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Susquehanna River Basin Commission

a water management agency serving the Susquehanna River Watershed

August 22, 2011

Mr. Terry L. Harpster
VP-Bell Bend Project-Development
PPL Bell Bend, LLC
38 Bomboy Lane, Suite 2
Berwick, PA 18603

Re: PPL Bell Bend Nuclear Power Plant;
Avoidance of Consumptive Use – BNP-2010-192;
Salem Township, Luzerne County, Pennsylvania

Dear Mr. Harpster:

The Susquehanna River Basin Commission (Commission) has reviewed the "Avoidance of Consumptive Use" submitted in the referenced correspondence which is a partial response to the Commission's letter dated March 1, 2010, commenting on the surface water withdrawal application submitted on May 15, 2009, by PPL Bell Bend, LLC. As noted in the narrative of the referenced correspondence, the following comments relate to compliance with 18 CFR §806.14(a)(2)(ix).

The Commission appreciates the depth of analysis of the air cooled condensers (ACC) compared to wet cooling systems and the resultant impact of turbine and generator performance. However, as acknowledged in the narrative of the referenced correspondence, there are inconsistencies between Enclosure 1 and Enclosure 2, as well as inconsistencies with the narrative. While acknowledging that some inconsistencies are inherent to different analytical approaches, some inconsistencies require resolution as noted below.

The Commission agrees that utilizing an ACC for Bell Bend Nuclear Power Plant (BBNPP) creates uncertainty and therefore financial risk because ACCs have not previously been used for nuclear power plants or large conventional power plant units, and extrapolation of the technology to the scale required for BBNPP may entail unseen technological problems. The Commission also acknowledges that increased turbine back pressure resulting from utilizing an ACC may impact turbine generator performance beyond the analysis in Enclosure 2 of the referenced correspondence.

The analyses use mitigation fee payments of $0.28 per 1,000 gallons of water as an indication of cost of mitigation makeup water. Although the Commission does allow mitigation fee payments as an option for smaller projects, the water storage controlled by the Commission is

not sufficient to support the mitigation makeup water for a project as large as BBNPP. For that reason, as noted in previous correspondence, consumptive use mitigation fee payments are not a viable option for the BBNPP project. The cost of providing actual mitigation water, perhaps using an analysis of costs related to your proposed pooled asset concept, should be used. Also, PPL should not assume that the $0.28 per 1,000 gallons of water is an appropriate cost figure to provide mitigation makeup water. The Commission increased this fee to $0.29 as of July 1, 2011, one of several increases over the last few years, and will most likely continue these increases during the term of any approval as the costs of providing storage continue to escalate.

There are inconsistencies between Enclosure 1 and Enclosure 2 that should be resolved. In Enclosure 1, Attachment A; there is reference to a power reduction penalty for ACC of several percentage points. The study in Enclosure 2 defines the power reduction penalty as 2% which appears to be more accurate based on the engineering analysis. Also in Attachment A, there is an assertion that ACCs require more space than the 15 acres allocated to the wet cooling design. Enclosure 2 states that ACCs for BBNPP will require 10 acres and 15 acres would be adequate to accommodate an ACC design.

Comments on Enclosure 1, Attachment C, Table 1 are as follows:

1. In the "Footprint per Plan Unit" column, the entry for dry cooling should be 15 acres as stated in the engineering study in Enclosure 2.
2. In the "Auxiliary Load Difference" column, the entry for dry cooling should be 13.5 megawatts (MW) which is the auxiliary load difference cited in Enclosure 2, Section 5.1.
3. In the "Annual O&M Cost" column, the cost for maintaining the natural draft cooling towers is not zero. A cost figure should be generated and subtracted from all the other options to calculate a difference between the natural draft option and the other options, as stated in Note (a).
4. In the "Annual O&M Cost" column, Note (e) asserts that O&M for dry cooling will be 1% or 2% of the capital cost. The relationship between capital costs and O&M costs needs to be validated. Also, the 2% figure was used which is inconsistent with the conservative analytical approach used in the engineering study in Enclosure 2. The 1% figure should be used in Table 1.
5. In Note (b), the 8% cost of money is inconsistent with the 7% discount factor used in the analysis performed in Enclosure 2.
6. In Note (d), use of the $280 per million gallons of water is inappropriate as discussed above.

Enclosure 1, Attachment C, Table 2 presents an acceptable comparison of the cooling options.

In Enclosure 2, Section 1.0, the Commission has not indicated that use of the $0.28 per 1,000 gallons of water is an acceptable method to estimate the cost of makeup water for BBNPP, as discussed above.

In Enclosure 2, Section 3.1, last paragraph, the Commission does not have a requirement to store 90 days of water at the peak consumption rate. The current design consumptively uses up to 28 million gallons per day (MGD), and most likely there will be a requirement to provide water to meet a passby requirement that has not been established. For purposes of this study, reasonable capital costs and annual costs should be established to provide mitigation for the BBNPP makeup water. For the dry air cooling option, for purposes of this study, the $0.29 per 1,000 gallons of water cost plus an escalator figure is appropriate because of the reduced consumption.

Comments on Enclosure 2, Table 1 are as follows:

1. Contractor Indirects and Contractor Fee for the Air Cooled Condenser System (ACC) are considerably higher than the Existing Circulating Water System (ECWS) on a percentage of direct cost basis. What is the rationale for the difference?
2. Although the rationale was provided for the contingency calculation, the amount of contingency for the ACC option ($106,723,200) appears to be too high (30% of total cost).
3. The cost of providing "Offsite Water Storage" for the ACC of $48,000,000 is not consistent with the $400,000 cost in Enclosure 1, Attachment C, Table 1 which used the $0.28 per 1,000 gallons of water cost method. As discussed above, the amount of water required for BBNPP with an ACC system (0.3 MGD) is relatively small and therefore the use of $0.29 per 1,000 gallons of water plus an escalator is appropriate.
4. The "Capital Cost Difference" of $124,710,000 is significantly reduced based on the above comments.

In Enclosure 2, Section 6.0, further detail is required to understand how the present values were calculated for operating costs and capital costs. The $253,850,000 net present value of operating costs should be segregated into maintenance costs, increased auxiliary power, and power reduction opportunity costs with a breakdown of each segregation.

In summary, the Commission requires resolution of the inconsistencies between the two studies submitted in the referenced correspondence, and addresses the above comments. The costs for the two options should be consistent with regard to the time value of money and include all costs.

If you have any questions regarding the above comments, please contact Andrew Dehoff at (717) 238-0423, extension 221.

Sincerely yours,

Andrew D. Dehoff

Andrew D. Dehoff
Manager, Project Review

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