NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: TBD

Region: Raleigh Regional Office
County: Person
NC Facility ID: 7300029
Inspector's Name: Matthew Mahler
Date of Last Inspection: 02/07/2018
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): Duke Energy Progress, LLC - Roxboro Steam Electric Plant

Facility Address:
Duke Energy Progress, LLC - Roxboro Steam Electric Plant
1700 Dunnaway Road
Semora, NC 27343

SIC: 4911 / Electric Services
NAICS: 221112 / Fossil Fuel Electric Power Generation

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D: .0501, .0510, .0515, .0519, .0521, .0524, .0530, .0535, .0536, .0606, .1100, .1111
02Q: .0400
NSPS: D, Y, OOO, IIII
NESHAP: ZZZZ, UUUUU
PSD: Use of Projected Actual Emissions
PSD Avoidance: n/a
NC Toxics: 02D .1100
112(r): n/a
Other: CSAPR

Contact Data

Facility Contact

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Application Data

Application Numbers: 7300029.18C, D, & F
Date Received: 04/30/2018
Application Type: Renewal
Application Schedule: TV-Renewal

Existing Permit Data
Existing Permit Number: 01001/T53
Existing Permit Issue Date: 05/03/2018
Existing Permit Expiration Date: 01/31/2019

Total Actual emissions in TONS/YEAR:

CY	SO_2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2016	8052.62	5480.98	96.28	806.85	460.94	20.21	9.41 [Hydrogen chloride (hydrochlori]
2015	10544.03	7120.18	104.26	883.20	528.85	27.12	11.59 [Hydrogen chloride (hydrochlori]
2014	15647.03	9569.75	148.23	1235.49	731.18	24.00	6.15 [Cyanide & compounds (see also]
2013	12642.21	10060.78	117.27	26960.69	484.71	17.31	4.93 [Cyanide & compounds (see also]
2012	13372.01	13064.42	175.62	25999.17	748.65	24.70	7.27 [Cyanide & compounds (see also]

Review Engineer: Russell Braswell

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 01001/T54
Permit Issue Date: TBD
Permit Expiration Date: TBD

1. Purpose of Application:

- .18D:

  Duke Energy Progress, LLC - Roxboro Steam Electric Plant ("Duke – Roxboro", "the facility") currently operates an electric generating power plant in Person County NC. The facility operates under Title V Air Quality Permit 01001T53, which is set to expire on January 31, 2019. Duke – Roxboro submitted this application in order to renew the Title V permit. Because the renewal application was received at least six months before the expiration date, the existing permit will remain in effect, regardless of expiration date, until this renewal application is processed.

  In addition to renewing the permit, the application noted several emission sources currently listed on the permit that were never constructed. The application recommended removing these sources from the permit. See Section 5 and Attachment 1 to this review for more details.

  Because this application is for renewal, no P.E. seal or zoning consistency form was required.

- .18C:

  In addition to the Title V permit, Duke – Roxboro also holds a Title IV Acid Rain permit. That permit is incorporated into the Title V permit. Duke – Roxboro submitted this application in order to renew the Title IV permit without modification. By submitting this application, the renewal dates of the Title IV and Title V permits will be the same in the future.

- .18F:

  The existing Title V permit contains Specific Condition 2.1 B.4, which requires Duke – Roxboro to submit a 2nd-step permit application pursuant to 15A NCAC 02Q .0501(d)(2) within 12 months of completing the Unit 4 burner upgrades. This permit condition was added during the T53 permit revision. Duke – Roxboro submitted application .18F in order to satisfy this condition. In the application, Duke – Roxboro stated that burner upgrades were implemented as planned, and with no revisions.

  Because no revisions were made to the planned burner upgrades, the original analysis in the T53 application review is sufficient discussion for this current application review. The T53 application review is included in Attachment 2.

2. Facility Description:

This facility is a coal-fired power plant. The facility operates four boiler units (with six total boilers) and associated steam turbines. The boilers are equipped with electrostatic precipitators, low-NOx burners, selective catalytic reduction (SCR), sorbent injection, and wet limestone scrubbers. The SCR systems are operated on an as-needed basis primarily during the summer ozone season. In addition to the boilers, the facility operates equipment for handling coal, flyash, and limestone.

3. History/Background Since the Previous Permit Renewal:

- February 7, 2014 Permit T48 issued. This action renewed the permit and satisfied a 2nd-step permit application requirement under 15A NCAC 02Q .0504(d).

- April 13, 2016 Permit T49 issued. This action changed the name and ownership of the permit.

- June 20, 2016 — Permit T50 issued. This action renewed and modified the Title IV Acid Rain Permit. In addition, DAQ took this opportunity to remove the expired Clean Air Interstate Rules and add the Cross State Air Pollution Rule.

- October 21, 2016 — Permit T51 issued. This was 1st-Step Significant modification that allowed for upgraded flyash handling at the facility. Also removed references to recycled fuel oil, burning of waste cleaning materials, and a decommissioned gas turbine.

- December 20, 2017 — Permit T52 issued. This was a Significant modification that added a specific permit condition for MACT Subpart UUUUU, revised PM monitoring requirements for Units 1 – 3, and lowered the PM emission limit for Unit 4 (as allowed by NSPS Subpart D, and requested by the facility). A statement that disallowed the use of halogen compounds for mercury control was also added to the permit.

- May 3, 2018 — Permit T53 issued. This was a 1st-Step Significant modification that allowed for replacement and upgrade of the low-NOx burners in Unit 4.

4. Application Chronology:

- April 13, 2018 — Application .18C received in Raleigh Central Office.

- April 30, 2018 — Application .18D received in Raleigh Central Office.

- May 3, 2018 — Permit T53 issued.

- June 7, 2018 — Email sent to facility regarding "normal" visible emissions under 02D .0521 and the compliance options chosen for MACT Subpart UUUUU. Erin Wallace (Sr. Environmental Specialist for Duke Energy) responded by email later that day.

- June 12, 2018 — Email sent to facility regarding the choice of HCl testing versus SO_2 CEMS to demonstrate compliance with MACT Subpart UUUUU. Erin Wallace responded by email on June 18, 2018.

- June 25, 2018 — An initial draft of the permit and application review were sent to DAQ staff (Tom Anderson, Mark Cuilla, Samir Parekh, Matthew Mahler, Ray Stewart) and to Duke - Roxboro staff (Erin Wallace, Jason Haynes).

- July 16, 2018 — Application .18F received in Raleigh Central Office.

- July 18, 2018 — A second draft of the permit and application review (including application .18F) were sent to DAQ staff and Duke – Roxboro staff. See Attachment 3 for a summary of comments received.

- XXXXX — Public / EPA notice

- XXXXX — Permit issued.

5. Permit Modifications/Changes and TVEE Discussion:

The renewal application requested the following changes to the permit:

- Add IS-55 through 62. These sources are various small fuel tanks around the facility.
- Remove flyash-fired fluidized bed combustor (ES-CBO-FBC) and associated sources because Duke - Roxboro no longer plans to construct them.
- Remove several sorbent handling sources because Duke - Roxboro no longer plans to construct them.
- The requirement to submit a 2nd step permit application for the Unit 4 burner upgrade has been removed from the permit because Duke – Roxboro has satisfied this requirement.

In addition to these changes, the emergency-use engines have been moved to the Insignificant Activities list because they qualify under 15A NCAC 02Q .0503(8).

The list of changes to the permit can be found in Attachment 1.

6. Regulatory Overview:

Duke - Roxboro is subject to the following State Implementation Plan (SIP) and Federal regulations, in addition to the requirements in the General Conditions:

- 15A NCAC 02D .0501 "Compliance with National Ambient Air Quality Standards"
- 15A NCAC 02D .0510 "Particulates from Sand, Gravel, or Crushed Stone Operations"
- 15A NCAC 02D .0515 "Particulates from Miscellaneous Industrial Processes"
- 15A NCAC 02D .0519 "Control of Nitrogen Dioxide and Nitrogen Oxides Emissions"
- 15A NCAC 02D .0521 "Control of Visible Emissions"
- 15A NCAC 02D .0524 "New Source Performance Standards"
  (40 CFR Part 60, Subparts D, Y, OOO, IIII)
- 15A NCAC 02D .0530(u) "Prevention of Significant Deterioration"
  (Use of Projected Actual Emissions)
- 15A NCAC 02D .0535 "Excess Emissions Reporting and Malfunctions"
- 15A NCAC 02D .0536 "Particulate Emissions from Electric Utility Boilers"
- 15A NCAC 02D .0606 "Sources Covered by Appendix P of 40 CFR Part 51"
- 15A NCAC 02D .1100 "Control of Toxic Air Pollutants"
- 15A NCAC 02D .1111 "Maximum Achievable Control Technology"
  (40 CFR Part 63, Subparts ZZZZ, UUUUU)
- 15A NCAC 02Q .0400 "Acid Rain Procedures"
- Cross State Air Pollution Rule (aka CSAPR)
  (40 CFR Part 97, Subparts AAAAA, BBBBB, and CCCCC)

An extensive review for the following applicable regulations is not included in this document: 02D .0510, .0515, .0519, .0535, and .0606. The facility's status with respect to these regulations has not changed. The permit will be updated to reflect the most current stipulations for all applicable regulations.

For a review of permit changes and an explanation of rules included (or not included) in the permit, see Section 7. For a discussion of TAP rules (e.g. 02D .1100), see Section 8.

7. Rules Review

a. New Source Performance Standards (NSPS; 40 CFR Part 60)

1. Subpart D "Fossil-Fuel-Fired Steam Generators"

This rule applies to fossil-fuel-fired boilers that were constructed or modified after August 17, 1971, provided they are not also subject to NSPS Subpart Da. The Units 1, 2, and 3 boilers were constructed before this date and have not undergone a modification that meets the definition of "modification" under 40 CFR Part 60. Therefore, the only source at this facility subject to this rule are the Units 4A and 4B boilers.

The rule has emission limits for NOx, SO_2, and PM. As an alternative to the PM standard in this rule, the facility has opted to use a continuous emission monitor system (CEMS) and comply with the PM emission limit in NSPS Subpart Da, as allowed by 40 CFR 60.42(c). The rule also requires a CEMS for NOx and SO_2.

In addition to operating CEMS, the permit requires a semi-annual emission test for PM. Provided that three consecutive test results are less than 80% of the emission limit, the testing frequency can be reduced to annual. Based on the most recent emission test in DAQ's database (reference number 2017-284ST), Duke – Roxboro is allowed to perform this test annually.

The facility must operate and maintain each CEMS in good condition, and submit reports of excess emissions quarterly.

Based on the most recent inspection report, Duke – Roxboro appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

2. Subpart Da "Electric Utility Steam Generating Units" and Subpart Db "Industrial-Commercial-Institutional Steam Generating Units"

These rules apply to boilers that were constructed, modified, or reconstructed after the applicability date of the rule. For Subpart Da, the applicability date is September 18, 1978. For Subpart Db, the applicability date is June 19, 1984.

Units 1, 2, and 3 were constructed before the 1978 applicability date, and have not been modified or reconstructed since that date. Therefore, Subparts Da and Db do not apply to Units 1, 2, and 3.

Unit 4 was constructed before the 1978 applicability date. The recent T53 permit allowed for replacement and upgrade of the burners in Unit 4. As discussed in the associated application review (see Attachment 2), this action does not meet the definition of "reconstruction" or "modification" under 40 CFR Part 60. Therefore, Unit 4 has not been modified or reconstructed since the applicability dates of Subparts Da and Db.

The existing permit includes a flyash-fired fluidized bed combustor which is subject to Subpart Db. However, according to the renewal application, Duke – Roxboro never constructed this source, and now requests it removed from the permit. Because the only source subject to this rule is being removed from the permit, all references to Subpart Db have also been removed from the permit.

3. *Subpart Y "Coal Preparation and Processing Plants"*

   This rule applies to facilities that process coal in a manner described in 40 CFR 60.250(b) and were constructed or modified between October 27, 1974 and April 28, 2008. All of the coal handling sources at this facility are subject to this rule. These sources are considered "coal processing and conveying equipment" under this rule.

   For such sources, the rule requires that visible emissions (VE) be limited to 20% opacity. In order to demonstrate compliance with this rule, the facility must conduct a monthly observation of VE from each source and compare them to the established "normal" for that source. If VE is observed above normal, the facility must perform a Method 9 observation and/or immediately shut down the source for repairs. The permit requires recordkeeping and semiannual reporting of all monitoring.

   Based on the most recent inspection report, Duke – Roxboro appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

4. *Subpart OOO "Nonmetallic Mineral Processing Plants"*

   This rule applies to mineral processing facilities that are equipped with an above-ground grinding mill and were constructed after August 31, 1983. Each of the limestone handling sources at this facility are subject to this rule.

   The rule limits PM and VE based on the type and construction date of an individual source. There are two overall groups of sources at this facility: those subject to a 10% opacity limit, and those subject to a 7% opacity and 0.022 gr/dscf limit for PM.

   In order to demonstrate compliance with this rule, the facility must conduct a monthly observation of VE from each source and compare them to the established "normal" for that source. If VE is observed above normal, the facility must perform a Method 9 observation and/or immediately shut down the source for repairs. The permit requires recordkeeping and semiannual reporting of all monitoring. In addition, for sources controlled with bagfilters, the facility must perform a monthly external inspection and an annual internal inspection of each bagfilter.

   The permit requires recordkeeping and semiannual reporting of all monitoring.

   Based on the most recent inspection report, Duke – Roxboro appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

5. *Subpart IIII "Stationary Compression Ignition Internal Combustion Engines"*

   This rule applies to stationary CI engines installed after July 11, 2005. The only CI engines at this facility subject to this rule are IS-61 and IES-FWP2. Both of these engines are considered "emergency use".

   For such engines, this rule requires:

   - A non-resettable hour meter;
   - Operate only during periods of emergency or maintenance;
   - Operate with good work practices; and
   - Use diesel fuel with a sulfur content less than 15ppm

Based on the most recent inspection report, Duke – Roxboro appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

Note that this rule only applies to sources on the Insignificant Activities List. The facility must comply with the rule, but the permit will not contain a specific condition for this rule.

b. Maximum Available Control Technology (MACT; 40 CFR Part 63)

1. Major Source Status

This facility is considered a Major Source of hazardous air pollutants. Therefore, rules that apply specifically to Area Sources (e.g. Subparts JJJJJJ and CCCCCC) do not apply to this facility by default.

2. Subpart ZZZZ "Stationary Reciprocating Internal Combustion Engines"

This rule applies to all stationary internal combustion engines.

The requirements of this rule depend on several factors: engine capacity, manufacture date, HAP-Major/Minor, etc. For the purposes of this rule, all of the engines at this facility are:

- New OR Existing;
- HAP-Major;
- Emergency use;
- Between 100 and 500 horsepower;
- Diesel-fired/compression ignition; and
- Uncontrolled.

For existing engines, the general requirements of the rule are to install a non-resettable hour meter, perform regular maintenance and oil changes and to operate according to manufacturer's specifications. For new engines, the rule only requires that the facility also comply with NSPS Subpart IIII.

The facility is expected to continue to comply with this rule.

Note that this rule only applies to sources on the Insignificant Activities List. The facility must comply with the rule, but the permit will not contain a specific condition for this rule.

3. Subpart DDDDD "Major Sources: Industrial/Commercial/Institutional Boilers and Process Heaters"

This rule applies to boilers located at HAP-Major sources. However, per §63.7491(a), this rule does not apply to boilers that are also subject to MACT Subpart UUUUU. All of the boilers at this facility are subject to Subpart UUUUU, and therefore this rule does not apply.

4. Subpart UUUUU "Coal- and Oil-Fired Electric Utility Steam Generating Units"

This rule applies to all coal/oil-fired boilers that generate steam used to produce electricity. Each coal-fired boiler at this facility is subject to this rule. This rule is often referred to as "Mercury Air Toxics Standards", "MATS", or the "EGU MACT".

Under this rule, a boiler is considered "existing" if it was constructed before May 3, 2011 and has not undergone reconstruction since that date. All boilers at this facility were constructed before this date.

The recent T53 permit allowed for replacement and upgrade of the burners in Unit 4. As discussed in the associated application review (see Attachment 2), this action does not meet the definition of "reconstruction" under 40 CFR Part 63. Therefore, each boiler at this facility is considered "existing" under the rule.

This rule establishes three emission limits, and provides several compliance methods for each limit. Based on an email from the facility received on June 12, 2018, this facility has chosen the following emission limits and compliance methods:

- Limit filterable PM emissions to less than 3.0E-2 lb/MMBtu and use a PM CEMS to demonstrate compliance;
- Limit hydrogen chloride (HCl) emissions to less than 2.0E-3 lb/MMBtu and perform quarterly emission tests to demonstrate compliance; and
- Limit mercury (Hg) emissions to less than 1.3E-02 pounds per gigawatt-hour, and use a combination of Hg CEMS and sorbent traps to demonstrate compliance.

The rule provides alternative limits and methods to those listed above. If the facility choses to comply with the alternative limits, the facility must submit a new notification of compliance status per 40 CFR 63.10011(a) and 63.10030(e).

In addition to emission limits, the rule requires the facility to operate with good work practices, conduct regular boiler tune-ups, and burn only oil during periods of startup and shutdown. The rule requires regular reporting of CEMS and stack test data.

The permit condition has been rewritten in order to specify the compliance options chosen by the facility, and to specify that a change requires a new notification. This is only for clarity and completeness, and will not affect Duke – Roxboro's requirements under the rule.

Based on the most recent inspection report, Duke – Roxboro appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

c. Prevention of Significant Deterioration (PSD)

This facility is a Major Source for PSD purposes, but has not undergone a PSD review.

In order to demonstrate the low-NOx burner upgrade for Unit 4 (approved in the T53 permit) did not trigger a PSD review, Duke – Roxboro submitted an application that compared projected actual emissions to the baseline emissions for Unit 4. The projected emissions used in that application are included in the permit. After the upgrade is complete, Duke – Roxboro will be required to submit an annual emission report such that the projections can be verified.

d. Risk Management Program and Section 112(r) of the Federal Clean Air Act

This facility stores anhydrous ammonia above the threshold listed in 40 CFR 68.130, and therefore this facility must develop and maintain a Risk Management Plan (RMP).

The facility was most recently inspected for compliance with the RMP on June 30, 2017. The facility appeared to be in compliance with the plan at that time. The facility must submit an update to the RMP by December 12, 2021.

A specific condition for the RMP has been added to the permit, as required by 15A NCAC 02Q .0508(h).

e. Reasonably Available Control Technology (RACT)

The facility is not located in an area of ozone nonattainment, therefore RACT does not apply.

f. Compliance Assurance Monitoring (CAM; 40 CFR Part 64)

CAM applies to an emission source and associated control device if the following criteria are met:

1. The source being controlled is subject to a non-exempt emission standard (defined by 02D .0614(b)(1)),
2. The control device is being used to comply with the emission standard, and
3. The source being controlled has potential emissions of the pollutant subject to the emission standard greater than major source thresholds.

This facility uses control devices to comply with several emission limits. The table below examines each rule and emission source for CAM applicability.

Rule	Sources	Pollutant	Triggers CAM?	Notes
02D .0501(c)	Units 1 – 4	NOx, SO_2	No	*
02D .0510	Limestone handling	PM	No	This rule does not have a specific emission limit
02D .0515	Coal, flyash, and limestone handling	PM	No	**
02D .0519	Units 1 – 3	NOx	No	*
02D .0524 (Subpart D)	Unit 4	NOx, SO_2, PM	No	*
02D .0524 (Subpart Y)	Coal handling	VE	No	***
02D .0524 (Subpart OOO)	Flyash and limestone handling	PM, VE	No	**,***
02D .0536	Units 1 – 3	PM	No	*
02D .1100	Facility-wide	TAPs	No	***
02D .1111	Units 1 – 4	PM, HCl, Hg	No	02D .0614(b)(1)(A)
02Q .0400	Units 1 – 4	NOx, SO_2	No	02D .0614(b)(1)(C)
CSAPR	Units 1 – 4	NOx, SO_2	No	02D .0614(b)(1)(D)

* Each subject source operates a CEMS for this pollutant. A CEMS is considered a continuous compliance determination method (CCDM), which allows for exemption from CAM per 02D .0614(b)(1)(F).

** Potential emissions are less than the major source threshold.

*** This pollutant does not have a major source threshold.

No emission source triggers CAM requirements, and therefore CAM does not apply to this facility.

g. Cross State Air Pollution Rule (CSAPR; 40 CFR Part 97, Subparts AAAAA, BBBBB, and CCCCC)

This rule applies to power plants that produce electricity for sale.

CSAPR was originally scheduled to take effect on January 1, 2012. This rule was planned as a replacement for the Clean Air Interstate Rules. However, CSAPR was challenged in court and initially vacated by the DC Circuit Court. Legal issues were finally resolved in April 2014, when the US Supreme Court reversed that decision. Because the regulation was delayed by court proceedings, the effective date of the rule was moved to January 1, 2015.

Under this rule, each of the boilers at the facility is considered a "large electric generating unit", per 40 CFR 52.34. This rule and all requirements thereof are considered Federal-enforceable only. Compliance will be determined by the US EPA, not NC DAQ.

h. Acid Rain Permit

This facility is required to obtain and comply with an Acid Rain Permit (ARP) under 40 CFR 72.30 and 31. The ARP limits SO_2 and NOx emissions under 40 CFR Parts 73 and 76. The requirements of the ARP are incorporated into NC's SIP under 15A NCAC 02Q .0400.

Duke – Roxboro is allocated SO_2 allowances by US EPA under Part 73. A reference to the SO_2 allowances is included in the permit, but compliance with Part 73 is determined by US EPA.

Part 76 applies NOx limits to coal-fired boilers based on the design of the boiler. However, facilities may group multiple boilers from multiple facilities into a larger averaging plan. Under the averaging plan, each boiler in the group is assigned an alternative limit and a minimum heat input rate. The combination of the alternative limits and heat input rates must result in NOx emissions less than the default emission limits for the group.

Duke - Roxboro is part of an averaging plan which groups together several other power plants owned by Duke Energy Progress, all of which are located in North Carolina. The proposed alternative emission limits are listed in the permit. Ultimately, compliance with Part 76 is also determined by US EPA.

The permit condition that incorporates the ARP has been rewritten for clarity. Ultimately, the requirements have not been changed.

i. Other SIP Rules

1. 02D .0501 "Compliance with National Ambient Air Quality Standards"

Under this rule, the facility has emission limits for PM, SO_2, and NOx. These limits were determined with a modeling analysis on May 16, 2007 and were implemented to ensure compliance with the NAAQS listed in 61 Fed. Reg. 25566 (May 22, 1996) and 61 Fed. Reg. 52852 (October 8, 1996). In general, the facility demonstrates compliance with these limits using CEMS for each pollutant.

A sentence has been added to each permit condition that states the specific NAAQS associated with the emission limits. This was only added for clarity, and the permit requirements are ultimately unchanged.

Based on the most recent inspection report, Duke – Roxboro appeared to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

2. *02D .0521 "Control of Visible Emissions"*

This rule limits visible emissions VE from sources that have no other applicable VE emission limit (e.g. NSPS Subpart OOO). The specific conditions for this rule require periodic observations of VE from these sources, recordkeeping, and reporting.

The monitoring section of the specific conditions have been updated to the latest DAQ-approved wording. This change clarifies the facility's requirements if above-normal VE is observed, and clarifies what scenarios can be deemed noncompliance. Emission limits and frequency of monitoring remain unchanged.

Based on the most recent inspection report, Duke - Roxboro appeared to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

3. *02D .0536 "Particulate Emissions from Electric Utility Boilers"*

This rule applies to specific electric utility boilers in North Carolina, as indicated in 02D .0536(b). Units 1, 2, and 3 are listed in this rule, but Unit 4 is not. The rule regulates PM and VE from each boiler subject to the rule.

The permit allows the facility to use PM CEMS output to demonstrate compliance with the VE emission limit. The permit condition provides a specific equation to convert PM CEMS data into an opacity to demonstrate compliance with the VE limit. This equation has been rewritten for clarity. The permit requirements are ultimately unchanged.

Based on the most recent inspection report, Duke - Roxboro appeared to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

4. *02Q .0504 "Option for Obtaining Construction and Operation Permit"*

02Q .0504(d) allows for Significant Title V applications to be processed in two steps: the first step is processed under 02Q .0300, and the second step under 02Q .0500. In general, the applicant submits an application for the first step, implements the applied-for modification, and then submits the second application within 12 months of completion of the modification. Until the second application is received, the Title V permit contains a requirement that the applicant submit the second application.

Duke – Roxboro's existing Title V permit contains three separate requirements to submit a 2nd-step application: one for the Unit 4 burner upgrades (Condition 2.1 B.4 in the T53 permit) and two for upgrading the flyash handling sources (Conditions 2.1 C.3 and 2.1 D.3 in the T53 permit). The facility submitted application .18F in order to satisfy Condition 2.1 B.4, and application .17C in order to satisfy Conditions 2.1 C.3 and 2.1 D.3.

Application .17C is currently being processed separately from applications .18C, D, and F. Therefore, Conditions 2.1 C.3 and 2.1 D.3 will remain in the permit. Condition 2.1 B.4 will be removed.

The T53 application review discussed the Unit 4 burner upgrades in-depth. Because the facility implemented the upgrades with no revisions, no additional discussion is necessary. Attachment 2 contains the portions of the T53 application review relevant to the Unit 4 burner upgrades.

8. Toxic Air Pollutants (TAPs)

This facility has submitted air dispersion modeling in order to demonstrate compliance with the Acceptable Ambient Limits (AALs) listed in 02D .1100. The emission rates used in these modeling demonstrations have been incorporated into the permit as emission limits. Based on the actual emission rates at this facility, it has been determined that no monitoring, recordkeeping, or reporting is required to demonstrate compliance with the AALs and TAP emission limits in the permit.

The previous permit included a requirement to submit new air dispersion modeling prior to the startup of the flyash-fired fluidized bed combustor and associated handling sources. In the renewal application, Duke – Roxboro requested that these sources be removed from the permit. Therefore, this modeling requirement has also been removed from the permit.

This renewal does not trigger a new TAP emission review.

9. Facility Emissions Review

For a historical review of actual emissions from the facility, see the summary table on the first page of this review.

10. Compliance Status

- Notices of Violation/Recommendation for Enforcement since the previous renewal

  March 17, 2014 NOV issued for failing to conduct an annual internal inspection of all bagfilters at the facility.

- Inspection status

  The facility was most recently inspected by Steven Carr on June 13, 2017. Duke - Roxboro appeared to be in compliance with the Title V permit at the time of that inspection.

11. Other Regulatory Concerns

This facility was targeted for review under the Data Requirements Rule for the 2010 primary SO_2 NAAQS under 40 CFR Part 51, Subpart BB because it has actual emissions of SO_2 greater than 2,000 tons per year. This rule requires action by NC DAQ, not the facility.

As allowed by §51.1203(c), NC DAQ decided to characterize SO_2 concentrations in the vicinity of this facility through ambient monitoring. NC DAQ will continue to operate SO_2 monitors as required by §51.1205(a), and will take any action deemed necessary as a result of SO_2 monitoring.

Because this facility has no requirements under this rule, the Title V permit will not contain a specific condition for this rule.

12. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 02Q .0521 above. Virginia is an affected state, and Forsyth county is an affected local program.

The Public Notice and EPA Review periods began on XXXXXXXXX.

13. Recommendations

Issue Permit 01001T54.

Attachment 1 to review of applications 7300029.18C, D, & F
Duke Energy Progress, LLC - Roxboro Steam Electric Plant

Change List

Insert change list from final permit

Attachment 2 to review of applications 7300029.18C & D
Duke Energy Progress, LLC - Roxboro Steam Electric Plant

Excerpt from Application Review for the T53 Permit Revision

Sections of this application review that are not relevant to the Unit 4 upgrades are not included in this document.

Application Number: 7300029.18B
Date Received: 03/16/2018

Review Engineer: Rahul Thaker **Review Engineer's Signature:** **Date:** May 3, 2018 ***Signed May 3, 2018***	**Comments / Recommendations:** **Issue** 01001/T53 **Permit Issue Date:** 05/03/2018 **Permit Expiration Date:** 01/31/2019

1 Purpose of Application

Duke Energy Progress, LLC (DEP), Roxboro Steam Electric Plant, Roxboro, NC, has submitted a permit application to replace the existing low NOx-burners for coal firing on Unit 4 boilers. This application will be processed under 15A NCAC 02Q .0300 "construction and operation permits" as the first-step of a two-step process included in 15A NCAC 02Q .0504. The applicant will be required to submit another application in the future (within 12 months of commencement of resumption of operation of Unit 4 boilers with the replacement low-NOx burners for coal) for the same changes included in this application. The resubmittal of the application will complete the two-step process which will then be sent through a 30-day public notice and 45-day EPA review.

5 Permit Modifications/Changes

- Project

The Unit 4 boilers (4A and 4B) commenced commercial operation on September 15, 1980 with the commence construction occurring in the mid to late 1970's. They are permitted to burn coal and No. 2 fuel oil. Coal is used for normal source operations. Fuel oil alone cannot be used for normal operations. Generally, fuel oil is fired only for start-ups, shut-downs, and flame stability.

The applicant is requesting a complete replacement of the existing low-NOx burner system (LNB) for coal burning in Unit 4 boilers (4A and 4B) in addition to removal of the existing secondary over-fire air ports (16 total for two boilers). The current coal burner system was installed in 2000. Replacement of burner system is needed to avoid recurring repair activities every 18 months. These recurring repairs or complete replacements are necessary to reduce the risk of burner / wind box fires, maintain good combustion, and sustain continued use of Unit 4 boilers. The industry standard for burner replacement is 10 to 20 years. The applicant states that the new LNB system will not alter the design heat input rating of the boiler (nominal 4099 million Btu per hour for each boiler) nor will it change the output of the Unit 4 (nominal 700 MW combined for two boilers).

The existing 48 coal burners (24 each boiler) are each 172.8 million Btu per hour AAB Robatas burners. The 48 new burners (24 each boiler) will be Babcock and Wilcox DRB 4-Z 153.2 million Btu per

hour burners. These burners are rated based on the number of pug mills in service. The existing burners were rated based on 10 mills in service, while the new burners are rated based on 11 mills in service.

With respect to emissions, vendor guarantees were provided for NOx and CO. The Permittee states that NOx emissions will not exceed 0.415 lb per million Btu at the burner and additional NOx control will continue to be provided by the selective catalytic reduction systems (SCR) to meet all applicable limits, currently installed on each electric steam generating unit (EGU). The existing NOx continuous emissions monitoring systems (CEMS) are currently measuring NOx emissions on real-time basis from each unit. As per the applicant, historic operations indicate the post-SCR NOx emissions rates in the range of 0.08 to 0.1 lb per million Btu and no change in that target is expected due to the proposed replacement of LNB.

The vendor guarantees for CO ensures that the post-project emissions do not exceed 200 ppmvd @ 3% O_2. If the current CO levels (pre-project) are higher than 200 ppm, the vendor guarantees to not exceed this 200 ppm limit post-project. The applicant adds that although the vendor guarantee is higher than actual CO emissions currently, the boiler will be tuned upon installation of replacement LNB such that CO and NOx emissions will not indicate a statistically significant change from the current levels. Moreover, as per the applicant, the cessation of using the over-fire air (OFA) with the existing LNB burners will have a positive impact on the post-project CO emissions.

Finally, it should be noted here that no physical or operational change to the permitted fuel oil burning capability is proposed with this modification. Oil firing in the subject boilers comprises of dedicated 48 ignitors (not burners) (24 each boiler), each 17.3 million Btu per hour heat input.

- Regulatory Applicability

These boilers are currently subject to the requirements in 02D .0501(c), .0524 (NSPS Subpart D), .1111 (NESHAP Subpart UUUUU), 02Q .0400 (Acid Rain Program), and the requirements in 40 CFR 97 Subparts AAAAA, BBBBB, and CCCCC (i.e., Cross-State Air Pollution Rule). Each of these applicable requirements are discussed below to determine if any new requirements will apply or any existing requirements need to be revised.

<u>02D .0501(c)</u>

The Unit 4 boilers are subject to a SO_2 emission standard of 0.547 lb per million Btu. The permit also includes continuous emissions monitoring, record keeping, and reporting requirements. The LNB replacement project is not expected to have any effect on SO_2 emissions from Unit 4. No changes to the existing requirements are needed.

<u>02D .0524</u> [NSPS Subpart D]

Unit 4 boilers are subject to this NSPS. The current permit includes emissions limits for nitrogen oxides, sulfur dioxide, and particulate matter. The permit also includes testing for PM and continuous emissions monitoring for all these pollutants (NOx, SO_2, and PM). Finally, the Permittee is required to report excess emissions for the pollutants to DAQ in addition submittal of stack test reports (for PM only).

§60.14 "Modification"

The relevant passages of this requirement are as follow:

> (a) Except as provided under paragraphs (e) and (f) of this section, any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere.
> (b) Emission rate shall be expressed as kg/hr of any pollutant discharged into the atmosphere for which a standard is applicable. The Administrator shall use the following to determine emission rate:
> …
> (e) The following shall not, by themselves, be considered modifications under this part:
> …
> (5) The addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or is replaced by a system which the Administrator determines to be less environmentally beneficial.

The Permittee has stated that the above project will not result in an increase in hourly emissions (statistically significant) of NOx, SO_2, or PM, when comparing their current emissions levels. Regardless of the above, the DAQ believes that the proposed LNB replacement qualifies for the exemption in §60.14(e)(5); because, the project's primary activity is the reduction of NOx emissions. Further, as per the applicant, the proposed LNB technology is substantially improved since the existing LNB burners were installed in 2000, indicating further reduced NOx emissions levels with the replacement LNB as compared to the existing LNB system. In summary, "modification" provision is not triggered for the proposed project as it is exempt under §60.14(e)(5).

§60.15 "Reconstruction"

The relevant passages of this requirement are as follow:

> (b) "Reconstruction" means the replacement of components of an existing facility to such an extent that:
> (1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and
> (2) It is technologically and economically feasible to meet the applicable standards set forth in this part.
> (c) "Fixed capital cost" means the capital needed to provide all the depreciable components.

As per the Permittee, the total budgeted cost for the burner replacement project is approximately $25,000,000. According to historical integrated resource planning information filed with the U.S. Energy Information Administration (EIA), the capital cost for a comparable new pulverized coal plant with wet flue gas desulfurization pollution controls is $2,258/kW. Based on Roxboro Unit 4's capacity of 700 MW, the replacement cost of a comparable new unit is estimated to be $1,580,600,000. Therefore, the burner replacement cost is approximately 1.6% of the total capital cost of a comparable new plant. Thus, this project does not meet the definition of reconstruction under the NSPS.

In summary, all existing requirements under the NSPS Subpart D, as included in the current permit, continues to apply and no changes to the existing requirements are needed as modification and reconstruction provisions do not apply.

02D .1111 [NESHAP Subpart UUUUU]

The current permit includes all applicable emissions standards for hazardous air pollutants, testing, monitoring, record keeping, and reporting requirements, for Unit 4 boilers, under this NESHAP.

As per §63.2 "Reconstruction, unless otherwise defined in a relevant standard, means the replacement of components of an affected or a previously nonaffected source to such an extent that: (1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source; and (2) It is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Administrator (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source."

As stated above, the total budgeted cost for the burner replacement project is approximately $25,000,000. According to historical integrated resource planning information filed with the U.S. EIA, the capital cost for a comparable new pulverized coal plant with wet flue gas desulfurization pollution controls is $2,258/kW. Based on Roxboro Unit 4's capacity of 700 MW, the replacement cost of a comparable new unit is estimated to be $1,580,600,000. Therefore, the burner replacement cost is approximately 1.6% of the total capital cost of a comparable new plant. Thus, this project does not meet the definition of reconstruction under the NESHAP.

In summary, no changes to the existing NESHAP Subpart UUUUU requirements are needed as the Unit 4 boilers are deemed not "reconstructed" as above. The existing NESHAP requirements as included in the current permit continues to apply.

02Q .0400 (Acid Rain Program)

The current permit includes SO_2 allowances for various years and NOx limits for Unit 4 boilers. It also includes monitoring and reporting requirements for these pollutants. No change to the existing requirements is needed due to LNB replacement on Unit 4. The Permittee will continue to comply with these requirements after the installation of replacement LNB on Unit 4.

40 CFR 97 Subparts AAAAA, BBBBB, and CCCCC (Cross State Air Pollution Rule)

The current permit includes all applicable requirements under Subparts AAAAA, BBBBB and CCCCC of 40 CFR 97, which are NOx trading programs requirements for annual and ozone season, and SO_2 trading program requirements, respectively. These are federal-enforceable only requirements. No changes to these existing requirements are needed due to the LNB replacement project. The Permittee will continue to comply with these requirements after the installation of replacement LNB on Unit 4.

02D .0530(u)

NC's SIP-approved provision in 02D .0530(u) requires that the agency explicitly approve the projected actual emissions (PAE) as a permit revision (so-called "project [emissions] and [obtain] approval" scheme) when the applicant seeks to conclude a project "minor" for PSD using the actual-to-projected actual test.

Unit 4 boilers are currently not subject to this requirement. However, for the proposed replacement project, the requirement does apply as below:

The Permittee has performed the actual-to-projected actual applicability test for the existing emissions units (Unit 4 boilers). As stated in Section 2 above, the application was deemed complete by the DAQ as of March 16, 2018. As per the approved PSD regulation, the applicant needs to use a five-year lookback period from the receipt of the complete application, which is April 2013 through March 2018, for determining the baseline actual emissions (BAE) for Unit 4 boilers. In addition, the applicant can use any consecutive 24-month period within this five-year lookback period to determine baseline emissions if adequate information is available to determine baseline emissions for the selected period. The applicant is also free to use different 24-month periods within the 5-year lookback period for different pollutants. The Permittee has opted to use a consecutive 24-month period of April 2013 through March 2015 for all pollutants, meeting the requirement.

The Permittee has estimated the BAE for Unit 4 using the following emissions factors:

Coal Emissions Factors for Estimating BAEs			
Pollutant/ Parameter	Emission Factor		Comment
	Value	Units	
PM	0.0100	lb/million Btu	Average 2013-2015 PM CEMS filterable portion Condensibles excluded as per regulation
PM-10	0.0157	lb/million Btu	Average 2013-2015 PM CEMS for filterable portion Average 2008 stack tests results for condensable portion 71 percent of PM is PM10 for pulverized coal boilers with scrubber control (Table 1.1-6, Section 1.1, AP-42)
PM-2.5	0.0137	lb/million Btu	Average 2013-2015 PM CEMS for filterable portion Average 2008 stack tests results for condensable portion 51 percent of PM is PM2.5 for pulverized coal boilers with scrubber control (Table 1.1-6, Section 1.1, AP-42)
SO_2	-	CEMS	CEMS
NOx	-	CEMS	CEMS
VOC	0.0600	lb/ton	Table 1.1-19, Section 1.1, AP-42
CO	0.15	lb/million Btu	Average 2013-2015 stack test results
Lead	2.88E-06	lb/million Btu	Average 2013-2015 stack tests results
H_2SO_4	0.227	lbs/ton	Average 2013-2015 stack tests results, post-hydrated lime system
N_2O	3.53E-03	lb/million Btu	Table C-2, Subpart C, 40 CFR 98
CH_4	2.42E-02	lb/million Btu	Table C-2, Subpart C, 40 CFR 98
CO_2	-	CEMS	CEMS
Heat Input	40,254,574	million Btu	Annualized for baseline period April 2013-March 2015
Coal	1,597,863	tons	Annualized for baseline period April 2013-March 2015

The following Table provides a summary for BAEs for Unit 4:

Baseline Period	Heat Input MMBtu/yr	Coal Usage Tons/yr	PM Tons/yr	PM_{10} Tons/yr	$PM_{2.5}$ Tons/yr	SO_2 Tons/yr	NOx Tons/yr	VOC Tons/yr	CO Tons/yr	H_2SO_4 Mist Tons/yr	Lead Tons/yr	GHG as CO_2e Tons/yr
April 2013-March 2015	40,254,574.0	1,597,862.7	193.5	311.9	273.2	4,760.9	3,050.9	47.9	3,019.1	181.7	0.058	3,953,694.9

It should be noted that as per 02D .0530(b)(1)(A)(iv), "for an electric utility steam generating unit, the average rate shall be adjusted downward to reflect any emissions reductions under G.S. 143-215.107D and for which cost recovery is sought pursuant to G.S. 62-133.6".

Unit 4 is an EGU; however, Duke Energy has not installed/implemented any controls on this Unit to reduce emissions of NOx or SO_2 to comply with the NC's Clean Smokestacks Act [CSA] (G.S. 143-215.107D); thus, the provision of cost recovery G.S. 62-133.6 is not applicable. Therefore, the applicant is not required to adjust the baseline emissions for any pollutants. Regardless, it needs to be pointed out that during the baseline period of April 2013-March 2015, as per the current permit, the Permittee was required to comply with the NOx emission standard of 0.7 lb/million Btu (NSPS Subpart D) and SO_2 standard of 0.547 lb/million Btu (02D .0501(c)) when burning coal or oil. The permit also includes an optional / conditional Acid Rain Program NOx limit of 0.25 lb/million Btu. Based on the baseline period data, the maximum SO_2 and NOx emissions rates were observed to be 0.315 lbs/million Btu and 0.219 lb/million Btu, respectively. Thus, Unit 4 operated well within the boundaries of applicable limits as above at that time. Hence, no adjustments in baseline emissions of these pollutants can be justified. Moreover, the Unit is currently subject to the same emissions limits for SO_2 and NOx. So, again, no adjustments to the baseline emissions for the pollutants need to be made. Finally, it should be clarified that the Unit 4 is currently subject to PM standard of 0.03 lb/million Btu (NSPS Subpart D). This PM standard was placed in the permit (December 2017) after the Unit became subject to the PM mass-based standard (after the baseline period). Regardless, the maximum PM emission rate during the baseline period is only 0.0139 lb/million Btu. Thus, no adjustment to the baseline emissions of PM are required. Finally, Unit 4 is not subject to any emission standard for any other regulated NSR pollutant (other than NOx, SO_2, and PM). In summary, baseline emissions for all regulated NSR pollutants meet the requirements of 02D .0530.

It should be stated here that the baseline actual emissions are required to include contributions of all fuels fired (coal and fuel oil). The fuel firing for the baseline period varies between 0.22 percent to 0.35 percent of total heat input (combined coal and fuel oil) to Unit 4 boilers. The Permittee argues that only coal burners are modified, so, there is no need to account for fuel oil emissions contributions to the baseline emissions. The argument on only emissions associated with the physical change associated with the coal burners are to be accounted for in baseline emissions, is erroneous. Nevertheless, it can be considered a more conservative approach as per the applicant. The DAQ agrees with it.

With respect to PAEs for Unit 4, the following emissions factors have been utilized:

Coal Emissions Factors for Estimating PAEs			
Pollutant/ Parameter	Emission Factor		Comment
	Value	Units	
PM	0.0100	lb/million Btu	Average 2013-2015 PM CEMS filterable portion Condensibles excluded as per regulation

Coal Emissions Factors for Estimating PAEs			
PM-10	0.0157	lb/million Btu	Average 2013-2015 PM CEMS for filterable portion Average 2008 stack tests results for condensable portion 71 percent of PM is PM10 for pulverized coal boilers with scrubber control (Table 1.1-6, Section 1.1, AP-42)
PM-2.5	0.0137	lb/million Btu	Average 2013-2015 PM CEMS for filterable portion Average 2008 stack tests results for condensable portion 51 percent of PM is PM2.5 for pulverized coal boilers with scrubber control (Table 1.1-6, Section 1.1, AP-42)
SO_2	-	-	Fuel and operations forecast (FOF) model output
NOx	-	-	FOF model output
VOC	0.0600	lb/ton	Table 1.1-19, Section 1.1, AP-42
CO	0.15	lb/million Btu	Average 2013-2015 stack test results
Lead	2.88E-06	lb/million Btu	Average 2013-2015 stack tests results
H_2SO_4	0.227	lb/ton	Average 2013-2015 stack tests results, post-hydrated lime system
N_2O	3.53E-03	lb/million Btu	Table C-2, Subpart C, 40 CFR 98
CH_4	2.42E-02	lb/million Btu	Table C-2, Subpart C, 40 CFR 98
CO_2	0.0974	lb/million Btu	BAE emission factor
Heat Input	5,707,405.37	million Btu	Maximum FOF model output for 2019-2023
Heat Content	12,916	Btu/lb	-
Coal	220,943.22	tons	-

The following Table provides a summary for PAEs for Unit 4:

Projected Actual Period	Heat Input MMBtu/yr	Coal Usage Tons/yr	PM Tons/yr	PM_{10} Tons/yr	$PM_{2.5}$ Tons/yr	SO_2 Tons/yr	NOx Tons/yr	VOC Tons/yr	CO Tons/yr	H_2SO_4 Mist Tons/yr	Lead Tons/yr	GHG as CO_2e Tons/yr
Jan 2019-December 2023	5,707,405.4	220,943.2	28.6	44.7	39.0	390.4	427.0	6.6	428.1	25.1	0.0082	560,565.9

In estimating PAEs for various pollutants, the permittee has utilized the most recent iteration of its FOF model output, considering the highest current projections of its business activity for Unit 4 post-project. All amounts of future heat inputs (five calendar years from the operation of replacement LNB) would be satisfied by coal only. This is the same data supplied to North Carolina Utilities Commission, ensuring continued compliance with the CSA requirements. The DAQ believes that the PAEs as included in the above Table meets the regulatory provision in §51.166(b)(40) as incorporated in 02D .0530. They are based upon valid data and emissions factors. Thus, the DAQ approves these projections (PAEs) for Unit 4.

The following Table provides the change in emissions for the proposed LNB replacement project:

	Heat Input MMBtu/yr	Coal Usage Tons/yr	PM Tons/yr	PM_{10} Tons/yr	$PM_{2.5}$ Tons/yr	SO_2 Tons/yr	NOx Tons/yr	VOC Tons/yr	CO Tons/yr	H_2SO_4 Mist Tons/yr	Lead Tons/yr	GHG as CO_2e Tons/yr
BAEs	40,254,574.0	1,597,862.7	193.5	311.9	273.2	4,760.9	3,050.9	47.9	3,019.1	181.7	0.058	3,953,694.9
PAEs	5,707,405.4	220,943.2	28.6	44.7	39.0	390.4	427.0	6.6	428.1	25.1	0.0082	560,565.9
Change in Emissions	-	-	-164.9	-267.2	-234.2	-4,370.5	-2,623.9	-41.3	-2,591.0	-156.6	-0.0498	-3,393,129.1
Significance Threshold	-	-	25	15	10	40	40	40	100	7	0.6	75,000
Major Modification	-	-	No	No	No	No	No	No	No	No	No	No

As can be seen in the above Table, emissions of all regulated NSR pollutants are projected to be decreasing as the Unit 4 is forecasted to be utilized much less in post-modification scenario than the pre-modification scenario, in addition to improvement in at least NOx emissions due to LNB replacement. Therefore, the change in emissions for each pollutant is negative and there is no expectation for post-modification emissions exceeding the applicable significance thresholds for any regulated NSR pollutant. Thus, pursuant to the requirements in 02D .0530(u), these projected actuals will be memorialized in the permit as non-enforceable limits. However, no monitoring, record keeping, or reporting can be justified for this case.

7. Facility-wide Air Toxics

The current permit (01001T52) includes approved emissions limits for several NC-regulated air toxics pollutants (arsenic, beryllium, cadmium, manganese, mercury, nickel, chromium vi, and hydrogen sulfide) on a source-by-source basis. These limits are optimized emissions rates, corresponding to 98 percent of the applicable Accepted Ambient Levels (AALs) for each of these pollutants. They were approved through an air quality permit 01001T51 (10/21/2016). Moreover, the predicted impacts for the above pollutants, based on the potential to emit emissions rates, are only 0.35 percent (nickel) to 40.95 percent (arsenic) of applicable AALs. Finally, this review includes that that after including emissions of exempt sources (such as MACT subject engines and EGUs), there would be no unacceptable risk to human health present, as long as the modeling demonstrates compliance with the AALs. Refer to application review associated with air permit 01001T51 for details.

This application does not result in change in emissions limits of these pollutants. In addition, installation of more improved LNB (as compared to the existing LNB) on Unit 4 is may reduce the emissions of air toxics. Finally, because all existing EGUs including Unit 4 boilers are subject to NESHAP as above, any emission change (increase), if any, with Unit 4, is exempt from air toxic permitting, consistent with 02Q .0702(a)(27)(B). In summary, there would be no unacceptable risk to human health from facility's air toxics emissions after modification (i.e., installation of replacement LNB on Unit 4) for any NC-regulated air toxics pollutants.

9. Public Notice/EPA and Affected State(s) Review

Not Applicable in the first step of the two-step modification.

11. Conclusions, Comments, and Recommendations

- This permit engineer recommends issuing the revised Title V permit.

Attachment 3 to review of applications 7300029.18C, D, & F
Duke Energy Progress, LLC - Roxboro Steam Electric Plant

Comments Received on T54 Initial Drafts

- Mark Cuilla, by email on July 25, 2018

1. Permit conditions 2.1 C.3 and D.3 should remain in the permit because their associated 2nd step application has not yet been processed.

   Response: I have restored these conditions and corrected the application review.

2. Should the permit contain a reference to 40 CFR Part 63, Subpart CCCCCCC associated with IS-9?

   Response: No, that rule only applies to Area Sources of HAP.

3. Has "normal" VE been established throughout the facility?

   Response: Based on the June 7, 2018 email from Erin Wallace, not for each instance in the permit.

4. The comments indicated several typos in the draft permit and application review.

   Response: These issues have been corrected.

- Erin Wallace, by email on August 14, 2018

1. IS-62 should be added to the Insignificant Activities list.

   Response: The email also included calculations showing this source should be exempt per 02Q .0503(8). Therefore, I have added this source.

2. Footnote "g" in the draft Permitted Emission Source list should be removed because the facility has completed this requirement.

   Response: This footnote requires a 2nd step application for several material handling sources. Duke has submitted this application, but it is being processed under application .17C. Mark Cuilla requested that all references to the 2nd step processes being handled by .17C remain in the permit. Therefore, this footnote will not be removed.

3. "normal" visible emissions have already been established per Section 2.1 G.2.c, so these requirements can be removed from the permit.

   Response: I agree.

4. There is a typo in Section 2.1 J.2.c.i.

   Response: Fixed.