

Hearing Officer's Report and Recommendations

Duke Energy Carolinas, LLC - Buck Combined Cycle Facility
April 10, 2018
North Rowan High School
Spencer, NC

Public Comment Period: March 9, 2018 through April 15, 2018

Pertaining to Draft Air Permit No. 03786T34 for:

Duke Energy Carolinas, LLC - Buck Combined Cycle Facility
Coal Ash Staged Turbulent Coal Ash Reactor (STAR®)
Dukeville Road
Salisbury, NC, Rowan County
Facility ID No. 8000004
Fee Class: Title V

Hearing Officer

Robert Fisher, Regional Supervisor, Washington Regional Office

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Original Documents in the Washington Regional Office

Background

On April 24, 2017, the North Carolina Department of Environmental Quality (NC DEQ), Division of Air Quality (DAQ), Mooresville Regional Office (MRO) received an air quality permit application (App. No. 8000004.17B) from Duke Energy Carolinas, LLC - Buck Combined Cycle Facility (Duke Energy – Buck Facility) to construct and operate a new fly ash processing facility at Dukeville Road in Salisbury, NC, Rowan County. Upon issuance of the air quality permit, Duke Energy - Buck Facility plans to install a Staged Turbulent Air Reactor (STAR®) plant - to chemically and physically convert fly ash into a low-carbon material suitable for use in concrete as well as other commercial and industrial applications. The proposed plant has a production capacity of 400,000 tons of fly-ash per year. It will be fired by natural gas or propane using low-NOx start-up burners with 140 million Btu per hour heat input capacity, then combined with fly ash until the fly ash auto-ignition temperature (approximately 1,400 °f) is reached. Additionally, ancillary sources of air pollution associated with the conveyance, preparation of and storage of material are included as sources.

On March 9, 2018, pursuant to the North Carolina Coal Ash Management Act, a notice of public hearing was posted in the Salisbury Post newspaper and on the DAQ website. The public comment period was March 9, 2018 through April 15, 2018. Copies of the air quality application, permit application review and draft air permit were also posted on the DAQ website for public review. Copies of the air quality permit application and related documents were available for public review in DAQ's MRO and Raleigh Central Office (RCO) throughout the public comment period. Post cards were also mailed to residents near the proposed facility. The public hearing was held on April 10, 2018 at the North Rowan High School Auditorium.

Air Quality Permit Application and Review

The application is for the first part of a two-step significant modification of the current Title V permit to install and operate a fly ash processing plant at Duke Energy - Buck Facility. The proposed plant is designed to annually process up to 400,000 tons of coal combustion fly ash with other ingredient materials to produce a high-quality Class-F fly ash for use in ready mix concrete or other commercial and industrial products. It uses a proprietary technology from the SEFA Group Inc. called STAR® - Staged Turbulent Air Reactor - to chemically and physically convert fly ash into a low-carbon material that meets the American Society for Testing and Materials (ASTM) Standard C618-08, "Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete" of no more than 6 percent by weight loss-on-ignition (LOI) content to be suitable for use in concrete.

Jenny Kelvington, P.E., former permit engineer in the DAQ's RCO, reviewed the application submitted by Duke Energy - Buck Facility and determined that the facility could comply with all applicable federal and state air quality requirements provided that the specific conditions included in the draft air quality permit are met. Matthew Porter, meteorologist in DAQ's RCO, provided technical support in the application review process by reviewing site-specific air dispersion modeling analysis of the proposed STAR® plant to ensure compliance with the National Ambient Air Quality Standards (NAAQS) for sulfur dioxide (SO₂), nitrogen oxides (NO_x) and the North Carolina air toxics regulations. Mr. Porter's analysis showed that "the modeling analysis of maximum-allowable facility-wide Toxic Air Pollutants (TAPs) emissions adequately demonstrated compliance with Acceptable Ambient Levels (AALs)."

Meaning the addition of the STAR® plant to the Duke Energy - Buck Facility would not cause an exceedance of 15A NCAC 02D .1100 AALs for any toxic air pollutant beyond the facility's property boundaries.

Unless the public comments received during the public hearing reveal that DAQ was in error or incomplete in its evaluation of the proposed STAR® plant from an air quality standpoint, and if the applicant has met all federal and state laws, and rules for the protection of air quality, the DAQ is obligated to issue an air permit to Duke Energy - Buck Facility. The following hearing officer responses to written and oral public comments will address issues raised in light of these requirements.

Public Comments

From the comments received during the public comment period, it is apparent that the citizens around the town of Salisbury and the proposed Duke Energy - Buck Facility STAR® plant are very concerned about potential impacts on their health and property. Of particular concern are the air emissions of heavy metals and fugitive dust. Also of concern was the monitoring of the emissions and notification of neighbors in the event of excess emissions. At the public hearing on April 10, 2018, approximately 100 people were in attendance. Nineteen attendees spoke, all but one in opposition to the proposed Duke Energy - Buck Facility STAR® plant. Additionally, written comments were received from 65 citizens during the public comment period. All written comments received were in opposition to the proposed STAR® plant.

Forty-one (41) emails, though signed by different people, contained identical or nearly identical messages. The commenters believe that toxic air pollutants from the proposed STAR® plant will pose a negative health impact and has many people throughout the Dukeville Road area concerned about the potential health impacts associated with the proposed plant.

The comments received, both written and oral, addressed many of the same issues. In order to make this report concise, address all issues and minimize redundancy, I have summarized and addressed the issues of concern below by category of regulatory authority.

Comment Category #1

The Draft permit is inadequate to ensure compliance with air quality rules.

- *On July 6, 2017 the Division of Air Quality asked Duke Energy to provide an explanation of how it would comply with the modeled emission rate for hexavalent chromium (Cr-6) after initial calculations yielded staggering results at 125% of the NC Allowable Ambient Limit (AAL - 25% over the compliance limit). One week later, the Division of Air Quality stated that it had made a mistake and the new calculations revealed a modeled emissions rate at 93% of the NC AAL. The explanation is not satisfactory as to how the recalculations are now conveniently in compliance with the AAL*
- *Formaldehyde emissions represent one of the most significant hazardous air pollution impacts, with 4 tons expected to be emitted each year.*
- *Coal Ash is a hazardous material.*
- *The Buck STAR® facility will represent a major new source of NOx, VOCs, CO, PM10/PM2.5, SO2, HAPs, TAPs and GHGs.*

- *This is not clean technology, there will be emissions. A zero emission level should be set.*
- *Stack testing of the STAR® reactor should be required—the draft permit mentions "if emissions testing is required."*
- *the draft permit merely requires self-reporting/self-regulation— DAQ should require ambient monitoring for particulates, VOCs (like benzene), etc.,*

Hearing Officer's Response to These Comments

- Air dispersion modeling never showed an ambient impact for hexavalent chromium (chromium VI) of 125 percent of the applicable AAL. In fact, the permit engineer's draft application review cited the modeled chromium VI impact of 93.5 percent. The engineer was pointing out a possible discrepancy between chromium VI emission rates in the application and the modeling. This is not necessarily unusual if an applicant is proposing a limit for modeling purposes. Ultimately the draft permit contained an emission limit of 7.71E-5 pounds per hour as originally proposed by the applicant, corresponding to the modeled impact of 93.5 percent of the AAL.
- Formaldehyde emissions from the proposed STAR® plant are expected to add 0.02 tons per year (TPY) to the existing Duke Energy – Buck Facility rate of approximately 4 TPY.
- DAQ determined that fly ash from a coal-fired power plant's particulate collection infrastructure as well as fly ash received from coal ash landfills or ponds is a non-hazardous secondary material (NHSM), see appendix F of the November 2017 air permit application.
- The STAR® plant will contribute to additional emissions of regulated air pollutants. The pollutant impacts have been determined to be compliant with Prevention of Significant Deterioration (PSD) and the NAAQS.
- There is no regulatory basis to require zero emissions from the plant.
- The draft permit includes the following testing conditions for the STAR® plant:
 - 2.1.F.4.b requires the facility to test within 3 months of start-up to evaluate the lime injection rate for SO₂ control, and
 - 2.1.F.5.b requires the facility to test within 6 months of start-up to determine compliance with the NO_x emission limit.
- The draft permit includes the following monitoring conditions for the STAR® plant:
 - 2.1.F.3.c requires the facility to monitor visible emission and conduct evaluations monthly, and
 - 2.1.G.1.c requires inspection and maintenance (I&M) for particulate control on the bin vents and baghouses, monthly and annually.
 - 2.1.G.2.c requires Visible Emission Observations on the bin vents and baghouses, every six months.
- Regarding ambient monitoring for particulate matter (PM) and volatile organic compounds (VOCs), the estimated emission rate is below levels which might suggest ambient concentrations impacting the design value for any NAAQS.

Comment Category #2

The proposed STAR® plant permit is inadequate to protect the health of those living in the area surrounding the plant.

- *There is no plan/explanation of how they will keep fugitive coal ash out of neighbors' yards.*

- *There are no monitoring requirements for heavy metals.*
- *If a toxic emission source is not in compliance, Duke Energy should be required to have a clear plan and timeline to reach compliance. Impacted communities should get prompt notification of any excess toxic emissions on the same day the violation is recorded.*
- *"Startup, Shutdown Malfunction" (SSM) events are mentioned over a dozen times where the draft talks about compliance. These facilities have abused these loopholes in the past because the protections of the Clean Air Act are thrown aside for these events, and the facility is given a free pass to emit huge amounts of pollution.*
- *Emissions from this new facility will be deposited on a watershed where some of the highest levels of hexavalent chromium in the state have been found in plant neighbor's wells!*

Hearing Officer's Response to These Comments

- The draft permit identifies the ash handling equipment as sources of fugitive emissions. The draft permit contains General Condition MM which prohibits fugitive dust from leaving the property. If dust complaints are substantiated, the DAQ has the authority to require the facility to develop a dust management plan and implement that plan.
- Although the draft permit does not require monitoring for heavy metals, the modeling analysis of maximum-allowable facility-wide TAPs emissions adequately demonstrated compliance with AALs outlined in 15A NCAC 02D.1104, on a source-by-source basis, for all TAPs.
- The draft permit includes Condition B. EE Prevention of Accidental Releases General Duty Clause - Section 112(r)(1) which reads, "Although a risk management plan may not be required, if the Permittee produces, processes, handles, or stores any amount of a listed hazardous substance, the Permittee has a general duty to take such steps as are necessary to prevent the accidental release of such substance and to minimize the consequences of any release." Accidental releases should be reported to the National Response Center (NRC).
- The Start-Up Shut-down Malfunction (SSM) rule, NCAC 2D .0535, restricts the time allowed for excess emissions. It requires facilities to submit specific information for consideration by the Director when determining enforcement action for a malfunction event.
- Air dispersion modeling results indicate that ambient impacts of hexavalent chromium are below the health based AAL.

Comment Category #3

General comments not directly related to the expressed intent of the public hearing. Including allegations about the trustworthiness of Duke Energy

- *Allegation that at the Chatham County Commissioners meeting in Aug 2017 ([minutes link](#)) after Duke reps gave a [PowerPoint presentation \(link\)](#), and touted the system is a closed loop system. When asked what would be going up the stack, Duke replied JUST water vapor AND CO2."*
- *The Division should suspend issuing the permit until the waste and water disposal permitting issues are made.*
- *The demographic studies in Environmental Justice (EJ) review for this facility ...only compare to census data for Rowan County. This is an inadequate method... The EJ analysis should be*

performed using methods that also compare the EJ impacts of the facility to statewide demographic data.

- *Duke has a history of non-compliance with environmental rules and will exhibit the same lack of environmental concern at the Duke Energy - Buck Facility plant.*
- *Money making should not be the issue,*
- *This plant will negatively impact the health of those living in the area surrounding the plant.*
- *The 12 jobs created for the operation of this plant is not worth the risk to the local residents.*
- *(This will be) transferring heavy metals and other contaminants from one environmental medium to another.*
- *Need to provide local VFD disaster training*
- *This is having a negative impact on the property values in this area*
- *We've been on bottled water for over 1300 days.*
- *We can't baptize in our nearby church; we have to go elsewhere.*
- *Will there be waste water discharges?*
- *Will there be off site waste disposal?*
- *Nothing in the draft permit states that coal ash brought from other sites is prohibited. This is particularly concerning when considering out-of-state and foreign-imported coal ash.*
- *Would you want this plant near your home?*
- *The draft permit does not have requirements for the percentage of ash that must be recycled.*
- *There is no mention of the potential for radioactive emissions.*

Hearing Officer's Response to These Comments

The DEQ conducted an analysis following the Environmental Justice guidance under NEPA:

https://www.epa.gov/sites/production/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf

Minority populations should be identified where either:

- (a) "the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. In identifying minority communities, agencies may consider as a community either a group of individuals."
- (b) When the minority population in question does not meet the 50% threshold, you need to have a way to identify what is meant by "significantly greater". There is no one way of doing this, so DEQ follows other state and Federal agency best practices.

Each analysis is project specific. This particular project was conducted using a 1.5 mile radius around the project area, due to the low amount of projected emissions in the permit application. The source is expected to be in compliance with the State and federal air regulations as required by the draft permit. Given this buffer area size, the scale of the analysis used went up to a county level. The data gathered in the 1.5 mile radius was compared to the census tract and county level data for any census tracts and their corresponding counties that overlapped into the 1.5 mile buffer.

The DEQ also reviewed the project area population data and compared this data to both Rowan County and to the statewide demographic data. Performing a broader analysis did not result in a different outcome.

DAQ has engaged the public in the area by holding the public hearing on April 10, 2018, in a centrally located accessible hearing space. The DAQ sent fliers and postcards while soliciting comments on the draft permit. Potentially affected groups have had informed opportunities to participate in the process, consistent with the applicable case-specific aspects of DEQ's Environmental Equity Policy and relevant air permitting statutes and rules.

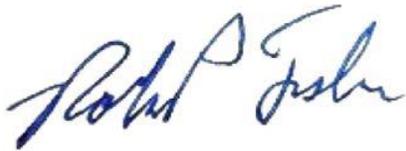
While most of the remaining comments received were thoughtful and worth considering in the proper forum, many of the comments received were not directly related to the Duke Energy - Buck Facility STAR® plant air quality permit application or the air quality permitting process. As such, these comments fall outside the purview of this public hearing and are therefore not directly addressed in this report.

Conclusions and Recommendations

Before the public hearing I, Robert Fisher, toured the site of the proposed STAR® plant. I was accompanied by Jim Hafner and Matt Hill, of MRO. We were escorted by Mr. Dale Wooten, environmental compliance contact for the Duke Energy - Buck Facility. We also spoke with several of the project managers for the STAR ® construction project. There was no apparent STAR® plant construction underway, the area was an undisturbed grass field. There was, however, road construction, water-supply line construction, and logging around the proposed site in preparation for the new plant.

North Carolina General Statute 143.215.108(c)(5a)b. requires that an applicant satisfies to the Department that it “has substantially complied with the air quality and emission control standards applicable to any activity in which the applicant has previously engaged, and has been in substantial compliance with federal and state laws, regulations, and rules for the protection of the environment”. The compliance record of the Duke Energy - Buck Facility suggests that the applicant has met this requirement, except for one violation of the excess emissions reporting and malfunction rule in 2013.

After considering all the public comments addressing whether or not DAQ should issue an air quality permit to Duke Energy - Buck Facility to allow the construction and operation of a STAR® plant on Dukeville Road in Salisbury, NC, it is the recommendation of the hearing officer that the Director issue the Air Quality permit. Additionally, I recommend DAQ staff remain sensitive to the health of the nearby communities and to the concerns that will remain should the STAR® plant begin operation. This can be accomplished through thorough frequent inspections and prompt responses to the citizen’s air quality concerns and complaints, noting the effect of the increased truck traffic, moving coal ash, and wind erosion of the disturbed ash ponds which has the potential to contribute to fugitive dust emissions.



Robert P. Fisher, Hearing Officer

May 10, 2018
Date

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SUPPORTING ATTACHMENTS

(Electronic files stored in DAQ SharePoint)

Includes:

[Permit Application Review](#)

[Draft Permit](#)

[Notice of Public Hearing](#)

Public Hearing Attendance Forms

[For the Speakers](#)

[For the Silent Attendees](#)

[Emailed Public Comments](#)

[Paper Public Comments](#)

[Audio of Public Hearing Comments](#)