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IDAHO PUBLIC
UTILITIES COMMISSION

BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE PETITION OF) CASE NO. IPC-E-05-22
IDAHO POWER COMPANY FOR AN)
ORDER TEMPORARILY SUSPENDING)
IDAHO POWER'S PURPA OBLIGATION) Direct Testimony of Bruce W. Griswold
TO ENTER INTO CONTRACTS TO)
PURCHASE ENERGY GENERATED BY)
WIND-POWERED SMALL POWER)
PRODUCTION FACILITIES.

PACIFICORP

IPC
CASE NO. ~~PAC~~-E-05-22

July 2005

1 **Q. Please state your name, business address and position with PacifiCorp (the**
2 **Company).**

3 A. My name is Bruce W. Griswold. My business address is 825 N. E. Multnomah, Suite
4 600, Portland, Oregon 97232. I am a Manager in the Origination section of the
5 Company's Commercial and Trading Department.

6 **Q. Please briefly describe your education and business experience.**

7 A. I have a B.S. and M.S. degree in Agricultural Engineering from Montana State and
8 Oregon State, respectively. I have been employed with PacifiCorp over eighteen
9 years in various positions of responsibility in retail energy services, engineering,
10 marketing and wholesale energy services. I have also worked in private industry and
11 with an environmental firm as a project engineer. My responsibilities are wholesale,
12 qualifying facility and large retail transactions including the negotiation and
13 management of the non-tariff power supply and resource acquisition agreements with
14 PacifiCorp's largest retail customers.

15 **Q. Have you previously appeared in any regulatory proceedings?**

16 A. Yes. I have appeared in proceedings in Utah and Idaho.

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

18 A. I will outline PacifiCorp's position on Idaho Power Company ("IPC") Petition for an
19 Order Temporarily Suspending IPC's PURPA Obligation to Enter into Contracts to
20 Purchase Energy Generated by Wind-powered Small Power Production Facilities and
21 explain why a temporary suspension is justified for all Idaho electric utilities. To this
22 end, I will describe and explain the issues affecting PacifiCorp related to wind QF
23 projects in Idaho. I will also summarize a series of actions the Company is willing to

1 undertake in support of this proceeding.

2 **Q. Please provide a summary of your testimony.**

3 A. The Company agrees with the issues as outlined in Idaho Power's petition and
4 supports a temporary suspension to enter into any new QF contracts with wind
5 resources at current avoided cost rates for all utilities in Idaho until the issues are
6 vetted in this proceeding or a separate docket to be opened by the Commission. In
7 order to help the Commission understand the magnitude of the impact from these
8 issues, the Company has prepared and included in this testimony its proposed
9 methodology for computing avoided costs specifically tailored to the attributes of
10 intermittent wind-powered resources.

11 **Background**

12 **Q. Please summarize the procedural background of this proceeding.**

13 A. IPC filed a petition on June 17, 2005 requesting the Idaho Commission issue an order
14 to temporarily suspend IPC's PURPA obligation, as defined in Sections 201 and 210
15 and its state obligation per specific Commission orders, requiring it to enter into any
16 new contracts to purchase energy generated by wind-powered qualifying facilities
17 ("QFs"). The request does not apply to any existing wind QF or new non-wind QF
18 contracts. The petition asks that the Commission investigate the impacts on IPC's
19 ratepayers resulting from significant number of wind QF projects being added,
20 particularly: 1) the cost associated with acquiring wind resources in IPC's overall
21 resource portfolio, 2) electric system reliability with additions of a large number of
22 intermittent wind resources, and 3) the need for adjustments to the current avoided
23 cost methodology to correctly reflect the actual power supply costs IPC avoids

1 through wind resource additions. The Commission issued a Notice of Petition and
2 Scheduling on July 1, 2005 seeking testimony and written briefs regarding IPC's
3 request.

4 **Q. Please describe PacifiCorp's efforts to incorporate wind into its resource**
5 **portfolio.**

6 A. PacifiCorp has achieved national recognition for its strong commitment to renewable
7 energy, particularly wind power. In 2003, PacifiCorp's Integrated Resource Plan
8 ("IRP") contained a diverse resource mix to meet the projected load growth need over
9 the next ten years including 1,400 MW of renewable energy. Based on a cost
10 effectiveness test, these resources were primarily characterized in the IRP as wind
11 resources. In 2004, the Company released its 2003B Request for Proposal (RFP)
12 seeking to acquire 1,100 MW of cost effective renewable resources over a period of
13 six years. PacifiCorp successfully signed a contract in 2005 with Wolverine Creek
14 Energy LLC, for the purchase of the output of a 64.5 MW wind farm to be built
15 southeast of Idaho Falls, Idaho and has targeted 200 MW of additional economic
16 renewable resources in 2006 and 2007. The RFP has provided the Company a
17 competitive process for acquiring wind resources, thereby allowing the Company to
18 include adjustments for project specific operating and location characteristics into
19 determining the overall cost effectiveness of the resource proposals. PacifiCorp
20 continues to pursue other opportunities through the RFP process and are responding
21 to numerous requests from wind QF developers across our multi-state territory.

1 **Need for a Temporary Stay**

2 **Q. What is PacifiCorp's position regarding Idaho Power's petition?**

3 A. First, the Company stands behind its obligation to purchase power from all QF
4 projects regardless of the generation technology. The Company has supported and
5 continues to support the "ratepayer indifference" standard as a principal consideration
6 in developing an avoided cost methodology and acquiring QF projects in its resource
7 portfolio. While PacifiCorp actively participates in this proceeding because of the
8 value it places on renewable resources, the Company will continue to be responsive to
9 QF projects. For example, when this petition was filed, PacifiCorp was close to
10 completing a power purchase agreement with a published rate (less than 10 aMW)
11 wind QF project in Idaho. While the issues raised by IPC were considered by
12 PacifiCorp during the contract negotiation, Commission Order No. 29646 on
13 published rate QFs does not presently allow these factors to be addressed through any
14 price or cost adjustment mechanism. In the spirit of good faith negotiations,
15 PacifiCorp felt obligated to finalize the agreement and will be submitting it in the near
16 future to the Commission for its review and approval. However, PacifiCorp is
17 concerned that approval of this particular QF contract could lead to an overpayment to
18 the QF, in the event that the Commission orders price adjustments that reduce the
19 published avoided cost rate for wind QF projects in this proceeding. That would
20 clearly not meet the "ratepayer indifference" standard for QFs and place additional
21 costs on Idaho customers.

22 PacifiCorp agrees that IPC has raised a number of valid issues that need to be
23 addressed before the Commission, specifically as they apply to intermittent resources

1 such as wind. These issues apply whether the wind resources are acquired as QF
2 contracts or through commercial transactions; however, commercial transactions
3 through a RFP or direct bi-lateral negotiation provide for price adjustment
4 mechanisms to be taken into consideration. PacifiCorp increasingly faces these same
5 issues across its system as more wind projects come forth as proposed QF projects
6 rather than participating in a RFP. Consequently, these issues are now the focus of
7 docket number 03-035-14 in Utah and phase II of Oregon Docket UM-1129. These
8 issues affect PacifiCorp and in fact, ALL electric utilities in Idaho, not just IPC.
9 Ordering a temporary stay for IPC alone threatens to simply shift most QF projects
10 from IPC to PacifiCorp or other utilities in Idaho. Therefore if the Commission
11 decides to grant IPC's request in this proceeding, it should do so for Idaho Power,
12 PacifiCorp and Avista. Because of the magnitude and potential cost to Idaho
13 ratepayers in acquiring wind QF resources at other than avoided costs, the Company
14 believes the Commission should open a docket to address the impact of each of the
15 relevant issues in detail.

16 **Q. Does PacifiCorp face the same wind resource issues and concerns as Idaho**
17 **Power?**

18 A. On a general level, yes, all utilities face the same issues of integrating an intermittent
19 resource into their portfolio. However, because the Company has a much different
20 load and service area, transmission system, and resource portfolio than IPC and other
21 Idaho utilities, the impact of these issues on the Company could be different in
22 magnitude. Let me explain each.

23 *Electric System Reliability Impact.* Wind resource output depends on wind

1 availability and speed. Wind speeds cannot be predicted with complete accuracy and
2 the wind often fluctuates significantly over an hour. As a result of the Company's
3 study in the 2003 IRP, and through PacifiCorp's experience with several wind farms,
4 PacifiCorp's system planners and operators have determined that these variations
5 increase the overall operating costs of the PacifiCorp system. System operators
6 maintain a balance between the system supply and demand for power on a continuous
7 basis. The balancing relies on the operating characteristics of power plants in
8 PacifiCorp's resource mix and computer automation. The variability of wind plant
9 output causes additional volatility in system balance that must be compensated by
10 other power plants to maintain system balance, causing power plants to further
11 deviate from economically optimal operating conditions. Additionally, it is important
12 to understand that the key issue is not whether a system with a significant amount of
13 wind capacity can be operated reliably, but rather to what extent the system operating
14 costs are increased due to the variability of the wind and/or what other system
15 upgrades must be put in place to integrate the resource in question. A study was
16 performed by the Company during its IRP process to estimate the integration cost of a
17 wind resource added to its system. These costs are referred to as ancillary services
18 costs such as incremental reserve or system dispatch costs (termed "imbalance" costs
19 in the 2003 IRP). Incremental reserves are the cost associated with holding additional
20 operating reserves to maintain system reliability as greater amounts of wind resources
21 are added and the increased volatility in system load imposed by the variability of
22 wind plant output. System dispatch costs capture the increased operating costs
23 associated with operating other power plants to balance the system with the addition

1 of rapidly changing wind resources. In the 2003 IRP, the cost of incremental
2 operating reserves for a wind site with a capacity factor of 30 percent was determined
3 to be \$2.72/MWh. Combined with the \$3.00/MWh estimate for incremental system
4 dispatch; the total integration cost was approximately \$5.50/MWh. An update to the
5 costs was done for the 2004 IRP in which the assumption for imbalance costs have
6 remained unchanged at \$3.00/MWh but the cost of incremental reserves has been
7 updated for new market prices. In the current updated IRP the cost of integration is
8 estimated to be \$4.64/MWh. Absent site specific integration costs, PacifiCorp
9 considers these costs to be a reasonable approximation to the costs of integrating wind
10 and should be included as a cost the Company incurs in the calculation of avoided
11 cost for wind resources.

12 QF versus RFP. The Company's current experience across its service territory
13 is that some wind projects that were not successful in the 2003B RFP, chose to pursue
14 QF certification for avoided cost pricing on their project and re-approach the
15 Company as a QF. With the increase in the project size cap for published avoided
16 cost rates, many wind developers are tailoring their initial project into separate
17 smaller projects to fit under the cap, whether it is 10 aMW in Idaho, 3 MW in Utah,
18 or 10 MW in Oregon. Because a contract under the published QF rate has minimal
19 flexibility to adjust pricing or terms and conditions in the contract, wind resources
20 have found the QF path more conducive to gaining a long term power purchase
21 agreement without the integration cost or other adjustments they would encounter in a
22 competitive RFP process or through bi-lateral negotiation. This divergence between a
23 competitive process for acquiring the lowest cost wind resource and the default

1 pricing nature of the QF process does not account for system impact costs and will
2 lead to Idaho ratepayers carrying the burden of a higher-cost (i.e., above avoided cost)
3 QF resource than they would otherwise pay for. Therefore the Company believes a
4 temporary stay should be put in place to allow for investigation of how the gap
5 between the competitive process and the QF process can be closed.

6 Avoided Cost for Wind Resources. The Company is currently participating
7 in an open docket in Utah, Docket 03-035-14, which focuses on the avoided cost
8 methodology for QF projects greater than 3 MW. As part of that docket, PacifiCorp
9 has outlined the cost adjustments that should apply to the avoided costs specifically
10 for wind and other intermittent resources. I will describe PacifiCorp's proposed
11 process and adjustments later in my testimony. The Company also expects that the
12 same issues will be addressed in Oregon Docket UM-1129 later this year.
13 Historically the generation threshold for published avoided cost rates has been low,
14 and the costs associated with capacity contribution and integration for an intermittent
15 resource have been deemed to have minimal impact on the Company's electric
16 system. With current thresholds increased in Idaho to 10aMW, Oregon to 10 MW
17 and 3 MW in Utah, the cost to the Company and thus to the ratepayer for integration
18 and capacity contribution are of greater significance and need to be revisited in
19 determination of avoided costs for intermittent resources.

20 In those cases where a resource is added in Idaho and there is insufficient load,
21 then the added QF power must be moved elsewhere to be useful to the system. This
22 is primarily expected to be the case in the off-peak time period when customer loads
23 are normally lower but also may occur with the addition of numerous QF projects

1 and/or large QF projects. If there is inadequate transmission capacity to move the
2 power elsewhere in the system, the Company has two options: back down use of its
3 own low-cost resources to serve the load in the area or upgrade the transmission
4 system to accommodate moving the resource output to load elsewhere. In the
5 penultimate scenario, where there are no Company resources to curtail, the Company
6 may be faced with not being able to accept QF power. In the first case, the avoided
7 cost that the QF receives should be adjusted down to reflect the Company's obligation
8 to accept the QF's higher cost power and back down the lower cost resources such as
9 a coal plant. If a new QF resource has triggered a transmission system upgrade, the
10 QF should bear the cost of the transmission system upgrade to move their power out
11 of the load pocket to serve the network load. While the Company recognizes that
12 locational transmission constraints and the need for transmission upgrades should not
13 prevent project development, the incremental cost reflecting the constraint or upgrade
14 should be borne by the developer and not the ratepayer as is presently the case.

15 Analysis of transmission system constraints and the cost of options for dealing with
16 those constraints should be made available to QF project developers as part of the QF
17 pricing and contract process so that appropriate adjustments can be made. The
18 approval of a temporary stay in this proceeding would allow each utility to prepare
19 and demonstrate the need for such adjustments in the determination of avoided costs.

20 **PacifiCorp's Proposed Actions if a Temporary Stay is Granted**

21 **Q. How does the Company propose to address these issues?**

22 A. The Company believes the three wind QF issues posed by IPC can be adequately
23 addressed through specific adjustments to the avoided cost paid to the individual QF

1 project for that QF's operating or locational characteristics regardless of the QF
2 project size. This is true whether it is system reliability, the impact to the overall cost
3 of a utility's resource portfolio, or the appropriate avoided cost for an intermittent
4 resource.

5 **Q. Is the Commission allowed to make such price adjustments?**

6 A Yes. The factors allowed under PURPA are for adjustments to reflect an individual
7 QF project's operating characteristics when finalizing the avoided cost prices. These
8 factors include:

9 a. *The type of power being delivered to the utility by the QF project.* One of the
10 key factors affecting the prices paid to the QF is the type of power delivered to
11 PacifiCorp. Rates for purchases should reflect the duration and firmness of
12 the energy and capacity provided. When the QF has contractually committed
13 to make capacity and energy available on a firm basis, the QF is entitled to
14 capacity and energy payments that reflect the energy and capacity costs it
15 allows the Company to avoid. If the QF will only agree to make power
16 available on a non-firm basis, it is entitled to only an energy payment.

17 b. *The QF's availability during daily and seasonal peak periods.* The
18 Company's standard avoided cost prices assume that energy and capacity from
19 a QF will be available during the Company's daily and seasonal peak periods.
20 If the QF cannot or will not commit to provide energy and capacity during
21 peak periods, then no capacity payments should be made to the QF project for
22 those months when the QF is not providing capacity and energy during the
23 peak periods.

1 c. *The ability of the utility to dispatch the QF.* The ability of a utility to schedule
2 or dispatch QF generation on demand is a key consideration that should be
3 taken into account when establishing project specific avoided costs. Any QF
4 that offers to sell PacifiCorp capacity and energy must match the availability
5 of the avoided resource to receive the full avoided costs including capacity
6 payment. Since this analysis is resource specific, it can only be applied on a
7 case by case basis.

8 d. *The reliability of the QF.* The specific rates paid to the QF should be adjusted
9 to reflect the facility's actual, or valid operator estimate of, operating
10 reliability and capacity production capability as compared to the avoided
11 resource.

12 e. *The type of generation technology and fuel source.* The type of generation
13 and fuel source can also affect avoided cost prices. For example, wind
14 resources are dependent upon wind for fuel and therefore considered an
15 intermittent resource.

16 **Q. How do these factors apply in determining the avoided cost price paid to an**
17 **intermittent QF project?**

18 A. The factors discussed above with respect to QFs also generally apply to renewable QF
19 projects. For example, with respect to a wind project, performance is based on
20 mechanical turbine availability as well as wind performance (speed and variability).
21 The probability that the wind resource may not be available when needed to meet
22 peak load is significant. As a result, a separate calculation of planning reserve
23 contribution is required and should reflect the variability of wind generation during

1 the system peak. Several factors drive the measure of wind's capacity contribution to
2 PacifiCorp's system. The first of these factors is site performance. For example,
3 wind speed and duration are characteristics which directly impact site generation and
4 the capacity factor of a particular wind site. Second, seasonal and time-of-day
5 patterns determine wind contribution during peak hours. Third, the composition of
6 the existing resource mix as well as volatility in area system loads and resources
7 affect how wind's capacity contributes to the Company's system.

8 **Q. How should the avoided cost for an intermittent resource such as wind QF be**
9 **determined?**

10 A. The Company proposes an adjustment procedure for calculating the wind resource
11 avoided cost, which I have attached as PacifiCorp Exhibit No. 1 for a generic wind
12 project. This procedure is the same as proposed by PacifiCorp in Utah Docket No.
13 03-035-14. The only difference is the initial methodology for each jurisdiction. In
14 this case, I have applied the adjustments to the published avoided cost prices per the
15 Commission Order 29646 to illustrate the adjustments for a wind resource.

16 **Q. How should capacity payments be determined and structured for wind QF**
17 **projects?**

18 A. Under the Company's proposal, the Company will pay twenty (20) percent of the
19 avoided capacity costs as determined using the Commission approved avoided cost
20 methodology for QFs. The twenty percent capacity payment covers capacity
21 contribution only and does not include other costs or adjustments. The Company
22 proposes that a wind QF resource receive a volumetric price structured as on-peak and
23 off-peak prices where the 20 percent capacity payment would be included only within

1 on-peak hours. The wind QF receives the 20 percent capacity payment in the on-peak
2 energy price assuming they maintain a 35 percent wind capacity factor through the on-
3 peak period. A 35 percent wind capacity factor was selected as a reasonable estimate
4 of the annual on-peak capacity factor of a proxy wind resource. A wind plant is
5 “fueled” by the wind, which blows steadily sometimes and not at all other times.
6 While utility-scale wind turbines are now designed to be available a high percentage
7 of the time, they often run at less than full capability due to wind availability.
8 Therefore, a wind capacity factor of 25 percent to 40 percent is not uncommon and
9 this range has been documented throughout the wind industry.

10 **Q. What other adjustments or factors are appropriate for consideration in pricing**
11 **for wind QF projects?**

12 A. Wind integration cost and its components have been previously described and
13 explained in my testimony. Avoided costs should be reduced by the Company's cost
14 to integrate the wind energy delivered into its system. Current estimated cost of wind
15 integration is \$4.64 per MWh, but it must be recognized that the magnitude of the
16 costs are strongly dependent on the amount of wind already connected to a system or
17 subsystem, and the size of the system into which the wind interconnects.. The second
18 adjustment should be made in the event that the resource exceeds the load. This
19 adjustment should reflect any transmission constraints or transmission upgrades
20 necessary to move the QF power from the point of receipt where it is excess of the
21 load pocket to a point of use for serving network load. The adjustment would be a
22 reduction in the price paid per MWh for the QF power due to backing off of Company
23 low cost resources when the resource exceeds the load or the QF could pay for the

1 transmission upgrade cost to move the power.

2 **Q. Are the other actions that should be undertaken if a temporary stay is ordered?**

3 A. Yes. The Company also recommends an analysis be conducted to assess the total
4 amount of additional wind resources the Company's system in Idaho can absorb at the
5 above stated costs, without adversely affecting the Company's overall power supply
6 costs and system reliability. Such an effort should take into account the effects of
7 both proposed RFP and QF wind projects and include the impact, if any, of load
8 pockets and transmission constraints.

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

10 A. Yes it does.

Case No. IPC-E-05-22
Exhibit No. 1
Witness: Bruce W. Griswold

BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

PACIFICORP

Exhibit Accompanying Direct Testimony of Bruce W. Griswold

Procedure for QF Wind Pricing

July 2005

Wind QF Pricing Procedure

The Company's wind pricing procedure is outlined below:

1. The Company will pay 20% of the Company's Commission approved avoided capacity costs.
2. Wind resources would receive a volumetric price based on on-peak and off-peak prices.
3. The 20% capacity payment is included solely within on-peak hours assuming that the wind QF is on an annual average, a 35% on-peak capacity factor resource.
4. Avoided costs would be reduced by the Company's wind integration costs.
5. Load pocket / transmission constraint adjustments would be treated on a project-by-project basis.

In this example we use the avoided cost components from the AVOIDED COST CALCULATION MODEL that went into the Commission approved avoided costs for QFs from Order 29646. For the purposes of illustration, Table 1 is prepared for 2005 through 2024. This description is only intended to describe the type of calculations that will be necessary to accomplish the pricing adjustments mentioned above.

Table 1
 Column Description

A	Year
B	TILTED CAPITAL from AVOIDED COST CALCULATION MODEL
C	Fixed O&M from AVOIDED COST CALCULATION MODEL
D	Wind Capacity Adjustment at 20% assuming an adjustment from a 92% SAR CCCT Capacity Factor to a 35% Wind Capacity Factor
E	Variable O&M from AVOIDED COST CALCULATION MODEL
F	FUEL from AVOIDED COST CALCULATION MODEL
G	Wind Integration Cost – The wind integration cost start at \$4.64/MWh and escalate at inflation rate of 2.5% to simplify the example, the actual inflation rate to be used is in provided in the IRP Table C.1.
H	Off-Peak Price
I	On-Peak Price

Table 1 is a summary showing the annual on-peak and off-peak prices with adjustments for wind capacity contribution and wind integration costs.

Where:

- Wind Capacity Adjustment is the sum of TILTED CAPITAL (Col B) and Fixed O&M (Col C) adjusted from the SAR CCCT 92% capacity factor to the wind 35% capacity factor times 20% and adjusted for on-peak hours only.
- Off-peak Price (Col H) is the sum of Variable O&M (Col E), FUEL (Col F) and Wind Integration Cost (Col G).

- On-peak Price (Col I) is the sum of Wind Capacity Adjustment On-Peak (Col D) and Off-peak Price (Col H)

Table 1

A	B	C	D	E	F	G	H	I
WIND VOLUMETRIC FIXED PRICES								
YEAR	TILTED CAPITAL	Fixed O&M	Wind Capacity Adjustment On-Peak (1)	Variable O&M	FUEL	Wind Integration Cost	Off-Peak Price (2)	On-Peak Price (3)
2005	9.65	1.52	10.30	3.20	37.04	(4.64)	35.60	47.41
2006	9.85	1.56	10.52	3.29	37.89	(4.76)	36.42	48.50
2007	10.06	1.60	10.75	3.37	38.77	(4.87)	37.27	49.62
2008	10.27	1.64	10.98	3.47	39.66	(5.00)	38.13	50.75
2009	10.48	1.69	11.22	3.56	40.57	(5.12)	39.01	51.92
2010	10.70	1.73	11.47	3.65	41.50	(5.25)	39.91	53.11
2011	10.93	1.78	11.72	3.75	42.46	(5.38)	40.83	54.33
2012	11.16	1.83	11.98	3.85	43.43	(5.52)	41.77	55.58
2013	11.39	1.88	12.24	3.96	44.43	(5.65)	42.74	56.85
2014	11.63	1.93	12.51	4.07	45.46	(5.79)	43.73	58.16
2015	11.87	1.98	12.78	4.18	46.50	(5.94)	44.74	59.50
2016	12.12	2.03	13.06	4.29	47.57	(6.09)	45.77	60.86
2017	12.38	2.09	13.34	4.40	48.66	(6.24)	46.83	62.26
2018	12.64	2.14	13.63	4.52	49.78	(6.40)	47.91	63.69
2019	12.90	2.20	13.93	4.65	50.93	(6.56)	49.02	65.15
2020	13.18	2.26	14.24	4.77	52.10	(6.72)	50.15	66.65
2021	13.45	2.32	14.55	4.90	53.30	(6.89)	51.31	68.18
2022	13.73	2.39	14.87	5.03	54.52	(7.06)	52.50	69.75
2023	14.02	2.45	15.19	5.17	55.78	(7.24)	53.71	71.35
2024	14.32	2.52	15.53	5.31	57.06	(7.42)	54.95	72.99

(1) Calculated by (Tilted Capital + Fixed O&M) x 20% x (92% / 35%) / 57%

Where:

(Tilted Capital + Fixed O&M) are as calculated in the SAR model

20% is the Wind's capacity adjustment

(92% / 35%) Adjust from a 92% SAR CCCT Capacity Factor to a 35% Wind Capacity Factor

57% is the percent of on-peak hours

(2) Calculated as Variable O&M plus Fuel plus Wind Integration Cost

(3) Calculated as Wind Capacity Adjustment On-Peak plus Off-Peak Price