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TO: The Idaho Public Utilities Commissioners

FROM: John F. Gardner, Ph.D., P.E., Professor of Mechanical Engineering
2700 Harmony St., Boise, ID 83706
208.336.0767
jfgardner@cableone.net

IDAHO PUBLIC
UTILITIES COMMISSION

RE: PAC-E-07-07

Date: 21 September 2007

I offer these comments regarding the above-referenced case currently before the commission dealing with the future of wind energy projects under the provisions of the federal PURPA law.

I am a professor of mechanical engineering, currently at Boise State University, but have been a professor for over 20 years with more than 50 referred publications and 2 textbooks to my name. For the past 4 years, my research has been focused on wind turbine technology. Most recently, my team has been focusing on local energy storage for wind farms, a technology that has the potential for mitigating the intermittency problems which lie at the root of the cases you now consider.

I am considered an expert in dynamic modeling of energy systems and I have a thorough understanding of the intricacies involved in the issues presented here. I have read the wind integration studies offered by the utilities as well as several others commissioned throughout the country in the past years.

I have no financial interest (that I know of) in a wind farm, current or planned. Neither am I a shareholder (to the extent that I'm aware, some of my retirement investments may well hold some stock in one of the utilities) in any of the companies who are party to the complaint.

I offer my comments as a state employee who has particular expertise in the matter in front of the commission and I do so in a sincere attempt to be impartial and unbiased.

PacifiCorp's request asks that the current limit of 100kW for wind-powered projects governed by the PURPA rules be restored to 10 MW under a number of conditions. I would like to address the request of this petition point-by-point, but first let me comment on the overall request.

The lowering of the cap for wind-powered PURPA projects to 100kW effectively halted all development of small wind farms in the state of Idaho. This seems to run counter to the current Idaho Energy plan (2007) which calls for, among other

things, the protection of "Idaho's public health, safety and natural environment and conserve Idaho's natural resources" (objective 3) and the promotion of "sustainable economic growth, job creation and rural economic development" (Objective 4). In addition, the development of wind-powered projects under the provision of PURPA promotes a distributed, diverse and robust power generation system in Idaho. Finally, as the country and the world moves toward a system of constraining the way in which carbon dioxide is introduced into the atmosphere, we should be embracing and encouraging the development of energy systems not subject to the inevitable constraints (and related price increases) that will be placed on fossil fuels. I would welcome the granting of this request.

Now I'll comment on the conditions requested by PacifiCorp.

Condition 1: Reducing the published avoided cost rates applicable to purchases by Rocky Mountain Power of electric power from wind-powered QFs by \$5.04 per MWh, which amount represents the inflation-adjusted integration costs of that wind power, to be applied against published avoided cost rates except in those circumstances where the QF developer agrees in the power purchase agreement with Rocky Mountain Power to deliver QF output to Rocky Mountain Power on a firm hourly schedule;

This condition, charging a \$5.04/MWhr integration fee, stands in stark contrast to the requests of the other two investor-owned utilities currently doing business in Idaho. It amounts to roughly one-half of the fees requested by Avista and Idaho Power and is much more in line with the costs of integration found by studies throughout the country. While it's a bit higher than similar fees across the country, it is the most reasonable and defensible of the proposals put forward by the three investor-owned utilities related to this issue.

Condition 2: Removing the requirement that the 90%/110% performance band be applied to purchases from wind-powered QFs;

On the elimination of the 90/100 rule, most people are in complete agreement. My colleagues involved in wind energy research (not commercial operations) across the country are perplexed and troubled by the existence of this requirement. It requires that small wind farm operators (spanning in size from the approximately 300 kW Lewandowski Farm to the 10.5 MW Fossil Gulch installation) predict the wind conditions 4 to 6 months in advance. Anyone who watches the nightly weather report and looks out the window the following morning understands the impossible nature of that requirement.

Therefore, I would argue that the rule should be eliminated regardless of the other actions by the commission. It provides no real value to the utilities or the QF operators and serves only to penalize the operators of small wind farms, and does so in an arbitrary and unpredictable manner.

I concur with the request that the rule be eliminated.

Condition 3: Authorizing Rocky Mountain Power to purchase state-of-the-art wind forecasting services to provide Rocky Mountain Power with forecasted wind conditions in those geographic areas in which wind generation resources are located, provided that QFs will reimburse Rocky Mountain Power for their share of the on-going cost of the wind forecasting service, in proportion to their percentage share of the wind-generator capability being supplied to Rocky Mountain Power from that area;

It's important to note that, according to the best experts in the field of wind forecasting, the best current predictor of wind is persistence. That is, your highest chance of being correct in prediction what the wind will do in the next hour is to say that it will continue to do what it has been doing in the previous hour. Clearly, such a prediction is often wrong, yet we can do no better than that.

Therefore, it is unclear that such 'state of the art' forecasting models are effective enough to justify their cost. That said, this condition is less vague than the similar request from Avista and Idaho Power. It does not limit the use of wind forecasting tools to PURPA projects and is more explicit about how the costs would be computed. However, I believe the utilities need to make a better case and be more explicit about both the efficacy of these models, the actual costs associated with them, and how they are to be charged.

Condition 4: Requiring QFs to deliver a "mechanical availability guarantee" to Rocky Mountain Power to demonstrate monthly, except for scheduled maintenance and events of force majeure or uncontrollable force, that the QF was physically capable and available to generate a full output during 85% of the hours in a month;

This request seems both reasonable and prudent.

Condition 5: Clarifying the rules governing the entitlement to published rates to prevent all QFs, whether wind or non-wind, capable of delivering more than 10 aMW per month from structuring or restructuring into smaller projects for the purpose of qualifying for the published avoided cost rates.

This point deals with legal and business issues which lie far outside my expertise.

Condition 6: Clarifying that the cap on entitlement to published avoided 'Cost rates shall be restored to 10 aMW only until PacifiCorp's renewable targets for each calendar year in the most recently acknowledged Integrated Resource Plan are met.

Having insufficient time to study this particular issue (for example, what are the current targets? How often are they adjusted?) I am unable to offer an informed opinion on this point.

In closing, I respectfully remind the commissioners of the 2007 Idaho Energy plan, which calls for the following actions:

1. Idaho utilities should acquire reliable, diverse, cost effective and environmentally sound resource portfolios sufficient to meet their customers' long-term electricity needs.
2. Idaho utilities should have access to a broad variety of resource options consistent with Idaho's policy objectives, including both renewable and conventional resources.
5. When acquiring resources, Idaho and Idaho utilities should give priority to: (1) Conservation, energy efficiency and demand response; and (2) Renewable resources; recognizing that these alone may not fulfill Idaho's growing energy requirements.
7. It is Idaho policy to encourage the development of customer-owned and community-owned renewable energy and combined heat and power facilities.
10. Idaho and Idaho utilities should encourage technologies that minimize emissions of harmful pollutants and consumptive use of water.
11. Idaho and Idaho utilities should prepare for the possibility of federal regulation of greenhouse gas emissions.

Clearly, any policy that encourages the development of wind farms in Idaho is consistent with all of these policy goals. Conversely, policies which discourage, or preclude the economic viability of, wind farms in Idaho stand in direct conflict with these goals.

Finally, I encourage the commission to take a long view in debating these requests. The question we should ask is: What path will lead to lower power rates 5 or 10 years from now? Like any prudent investment portfolio, an approach in which geographic, fuel source and ownership is diversified is the most conservative and safest approach.

I would be pleased to make myself available to the Commissioners or the staff of the Public Utilities Commission at any time in the future.

Sincerely,



John F. Gardner, Ph.D., P.E.
Professor of Mechanical & Biomedical Engineering