



**DUKE ENERGY CORPORATION**  
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December 1, 2006

Dr. Don Van der Vaart, P.E.  
Division of Air Quality  
1641 Mail Service Center  
Raleigh, North Carolina 27699-1641

Subject: Cliffside New Generation Project  
PSD Construction Permit Application –  
Additional Modeling Analysis and BACT for Visible Emissions

Dear Dr. Van der Vaart:

As requested by the Division of Air Quality, Duke Energy has performed additional modeling to verify air quality impacts related to the auxiliary boiler will not significantly change the modeled results or change any conclusions drawn from the modeling conducted and submitted in October 2006. DAQ has also requested that Duke Energy provide a BACT analysis for visible emissions for the new emission units. These issues are addressed below.

#### **Revised Modeling Analysis**

DAQ expressed concern that the modeling methodology used to assess PM<sub>10</sub> impacts on near-field receptors in the October 2006 submittal for the new auxiliary boiler may not be representative of worst-case operating conditions. The purpose of the auxiliary boiler is to provide steam to the facility when the generating units are out of service or during startup. The auxiliary boiler is not typically expected to operate after one or both generating units are in operation. In our previous modeling analysis, the modeling contractor used a simplifying assumption to account for the limited daily operation of the auxiliary boiler. Through the additional dispersion modeling discussed below, Duke Energy has determined that a more conservative analysis which assumes simultaneous operation of the auxiliary boiler and the generating units at full capacity does not significantly change the PM<sub>10</sub> modeling results as reported in the October 2006 submittal. The CO and NO<sub>x</sub> modeling presented in the October 2006 submittal were conducted with the appropriate time-averaged emission rate.

Revised modeling was conducted for the project sources alone using modeling files and methodologies consistent with the PM<sub>10</sub> Significant Impact Level (SIL) analysis described in Section 6 of the October 2006 submittal. The only exception was that the modeled emission rate for the auxiliary boiler as reported in Table 6-11 was changed from 0.024 g/s to 0.576 g/s. The new emission rate represents the maximum hourly emission rate with no annual or daily limitations on usage. The table provided below compares the PM<sub>10</sub> modeled concentrations reported in October 2006 submittal with the revised modeled concentration. As shown, the modeled impacts increase by only a small amount. For PM<sub>10</sub> 24-hour, the worst-case year changed by only 2.1%. The changes in the annual concentrations were about the same. Also worth noting was all the maximum modeled impacts occurred in the same location as

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previously modeled. The results presented below under the "revised" heading should replace those contained in Table 7-1 and other subsequently affected tables.

While the analysis does not represent actual expected operations, we are providing the analysis to confirm that the proposed project will not affect air quality even with those conservative assumptions. Based on these supplemental modeling results, Duke Energy feels this should satisfy DAQ's concerns over how the auxiliary boiler was factored into the original modeling analysis and that the unit should not receive any limitations on its usage.

Year	Load	Averaging Period	Maximum Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )		% change
			October 2006	Revised	
1987	100%	24-hour	24.91	25.44	2.1%
		Annual	9.16	9.39	2.4%
1988	100%	24-hour	22.22	22.38	0.7%
		Annual	8.49	8.69	2.3%
1989	100%	24-hour	24.29	24.57	1.1%
		Annual	8.26	8.44	2.1%
1990	100%	24-hour	22.62	22.83	0.9%
		Annual	7.96	8.15	2.4%
1991	100%	24-hour	22.92	23.37	1.9%
		Annual	8.53	8.76	2.7%
1987	75%	24-hour	24.91	25.44	2.1%
		Annual	9.16	9.39	2.4%
1988	75%	24-hour	22.22	22.39	0.7%
		Annual	8.49	8.69	2.3%
1989	75%	24-hour	24.29	24.57	1.1%
		Annual	8.26	8.44	2.1%
1990	75%	24-hour	22.62	22.83	0.9%
		Annual	7.96	8.15	2.4%
1991	75%	24-hour	22.92	23.37	1.9%
		Annual	8.53	8.76	2.7%
1987	50%	24-hour	24.91	25.44	2.1%
		Annual	9.16	9.39	2.4%
1988	50%	24-hour	22.22	22.39	0.7%
		Annual	8.49	8.69	2.3%
1989	50%	24-hour	24.29	24.57	1.1%
		Annual	8.26	8.44	2.1%
1990	50%	24-hour	22.62	22.83	0.9%
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1991	50%	24-hour	22.92	23.37	1.9%
		Annual	8.53	8.76	2.7%

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The supplemental modeling files will be submitted by e-mail by our contractor, ENSR, for electronic posting by DAQ.

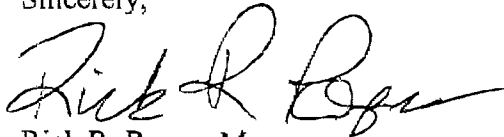
**BACT Analysis for Visible Emissions**

The US EPA recently issued revised New Source Performance Standards applicable to steam-electric generating units (40 CFR 60 Subpart Da) and industrial boilers (40 CFR 60 Subpart Db and Dc). These revised standards were issued after careful consideration of the achievable emissions for new or modified units equipped with the best control technologies commercially demonstrated. The revised NSPS reaffirmed a visible emissions standard of 20% opacity as measured on a 6-minute basis for electric generating units and industrial boilers. Duke Energy is proposing a BACT limit of 20% 6-minute opacity for visible emissions for the proposed new Subpart Da electric generating units and the Subpart Db auxiliary boiler.

If you have any questions, please contact Kris Knudsen (980-373-3225).

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained or referenced in this letter are true, accurate, and complete.

Sincerely,



Rick R. Roper, Manager  
Cliffside Steam Station

cc: Ed Martin, DAQ  
DAQ Permit Branch - 5 copies