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IDAHO PUBLIC UTILITIES COMMISSION

BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE)
APPLICATION OF ROCKY) **CASE NO. PAC-E-07-05**
MOUNTAIN POWER FOR)
APPROVAL OF CHANGES TO ITS) **Direct Testimony of William J. Fehrman**
ELECTRIC SERVICE SCHEDULES)
)

ROCKY MOUNTAIN POWER

CASE NO. PAC-E-07-05

June 2007

1 **Q. Please state your name, business address and position with the Company**
2 **(also referred to as Rocky Mountain Power).**

3 A. My name is William J. Fehrman. My business address is 1407 West North
4 Temple, Suite 320, Salt Lake City, Utah. My position is President of PacifiCorp
5 Energy.

6 **Qualifications**

7 **Q. Please describe your education and business experience.**

8 A. I have a Bachelor of Science degree in Civil Engineering from the University of
9 Nebraska at Lincoln and a Masters in Business Administration from Regis
10 University in Denver, Colorado. During my career, I have served as an engineer
11 for coal-fired and nuclear power plants, a nuclear projects manager, an assistant
12 station manager, senior manager for operations, maintenance and environmental,
13 station manager of the Gerald Gentleman station (a two unit plant with 1,365
14 megawatts of capacity), vice president of fossil energy, vice president of energy
15 supply and president and chief executive officer for Nebraska Public Power
16 District. I was appointed president of PacifiCorp Energy in February 2006 with
17 responsibilities for PacifiCorp's electric generation, commercial and energy
18 trading, and coal-mining operations.

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

20 A. The purpose of my testimony is to explain the reason for and prudence of major
21 supply-side resource additions and the known and measurable increases to
22 generation related operation and maintenance (O&M) expenses included in the
23 test year through the end of December 31, 2007. I will discuss how these

1 increases contribute to the overall revenue requirement request supported by the
2 testimony of Company witness Steven R. McDougal. My testimony explains
3 these increases and the circumstances that are driving them. My testimony will
4 also demonstrate the prudence of acquiring the following supply-side resources:
5 the Lake Side project, the Leaning Juniper project, the Marengo project, the
6 Goodnoe Hills project and the Blundell geothermal bottoming cycle project.

7 **Prudence of Supply-Side Resource Capital Investments**

8 **Q. Please briefly explain how you support the prudence of supply side resources**
9 **in your testimony.**

10 A. Beginning with the Lake Side combined cycle plant, and then moving to the
11 Leaning Juniper, Marengo, Goodnoe Hills wind projects, and finally the Blundell
12 Bottoming Cycle project, I will explain the basis upon which the Company
13 determined the need for these plants, how the plants were acquired, and the
14 technology, size, location and cost impact of each facility.

15 **Q. Please generally describe the process the Company uses in determining the**
16 **need for additional long-term supply-side resources.**

17 A. On a periodic cycle, the Company undertakes a comprehensive integrated
18 resource planning (IRP) process. The IRP is developed with considerable public
19 involvement from customer interest groups, regulatory staff, regulator, and other
20 stakeholders. Each of these entities are asked to actively participate and provide
21 input and guidance as the Company considers a number of issues related to long-
22 term resource planning. The purpose of the IRP process is to provide a framework
23 for the prudent future actions required to ensure the Company continues to

1 provide reliable and least cost electric service to its customers while striking an
2 expected balance between cost and risk over the planning horizon.

3 **Q. Please describe briefly the recommendations of the 2003 IRP.**

4 A. The 2003 IRP contained a variety of resources within its preferred portfolio based
5 on size, timing and type. Specifically, the 2003 IRP set forth a need for: flexible
6 resources in the East portion of the system in 2005; a high capacity factor
7 resource in the East portion of the system in 2007; and a number of renewable
8 resources (proxied as wind resources) located in both the East and West portions
9 of the system and spread over a number of years.

10 **Q. Please provide more detail on the IRP process in selecting new supply-side**
11 **resources.**

12 A. The IRP process assesses the gap between loads and resources for each year
13 throughout the twenty-year planning horizon. Resource alternatives are then
14 assembled into a variety of portfolios that are studied based on their relative cost
15 and risk to meet the Company's obligations. These portfolios are subjected to risk
16 and uncertainties that include stochastic risks, scenario risks, and paradigm risks.
17 Modeling is performed on a system-wide basis and takes into account a necessary
18 level of planning margin. Ultimately, a single preferred portfolio is identified, and
19 it is intended that the Company then undertake actions to acquire the necessary
20 resources.

1 **Natural Gas-Fueled Resources**

2 **Lake Side Power Project**

3 **Q. Please describe the size and location of the Lake Side resource.**

4 A. The Lake Side resource is a 534 MW (summer rated) natural gas fired combined
5 cycle combustion turbine power plant that is being constructed approximately 35
6 miles south of Salt Lake City, Utah. The project consists of 470 MW coming from
7 the combined cycle portion of the plant with an additional 45 MW available from
8 the ability to duct fire and 19 MW available via steam augmentation. Exhibit No.
9 17 shows a map of the plant location.

10 **Q. On what basis did PacifiCorp determine that the Lake Side project was**
11 **needed?**

12 A. The Company's decision to construct the Lake Side project was in response to the
13 conclusions reached in the January 24, 2003 IRP. The Company's RFP 2003-A
14 solicited a flexible resource to be available by June 2005, a resource with an
15 online date of June 2007, and seasonal resources to be available during the
16 summers of 2004-2007.

17 **Q. Was the decision to construct Lake Side made due to RFP 2003-A?**

18 A. Yes. Upon evaluating the alternatives presented via RFP 2003-A, the Company
19 determined that the Lake Side resource proposed by one of the bidders was the
20 best alternative for the 2007 resource category in the RFP.

21 The RFP 2003-A process used a blind bid evaluation process wherein bid
22 responses were submitted to an independent evaluator, Navigant Consulting, Inc.
23 (Navigant), which, in turn, assured that the responses were adequately blinded

1 such that the bidding entity was not known to PacifiCorp. Navigant's overall role
2 was: (1) to make certain that the Company evaluated its own build option in a
3 manner that is reasonable, fair, unbiased, and comparable to the extent
4 practicable, against other bids, and (2) to report on whether the process followed
5 by the Company adequately met these objectives.

6 **Q. Did Navigant agree with the Company's decision?**

7 A. Yes. Page 47 of the Navigant report states that:

8 "Taken in aggregate, it was apparent that the preferred transaction would
9 be with the selected bidder due to its lower risk and its equivalent cost
10 characteristics."
11

12 **Q. Please describe the transaction that Navigant was referring to.**

13 A. Summit Power, through its affiliate Summit Vineyard, LLC (Summit), submitted
14 a bid to develop, construct, and transfer, upon completion, ownership of a 534
15 MW (summer rated) power plant to PacifiCorp. The name of the project is the
16 Lake Side Power Project. Summit proposed to develop the Lake Side Power
17 Project on the former Geneva Steel site in Vineyard, Utah, and enter into an
18 Engineering, Procurement and Construction Contract (EPC) with Siemens
19 Westinghouse Power Corporation (Siemens Power) to construct the resource.
20 Siemens Corp., the parent company of Siemens Power, is guaranteeing the work
21 of Siemens Power under the EPC contract. In addition, PacifiCorp entered into a
22 long-term program (LTP) for the Lake Side Power Project with Siemens Power.
23 The scope of supply for the LTP covers the planned maintenance of the gas
24 turbine internals including the compressor, combustor and turbine. Planned
25 maintenance activities include the combustor inspections, hot gas path inspections

1 and major overhauls. Also included are periodic borescope exams, combustor
2 tuning, and remote monitoring services. The scope of the LTP also includes
3 diagnostics, parts and services for maintaining the plant's Siemens SPPA-T3000
4 digital control system. The contract also provides for a pre-negotiated pricing
5 mechanism for unplanned gas turbine maintenance. The term of the contract is
6 through the second major overhaul, which is after 3,600 equivalent starts or
7 100,000 equivalent operating hours, depending on whether the plant is operated in
8 a starts or hours based regime, respectively.

9 **Q. Please describe the benefits of this resource to Idaho ratepayers.**

10 A. Idaho ratepayers benefit from this resource as it provides the most economic and
11 risk balanced resource available to implement the identified need. This resource
12 was chosen instead of a more costly Company-built alternative or a more risky
13 alternative from an entity who has since filed for bankruptcy. While the IRP did
14 not specify a need for a flexible resource in 2007, ratepayers will benefit from the
15 fact that the Lake Side resource will indeed have a level of flexibility associated
16 with combined cycle natural gas fired plants with duct firing and steam
17 augmentation. As with the Company's Carrant Creek facility, Lake Side will also
18 enable the Company to manage unexpected changes in loads, resources and/or
19 transmission transfer capabilities while also being available as a resource that can
20 be economically dispatched such that the output can be sold to third parties at
21 times when it is not needed to meet Company obligations.

1 Q. Has the decision to construct Lake Side been reviewed by any other
2 commission?

3 A. Yes. On November 12, 2004, the Utah Public Service Commission (PSC) issued
4 an order granting a Certificate of Public Convenience and Necessity authorizing
5 the Company to proceed with construction of the Lake Side project. In its Order,
6 the Utah PSC said:

7 "We conclude and find the Lake Side Power Project resource addition as
8 proposed by the Company is required by the public convenience and
9 necessity, and that a certificate to that effect should be issued." (Utah PSC
10 Docket No. 04-035-30, November 12, 2004 Order, p. 18)

11
12 The Utah PSC reached this conclusion, in part, based on the following facts:

- 13 1. The Utah Division of Public Utilities (Division) hired its own consultant (in
14 addition to Navigant) to evaluate the Company's certificate application. Both
15 the Division and its consultant testified that they found no evidence to refute
16 Navigant's conclusion that the solicitation and evaluation of base load bids
17 (the 2007 resource category in RFP 2003-A) was fair and equitable. The
18 Division's consultant also testified the selection of the preferred resource (the
19 Lake Side project) was a reasonable decision given the parameters of the base
20 load bid category, and
- 21 2. The Company testified that the Lake Side project proposal by Summit
22 represented the most prudent balance between cost and risk. At the Utah PSC
23 certificate hearing, no party opposed the granting of a certificate of public
24 convenience and necessity to the Company for the Lake Side project, or
25 challenged the Company's selection of the Lake Side project as the best
26 alternative.

1 **Q. How did the Company make the decision to move forward with the Lake**
2 **Side project?**

3 A. The Company's Board was provided with a detailed overview of the project, the
4 contract support and counterparty guarantees for executing the project, a
5 comparison against the risks associated with an alternative bidder, the risks
6 associated with the project, the need for the project as established by the IRP, the
7 financial assessment of the project, the fueling strategy, and the justification of the
8 project due to the results of RFP 2003-A. Upon review of this information, the
9 Board deliberated and subsequently voted to proceed with the project.

10 **Q. What investment related to the Lake Side project is included in the revenue**
11 **requirement?**

12 A. The Company has included \$330.8 million for the Lake Side plant in this
13 application. The O&M cost associated with the Lake Side plant is approximately
14 \$2.6 million. This is due to the labor required to operate the plant (the labor was
15 capitalized prior to the plant going in-service), chemical cost, maintenance
16 materials and contracts, and other miscellaneous operating expenses (e.g. utilities,
17 rents, leases, insurance premiums, etc.).

18 The Lake Side project is expected to be operational during the summer of
19 2007. As discussed in Company Witness Mark T. Widmer's testimony, the
20 Company's net power cost calculation reflects the inclusion of Lake Side for the
21 same number of months that the investment is included in the revenue
22 requirement. Company witness Steven R. McDougal's testimony describes the
23 revenue requirement calculations associated with the inclusion of this resource.

1 **Q. Please describe the Company's natural gas supply strategy.**

2 A. The Company is striving to provide a stable and predictable natural gas supply in
3 a manner that mitigates price volatility and ensures reliable supply.

4 **Q. What factors are influencing the Company's natural gas strategy?**

5 A. The Company is experiencing a significant increase in natural gas requirements
6 due to its new combined cycle combustion turbines at the Currant Creek and Lake
7 Side plants and higher capacity factors on higher heat rate units such as the
8 Gadsby simple cycle combustion turbines. This increase in requirements for
9 natural gas requires a supply strategy that mitigates price and supply risk to
10 customers, and the Company is seeking a long-term focus to ensure customer
11 protection against major volatility swings.

12 **Q. What steps is the Company taking to protect its customers from volatility in
13 the price and supply of natural gas?**

14 A. The Company is seeking to secure enough physical gas to operate its gas-fired
15 generating units during on-peak hours and to protect customers against the
16 potential of purchasing high market-priced electricity in the future. By purchasing
17 gas on a forward-looking basis, the Company is hedging against the risk of
18 increased market prices for natural gas, essentially locking in a fixed price for on-
19 peak power now rather than relying on market timing decisions later. Due to the
20 significant increase in gas requirements mentioned above, the Company is
21 moving towards active management of 5 to 10 years of future gas supply.

22 **Q. How do customers benefit from the Company's natural gas supply strategy?**

23 A. As mentioned above, the Company's hedging strategy protects customers from

1 long-term price and supply risk as the Company procures the fuel required to run
2 its gas-fired generating units. In a volatile market environment and a period of
3 rising costs, such a strategy will shield customers from drastic swings in the cost
4 of natural gas and supply the electricity our customers demand at a reasonable and
5 predictable price.

6 **Q. Does hedging always produce the lowest possible cost?**

7 A. On average over the long term, it should. But in any particular period there will
8 inevitably be periods when market prices are lower than the Company's hedged
9 costs and periods when market prices are higher than hedged costs, as was the
10 case in Case No. PAC-E-06-04. The benefit of this approach is that customers
11 will be protected against significant volatility.

12 **Renewable Resources**

13 **Wind**

14 **Q. How does the 2004 Integrated Resource Plan address wind resources?**

15 A. The 2004 IRP characterizes wind energy as having only minor impacts on the
16 environment and producing no air pollutants or greenhouse gasses (page 94 of
17 PacifiCorp's 2004 IRP). The 2004 IRP includes wind resources as a proxy for all
18 renewable resources, which are part of a prudent and balanced resource mix.

19 **Q. Please describe the Company's renewable resource request for proposal.**

20 A. The Company's 2003 IRP had identified 1,400 MW of renewable resources as
21 part of a least-cost portfolio of resources to meet the Company's growing demand
22 over a ten-year period. The Company's renewable resource RFP, designated RFP
23 2003-B, was issued in February 2004. Following the acquisition of PacifiCorp by

1 MidAmerican Energy Holdings Company, PacifiCorp amended RFP 2003-B by
2 re-opening the process to allow previous bidders to update their proposals and
3 invite new bidders to participate. Given then-current federal tax law, amended
4 RFP 2003-B focused on the acquisition of renewable resources that could be
5 made available prior to the end of 2006 and 2007.

6 **Q. What was the outcome of RFP 2003-B?**

7 A. RFP 2003-B resulted in the acquisition of the 100.5 megawatt Leaning Juniper
8 wind plant, the acquisition and subsequent construction of the 140.4 megawatt
9 Marengo wind plant, and served as a benchmark to compare other wind resource
10 alternatives against (such as the Goodnoe Hills wind project).

11 **Leaning Juniper**

12 **Q. Please describe the size and location of the Leaning Juniper 1 resource.**

13 A. Leaning Juniper 1 is a 100.5 MW wind energy generation facility, consisting of
14 67 General Electric 1.5 MW (model SLE) 60 hertz wind turbine generators
15 located about three miles southwest of Arlington, Oregon. Exhibit No. 18 shows a
16 map of the plant location. The project was placed into service on September 14,
17 2006, and PacifiCorp owns the assets, all output, all environmental attributes and
18 all interconnection rights (up to the project's 100.5 MW capability). The turbines
19 have 80 meter tubular towers and a 77 meter rotor diameter. The project includes
20 above-ground and underground electric cable, fiber optic communication cable,
21 approximately twenty miles of turbine access roads, two permanent
22 meteorological towers, one collector substation, one supervisory control and data
23 acquisition system, and one operation and maintenance building. Ongoing

1 operations, warranty, and general maintenance services will be performed by
2 Leaning Juniper Wind Power LLC (a PPM Energy affiliate), under a negotiated
3 two-year contract.

4 **Q. How will energy generated by Leaning Juniper 1 be delivered?**

5 A. The energy generated by the project will be delivered to the project's substation,
6 which connects to the Jones Canyon substation that was built by the Bonneville
7 Power Administration (BPA), then to BPA's transmission system. Energy from
8 the project is then transmitted across BPA's transmission system for delivery into
9 PacifiCorp's system.

10 **Q. Please describe the benefits of this resource to Idaho ratepayers.**

11 A. Idaho ratepayers benefit from this resource as it represents the only resource made
12 available to the Company via RFP 2003-B that could economically meet a
13 commercial operation date during 2006. The 2003 and subsequent IRPs specify
14 that renewable resources (using wind resources as a proxy) be steadily added to
15 the system with the target of reaching 1,400 megawatts or more of renewable
16 resources prior to 2015. Leaning Juniper represents such a resource. In addition,
17 Leaning Juniper was economical when compared against resources identified via
18 RFP 2003-B for renewable resources that could become commercial during 2007.

19 **Q. How else will the Leaning Juniper resource benefit Idaho ratepayers?**

20 A. The Leaning Juniper resource further benefits Idaho ratepayers by providing the
21 Company with a zero incremental cost fuel source (thus reducing commodity risk
22 exposure), a multi shafted generation resource (thus diversifying the impact of
23 individual generator failures), and valuable ownership and operational experience

1 with utility scale wind projects. Leaning Juniper is the first wind resource that
2 PacifiCorp has acquired on an ownership basis since the construction of the Foote
3 Creek 1 wind resource at Foote Creek rim in Wyoming. The Leaning Juniper
4 project utilizes General Electric wind turbines, thus giving PacifiCorp valuable
5 experience with this particular manufacturer. As a result of long-term planning
6 and the reasonable expectation that a federal renewable portfolio standard will be
7 established, PacifiCorp is expecting to have a robust need for renewable resources
8 in the coming years. PacifiCorp currently has a number of power purchase
9 agreements from wind projects in its portfolio and it is important that the
10 Company diversify to include owned renewable resources. Leaning Juniper is
11 providing the Company with valuable experience to enable the evolution of those
12 activities as well as valuable experience with a General Electric turbine-based
13 wind project.

14 **Q. How did the Company make the decision to move forward with the Leaning**
15 **Juniper 1 project?**

16 **A.** The Company was provided with a detailed overview of the project, the contract
17 support and counterparty guarantees for executing upon the project, a comparison
18 against the risks associated with an alternative bidder, the risks associated with
19 the project, the need for the project as established by the IRP, the financial
20 assessment of the project and the justification of the project due to the results of
21 RFP 2003-A. Upon review of this information, the Company determined that it
22 would proceed with acquisition of the project.

1 **Q. What investment related to the Leaning Juniper 1 project is included in the**
2 **revenue requirement?**

3 A. The Company has included \$175.4 million for the Leaning Juniper 1 plant in this
4 application. The O&M cost associated with the Leaning Juniper 1 resource is
5 approximately \$2.4 million. This is due to the wind turbine-generator
6 maintenance agreement, permitting obligations, local levy tax and land royalties
7 and easements.

8 As discussed in Company witness Mark T. Widmer's testimony, the
9 Company's net power cost calculation reflects the inclusion of Leaning Juniper 1.
10 Company witness Steven R. McDougal's testimony describes the revenue
11 requirement calculations associated with the inclusion of this resource.

12 **Marengo**

13 **Q. Please describe the size and location of the Marengo resource.**

14 A. Marengo is a 140.4 MW wind energy generation facility, consisting of 78 Vestas
15 1.8 MW wind turbine generators located near Dayton, Washington. Exhibit No.
16 19 shows a map of the plant location. PacifiCorp owns the assets, all output, all
17 environmental attributes and all interconnection rights. The Vestas turbines
18 located at the Marengo site have 67 meter tubular towers and an 80 meter rotor
19 diameter. The project includes above-ground and underground electric cable, fiber
20 optic communication cable, turbine access roads, two permanent meteorological
21 towers, one collector substation, a transmission line extension, one supervisory
22 control and data acquisition system, and one operation and maintenance building.
23 Ongoing operations, warranty, and general maintenance services will initially be

1 performed by Vestas American Wind Technology Inc. for a period that extends
2 four years from the commercial operation date of the Marengo Expansion project
3 discussed below.

4 **Q. How will energy generated by Marengo be delivered?**

5 A. The electrical energy generated by the Marengo wind project will be delivered to
6 the project substation and stepped up from 34.5kV to 230kV and delivered into
7 PacifiCorp's transmission system on the North Lewiston-to-Walla Walla 230kV
8 transmission line via a 230 kV transmission line extension and new transmission
9 switching station (the Talbot switching station). As such, no third-party
10 transmission expense is anticipated (i.e., no BPA point-to-point wheeling
11 expenses).

12 **Q. Please describe the benefits of this resource to Idaho ratepayers.**

13 A. Idaho ratepayers benefit from this resource as it represents the only resource made
14 available to the Company via RFP 2003-B that could economically meet a
15 commercial operation date during 2007. The 2003 and subsequent IRPs specify
16 that renewable resources (using wind resources as a proxy) be steadily added to
17 the system with the target of reaching 1,400 megawatts or more of renewable
18 resources prior to 2015. Marengo represents such a resource.

19 **Q. How else will the Marengo resource benefit Idaho ratepayers?**

20 A. The Marengo resource further benefits Idaho ratepayers by providing the
21 Company with a zero incremental cost fuel source (thus reducing commodity risk
22 exposure), a multi shafted generation resource (thus diversifying the impact of
23 individual generator failures), and further valuable ownership and operational

1 experience with utility scale wind projects. Marengo will be the second wind
2 resource that PacifiCorp has acquired on an ownership basis since the
3 construction of the Foote Creek 1 wind resource at Foote Creek rim in Wyoming.
4 The Marengo project utilizes Vestas wind turbines, thus giving PacifiCorp
5 valuable experience with this particular manufacturer. As a result of long-term
6 planning and the reasonable expectation that a federal renewable portfolio
7 standard will be established, PacifiCorp is expecting to have a robust need for
8 renewable resources in the coming years. PacifiCorp currently has a number of
9 power purchase agreements from wind projects in its portfolio and it is important
10 that the Company diversify to include owned renewable resources. Marengo will
11 also provide the Company with valuable experience with a Vestas turbine-based
12 wind project.

13 **Q. How did the Company make the decision to move forward with the Marengo**
14 **project?**

15 A. The Company was provided with a detailed overview of the project, the contract
16 support and counterparty guarantees for executing upon the project, a comparison
17 against the risks associated with an alternative bidder, the risks associated with
18 the project, the need for the project as established by the IRP, the financial
19 assessment of the project and the justification of the project due to the results of
20 RFP 2003-A. Upon review of this information, the Company determined that it
21 would proceed with acquisition of the project.

1 **Q. What investment related to the Marengo project is included in the revenue**
2 **requirement?**

3 A. The Company has included \$258.5 million for the Marengo project in this
4 application. The Marengo project is expected to be operational by August 2007.
5 The O&M cost associated with the Marengo resource is approximately \$2.2
6 million. This is due to the wind turbine-generator maintenance agreement,
7 permitting obligations, local levy tax and land royalties and easements.

8 As discussed in Company witness Mark T. Widmer's testimony, the
9 Company's net power cost calculation reflects the inclusion of Marengo for the
10 same number of months that the investment is included in the revenue
11 requirement. Company witness Steven R. McDougal's testimony describes the
12 revenue requirement calculations associated with the inclusion of this resource.

13 **Goodnoe Hills**

14 **Q. Please describe the size and location of the Goodnoe Hills resource.**

15 A. The Goodnoe Hills resource is a wind resource located near Goldendale,
16 Washington. Exhibit No. 20 shows a map of the plant location. PacifiCorp owns
17 the assets, all output, all environmental attributes and 94 MW of interconnection
18 rights with the BPA. Ongoing operations, warranty, and general maintenance
19 services will be performed by the wind turbine supplier (REpower System AG)
20 for the first two years and then by enXco Service Corporation for the following
21 eight years. The Goodnoe Hills wind project consists of a 94 MW wind energy
22 generation facility utilizing 47 REpower System AG 2.0 MW (model MM92) 60
23 hertz wind turbine generators. The turbines have 80 meter tubular towers and a

1 92.5 meter rotor diameter. The project includes above-ground and underground
2 electric cable, fiber optic communication cable, turbine access roads, permanent
3 meteorological towers, a supervisory control and data acquisition system, a
4 collector substation and one operation and maintenance building.

5 **Q. How will energy generated by Goodnoe Hills be delivered?**

6 A. The energy generated by the projects will be delivered to a 34.5/230 kilovolt
7 substation which connects to the Rock Creek substation built by the BPA. The
8 energy is then delivered to BPA's transmission system for transmission across
9 BPA's system for delivery into PacifiCorp's system.

10 **Q. Please describe the benefits of this resource to Idaho ratepayers.**

11 A. Idaho ratepayers benefit from this resource as it represents a renewable resource
12 that can economically meet a commercial operation date during 2007. The 2003
13 and subsequent IRPs specify that that renewable resources (using wind resources
14 as a proxy) be steadily added to the system with the target of reaching 1,400
15 megawatts or more of renewable resources prior to 2015. Goodnoe Hills
16 represents such a resource.

17 **Q. How else will the Goodnoe Hills resource benefit Idaho ratepayers?**

18 A. The Goodnoe Hills resource further benefits Idaho ratepayers by providing the
19 Company with a zero incremental cost fuel source (thus reducing commodity risk
20 exposure), a multi-shafted generation resource (thus diversifying the impact of
21 individual generator failures), and further valuable ownership and operational
22 experience with utility scale wind projects. The Goodnoe Hills project utilizes
23 REpower wind turbines, thus giving PacifiCorp valuable experience with this

1 particular manufacturer. The combination of the turbine supplier and operational
2 expertise held by the project developer enabled the Company to negotiate a long-
3 term operation and maintenance agreement for the entire project. This benefited
4 ratepayers as it is an economical way to operate a project that is located outside of
5 PacifiCorp's service territory. Further, as a result of long-term planning and the
6 reasonable expectation that a federal renewable portfolio standard will be
7 established, PacifiCorp is expecting to have a robust need for renewable resources
8 in the coming years. PacifiCorp currently has a number of power purchase
9 agreements from wind projects in its portfolio and it is important that the
10 Company diversify to include owned renewable resources. Goodnoe Hills will
11 provide the Company with further experience in owning wind resources.

12 **Q. How did the Company make the decision to move forward with the Goodnoe**
13 **Hills project?**

14 A. The Company was provided with a detailed overview of the project, the contract
15 support and counterparty guarantees for executing upon the project, a comparison
16 against the risks associated with an alternative bidder, the risks associated with
17 the project, the need for the project as established by the IRP, the financial
18 assessment of the project, the fueling strategy, and the justification of the project
19 due to the results of RFP 2003-A. Upon review of this information, the Company
20 determined that it would proceed with acquisition of the project.

21 **Q. What investment related to the Goodnoe Hills project is included in the**
22 **revenue requirement?**

23 A. The Company has included \$151.9 million for the Goodnoe Hills project in this

1 application with a projected in-service date of November 15, 2007. The O&M
2 cost associated with the Goodnoe Hills resource is approximately \$0.2 million.
3 This is due to the wind turbine-generator maintenance agreement, permitting
4 obligations, local levy tax and land royalties and easements. These expenses will
5 be reduced by funds made available by BPA (via the conservation and renewable
6 resource credit program) and by grant monies supplied via the Energy Trust of
7 Oregon, Inc.

8 As discussed in Company witness Mark T. Widmer's testimony, the
9 Company's net power cost calculation reflects the inclusion of Goodnoe Hills for
10 the same number of months that the investment is included in the revenue
11 requirement. Company witness Steven R. McDougal's testimony describes the
12 revenue requirement calculations associated with the inclusion of this resource.

13 **Geothermal**

14 **Blundell Bottoming Cycle**

15 **Q. Please describe the size and location of the Blundell Bottoming Cycle**
16 **resource.**

17 A. The Blundell Bottoming Cycle resource is a separate facility at the Blundell plant,
18 located near Milford, Utah. Exhibit No. 21 shows a map of the plant location. The
19 bottoming cycle generates a nominal 11 MW of electrical energy using latent heat
20 in the geothermal brine.

21 **Q. Please provide additional detail about the Blundell Bottoming Cycle**
22 **resource.**

23 A. The Blundell Plant, which was developed and constructed in the 1980's, utilizes a

1 single-flash process to generate electrical power from liquid-dominated
2 geothermal brine. The original plant was designed to utilize the heat energy in the
3 geothermal brine, flashing the brine to steam and using it in a conventional steam
4 turbine generator. The brine is flashed to steam, passed through a steam turbine
5 generator, condensed back to liquid and then re-injected back into the
6 underground geothermal reservoir at approximately 340°F.

7 The bottoming cycle uses the latent heat in the geothermal brine to drive a
8 second turbine generator. The brine at 340°F flows through a conventional tube
9 and shell heat exchanger and is used to vaporize pentane as the motive fluid. The
10 pentane vapor drives the second turbine generator which produces the nominal 11
11 MW. The pentane is condensed back to liquid with an air-cooled condenser. The
12 brine is re-injected back into the geothermal reservoir at approximately 180°F.

13 **Q. How will energy generated by the Blundell Bottoming Cycle resource be**
14 **delivered?**

15 A. Energy generated by the Blundell Bottoming Cycle will be delivered directly to
16 the Company's system at the 46kV level.

17 **Q. Please describe the benefits of this resource to Idaho ratepayers.**

18 A. Idaho ratepayers benefit from this resource as it represents a renewable resource
19 that can economically meet a commercial operation date during 2007. The 2003
20 and subsequent IRPs specify that that renewable resources be steadily added to
21 the system with the target of reaching 1,400 megawatts or more of renewable
22 resources prior to 2015. The Blundell Bottoming Cycle project represents such a
23 resource.

1 **Q. What additional evaluation did the Company do regarding the Blundell**
2 **Bottoming Cycle resource?**

3 A. The Blundell Bottoming Cycle project was included as a resource in the 2004
4 Updated Integrated Resource Plan Action Plan to meet PacifiCorp's renewable
5 target.

6 **Q. How did the Company make the decision to move forward with the Blundell**
7 **Bottoming Cycle resource?**

8 A. The Company was provided with a detailed overview of the project, the contract
9 support and counterparty guarantees for executing upon the project, a comparison
10 against the risks associated with an alternative bidder, the risks associated with
11 the project, the need for the project as established by the IRP, the financial
12 assessment of the project, the fueling strategy, and the justification of the project.

13 **Q. What investment related to the Blundell Bottoming Cycle resource is**
14 **included in the revenue requirement?**

15 A. The Company has included \$27.7 million for the Blundell Bottoming Cycle
16 resource in this application. The Blundell Bottoming Cycle resource is expected
17 to be operational by December 2007. The O&M cost associated with the Blundell
18 Bottoming Cycle resource is approximately \$25 thousand.

19 As discussed in Company witness Mark T. Widmer's testimony, the
20 Company's net power cost calculation reflects the inclusion of Blundell
21 Bottoming Cycle resource for the same number of months that the investment is
22 included in the revenue requirement. Company witness Steven R. McDougal's
23 testimony describes the revenue requirement calculations associated with the

1 inclusion of this resource.

2 **Conclusion**

3 **Q. Please summarize your conclusions.**

4 A. Supply-side resources with in-service dates during 2007, have been included in
5 the Company's application including the investment, modeling of net power cost
6 impacts, and associated expenses. These projects represent significant investments
7 the Company is making on behalf of its customers to meet their energy needs on a
8 prudent and cost-effective basis. Customers will receive the output of these
9 facilities during the rate-effective period and, therefore, should pay for the costs
10 associated with the facilities. The Company has been prudent in securing these
11 facilities for the benefit of its Idaho customers and should be granted full cost
12 recovery.

13 **Q. Does this conclude your testimony?**

14 A. Yes.

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IDAHO PUBLIC
UTILITIES COMMISSIO.

Case No. PAC-E-07-05

Exhibit No. 17

Witness: William J. Fehrman

BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

ROCKY MOUNTAIN POWER

Exhibit Accompanying Direct Testimony of William J. Fehrman

Map of Lake Side Power Project Location

June 2007

