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December 23, 2008

Dr. Donald R. van der Vaart
Chief, Division of Air Quality
Department of Environment and Natural Resources
Parker-Lincoln Building
1641 Mail Service Center
Raleigh, NC 27699-1641

Dear Dr. van der Vaart:

Thank you for your letter dated December 17, 2008. Your letter noted that Duke Energy had submitted all items for completeness of the MACT application except for the requirements for zoning. In addition, your letter stated the State's preliminary determination to disapprove Duke Energy Carolinas' MACT application based on three specific issues.

In response to the zoning requirements for the MACT application, please note that on December 17, 2008, Duke Energy sent to Keith Overcash additional information related to zoning consistency. That transmittal included the file-stamped request letter Duke delivered to Cleveland County, the affidavit and proof of publication from the Daily Courier and two pictures of the sign posted at the Cliffside site, both for Rutherford County, which has no applicable zoning.

Duke Energy Carolinas is likewise aware of the Court's Order and 60-day timeline and appreciates the expeditious work on the matter.

Because DAQ has published a draft permit containing minor source HAP limits and has proposed to find that Cliffside Unit 6 is not a major source subject to Clean Air Act ("CAA") § 112(g), Duke Energy Carolinas urges DAQ to complete first the minor source determination and issuance of the permit with minor source limits before continuing additional work on this MACT process, which will have no application to Cliffside Unit 6 as a minor source of HAPs.

The three specific issues raised in your letter are repeated and addressed below.

- (1) Your analysis assumes a "better than 90%" removal efficiency of mercury. However, there is no basis given in your application for this assumption. Please provide documentation regarding the basis for your assumption of a "better than 90%" removal efficiency. In particular, given the importance of chlorine (Cl) content in the coal with respect to mercury removal, please specify and document the level of Cl in the coals that are available for you to burn at Cliffside Unit 6 and any limitations on the burning of any specific coals.

Because we believe this information has been provided in our submittal as well as in other documents that are on the record in previous submittals we have made to DAQ concerning MACT issues, we are requesting further clarification of what additional information DAQ is requesting at this time. Duke Energy did not assume that Cliffside Unit 6 would achieve *greater than 90%* removal efficiency of mercury. In fact, Duke Energy agrees with DAQ's apparent skepticism regarding guaranteed removal efficiencies *above 90%*. Duke Energy has relied upon a 90% removal efficiency in calculating MACT emission limits for mercury. As stated on page 17 of our letter of December 4, 2008:

Duke Energy felt it could utilize an assumed level better than that found by EPA to be demonstrated or achievable in practice, because the company has received a guarantee from its vendor reflecting that 90% assumption, under specified conditions, as discussed below.

In all of our calculations and representations, we have assumed a 90% removal efficiency which is based on our vendor guarantee. That guarantee is the best in the industry. Duke Energy is not aware of any other vendor offering a 90% removal guarantee, and we are aware of no vendor offering removal guarantees in excess of 90% removal. We provided documentation of the guarantee in Attachment 12 to our December 4, 2008 submittal. Note that Attachment 12 contains Confidential Business Information. As we have documented in our analysis, the assumed 90% removal is much greater than the 86.7% removal efficiency that EPA determined was demonstrated and achievable in their recent (2006) analysis of Best Demonstrated Technology (Attachment 11 -- Memorandum from William H. Maxwell). The vendor guarantee of 90% removal applies only during a single, initial performance test and provides no assurance that long term performance will meet that level of performance. However, Duke

Energy is confident that the design of the Unit 6 control system will be effective and 90% removal (but not more than 90%) is an achievable MACT level for this unit.

There are many factors which limit the ability to assume greater than 90% mercury removal when setting a MACT standard. Chlorine content of the coal is only one of these factors. However, DAQ has represented chlorine as the key parameter affecting mercury removal efficiency and has cited literature that suggested lower removal efficiency when chlorine in the coal is less than 1000 ppm. We have provided considerable documentation that chlorine in Eastern bituminous coal (the predominant fuel source expected for Cliffside Unit 6) may often fall well below 1000 ppm. This documentation includes data evaluated by EPRI from the 1999 Mercury ICR (Attachment 18), actual coal analyses obtained for coal received over the past two years at Duke Energy facilities in the Carolinas and in the Midwest (Attachment 23), and our evaluation of "parent" fuels that represent coal supplies that Unit 6 is designed to operate with and which Unit 6 may be expected to burn (Attachment 16 and the table on the third page of Attachment 3). We have also provided extensive discussion on the fuel supply limitations of Unit 6, including the design of the boiler that will not allow the use of sub-bituminous coal unless blended at a ratio of not less than fifty percent with bituminous coal.

- (2) Your calculations assumed a heat rate of 9,833 Btu/kW-hr. Your applications have, at times, indicated that a heat rate of approximately 8,900 Btu/kW-hr better describes Unit 6. In particular, your MACT application uses a different heat rate than your NSR application when normalized on a lb/GW-hr basis, the heat rate will affect the proposed HAP emission rate. Please remedy this inconsistency by specifying and providing documentation regarding the heat rate that the DAQ should use for the MACT application and explaining any inconsistencies, if any remain, with your previous submissions.

In setting a MACT for EGUs, EPA has stated that it will use a heat rate of 9833 Btu/KW-hr for all new units and a heat rate of 10,000 Btu/KW-hr for all existing units. Our December 4, 2008 submittal uses a basis of 9833 Btu/KW-hr to express the proposed mercury MACT level in terms of an output-based limit to assure consistency and equity among similar new units that may be subject to MACT. Please note that there are some references to a heat rate of 10,000 Btu/KW-hr in Attachment 7 which were carried over from our original July 3, 2008 submittal.

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Those references are inadvertent and should be disregarded; and our intent is to use the 9833 Btu/KWHr heat rate.

Since a case-by-case MACT determination is intended by regulation to serve as an interim measure pending EPA promulgation of a MACT standard, the process for setting the case-by-case standard should reflect the likely process that EPA will follow in setting a final MACT standard. Duke Energy Carolinas believes DAQ should consider the interim nature of any case-by-case derived limit and should attempt to estimate the MACT emission limits that EPA would set. This makes use of a heat rate of 9833 Btu/KW hr appropriate.

In other permit application submittals for Cliffside 6 (specifically, the PSD permit application), as noted, we have represented the actual expected heat rate as 8900 Btu/KWHr. However, those submittals were not for the purpose of setting an emissions standard, but for comparing the expected emissions to an emissions standard. The use of an output-based standard is generally favored where there is intent to encourage greater process efficiency. Because compliance would be based on the actual achieved heat rate, there is some incentive to assure that the steam-cycle efficiency is maintained as high as possible to provide greater operating margin in compliance with applicable limits.

In our MACT evaluation, the development of the mercury emissions rate derives from achievable emissions calculated on a heat-input basis which is then converted to an output basis assuming a consistent thermal efficiency standard for new units. Use of the more efficient thermal heat rate for Cliffside Unit 6 would not be equitable when making this conversion to an output-based standard. In addition, the standard would not account for long term variability in the expected heat rate that occurs within the cycle of turbine maintenance and which is also impacted by year-to-year variation in capacity factor and operations at lower loads. As we stated in our submittal, the alternative to using a standardized heat rate would be for DAQ to set the MACT emission rate on a *heat input basis* (for example, based on our analysis, the heat input basis emission rate would be 1.4 lb/TBtu.)

Before we can respond to your concerns with this issue, we request that DAQ explain how it plans to address the issues of equity and the role of an output-based standard versus an input-based standard in demonstrating compliance. In our view, it is not appropriate to penalize efficient units and reward inefficient units when setting an output-based standard and doing so would be contrary to EPA's intent and sound energy policy.

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- (3) You assumed the mercury content of your coal to be 14.3 lb/TBtu, which is the same value used by the EPA in their ICR analysis. Please explain and provide documentation of the relevance of that number to the coals currently burned at Cliffside or expected to be burned in Unit 6. Additionally, please specify and document the level of mercury in the coals that are available for you to burn at Cliffside Unit 6 and any limitations on the burning of any specific coals.

In calculating the MACT emission limit, Duke Energy Carolinas used reasonable worst-case conditions, consistent with regulations applicable to major sources of HAPs. EPA determined from its data gathering exercise and analysis, as shown in EPA's ICR, that 14.3 lb/TBtu reflected the reasonable worst-case condition for bituminous coal. We have also noted that the *average* mercury content for coal from Pennsylvania and Ohio in the Northern Appalachia region is at or above the 14.3 lb/TBtu value determined by EPA. As we have documented in our submittal, Northern Appalachia is one of the areas expected to supply Cliffside after the construction of Unit 6 and the concurrent retirement of Units 1-4. As described previously, it is reasonable to expect that coal for this region may supply Cliffside for a 12-month period. (See the discussion beginning on page 11 and Attachment 16 of our December 4, 2008 submittal.)

To further expedite this matter, Duke Energy Carolinas believes a conference with DAQ's technical staff in early January to discuss these three specific issues would be beneficial. We will contact your office to arrange such a conference to understand more thoroughly the information DAQ has reviewed, to learn what questions may remain, and to clarify any further questions that may arise from the information provided in this letter.

Please call me if you have any questions. Thank you for your assistance in this process.

Sincerely,



James L. Turner

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