

This claim is based on evidence that Debtors have improperly and illegally manipulated energy markets in Oregon and the Western United States, engaged in over 1,346 incidents of unlawful conduct in the state of Oregon including, without limitation, wash trades, "Death Star" and "Ricochet" transactions, and violated federal and state laws and regulations including, without limitation, Antitrust Oregon Revised Statutes (ORS) 646.705-646.730 and Oregon Racketeering Activity ORS166.720.

As a result of such misconduct Debtors are liable to Claimant for civil penalties in the amount of $250,000.00 per violation of the CPA. Debtors engaged in over 1,346 such acts in the state of Oregon or with Oregon state entities, resulting in a total of over $366,500,000.00 in civil penalties owed to the state.

The investigation of the Oregon Attorney General into Debtor's unlawful, unfair or anti-competitive behavior in the Oregon State and Western U.S. energy markets is ongoing and it is expected that additional evidence of misconduct and damages caused by Debtors will be discovered.

Enron Corporation, and all subsidiaries and affiliates which it controlled, including Enron North America Corp., Enron Power Marketing, Inc., Enron Energy Services, Inc. and others named above (collectively "Enron"), was prior to bankruptcy reportedly the largest wholesale power marketer in North America by sales volume and made nearly two billion dollars in profits from its electricity trading operations in the Western states in the years 2000 and 2001.

Enron engaged in the improper use of market power, market manipulation and misrepresentations concerning its power trading services, among other practices. Enron's schemes included "Fat Boy," "Ricochet," "Load Shift," "Death Star," selling non-firm energy as firm energy and others described in the now infamous December 8, 2000 memo by Enron lawyers. In addition, Enron engaged in "wash trades" to manipulate index prices, and falsely create the appearance of higher volume trading thereby boosting their credit and stock status. The evidence so far indicates that Enron's activities violated and are actionable under many laws including, but not limited to, Oregon Antitrust laws, Oregon Revised Statutes (ORS) 646.705-646.730 and the Oregon Racketeer Influenced and Concept Organization Act ("ORICO"), ORS 166.715 et seq., and federal antitrust, mail and wire fraud statutes, 15 U.S.C. §1 *et seq.* and 18 U.S.C. §§1341 *et seq.*; and as constituting fraud and conversion.

As a result of the 1,346 violations for as many separate "Death Star" transactions, Debtors are liable for civil penalties in the sum of $250,000.000 per violation pursuant to ORS

646.760 for each Antitrust violation and/or $250,000.00 pursuant to ORS 166.725(8) for Oregon Racketeering Activity.

The Federal Energy Regulatory Commission (FERC) describes "Death Star", also known as "Circular Scheduling" as follows:

> The practice involved the market participant [Enron] 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 [California] control area and a transaction outside the [California] control area in the opposite direction of the counterflow back to the original place of origin, however, power did not actually flow and congestion was not relieved.[1]

This claim is asserted for each and every violation of law by Enron and its affiliates and subsidiaries by reason of energy market misconduct, including, but not limited to, the actions and matters stated above. In light of the ongoing nature of the investigations into Enron's activities in the Western U.S. power markets, and revelations that Enron's corporate structure may in some respects have been a sham, Claimant reserves the right to assert this claim in each of the Enron Corp., *et al.* Chapter 11 cases that are currently pending before this Court. Claimant also reserves the right to amend or supplement this Proof of Claim in any respect.

By filing this claim, the State of Oregon does not waive sovereign immunity, except as otherwise provided by law. Any waiver of sovereign immunity under the law resulting from the filing of this claim is strictly limited to this claim. Further, the filing of this claim shall not be deemed or construed as a waiver of any objections or defenses that the State of Oregon, or any other agency, unit or entity of the State of Oregon may have to this Court's jurisdiction over it or such other agency, unit or entity based upon the Eleventh Amendment or related principles of sovereign immunity or otherwise, all of which are hereby preserved.

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[1] 103 FERC ¶61,345, page 23 at paragraph 43, "Order to Show Cause Concerning Gaming and/or Anomalous Market Behavior."

The Debtors may also owe the Claimant for additional amounts obtained as a result of actionable misconduct occurring after December 2, 2001. Claimant reserves the right to amend this Proof of Claim accordingly, to seek payment of some or all of the amounts claimed herein as administrative expenses.

Dated this 17th day of October, 2003.

HARDY MYERS
Attorney General of the State of Oregon

Susan E

SUSAN T. EGNOR #87215
Assistant Attorney General
Attorney for State of Oregon

CEDF0535.DOC

Aug. 14, 2002, 2:20PM

West Coast deals probed

Regulators find evidence Enron forced up prices

By DAVID IVANOVICH and JANET ELLIOTT

WASHINGTON -- Federal regulators say they have evidence Enron and two other energy-trading firms manipulated electricity and natural gas prices during California's energy crisis.

While the findings by its staff are only preliminary, the Federal Energy Regulatory Commission Tuesday launched formal investigations to determine if Enron, together with El Paso Electric Co. and Avista Corp., distorted prices at a time when California was scrambling to buy electricity.

"Enron's corporate culture ... fostered a callous disregard for the American energy customer," staffers wrote in this interim report to Congress sent to Capitol Hill on Tuesday.

If regulators ultimately conclude the companies engaged in misconduct, they could be barred from participating in the wholesale power market and be forced to turn over trading profits earned at that time.

The report also could help California in its bid to force power suppliers to refund nearly $9 billion the state contends it was overcharged during the crisis.

But California Gov. Gray Davis dismissed the report Tuesday as a "whitewash."

"Not one sanction was imposed on one company," Davis said. "No prosecution was recommended. California consumers are at serious risk as long as FERC is in charge," said Davis.

Davis said federal regulators have known about wholesale price-gouging in California since October 2000.

"After two years, they decide they want to launch a full probe. Man, I'm glad these guys weren't running World War II."

Enron spokesman Eric Thode would say only: "We continue to cooperate in FERC's investigation."

Commission staffers launched the investigation back in February at the request of

RESOURCES

Latest news:
• FERC's findings on Enron - PDF file courtesy of FindLaw.

Video:
• Skilling denies deceiving
Video courtesy of KHOU.

Graphics:
• Qwest admits to criminal probe
• Understanding Enron's partnerships
• Enron's phantom hedge
• Enron's accounting
• Enron's trading strategies

• Enron's collapse
(Requires Flash plug-in)

Other:
• 2001 compensation for 144 Enron insiders
• Enron's financial statement (188 pages in PDF; 0.5 MB)
• J. Clifford Baxter's suicide note
• Enron/Opco Energy Company's business plan
• The Powers Report: Internal investigation (10 MB)
• Vice president's memo warning of problems at Enron
• List of Enron creditors
• Legal documents compiled by FindLaw
• History of Enron
• Enron's Web site
• Houston Chronicle archived coverage of Enron's rise and fall

(Several files require Acrobat Reader.)

EXHIBIT
A
p. 1 of 3

EXHIBIT
A
p. 2 of 3

lawmakers who believe Enron played a key role in exacerbating California's power crunch.

In conducting the probe, investigators pored over 1,200 gigabytes of electronic data and 70 boxes of documents, interviewed company executives and conducted onsite inspections.

In May, Enron handed investigators the break they needed: memos detailing trading strategies with names such as "Fat Boy," "Get Shorty," and "Death Star" that regulators say Enron employed to "game the system."

Using these techniques, Enron traders created phantom congestion on California's power transmission grid, shipped electricity out of the state to circumvent price caps and deceived the state's grid operator by filing false information.

Regulators say many of these techniques may have been attempts to manipulate prices.

"The now infamous Enron trading strategies have adversely affected confidence in energy markets in the West," the report said.

Commission staffers concede they don't really know the full economic impact of Enron's trading strategies, but they argue the ramifications go "far beyond their dollar impact on spot prices."

Enron made $1.8 billion in profit from its electricity trading operations in California and other Western states in 2000 and 2001.

After Enron revealed these strategies to regulators in May, the commission ordered 130 wholesale suppliers that had operated in the western market during the crisis to turn over data.

Ten companies admitted they engaged in some of the trading strategies detailed by Enron.

Portland General Electric Corp., a wholly owned Enron subsidiary, told regulators it engaged in a practice known as "ricochet" or "megawatt laundering" -- buying electricity in California at a capped price, then selling it out of state. The power supplier then repurchased the electricity for a slightly higher price, sent it back to California and sold for the higher price allowed for imported power.

Portland General told regulators Enron would buy the power in California in these deals, then sell it to Spokane, Wash.-based Avista. Avista then sold the electricity to Portland General, which then sold it back to Avista, which then resold it to Enron, which would then ship it back to California.

Portland General spokesman Kregg Arntson expressed real frustration with regulators.

"We ... have done everything we can think of to respond, and we have asked for suggestions and guidance from FERC along the way," Arntson said. "We have provided FERC with massive amounts of information relevant to previous data request, and we will continue to fully cooperate with FERC's investigation."

Avista spokesman Pat Lynch said company officials "look forward to the opportunity to tell our story to FERC, to clear Avista's name. ... We have acted ethically and honestly in our business practices. Our review continues to affirm that Avista employees had no knowledge of the strategies Enron may have been pursuing."

El Paso officials told regulators they had no knowledge of Enron's trading strategies, because Enron employees manned their trading desk 75 percent of the time.

Regulators disputed those claims, pointing to a letter from El Paso executives, lauding their joint project as a "great illustration of what is possible when teamwork, knowledge, initiative and accountability all come together."

And at the very least, the staffers noted, El Paso was complacent about monitoring Enron's activities.

"Market participants complained that, when they call El Paso Electric's trading desk, they were uncertain whether they

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were actually dealing with El Paso Electric or with Enron," the report noted.

El Paso released a brief statement Tuesday evening, noting: "Our intent is to answer all of FERC's questions candidly, openly and completely."

El Paso Electric Co. is not affiliated with Houston-based El Paso Corp.

To prevent similar practices in the future, the commission incorporated safeguards in a master plan it developed for the nation's wholesale power market.

Regulators also examined gas prices, comparing prices in producing regions such as West Texas' Permian Basin to those in California at the height of the crisis. Regulators believe there are "preliminary indications" of gas price manipulation.

Gas prices were a critical factor during the electricity crisis, since so much of California's electricity generation is fired by natural gas.

Sen. Dianne Feinstein, D-Calif., who was key in persuading FERC Commission Chairman Pat Wood III to launch the investigation, noted that "while this report may not contain any major new smoking gun, it does point out that there are many things wrong in the energy marketplace."

Wood could not be reached for immediate comment Tuesday.

He is slated to meet with energy company executives in Houston today at a forum hosted by the Global Energy Management Institute at the University of Houston's Bauer College of Business.

HoustonChronicle.com -- http://www.HoustonChronicle.com | Section: Page 1
This article is: http://www.chron.com/cs/CDA/story.hts/special/enron/1533711

STOEL RIVES LLP

MEMORANDUM

December 8, 2000

TO: RICHARD SANDERS

FROM: CHRISTIAN YODER AND STEPHEN HALL

RE: Traders' Strategies in the California Wholesale Power Markets/ ISO Sanctions

CONFIDENTIAL: ATTORNEY/CLIENT PRIVILEGE/ATTORNEY WORK PRODUCT

This memorandum analyzes certain trading strategies that Enron's traders are using in the California wholesale energy markets. Section A explains two popular strategies used by the traders, "inc-ing" load and relieving congestion. Section B describes and analyzes other strategies used by Enron's traders, some of which are variations on "inc-ing" load or relieving congestion. Section C discusses the sanction provisions of the California Independent System Operator ("ISO") tariff.

A. The Big Picture

1. "Inc-ing" Load Into The Real Time Market

One of the most fundamental strategies used by the traders is referred to as "'inc-ing' load into the real time market." According to one trader, this is the 'oldest trick in the book' and, according to several of the traders, it is now being used by other market participants.

To understand this strategy, it is important to understand a little about the ISO's real-time market.[1] One responsibility of the ISO is to balance generation (supply) and loads (demand) on the California transmission system. During its real-time energy balancing function the ISO pays/charges market participants for increasing/decreasing their generation. The ISO pays/charges market participants under two schemes: "instructed deviations" and "uninstructed deviations." Instructed deviations occur when the ISO selects supplemental energy bids from generators offering to supply energy to the market in real time in response to ISO instructions. Market participants that increase their generation in response to instructions ("instructed deviation") from the ISO are paid the "inc" price. Market participants that increase their

[1] The "real-time" energy market is also known as the imbalance energy market. The imbalance energy market can be further subdivided into the (1) supplemental energy or instructed deviation market and (2) the ex post market or uninstructed deviation market.

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generation without an instruction from the ISO (an "uninstructed deviation") are paid the ex post "dec" price. In real-time, the ISO issues instructions and publishes ex post prices at ten-minute intervals.

"'Inc-ing load' into the real-time market" is a strategy that enables Enron to send excess generation to the imbalance energy market as an uninstructed deviation. To participate in the imbalance energy market it is necessary to have at least 1 MW of load. The reason for this is that a generator cannot schedule energy onto the grid without having a corresponding load. The ISO requires scheduling coordinators to submit balanced schedules; i.e., generation must equal load. So, if load must equal generation, how can Enron end up with excess generation in the real-time market?

The answer is to artificially increase ("inc") the load on the schedule submitted to the ISO. Then, in real-time, Enron sends the generation it scheduled, but does not take as much load as scheduled. The ISO's meters record that Enron did not draw as much load, leaving it with an excess amount of generation. The ISO gives Enron credit for the excess generation and pays Enron the dec price multiplied by the number of excess megawatts. An example will demonstrate this. Enron will submit a day-ahead schedule showing 1000 MW of generation scheduled for delivery to Enron Energy Services ("EES"). The ISO receives the schedule, which says "1000 MW of generation" and "1000 MW of load." The ISO sees that the schedule balances and, assuming there is no congestion, schedules transmission for this transaction. In real-time, Enron sends 1000 MW of generation, but Enron Energy Services only draws 500 MW. The ISO's meters show that Enron made a net contribution to the grid of 500 MW, and so the ISO pays Enron 500 times the dec price.

The traders are able to anticipate when the dec price will be favorable by comparing the ISO's forecasts with their own. When the traders believe that the ISO's forecast underestimates the expected load, they will inc load into the real time market because they know that the market will be short, causing a favorable movement in real-time ex post prices. Of course, the much-criticized strategy of California's investor-owned utilities ("IOUs") of underscheduling load in the day-ahead market has contributed to the real-time market being short. The traders have learned to build such underscheduling into their models, as well.

Two other points bear mentioning. Although Enron may have been the first to use this strategy, others have picked up on it, too. I am told this can be shown by looking at the ISO's real-time metering, which shows that an excess amount of generation, over and above Enron's contribution, is making it to the imbalance market as an uninstructed deviation. Second, Enron has performed this service for certain other customers for which it acts as scheduling coordinator. The customers using this service are companies such as Powerex and Puget Sound Energy ("PSE"), that have generation to sell, but no native California load. Because Enron has native California load through EES, it is able to submit a schedule incorporating the generation of a generator like Powerex or PSE and balance the schedule with "dummied-up" load from EES.

Interestingly, this strategy appears to benefit the reliability of the ISO's grid. It is well known the California IOUs have systematically underscheduled their load in the PX's Day-

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Ahead market. By underscheduling their load into the Day-Ahead market, the IOUs have caused the ISO to have to call on energy in real time in order to keep the transmission system in balance. In other words, the transmission grid is short energy. By deliberately overscheduling load, Enron has been offsetting the ISO's real time energy deficit by supplying extra energy that the ISO needs. Also, it should be noted that in the ex post market Enron is a "price taker," meaning that they are not submitting bids or offers, but are just being paid the value of the energy that the ISO needs. If the ISO did not need the energy, the dec price would quickly drop to $0. So, the fact that Enron was getting paid for this energy shows that the ISO needed the energy to balance the transmission system and offset the IOU's underscheduling (if those parties own Firm Transmission Rights ("FTR") over the path).

2. Relieving Congestion

The second strategy used by Enron's traders is to relieve system-wide congestion in the real-time market, which congestion was created by Enron's traders in the PX's Day Ahead Market. In order to relieve transmission congestion (i.e., the energy scheduled for delivery exceeds the capacity of the transmission path), the ISO makes payments to parties that either schedule transmission in the opposite direction ("counterflow payments") or that simply reduce their generation/load schedule.

Many of the strategies used by the traders involve structuring trades so that Enron gets paid the congestion charge. Because the congestion charges have been as high as $750/MW, it can often be profitable to sell power at a loss simply to be able to collect the congestion payment.

B. Representative Trading Strategies

The strategies listed below are examples of actual strategies used by the traders, many of which utilize the two basic principles described above. In some cases, the strategies are identified by the nicknames that the traders have assigned to them. In some cases, i.e., "Fat Boy," Enron's traders have used these nicknames with traders from other companies to identify these strategies.

1. Export of California Power

NO. 250?

a. As a result of the price caps in the PX and ISO (currently $250), Enron has been able to take advantage of arbitrage opportunities by buying energy at the PX for export outside California. For example, yesterday (December 5, 2000), prices at Mid-C peaked at $1200, while California was capped at $250. Thus, traders could buy power at $250 and sell it for $1200.

b. This strategy appears not to present any problems, other than a public relations risk arising from the fact that such exports may have contributed to California's declaration of a Stage 2 Emergency yesterday.

2. "Non-firm Export"

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

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

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

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

Apparently, the ISO has heavily documented Enron's use of this strategy. Therefore, this strategy is the more likely than most to receive attention from the ISO.

2. "Death Star"

a. This 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.

b. For example, Enron would first import non-firm energy at Lake Mead for export to the California-Oregon border ("COB"). Because the energy is traveling in the opposite direction of a constrained line, Enron gets paid for the counterflow. Enron also avoids paying ancillary service charges for this export because the energy is non-firm, and the ISO tariff does not require the purchase of ancillary services for non-firm energy.

c. Second, Enron buys transmission from COB to Lake Mead at tariff rates to serve the import. The transmission line from COB to Lake Mead is outside of the ISO's control area, so the ISO is unaware that the same energy being exported from Lake Mead is simultaneously being imported into Lake Mead. Similarly, because the COB to Lake Mead line is outside the ISO's control area, Enron is not subject to payment of congestion charges because transmission charges for the COB to Lake Mead line are assessed based on imbedded costs.

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d. The ISO probably cannot readily detect this practice because the ISO only sees what is happening inside its control area, so it only sees half of the picture.

e. The net effect of these transactions is that Enron gets paid for moving energy to relieve congestion without actually moving any energy or relieving any congestion.

3. "Load Shift"

a. This strategy is applied to the Day-Ahead and the real-time markets.

b. 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.

c. This strategy requires that Enron have FTRs connecting the two zones.

d. 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.

e. 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.

f. Following this strategy has produced profits of approximately $30 million for FY 2000.

4. "Get Shorty"

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

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

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c. The profit is made by shorting the ancillary services, i.e., sell high and buy back at a lower price.

d. One concern here is that the traders are applying this strategy without having the ancillary services on standby. The traders are careful, however, to be sure to buy services right at 9:00 a.m. so that Enron is not actually called upon to provide ancillary services. However, once, by accident, a trader inadvertently failed to cover, and the ISO called on those ancillary services.

e. This strategy might be characterized as "paper trading," because the seller does not actually have the ancillary services to sell. FERC recently denied Morgan Stanley's request to paper trade on the New York ISO.

The ISO tariff does provide for situations where a scheduling coordinator sells ancillary services in the day ahead market, and then reduces them in the day-of market. Under these circumstances, the tariff simply requires that the scheduling coordinator replace the capacity in the hour-ahead market. ISO Tariff, SBP 5.3, *Buy Back of Ancillary Services.*

f. The ISO tariff requires that schedules and bids for ancillary services identify the specific generating unit or system unit, or in the case of external imports, the selling entity. As a consequence, in order to short the ancillary services it is necessary to submit false information that purports to identify the source of the ancillary services.

5. "Wheel Out"

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

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

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

6. "Fat Boy"

a. This strategy is described above in section A (1).

7. "Ricochet"

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a. Enron buys energy from the PX in the Day Of market, and schedules it for export. The energy is sent out of California to another party, which charges a small fee per MW, and then Enron buys it back to sell the energy to the ISO real-time market.

b. The effect of this strategy on market prices and supply is complex. First, it is clear that Enron's intent under this strategy is solely to arbitrage the spread between the PX and the ISO, and not to serve load or meet contractual obligations. Second, Ricochet may increase the Market Clearing Price by increasing the demand for energy. (Increasing the MCP does not directly benefit Enron because it is *buying* energy from the PX, but it certainly affects other buyers, who must pay the same, higher price.) Third, Ricochet appears to have a neutral effect on supply, because it is returning the exported energy as an import. Fourth, the parties that pay Enron for supplying energy to the real time ex post market are the parties that underscheduled, or underestimated their load, i.e., the IOUs.

8. Selling Non-firm Energy as Firm Energy

a. The traders commonly sell non-firm energy to the PX as "firm." "Firm energy," in this context, means that the energy includes ancillary services. The result is that the ISO pays EPMI for ancillary services that Enron claims it is providing, but does not in fact provide.

b. The traders claim that "everybody does this," especially for imports from the Pacific Northwest into California.

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

9. Scheduling Energy To Collect the Congestion Charge II

a. In order to collect the congestion charges, the traders may schedule a counterflow even if they do not have any excess generation. In real time, the ISO will see that Enron did deliver the energy it promised, so it will charge Enron the inc price for each MW Enron was short. The ISO, however, still pays Enron the congestion charge. Obviously a loophole, which the ISO could close by simply failing to pay congestion charges to entities that failed to deliver the energy.

b. This strategy is profitable whenever the congestion charge is sufficiently greater than the price cap. In other words, since the ex post is capped at $250, whenever the congestion charge is greater than $250 it is profitable to schedule counterflows, collect the congestion charge, pay the ex post, and keep the difference.

C. ISO Tariff

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The ISO tariff prohibits "gaming," which it defines as follows:

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

The ISO tariff also prohibits "anomalous market behavior," which includes "unusual trades or transactions"; "pricing and bidding patterns that are inconsistent with prevailing supply and demand conditions"; and "unusual activity or circumstances relating to imports from or exports to other markets or exchanges." MMIP, Section 2.1.1 et seq.

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

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

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

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

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

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

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

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Docket UM 1002
WC/1131

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

Prepared Direct Testimony of Dr. Timothy D. Mount

on behalf of PacifiCorp, submitted before the

Federal Energy Regulatory Commission in Docket Nos. EL02-80-000,

EL02-81-000, EL02-82-000 and EL02-83-000

(PacifiCorp v. Reliant Energy Services, et al.)

July 6, 2007

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PacifiCorp	
v.	
	Docket Nos.
Reliant Energy Services, Inc.	EL02-80-000
Morgan Stanley Capital Group, Inc.	EL02-81-000
Williams Energy Marketing & Trading Company	EL02-82-000
El Paso Merchant Energy, L.P.	EL02-83-000
	(consolidated)

PREPARED DIRECT TESTIMONY OF DR. TIMOTHY D. MOUNT ON BEHALF OF PACIFICORP

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Timothy D. Mount. My business address is 215 Warren Hall, Cornell University, Ithaca, NY 14853-7801.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am a Professor of Applied Economics and Management at Cornell University, specializing in econometric modeling and energy economics. I am appearing as an Academic Affiliate of Power Economics, Inc., a consulting firm specializing in the economics of electricity.

Q. PLEASE DESCRIBE BRIEFLY YOUR EDUCATIONAL AND EMPLOYMENT BACKGROUND.

A. I hold a B.S. in Agriculture from the University of London, an M.S. in Agricultural Economics from Oregon State University and M.S. and Ph.D. degrees in Statistics and Agricultural Economics, respectively, from the University of California, Berkeley. From 1969 to the present, I have been a Professor at Cornell University in the Department of Applied Economics and Management (formerly Agricultural Economics) teaching econometrics and doing research on issues relating to the use of electricity and fuels and the corresponding environmental consequences. I was Director of the Cornell Institute for Social and Economic Research (CISER) from 1990-99. The mission of CISER is to support research by social scientists in all disciplines. I am currently doing research on electricity markets as a member of the Power System Engineering Research Center (PSERC). PSERC is a consortium of universities established by the National Science Foundation to support collaborative research between university researchers and industry and government staff on current problems faced by the electric utility industry associated with restructuring. A detailed vita is attached as Exhibit PAC-15.

Q. ON WHOSE BEHALF ARE YOU APPEARING?

A. I am appearing on behalf of PacifiCorp.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to address the Federal Energy Regulatory Commission's ("FERC" or "Commission") instruction that in order to meet its burden of proof to reform the forward bilateral contracts that are the subject of this proceeding ("Summer 2002 Contracts"), PacifiCorp must demonstrate that "the dysfunctional ISO and PX spot markets had an adverse effect on the forward bilateral markets in California."[1] In order to assist PacifiCorp in this demonstration, I have prepared a series of statistical analyses that address the economic relationships, first, among the spot markets in California and throughout the western United States and, second, between the spot market and forward market at Palo Verde, a major trading hub in Arizona. Although the Commission's instruction references only markets in California, I have expanded the analysis to include points outside California because PacifiCorp's load is largely outside California and because each of the Summer 2002 Contracts specify Palo Verde as the delivery point.

II. SUMMARY

Q. PLEASE SUMMARIZE YOUR CONCLUSIONS.

A. I have conducted a standard Vector Auto Regressive ("VAR") model of spot prices at four different locations in the West: SP-15 in California; California-Oregon Border ("COB"); Mid-Columbia ("Mid-C") in the Pacific Northwest;

[1] *PacifiCorp v. Reliant Energy Services, Inc.*, 99 FERC ¶ 61,381 at P 27 (June 28, 2002).

and Palo Verde. My analysis shows that there are strong interrelationships among these four markets, and that the markets have a set of dynamic features in common.

In addition, using reported data from NYMEX, I have conducted a statistical analysis which shows that the spot price for electricity at Palo Verde is a statistically significant determinant of the forward price of electricity for two fixed delivery dates, August 2001 and August 2002. The data used to produce these strong statistical results apply to the period when the spot market was dysfunctional and spot prices were much higher than historical levels.

Indeed, my analysis shows that 90% of the variability of the forward price ratio (of electricity to natural gas) for delivery at Palo Verde in August 2002 can be explained by the changes in the spot price of electricity. This finding is of particular significance to this case because PacifiCorp's Summer 2002 Contracts provide for delivery at Palo Verde during the summer of 2002, including the month of August. In my opinion, the finding leaves virtually no doubt that the dysfunction that occurred in the California ISO and PX spot markets greatly affected the price paid by PacifiCorp under the Summer 2002 Contracts in the forward bilateral market at Palo Verde.

III. RELATIONSHIPS AMONG WESTERN SPOT MARKETS

Q. PLEASE DESCRIBE YOUR ANALYSIS OF THE RELATIONSHIPS AMONG WESTERN SPOT MARKETS.

A. In my analysis, I show that dynamic interrelationships among spot prices in four locations in the West are statistically significant, and that the spot price is an important determinant of forward prices from the Summer of 2000 to the Spring of 2001 when spot prices were unusually high. These relationships exist after the effects of seasonality and structural shifts, associated with the change in market structure in California, have been removed from the price series.

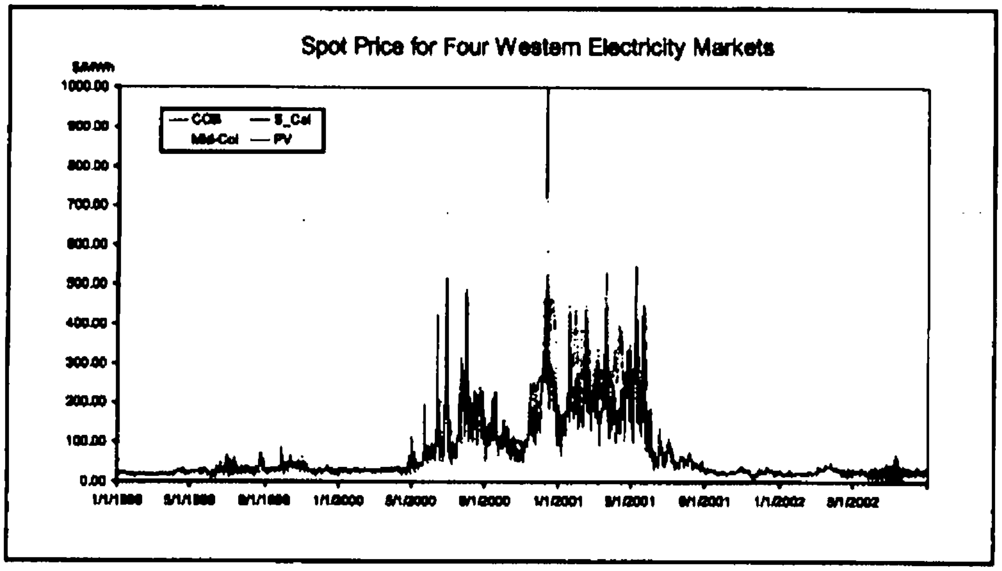
Q. WHICH PRICE SERIES HAVE YOU INCLUDED IN THE ANALYSIS?

A. As mentioned, the four locations are the electricity trading hubs commonly known as SP-15, COB; Mid-C and Palo Verde. These data were reported by Energy Market Report, and they cover the period January 1, 1999 to August 31, 2002 for a total of 1339 daily observations of the on-peak spot price.

Q. WHAT WAS HAPPENING TO SPOT PRICES IN CALIFORNIA DURING THAT TIME?

A. In December, 2000, FERC ordered that a new "soft-cap" auction should be implemented to replace the existing market operated by the California ISO. FERC's action created a new form of market that combined a uniform price auction with a discriminatory price auction. Offers to sell below the soft-cap ($150/MWh starting in January, 2001) were used to set a market clearing price in a conventional form of uniform price auction. However, any offers to sell above the soft-cap that were needed to meet the load did not set the market price and were paid the actual offer. The objective of this auction was to stop high offers (i.e., above the soft-cap) from setting the market price for all capacity sold. The reported spot prices for the four locations cited above show that prices were persistently higher than the soft-cap from January to May, 2001. These four price series are shown in Figure 1.

Figure 1 Spot Prices for Electricity at Four Locations



Q. HOW DID THE SOFT CAP AFFECT YOUR ANALYSIS?

A. This change in price behavior using the soft-cap auction is the main reason why I allowed for structural shifts as well as seasonal effects in the econometric analysis of spot prices. The soft-cap auction was replaced in June 2001, and at the same time, a more vigorous form of price mitigation was introduced. Consequently, I have treated this latter period as another structural shift to distinguish conditions before and after the soft-cap auction was operating.

Q. WAS PRICE BEHAVIOR UNUSUAL DURING THE PERIOD SOFT CAP WAS IN EFFECT?

A. Yes. Spot markets in the East like PJM have a few infrequent price spikes and such behavior is typical for a uniform price auction. However, the persistence of the high prices day after day in the soft-cap spot market in California was very unusual.

Q. DO YOU THINK THAT THE PERSISTENCE OF HIGH PRICES IN THE SPOT MARKET AFFECTED THE EXPECTATIONS OF BUYERS IN THE WHOLESALE MARKET ABOUT FUTURE PRICES?

A. High prices in the previous summer of 2000 could be partly, but not completely, explained by real factors such as high seasonal demand. In contrast, no one would have expected spot prices to be as high as they were in the winter of 2001 under normal circumstances. For example, California normally exports electricity to the Pacific Northwest in the winter when generating capacity in California is relatively abundant compared to load. Persistent high prices during the generally mild California winter would be viewed by buyers as a very ominous sign for the coming summer when resources are typically much tighter. Consequently, the unusually high spot prices in the winter of 2001 would have increased the expectations of buyers that prices would be higher in the future.

Q. ARE THERE OTHER UNUSUAL FACTORS THAT AFFECTED THE EXPECTATIONS OF BUYERS IN THE WHOLESALE MARKETS DURING THE WINTER OF 2001?

A. Yes. Before the introduction of the soft-cap market in December 2000, the spot prices reported by the California ISO represented the market clearing price for all electricity sold. However, in a soft-cap auction when the reported prices are above the soft-cap, these prices only reflect the prices of a few individual transactions rather than the market clearing prices. This introduces another source of uncertainty since it is not obvious how the reported prices should be interpreted or exactly what they measure (i.e., whether it is the highest price paid or the average of all trades above the soft-cap). As a member of the public, I was amazed to see prices above $300/MWh reported in the *Wall Street Journal* day after day in the winter of 2001, but it was extremely difficult at that time to get any additional information from the California ISO about what was really going on in the spot market.

Q. **TO RETURN TO YOUR ECONOMETRIC ANALYSIS OF THE SPOT PRICES AT FOUR LOCATIONS, HOW DID YOU SPECIFY THE STRUCTURAL SHIFTS AND SEASONALITY IN YOUR MODEL?**

A. The two structural shifts were specified by two types of variables. One was a dummy variable for each specified period (i.e., during the soft-cap market and after the soft-cap market), and the other was an inverse function of the number of days (i.e., 1, 1/2, 1/3, 1/4...., starting with the first day of the structural shift) and zero otherwise. The reason for including these inverse variables was to account for the high reported price of natural gas that coincided with the introduction of the soft-cap market in December 2000, and to allow for a gradual adjustment of prices when strict price mitigation was introduced in June, 2001. In addition, two sine/cosine waves were included to seasonality (representing a one year and a half year cycle). The reason for using these seasonal variables was to avoid the discontinuous jumps associated with monthly dummy variables.

Q. **WHAT WERE THE NEXT STEPS IN YOUR ANALYSIS?**

A. The four price series were treated as dependent variables in a VAR model. In this model, each price was regressed on seasonal variables, structural shift variables and the prices in all four markets for the previous days (i.e., "lagged" values of the prices). The seasonal and shift variables represent market fundamentals and the lagged prices allow for dynamic responses and incorporate the interrelationships of the price series through time. The estimation was done in two stages. In the first stage, the four prices were transformed to logarithms and the effects of seasonality and structural shifts were removed from each price series using ordinary least squares (see Exhibit PAC-16, Table 1). The computed residuals from this first stage were then used as dependent variables in the second stage for estimating a VAR model of order two to account for dynamic relationships that link the four price series together.

Q. CAN YOU SUMMARIZE THE RESULTS OF THE FIRST STAGE OF THE ANALYSIS OF SPOT PRICES?

A. The regression results for both stages of the model are summarized in Table 1. In the first stage, the structural shift associated with the soft-cap market corresponds to an increase of 500% or more compared to the period before the market was changed in December, 2000. When strict price mitigation was introduced in June 2001, the corresponding structural shift is equivalent to a price reduction of at least 30% below the levels prior to the introduction of the soft-cap market. The seasonal cycles and structural shift variables generally account for over 60% of the variability in the spot market. Note that transforming the price series to logarithms makes the estimation less sensitive to the extreme observations and makes the statistical properties of the residuals much closer to the desirable specifications of a regression model.

Q. CAN YOU SUMMARIZE THE RESULTS OF THE SECOND STAGE OF THE ANALYSIS OF SPOT PRICES?

A. The objective of the second stage is to account for the serial correlation that creates relationships through time. In a well-specified model, the computed residuals for the next day should be unpredictable (i.e., random). If serial correlation exists in a model, then there is still room for improving the forecasting ability of the model. A first order VAR did not explain all of the serial correlation, but a second order VAR model did a much better job.

Q. ARE THERE ADDITIONAL RESULTS FROM THE SECOND STAGE OF THE ANALYSIS?

A. Yes. Given that the model meets the basic statistical requirements, it is now possible to determine whether or not the dynamic relationships among the spot prices are independent of each other. For any one of the four price series, there are two lagged prices of the same price series in a second order VAR model and six lagged prices from the other three price series. In general, if the lagged prices of the other series are statistically significant, it implies that each price series shares a common dynamic structure with the other three price series. If these "cross-price" coefficients are not statistically significant, then the dynamic structure of each price series is unrelated to the other price series. In the estimated model, there are 24 cross-price coefficients and 8 own-price coefficients for the four price series. All 32 of these coefficients are statistically significant (i.e., not equal to zero). As a result, there is strong statistical evidence that the four price series share a common dynamic structure and are highly interrelated. In addition, the two coefficients for the lagged Californian prices are more important (larger) than any of the other coefficients in the equation for predicting the spot price at Palo Verde. In other words, unexpected price shocks in the California spot market affected the spot prices at Palo Verde, as well as the other two spot markets.

IV. RELATIONSHIP AMONG SPOT AND FORWARD MARKETS

Q. PLEASE DESCRIBE YOUR ANALYSIS OF THE RELATIONSHIPS AMONG SPOT AND FORWARD MARKETS.

A. In my analysis, the objective of the model is to explain why the forward price for a fixed month of delivery changes over time. Separate models are estimated using NYMEX data at Palo Verde for delivery in August 2001 and August 2002. In other words, I examined how current market conditions during the period of market dysfunction affected these forward prices. These delivery dates were chosen to correspond to periods when prices are traditionally high and to incorporate data from the market during the period of unusually high spot prices (i.e., from the Summer of 2000 to the Spring of 2001) in the analysis.

Q. CAN YOU DESCRIBE THE QUALITY OF THE DATA USED IN THE MODEL?

A. Although I have significant concerns that the limited liquidity of the forward markets for electricity made forward prices vulnerable to distortion, this problem is ignored in my econometric analysis, and the price data are treated as accurate measures of actual transactions. Putting the issue of accuracy aside, however, the forward price series are still not informative about daily variations in price because the reported prices are often constant for many consecutive days. For this reason, it is inappropriate to use the same type of VAR model used in the analysis of spot prices. Given the poor quality of the data, I used monthly data which do capture changes in forward prices.

Q. WHAT ARE THE ECONOMETRIC IMPLICATIONS OF USING MONTHLY DATA?

A. The most important implication is that the sample size is small, because the number of monthly observations of the price for a given delivery date is relatively small. However, this approach still makes it possible to investigate how the forward price at a specified delivery date changes from month to month in response to new information from the spot market.

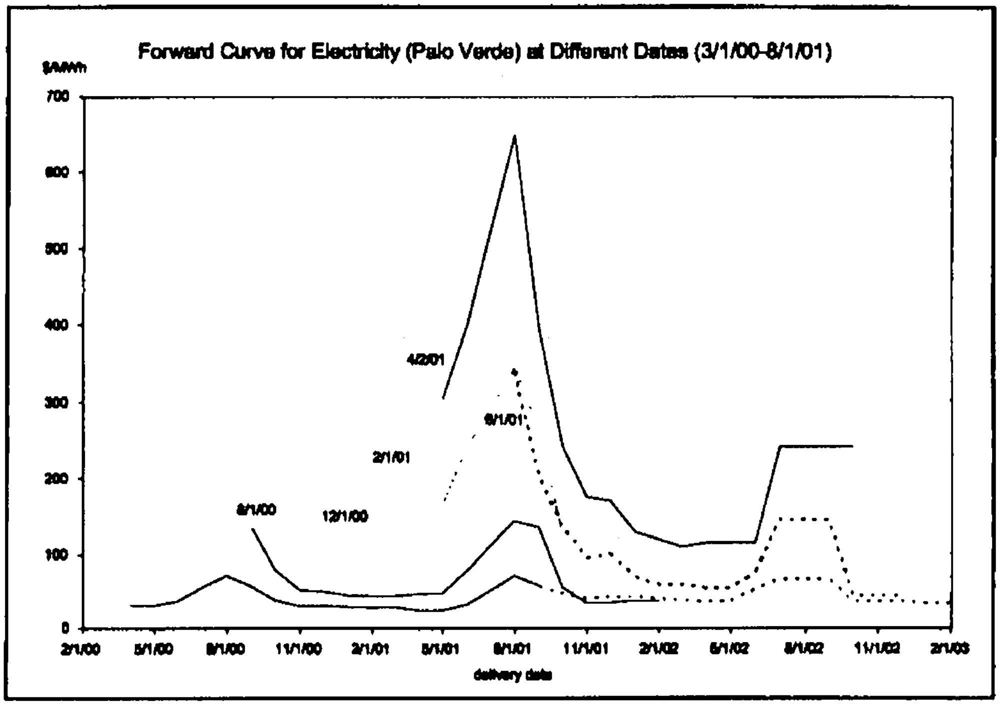
Q. WHAT TYPE OF INFORMATION DID YOU INCLUDE IN THE MODEL?

A. There are two main types of information. The first is the forward price of natural gas at the same delivery date as the forward price for electricity, and the second is the current spot price for electricity.

Q. WHY DID YOU USE THE FORWARD PRICE FOR NATURAL GAS?

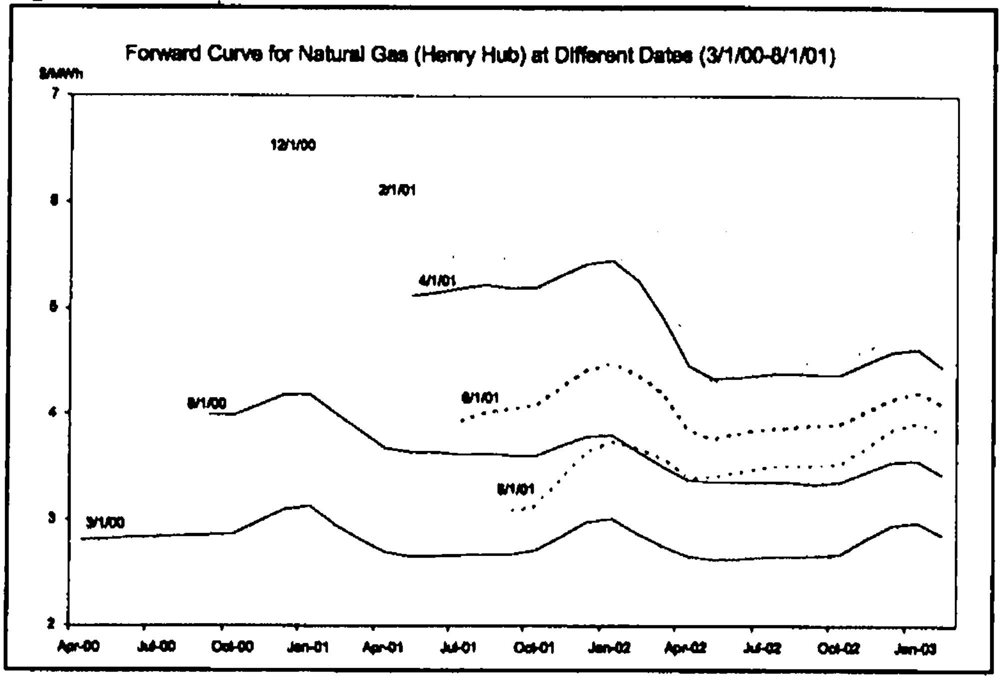
A. Because natural gas is the primary fuel used to generate electricity in California, the forward price of electricity is closely linked to expectations about the price of natural gas at the same delivery date. In addition, forward markets for natural gas are active. The forward prices at Henry Hub, for example, are transparent and reliable because NYMEX follows strict regulated procedures for reporting. In the model, the hypothesis tested is that the forward price for electricity is proportional to the forward price for natural gas at the same delivery date. Because the FERC staff has concluded that the reported prices of natural gas at delivery points in California are unreliable,[2] I used the forward prices at Henry Hub in my analysis. The forward price curves at different dates for electricity and natural gas are shown in Figures 2 and 3, respectively.

Figure 2



[2] Initial Report on Company-Specific Separate Proceedings and Generic Reevaluations; Published Natural Gas Price Data; and Enron Trading Strategies: Fact-Finding Investigation of Potential Manipulation of Electric and Natural Gas Prices, at p. 73, Docket No. PA02-2-000 (Aug. 2002).

Figure3



Q. HOW DID YOU INCORPORATE SPOT PRICES INTO THE MODEL?

A. There are two issues relating to the spot price. The first is seasonality and the second is the computation of monthly spot prices. Since the delivery date for the forward price is fixed in the analysis, seasonal effects should not be ignored. (In contrast, if the spot price is used to predict the forward price one year ahead, it is reasonable to assume that seasonal effects are the same for the spot and forward prices and cancel out.)

Q. HOW DID YOU INCORPORATE SEASONALITY?

A. Since there are so few observations, I used the spot prices prior to the period of unexpectedly high prices in the spot market (i.e., up to the end of May 2000) to estimate seasonal effects (using the same pair of sine/cosine waves that were specified in the VAR model of spot prices). The difference between the observed spot prices and the predicted spot prices gives a "deseasonalized" price series for the whole time period, including the period after May, 2000. In other words, the effects of the unexpectedly high spot prices, associated with structural changes in the market, were only adjusted for seasonal effects.

Q. **HOW DID YOU COMPUTE THE MONTHLY SPOT PRICES FOR THE ANALYSIS?**

A. In the analysis, the monthly forward prices for electricity and natural gas correspond to the reported prices on the first business day of each month. The accumulated information in the spot market on that date is measured by the average deseasonalized spot price in the previous month. This approach was chosen primarily to simplify the analysis and keep the number of variables consistent with the small number of observations.

Q. **HOW DID YOU SPECIFY THE MODEL FOR THE THREE VARIABLES?**

A. Since the null hypothesis of the analysis is that the ratio of the forward prices of electricity and natural gas is constant, the ratio of these prices is the dependent variable (in logarithms). The deseasonalized spot price (monthly average in logarithms) is the explanatory variable and the value of the dependent variable in the previous month (the lagged dependent) is also included to allow for a gradual adjustment to changes in the spot price.

Q. **WHAT ARE THE RESULTS OF YOUR ANALYSIS?**

A. Both regression models, fitted for the delivery dates of August, 2001 and August, 2002, show that most of the changes in the forward price ratio can be predicted by changes in the spot price. The null hypothesis that spot prices do not affect the forward price ratio can be rejected in both cases. Over 80% of the variability of the forward price ratio for delivery in August, 2001, and over 90% of the variability of the forward price ratio for delivery in August, 2002 can be explained by changes in the spot price of electricity. These regression results are summarized in Exhibit PAC-16, Table 2. In both models, the coefficient for the spot price is significantly different from zero.

Q. ARE THERE DIFFERENCES IN THE MODELS FOR THE TWO DELIVERY DATES?

A. Yes. The model for August 2001, which is the first summer following the period of high prices in the spot market, shows a gradual adjustment to changes in the spot market (the coefficient of the lagged dependent variable is relatively large). In contrast, the adjustment to spot prices in the model for August 2002 is virtually instantaneous.

Q. IN THEIR ANSWERING TESTIMONY IN *NEVADA POWER COMPANY V. DUKE ENERGY TRADING AND MARKETING*,[3] DRS. SCOTT HARVEY AND WILLIAM HOGAN PROVIDE THEIR OPINION REGARDING THE RELATIONSHIP BETWEEN THE SPOT AND FORWARD MARKETS. WOULD YOU PLEASE SUMMARIZE THEIR POSITION?

A. From pages 109-141 of their testimony (Exhibit No. MSC-65), Drs. Harvey and Hogan attempt to show that the spot and forward markets were independent, in the sense of each being driven by their own set of market fundamentals. The evidence for their criticism is a forward-spot model in which the regression coefficient on the spot variable is statistically insignificant. Correcting for first order serial correlation in a simple regression of the forward price on the spot

[3] *Prepared Answering Testimony of Scott M. Harvey and William G. Hogan on behalf of Morgan Stanley Capital Group Inc, Mirant Americas Energy Marketing, LP, American Electric Power Service Corporation, Reliant Energy Services* in *Nevada Power Company v. Duke Energy Trading and Marketing*, Docket Nos. EL02-26-000 (August 27, 2002).

price, Drs. Hogan and Harvey (in their Table 51) attempt to show that the coefficients for spot prices at COB and Palo Verde are very small (.078 and .022, respectively).

Q. IS THEIR ANALYSIS APPROPRIATE?

A. No. Drs. Harvey and Hogan continue to use a static model adjusted for first order serial correlation. They do not allow for a dynamic relationship between the spot and forward prices, and more importantly, they do not allow for changes in the structure of the relationships between spot and forward prices during the period when the spot prices were persistently much higher than expected.

Q. PLEASE EXPLAIN WHY THIS FAILING OF THE HOGAN-HARVEY ANALYSIS IS IMPORTANT.

A. The high prices in the California spot market from the Summer of 2000 to the Spring of 2001 were unprecedented. Under these unusual circumstances, it is reasonable to expect that changes in the relationship between spot prices and forward prices will occur. Indeed, my analysis of spot prices at four locations found structural shifts, corresponding to changes in the type of auction used to determine prices, to be highly statistically significant. Regressing the forward price on the spot price in a model with fixed parameters, as Drs. Hogan and Harvey do, does not allow for this type of change. When spot prices are persistently high and unexpectedly so, the effect of spot prices on forward prices may be much larger than it is when conditions in the spot market are more predictable. My econometric analysis proves this to be true.

IV. CONCLUSION

Q. PLEASE SUMMARIZE YOUR CONCLUSIONS.

A. My analysis has shown that the spot markets for electricity in the Western Interconnection were interrelated, across the separate market locations and across time, in a meaningful and statistically significant way. In addition, I have shown in Exhibit PAC-16, Table 2 that most of the changes in the long-run relationship between the forward prices of electricity and natural gas at Palo Verde for delivery in August 2001 and August 2002 can be attributed to changes in the spot prices for electricity when the market was dysfunctional.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PacifiCorp	
v.	
Reliant Energy Services, Inc.,	Docket No. EL02-80-000
Morgan Stanley Capital Group, Inc.,	Docket No. EL02-81-000
Williams Energy Marketing & Trading Company, and	Docket No. EL02-82-000
El Paso Merchant Energy, L.P.	Docket No. EL02-83-000
	(consolidated)

**AFFIDAVIT
OF
TIMOTHY D. MOUNT**

Timothy D. Mount, on oath, deposes and states that the foregoing Affidavit and Exhibits, on behalf of the PacifiCorp were prepared by him or at his direction and under his supervision, and that if asked the question herein, he would give the answers as shown, and that the facts stated herein are true to the best of his knowledge, information and belief.

T. D. Mount

Timothy D. Mount

Subscribed and sworn to before me on this 5 day of October , 2002

NOTARY PUBLIC
My Commission Expires:

TONYA MARIE ZEGRETTI
Notary Public, State of New York
No. 01ZE6051010
Qualified in Tompkins County

PAC - 14

Docket UM 1002
WC/1132

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

Excerpts from Brief on Exceptions of PacifiCorp, dated March 28, 2003,

Before the Federal Energy Regulatory Commission in

Docket Nos. EL02-80-000, EL02-81-000, EL02-82-000 and EL02-83-000

(PacifiCorp v. Reliant Energy Services, et al.)

July 6, 2007

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PacifiCorp	)	
	)	
v.	)	
	)	
Reliant Energy Services, Inc.,	)	Docket No. EL02-80-000
Morgan Stanley Capital Group, Inc.,	)	Docket No. EL02-81-000
Williams Energy Marketing & Trading	)	Docket No. EL02-82-000
Company, and	)	Docket No. EL02-83-000
El Paso Merchant Energy, L.P.	)	(consolidated)

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Dated: March 28, 2003

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cases."[121] The First Circuit went on to explain that the *Mobile-Sierra* public interest test was never intended to be "practically insurmountable," and that other circumstances may warrant contract reformation per a lesser public interest standard, stating as an example the need to protect third parties.[122] The Initial Decision ignores these important dynamics that guide the imposition of the public interest standard, choosing instead to judge PacifiCorp's complaints pursuant to only a single component of the strict version of the test. As in *Northeast Utilities*, the case at hand is not the typical low-rate case; PacifiCorp is a buyer serving a large number of retail customers seeking relief from excessive rates. Furthermore, there are many other extraordinary factors present here that warrant reformation of the Summer 2002 Contracts.

3. The Public Interest Test Is Satisfied Where, As Here, Excessive Prices Are The Result Of Market Dysfunction Or Market Manipulation

As discussed in more detail elsewhere in this Brief, it has been conclusively established that the dysfunctional spot markets directly influenced forward prices. The Staff Report unequivocally establishes this link, and states that "[t]he influence of spot prices on forward prices [during 2000-2001] was the greatest for forward contracts with the shortest time to delivery (1-2 years)."[123] The Summer 2002 Contracts fall squarely within this category of forward contracts most influenced by the dysfunctional spot markets. The magnitude of the effect of the spot market dysfunction on the Summer 2002 Contracts is

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[121] *Northeast Utilities Service Co. v. FERC*, 55 F.3d 686, 690 (1st Cir. 1995) (emphasis in original).

[122] 55 F.3d at 691.

[123] Staff Report at ES-9.

further increased by their short duration and the fact that their entire term fell within the period of spot market mitigation. These are truly remarkable factors that require a finding that reformation of the Summer 2002 Contracts is warranted under the public interest standard. These are not the only factors, however, to consider.

The Staff Report also dramatically lays out instances of market manipulation by each of the Respondents in this case. Respondents Williams and El Paso were implicated as contributors to the false reporting "epidemic" in which they provided false information to compilers of natural gas price indices in order to "influence reported gas prices, to enhance the value of financial positions or purchase obligations, and to increase reported volumes to attract participants by creating the impression of more liquid markets."[124] In connection with this type of manipulation, three of the Respondents here – El Paso Merchant Energy, Williams, and Reliant – will be required to demonstrate that they have corrected their internal processes for reporting gas data or that they no longer sell natural gas at wholesale.[125]

Reliant, Williams, and El Paso are named in the Staff Report as having engaged in wash trades through EnronOnline,[126] which "created a fertile ground for wash trading that resulted in multiple forms of manipulation of energy markets."[127] Staff states that such trades may have been motivated "to create

[124] Staff Report at ES-6.

[125] *Id.* at ES-7.

[126] *Id.* at VII-8.

[127] *Id.* at VII-1.

the illusion that a market is liquid and active, or to increase reported trading revenue figures" or "in an attempt to send false signals to other market participants."[128] Staff concluded that such activity is "damaging to the integrity of a market and has the potential to mislead a host of market stakeholders (including competitors, regulators, analysts, and investors)."[129]

An entire chapter of the Staff Report is devoted to a detailed discussion of Reliant's "churning" activities.[130] According to Staff, "Reliant often bought and sold many times its needs in quick bursts, which significantly increased the price of gas in that market."[131] This enabled Reliant to

> reduce the overall cost of gas it actually needed. Through its churning, Reliant profited by selling gas at or near the top of the price climb it caused. Reliant was often such a large presence at Topock . . . that its trading strategy moved the entire market price.[132]

As a result of still other market abuses by Reliant, the Commission has issued an Order Proposing Revocation of Market-Based Rate Authority directing Reliant "to show cause to the Commission . . . why it should not be found to have violated Section 205 of the FPA and why its market-based rate authority should not be revoked."[133] In that order, the Commission states that "BP Energy and Reliant appear to have violated FPA Section 205(a)'s requirement that rates be just and

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[128] *Id.* at VII-1.

[129] *Id.* at VII-1.

[130] *Id.* at II-1 through II-61.

[131] *Id.* at ES-5.

[132] *Id.* at ES-5.

[133] 102 FERC ¶ 61,315, at Ordering Paragraph (A) (March 26, 2003).

reasonable by manipulating the electricity prices at Palo Verde."[134] It is unthinkable that while the Commission proceeds with the revocation of Reliant's market-based rate authority, the Initial Decision's conclusion that *the very same grant of market-based rate authority* to Reliant has provided any sort of protection to PacifiCorp would be permitted to stand.

The notion that contract sanctity should outweigh the need for reformation must succumb under the sheer weight of these revelations about the behavior of the Respondents here in the markets. Furthermore, the Staff Report mentions numerous other entities that have engaged in similar behavior, which may have caused excessive rates. Again, this manipulative behavior in the dysfunctional spot markets directly affected forward markets, especially forward contracts with a shorter time to delivery and of short duration, falling entirely within the refund period, such as the Summer 2002 Contracts. The public interest is in no way served by protecting contract prices achieved through such behavior and under such conditions; in light of all of these factors, the Summer 2002 Contracts should be reformed pursuant to the public interest test.

4. The Harm To PacifiCorp, Its Customers, And Its Shareholders Resulting From The Summer 2002 Contracts Warrants Reformation Under The Public Interest Standard

The Initial Decision incorrectly assesses PacifiCorp's ability to recover the excessive costs associated with the Summer 2002 Contracts from retail ratepayers. The Initial Decision states simply that "PacifiCorp may be able to pass through a significant share of the cost of the contracts to its retail

[134] *Id.*

ratepayers."[135] However, recovery has already been precluded in Utah, and since the close of the record in this proceeding, recovery has been precluded in Wyoming.[136] Furthermore, from a policy standpoint, PacifiCorp's ratepayers should not be required to bear these excessive costs any more than PacifiCorp and its shareholders themselves.

The Initial Decision next errs in describing PacifiCorp's $53 million in out-of-market costs as *de minimis*.[137] The Initial Decision bases this conclusion on the notion that $53 million is a small portion of PacifiCorp's portfolio, in total disregard of the fact that $53 million is a substantial sum of money for any individual or corporation, in total disregard of PacifiCorp's fiduciary duties to its shareholders, and in total disregard of the impact on ratepayers. The fact that $53 million may not bankrupt PacifiCorp does not indicate that it is an inconsequential sum. Furthermore, the Initial Decision's focus on this figure entirely ignores the $1 billion loss to PacifiCorp attributable to purchased power costs.[138] Where excess costs are incurred as a result of market dysfunction and manipulation, as the Staff Report, Reliant Settlement, and other recent revelations demonstrate, the public interest test is surely satisfied; otherwise the Commission would allow manipulators to nonetheless benefit from their bad acts.

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[135] Initial Decision at P 29.

[136] *In The Matter of the Application of PacifiCorp for Authority to Increase Its Retail Electric Utility Service Rates In Wyoming, Public Service Commission of Wyoming*, Docket No. 20000-ER-02-184, Order Issued March 6, 2003, *available at* <http://psc.state.wy.us/htdocs/pacificorp/pacfinalorder.pdf>.

[137] Initial Decision at P 30.

[138] *See* Tr. at 342:21-342:24, 597:13-597:15.

D. THE INITIAL DECISION ERRONEOUSLY FAILS TO FIND THAT THE DYSFUNCTIONAL CALIFORNIA SPOT MARKET ADVERSELY AFFECTED THE SHORT-TERM FORWARD MARKET.

1. The Commission's Staff Report Definitively Proves The Adverse Effect

The Staff Report released earlier this week confirmed the findings that PacifiCorp established below in its complaint cases; the dysfunctional spot market adversely affected the Summer 2002 Contracts that were entered into in the Spring of 2001. Starting with fundamental economic predicates that followed through to the econometric analysis, the Staff Report by the Commission's Staff mirrored the case presented below by PacifiCorp with remarkable similarity. Most importantly, the findings reached by the staff corroborated what PacifiCorp had established below but rejected in the Presiding Judge's final analysis.

The Staff Report tracked spot and forward markets for the period of dysfunction and determined through an econometric analysis that the influence of spot prices on forward prices was the greatest for forward contracts with the shortest time to delivery (1-2 years) and varied by location.[139] With a delivery period of roughly 15 months from contract execution, PacifiCorp's contracts fall squarely within the 1-2 year window in which the staff found the most statistically significant correlation between the spot and forward markets. PacifiCorp asks that the Commission should take administrative notice of findings in the Staff Report as Commission previously anticipated that this information could be useful in the resolution of Section 206 Complaints.[140]

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[139] Staff Report at V-1.

[140] "Among other things, the Commission may use the information developed by this fact-finding investigation to determine how to proceed on any existing or future FPA Section 206

2. PacifiCorp Has Proven The Adverse Effect In This Proceeding

The testimony and studies presented by PacifiCorp substantiated the conclusion that the Commission reached in the June 19 Order when the Commission explained that:

> There is a critical interdependence among the prices in the ISO's organized spot markets, the prices in the bilateral spot markets in California and the rest of the West and the prices in the forward markets.[141]

While the testimony of PacifiCorp's employees provided the common sense and anecdotal perspective on this critical interdependence, Drs. Bidwell, Mount and Oren provided the economic and econometric theory that explained how this interdependence between the California spot market and the forward markets led to an adverse effect on the prices PacifiCorp paid in the Summer 2002 Contracts.

a. The Price Trend Evidence Shows Clear Correlation

PacifiCorp presented extensive testimony by Drs. Oren, Bidwell and Mount that demonstrated that spot prices throughout the west closely tracked the California dysfunctional market.[142] The Presiding Judge agreed with PacifiCorp on this point noting that "events in the California economy tended to become very influential in determining what happens throughout the Western Electric

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complaints involving long-term power sales contracts relevant to matters investigated, or any formal FPA section 206 or NGA section 5 proceedings initiated on our own motion." *Fact-Finding Investigation of Potential Manipulation of Electric and Natural Gas Prices* 98 FERC ¶ 61,165 (Feb. 13, 2002).

[141] June 19 Order at p. 62, 557. *See also AEP Power Marketing, et. al.*, 97 FERC ¶ 61,219, at p. 61,972 (2001)(" Commission recognized that "maintaining an accurately priced spot market is the single most important element for disciplining longer term transactions.")

[142] *See* Exs. PAC-11, PAC-14, PAC-17, PAC-75.

Coordinating Council (now the Western Systems Power Pool) region. . . There really is no dispute about this."[143] These observations are repeated in other portions of the Initial Decision as the Presiding Judge notes that "events in the California market inevitably affected other Western markets."[144] The findings of this connection established one of the factual legs needed to support PacifiCorp's argument that the dysfunctional California spot market adversely affected the prices for forward products sold at Palo Verde.

b. The Observations Of Market Participants

As explained in direct testimony and at hearing, PacifiCorp paid prices that were three to six times the historical average.[145] As Dr. Klein testified, the western markets facing PacifiCorp in early 2001 were in a "state of unprecedented and extraordinary dysfunction."[146] This dysfunction was led by the volatility in the California spot market.[147] When PacifiCorp entered into the Summer 2002 Contracts, Dr. Klein noted that the high forward market prices were driven in large part by the state of the then-current spot market.[148] Consistent with the price observations that demonstrated correlation between spot markets, Dr. Klein witnessed prices fluctuate at high levels for many months

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[143] Initial Decision at ¶ 39.

[144] Initial Decision at ¶ 72.

[145] *See* Ex. PAC-1 at 27:17, PAC-20 at 3:19.

[146] *See* Ex. PAC-1 at 15:17.

[147] *Id.* at 15: 18.

[148] *Id.* at 17:2-3.

and ultimately return to historic levels after FERC's imposition of the West-Wide Price Cap in June 2001 – all in tandem with spot prices in California.[149]

During the periods of the most intense market dysfunction, PacifiCorp continued to notice that prices for forward contracts were at astronomical levels. PacifiCorp's forward price curve for summer 6 x 16 power at Palo Verde showed prices in excess of $200/MWh in January and continuing through March.[150] The forward prices reached approximately $280 in April for a brokered product for delivery sixteen months later at a trading hub like Palo Verde.[151]

The Initial Decision criticized the price observations of Dr. Klein and particularly his conclusion that prices in excess of $100 may reflect that a seller was selling at a price that exceeded the marginal cost of production plus a reasonable return.[152] While the Presiding Judge spun this observation into PacifiCorp's failure to demonstrate the existence of market power, Dr. Klein's testimony warrants more credit, particularly in light of the findings in the Staff Report. The Staff report noted that:

> As explained in Chapter IV, the capital recovery requirement for a hypothetical new power project is between $16 and $19/MWh at a 60 percent plant factor. Therefore, the fixed and variable cost of generation would not exceed $100/MWh. As opposed to a rise in input costs, the excessively elevated bid prices appear to be solely an attempt to raise prices and Staff views this as a form of economic withholding.[153]

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[149] *See* Ex. PAC-44 at 3: 22 - 4: 2.

[150] *See* Ex. PAC-11 at 37 (Figure 7).

[151] *Id.*

[152] Initial Decision at ¶ 57.

[153] Staff Report at VI-45-46.

The excerpt from the Staff Report demonstrates that the Initial Decision has erroneously ascribed conclusions regarding market power and unfairly questioned Dr. Klein's credibility regarding pricing observations.

c. The Economic Analysis

PacifiCorp presented economic evidence that tracks closely the economic conclusions reached in the Staff Report. Testifying on behalf of PacifiCorp, Dr. Oren pointed out that the underlying premise of forward contract pricing is that the buyers and sellers can, in lieu of transacting business on the forward market, wait and conclude the same transaction on the spot market at a later date. As noted in the Initial Decision, Dr. Oren testified that:

> In a market where spot prices are high and supplies are scarce, therefore, forward prices will have built into them "an insurance premium reflecting the buyers' willingness to pay to avoid the risk of high future spot prices." Such a premium is especially likely when the spot market is dysfunctional. . .[154]

The Staff Report reiterated this notion explaining that if one component of the current spot price represents market "dysfunction," market participants might use current spot prices to formulate expectations about future dysfunction.[155] PacifiCorp's other economist witnesses testified on the economic basis for the connection between the spot and forward markets and noted that purchases in the spot market and purchases in the forward market can reflect equivalent sources of supply when the market is dysfunctional. Notably Dr. Bidwell explained that:

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[154] Initial Decision at P 44.

[155] Staff Report at V-5.

> The prices in both markets are linked because buying in a spot market and buying in a forward market are substitute sources of supply. The price in the forward markets will tend to be set by the expected future average spot market price, adjusted for risk factors. If the expected spot market price increases, arbitrage between the markets will cause the futures prices to increase also.[156]

The Initial Decision misses the mark on this point and is inconsistent with the findings in the Staff Report. The choice that customers must make is to buy now for delivery in real-time at some time in the future or wait until a time closer to real-time to purchase the power reflects common sense and decision making explained by fundamental economics.[157] If they decide to wait for forward delivery, this bids up the price of forwards. This also works in reverse when the customers buy less forward and wait to buy spot instead. The net result is arbitrage which in most commodity markets is used to describe an instantaneous buy and sell; however, the term is widely used in electricity markets in the intertemporal sense.

The Initial Decision also misread Dr. Bidwell's testimony on the topic of scarcity rents. PacifiCorp addressed the issue of scarcity rents fully and consistent with prior findings in the series of Commission orders on the California market that concluded that scarcity rents could not exist in the dysfunctional California spot market due to the lack of a demand response.[158] Presiding Judge

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[156] *See* Ex. PAC-17 at 47: 4-8.

[157] This point was apparently accepted by the Presiding Judge in observing that "when spot market prices become irrationally high, forward market prices are supposed to escalate significantly, as we have learned, in order to draw price-reducing resources into the marketplace and cause buyers to reduce their demand." Initial Decision at P 53.

[158] *See* April 26 Order at p. 61,361 ("Because of the lack of demand response, these prices may not reflect what the market would have established as appropriate scarcity rents and, therefore, may not be just and reasonable.")

even admitted in the Initial Decision that the California market lacked "any mechanism to allow "price signals" to be discerned by end-users who might be thus induced to conserve their use of electricity."[159]

The Initial Decision failed, however, to failure to discount the theory of scarcity rents in the California market and gave too much weight to the testimony of Dr. Kalt. Indeed, one of Dr. Kalt's misguided criticisms of PacifiCorp's econometric analysis was that the model "assumes away the prospect of scarcity rents associated with limited [generating] capacity, and the concomitant prospect that current spot prices reflect[] scarcity rents. . . "[160] Given that the Commission had already found no possible opportunity for legitimate scarcity rents, Dr. Kalt's criticism is without merit.

d. The Econometric Analysis

It comes as little surprise to PacifiCorp that the Staff Report's econometric analysis came to the same conclusion regarding the close relationship between the California spot markets and the other western spot markets that Dr. Mount presented in his econometric analysis.[161] Dr. Mount compared daily spot price data at the same four western markets. His analysis shows that there are "strong relationships among these four markets, and that the markets have a set of

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[159] Initial Decision at P 38.

[160] Initial Decision at P 47 (citing EPME-28 at 20). In this regard, the Presiding Judge has also apparently accepted the hypothesis that scarcity rents explain how prices could exceed the marginal cost of production, thus explaining away any potential exercise of market power. *See also* Initial Decision at ¶ 32.

[161] *See* Ex. PAC-14 at 3: 11-14 and 10:1 5 – 15: 12.

dynamic features in common."[162] "In other words," Dr. Mount stated, "unexpected price shocks in the California spot market affected the spot prices at Palo Verde, as well as the other two spot markets."[163]

Having found a statistically meaningful connection between the spot markets in the West, Dr. Mount constructed an econometric model of the relationship between spot markets and forward markets that demonstrated that the spot price for electricity at the Palo Verde hub, during the period of dysfunction, is a statistically significant determinant of the forward price of electricity in August of 2001 and August of 2002.[164] In the context of PacifiCorp's complaints, the model provided a quantification of the price behavior that PacifiCorp testified having witnessed and reinforces the economic principles that Drs. Oren and Bidwell addressed in their direct and rebuttal testimonies.

The Presiding Judge afforded PacifiCorp ample opportunity to present an econometric analysis and rebut the criticisms and shortcomings of the modeling presented therein. By the end of the hearing, no substantive criticism remained that Dr. Mount had not fully addressed. Indeed, the Presiding Judge eventually agreed with Dr. Mount's findings regarding the interdependence of spot markets in the west and price correlation between the spot and forward market.[165] Nonetheless, the Presiding Judge erroneously dismissed the probative weight of

[162] *See* Ex. PAC-14 at 4: 1-3 (All 32 coefficients in this analysis were statistically significant).

[163] *See* Ex. PAC-14 at 10: 12-14.

[164] *Id.* at 4: 4-9.

[165] Initial Decision at P 51.

Dr. Mount's testimony labeling it "too exotic" and claiming that in the final analysis correlation does not equal causation.[166] In this fashion, the Initial Decision errs in the summary dismissal of Dr. Mount's analysis. Respondents' suggestion that PacifiCorp's econometric testimony was required to prove correlation equals causation contradicts their assertions noted above that the hearing order only required a showing of whether the spot market adversely affected the forward markets.

While Respondents advocated and Presiding Judge apparently required a econometric demonstration showing the cause and effect between the spot and forward markets, the Initial Decision summarily dismissed Dr. Mount's testimony on the suggestion of one of Respondent's econometricians who was unable to dismiss the explanatory powers of Dr. Mount's model. In this regard, the Initial Decision accords too much weight to the suggestion by Dr. Kalt that econometric analysis has virtually no usefulness in a regulatory regime that relies on market based rates.[167] On this point, the Dr. Kalt has led the Presiding Judge down the path of least resistance, suggesting an easy exit from evaluating the merits and criticisms of a thoroughly briefed econometric model.

Dr. Kalt and the Presiding Judge offer the Commission a poor example to follow. As FERC continues to determine and assert its role as the "policeman on the beat" the use of an econometric model has greater rather than less utility for the Commission. The use of a thorough econometric analysis in the Staff Report emphasizes the value of this tool. To agree summarily with the Presiding

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[166] *Id.*

[167] Initial Decision at P 51.

Judge's conclusion that econometrics has little probative value in a case involving just and reasonable rates in a market based rate regime will complicate further the Commission's efforts to promote competitive markets.

3. The Judge's Conclusions On Effect Are Arbitrary And Capricious

While the Presiding Judge did not have the benefit of the Staff's report, PacifiCorp demonstrated the same linkage through empirical and anecdotal testimony, economic analysis and an econometric study that produced the same results that the Staff's econometric analysis demonstrated.[168] However, the Presiding Judge disregarded PacifiCorp's testimony and analysis and ruled against PacifiCorp because it had not shown the presence of factors such as fraud, mutual mistake or commercial impossibility.[169] This ruling reflects clear error. The Commission's June 28th Order required a determination whether or not the forward contracts were adversely affected by the dysfunctional market, and not a showing of contract type breaches that would support setting aside a contract in civil litigation.

FERC required PacifiCorp to demonstrate that there was such an adverse effect from the dysfunctional ISO and PX spot markets on the bilateral forward market in order to prevail.[170] The Presiding Judge has apparently construed this obligation to require a showing that the price in the forward contracts was solely

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[168] *See* Staff Report at V-4-18.

[169] Initial Decision at P 55. PacifiCorp notes that these breach of contract claims were missing from its case because it was seeking those remedies that are specifically provided for under the Federal Power Act.

[170] June 28 Order at P 27.

determined by prices in the spot market.[171] In his view, PacifiCorp failed to meet this test. He does conclude, however, that while the spot market may have played some part in affecting the forward bilateral markets and causing very high prices to prevail in those forward markets, the evidence is inconclusive as to whether there was a cause-and-effect relationship between the two."[172]

In this regard, the Presiding Judge has erred. The testimony of PacifiCorp established the cause and effect relationship between the two markets and the increase in prices provides prima facie evidence of the adverse effect. The release of the Staff Report that corroborates this evidence in the record, underscores how the Presiding Judge has committed error in concluding that PacifiCorp has not met its burden. A decision by FERC to adopt these findings in light of the evidence in the record and before the Commission in Docket No. PA02-2-000, would be arbitrary and capricious.

4. "Market Fundamentals" Do Not Fully Explain The Astronomical Western Electricity Prices

Respondents countered PacifiCorp's arguments about the adverse effect of the dysfunctional California ISO and PX spot market with extensive testimony on how market fundamentals have explained all pricing aspects in the Western markets. In this regard, Respondents alleged but did not provide a quantification for the theory that forward or long-term bilateral market prices are determined by expected future

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[171] Initial Decision at P 54. "The existing spot market ("dysfunctional" as it may have been) exercised an influence on the forward market. But it surely was not the sole factor or, for that matter, the determinative factor in shaping the forward market."

[172] Initial Decision at P 59.

market fundamentals while current spot market prices are determined by current market fundamentals.[173] Respondents have argued that the market dynamics exacerbated largely by short supply in California explained high prices in the spot market. However, as Respondents noted, any correlation between current spot and forward prices would not tell us that current spot prices are affecting or driving forward prices but that the market fundamentals existing for the spot market are expected in the future and are therefore reflected in the prices of forward contracts.[174]

In response, PacifiCorp noted that the discussions of fundamentals on the record left an imprecise determination as to the reason why prices rose and were sustained at a rate that was three to six times above historical levels. Further, PacifiCorp raised in its Reply Brief to the Respondents Initial Post Hearing Brief, that the evidence in the record by Respondents did not explain how fundamentals increased supply and dropped forward prices.[175]

The Initial Decision apparently agreed with PacifiCorp that market fundamentals did not hold all of the answers for the pricing of energy products. As noted by the Presiding Judge, "[o]ther so-called "fundamentals" that affected the spot market were plainly irrelevant to the forward market. For example, the region-wide drought that sharply reduced the availability of hydroelectric generation might or might not continue into the following year -- but current

[173] Initial Decision at P 41 (citing MSC-1 at 8).

[174] Initial Decision at P 41 (citing EMPE-28).

[175] Reply Brief at 14-15.

weather conditions had little or no bearing on the matter."[176] And in this regard, the question posed by PacifiCorp remains: why were prices in the forward markets for the third quarter of 2003 three to six times the historical average if fundamentals driving pricing in the spot market could not carry through to the forward market. Because the Initial Decision finds that these fundamentals did not matter for the forward markets, PacifiCorp submits that the dismissal of the complaints is in error.

E. THE INITIAL DECISION'S CONSIDERATION OF MARKET POWER IS UNREASONABLE

The Initial Decision reflected the unbalanced treatment of market power during the consideration of PacifiCorp's Complaints. First, the Presiding Judge adopted a narrow definition of market power, contrary to Commission precedent and generally accepted understandings of market power. Second, the Presiding Judge expressed a desire to avoid any discussion of market manipulation, bad acts, or market power. Respondents subsequently argued that PacifiCorp complaints must fail because PacifiCorp had not proven that Respondents exercised market power. When PacifiCorp sought to rebut this argument by introducing evidence of bad acts, the Presiding Judge excluded such evidence. Ironically, the Presiding Judge ultimately determined that PacifiCorp's failure to prove individual acts of market power led to the preservation of the contracts.

While PacifiCorp's excluded rebuttal evidence addressed the credibility of Respondents arguments regarding the exercise of market power, the tip of a larger "market manipulation" iceberg floated into view after the record had been

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[176] Initial Decision at P 53.

Docket UM 1002
WC/1133

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

Motion to Reopen the Record, Motion to Take Official Notice,

and Motion for Sanctions, dated March 13, 2003,

filed by PacifiCorp before the Federal Energy Regulatory Commission in

Docket Nos. EL02-80-000, EL02-81-000, EL02-82-000 and EL02-83-000

(PacifiCorp v. Reliant Energy Services, et al.)

July 6, 2007

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

PacifiCorp v. Reliant Energy Services, Inc., Morgan Stanley Capital Group Inc., Williams Energy Marketing & Trading Company, and El Paso Merchant Energy, L.P.	Docket No. EL02-80-000 Docket No. EL02-81-000 Docket No. EL02-82-000 Docket No. EL02-83-000 (consolidated)

**MOTION TO REOPEN THE RECORD,
MOTION TO TAKE OFFICIAL NOTICE,
AND MOTION FOR SANCTIONS**

Pursuant to Rules 716, 508, 212 of the Commission's Rules of Practice and Procedure, 18 C.F.R. §§ 385.716, 385.508, and 385.212, PacifiCorp hereby submits this Motion to Reopen the Record, Motion to Take Official Notice, and Motion for Sanctions in the above captioned proceeding. PacifiCorp asks the Commission to reopen the record in Docket Nos. EL02-80. *et al.* to admit the evidence provided by telephone transcripts between Reliant employees and energy traders on June 19 and 21, 2000 and the stipulated facts related to those conversations ("Stipulated Facts").[1] The discussions between traders for Reliant Resources ("Reliant"), the parent company of Reliant Energy Services, directly refute factual assertions made by witnesses for Reliant and the other Respondents[2] in these proceedings involving several forward contracts PacifiCorp entered into in the Spring of 2001 for delivery in the Summer of 2002 ("Summer 2002 Contracts").[3] These revelations go to the central issue in this case, and contradict the Respondents' argument against contract reformation. Moreover, because Reliant promised to, but never did, provide documentation which would have included the Transcripts in response to data requests submitted by PacifiCorp, PacifiCorp believes that the harm caused by the failure to make available these materials must be remedied by reopening the record.

In this motion PacifiCorp also asks the Commission to take official notice of the Consent Agreement, Stipulated Facts, and Transcripts. In this regard, the Stipulated Facts and Transcripts provide evidence that answers the question – central to this proceeding – of whether the dysfunctional California market affected the forward market. While the Respondents have claimed here that

[1] *See* Order Approving Stipulation and Consent Agreement 102 FERC ¶ 61,108 (2003)("Commission Order") which also included the Stipulation and Consent Agreement ("Consent Agreement") and the telephone transcripts ("Transcripts"). Docket No. PA02-2-001 (January 31, 2003).

[2] Respondents include Reliant Energy Services, Morgan Stanley Capital Group Inc., Williams Energy Marketing and Trading, and El Paso Merchant Energy.

[3] PacifiCorp notes that Reliant witness John Frederick Meyer is an employee of Reliant Resources and appeared in the above captioned proceeding as an employee of both Reliant Resources and Reliant Energy Services.

market fundamentals fully explained the unprecedented, astronomical prices for electricity, the conversations between the Reliant traders confirm that Reliant manipulated supply in the California Power Exchange ("CalPX") for the express purpose of affecting the forward market. In this regard, the Stipulated Facts and Transcripts unequivocally demonstrate the direct linkage between the dysfunctional spot and forward markets. In light of this evidence, the Respondents' position that there is no causal link between the spot and forward markets cannot stand. PacifiCorp submits that the Respondents should not be allowed to profit from Reliant's failure to provide this "smoking gun" evidence when it directly contradicts the Respondents' arguments against contract reformation.[4]

Finally, because of the extreme prejudice accorded PacifiCorp by Reliant's withholding of such evidence despite timely discovery requests and promises to provide responsive documents, PacifiCorp submits that sanctions are appropriate in this instance.

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[4] *See* Concurring Opinion of Commissioner Massey at 2. ("The Commission makes the right decision to make the ***smoking gun*** evidence of the physical withholding of generation available to the public immediately." (emphasis added).

I. Background

On January 31, 2003, FERC announced a settlement calling for Reliant Energy to pay $13.8 million for withholding generation for delivery to the California PX on June 21 and 22, 2000. According to a Commission press release, "Reliant's payment will put CalPX customers in the position they would have been in if the company had bid into the market as a 'price taker.'" FERC further explained that "the payment reflects a worst case scenario of the effect of Reliant's withholding on the California market. Reliant employees reduced the amount of power offered to the CalPX on a day ahead basis below the amount that would normally have been offered."

When the Commission set the complaints in this proceeding for hearing, the hearing order explained that the central issue in the case was "whether the dysfunctional California spot markets adversely affected the forward bilateral markets."[5] The Stipulated Facts provide unequivocal evidence on this point. In particular, the Stipulated Facts contained in the Consent Agreement explicitly state that:

- Reliant's traders intentionally reduced the quantity of megawatts offered to the CalPX on a day-ahead basis;[6] and
- Evidence indicates that significant motivation for some traders for this action was to attempt to increase CalPX day-ahead prices in

[5] *Id.* at 28.

[6] Consent Agreement ¶¶ 1-2.

the belief that this might mitigate losses in Reliant's existing forward positions.[7]

The extent to which Reliant's behavior demonstrates the connection between the spot and forward market and the impact of these revelations on the disposition of the central issue in this proceeding cannot be overestimated. As noted by the Commission, "Reliant reduced the capacity it bid into the CalPX for delivery on June 21 [2000] by approximately 1,000 MW to see if PX prices would increase and thus also raise forward prices."[8] While the 1,000 MW withheld comprised less than a third of Reliant's 3,800 MW of capacity (which in turn was less than three percent of the total capacity in the Western interconnection), the Commission's Order, Consent Agreement, Stipulated Facts, and related Transcripts indicate that Reliant's withholding efforts hit paydirt in the West: prices increased and any potential shortfalls in the third quarter of the following year were erased by actions in the near term spot market.

The Transcripts address the connection between the spot and forward market in an unvarnished and straightforward manner. The following exchange between an operations manager for Reliant and a trader provides an astonishing glimpse into efforts to manipulate the spot market in order to influence prices in the forward market.

Reliant Ops Manager 2: Cool How did it work today?

[7] *Id.*

[8] Commission Order at 2, ¶ 5.

Reliant Trader 1: Ah, 129 for the PX.

Reliant Ops Manager 2: Yeah. I saw that.

Reliant Trader 1 : And then we traded up to 113 for Q3 next year.

Reliant Ops Manager : Sweet.

Reliant Trader 1: I mean this year.

Reliant Ops Manager 2: This year? How about . . .

Reliant Trader 1: And then I traded as high as 97 for Q3 next year.

Reliant Ops Manager 2: All right. . .

This conversation, however, is not an isolated incident. Indeed, the connection between the spot and forward markets plays throughout the Transcripts. In other portions of the Transcripts, the following revelations come to light:

- Reliant intentionally withheld supply to provide strength "[f]or ***longer term*** trading issues. [9]
- Reliant understands that it is exercising market power when it withholds capacity from the spot market, labeling withholding as "market manipulation attempts on [Reliant's] part."[10]

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[9] Transcripts at June 20, 2000, 16:50 at p.1 (emphasis added).

[10] Reliant's own Plant Operator states that by shortening supply, the price on demand will increase. *See* Transcripts at June 20, 2000, 08:25 at p.1.

- Reliant "may need to get some units off for a couple of days to try to create some movement hopefully in the PX . . . create movement in other markets that help us out longer term."[11]
- Reliant was withholding in 2000 to "prop up 2001 to sell into it."[12]
- Reliant deliberately turned off all of the units at its Coolwater plant as part of its "market manipulation" in which it was "trying to shorten supply." Traders acknowledged that with a shorter supply "the price on demand goes up."[13]
- Reliant believed that its portfolio for forward sales in the third quarter "were going down" if generation was not withheld for sales into the PX.[14]

All of these statements from the Transcripts directly refute statements in this case by the Respondents claiming that all of the price changes observed during 2000 and 2001 are explainable solely in terms of the demonstrable and significant imbalance between demand and supply, as exacerbated by the peculiar features of California's power market design.[15] According to a brief co-sponsored by Reliant, "no casual [sic] relationship exists between the high prices in the ISO/PX spot markets during the period between May 2000 and June 2001

[11] Transcripts at June 19, 2000, 17:31 at p.1.

[12] Transcripts at June 20, 2000, 06:30 at p.1.

[13] Transcripts at June 20, 2000, 08:25 at p.1.

[14] *See* Transcripts at June 21, 2000, 15:29 at p.2.

[15] *See* Respondents' Joint Initial Brief at 38.

and the elevated prices observed during the same period in the forward markets at Palo Verde."[16] Ironically, Reliant's attorneys were coauthoring a brief with these very words at the same time that the same law firm, on behalf of Reliant, was entering into a stipulation with the Commission in which the company submitted transcripts showing that it had withheld supply in the spot market to affect the prices in the forward market.

II. Motion to Reopen Record

Through the recent settlement between Reliant Resources, Inc. and the Commission, dramatic new evidence that goes to the heart of this proceeding and that is crucial to a complete record in this case – and which should have been produced during discovery – has become available. Hence PacifiCorp respectfully requests that the Commission exercise its authority under Rule 716 of the Commission's Rules of Practice and Procedure for the limited purpose of including the Stipulated Facts and the Transcripts in the record of this proceeding.

Rule 716 allows the Commission to reopen the evidentiary record in a proceeding, even after the issuance of an Initial Decision, for the purpose of taking additional evidence where good cause is present.[17] While the Commission is generally reluctant to reopen proceedings, in this case the Commission specifically contemplated such reopenings. In directing Staff to

[16] *Id.* at 39.

undertake the investigation of market manipulation that led to the settlement with Reliant, the Commission stated that "*the Commission may use the information developed by this fact-finding investigation to determine how to proceed on any existing or future FPA Section 206 complaints involving long-term power sales contracts relevant to the matters investigated.*"[18]

Even without such a pronouncement from the Commission, the circumstances here fall squarely within the Commission's requirements for reopening. Rule 716 states that reopening may be "warranted by any changes in conditions of fact or of law or by the public interest."[19] Rule 716 has generally been applied only in "extraordinary circumstances" that involve evidence going "to the very heart of the case."[20] Here, the evidence that PacifiCorp seeks to have admitted into the record clearly goes to the heart of the case. Setting this case for hearing, the Commission stated that the central issue to be addressed was "whether the dysfunctional California spot markets adversely affected the forward bilateral markets."[21]

The Respondents, including Reliant, have argued strenuously throughout this proceeding that the California spot markets did not affect the forward bilateral

[17] *See* 18 C.F.R. § 385.716 (2002).

[18] Fact-Finding Investigation of Potential Manipulation of Electric and Natural Gas Prices, 98 FERC ¶ 61,165 at 61,614 (2002) (emphasis added).

[19] 18 C.F.R. § 385.716(c) (2002).

[20] *See Kentucky Utilities Company*, 44 FERC ¶ 63,020 at, 65,071 (1988) (*citing* Southern Company Services Inc., 43 FERC ¶ 61,003 at 61,024, *reh'g denied,* 43 FERC ¶ 61,394 (1988)).

[21] 99 FERC ¶ 61,381 at P 28 (2002).

markets, and that the forward markets were driven separately by distinguishable fundamentals.[22] The Stipulated Facts and Transcripts that PacifiCorp seeks to admit directly contradict this position, and clearly demonstrate that the Respondents knew of and took advantage of the relationship between the spot and forward markets. As the Commission found, the Transcripts reveal that Reliant manipulated the spot markets in order to increase forward prices.[23] This revelation, in addition to its facial egregiousness, goes to the central issue of this case and absolutely refutes the contention of the Respondents in this case that there is no linkage between the spot and forward markets.

The Presiding Judge noted that Respondents "did not hide material facts from PacifiCorp." The discovery of the Transcripts in late 2002 suggests otherwise. This information would already be in the record in this proceeding had Reliant properly responded to PacifiCorp's discovery requests. The Transcripts are clearly responsive to at least six different data requests from PacifiCorp to Reliant.[24] Reliant simply did not produce the Transcripts in response to any of these data requests. Nor did Reliant outright object to these data requests, as required by the Commission's Rules of Practice and Procedure, such that PacifiCorp could have moved to compel the production of such documents. Rather, Reliant stated that it had not identified any responsive documents, and

[22] *See, e.g.*, Respondents' Joint Initial Brief at 34-44 (filed Jan. 27, 2003); Exhibit Nos. MSC-1 at 7-11, EPME-1 at 36-51.

[23] *See, e.g.*, Transcripts, June 20, 2000, 16:50, at 1.

that it would supplement its response if further search and review yielded responsive documents.[25]

As Reliant did not even acknowledge the existence of such documents, PacifiCorp could not move to compel such information, and whether Reliant performed further "search and review," it certainly never informed PacifiCorp of the existence of the Transcripts at issue here. For these reasons, despite being as diligent as possible in trying to procure this information, PacifiCorp could not have presented this evidence while the record was open. It is only through the fortuitous timing of Reliant coming to the Commission in late 2002, coincidentally at the same time PacifiCorp's hearings were ongoing, that this evidence has seen the light of day.

It would be patently unjust to allow the Respondents to benefit from Reliant's refusal to comply with the Commission's rules and from the withholding of relevant evidence from the record. For these reasons, the extraordinary circumstances are present to warrant the reopening of the record here to include the Reliant Transcripts and Stipulated Facts, which as discussed above certainly go to the heart of the issues in this case.

The Commission has granted motions to reopen in circumstances similar to those present here. In *Centreville Hydro, Inc.*, the Commission granted a

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[24] *See, e.g.*, Data Requests PAC-RES-8, 15, 16, 22, 23, 24, provided with this Motion as Attachments A, B, C, D, E, F.

[25] *See, e.g.*, Reliant Responses to Data Requests PAC-RES-15, 16, 22, 23, 24, provided in Attachments A, B, C, D, E, F.

motion to reopen the record to include evidence that contradicted a misrepresentation made by Centreville as to whether a certain hydroelectric project was interconnected with the interstate grid.[26] Reopening the record in this case will cure a similar misrepresentation in the record: The assertion of Reliant and the other Respondents that the forward markets were not affected by the spot market dysfunction is eviscerated by the Transcripts that demonstrate Reliant's manipulation of the spot market was done to increase forward prices. Ultimately, the Respondents should not benefit from Reliant's omission of such crucial evidence and only an order from the Commission directing the Presiding Judge to admit such evidence will correct this oversight.

III. Request to Take Official Notice

PacifiCorp also requests that the Commission take official notice of the Consent Agreement with Reliant and the associated Stipulated Facts and Transcripts in making its determination in this proceeding. Pursuant to Rule 508(d) of the Commission's Rules of Practice and Procedure, the Commission may take official notice of "any matter that may be judicially noticed by the courts of the United States, or of any matter about which the Commission, by reason of its functions, is expert."[27] As the settlement was made with the Commission and regards issues within the Commission's jurisdiction, they certainly relate to matters about which the Commission is expert. Furthermore, as the Reliant

[26] 66 FERC ¶ 61,278 at 61,781-782 (1994).

Consent Agreement (including the Stipulated Facts) and Transcripts are now in the public record, the Commission is free to take official notice of them.[28]

Rule 508(d)(3) states that if a request for official notice is made after the close of hearing, the moving party must "set forth the reasons to justify the failure to request official notice prior to the close of the hearing."[29] As discussed above, PacifiCorp could not have presented this evidence before the close of hearing because although the information is responsive to data requests issued to Reliant by PacifiCorp prior to the hearing, Reliant did not produce the documents nor even indicate their existence such that PacifiCorp could have moved to compel their production. The information came to PacifiCorp's attention upon being made public by the Commission on January 31, 2003, almost a month after the end of the hearing in this proceeding.

IV. Request for Sanctions

The Commission's Rules of Practice and Procedure clearly spell out the Commission's remedies where a party disobeys an order compelling discovery.[30] There is no evidence that Reliant has disobeyed an order to compel production in response to a discovery request. What is clear, however, is that Reliant promised to provide responsive documents to PacifiCorp when Reliant

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[27] 18 C.F.R. § 385.508(d)(1) (2002).

[28] *See, e.g., El Paso Natural Gas Co.*, 100 FERC ¶ 63,041 at PP 13-18 (2002); *El Paso Electric Co. and Central and South West Services Inc.*, 68 FERC ¶ 61,181 at 61,917 n.132 (1994); *New England Power Co.*, 59 FERC ¶ 63,008 at 65,061 (1992).

[29] 18 C.F.R. § 385.508(d)(3) (2002).

[30] 18 C.F.R. § 385.411 (2002).

uncovered those materials in "doing further search and review."[31] In fact, when the Transcripts were released, it became apparent that Reliant actually had responsive documents that had not been provided to PacifiCorp.

The Transcripts and related plans to exercise market power in the spot market to affect the forward market should have been provided in response to at least six different data requests. PacifiCorp asked multiple questions that could have and should have prompted the release of the Transcripts prior to the commencement of the hearing. In this regard, PacifiCorp asked Reliant to:

> 1. Provide all documents, studies, analyses, memoranda, charts, or reports which address the affect of the dysfunctions in the California spot markets on prices in the forward markets (including, but not limited to, the market for power to be delivered during the summer of 2002) at Palo Verde and throughout the WECC, not produced in response to PAC-RES-10 through 14.[32]
>
> 2. Provide all documents, studies, analyses, memoranda, charts, or reports which address the relationship between the California spot markets and the forward market (including, but not limited to, the market for power to be delivered during the summer of 2002), at Palo Verde and throughout the WECC, not produced in response to PAC-RES-10 through 15.[33]
>
> 3. Provide all documents, studies, analyses, charts, memoranda, and reports related to any price projections for the spot markets and the forward markets in the WECC for the years 2000, 2001 and 2002.[34]
>
> 4. Provide all documents, studies, analyses, charts, memoranda, and reports related to any price projections for the spot markets and the forward markets in California for the years 2000, 2001, and 2002.[35]

[31] *See, e.g.*, Reliant Energy Service, Inc., Response to Data Request 24.

[32] Data request PAC-RES-15.

[33] Data request PAC-RES-16.

[34] Data request PAC-RES-22.

[35] Data request PAC-RES-23

5. Provide all documents, studies, analyses, charts, memoranda, and reports related to any price projections for the spot markets and the forward markets at Palo Verde for the years 2000, 2001, and 2002.[36]

6. Provide all documents which address:

   a. the impact of power prices on Reliant's operations in California, and the WECC and at Palo Verde during the period May 2000 through the present.
   b. Reliant's plans for dealing with power prices in California in the WECC and at Palo Verde during the period May 2000 through the present.[37]

In response to the questions 1 through 5 listed above, Reliant promised to supplement an initial response "if documents are identified during further search and review."[38] In each instance, this promise was made by Counsel preparing the response to the data request and created an ongoing obligation to identify and produce materials. With such an obligation, PacifiCorp could not reasonably seek a motion to compel production of materials that Reliant had promised. PacifiCorp took Reliant's word that it would provide the materials if and when identified.

The failure to provide such evidence and the absence of it from the hearing record has obviously accrued to the detriment of PacifiCorp. Nothing can erase the Presiding Judge's caustic comments in the Initial Decision, going so far as to call PacifiCorp's arguments "absurd." Nonetheless, the Initial

[36] Data request PAC-RES-24.

[37] Data request PAC-RES-8.

[38] In response to item six above, Reliant directed PacifiCorp to access public websites for 10-K and 10-Q reports on file with the Securities and Exchange Commission.

Decision has been issued and PacifiCorp will exercise its rights in a brief on exceptions.

When Reliant withheld power, the Commission saw fit to ensure in the Consent Agreement that Reliant did not see the benefit from such withholding. Now, Reliant stands to profit from withholding evidence from PacifiCorp. It remains within the Commission's authority to address this inequity by imposing sanctions as appropriate, including but not limited to the types of remedies provided in Rule 411. Furthermore, in addition to the potential sanctions enumerated in Rule 411, to the extent that PacifiCorp must relitigate portions of its case so that the Commission has the necessary record upon which to decide PacifiCorp's complaints, PacifiCorp believes Reliant should be held liable for any additional attorney's fees. Ultimately, PacifiCorp supports Reliant's own view that sanctions are appropriate where there is disregard for the Commission's order and for the rules necessary for practice before the Commission.[40]

VI. Conclusion

WHEREFORE, for the reasons cited above PacifiCorp respectfully requests that the Commission (i) reopen the record in the above captioned dockets to include the evidence provided by the Stipulated Facts and the Transcripts; (ii) take official notice in this proceeding of the evidence and Stipulated Facts presented by the Transcripts; (iii) impose such sanctions as appropriate; and (iv) provide such other relief as the Commission deems appropriate.

Respectfully submitted,

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J. Cathy Fogel
David A. Fitzgerald
Kerim P. May
Sullivan & Worcester
1666 K Street N.W.
Washington, D.C. 20006

Counsel for PacifiCorp

March 13, 2003

[40] *See* Motion For Immediate Enforcement Of Protective Order, filed by Reliant Energy Services, Inc., Docket No. EL00-98 (February 28, 2003). Reliant withdrew this motion on March 7, 2003 with some apparent reluctance noting that it is still "troubled by the California Parties' continued claim that their conduct should also be excused..." Reply of Reliant Energy Services, Inc. and Reliant Energy Power Generation, Inc. and Notice of Withdrawal of Motion at 1.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served copies of the preceding documents to all parties and participants listed on the Commission's official service list for Docket Nos. EL02-80 *et seq.*, via U.S. First Class Mail. As a courtesy, a copy of this motion has been hand delivered to counsel for Reliant Energy Services, Inc.

DATED at Washington, D.C., this 13th day of March, 2003.

David A. Fitzgerald

Docket UM 1002
WC/1134

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

PacifiCorp's Supplemental Motion to Reopen the Record

and Motion to Take Official Notice, dated May 7, 2003,

before the Federal Energy Regulatory Commission in

Docket Nos. EL02-80-000, EL02-81-000, EL02-82-000 and EL02-83-000

(PacifiCorp v. Reliant Energy Services, et al.)

July 6, 2007

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PacifiCorp	)	
	)	
v.	)	
	)	
Reliant Energy Services, Inc.,	)	Docket No. EL02-80-000
Morgan Stanley Capital Group Inc.,	)	Docket No. EL02-81-000
Williams Energy Marketing & Trading	)	Docket No. EL02-82-000
Company, and	)	Docket No. EL02-83-000
El Paso Merchant Energy, L.P.	)	
	)	(consolidated)

PACIFICORP'S SUPPLEMENTAL
MOTION TO REOPEN THE RECORD AND
MOTION TO TAKE OFFICIAL NOTICE

Pursuant to Rules 716, 508, and 212 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("FERC" or "Commission"), PacifiCorp hereby submits this Supplemental Motion to Reopen the Record and Motion to Take Official Notice in the above-captioned proceeding. On March 13, 2003, PacifiCorp filed its original Motion to Reopen the Record, Motion to Take Official Notice, and Motion for Sanctions ("First Motion to Reopen") in this proceeding. In the First Motion to Reopen, PacifiCorp requested that the Commission admit into the record of this proceeding and take official notice of Stipulated Facts and telephone Transcripts associated with the Commission's January 31, 2003 settlement with Reliant,[1] one of the Respondents here.[2] The Commission has not yet acted on the First Motion to Reopen.

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[1] *See* Order Approving Stipulation and Consent Agreement, 102 FERC ¶ 61,108 (Jan. 31, 2003).

[2] PacifiCorp demonstrated that reopening the record to admit the Reliant evidence was necessary and warranted because: (1) the Commission has expressly ruled that evidence developed in the Docket No. PA02-2 investigation may be used in the forward contract cases such as this one; (2) the Reliant evidence goes to the very heart of this case because it establishes – contrary to the assertions of the

Recently, still more dramatic evidence has become available that shatters the foundations upon which both the Respondents' arguments and the Initial Decision[3] in this proceeding are built. This evidence is extremely relevant and necessary for the Commission to make a full and reasoned decision in this case. Furthermore, this information is now available to the public at large, and indeed has been the subject of significant attention from the public, the media, and members of Congress. For the Commission to proceed to decision in this case while disregarding this crucial and potentially dispositive evidence would deny justice to the consumers harmed by rampant manipulation and market dysfunction and would constitute reversible error. PacifiCorp urges the Commission to consider all available relevant information in reaching a decision in this case.

For these reasons, PacifiCorp requests that the Commission reopen the record to include and take official notice of the following materials:[4]

1. The FERC Staff's Final Report on Price Manipulation in Western Markets, Fact-Finding Investigation of Potential Manipulation of Electric and Natural Gas Prices, FERC Docket No. PA02-2-000, issued March 26, 2003 ("March 26 Staff Report"), as well as the publicly-released materials underlying that report.

2. The evidence of market manipulation submitted by the parties to FERC Docket Nos. EL00-95 et al. and EL01-10 et al., and made public by the Commission in its March 21, 2003 Order Directing the Release of Information.[5]

Respondents – that Reliant knew of and preyed upon the direct linkage between the spot and forward markets (as the Commission is of course aware, this linkage is a central issue of this case); and (3) the Reliant evidence was not available to PacifiCorp while the record in this proceeding was open.

[3] Initial Decision Dismissing Complaints, 102 FERC ¶ 63,030 (Feb. 26, 2003) ("Initial Decision").

[4] In its Motion for Leave to Answer and Answer of PacifiCorp to the Answer of Reliant Energy Services, Inc. to PacifiCorp's Motion to Reopen the Record, Motion to Take Official Notice, and Motion for Sanctions, at n.15, filed April 10, 2003, PacifiCorp noted the large amounts of new and relevant evidence becoming available, and stated that its inclusion in the record here may be necessary.

[5] *See* Order Directing the Release of Information, 102 FERC ¶ 61,311 (March 21, 2003).

3. The public documents and telephone transcripts relating to the settlement between FERC and AES and Williams in FERC Docket No. IN01-3.

4. The evidence of market manipulation and other potentially unlawful conduct by Enron Power Marketing, Inc., Enron Capital and Trade Resources Corporation, El Paso Electric Company, Avista Corporation, Avista Energy, Inc., and Portland General Electric Corporation submitted in FERC Docket Nos. EL02-113, EL02-114, and EL02-115.

5. The public records from the pending Western forward contract complaint cases of the California Public Utilities Commission and California Electricity Oversight Board (FERC Docket Nos. EL02-60 and EL02-62) and of Nevada Power Company and Sierra Pacific Power Company (FERC Docket Nos. EL02-28 et al.); Nevada Power Company (FERC Docket Nos. EL02-29 et al.); Southern California Water Company (FERC Docket No. EL02-43); and Public Utility District No. 1 of Snohomish County, Washington (FERC Docket No. EL02-56).

6. The Stipulated Facts and Transcripts associated with the Commission's January 31, 2003 Settlement with Reliant.[6] (These materials were the subject of PacifiCorp's March 13, 2003 First Motion to Reopen, which for the sake of efficiency PacifiCorp incorporates here by reference and provides as Attachment A.)

These materials contain dramatic evidence bearing on the central issue of this case, namely, the linkage between the spot and forward markets. Such evidence takes various forms, including Staff's conclusion that for the period from May 2000 until June 2001 spot prices directly influenced forward prices and evidence that the Respondents manipulated spot prices in attempting to increase forward prices. Staff's conclusion regarding the linkage provides an unbiased and thorough factual analysis that the Commission can rely upon. Evidence that the Respondents tried to exploit the linkage between the markets disposes of the Respondents' contention that those markets are not linked. Both undercut the premises and conclusions of the Initial Decision in this case. In addition, in the event that the Commission determines, as the Presiding Judge

[6] *See* Order Approving Stipulation and Consent Agreement, 102 FERC ¶ 61,108 (Jan. 31, 2003).

did, that PacifiCorp must prove Respondents exercised market power, the materials also abound with examples of market manipulation by the Respondents. For these reasons, PacifiCorp respectfully requests that the Commission reopen the record to include the evidence listed above and that the Commission take official notice of this evidence in proceeding to a decision in this case.[7]

I. MOTION TO REOPEN THE RECORD

A. The Commission Expressly Stated That Evidence Developed In Its PA02-2 Investigation May Be Used In The Forward Contract Cases Such As PacifiCorp's

The investigation that culminated in the March 26 Staff Report was undertaken in FERC Docket No. PA02-2-000. In directing Commission Staff to undertake its extensive investigation of market manipulation, the Commission stated without qualification that "the Commission may use the information developed by this fact-finding investigation *to determine how to proceed on any existing or future FPA Section 206 complaints involving long-term power sales contracts relevant to the matters investigated*."[8] In other words, one of the purposes initially contemplated by this Commission for the PA02-2 investigation was to generate information that might help the Commission to resolve the forward contract cases, such as PacifiCorp's. This fact

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[7] Given the dramatic impact of this new evidence on the central issue of this case, it is all the more important that the Commission review these issues anew. As briefs on exceptions have been filed in this case, the Initial Decision has no precedential effect. *See, e.g., Illinois Power Co.*, 62 FERC ¶ 61,147 at 62,062 n.17 (1993); *Century Power Corp.*, 56 FERC ¶ 61,087 at 61,298 (1991); *Southern California Edison Co.*, 55 FERC ¶ 61,497 at 62,759 (1991) ("Once briefs on exception were filed in this case, the Initial Decision became an interlocutory, recommended decision, subject to Commission review, rather than a final Commission decision."); FERC Rules of Practice and Procedure, 18 C.F.R. §§ 385.708(d), 385.711, 385.712, 385.713(a)(3) (2002).

[8] Fact-Finding Investigation of Potential Manipulation of Electric and Natural Gas Prices, 98 FERC ¶ 61,165 at 61,614 (2002) (emphasis added).

alone should resolve any question as to whether the March 26 Staff Report and the information upon which it is based are appropriately included in the record here. As discussed below, however, because the March 26 Staff Report, the information upon which it is based, and indeed, all of the evidence that PacifiCorp seeks to have included in the record so strongly affect the central issues of this case, they certainly warrant inclusion in the record under the Commission's general rules regarding reopening as well.

B. Good Cause Is Present To Reopen The Record Under Rule 716 – These Are Extraordinary Circumstances And This New Evidence Certainly Goes To The Very Heart Of This Case

Rule 716 states that reopening may be "warranted by any changes in conditions of fact or of law or by the public interest."[9] As a general proposition, reopening under Rule 716 is permitted only in "extraordinary circumstances" that involve evidence going "to the very heart of the case."[10] There is no question as to what issue constitutes the heart of the instant case. In setting this case for hearing, the Commission stated that the central issue to be addressed is "whether the dysfunctional California spot markets adversely affected the forward bilateral markets."[11] The Respondents have argued strenuously throughout this proceeding that the dysfunctional California spot market did not affect the forward bilateral markets, but that rather, the forward markets were driven separately by distinguishable fundamentals.[12] The Initial Decision's conclusion

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[9] 18 C.F.R. § 385.716(c) (2002).

[10] *See* Kentucky Utilities Co., 44 FERC ¶ 63,020 at 65,071 (1988) (citing Southern Company Services Inc., 43 FERC ¶ 61,003 at 61,024, *reh'g denied*, 43 FERC ¶ 61,394 (1988)).

[11] 99 FERC ¶ 61,381 at P 28 (2002).

[12] See, e.g., Respondents' Joint Initial Brief at 34-44 (filed Jan. 27, 2003); Exhibit Nos. MSC-1 at 7-11, EPME-1 at 36-51.

regarding this central issue, while at odds with several underlying factual findings, was basically consistent with the Respondents' arguments.[13]

The new evidence that PacifiCorp seeks to have included in the record here directly contradicts the Respondents' assertions and the Initial Decision's conclusions. The March 26 Staff Report specifically concludes that "forward power contracts negotiated during the period 2000-2001 in the western United States were influenced by then-current spot prices," and that "[t]he influence of spot prices on forward prices was the greatest for forward contracts with the shortest time to delivery,"[14] such as the Summer 2002 Contracts at issue here. These conclusions certainly go directly to the central issue – the heart – of this case. Furthermore, Staff's analysis and conclusions provides a thorough and unbiased analysis upon which the Commission can comfortably rely.

Similarly, the Stipulated Facts and Transcripts associated with the Commission's January 31, 2003 settlement with Reliant establish, as the Commission itself has already found, that Reliant manipulated the spot markets "to see if PX prices would increase and thus also raise forward prices."[15] This finding was reaffirmed in a recent Order Denying Interventions, issued April 9, 2003, in which the Commission stated that "Reliant traders, *in an effort to increase prices in the forward markets*, reduced capacity offered on June 20 and 21, 2001 in the CalPX day-ahead market."[16] The fact that Reliant was attempting to exploit the linkage between the spot and forward markets

[13] *See* Initial Decision at PP 37-59.

[14] March 26 Staff Report at V-1.

[15] Order Approving Stipulation and Consent Agreement, 102 FERC ¶ 61,108 at P 5 (Jan. 31, 2003). *See also* Reliant Transcripts, June 20, 2000, 16:50 at 1.

[16] 103 FERC ¶ 61,019 at P 2 (emphasis added).

absolutely refutes the assertion of the Respondents in this case that those markets are not linked but rather are driven separately by distinguishable fundamentals.

In addition to going directly to the central issue of this case, the development of this evidence truly constitutes extraordinary circumstances. This evidence is the culmination of long and in-depth investigations instituted to explore the circumstances surrounding an extreme and unprecedented market crisis. That it has taken substantial time and effort to come to light, and that it was not available during the hearing in this proceeding, should not be a bar to its inclusion in the record here, where it provides crucial, potentially dispositive, information.

As a separate matter, the Initial Decision seems to base many of its conclusions on the finding that PacifiCorp had not proven that the Respondents exercised market power. The Initial Decision states that "there is no basis for depriving these Respondents of the benefits of their bargains" because PacifiCorp's "attempt to show that [the Respondents] exercised undue market power was so feeble as to verge on the farcical."[17] Going farther, the Initial Decision concludes that "[s]o far as the record shows, the Respondents did not violate any operative norm in their dealings with PacifiCorp. . . . They did not collude to increase prices in the marketplace. They did not unduly exercise market power."[18] Also, the Initial Decision concludes that "the rates [the Respondents] charged . . . were exactly what the authorization for market-based rates would have predicted."[19]

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[17] Initial Decision at P 57.

[18] Initial Decision at P 88.

[19] Initial Decision at P 35.

It is important to note that these findings were made by the Presiding Judge after PacifiCorp was specifically precluded from presenting evidence regarding the manipulative practices of the Respondents. To the extent that this evidence was precluded because the Commission did not want Staff's investigatory efforts in Docket No. PA02-2 to be duplicated, then the Commission's statements, discussed above, that the results of the PA02-2 investigation may be used in the pending forward contract cases is all the more relevant. That evidence is necessary to complete the record here. If on the other hand, the evidence of manipulation is to be excluded here, then the Commission can not also adopt the Initial Decision's conclusion that PacifiCorp failed to demonstrate the exercise of market power by the Respondents. In other words, the Commission cannot continue to disregard evidence of market manipulation that PacifiCorp seeks to have included in the record and then nonetheless rule that PacifiCorp was required to and failed to establish that the Respondents exercised market power.

Of course, it is now apparent to all that every one of the judge's conclusions regarding market power are in serious doubt. The Commission has concluded that at least one of the Respondents here – Reliant – did exercise market power, and the Commission has taken the dramatic step of requiring Reliant to show cause why its market-based rate authority should not be revoked.[20] Each of the Respondents in this proceeding is implicated in association with some manipulative activity in the March 26 Staff Report. In light of the voluminous new evidence that all of the Respondents here were involved in at least some manipulative behavior, it is all the more egregious to

[20] *See* Order Proposing Revocation of Market-Based Rate Authority, 102 FERC ¶ 61,315 (March 26, 2003).

leave unremedied the substantial harm inflicted on PacifiCorp and its ratepayers which the Presiding Judge described callously as "just desserts."[21] To the extent that the Initial Decision is based on the Presiding Judge's conclusions that the Respondents did not manipulate the markets, then, the evidence that PacifiCorp seeks to have admitted demonstrates that such conclusions cannot stand. The record in this proceeding must be reopened to include this important evidence.

II. MOTION TO TAKE OFFICIAL NOTICE

For the reasons discussed above, it is critical that the Commission weigh the evidence at issue here in formulating its decision in this case. Hence PacifiCorp also respectfully requests that the Commission take official notice of the materials described above. Pursuant to Rule 508(d) of the Commission's Rules of Practice and Procedure, the Commission may take official notice of "any matter that may be judicially noticed by the courts of the United States, or of any matter about which the Commission, by reason of its functions, is expert."[22] There can be no question that the evidence that PacifiCorp seeks to have included in the record is within the Commission's expertise. The March 26 Staff Report and underlying materials were developed by the Commission's own staff in response to Commission directives; the Stipulated Facts and Transcripts are associated with a settlement between Reliant and the Commission itself; and the remaining materials have all been developed within the framework of various Commission proceedings. Moreover, all of this material relates to the functioning of the spot and forward western markets, as well as to the regulation thereof; no credible

[21] Initial Decision at P 87.

[22] 18 C.F.R. § 385.508(d)(1) (2002).

argument could be raised that such information is beyond the Commission's expertise for the purposes of Rule 508(d).

Rule 508(d)(3) states that if a request for official notice is made after the close of hearing, the moving party must "set forth the reasons to justify the failure to request official notice prior to the close of hearing."[23] PacifiCorp could not have presented this evidence to the Commission prior to the conclusion of the hearing because this evidence has only recently been brought to light. Despite its diligence in discovery, the information surrounding the Commission's settlement with Reliant came to PacifiCorp's attention on January 31, 2003, almost a month after the end of the hearing in this proceeding. Similarly, the March 26 Staff Report and underlying materials and evidence submitted in the parallel forward contract cases were not issued and made public until long after the close of the hearing in this proceeding. PacifiCorp could not, then, have presented this information during hearing.[24] At bottom, the evidence at issue here is highly relevant to and may even dispose of the central issue in this case, it flatly contradicts the assertions of the Respondents regarding the linkage between the spot and forward markets, and undercuts both the premises and conclusions of the Initial Decision. Under these circumstances, official notice of these materials is warranted and necessary.

[23] 18 C.F.R. § 385.508(d)(3) (2002).

[24] Indeed, as indicated above, PacifiCorp was precluded from presenting what evidence it did possess regarding market manipulation by rulings of the Presiding Judge.

III. CONCLUSION

For the foregoing reasons, PacifiCorp respectfully requests that the Commission (i) grant this Supplemental Motion to Reopen the Record and Motion to Take Official Notice; and (ii) grant all relief requested in PacifiCorp's First Motion to Reopen.

Respectfully submitted,

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Dated: May 7, 2003

Docket UM 1002
WC/1135

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

PacifiCorp's Response to Petitioner's Nineteenth

Data Request (Request Nos. 204-209)

Dated July 2, 2007

July 6, 2007

COPY

BEFORE THE PUBLIC UTILITY COMMISSION OF OREGON

UM 1002

Wah Chang, Petitioner, v. PacifiCorp, Respondent.	**PACIFICORP'S RESPONSE TO PETITIONER'S NINETEENTH DATA REQUEST (Request No. 204-209)**

PacifiCorp responds and objects as follows to Wah Chang's Eighteenth Data Request:

GENERAL RESPONSES AND OBJECTIONS

1. PacifiCorp objects to petitioner's data request to the extent it seeks documents and information other than documents and information in PacifiCorp's possession.

2. PacifiCorp objects to petitioner's data request to the extent it seeks the production of documents protected from disclosure under the attorney-client privilege, the work product doctrine, or any other applicable privilege.

3. PacifiCorp objects to petitioner's data request to the extent it seeks the production of confidential, proprietary, or commercially sensitive documents and information. Any such documents that are produced will be produced only subject to the protective order in place in this matter, Commission Order No. 01-149, or such other protective order as may be necessary.

4. By responding to this data request, PacifiCorp does not in any way waive or intend to waive, but instead intends to preserve, all objections as to the competency, relevancy,

materiality, and admissibility of the responses, of any produced documents, and of the subject matter of the responses and documents.

5. PacifiCorp objects to petitioner's definitions and instructions to the extent they are inconsistent with or broader than PacifiCorp's obligations under the Commission's rules. PacifiCorp objects further to petitioner's definitions and instructions to the extent that those definitions and instructions purport to enlarge, expand or alter in any way the plain meaning and scope of petitioner's requests.

6. For purposes of appeal, PacifiCorp objects generally to this data request on the grounds that this matter is currently before the Commission for the limited purpose of considering certain specific evidence pursuant to ORS 756.600, and there is no basis for conducting additional discovery at this stage of the proceedings. This request, therefore, seeks the production of documents and information not relevant to the procedural posture of Wah Chang's claims and not reasonably calculated to lead to the discovery of admissible evidence.

7. PacifiCorp reserves the right to supplement or amend its responses to this data request upon the discovery of additional documents and information.

8. Each of these general objections is hereby expressly incorporated into the specific responses set forth below.

SPECIFIC RESPONSES AND OBJECTIONS

REQUEST NO. 204: With reference to page 63, lines 14-16 of Dr. Cicchetti's testimony, please provide all data and other information furnished by PacifiCorp to FERC from which FERC Staff concluded that PacifiCorp was a net purchaser.

RESPONSE: See Confidential Attachments to this Response, consisting of two emails (with attachments) from PacifiCorp to FERC, numbered PC2000001-PC2000177. See also Confidential Attachment to Request No. 201. See also June 20, 2003 Affidavit of Stan K. Watters.

REQUEST NO. 205: Please admit or deny the following statement: The FERC Staff Report's conclusion (at page 3) that PacifiCorp was "a net buyer[] during the relevant period" means that the megawatt hours purchased by PacifiCorp during the period May 1, 2000 to June 30, 2001 in the markets operated by the California ISO and the California PX exceeded the megawatt hours sold by PacifiCorp during that period in those markets.

RESPONSE: PacifiCorp is not in a position to admit or deny what the FERC Staff Report's conclusion was based upon on page 3 of the report. See also response to Request No. 204.

REQUEST NO. 206: If the response to Request No. 205 is a denial, please explain in what respects the statement is incorrect and provide a correct explanation of the FERC Staff Report's conclusion that PacifiCorp was "a net buyer[] during the relevant period."

RESPONSE: Not applicable.

REQUEST NO. 207: If the response to Request No. 205 is an admission, please provide the monthly data that demonstrate this.

RESPONSE: Not applicable.

REQUEST NO. 208: If the response to Request No. 205 is a denial, please provide the monthly data that demonstrate the correct explanation provided in response to Request No. 206.

RESPONSE: Not applicable.

REQUEST NO. 209: With reference to page 70, lines 2-3, of Dr. Cicchetti's testimony, please explain why PacifiCorp had potential responsibility for paying refunds if it was a net buyer.

RESPONSE: The reference on Page 70, lines 2-3 in Dr. Cicchetti's testimony is to the Refund Proceedings (which are defined as FERC Docket Nos. EL00-95-000, EL00-98-000, EL01-10-000, IN03-10-000, PA02-2-000, EL03-163-000, EL03-197-000 and ER03-746-000). FERC recently approved PacifiCorp's settlement for $27,975,973 which resolved matters and claims in the Refund Proceedings related to PacifiCorp and arising from events and transactions in the Western Energy Markets during the period January 1, 2000 through June 20, 2001. *See* Order Approving Settlement, 119 ¶ FERC 61,296 (June 21, 2007). Under the approved settlement, PacifiCorp will provide settlement proceeds in the amount of $27,975,973 and will assign to the California Parties all of PacifiCorp's rights and claims to payment by or from the California PX and the California ISO for sales of energy and ancillary services in the California markets during the period January 1, 2000 through June 20, 2001. This amount is $11,575,973. As a result, PacifiCorp will pay cash consideration totaling $16,400,000 to the California Parties.

There is no correlation between PacifiCorp's status as a "net buyer" and its potential obligation to pay refunds in settlement of the FERC Staff investigation, for several reasons:

(1) FERC Staff's statement on page 3 of its report states: "Certain other investor-owned utilities and municipal energy providers were net buyers during the relevant period, which would indicate they neither had the opportunity nor the incentive to withhold capacity from the market." FERC Staff's statement does not define precisely on what basis the net buyer calculation was based. Footnote 4 of the FERC Staff report provides only: "If the purchases and sales of these entities during the relevant time period are netted out, the entity will have made more purchases than sales during that period." Therefore, it is impossible to know what net buyer definition and/or calculations were relied upon by FERC Staff to form its opinion.

(2) PacifiCorp's statement in paragraph 14 of the June 20, 2003 Watters' Affidavit provides that the net purchaser calculation was PacifiCorp's short-term energy purchases (12 months or less in duration) exceeded its short-term sales by 5,421,000 MWh for the period May 1, 2000 to June 30, 2001. This Affidavit was provided as Confidential Attachment to Request No. 201 (Bates Nos. PC 08166 to PC 081190). It should be noted that PacifiCorp did not limit this statement to the California PX and California ISO markets. This statement in the affidavit was intended to provide context for the specific question of whether PacifiCorp had an incentive to physically withhold generation in the California markets.

(3) The settlement of the Refund Proceedings (as defined above) encompasses several different proceedings and investigations, and covers different time periods than the focus of Wah Chang's 19th Set of Data Requests.

(4) Whether PacifiCorp was a net buyer depends upon the time frame and geographic scope reviewed. Net buyer calculations can be done on several different bases including a set minute incremental basis, an hourly basis, a monthly basis, a yearly basis, a system-wide basis, a location specific/geographic specific basis, etc. As is apparent from the settlement agreement in the FERC Refund Proceedings, the settlement amounts were calculated on the basis of 6 minute increments, 10 minute increments, or hourly, and also were calculated on the individual increment basis, *i.e.*, if the sell price exceeded the MMCP for the increment, refunds would be due. It did not matter that if *overall* a particular utility was a net buyer or seller. In contrast, the information set forth in the Watters

affidavit "net buyer" conclusion was not based on that particular analytical approach, but rather on an overall analysis of total MWhs comparing buys to sells.

DATED: July 2, 2007.

PERKINS COIE LLP

By Clifford for JVN
James M. Van Nostrand, ~~OSB No. 794289~~

Attorneys for PacifiCorp

CERTIFICATE OF SERVICE

I hereby certify that I served the foregoing **PACIFICORP'S RESPONSE TO PETITIONER'S NINETEENTH DATA REQUEST** (Request Nos. 204-209) on:

Richard Williams
Lane Powell Spears Lubersky LLP
601 SW 2nd Avenue, Ste. 2100
Portland, OR 97204
williamsr@lanepowell.com
Attorneys for Wah Chang, Petitioner

by causing a full, true, and correct copy thereof, addressed to the last-known office address of the attorney (except when served by fax), to be sent by the following indicated method or methods, on the date set forth below:

- [ ] by causing a copy to be electronically mailed to said attorneys at their last known e-mail address
- [ ] by **mailing** in a sealed, first-class postage-prepaid envelope and deposited with the United States Postal Service at Portland, Oregon
- [x] by **hand-delivery**.
- [ ] by sending via **overnight courier** in a sealed prepaid envelope
- [ ] by **faxing** to the attorney at the fax number shown above, which is the last-known fax number for the attorney's office

DATED: July 2, 2007.

PERKINS COIE LLP

By ______ for JVN
James M. Van Nostrand, ~~OSB No. 794289~~

Attorneys for PacifiCorp

Docket UM 1002
WC/1200

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

Rebuttal Testimony of Berne Martin Howard

July 6, 2007

TABLE OF CONTENTS

REBUTTAL TESTIMONY OF BERNE MARTIN HOWARD

I. QUALIFICATIONS.

Q. Please state your name, occupation, and business address.

A. My name is Berne Martin Howard. I am the sole member of Bench Mark Heuristics, LLC, an electric power industry policy and economics consulting firm. My business address is 1910 NE 67th Avenue, Portland, Oregon 97213.

Q. Please state your qualifications and work experience.

A. I have worked in the electric power industry for over 25 years, with an emphasis on mathematical and statistical modeling and analysis. I was an employee of Portland General Electric Company and affiliated enterprises for about 15 years and worked on a broad variety of analytical, regulatory, and negotiation efforts during that time. In 1995 I left Portland General Electric Company to become a partner in McCullough Research, a Portland consulting firm, providing consultation to a variety of utilities, utility customers, non-utility providers of electric power services and other entities with interests related to electric power. With McCullough Research I worked extensively with information and people regarding the various electric power markets that have been evolving in North America. In April 2000 I left McCullough Research to form my own consulting business and have continued to work on projects for clients involving electric power markets and regulatory change. A more lengthy vita is included as an exhibit to my testimony, Exhibit WC/1201.

Q. Who retained you for this testimony?

A. I was retained on behalf of Wah Chang by Lane Powell PC, its legal counsel in this proceeding.

Q. Have you previously testified in this proceeding?

A. Yes. My Direct Testimony dated April 17, 2001 was admitted as Wah Chang Exhibit 200, and my Rebuttal Testimony dated June 12, 2001 was admitted as Wah Chang Exhibit 500.

Q. What was the subject of your Direct Testimony dated April 17, 2001?

A. Among other subjects, my testimony explained the Dow COB index and showed that Dow COB prices are correlated with California Power Exchange prices. My testimony also discussed the role of financial hedges in the electricity market.

II. PURPOSE AND SUMMARY OF TESTIMONY.

Q. What is the purpose of your testimony today?

A. The purpose is to comment on certain aspects of the Reply Testimony of Charles J. Cicchetti, Ph.D., filed on behalf of PacifiCorp in this proceeding as PacifiCorp/23.

Q. What aspects of Dr. Cicchetti's testimony will you comment on?

A. I will comment on (a) Dr. Cicchetti's statistical analysis of the relationship between California ISO prices and Dow COB prices, (b) Dr. Cicchetti's assertions that PacifiCorp's "gaming" activities during 2000-2001 could not have affected the Dow COB index and (c) Dr. Cicchetti's suggestion that Wah Chang did not act reasonably because it failed to hedge.

Q. Please summarize your comments.

A. I first discuss Dr. Cicchetti's testimony regarding the statistical similarity of the ISO Ex-post prices, also called "real-time prices,"[1] and Dow COB index prices. Dr. Cicchetti is not correct in failing to find statistical similarity between these prices. His assumptions and conceptual approach to this question contain a very fundamental logical flaw, a

[1] "Real-time prices" and "Ex-post prices" mean the same thing here. These are prices reported by the California ISO after all power has been delivered, sometimes months later. The data I have used in my analysis is the same as the data used by Dr. Cicchetti, though he has committed some minor errors in identifying hourly timing and computing on-peak and off-peak averages in his statistical analysis.

classic non-sequitur argument. For that reason, his statistical argument does not support his conclusion that California ISO prices will have no effect on COB prices. Furthermore, very simple statistical analysis of readily available price data shows a strong statistical and practically significant similarity and relationship between these two series. This is significant evidence that California ISO prices do affect COB prices.

Second, I have performed an analysis to determine whether a relationship exists between PacifiCorp buy/resell transactions with Enron and the effect of PacifiCorp's transaction reports on Dow COB index prices. That analysis shows a statistically significant variation in the influence of PacifiCorp's information submissions to Dow Jones, depending on whether PacifiCorp was conducting buy/resell transactions with Enron.

Third, I consider the practical difficulties faced by anyone contemplating electric power price hedging during the 2000-2001 period. There were good reasons for Wah Chang not to hedge earlier than it did, and some entities that did hedge did not fare well from their actions.

III. RELATIONSHIP OF CALIFORNIA ISO PRICES TO DOW COB PRICES.

Q. How does Dr. Cicchetti characterize the relationship between California ISO prices and Dow COB index prices?

A. When summarizing his conclusions at page 4 of his testimony, Dr. Cicchetti states that "statistical analyses that I conducted demonstrate that COB prices were quite different statistically from the prices in the market operated by the California Independent System Operator (CAISO)."[2] From this he concludes that "any alleged manipulation of the

[2] PacifiCorp/23, page 4, lines 13-16.

CAISO market is not relevant to the COB index price paid by Wah Chang under the MESA."[3]

Q. Does Dr. Cicchetti repeat these assertions elsewhere in his testimony?

A. Yes. On 37 of his testimony, Dr. Cicchetti testifies that his statistical analysis shows that CAISO prices are "statistically different" from COB index prices and demonstrates "that it is extremely unlikely that any of the 'games' described by Mr. McCullough had any effect whatsoever on the COB index price."[4] From this he again concludes that "Mr. McCullough's discussion of 'gaming' is thus not at all relevant to the prices at issue in this case."[5] In Section VI of his testimony, and in exhibit PacifiCorp/31, Dr. Cicchetti goes on to describe a straightforward means comparison analysis demonstrating that the Dow COB prices are "statistically different"[6] from the California ISO's Ex-post prices, and not statistically different from the California PX prices.

Q. What is your comment about Dr. Cicchetti's testimony on this point?

A. Dr. Cicchetti's statements are a classic non-sequitur argument. He argues, in essence, that if two things are distinguishable they are necessarily unrelated. Common sense tells us that this is an untrue generalization and straightforward analysis demonstrates that it is not true with regard to the issue at hand.

Parenthetically I note that Dr. Cicchetti's analysis suffers from some simple errors in data handling, such as a misalignment of hours defining peak and off-peak periods for some of the California ISO Ex-post data, and a number of more serious poorly conducted statistical procedures that reflect haphazard thinking about the statistical questions he considered. But these errors are relatively insignificant in comparison to the primary non-sequitur mistake.

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[3] PacifiCorp/23, page 6, lines 19-21.
[4] PacifiCorp/23, page 37, lines 10-12.
[5] PacifiCorp/23, page 37, lines 18-20.
[6] PacifiCorp/23, page 55, line 14.

Q. Why are Dr. Cicchetti's statements a non-sequitur?

A. In outline, Dr. Cicchetti's formal logic goes like this:

1. If CAISO prices are not statistically similar to COB prices, then CAISO prices will have no effect whatsoever on the COB index price.
2. If CAISO prices are statistically different from COB index prices, then CAISO prices are not statistically similar to COB prices.
3. COB index prices are statistically different from CAISO prices.
4. 3. and 2. imply that CAISO prices are not statistically similar to COB prices.
5. 4. and 1. imply that CAISO prices will have no effect whatsoever on the COB index price. QED.

This is a classic non-sequitur with the primary fallacy at step 2. "Not statistically similar" does not mean the same thing as "statistically different." To say otherwise is an abuse of logic, clear statistical thinking, and perhaps constitutes a kind of sophistry that employs confusing use of negation language, e.g. "not statistically similar."

Q. Why does "statistically different" not imply "not statistically similar"?

A. This is easier to think about if the word "statistically" is removed. Then we can see that "different" does not always mean "not similar." A person's height in feet is a very different number from the same person's height in millimeters, but the values mean the same thing; they are highly similar. The interest rate that a lender charges for mortgage loans is different from the yield of 10-year Treasury Bills, but the most cursory examination of the two series over time reveals deep similarity.

Q. How does Dr. Cicchetti's logical error relate to electric power market prices?

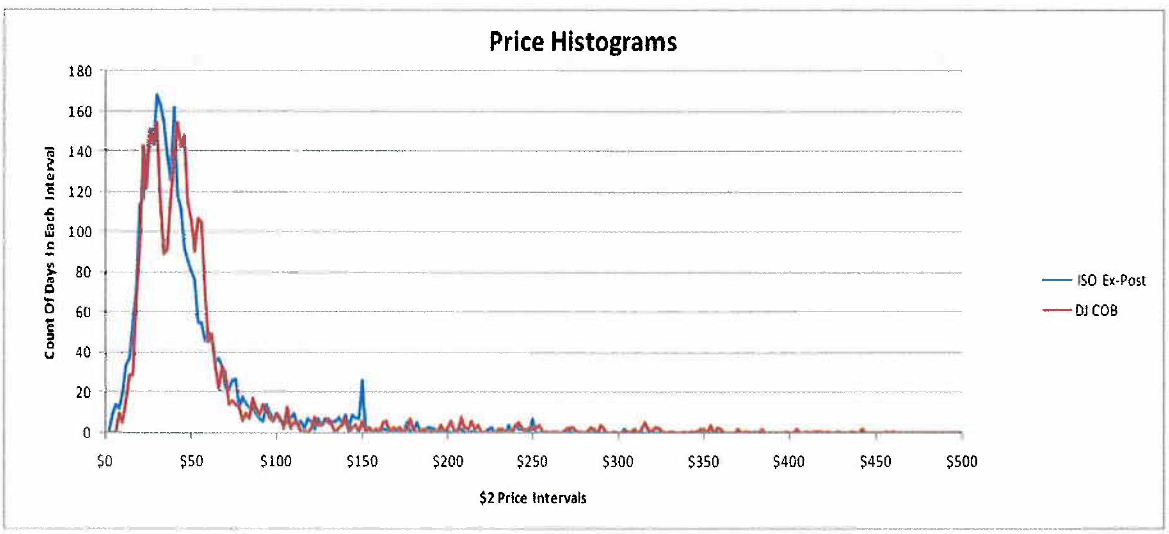
A. Dr. Cicchetti shows that the Dow COB price series and the California ISO price series are distinguishable in that the average, or mean, of one series is different than the average of the other. He calculates a COB on-peak average of $76.58 per MWh and a corresponding ISO real-time average of $60.04 per MWh and presents a t-statistic demonstrating that this is a difference greater than would be expected by chance alone. His false argument then attempts to use this fact to establish that there is no possible connection between the two series. I would certainly expect the first result—that the two price series have different means—as I believe would virtually anyone having even a passing familiarity with western electric power markets. At the very least I would expect COB prices to be different from prices at other western hubs, including the California ISO, because of the transmission cost of moving power from one hub to the other. The second result—that there is no relationship between the price series—not only fails to follow logically from the first, but I believe would come as a great surprise to people who have spent time examining these western price series. Even the most preliminary exploration of the data reveals striking similarity. As a simple matter of physics, engineering, and market behavior, the interconnection between COB and the California electric grid argues for considerable similarity in the behavior of prices.

Q. Can you illustrate how the means are different, yet the two series of prices are similar?

A. Yes. The first thing any good statistician does when presented with a data set is graphing, starting with the most rudimentary aspects of the data, before conducting a formal analysis. When I was reviewing Dr. Cicchetti's testimony, I did not have the data set he used for his t-test analysis because it was not an exhibit to his testimony. But the relevant price series are readily available, and I examined the data sets that I obtained myself from Dow Jones and from the California ISO.

At the most basic level, the prices at each trading hub consist of a collection of numbers, each number representing a price in dollars per MWh. A very simple way to graphically present this kind of data is through the use of a histogram. A histogram is a simple display of how frequently particular values occur in the data set. Histograms are familiar to most people because of their use in popular media. For example, newspapers sometimes report age characteristics of a town or neighborhood through histograms, with the set of ages divided into ranges and the number of people counted who fall into each range, so many people between the ages of zero and 20, so many between 21 and 40, so many between 41 and 60, and so forth. The results are often presented in a bar chart, often forming a familiar mountain shape, the celebrated "bell curve."

I constructed such histograms at two dollar intervals for Dow COB prices and for California ISO Ex-post prices and plotted them on the same graph, shown here for prices from April 1998 through May 2007, 3,247 prices in each series after excluding a few days with missing data. These histograms visually demonstrate that the relative frequencies of prices for the two series are very similar in shape. For example, the series have similar "double-peaks" with 168 ISO Ex-post prices falling between $28 and $30, and 154 Dow COB prices falling in the same interval.



Q. How then can Dr. Cicchetti state that these series are statistically different?

A. He does so by comparing the means. The average values for the series are not the same, which, as I have noted, is no surprise. As I said earlier, Dr. Cicchetti found the average Dow COB on-peak price to be $76.58 and the corresponding average ISO Ex-post price to be $60.04. Dr. Cicchetti followed a standard recipe of statistical analysis to conclude

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that the difference between these values is statistically significant. However, the difference in means is a distinction without practical significance, while the many qualities of similarity in the series have very meaningful implications. Dr. Cicchetti himself calls attention to important similarities in some of these price series in his testimony regarding hedging. In that discussion he notes correlations among various price series. He did not analyze, or at least present, the same sort of similarity when examining the relation between the California ISO and Dow COB prices.

Q. What qualities of similarity do these price series exhibit?

A. First, displaying the data visually presents strikingly similar behavior. The histograms presented above are one such display. Another is a simple line graph of the daily values of the series presented over time. The following simple graph shows how the two series take relatively similar values at similar times, following one another through time.[7]

[GRAPH FOLLOWS ON NEXT PAGE]

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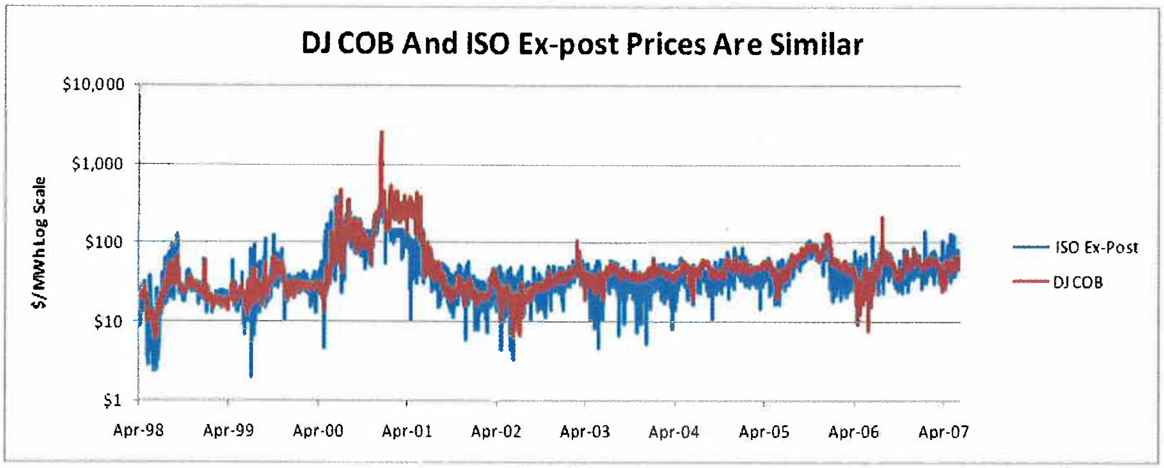
[7] The graph's vertical axis is on a logarithmic scale to allow better display of the relative behavior of the series at widely varying values. Price series generally have day-to-day variability proportional to the level of the series. For example, if prices are tending around $10 with a certain variability, then if they climb to the vicinity of $100 they will be ten times as variable. This kind of behavior is often rendered visually and analytically tractable by putting the data on a logarithmic scale. I performed a regression analysis on the raw data and on the logged data; both were highly significant, but the logged version was considerably more significant, as expected, and the more meaningful regression based on logged prices is shown in the graph below captioned "DJ COB And ISO Ex-post Prices Have Similar Values By Day."

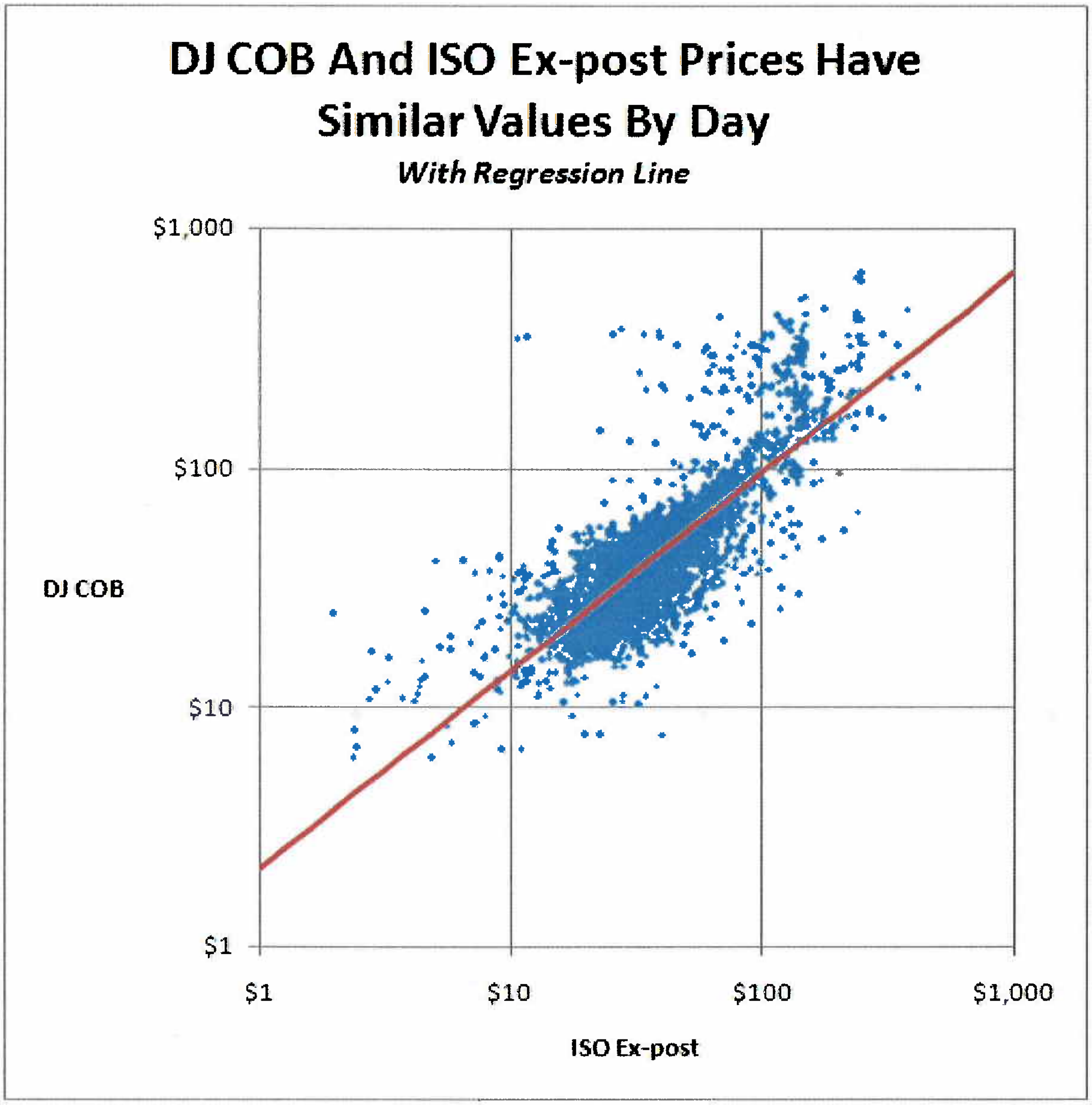


Q. These graphs are visually suggestive of similarity between the two price series, but is there a way to confirm this with a statistically sound computational analysis, not just pictures?

A. Yes. A simple linear model relating the two series can be used. It reveals a very strong relationship between them. The model expresses the Dow COB price as a linear function of the ISO Ex-post price, that is,

DJ COB price = Constant_1 + Constant_2 * Cal ISO Ex-post price + random error

This model fits the data to a high degree of statistical and practical significance. That is, the fitted parameters are not only highly statistically significant, they also "explain" a large proportion of the observed variation in Dow COB prices, and this relationship is relevant to the question of the influence that manipulative dysfunction in the California markets had on the Dow COB price, and thus the price paid for electric power by Wah Chang. This is in contrast to Dr. Cicchetti's analysis, which is irrelevant to these practical questions. The following graph illustrates the data and the fitted regression model. The fit is not only extremely good, it also is consistent with the possibility that the ISO Ex-post price exerts a causative influence on the Dow COB price.



Q. Did you correct for serial correlation in your analysis?

A. I did perform a simple Durbin-Watson test for serial correlation, though that property is so powerful in these price series that serial dependence is not seriously in doubt. The dependence is positive, as expected, with positive autocorrelation at virtually all lags for both the Dow COB and Ex-post price series, typical behavior that can be described by simple time series models. Further discussion of this subject is somewhat technical, so I have more fully answered this question in a technical exhibit to my testimony, WC/1202.

Q. Do you believe that the ISO Ex-post prices caused the Dow COB prices?

A. In part. Causation is difficult to prove through satistical analysis—in fact, causation is not a statistical concept in a direct way—but this simple regression analysis demonstrates that the two series are at the very least profoundly dependent. The two price series result from known common influences, especially the fact that the same energy sold in California might just as well be sold at COB on most days. Traders examine these prices continuously and a change in one can be an opportunity to arbitrage by transactions at the other, thanks to the common transmission interconnection. Of course, the prices at COB and in California are not expected to be identical, and numerous other factors influence the relationship between the prices at any particular time. One of those factors, the exertion of market power in California, especially by market manipulation and gaming that we know was occurring, could be seen by traders as a harbinger of price movement, and traders' expectations could be expected to translate into price movements at COB, which fits the usual definition of "causation." In fact, a simple descriptive statistic, the sample cross-correlation function, suggests that the level of the ISO Ex-post prices precedes similar levels of Dow COB prices, and precedence in time is a stronger indication of causation than simple correlation of the sort represented by a regression relationship. I discuss the cross-correlation function in greater depth in the technical exhibit to my testimony, WC/1202.

Q. Do you conclude, as a result of your analysis, that the COB index price series is similar to the California ISO price series?

A. I have demonstrated that the Dow COB firm index prices are highly similar to the California ISO Ex-post prices, both statistically and in ways relevant to the prices paid by Wah Chang. The similarities are just as I would expect for the electric power market prices for delivery at any pair of delivery points in the WECC. The differences between series average values reported by Dr. Cicchetti are trivially significant but practically irrelevant to any questions of interest in the present context.

Q. Do you conclude, as a result of your analysis, that the California ISO Ex-post price caused the Dow COB price?

A. In part. The simple analysis I have performed is consistent with a causative influence, suggests some of the character of such an influence, and comports with common sense notions of how these markets worked and our current knowledge of the nature, breadth and depth of manipulation and gaming that was occurring in the markets in 2000-2001.

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Pages 13 to 16 of WC/1200

refer to information designated by PacifiCorp as

Confidential Pursuant to Protective Order 01-149

and have been removed

and are being filed separately

under seal.

V. HEDGING.

Q. In Section VIII of his testimony, Dr. Cicchetti suggests that Wah Chang did not act reasonably because it did not take action sooner than it did to hedge against high prices. Do you agree with Dr. Cicchetti's assessment?

A. No.

Q. Please explain.

A. The western electric power market crisis of 2000-2001 was a period of chaos and uncertainty regarding electric power market prices. In the confusion there were winners and losers; among the losers were very responsible entities in which intelligent, knowledgeable, prudent and risk averse individuals made decisions regarding hedging that they carefully considered and that seemed the best course at the time. Some attempted to hedge their positions, and others did not. By the end of June 2001, when the air was let out of this balloon, some of those hedges became embarrassments to their authors. Given these circumstances, I would not be in a hurry to fault any of the various attempts made by reasonable, intelligent people to pilot their organizations through the minefield of the crisis.

Q. Please describe the circumstances that confronted energy managers in the summer and fall of 2000?

A. An answer to this question requires some context regarding how the crisis was experienced. The crisis began at a sharply defined point in time, May 22 or 23, 2000. Nothing in the conditions of the electric power system of the western United States was unusual enough to suggest what was about to happen. Indeed, after dire warnings about Northwest hydroelectric conditions early in the winter, precipitation had restored reservoir levels and runoff expectations for the Columbia River to very near normal conditions. May, June and July are usually the months of maximum input to the

Columbia River's electric power facilities and hydro power was, and was expected to be, in abundance during May and June. Yet, virtually without warning, the price at COB on May 22 went to over $60 per MWh, compared to previous, typical prices for the month that had been in the range of $37 per MWh. At the time, the only higher COB firm average price had occurred during the previous two Septembers, four days in total, during heat waves at a time of year when hydro power is at its lowest ebb. May has always been a time of water abundance, and a price this high had never been experienced in the springtime. And if May 22 was a shock, May 23, at $136.36 per MWh, was like Armageddon. This kind of event, and the continuing high summer prices, were far beyond the normal range of price variability and were not predictable. Hedging has cost and is a practice conducted in environments with known risks, and in those environments is known as an element of sound risk management. Hedging against events like the western market crisis, ahead of the event itself, is known as gambling. By the fall of 2000, there was a general feeling that the summer period of extraordinary prices was probably about to run out of steam and that price levels would probably fall to within their historical range, at least until the following summer. And there were signs of moderation in the fall of 2000, with prices ramping down some into the end of October.

Q. What effect would falling prices have on a reasonable person's decision whether to build a cogeneration plant?

A. Falling prices would cause a reasonable person to question and reevaluate the wisdom of building a plant. Remember, hedging, including power plant construction, means locking in costs. If a buyer had not hedged by the end of October 2000, after summer prices nearly an order of magnitude higher than any historical experience and when a return to sanity seemed imminent, was locking in the price, with an additional premium for the privilege, a reasonable action? Who knew?

Q. What happened to prices after the fall of 2000?

A. They rose dramatically. Even among people who thought the crisis would continue, few, if any, would have expected the subsequent explosion to even more highly unprecedented price levels, sustained averages over $200/MWh for months and frequent, almost weekly, peak days around $400/MWh.

Q. What was Portland General Electric's experience with cogeneration construction during the crises?

A. Portland General Electric Company faced an interesting prospect during the crisis, explored by the company in a very informative way that reveals much about the very uncertain environment of that time. PGE's experience shows that careful and informed action was simply not sufficient to protect anyone forced to conduct business in the midst of such a chaotic environment.

Q. What was PGE's prospect and how did PGE address it?

A. As the summer 2000 high prices continued without relief, PGE considered the implications if the market conditions continued unabated for many months. If a power plant could be constructed quickly, even a very inefficient unit would pay back its capital cost in a very short time, given the extraordinary price levels. In fact, a generating unit based on a small natural gas turbine that might be purchased and installed at PGE's Beaver plant site, could be expected to recover its entire capital cost in just a few months. PGE identified a specific 25 MW unit that could be up and running in just a few months, and began to make plans for its acquisition and installation at the Beaver plant.

But PGE faced a regulatory problem too. At the time PGE was contemplating these actions, Oregon had recently passed utility regulation restructuring legislation that made it considerably more difficult for utilities to place physical assets into rate base and recover the capital costs of the assets in customer rates. On the other hand, if PGE simply bought and installed the small gas unit using the capital of the company's owners, customers could mount numerous arguments justifying the return to customers of a large portion of any net revenue from operating the new unit. This was a conundrum; PGE had no clear way to benefit from a regulated return on any investment in such a generating resource, but it also faced effective confiscation of any profit it might realize by expending its own capital on the project. PGE decided to engage its customers and the Oregon Public Utility Commission staff in a dialog to see what could be arranged.

PGE, customer groups and the Commission staff settled on an arrangement under which customers would guarantee PGE's recovery of the capital cost and would thereafter receive credit for a large share of the expected ongoing profitable sales of power from the unit. The commitment made, PGE moved quickly to get the new unit up and running at the Beaver plant site. As with almost any significant construction project, there were some delays, but the new unit was operational not too long after the date originally planned.

Unfortunately, that time was well into the summer of 2001, and by then FERC had instituted investigations and hard price caps that brought the time of crazy electric power markets to a close, so the new unit was seldom operated. In 2004 provisions of the stipulated agreement were triggered that led to, essentially, the unit being given over to traditional ratemaking treatment, the capital costs included in rate base, PGE earning a return on the undepreciated remainder of that cost, recovering depreciation and O&M cost, and the benefits of unit operation enjoyed entirely by PGE's customers.

In late 2000 and early 2001, in the middle of the crisis period, all the participants in this action believed that the chance of earning significant profit in the "wild west" power markets, essentially a costly hedge against PGE's power needs, was worth the risk of a "dry hole." All the parties took that chance with their eyes open and lost.

The point of relating this situation is to illustrate that both hedging and not hedging turned out to be risky actions during the crisis, and no clear strategy presented itself to market participants as the only prudent course.

Q. What about the hedges proposed by Dr. Cicchetti for Wah Chang?

A. The examples presented by Dr. Cicchetti in PacifiCorp/32 are theoretically interesting, but of little practical use. During the crisis there were really only three true hedging actions that an entity like Wah Chang might have attempted:

1. Wah Chang could have tried to purchase NYMEX futures contracts at COB or Palo Verde, at least, until NYMEX cancelled the contracts.[11] But this option was never very realistic because of the thin trading in the contract.[12]
2. Wah Chang could have launched a generating plant project, an action similar in intended effect to PGE's Beaver project. Like PGE, Wah Chang did in fact build a plant that was ready for operation just as the crisis ended, with the same disappointing financial result.
3. Wah Chang might have been able to shrewdly identify some set of assets that could be acquired that would have an appropriately-sized, offsetting effect to Wah Chang's market exposure at COB; perhaps Enron stock would have been viewed as a prudent hedge at the time. Certainly, purchases at Palo Verde would not have been a realistic possibility.

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[11] NYMEX open interest for COB was zero by the end of November 2000, and zero at Palo Verde by the end of August 2001. After these times trading never resumed for these futures contracts.

[12] In early May 1999, a year before the crisis period began, NYMEX open interest for futures contracts at COB stood at around 3500 contracts. By the end of July, just two months into the crisis, the COB open interest was down to around 200 contracts, and at the beginning of October stood at 16 contracts. Palo Verde NYMEX futures suffered a similar loss of liquidity; the corresponding dates' open interest at Palo Verde were about 4000 contracts in early May 1999, about 300 contracts by the end of July 2000, and 240 contracts at the beginning of October 2000. By the fall of 2000 liquidity in these futures contracts was essentially gone and even precognition would not have allowed hedging through purchase of NYMEX futures.

The uncertain prospects of all these options render them risky. I do not think that a reasonable person would fault Wah Chang for making the decisions it did.

VI. CONCLUSION.

Q. Does this conclude your testimony?

A. Yes.

CONFIDENTIAL PURSUANT TO PROTECTIVE ORDER N0. 01-149
OPUC Docket UM 1002

Exhibit WC/1200

Confidential Portions of the
Rebuttal Testimony of Berne Martin Howard

July 6, 2007

Information in Exhibit WC/1200
has been designated as confidential by PacifiCorp.
Wah Chang reserves the right to contest PacifiCorp's designation.

Docket UM 1002
WC/1200

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

Confidential Portions of the

Rebuttal Testimony of Berne Martin Howard

July 6, 2007

Docket UM 1002
WC/1201

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

Curriculum Vita of Berne Martin Howard

Wah Chang Exhibit 1201
Accompanying Rebuttal Testimony of Berne Martin Howard

July 6, 2007

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OVERVIEW

Mr. Howard is the member of Bench Mark Heuristics, LLC, a consulting firm in Portland, Oregon. Since 1980, Mr. Howard has worked primarily in the electric power industry in both technical and policy shaping roles, especially in problems and issues related to, for example: regulation; regulatory change and restructuring; utility finance and economics; resource evaluation; power contract negotiations; risk modeling, evaluation and management; load and price forecasting; electric power markets, trading and the economics of commodity markets; hydro system operations; environmental effects of power systems, their costs and mitigation; and resource planning. In the course of this work, Mr. Howard has written testimony and served as an expert witness. Mr. Howard has a 40-year experience with the use of a broad range of computing tools in many different kinds of applications. Mr. Howard has specific professional interest and experience in applications of probability, mathematical statistics, and operations research, particularly application of simulation methods and time series analysis. Prior to 1980 Mr. Howard performed work in diverse applications. These included metrology, especially in the effects of calibration regimes on the reliability of complex systems; automated real property appraisal systems; and the construction and analysis of psychometric measurement for the evaluation of public mental health programs. Mr. Howard has served on an advisory group regarding technical resource planning and modeling issues for the Northwest Power and Conservation Council.

EXPERIENCE/ACCOMPLISHMENTS

BENCH MARK HEURISTICS, LLC Portland, Oregon **2000-2006**

Sole Member

* With McCullough Research, drafting testimony and preparing analytical studies of market manipulation actions by Enron and other companies involved in the Western electric power market crisis of 2000-2001, evaluating effects of those actions on market conditions and prices. For litigation regarding the involvement of banking institutions in the actions of various companies, including Enron.
* Advice and analytical assistance to Portland General Electric in the production of the 2007 Integrated Resource Plan. Development of tactical analytical procedures for evaluating risks and benefits of alternative resource portfolios. Statistical analysis of historical time series data to characterize probabilistic behavior of phenomena affecting the financial performance of portfolios of power supply resources. Develop simulation algorithms and computer models for producing realistic random behavior for input variables used in fundamental simulation models. Produce documentation of analytical processes and results. Technical presentations at various public meetings.
* Analysis of alternative power cost adjustment mechanisms in Portland General Electric Company's rate structure. Developed a model of retrospective alternative ratemaking procedures to evaluate the financial performance and risk characteristics of those procedures.
* Management of consultant's work on an hourly power cost simulation modeling contract, for Portland General Electric. Provided guidance to consultants, facilitated interaction among consultant, Portland General Electric, Utility Commission staff and other key interested customer groups. Helped evaluate consultant's reports and advised Portland General Electric regarding applications of the consultant's work.

* With McCullough Research, consultation regarding general operating conditions, contractual arrangements and valuation of power output for PacifiCorp's and Cowlitz County PUD's Lewis River hydro projects.
* With McCullough Research, analysis and drafting of testimony and exhibits for Snohomish PUD in various FERC dockets regarding dysfunctional electric power markets in the WECC and the role of Enron, et al, in destabilizing those markets.
* Analysis and testimony for reopened proceedings before the Oregon Public Utility Commission, on behalf of Wah Chang regarding electric power contract pricing under arrangements with PacifiCorp.
* Analysis and evaluation of the financial risks of hydroelectric power resources in the generating portfolio of Portland General Electric Company.
* Evaluation of risk aspects of state regulation of electric utilities as regards terminated nuclear generating plants, specifically the various risk issues for Portland General Electric Company and recovery of investment in the terminated Trojan nuclear generating station.
* Evaluate the possibility of applying extreme value theory and paleoclimate data to the estimation of the financial risk to an electric utility posed by the possibility of drought in the Pacific Northwest.
* Advise litigators on the process of conducting electric power market transactions in the WECC, with particular attention to various FERC-identified schemes conducted during the crisis period of 2000-2001; especially regarding transmission requirements and the relationship between the physical operation of electric power systems and the contractual/financial consequences of the scheduling process.
* Applications of extreme value theory to the estimation of appropriate regulated equity return for an electric power public utility.
* Kalman filter applications to drought occurrence likelihood in Canadian hydroelectric systems.
* Estimation of relationships among sleep/health variables using CDC survey data for marketing study.
* Evaluate the financial viability of a proposed water treatment and supply system project – translation of project specifications into a financial model producing customer rate estimates.
* Evaluation of alternative marketing strategies for the sale of net hydropower interchange for a Northwest publicly owned utility.
* Financial modeling of electric power resource portfolio performance in an environment of stochastically varying and interdependent electric power market prices, natural gas market prices, Northwest hydro generation and regional consumer loads, for Portland General Electric Company. PGE was evaluating a large set of responses to an RFP requesting proposals to supply electric power to the utility. PGE is a relatively market dependent utility, itself generating only about 60% of the energy necessary to serve its retail load. An existing computer model was modified to evaluate the relative performance of different combinations of RFP responses and market purchases over a 20 year horizon, and to help search for desirable combinations. The time series modeling of the primary driving variables was a central feature of this effort.
* Evaluation of bidding practices in ERCOT, especially regarding evidence of anti-competitive bidding behavior and the possible inappropriate exercise of market power in the restructured Texas electric power market, on behalf of Texas Commercial Energy.
* Review risk management practices in use at the Snohomish Public Utility District, especially technical approaches and risk metrics, in collaboration with Economists.com.
* Comprehensive statistical description and analysis of the key variables influencing a portfolio model to inform resource acquisition decisions. For the Northwest Power and Conservation Council. This project requires a careful statistical exploration of vector time series data; electric power loads, hydro generation, transmission system congestion, weather/temperature data, various gas market prices, and electric power market prices.
* Evaluation of hydro generation prospects for 2003 in Manitoba.
* Modeling, analysis and documentation for PGE 2002 Resource Plan. Interpreted regulatory and management requirements for the 2002 Plan, performed analysis of the stochastic behavior of electric power market prices including the influence of Northwest hydro system water conditions, gas price variability, load variability and the effect of regional capacity margins. Performed analyses of the relationship between gas market prices and electric power market prices and

implemented the optional consideration of such effects in PGE's planning model. In collaboration with PGE staff developed estimated costs, terms and lead times for a wide variety of alternative ways to acquire electric power supply, and developed a set of alternative strategies for the acquisition of a portfolio of such resources to satisfy PGE's requirements. Constructed computer models to evaluate the range of resource acquisition strategies. Recommended and implemented several measures of performance for resource acquisition strategies. Performed and interpreted model runs to evaluate alternative resource acquisition strategies, modifying computer code as needed. Drafted and edited of analytical sections of final resource Plan document. Provided follow up support to PGE and OPUC staff in explaining and interpreting Plan results.

* Developed credit value-at-risk evaluation methodology for trading counter-party credit risk and example analyses as advice to PGE management and staff.
* Statistical analysis and support for contested issue regarding weight-mile tax in Oregon.
* Modeling and analysis of environmental effects and operating constraint violations for hydroelectric power systems in Quebec and Manitoba.
* Analysis and evaluation of the risk aspects of PGE least cost planning, including implementation of heuristic quantitative tools to show risk exposure and compare action alternatives.
* Coordination of and work on regulatory change initiatives for Portland General Electric Company. PGE has pursued changes in the way the electric power industry in Oregon is regulated. The proposed changes were consistent with, but went beyond 1999 Oregon legislation. The essence of the proposals was regulatory process implemented through a system of commercial contracts. The work was performed primarily during the 2001 legislative session
* Drafting of contracts to implement two potential resource acquisition mechanisms for utilities under Oregon's electric power regulatory reforms.
* Statistical analysis and market evaluation analysis in support of PGE's participation in FERC's Northwest refund evidentiary proceeding.
* Power supply cost analysis for PGE regarding rate filings in the context of profound instability in West coast power markets beginning in 2000.
* Value-at-risk analysis and narrative regarding the risk effects of market price and volatility on PGE's overall financial performance.
* Negotiations with Oregon Public Utility Commission staff on terms for customer participation in the benefits and risks of procuring, installing and operating a new small combustion turbine.
* Technical assistance in producing an updated open access transmission tariff for PGE.
* Addition of stochastic risk analysis elements to PGE's least cost planning process modeling, especially with regard to market price effects.
* Advice and analysis for Wah Chang regarding West coast power market price behavior and the structure and use of price indices. Expert witness on these subjects in complaint before Oregon Public Utility Commission.
* Evaluation of economic implications from changes in the operations Northwest hydroelectric systems, from load, environmental and market influences.
* Statistical model building and analysis for streamflow in hydroelectric systems in Quebec.

McCULLOUGH RESEARCH, Portland, Oregon **1995-2000**

Partner

* Analytical support for power cost issues in the 1999-2000 PacifiCorp rate case in Utah, on behalf of the Large Customer Group.
* Advice to numerous utility and industrial clients regarding restructuring and its effects on power markets and the viability of new generating plants. This for clients in Virginia, Quebec, Indiana, Louisiana, California, Oregon, Washington, Alberta, and British Columbia.
* Advice and analysis for Cominco Metals regarding the sale of surplus hydropower.
* System and statistical analysis of hydroelectric operation in Quebec, including evaluation of reliability effects and the implications of power market behavior.
* Negotiating pricing for special contracts between Georgia Pacific - Bellingham, Washington, Bellingham Cold Storage, and Puget Sound Energy.
* Report to Logansport Municipal Utilities evaluating future options and recommending action

regarding the future of the utility's generating plants, the procurement of power supply, the general conduct of the enterprise, and the possible sale or lease of the utility.

* Negotiations with Entergy regarding the sale of peaking power by Logansport Municipal Utilities to Entergy and the coordinated operation of Logansport's generating plants.
* Risk analysis and valuation of electric and gas supply proposals in the context of emerging electric power markets
* Evaluation and operation of utility power dispatch models
* Forecasts of spot power prices
* Analysis and evaluation of electric power price hedging proposals for pulp and paper industrial electric consumer.
* Analysis of commodity and electric power price hedging links for commodity producers
* Electric power transmission bypass analysis and evaluation for industrial access to power markets
* Analytical support for the successful action by Tenaska Lmited Partners against the Bonneville Power Administration regarding the canceled generating project at Fredrickson, Wa.
* Southwest Intertie Project - Analysis of expected effects on markets and prices, risks and benefits of participation.
* Capital structure analysis for price regulated companies
* Market evaluation and analysis, joint power marketing effort, Edmonton Power/PGE
* Evaluation of economic effects of alternate Columbia River hydro system operation for fish and wildlife
* Administration and evaluation of power supply RFPs for large Northwest industrial customers

PORTLAND GENERAL ELECTRIC COMPANY, Portland, Oregon **1990-1995**

<u>FERC Project Manager</u> -- 1993-1995

* Coordinate Company Contact with FERC.

* Preparation of FERC Tariff Filings, particularly the massive series of filings necessary to comply with FERC's directives and rule-makings regarding the so-called Central Maine amnesty periods. This work required study and review of all PGE contracts for potential FERC filing requirements, the drafting of filing materials describing these contracts, and the formulation of arguments supporting FERC acceptance of the contracts for filing.
* Cost Support Analysis for Tariffs.
* Evaluation of FERC Order and Policy Implications for PGE Strategic Action.

<u>Rates Analyst</u> -- 1990-1993

* Represent PGE at Various Bonneville Power Administration Proceedings, including Wholesale Rate Cases.
* Provided analytical and modeling support for general regulatory issues: cost of service, ROE analysis, generation plant economic evaluation.

PORTLAND GENERAL EXCHANGE, Portland, Oregon **1988-1990**

<u>Marketing Associate</u>

* Evaluation of power marketing alternatives.
* Development of optimal capacity expansion models.
* Development of transmission utilization models.
* Planning and administration of PGX computing resources, LAN and software.

PORTLAND GENERAL ELECTRIC COMPANY, Portland, Oregon **1980-1988**

Statistician and Rates Analyst

* Analytical and administrative support for BPA wholesale rate cases, writing testimony, performing studies, evaluating opposing positions.
* Model building: power resource dispatch, optimal hydro regulation, aluminum smelter operation, pulp and paper mill operation, cogeneration evaluation, alternative ROE estimation analyses.
* Technical support throughout the Company for mathematical, statistical, and computing applications.

Systems Analyst

* Technical support throughout the company for mathematical, statistical, and computing applications.

Project Scheduler

* Scheduling management for substation construction projects.

OREGON STATE MENTAL HEALTH DIVISION, Salem, Oregon **1975-1980**

Statistician

* Evaluation of mental health programs, construction of psychometric instruments and analyses for measuring and evaluating program performance.
* Statistical and mathematical consulting to the Oregon Department of Human Resources.

LANE COUNTY DEPARTMENT OF ASSESSMENT AND TAXATION, Eugene, Oregon **1974-1975**

Systems Analyst

* Development of automated real property appraisal systems.

U.S. NAVY METROLOGY ENGINEERING CENTER, Pomona, California **1973-1974**

Mathematical Statistician

* Evaluation of effects of calibration regimens on the reliability of complex weapons systems
* Development and analysis of calibration and measurement plans and procedures.

PROFESSIONAL & CIVIC AFFILIATION

Member – Board of Governors, The Reed Institute, 2004-
The Reed Institute is a research enterprise at Claremont McKenna College that provides practical experience for students in economic and mathematical modeling, decision-making, and risk analysis for industry, government, and the professions. It sponsors research and presents conferences on topics in decision science. The Reed Institute is consulted by government agencies and major industrial corporations.

Member - Portland Public Schools Board of Education, 1989-1997
Served as Chair in 1991 and in 1995.

Founding Member - Portland Public Schools Foundation Board, 1995-1998

Member - Oregon School Boards Association Board of Directors, 1991-1996.

Member - American Statistical Association, since 1973.

EDUCATION

University of Oregon, Eugene, OR
M.A., Mathematics, 1973

Claremont Men's College (now Claremont McKenna College), Claremont, CA
B.A., Mathematics, 1971

Docket UM 1002
WC/1202

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

Technical Exhibit to the Rebuttal Testimony

of Berne Martin Howard

Wah Chang Exhibit 1202
Accompanying Rebuttal Testimony of Berne Martin Howard

July 6, 2007

TECHNICAL EXHIBIT TO REBUTTAL TESTIMONY OF BERNE MARTIN HOWARD

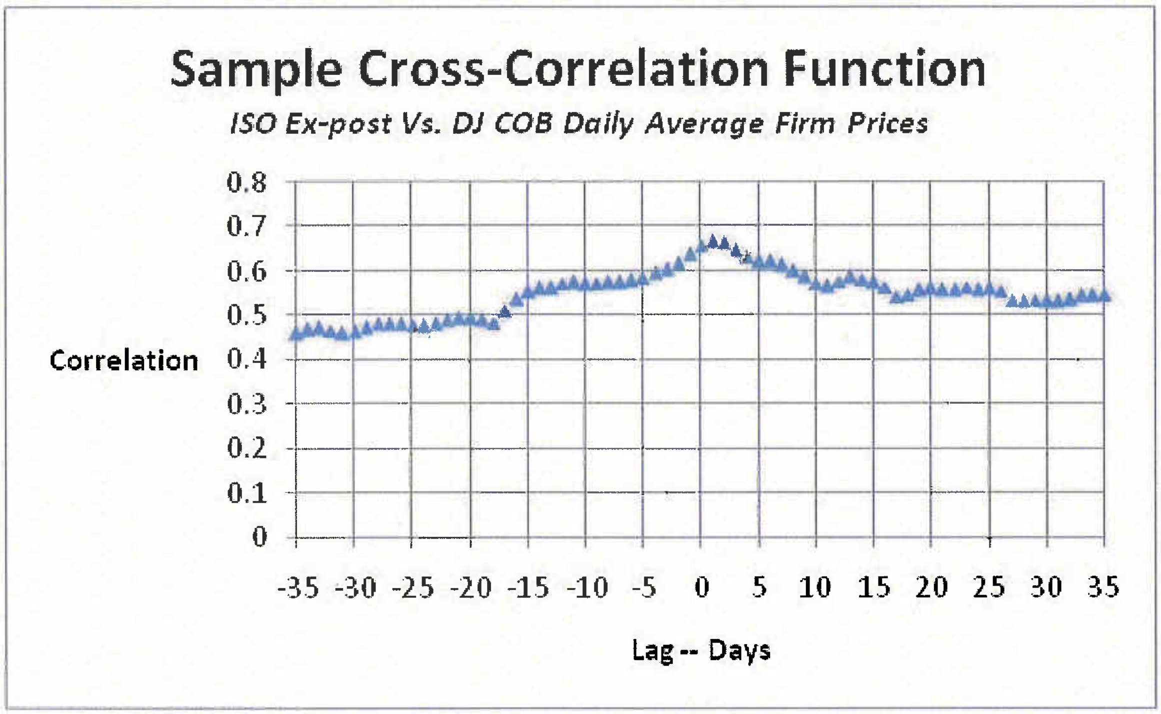
I. Explanation of Test for Serial Correlation of California ISO and Dow COB Price Series.

I performed a simple Durbin-Watson test for serial correlation, though that property is so powerful in these price series that serial dependence is not seriously in doubt. The dependence is positive, as expected, with positive autocorrelation at virtually all lags for both the Dow COB and Ex-post price series, typical behavior that can be described by simple time series models. But with positive serial dependence, the results from a simple regression analysis will be *less* significant than results that include correction for serial correlation. Therefore, simple regression analysis without serial correlation correction will be conservative in revealing a relationship between the two series, and the detection of a relationship would be easier if adjustment is made for autocorrelation. The appropriate approach to the analysis of these two series would be some variety of vector time series analysis, perhaps a classic and simple Box-Jenkins version of a transfer function analysis. But this effort is hardly necessary to establish that the two series are very strongly related in a positive sense to an extremely high statistical standard. A more realistic concern is the relationship between the magnitude of prices and concurrent variability of those prices. This kind of heteroskedasticity, with variability roughly proportional to the magnitude of price, is common in time series of price and the most common approach to accommodating the phenomenon is to use statistical models that are linear in the logarithms of the prices. And, in fact, simple linear regression analysis of the logged prices is more statistically significant than the regression on prices, with the p values of all statistics indistinguishable from zero, the most significant possible result.

This is an important check to perform because the statistical significance calculations for the standard regression model presumes that observed values arise from a process that has a constant level of probabilistic variability, that the "margin of error" of any particular price is the same as that of any other. But this is not at all true; in general, if prices are, for example, randomly varying in a +/- $10 range around a $50 average at one time, then if the prices rise, at some other period of time, to an average of around $100, the higher prices will vary in about a +/- $20 range; i.e., the variability is roughly proportional to price. However, if the logarithms of prices are considered, the variability of the log prices will be roughly constant, and thus would be a better application for linear regression analysis.

II. Explanation of Cross-Correlation Function.

The cross-correlation function between two time series is a function of lags in the time parameter of the series. For example, the cross-correlation function between series A and series B theoretically can have values corresponding to all lags from –infinity to +infinity. At a particular lag, L, the cross-correlation function between series A and series B is the correlation between the series when values from series A are paired with values from the B series that occur L time intervals later. If L is negative then the correlation between values from the A series paired with B series values that occur L intervals earlier. A vector statistic, the sample cross-correlation function, can be computed for two time series of n sequential observations, constrained by computational limitations to a range of lags from –n+2 to n-2, though many fewer are usually computed, especially for long series. If the two series are unrelated then the sample cross-correlation function is unlikely to have any particular pattern, For two series that are dependent and that possess significant autocorrelations of their own - as is true for these price series - the sample cross-correlation function will usually be symmetric around zero, with the greatest correlation being at lag zero, that is, between the values of one series and the coincident values of the other series, and the values decreasing as lags recede from zero in either a negative or positive direction, like a volcano with its peak at lag zero and similar slopes dropping away both the left – negative lags – and the right. If series B is generally more highly dependent on earlier values of series A then later values of series A then the right side slope of the metaphorical mountain will be more gentle than the left slope. This is consistent with series A having a causative effect on series B, with the cause preceding the effect in time. In fact, this relationship is observed in the raw ISO Ex-post and DJ COB prices, as shown in the following graph.



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CONFIDENTIAL PURSUANT TO PROTECTIVE ORDER N0. 01-149
OPUC Docket UM 1002

Exhibit WC/1203

Description of Study by Berne Martin Howard

Of PacifiCorp's Reports to Dow Jones

July 6, 2007

Information in Exhibit WC/1203
has been designated as confidential by PacifiCorp.
Wah Chang reserves the right to contest PacifiCorp's designation.

Docket UM 1002
WC/1203

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON

WAH CHANG

Description of Study by Berne Martin Howard

of PacifiCorp's Reports to Dow Jones

Wah Chang Exhibit 1203
Accompanying Rebuttal Testimony of Berne Martin Howard

July 6, 2007