



Oregon

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Public Utility Commission

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June 27, 2007

OREGON PUBLIC UTILITY COMMISSION
ATTENTION: FILING CENTER
PO BOX 2148
SALEM OR 97308-2148

RE: **Docket No. UE 191** - In the Matter of PACIFICORP, dba PACIFIC POWER &
LIGHT COMPANY 2008 Transition Adjustment Mechanism.

Enclosed for electronic filing in the above-captioned docket is the Public Utility
Commission Staff's Direct Testimony.

/s/ Kay Barnes

Kay Barnes

Regulatory Operations Division

Filing on Behalf of Public Utility Commission Staff

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c: UE 191 Service List (parties)

**PUBLIC UTILITY COMMISSION
OF OREGON**

UE 191

STAFF DIRECT TESTIMONY OF

Bill Wordley

**In the Matter of
PACIFICORP, dba PACIFIC POWER & LIGHT
COMPANY
2008 Transition Adjustment Mechanism.**

June 27, 2007

CASE: UE 191
WITNESS: Bill Wordley

**PUBLIC UTILITY COMMISSION
OF
OREGON**

STAFF EXHIBIT 100

Direct Testimony

June 27, 2007

1 **Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND**
2 **OCCUPATION.**

3 A. My name is Bill Wordley. My business address is 550 Capitol Street NE,
4 Suite 215, Salem, Oregon 97301. I am a Senior Economist in the
5 Economic Research & Financial Analysis Division of the Utility Program of
6 the Public Utility Commission of Oregon (OPUC).

7 **Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND WORK**
8 **EXPERIENCE?**

9 A. My witness qualification statement is found in Staff/101, Wordley/1.

10 **Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

11 A. In this testimony I describe staff's recommended adjustments to the power
12 costs that PacifiCorp has included in its filed case. I also recommend that
13 the Commission require the company to submit a report to the
14 Commission on the potential use of stochastic modeling for estimating
15 power costs.

16 **Q. PLEASE SUMMARIZE STAFF'S ADJUSTMENTS TO POWER COSTS.**

17 A. Staff proposes three adjustments to the power costs allocated to Oregon:
18 (1) A reduction of \$4,210,848 to account for a reduction in the operating
19 reserve requirement from what was included in the company's filled case;
20 (2) A reduction of \$17,242,758 to account for margin that PacifiCorp is
21 expected to realize from wholesale market sales and purchase
22 transactions that are not captured by the company's GRID power cost
23 model used in this case; and

1 (3) A reduction of \$1,839,978 to account for an increase in the generation
2 output from the Carbon power plant from what was assumed in the
3 company's filled case.

4 **Q. WHAT IS STAFF'S REQUEST REGARDING STOCHASTIC POWER**
5 **COST MODELING?**

6 A. In a stipulation approved as part of Order 05-1050 in UE 170 the company
7 made the following commitment:

8 PacifiCorp will commit sufficient resources during the year following the
9 approval of this partial stipulation to permit the evaluation of stochastic
10 modeling of Net Power Costs for possible incorporation into rates. The
11 analysis will consider the volatility of hydro generation, electricity
12 prices, natural gas prices, system load and forced outages, as well as
13 the correlations among these variables. PacifiCorp, with input from
14 Staff, will develop a plan to complete the evaluation of stochastic
15 modeling, including a schedule of quarterly public workshops to
16 provide progress reports and receive inputs from interested parties.
17 (Order 05-1050 at Appendix A, 3 of 13)

18 Staff is aware that the company has done significant work on developing
19 and evaluating stochastic modeling. However, since it has been two years
20 since the above commitment was made, Staff recommends that the
21 Commission require PacifiCorp to provide the Commission a written report
22 on the feasibility of using stochastic modeling for the estimation of power
23 costs by September 1, 2007. This is the same date that Commission
24 ordered PGE to submit a similar report in Order 07-015 in UE 180.
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Adjustment for Operating Reserve Requirement

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Q. WHAT ARE OPERATING RESERVES?

A. The North American Electric Reliability Council (NERC) requires all entities with generation to carry contingency reserves to meet its most severe single contingency, or 5% for operating hydro and wind resources and 7% for operating thermal resources, whichever is greater. In the case of PacifiCorp, the company provides reserves for all generating plants, company-owned and non-owned, in its two control areas. The control areas are geographical areas for which PacifiCorp is responsible for providing load and resource balance and other associated electrical system services necessary to maintain the integrity of the electrical system.

Q. WHO OWNS THE POWER PLANTS FOR WHICH PACIFICORP PROVIDES RESERVES?

A. First, PacifiCorp has a number wholly owned and joint-ownership power plants. The company provides reserves for the entire output of both its wholly owned and the jointly owned plants. Second, several other utilities own power plants located inside PacifiCorp's control areas for which the company provides reserves. Third, some of PacifiCorp's large retail customers own generating plants for which PacifiCorp provides reserves. Finally, PacifiCorp provides reserves for all the QFs (qualifying facilities) in its control areas.

1 **Q. WHAT IS THE ADJUSTMENT FOR OPERATING RESERVES?**

2 **A.** In its response to staff's DR 21 the company indicated that the assumed
3 reserve requirement obligation held for other parties in the company's
4 filled case in this docket is overstated. Correcting this problem results in a
5 \$16 million reduction in total system net power costs, for an adjustment of
6 \$4.2 million as allocated to Oregon. (see Staff/102, Wordley/1-4)

7 **Adjustment for the Margin from Market Transactions Not Included in GRID**

8 **Q. WHAT IS GRID?**

9 **A.** GRID is PacifiCorp's power cost model used in this case to estimate net
10 power costs.

11 **Q. WHAT IS THE DEFINITION OF MARKET TRANSACTIONS?**

12 **A.** Market transactions are the short-term firm and non-firm sales and
13 purchases the company makes in the wholesale power market. Short-
14 term means less than 12-months ahead, however many of these
15 transactions occur in the day-ahead and hour-ahead power markets.

16 **Q. DOES THE PROPOSED ADJUSTMENT FOCUS ON SPECIFIC**
17 **MARKET TRANSACTIONS?**

18 **A.** Yes. Staff's margin adjustment is based on an analysis of the short-term
19 firm and non-firm sales and purchases **not** captured by the GRID model.

20 **Q. HOW DOES STAFF IDENTIFY THE MARKET TRANSACTIONS NOT**
21 **CAPTURED BY GRID?**

22 **A.** Short-term firm and non-firm sales and purchases are estimated in the
23 GRID simulation of hourly system power operations for the future test
24 year. After the test year has occurred, the actual megawatt-hour (MWh)

1 volume of short-term firm and non-firm transactions are compared to the
2 earlier GRID MWh estimate. The actual MWh volumes of sales and
3 purchases consistently exceed the GRID forecast of sales and purchases
4 volume. It is the MWh volume of actual sales and purchases **less** the
5 volume of GRID forecasted sales and purchases that the margin
6 adjustment is based on.

7 **Q. WHY DOESN'T GRID DO A BETTER JOB OF ESTIMATING THE**
8 **VOLUME OF SHORT-TERM AND NON-FIRM TRANSACTIONS?**

9 A. There is considerably more variation and interaction between the actual
10 loads, market energy prices, thermal plant availability and hydro
11 generation than what is included in GRID. This difference in variation and
12 interaction, between what GRID models and what occurs in the actual
13 operation of the system, is what causes the actual volume of market sales
14 and purchases to be consistently higher than what GRID estimates.

15 **Q. IS THE FACT THAT GRID CONSISTENTLY UNDER ESTIMATES THE**
16 **VOLUME OF SALES AND PURCHASES A REASON TO PROPOSE AN**
17 **ADJUSTMENT TO THE COMPANY'S POWER COSTS?**

18 A. No. It's the fact that the company makes a positive margin on these
19 additional market sales and purchase transactions that causes staff to
20 propose the adjustment.

21 **Q. WHY DOES THE COMPANY MAKE A POSITIVE MARGIN ON THESE**
22 **ADDITIONAL SALES AND PURCHASES?**

23 A. It's the advantageous characteristics of PacifiCorp system, paid for by
24 customers, that allow the company to realize a positive margin on the

1 additional sales and purchases not included in GRID. PacifiCorp's system
 2 is spread over six states, and has significant load diversity, power
 3 transmission capability and power resource flexibility. By using these
 4 valuable system characteristics the company is able to consistently realize
 5 a positive margin in actual operation from the additional sales and
 6 purchase transactions. Below is a comparison of system characteristics
 7 between PacifiCorp, PGE and Idaho Power Company. As can be seen,
 8 PacifiCorp is substantially more spread out and diversified than the other
 9 electric utilities in Oregon.

	PacifiCorp	PGE	Idaho PC
10 Transmission Lines - miles ¹	15,586	561	4,691
11 Service Territory - sq. mi. ²	136,000	4,000	24,000
12 Number Customers - millions ²	1.6	0.76	0.46
13 Generation - MW ^{2,3}	8,622	1,975	3,260
Hydro	1,084	509	1989
14 Coal	6,114	676	1026
Gas	1,368	790	245
15 Wind	33		
Geothermal	23		
16 ¹ - Company's 2005 FERC Form 1			
17 ² - Company's Web Site			
³ - GRID detail			

18 **Q. HOW IS THE MARGIN ADJUSTMENT CALCULATED?**

19 A. First, the MWh volume of sales and purchases not captured by GRID are
 20 determined by subtracting the GRID forecast MWh volumes from the
 21 actual MWh volumes, call these additional MWh. Second, the dollars
 22 associated with the additional MWh volumes are determined by
 23 subtracting the GRID forecast sales and purchase dollars from the actual
 24 sales and purchase dollars, call these additional dollars. Third, the margin

1 in \$/MWh is determined by dividing the additional dollars by the additional
2 MWh. Finally, the margin adjustment is determined by multiplying the
3 \$/MWh margin by the average of the additional MWh sales and the
4 additional MWh purchases.

5 **Q. WHAT DATA DID STAFF USE TO CALCULATE THE MARGIN**
6 **ADJUSTMENT?**

7 A. Staff used the only data available, which is the GRID power cost forecasts
8 from UE 134, UE 147 and UE 170, and the actual power cost results from
9 the test year in each of those cases. The only other case that included
10 power costs since PacifiCorp began using GRID was UE 179, however
11 the test period for that case was calendar year 2007, for which actual
12 results are not available at this point.

13 **Q. WHAT IS STAFF'S PROPOSED MARGIN ADJUSTMENT?**

14 A. Staff's proposed margin adjustment, based on the three years of available
15 data, is a reduction of \$17,242,758 to Oregon's allocated power cost. This
16 adjustment is necessary to achieve a matching of costs paid by customers
17 and benefits received by customers.

18 **Carbon Generation Output Adjustment**

19 **Q. WHAT CAPACITY FACTOR DOES THE CARBON PLANT DISPATCH**
20 **AT IN THE COMPANY'S FILLED CASE?**

21 A. The company's Carbon coal-fired power plant dispatches at 70% of
22 capacity in the company's filling, compared to 80% in last year's TAM and
23 86% in actual operation in 2006.

1 **Q. WHAT IS THE COMPANY'S EXPLANATION FOR THIS LOW**
2 **CAPACITY FACTOR?**

3 A. In response to staff DR 25 the company stated that the lower 2008 test
4 period estimate occurs because normalized data is used and Carbon's
5 fuel cost is higher than in 2006. (see Staff/102, Wordley/5)

6 **Q. IS THIS EXPLANATION CREDIBLE?**

7 A. No. In last years TAM the "normalized" capacity factor was 80%.
8 Regarding the level of fuel cost, the company's Craig, Hayden, Naughton
9 and Cholla coal-fired power plants all have higher fuel cost than Carbon,
10 at \$14.1/MWh, \$16.3/MWh, \$14.7/MWh and \$19.4/MWh respectively
11 compared to \$12.7/MWh for Carbon. Each of these higher fuel-cost plants
12 dispatch at a higher capacity factor than Carbon, 87% for Craig, 77% for
13 Hayden, 86% for Naughton and 82% for Cholla, compared to 70% for
14 Carbon.

15 **Q. WHAT IS STAFF'S PROPOSED ADJUSTMENT FOR THE CARBON**
16 **PLANT GENERATION OUTPUT?**

17 A. Using the 80% capacity factor from last year's TAM for Carbon instead of
18 the company's 70%, produces a reduction in Oregon allocated power cost
19 of \$1,839,978. This is conservative, since the 80% capacity factor is still
20 less than the 2008 estimated capacity factors of three out of the four
21 higher fuel cost plants discussed above.

1 **Q. PLEASE SUMMARIZE YOUR TESTIMONY?**

2 A. Staff recommends that the Commission require the company to provide a
3 report to the Commission on the feasibility of using stochastic modeling for
4 estimating power costs by September 1, 2007. Staff also recommends the
5 following adjustments to the company's filed power costs: (1) A
6 \$4,210,848 million reduction for an overstatement of reserve
7 requirements; (2) A \$17,242,758 reduction for margins from market
8 transactions not captured by GRID; and (3) A \$1,839,978 reduction for
9 increased generation at the Carbon plant.

10 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

11 A. Yes.

CASE: UE 191
WITNESS: Bill Wordley

**PUBLIC UTILITY COMMISSION
OF
OREGON**

STAFF EXHIBIT 101

Witness Qualification Statement

June 27, 2007

WITNESS QUALIFICATION STATEMENT

NAME: Bill Wordley

EMPLOYER: Public Utility Commission of Oregon

TITLE: Senior Economist, Economic Research & Financial Analysis
Division

ADDRESS: 550 Capitol Street NE Suite 215, Salem, Oregon 97301-2115.

EDUCATION: All course work towards Masters in Economics
Portland State University

B.S. Portland State University
Major: Mathematics

EXPERIENCE: Since August 2000 I have been employed by the Public Utility Commission of Oregon. Responsibilities include research and providing technical support on a wide range of cost, revenue and policy issues for gas, electric and telephone utilities. Active participation in all primary PacifiCorp regulatory proceedings in Oregon during past six years, including providing testimony in UM 995, UE 116, UE 134, UE 170, UE 173, UE 179, and UE 180.

From March 1999 to August 2000 I worked as a consultant in the energy field working for electric utilities and utility organizations. Work included load forecasting and operations planning.

From 1972 to 1999 I worked for PacifiCorp in various analytical and management positions dealing with long and short-term load, sales, and revenue forecasting, power operations planning, power contract optimization, merger and acquisition support, strategic planning support, market research, retail market planning, load-resource analysis, and power contract administration. Testified in some 30 regulatory proceedings in Oregon, Washington, Idaho, Montana, Wyoming, and California.

CASE: UE 191
WITNESS: Bill Wordley

**PUBLIC UTILITY COMMISSION
OF
OREGON**

STAFF EXHIBIT 102

**Exhibits in Support
of Direct Testimony**

June 27, 2007

OPUC Data Request 21

Please provide, in electronic format, 1) a detailed report for 2006 (actual data) of the monthly MWh reserves held by resource on the company's system: a) for the company, and b) for other parties, by party. 2) What was the \$ impact on power costs in 2006 of providing ancillary services to other parties? 3) Provide the same information requested in 1) and 2) above for the 2008 test period.

Response to OPUC Data Request 21

- 1) For monthly average spinning reserves by resource from 1/1/2006 through 11/14/2006, please refer to Attachment OPUC 21 -1 on the enclosed CD. The data provided consists of monthly averages of the hourly data included in response to OPUC 3. This data is from the Company's EMS system and consists of spinning reserves only. For historical data, the Company does not record separately how much reserve is held for the Company versus how much is held for other parties.
- 2) The Company has not performed such studies for the 2006 historical period.
- 3) The Company has determined that the reserve requirement obligation held for other parties in the Company's control areas is overstated in the filed net power cost calculation. As a result, filed net power costs, on a total company basis, should be reduced by approximately \$16 million, from \$1,003 million to \$986.8 million. The correction, which is included in Attachment OPUC 21-3, will be incorporated in the next round of updates for the TAM.

For the 2008 test period, the reserve requirements, net of reserves provided by unused hydro capabilities and contracted reserves, that are held by the Company's system are: a) 2,881,255 MWh for the Company and b) 307,870 MWh for other parties. Individual parties are not identified in GRID. Monthly information for 2008 is provided as part of Attachment OPUC 21-3 on the enclosed CD. Note that the 2006 and 2008 reserve data is not comparable because the 2006 data consists of spinning reserves only, while the 2008 data modeled in GRID includes spinning, non-spinning, and regulating margin. The Company intends to supplement OPUC 3 with non-spinning reserve and regulating margin for the period 11/15/2006 through 12/31/2006.

The dollar impact on power costs in the 2008 test period of providing reserves to other parties is estimated to be \$6,044,938 on a total company basis. The details are provided as part of Attachment OPUC 21-3.

The estimated dollar impact calculated above is an incremental cost of holding reserves for other parties within the Company's control areas. This differs

from the determination of FERC tariff rates for ancillary service revenues, which are based on expected average costs. Therefore, the opportunity cost of holding ancillary services for other parties is higher than the revenues received for ancillary services.

OREGON

TAM

UE-191

PACIFICORP

OPUC STAFF DATA REQUEST 21

ATTACHMENT OPUC 21 -1

ON THE ENCLOSED CD

OREGON

TAM

UE-191

PACIFICORP

OPUC STAFF DATA REQUEST 21

ATTACHMENT OPUC 21 -3

ON THE ENCLOSED CD

OPUC Data Request 25

Why does the Carbon plant only dispatch at a 70% capacity factor in the company's 2008 filed case; in 2006 the plant dispatched at a 87% capacity factor.

Response to OPUC Data Request 25

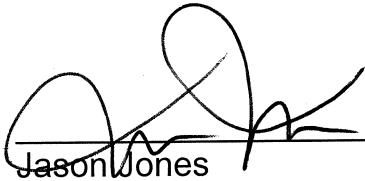
The 2008 level of generation is determined based on normalized data, such as 48-month average of availability and maintenance outages of all plants, while 2006 data is actual plant performance. In addition, the fuel cost for the Carbon plant in 2008 is projected to be significantly higher than in 2006; therefore the plant will be less economical to dispatch.

CERTIFICATE OF SERVICE

UE 191

I certify that I have this day served the foregoing document 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 860-13-0070, to the following parties or attorneys of parties.

Dated at Salem, Oregon, this 27th day of June, 2007.



Jason Jones

Assistant Attorney General
Of Attorneys for Public Utility Commission's Staff
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Salem, Oregon 97301-4096
Telephone: (503) 378-6322

**UE 191
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