Hearing Officer's Report and Recommendations

Duke Energy Progress, LLC – H. F. Lee Steam Electric Plant
Public Hearing July 10, 2018
Wayne Community College
Goldsboro, NC

Public Comment Period: June 8, 2018 through July 13, 2018

Pertaining to Draft Air Permit No. 01812T43 for:

Duke Energy Progress, LLC – H. F. Lee Steam Electric Plant
Coal Ash Staged Turbulent Coal Ash Reactor (STAR®)
1199 Black Jack Church Road
Goldsboro, NC, Wayne County
Facility ID No. 9600017
Fee Class: Title V

Hearing Officer
Brendan G. Davey, P.E., Regional Supervisor, Asheville Regional Office

Background

On November 13, 2017, the North Carolina Department of Environmental Quality (NC DEQ), Division of Air Quality (DAQ), received an air quality permit application (App. No. 9600017.17A) from Duke Energy Progress, LLC – H. F. Lee Steam Electric Plant to construct and operate a new fly ash processing facility at 1199 Black Jack Church Road in Goldsboro, NC, Wayne County. Pending issuance of the air quality permit, the Duke Energy Progress – H. F. Lee 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 as a component 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 is reached. Additionally, ancillary sources of air pollution associated with the conveyance, preparation of and storage of material are included as emission sources.

On June 8, 2018, pursuant to the North Carolina Coal Ash Management Act, a notice of public hearing was posted in the Goldsboro News-Argus newspaper and on the DAQ website. The public comment period was June 8, 2018 through July 13, 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 Washington Regional Office (WARO) and Raleigh Central Office (RCO) throughout the public comment period. On June 14, 2018 an informational meeting was held in Goldsboro, NC with the Down East Ash Coalition and the community to discuss the proposed permit. The public hearing was held on July 10, 2018 at the Wayne Community College, Goldsboro, NC.

Air Quality Permit Application and Review

The application is for the first step of a two-step significant modification of the current Title V permit to install and operate a fly ash processing plant at Duke Energy Progress – H. F. Lee Facility. The proposed plant is designed to annually process up to 400,000 tons of coal combustion fly ash 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.

Edward Martin, P.E., Permit Engineer in the DAQ's RCO, reviewed the application submitted by Duke Energy Progress – H. F. Lee 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. Alex Zarnowski, 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 North Carolina air toxics regulations. Mr. Zarnowski's analysis showed that "The purpose for modeling was to demonstrate compliance with guidelines specified in 15A NCAC 02D .1104 for each Toxic Air Pollutant (TAP) emitted in excess of its Toxic Permitting Emission Rate (TPER) listed in 15A NCAC 02Q .0711. The modeling adequately demonstrates compliance on a source-by-source basis." This analysis demonstrates the addition of the STAR® plant to

the Duke Energy Progress – H. F. Lee Facility would not cause an exceedance of 15A NCAC 02D .1100 Acceptable Ambient Levels (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 Progress – H. F. Lee 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 proposed Duke Energy Progress- H. F. Lee 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 July 10, 2018, approximately 53 people were registered in attendance. Fifteen attendees spoke, all but one in opposition to the proposed Duke Energy Progress – H. F. Lee Facility STAR® plant. Additionally, 32 written e-mail comments (some with attachments) were received during the public comment period. All written comments received were in opposition to the proposed STAR® plant. There were no hardcopy comments received by mail or delivered during the public hearing or otherwise.

Twenty-four (24) of the 32 e-mails were sent to *SVC_DENR.publiccomments* (instead of to Edward Martin as per the public notice) primarily from the western part of North Carolina. These emails, though signed by different people, contained identical or nearly identical messages. These commenters believe that air pollutants from the proposed STAR® plant will pose a negative health impact, continuous monitoring should be employed for all pollutants, and also expressed fugitive dust concerns.

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 grouping by topic similarity. Bulleted comments in italics are direct quotes from submitted written comments, where bulleted non-italics are paraphrased from verbal or written comments.

Comment Category #1: Stack Testing / Continuous Monitoring

In general, commenters requested compliance stack testing, monitoring, and continuous emissions monitoring for all pollutants.

- *Duke should be required to continuously monitor all emissions from the STAR facility, to ensure compliance with this permit. Monitoring results should be made available and easily accessible to neighboring communities.*
- *The STAR reactor re-burns the coal ash at high temperatures to produce the final product. Duke Energy is only required to observe the STAR reactor for any visible emissions above normal once per month. The reactor has no requirements for emissions testing.*

- *Continuous emissions testing must be required for the STAR reactor.*
- *It is imperative for an impartial 3rd party group to monitor emissions at this site.*
- *I also ask you to include requirements for some monitoring of air emissions directly by DEQ or through other avenues, independent of the owners of the facility. Self-monitoring is an important base for emissions control, but additional independent monitoring provides a cross-check and an additional layer of protection for the public.*
- *This type of facility is new to North Carolina, yet the DAQ is not requiring a continuous emissions monitor (CEMS) for heavy metals and other contaminants, or ambient monitoring ... To ensure compliance, it is essential that the agency require continuous monitoring of this facility.*
- *Revise the permit to require CEMs and ambient monitoring*
- 'Have third party monitoring / more frequent monitoring'

Hearing Officer's Response to These Comments

The draft air permit already requires significant compliance stack testing and compliance monitoring. Sulfur dioxide testing is required for the FGD system installed on the STAR® reactor with compliance parameters (such as lime-to-sulfur ratios) being established to ensure continuous compliance via parametric monitoring. By continuously monitoring these parameters that were established during the initial stack test, Duke will ensure compliance with the sulfur dioxide standard. Carbon monoxide and volatile organic compounds are also required to be tested from this emission source to verify compliance with established limits. These stack tests are typically conducted by an independent third-party as requested by some commenters. Periodic visual observations are also required for the majority of the new equipment to ensure proper operation and compliance with opacity standards. All fabric filter control devices are required to be properly maintained and inspected with these results available for DAQ review.

In addition to the above, based on my review I am recommending particulate emissions stack testing for one of the two external heat exchangers and the STAR® reactor exhaust. This will verify compliance not only with applicable particulate emission standards but will verify emissions estimations used in the toxic air pollutant analysis. The toxic air pollutant emissions are based on estimated particulate emission rates in conjunction with the coal ash metals analysis. See the final recommendations in this document.

Comment Category #2: Ambient Monitoring

In general commenters requested ambient air monitoring for all air pollutants.

- *Many states have mobile air monitoring equipment. North Carolina previously had some mobile testing capabilities. Those allow fence-line monitoring so that extremes of toxic releases can be measured, and DAQ does not have to rely on self-monitoring by the industries profit from, and produce, those toxins. Mobile vans with sophisticated equipment is not cheap and require frequent calibrations. Without mobile units, DAQ cannot monitor the proposed STAR processing plants and so should not issue a permit.*
- *This type of facility is new to North Carolina, yet the DAQ is not requiring a continuous emissions monitor (CEMS) for heavy metals and other contaminants, or ambient monitoring.*

- *Revise the permit to require CEMs and ambient monitoring*
- 'Need fenceline monitoring'
- 'NOx and SO_2 can be monitored'

Hearing Officer's Response to These Comments

There are no regulatory requirements for monitoring ambient air levels of pollutants at this specific industrial source. The facility is anticipated to be in compliance with the applicable air quality regulations and air permit requirements which are designed to protect the ambient air for toxic and criteria air pollutants.

Comment Category #3: Fugitive Dust / Dust Prevention

In general commenters expressed concerns regarding the possibility of fugitive dust emissions from the site which may include metals.

- *Duke Energy should be required to submit a clear plan to monitor and report all "fugitive dust" emitted from the STAR facility.*
- *This facility is projected to emit 59 tons of fine particulate matter per year, but the permit does not monitor for "fugitive dust" from handling and reprocessing the coal ash.*
- *Any approved Title V permit must include emissions and fugitive dust controls to PREVENT such releases from happening in the first place.*
- *Movement of ash may generate more emissions*

Hearing Officer's Response to These Comments

The draft permit identifies the ash handling equipment and ash basin as sources of fugitive emissions. The toxic air pollutant emissions analysis makes assumptions that certain dust management measures will be implemented. This includes, but is not limited to, disturbed area watering and the assumption of residual moisture content in further ash processing. If these measures are not implemented, the air toxics dispersion modeling and toxic ambient air level analysis may not be valid.

The draft permit contains General Condition MM (15A NCAC 02D 0540, "Particulates from Fugitive Dust Emission Sources") 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. In addition, the Environmental Protection Agency Coal Combustion Residuals (CCR) rule, 40 CFR 257.80 already requires a dust management plan be developed and implemented. Also, proposed NCDEQ Waste Management regulations 15A NCAC 13B .2001-2018 will require a dust management plan be developed and implemented. These proposed rules have been through public hearing and public comment. NCDEQ Waste Management is currently reviewing the comments received. Duke Energy has already developed a coal combustion residuals fugitive dust control plan. A copy of this plan was forwarded to Edward Martin. Based on the above requirements, I do not recommend any changes to the air permit regarding dust management.

Comment Category #4: Startup, Shutdown, Malfunction Events / Excess Emissions

In general commenters expressed concerns regarding excess emissions, startup, shutdown, and malfunction (SSM) events.

- *In the event that a toxic emission 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 of toxic emissions on the same day the violation is recorded.*
- *DAQ's air permit for the STAR plant at HF Lee allows for unlimited periods of start-ups, shut-downs and maintenance with no requirements other than logging the occurance.*
- *Time limits and accountability for startup and shutdown malfunction events need to be clearly specified in this Title V permit modification.*
- *In the event of a spill or upset, the draft permit only requires the company to notify the DEQ if the excess lasts longer than 4 hours. And there is no requirement to notify the public.*
- *According to the permit, if the reactor produces emissions exceeding those projected, the process of reporting and revision may take as long as 6 months. What will be done to protect the surrounding community during this time?*
- 'Rules do not apply when conducting startup, shutdown, and maintenance.'

Hearing Officer's Response to These Comments

Startup, shutdown, and malfunctions are generally regulated by air quality regulation 15A NCAC 02D .0535, "Excess Emissions Reporting and Malfunctions." There are "next business day" reporting requirements for DAQ review for excess emissions lasting more than four hours. Operators are required to minimize the amount and duration of excess emissions to the maximum extent practicable which can include shutting down the emission source. Excess emissions will not be considered a malfunction (and therefore may be considered a violation) if they are a part of a recurring pattern indicative of inadequate design, operation, or maintenance. Excess emissions during start-up and shut-down are not allowed to be "unlimited" as commented, but are considered a violation of the appropriate rule if the owner or operator cannot demonstrate that the excess emissions are unavoidable. It is expected that excess emissions from start-up/shut down will be minimal to nil as the air pollution control devices are generally expected to be fully operational upon air emission source startup and shut-down. Excess emissions from malfunctions will be reviewed by DAQ personnel on a case-by-case basis.

In addition, the draft permit includes General Condition 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).

Comment Category #5: General Concerns Regarding Health Impacts From Air Pollutants

There were several comments with concerns regarding the health impacts from the air pollution proposed from the new facility. These include toxic and criteria air pollutants and long-term vs short-term risks.

- *It is well established that the particulates and heavy metals that are produced from burning coal are serious health risks – especially for infants, children, pregnant women, the elderly, and anyone with pre-existing lung or breathing problems.*
- *I ask you to require that the emissions of regulated contaminants be well below the theoretical maximum allowable amounts for compliance, not just barely below.*
- *The Permit Review document repeatedly states that emissions factors are based on EPA guidance, the process, manufacturer's specifications, and "Duke site-specific average ash analysis." Coal ash contains toxic constituents and is not a benign waste stream. It contains heavy metals such as arsenic, selenium, mercury, and chromium, often present as hexavalent chromium, as well as radionuclides. Despite the most current research on appropriate test methods for coal combustion residuals, DEQ continues to support the use of the "Toxicity Characteristic Leaching Procedure" (TCLP) for the characterization of coal ash. The test was never intended for this use and may underestimate the toxicity of the ash. The US Environmental Protection Agency (EPA) does not recommend that the test be used for the characterization of coal ash waste. In its final rule on the disposal of coal combustion residuals EPA said that, "For landfills, EPA agrees that TCLP, SPLP and other single pH test methods may not be the most appropriate leachate extraction methods for all waste streams and all disposal scenarios." Without appropriate characterization of the coal ash, emission rates could vary greatly.*
- 'Looking at long term averages'
- 'cumulative effects aren't being looked at'

Hearing Officer's Response to These Comments

The facility is expected to be in compliance with the applicable air quality regulations and air permit requirements which are designed to protect the ambient air for both toxic and criteria air pollutants. These ambient standards are generally set for sensitive populations such as children and not just healthy adults. Stack testing, monitoring, recordkeeping, and reporting are required to ensure compliance with the applicable air quality regulations and air permit requirements.

The project meets the impact requirements for the NC Air Toxics Regulations with a significant compliance margin. The majority of the toxic air pollutant emissions for the site are coming from the existing sources (turbines) which were appropriately included in the analysis. See the air permit review for more information. In addition, the referenced dispersion modeling analysis is considered conservative as follows:

- The NC allowable ambient air levels are set at a conservative value following recommendations provided by an independent scientific advisory board to protect the public health with a protective margin;
- Computer models tend to be conservative;

- The company reported modeled emission rates conservatively (8760 hours operation, firing oil when natural gas is predominantly fired, conservative bagfilter exhaust rate, etc.); and
- The company modeled optimized emissions rates which are many times greater than their true potential emission rate (see Table 6 of the air permit review).

Comments were provided regarding averaging periods of air pollution. The appropriate lb/hr, lb/day, and lb/year periods for the specific toxic air pollutants were considered per 02Q .0711 and 02D .1100.

One commenter disagreed with the use of a "*Toxicity Characteristic Leaching Procedure*" (TCLP) to characterize the metals in the coal ash. Duke Energy indicated TCLP methods were not used supporting the air permit application but rather industry standard ASTM Methods and EPA Publication SW846 *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*. However, further DAQ review of the Method SW846 3050B based on these comments presented a new concern as follows:

> Method SW846 3050B indicates: "This method is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment. <u>If absolute total digestion is required use Method 3052.</u>"

As coal ash can contain significant amounts of silica, the concern regarding the appropriateness of the original test method 3050B for the air permit application was presented to Duke Energy. A review of this method and re-analysis of coal ash samples by Duke Energy indicated using Method 3052 does result in higher ultimate concentrations of metals. Higher concentrations of metals in the ash would result in higher estimated air emissions using the engineering analysis presented in the air permit application. Duke Energy re-analyzed all 41 coal ash samples with Method 3052 and submitted a revised air permit application and air toxics analysis for the revised metals concentrations. This information was received by the Division on October 26, 2018. As discussed above, the revised air toxics modeling analysis incorporating the new air toxics emissions estimates based on re-analysis of the ash was reviewed by Alex Zarnowski, Meteorologist in DAQ's RCO. Mr. Zarnowski's analysis showed that "The purpose for modeling was to demonstrate compliance with guidelines specified in 15A NCAC 02D .1104 for each Toxic Air Pollutant (TAP) emitted in excess of its Toxic Permitting Emission Rate (TPER) listed in 15A NCAC 02Q .0711. The modeling adequately demonstrates compliance on a source-by-source basis." See Edward Martin's air permit review for further discussion of this issue.

Therefore, using the higher metals concentrations in the re-analyzed coal ash for emissions calculations Duke Energy still complies with NC Air Toxics Regulations. <u>I consider this issue resolved.</u>

<u>Comment Category #6: Air toxics From 1000-Gallon Gasoline Storage Tank:</u>

- *Hold the permit until Duke Energy has submitted air toxics modeling on the emissions from a 1000-gallon gasoline storage tank not included in the original application. The DAQ should not have issued a draft air permit knowing that this had been omitted. If the revised modeling has been accepted, the permit should be re-noticed.*

Hearing Officer's Response to This Comment:

The gasoline storage tank was included in the air toxics health risk assessment – see pages 26 and 27 of the air permit review which indicates:

> *"It can be that from the percent increase contribution from the two engines and gasoline tank is insignificant, therefore, there is not an unacceptable risk to human health from the modification."*

In addition, the revised air toxics modeling mentioned above included the emissions from the gasoline storage tank.

Comment Category #7: Reevaluate the Commercial and Industrial Solid Waste Incineration Units (CISWI) / Non Hazardous Secondary Material (NHSM) Determination:

- *... However, this facility is not being permitted under CISWI because the Division of Air Quality (DAQ) granted the SEFA group a "Non Hazardous Secondary Material" (NHSM) designation for their STAR process, and considers it recycling. Of interest, the DEQ notes that NHSM waste combusted is "generally a byproduct of manufacturing." The coal ash proposed for incineration is not a "byproduct of manufacturing." It is a solid waste as defined by federal law. Clearly, the impoundments from which the ash will be excavated were intended as disposal.*

Hearing Officer's Response to This Comment:

The NCDAQ CISWI/NHSM determination appears well researched and its conclusions sound. See the air permit review for more information. Specifically, the permit review indicates:

- *In a letter dated June 10, 2015 (Appendix F of the application) to Mr. Jim Clayton with The SEFA Group, the DAQ made a determination that flyash received directly from a coal-fired power plant's particulate collection device (i.e., electrostatic precipitator or baghouse) and flyash received from landfills and ash ponds is a NHSM and is an "ingredient", as defined in §241.2. §241.3(b)(4) of the rule states that NHSMs used as fuel or ingredient products in a combustion unit, and that are produced from the processing of discarded NHSMs and that meet the legitimacy criteria specified in §241.3(d)(l), with respect to fuels, and §241.3(d)(2), with respect to ingredients," are not solid waste. §241.3(b)(3) states that NHSMs when used as an ingredient in a combustion unit that meet the legitimacy criteria specified in paragraph §241.3(d)(2) are not solid waste. Therefore, the STAR® reactor is not subject to the CISWI requirements.*

Comment Category #8: Lack of Public Outreach:

There were general comments regarding a lack of public outreach and poor advertisement of the hearing.

- *It was unreasonable to have this hearing on such notice, and I feel that many people in this poor community were not aware of this public comment hearing. DAQ/DEQ, both need to do a better*

job of announcing hearings, by utilizing more social media, reaching out to church groups in the area, to community centers, to senior centers since many residents are too poor for a newspaper or internet.

Hearing Officer's Response to These Comments:

NCDEQ is aware of public outreach concerns. There was public outreach as follows for this air permit application:

- October 30, 2017 - Wayne County Government (Planning Department) acknowledges receipt of a copy of the air permit application and indicates the proposed operation is consistent with local zoning requirements.
- June 8, 2018 - A notice of public hearing was posted in the Goldsboro News-Argus newspaper and on the DAQ website.
- June 8, 2018 through July 13, 2018 - Public Comment Period.
- June 14, 2018 - Informational Meeting held with the Down East Ash Coalition and the community in Goldsboro, NC.
- July 10, 2018 - Public Hearing held at Wayne Community College, Goldsboro, NC.

Comment Category #9: Concern Regarding Coal Ash From Off-Site:

- *It is most important that requirements be added to this permit modification to prohibit the use of out-of-state coal ash at these facilities.*
- *How long will this site be operational for this purpose, and how much ash will be processed? Will it be limited to coal ash from North Carolina?*

Hearing Officer's Response to These Comments:

Bringing in coal-ash from off-site may affect regulatory determinations regarding certain applicable rules such as Prevention of Significant Deterioration (PSD). Note, coal ash is already prohibited from being brought in from off-site by the NC Coal Ash Management Act §130A-309.216. *Ash beneficiation projects* as follows:

(a) On or before January 1, 2017, an impoundment owner shall (i) identify, at a minimum, impoundments at two sites located within the State with ash stored in the impoundments on that date that is suitable for processing for cementitious purposes and (ii) enter into a binding agreement for the installation and operation of an ash beneficiation project at each site capable of annually processing 300,000 tons of ash to specifications appropriate for cementitious products, with all ash processed to be removed from the impoundment(s) located at the sites.

I do not recommend any changes to the air permit regarding this issue.

Comment Category #10: Coal Ash Contaminated With PCBs:

- *Coal ash can be contaminated with other substances, such as polychlorinated biphenyls (PCBs). PCBs can form when coal is burned with other waste, or can be present when PCBs have been disposed of improperly at electric generating plants—ending up in the ash.*

Hearing Officer's Response to This Comment:

According to an e-mail from Erin Wallace of Duke Energy on July 31, 2018, no operations occurred at the H. F. Lee facility which would have resulted in the deposition of PCBs in the coal-ash.

Comment Category #11: Environmental Justice:

Comments were generally received regarding a delay and non-availability of an Environmental Justice report and requesting a longer public comment period.

- *The EJ report has not been released so the public comment period should be extended and a permit should not be allowed.*
- *It is disappointing that a required environmental justice analysis for this facility was not completed in time to give the impacted community an opportunity to review it before the public hearing held July 10, 2018, and the close of the comment period July 13, 2018.*
- *Extend the comment period until questions about environmental justice impacts are answered and the community has an opportunity to review and provide input on the Environmental Justice Impact Analysis*

Hearing Officer's Response to These Comments:

The Environmental Justice report has typically been finalized and released as a work product at the end of the process because public comments are incorporated to address any additional concerns received. Going forward, DEQ plans to release a brief summary report or "snapshot" at the beginning of the public comment process when appropriate. The public can then comment on the initial snapshot for additions to the final Environmental Justice Report. The DAQ Director has decided not to extend the comment period based on these comments. The Environmental Justice report was released August 16, 2018, posted at https://deq.nc.gov/news/hot-topics/coal-ash-nc/facilities-permits/lee, and sent via email by Sharon Martin, Public Information Officer, to previously interested parties.

Comment Category #12: Other Comments and Alternative Options:

- *Identify all additives which could be used and their potential impact on emissions.*
- *Duke Energy has a long history of illegal modifications to air permits at several of its sites.*
- *Periodic testing of toxin levels in surrounding soil and water should be performed.*
- *Coal ash contains varying amounts of Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM).*

- Alternatives to the STAR process (above ground storage, electromagnetic removal, etc.)
- *Coal ash should be isolated from the environment and stored above-ground on utility property.*
- 'Pioneer better options'
- A Duke Energy representative spoke in favor of the project touting emission controls, pollution reduction since coal combustion, and transforming ash into a viable product.
- Concerns about flooding and water quality.

Hearing Officer's Response to These Comments:

There are no coal-ash additives expected to be used at this location. There were several requests for disposing of the ash by alternative means. NCGS 130A-309.216 *Ash Beneficiation Projects* mandates three sites in North Carolina for coal ash to be processed for cementitious purposes.

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 – H. F. Lee 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, Brendan Davey, toured the site of the proposed STAR® plant. I was accompanied by Rob Fisher of WARO. We were escorted by Mike Graham, Environmental Field Support for the Duke Energy – H. F. Lee Facility and Bobby Smith, Project Director for the STAR® project. There was no apparent STAR® plant construction underway, the area was an undisturbed grassy field.

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 Progress – H. F. Lee Facility suggests that the applicant has met this requirement. In the past 15 years the facility has been issued one Notice of Deficiency in 2014 regarding late reports.

After considering all the public comments addressing whether or not DAQ should issue an air quality permit to Duke Energy Progress H. F. Lee Facility to allow the construction and operation of a STAR® plant on Black Jack Church Road in Goldsboro, NC, it is the recommendation of the hearing officer that the Director issue the Air Quality permit after considering the following recommendations:

1. Particulate stack testing: Add a stack testing requirement for particulate emissions for one of the two external heat exchangers, and the reactor system. This will verify compliance not only with applicable particulate emission standards but will verify emissions estimations used in the toxic air pollutant analysis. The toxic air pollutant emissions are based on estimated particulate emission

rates in conjunction with the coal ash metals analysis. Based on a review of the revised draft permit, this issue appears resolved and required testing has been included.

2. Hydrogen chloride (HCl) and hydrogen fluoride (HF) emissions: Coal combustion typically has hydrogen chloride (HCl) and hydrogen fluoride (HF) air emissions from chlorine (Cl) and fluorine (F) in the coal. The coal ash being burned in the reactor does have remaining chloride per the analysis received by Edward Martin and subsequently HCl emissions could be expected by the combustion process. HF emissions could be expected by the same reasoning. These possible emissions should be considered in the permit review process. After discussion, Edward Martin requested additional information from Duke Energy Progress regarding this topic. Information was received from Duke Energy Progress on August 27, 2018 addressing these issues and demonstrating the estimated HCl and HF emissions are well below the Toxic Permitting Emission Rate (TPER) listed in 15A NCAC 02Q .0711. These pollutants were incorporated into the revised air permit and permit review. I consider this issue resolved.

3. Pressure drop monitoring: The Duke Buck STAR® plant requires monthly pressure drop recording for the two bagfilters installed on the external heat exchangers. For consistency and good inspection and maintenance practices, I recommend the same for the H. F. Lee location. Based on a review of the revised draft permit, this issue appears resolved and the permit modified.

4. Typos and minor corrections in the draft air permit:
   (a) On page 38 the reactor visible emissions monitoring indicates "monthly" in one spot and "weekly" in another. This frequency should be consistent.
   (b) On pages 48-53 the PSD calculations for NOx, SO_2, and sulfuric acid do not include the emission source ES-31 (the STAR® reactor). This should be corrected.
   Based on a review of the revised draft permit, these issues appear resolved.

5. Coal ash metals analysis: As indicated in Comment Category #5, the sampling methodology used for coal ash analysis in support of the air permit application was questioned. Review of the methodology uncovered some concerns which were presented to Duke Energy. Ultimately the ash was re-analyzed using more appropriate methodology for the air permit application. A revised permit application and air toxics analysis was received October 26, 2018 and indicated compliance with NC Air Toxics Regulations. I consider this issue resolved.

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.

Brendan G. Davey, P.E., Hearing Officer

November 29, 2018
Date

Hearing Officer's Report and Recommendations

Duke Energy Progress, LLC – H. F. Lee Steam Electric Plant
Public Hearing July 10, 2018
Wayne Community College
Goldsboro, NC

SUPPORTING DOCUMENTATION

Permit Application Review
Draft Permit
Notice of Public Hearing
Public Hearing Attendance Forms
32 E-mailed Public Comments
(*No Hardcopy/Paper Public Comments Were Received)
Environmental Justice Study
Audio of Public Hearing Comments