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United States Senate

COMMITTEE ON ENERGY AND NATURAL RESOURCES

WASHINGTON, DC 20510-6150

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June 19, 2008

SIMILAR TO #08-0067

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Stephen J. Wright
Administrator
Bonneville Power Administration - A-7
905 NE 11th Ave
Portland, Oregon 97232

Dear Administrator Wright:

Your willingness to appear before the Senate Committee on Energy and Natural Resources on Tuesday, to give testimony on the challenges and regional solutions to developing transmission for renewable electricity resources was very much appreciated.

Members and staff were most interested in your statement and testimony. Enclosed, is a list of questions, which have been submitted for the record. If possible, please respond to these by Thursday, July 3, 2008.

Sincerely,



Jeff Bingaman
Chairman

**Questions for Stephen Wright
Bonneville Power Administration**

Committee on Energy and Natural Resources Hearing- June 17, 2008

Questions from Senator Domenici:

- 1) BPA started adding wind resources to its system about a decade ago. Initially, Bonneville was able to use the federal hydropower system to shape the load but I understand that this is no longer possible due to competing non-power demands on the hydropower system. Please elaborate.
- 2) In general, is it advisable to mandate a transmission line to carry only renewable resources? Given the capacity factor issues, shouldn't the construction of facilities needed to deliver wind also be available to deliver the back-up power and move other energy when the wind is not blowing?
- 3) The intermittent nature of renewable resources like wind present some challenges. How far off are future technological advances, such as electricity storage and better wind forecasting, which could help address some of these challenges?
- 4) With the National Interest Electric Transmission Corridor process established in EPAct 2005, Congress sought to address the critical issue of transmission siting. However, at this time, these provisions haven't been fully implemented and no line as been sited pursuant to EPAct. Nevertheless, the NIETC process has been contentious.

I was surprised then to read some testimony – including that from Mr. Pickens and Mr. Freeman with the WIA – that suggested these Energy Policy Act authorities did not go far enough. Mr. Pickens goes so far as to call on Congress to provide FERC with exclusive jurisdiction to site new transmission for a renewable project. Please comment.

- 5) BPA's Open Network Season was a tremendous success. What are your next steps?

Questions from Senator Smith:

JOE Implementation

BACKGROUND

In 2000, Congress passed the Joint Operating Entity (JOE) legislation (PL 106-273) which amended the Pacific Northwest Electric Power Planning and Conservation Act. This 2000 Act requires the Bonneville Power Administration (BPA) to sell preference power to a qualifying JOE. The intent of the Congress was to establish a new type of

eligible preference customer, a JOE, which could aggregate its members' contracts for the purchase of power from BPA into a single contract. Congress wanted the JOE and its member utilities, which are preference customers of BPA, to have the opportunity to join together to meet their retail load power needs in a more efficient, cost-effective manner. In BPA Administrator Judith Johansen's 3-29-00 response to Rep. John Dingell's 1-19-00 letter regarding the JOE legislation, the Administrator stated "(g)enerally, customers might realize such benefits as reduction in administrative staff, reduction in legal fees, combinations of operations and maintenance work, or optimized use of the interconnected transmission and distribution systems. Pooling would also provide the utilities with greater opportunity to better manage the use of, addition to, or sales from non-BPA resources than they could individually." Pooling of geographically diverse loads and resources under one contract is one mechanism for a JOE to optimize the use of the interconnected transmission system; for example, sinking resources to its geographically diverse load is one way to minimize transmission costs.

As the region moves forward with new long-term contracts, one primary goal of the Regional Dialogue is to encourage utilities to develop resources. "Having willing utilities responsible for resource acquisition decisions also enhances competition in the marketplace and spreads risk." (Regional Dialogue Policy, page 6)

QUESTIONS

- 1) How does BPA's Regional Dialogue process, including the Tiered Rates Methodology and the new Regional Dialogue power contracts, facilitate a JOE's ability to develop new power resources?
- 2) The 2000 Act states that BPA 'shall' sell wholesale power to a JOE. How is BPA implementing the various components of the Regional Dialogue to ensure the statutory benefits of the JOE legislation intended by Congress remain intact?
- 3) Do BPA's Regional Dialogue scheduling policies advance the goals of PL 106-273 and the Regional Dialogue, regarding resource development? And are they consistent with how BPA treats its own resources, that is, in the most efficient and cost-effective manner possible?

Residential Exchange Program

BPA has drafted a proposal in which preference utilities will be asked to give up their right to exchange power under the Residential Exchange Program (REP) (established by section 5(c) of the Regional Act), in order to sign new Regional Dialogue contracts. Without rights to participate in the REP, the economics of new resource acquisition and development by preference utilities is dependent on the continuing existence of tiered rates during the term of the contract.

- 1) What assurances can BPA give to those utilities that sign Regional Dialogue contracts and forego their exchange rights that there will be no melding of Tier 1 and Tier 2

costs during the contract term (2028) and that there will be a transparent separation of Tier 1 and Tier 2 costs?

- 2) During the term of these contracts, does BPA plan to combine the costs of new and existing resources, offer melded rates, or allow other preference customers to exchange new resource costs with BPA?
- 3) What options has BPA examined to allow preference customers to retain exchange benefits?

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**Questions for Stephen Wright
Bonneville Power Administration**

Committee on Energy and Natural Resources Hearing - June 17, 2008

Questions from Senator Domenici:

- 1) BPA started adding wind resources to its system about a decade ago. Initially, Bonneville was able to use the federal hydropower system to shape the load but I understand that this is no longer possible due to competing non-power demands on the hydropower system. Please elaborate.**

Response: The Columbia River serves multiple purposes besides power generation, including flood control, irrigation, and navigation as well as fisheries mitigation and enhancement. These purposes have system operation requirements that limit the optimization of river operations for power generation.

The recent growth of wind generation in BPA's control area comes at a time when the federal hydropower system is being further constrained by storage and operation requirements to facilitate anadromous fish migrations. Those requirements, established in response to the Northwest Electric Power Planning and Conservation Act of 1980 and the Endangered Species Act of 1973, prescribe periods of time when water must be spilled, rather than run through dam turbines, and flow volume requirements that must be met through seasonal reservoir storage.

These spill and storage operations have reduced the flexibility of the hydropower system to meet peak demands and to follow load. As your question points out, this was not as much of a concern when wind generation began to be added to BPA's control area. Now, with 1,500 MW of wind generation that can appear or disappear quickly, BPA's hydropower system that operates at an average of 9,000 MW is straining within the non-power constraints to fill in for the intermittent wind.

We are continuing to actively seek solutions to this challenge that facilitate the growth of the wind resource while keeping the cost of integrating wind output with the rest of the generation system as low as possible, and while also meeting system reliability and fish protection requirements. Currently, the primary venue for this effort is the Wind Integration Team which we committed to form and fund as part of a recent rate case settlement.

- 2) In general, is it advisable to mandate a transmission line to carry only renewable resources? Given the capacity factor issues, shouldn't the construction of facilities needed to deliver wind also be available to deliver the back-up power and move other energy when the wind is not blowing?**

Response: Limiting a transmission line to carry only renewable energy would likely undermine the cost-effectiveness of construction. The ability of a line to support a diversity of resources would improve its capacity factor and its cost recovery and would also be consistent with open access.

3) **The intermittent nature of renewable resources like wind present some challenges. How far off are future technological advances, such as electricity storage and better wind forecasting, which could help address some of these challenges?**

Response: Accurate wind forecasting is available today only over an extended time period; for example, expected average output over a year. Utilities operate from what is often called “real time,” which means the actual operating hour that wind is occurring (the time domain of a transmission operator or regional transmission organization) to next hour and a day ahead (and longer) that is the time domain of the generation side of a utility or Independent System Operator (ISO).

Accurate within the hour “real time” wind forecasts are not yet commercially available. These forecasts are about being able to anticipate sudden changes in wind generation. Large changes in wind energy are difficult to predict and are important to predict for effective integration of wind operations and utility operations. The lack of forecast capability, when the wind is currently generating, has led to transmission operators increasing the amount of reserve generation. This has increased the integration costs for wind to connect to the grid to serve a contracted load. Several United States and European wind forecast vendors are developing prototype systems to forecast wind within the hour. Research supporting this development is being sponsored by BPA, DOE, California, and the European Union.

Wind forecasts for the next operating hour and operating day are improving. However, wind behavior is peculiar to regional geography (coastal, central, mountain), global wind influences (trade winds, jet stream), and terrain (river gorges, mountains, plains). An accurate wind forecast system that may work well in the Midwest (for example) may not work all that well if applied to California. Regardless, accurate wind forecasts a day ahead have become more accurate from what was available several years ago. An important note - day in advance wind forecasts are only able to forecast hourly average wind, which may have little benefit to manage wind within the hour – the time domain of the transmission operator.

Pumped storage (water) remains the storage leader for utility-scale application. However, it has locational and environmental issues. BPA’s Office of Technology Innovation has a 2007 comprehensive study on utility energy storage systems that may be the most up to date assessment of utility scale energy storage systems. We have included it as an attachment to our response (**Attachment 1**).

Prototype utility-scale energy storage devices are currently under development and field testing. The broad application of energy storage to support renewable intermittency has

yet to be achieved. The challenge is finding a technology that can fully charge and discharge tens of megawatts several times in every 10 minute period to support intermittency, and yet have sufficient life to recover costs and earn a rate of return. Several utility-scale systems are currently in service in the USA, but they are small and only economic when applied in specific situations.

BPA's Technology Innovation Office, in partnership with California and DOE's National Laboratories, is in the second year of a three year research effort to see if flywheel technology can be scaled up to meet the wind integration demands. Several other storage technologies are showing promise such as Sodium Sulfide (NaS) batteries.

- 4) With the National Interest Electric Transmission Corridor process established in EAct 2005, Congress sought to address the critical issue of transmission siting. However, at this time, these provisions haven't been fully implemented and no line as been sited pursuant to EAct. Nevertheless, the NIETC process has been contentious.**

I was surprised then to read some testimony – including that from Mr. Pickens and Mr. Freeman with the WIA – that suggested these Energy Policy Act authorities did not go far enough. Mr. Pickens goes so far as to call on Congress to provide FERC with exclusive jurisdiction to site new transmission for a renewable project. Please comment.

Response: The currently designated National Interest Electric Transmission Corridors are in other parts of the nation than the Pacific Northwest. BPA has been able to site new transmission lines successfully in this region, including recent major additions of 500-kV capacity.

BPA's statutory authorities allow it to acquire interests in land to site transmission lines, including the authority for eminent domain. BPA has been able to site new transmission lines in the Pacific Northwest working through public processes with federal, state, tribal and local governments as well as private landowners. We have also been able to construct transmission in sensitive environmental areas. For example, we were able to construct new transmission reliability in the City of Seattle's watershed, winning the support of the City Council and environmental groups. BPA does not have a position on additional transmission siting authority for FERC.

- 5) BPA's Open Network Season was a tremendous success. What are your next steps?**

Response: BPA was pleased by the customer response to its first Network Open Season. By June 27, 27 customers had provided security deposits for 153 Precedent Transmission Service Agreements (PTSA) for a total of 6,410 megawatts (MW) of service. Most of those PTSAs were associated with wind development.

Now that BPA has received the security payments, it will determine what existing long-term firm capacity can be granted to the PTSAs and begin the cluster study to evaluate transmission needs and facility requirements where capacity is not available. Once the cluster study is complete, then BPA will know what transmission facilities are needed to meet the requests for service. BPA will use its financial model to evaluate the results of the cluster study to determine the potential rate impacts. BPA will need to complete all National Environmental Policy Act requirements before starting new construction.

Questions from Senator Smith:

JOE Implementation

BACKGROUND

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As the region moves forward with new long-term contracts, one primary goal of the Regional Dialogue is to encourage utilities to develop resources. "Having willing utilities responsible for resource acquisition decisions also enhances competition in the marketplace and spreads risk." (Regional Dialogue Policy, page 6)

QUESTIONS

- 1) How does BPA's Regional Dialogue process, including the Tiered Rates Methodology and the new Regional Dialogue power contracts, facilitate a JOE's ability to develop new power resources?

Response: Ensuring adequate infrastructure development is one of our primary goals in the Regional Dialogue contracts. In line with that goal, we have focused intently on making it practical for our customers to develop their own resources to meet their load growth. The new Regional Dialogue contracts and Tiered Rate Methodology (TRM) will facilitate a JOE's ability to develop new power resources in a number of major ways. First and foremost, they will remove a barrier that would otherwise be nearly insurmountable – BPA's past practice of meeting customers' load growth at melded rates. When new resource costs are far in excess of BPA melded rates, this practice makes resource development by customers economically impractical. Second, BPA is offering to provide at-cost services to back up and reshape the output of customer-acquired resources, making it much easier and more practicable for customers to add their own resources. Third, BPA has agreed to pay for transmission of customers' new resources over third party transmission systems. Fourth, BPA has committed to not use its existing system resources to advantage its own sales of power for load growth over customers' own resources. Fifth, BPA has taken steps to give customers ample time to decide between adding their own resources and buying from BPA to meet their load growth, so they are not rushed into a premature choice. Sixth, BPA will provide flexibility in how customers schedule power from their own resources to their loads, in order to reduce the delivered costs of those resources, so long as these flexibilities do not create costs for other customers. These are just some of the steps BPA is taking to facilitate resource development by a JOE, and by other customers.

2) The 2000 Act states that BPA 'shall' sell wholesale power to a JOE. How is BPA implementing the various components of the Regional Dialogue to ensure the statutory benefits of the JOE legislation intended by Congress remain intact?

Response: As a qualified customer of BPA, a JOE will continue to be able to purchase an amount of power for its members' aggregated load service from BPA, similar to how BPA currently sells power to PNGC Power (PNGC). We have invested substantial time and effort into minimizing the extent to which Energy Northwest bond requirements constrain PNGC's future purchase relationship with us, and believe that effort has been largely successful. We are now in the midst of intensive efforts to work out contractual and rate provisions as they apply to PNGC and other JOEs, so it is premature to answer this question definitively, but we are seeking to preserve the statutory benefits of JOE status under the new contractual relationship and expect to be successful. If there are specific concerns about this, we would be happy to address them.

3) Do BPA's Regional Dialogue scheduling policies advance the goals of PL 106-273 and the Regional Dialogue, regarding resource development? And are they consistent with how BPA treats its own resources, that is, in the most efficient and cost-effective manner possible?

Response: Yes, we believe the approach to resource scheduling in the Regional Dialogue is consistent with PL 106-273 and the Regional Dialogue. Specifically, BPA is offering scheduling services on behalf of customers who add their own new resources,

thereby removing one of the primary potential barriers to customer resource addition. We have also indicated to PNGC, which is the only JOE with which we have a contract now, that we will provide them scheduling flexibility for their new resources, limited only by the need to ensure that it does not impose costs on other BPA customers. We must also ensure that the scheduling policies/provisions ensure that implementation of the agreement is workable, though we do not expect that to be a significant impediment. Given the importance you place on this matter, we will highlight this issued in the contract negotiations with PNGC and other customers, who could be impacted by the offering of the services.

This treatment may not be entirely consistent with how BPA treats its own Tier 2 resources because BPA must deliver those resources to preference customer loads wherever they are located, and cannot necessarily avoid incremental scheduling challenges across constrained paths by netting new resources against existing load.

Residential Exchange Program

BPA has drafted a proposal in which preference utilities will be asked to give up their right to exchange power under the Residential Exchange Program (REP) (established by section 5(c) of the Regional Act), in order to sign new Regional Dialogue contracts. Without rights to participate in the REP, the economics of new resource acquisition and development by preference utilities is dependent on the continuing existence of tiered rates during the term of the contract.

- 1) What assurances can BPA give to those utilities that sign Regional Dialogue contracts and forego their exchange rights that there will be no melding of Tier 1 and Tier 2 costs during the contract term (2028) and that there will be a transparent separation of Tier 1 and Tier 2 costs?**

Response: In the Tiered Rates Methodology BPA set forth a number of principles that guide the allocation of costs. In particular, Principles 2 and 3 provided as follows:

- 2) Tier 1 Costs will be kept separate and distinct from Tier 2 Costs. Tier 1 Costs will be recovered through the Tier 1 Rates. Tier 2 Costs will not be recovered through the Tier 1 Rates except when necessary to ensure BPA's cost recovery during the Rate Period or to conform to court order.
- 3) Individual Tier 2 Cost Pools are to be kept separate from one another; customers paying the cost of one Tier 2 Cost Pool will not be responsible for paying the cost of another Tier 2 Cost Pool.

BPA's intent in determining the costs included in individual Tier 2 Cost Pools is that the costs and cost of risk faced by each customer that elects a particular Tier 2 Rate Alternative will reflect BPA's incremental cost of serving the customer and will be comparable to the types of costs and risks the customer would face if purchasing from a non-Federal source.

These principles are being implemented through extensive provisions in the TRM. BPA has expended extensive effort to give customers the greatest possible assurance that these TRM provisions will be observed for the full duration of the new contracts. Sections 12 and 13 of the draft TRM are largely devoted to providing customers with protections against changes in these TRM provisions over the 20-year life of the contracts, as are related sections of the draft contracts.

While we believe these provisions provide substantial protection against Tier 2 costs migrating to Tier 1, we always reserve the right to collect otherwise unrecoverable costs in Tier 1. This is necessary to assure that U.S. taxpayers are not burdened with inappropriate costs.

2) During the term of these contracts, does BPA plan to combine the costs of new and existing resources, offer melded rates, or allow other preference customers to exchange new resource costs with BPA?

Response: BPA does not plan on combining the costs of new and existing Federal resources when it sets its power rates, except for an identified and very limited amount of resources acquired to augment the Federal system, as defined in the July 2007 Regional Dialogue Policy. Beyond this limited augmentation, the costs of energy from Federal resource acquisitions made after September 30, 2006, will be allocated to particular Tier 2 cost pools and will not be added to the set of Tier 1 System Resources.

BPA will provide Load Following customers with a limited opportunity to select a Shared Rate Plan (SRP). Participants in this plan will be subject to the same tiered rate structure as other customers, but their bills will be averaged after charges are calculated for each customer. BPA plans on limiting the participation in the SRP to less than 10 percent of total preference sales.

Under the Regional Dialogue contracts, there is no provision that would allow preference customers to exchange the costs of new non-federal resources with BPA. Customers who wish to exchange the costs of new resources will not have the opportunity to sign a Regional Dialogue contract, and would not receive a high water mark. Such customers would be offered a contract at some point in the future. The terms and conditions of such alternative contracts have not been defined, in part because of the expectation that all or virtually all customers will sign the Regional Dialogue contracts.

3) What options has BPA examined to allow preference customers to retain exchange benefits?

Response: BPA believes that the ability to exchange resources under the Residential Exchange Program is incompatible with the concept of tiered rates, and is likewise incompatible with the customers' strong desire to keep the costs of the resources BPA acquires for service at the Tier 2 rate out of the Tier 1 rate. In the Regional Dialogue Policy BPA stated:

The cornerstone of the Regional Dialogue Policy is to limit BPA's sales of firm power at the lowest cost-based rates to approximately the firm capability of the existing Federal system. Customers may purchase additional Federal power, but it will be priced at a Tier 2 rate based on the marginal cost of serving the additional load. The costs of power acquired to serve load subject to a Tier 2 rate will be kept as low as possible; however, BPA will not subsidize Tier 2 rates to create a financial advantage over a non-Federal resource.

This goal of keeping the costs of new resources separate from the costs of the existing system would be thwarted if customers' higher-cost new acquisitions were to flow back to the Tier 1 rate through the Residential Exchange Program.