NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: XXXX, xx, 2025

Region: Fayetteville Regional Office
County: Richmond
NC Facility ID: 7700082
Inspector's Name: Joshua Loehman
Date of Last Inspection: 12/19/2024
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): NCEMC - Hamlet Plant

Facility Address:
NCEMC - Hamlet Plant
162 Cooperative Way
Hamlet, NC 28345

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: 15A NCAC 02D .0521, .0524, .0530, .1100, .1418, and .1425, and 15A NCAC 02Q .0400, 02Q .0317 of 02D .0530
NSPS: 40 CFR Part 60, Subpart KKKK
NESHAP: N/A
PSD: CO, NOx, PM_{10}, and $PM_{2.5}$
PSD Avoidance: NOx and GHGs
NC Toxics: Yes
112(r): N/A
Other: Cross State Air Pollution Rule (CSAPR) 40 CFR Part 97, Subparts AAAAA and CCCCC

Phase II Acid Rain Program
40 CFR Part 72

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Tony Phillips Manager 749 Blewett Falls Road Lilesville, NC 28091 (919) 875-7106 Barry.Phillips@ncemcs.com	James Wilkins Vice President, Energy Portfolio 3400 Sumner Boulevard Raleigh, NC 27616 (919) 875-3132 james.wilkins@ncemcs.com	Khalil Porter Manager, Environmental Affairs 3400 Sumner Boulevard Raleigh, NC 27616 (919) 875-3088 Khalil.Porter@ncemcs.com

Application Data

Application Number: 7700082.24A and .24B
Date Received: 10/15/2024 (FRO)
Application Type: Renewal and Acid Rain
Application Schedule: TV-Renewal and TIV

Existing Permit Data
Existing Permit Number: 09488T10
Existing Permit Issue Date: 06/23/2020
Existing Permit Expiration Date: 05/31/2025

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2023	---	39.60	4.80	49.50	1.90	0.4144	0.2821 [Formaldehyde]
2022	---	97.90	11.64	116.84	5.37	1.04	0.6901 [Formaldehyde]
2021	---	56.18	6.78	71.79	2.99	0.6089	0.4216 [Formaldehyde]
2020	---	29.98	4.03	38.83	1.58	0.3235	0.2240 [Formaldehyde]
2019	---	49.01	6.41	63.36	2.58	0.5246	0.3614 [Formaldehyde]

Review Engineer: Booker T. Pullen

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

Comments / Recommendations:
Issue: 09488T11
Permit Issue Date: XXXX, xx 2025
Permit Expiration Date: XXXXX, xx, 2030

1.0 Purpose of Application(s)

The North Carolina Electric Membership Corporation – Hamlet Plant (NCEMC – Hamlet) is an electric power generating station located in Hamlet, North Carolina. The Applicant currently holds Title V and Acid Rain Permit No. 09488T10 with an expiration date of May 31, 2025.

The facility has submitted Application No. 7700082.24A for an existing Title V permit renewal without modifications, changes, or confidential or trade secret information requests. The renewal application was received on October 15, 2024 in the Fayetteville Regional Office (FRO), or at least six months prior to the expiration date (May 31, 2025). Therefore, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

Separately, the facility has submitted Application 7700082.24B for the renewal of its existing Acid Rain permit. There were no modifications, changes, or confidential or trade secret information requests. The Acid Rain renewal application was also received on October 15, 2024 in the Fayetteville Regional Office (FRO), or at least six months prior to the expiration date. Therefore, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

The permit modification for this renewal of the Title V operation permit and the Acid Rain permit will be required to go through both a 30-day public participation and a 45-day EPA review.

2.0 Facility Description

The Hamlet Plant located at 162 Cooperative Way in Hamlet, Richmond County, North Carolina, is comprised of six simple cycle, natural gas-fired (low sulfur No. 2 fuel oil backup) Pratt and Whitney FT-8 combustion turbine (CT) sets, commonly known as “Swift-Pacs”, for a total of 12 turbines. Each FT-8 Swift-Pac set consists of two turbines (designated A and B) which drives a single electric generator with each turbine using water injection for NOx control. Three of the turbine sets are under contract with Duke/Progress Energy and the other three turbine sets are under contract with Pennsylvania Jersey Maryland Power. The two turbines in each set do not have to operate simultaneously. The double-ended configuration allows for greater efficiency during partial load usage. This plant operates as a “peaking” facility to meet peak power demands on a daily or seasonal basis. In addition, there are three insignificant sources at the facility, two 500,000 gallon each No. 2 fuel oil storage tanks, and a small natural gas heater.

The Hamlet plant operates 24 hours per day and seven days per week. The facility can produce 340 Mega Watts of electrical power for retail distribution during periods of high demand or during emergencies. The facility has chosen to use a predictive emission monitor system (PEM) to monitor NOx emission in lieu of CEMs. The predictive emission monitor systems have been proven to be as accurate as the CEMs and are in fact more economical (cost and maintenance). The facility uses this software program to monitor and determine NOx emissions from the gas turbines in real time.

The facility is a Title V facility because the potential emissions of at least one criteria pollutant exceeds a Title V threshold.

3.0 History/Background/Application Chronology

<u>History/Background</u>

June 23, 2020 TV permit renewal and Acid Rain Permit issued. Air Permit No. (09488T10) was issued on June 23, 2020 with an expiration date of May 31, 2025.

Application Chronology

October 15, 2024	Applications 7700082.24A (TV Renewal) and .24B (Acid Rain) were received for the renewal of the Title V operating permit and renewal of the Acid Rain permit. The applications were received in the Fayetteville Regional Office, then forwarded to the Raleigh Central Office. These applications were considered complete on this date.
October 15, 2024	Applications 7700082.24A (TV Renewal) and .24B (Acid Rain) were scanned into Laserfiche by the Fayetteville Regional Office.
October 21, 2024	DAQ Central Office sent separate acknowledgment letters indicating that applications for permit renewal of the operating permit (7700082.24A) and the Acid Rain renewal permit (7700082.24B) were complete on October 15, 2024.
January 14, 2025	Draft permit and review forwarded to SSCB. SSCB (Samir Parekh) responded on Wednesday January 15, 2025 that they had no comments.
January 14, 2025	Draft permit and review forwarded to the Fayetteville Regional Office. Comments were received on January 17, 2025. All relevant comments were included in the review and permit.
January 29, 2025	Draft permit and review forwarded to Supervisor for comments. Comments were received from Supervisor on February 12, 2025. All pertinent comments were included in the draft permit and engineering review.
March 26, 2025	Draft permit was sent to the applicant. Included in the email to the applicant was a statement indicating that regulation 15A NCAC 02D .1418 rule should be placed back into the NCEMC Title V Air Permit. A recently adopted regulation, 15A NCAC 02D .1425 would be placed into the permit. The applicant responded with several administrative type revisions which were placed into the permit accordingly. Also included in the Title V permit for the first time is a “State enforceable only” PFAS Disclosure Statement. See Section 12.0 below.
XXXXXX, 2025	Draft permit and permit review forwarded to public notice via DAQ website. See Section 11.0 of this review for any public comments.
XXXXXX, 2025	Public comment period ends. Comments were/were not received. See Section 11.0 of this review for EPA responses to comments.
XXXXXX, 2025	EPA comment period ends. Comments were/were not received. See Section 11.0 of this review for EPA responses to comments.
XXXXXX, 2025	Permit issued.

4.0 Permit Modifications/Changes and TVEE Discussion

The following table describes the modifications to the current permit (09488T10) as part of the renewal process to reissue the Title V permit as 09488T11. This summary is not meant to be an exact accounting of each change but a summary of those changes.

Page(s) of new Permit	Section in T11	Description of Changes
Page 1	Cover Letter	• Updated letterhead and permit using new permit shell. • Updated permit revision numbers and dates throughout.
Page 2	Cover Letter	• Changed engineer's name and contact information to Booker T. Pullen
Page 3	Cover Letter	• Added page containing "Notice Regarding The Right to Contest A Division Of Air Quality Permit".
Page 4	Cover Letter	• Revised the Summary of Changes to the Permit page.
Page 1	Permit	• Changed Permit number, changed "Replaces Permit" number, changed effective date of Permit, revised the application number and the complete application date.
Page 2	Permit	• Revised the "Table of Contents" to reflect the most current shell language/format. Placed "Acid Rain Permit Requirements" and "Cross State Air Pollution Rules" under the heading "Other Applicable Requirements"
Page 3	Permit	• Added the List of Acronyms.
Page 4	Permit	• Revised the descriptions of the 6 gas turbine units and the regulatory designations.
Page 5	Permit, Section 2.1 A	• Added regulations 15A NCAC 02D .1418 and 02D .1425 to the permit for turbines (ID Nos. ES-1A and 1B through ES-5A and 5B).
Page 6	Permit, Section 2.1 A	• Added regulatory requirements of 15A NCAC 02D .1418 and 02D .1425 to the permit for turbines (ID Nos. ES-1A and 1B through ES-5A and 5B).
Page 9	Permit, Section 2.1 B	• Added regulations 15A NCAC 02D .1418 and 02D .1425 to the permit for turbines (ID Nos. ES-6A and 6B).
Pages 12-13	Permit, Section 2.1 B	• Added regulatory requirements of 15A NCAC 02D .1418 and 02D .1425 to the permit for turbines (ID Nos. ES-6A and 6B).
Page 19	Permit, Section 2.3	• Changed Section 2.4 to 2.3 "Other Applicable Requirements" to include Phase II Acid Rain Permit Requirements, Cross State Air Pollution Rules, and the PFAS Disclosure Statement under this Section.
Page 20	Permit, Section 2.4	• Changed Section 2.4 to "Permit Shield for Nonapplicable Requirements"
Page 21	Permit, Section 3.0	• Added Section 3.0 "Insignificant Activities"
Page 22 - 30	Permit, Section 4.0	• Added the most current version of General Conditions (version 8.0, 7/10/2024).
Page 22	Permit, Section 4.0	• Removed Condition J from General Conditions.
Page 31	Permit	• Added Acid Rain Permit Application

This permit renewal for applications 7700082.24A and .24B is being processed without modifications, but with minor changes to the Title V Equipment Editor. No other modifications have been made to the permit since the last renewal. TVEE was approved by Connie Horne on March xx 2025.

5.0 Existing Permitted Sources and Associated Pollution Controls and Appurtenances

The following table contains a summary of all permitted emission sources and associated air pollution control devices and appurtenances:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-1A and ES-1B ES-2A and ES-2B ES-3A and ES-3B ES-4A and ES-4B ES-5A and ES-5B	Ten Pratt & Whitney FT8 Swift-Pac simple-cycle gas turbines (300 million Btu per hour nominal heat input capacity each when firing natural gas and 281 million Btu per hour nominal heat input each when	CD-1A, CD-1B CD-2A, CD-2B CD-3A, CD-3B CD-4A, CD-4B CD-5A, CD-5B	Water injection system (one per turbine)

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
NSPS KKKK, PSD BACT	firing ultra-low sulfur No. 2 fuel oil with one generator per pair of turbines.		
ES-6A and ES-6B **NSPS KKKK, PSD BACT**	Two Pratt & Whitney FT8 Swift-Pac simple-cycle gas turbines (314.4 million Btu per hour nominal heat input capacity each when firing natural gas), and (285.5 million Btu per hour nominal heat input each when firing ultra-low sulfur No. 2 fuel oil with one generator per pair of turbines.	CD-6A and CD-6B	Water injection system (one per turbine)

6.0 Regulatory Review

This facility is subject to the following regulations. The facility's equipment and operations have not changed since the last renewal in 2020. The permit was updated to reflect the most current stipulations for all applicable regulations, where necessary.

15A NCAC 02D .0521 "Control of Visible Emissions"
15A NCAC 02D .0524 "New Source Performance Standards" (40 CFR Part 60, Subpart KKKK)
15A NCAC 02D .0530 "Prevention of Significant Deterioration"
15A NCAC 02Q .0317 "Avoidance Conditions for 02D .0530 for NOx and GHGs"
15A NCAC 02D .1100 "Control of Toxic Air Pollutants" (State enforceable only)
15A NCAC 02D .1418 "New Electric Generating Units, Large Boilers, and Large I/C Engines"
15A NCAC 02D .1425 "NOx SIP Call Budget"
15A NCAC 02Q .0400 "Acid Rain Procedures" (40 CFR Part 72)
15A NCAC 02Q .0512 "Permit shield and Application Shield"
40 CFR Part 97, Subpart AAAAA "CSAPR NO_X Annual Trading Program" and Subpart CCCCC "CSAPR SO_2 Trading Program"

In addition to the above SIP rules, NCEMC – Hamlet Plant is also subject to the Cross State Air Pollution Rule (CSAPR). This rule is not included in the North Carolina SIP.

NCEMC's requirements under each rule that applies to this facility are discussed below. In addition, some rules that do not apply to this facility are also discussed below in Section 7.0. NCEMC's applicability to various other regulations (NSPS, PSD, MACT) are discussed in Section 7.0 below of this review.

a. 15A NCAC 02D .0521 "Control of Visible Emissions"
These turbines are subject to New Source Performance Standards (NSPS) Subpart KKKK, however this NSPS does not include a particulate emissions standard in the form of visible emissions (VE). The facility's combustion turbines are subject to the VE standard in 02D .0521 because no specific VE emission limit apply to them pursuant to .0506, .0508, .0524, .1110, .1111, .1206, or .1210.

For sources constructed after 1971, the opacity limit is 20% over any six-minute period, with the following exceptions: (1) No six-minute period exceeds 87 percent opacity; (2) No more than one six-minute period exceeds 20 percent opacity in any hour; and (3) No more than four six-minute periods exceed 20 percent opacity in any 24-hour period. Each turbine at this facility is subject to this rule.

In general, no VE is expected from properly operated turbines that fire natural gas or low-sulfur No. 2 oil. The turbines at the facility are required to burn only natural gas and ultra-low sulfur diesel (15 ppm %w sulfur) to comply with the NSPS KKKK. Thus, VE from the turbines are expected to be non-existent. Given that NCEMC is operating the turbines in accordance with NSPS and PSD, the Title V permit includes no monitoring (including record keeping) and reporting for 02D .0521. No change to the existing monitoring/record keeping/reporting requirements is required.

b. 15A NCAC 02D .0524 "New Source Performance Standards" (40 CFR Part 60)
The turbines at this facility are subject to NSPS Subpart KKKK. Please see discussion in Section 7.0 below.

c. 15A NCAC 02D .0530 "Prevention of Significant Deterioration"
Some of the turbines at this facility are subject to "Prevention of Significant Deterioration" (PSD) for Carbon Monoxide and some for PM2.5, PM_{10}. Please see the PSD discussion in Section 7.0 below.

d. 15A NCAC 02Q .0317 for 02D .0530 "Avoidance of PSD"
Ten of the Pratt & Whitney FT8 Swift-Pac simple-cycle gas turbines (ID Nos. ES-1A and B through ES-5A and B) are subject to a PSD avoidance limit for nitrogen dioxide. Please see the avoidance discussion for NOx in Section 7.0 below in this review.

Two of the Pratt & Whitney FT8 Swift-Pac simple-cycle gas turbines (ID Nos. ES-6A and B) are subject to a PSD avoidance limit for GHGs. Please see the avoidance discussion for GHGs in Section 7.0 below in this review.

e. 15A NCAC 02D .1100 "Control of Toxic Air Pollutants" (State enforceable only)
This facility submitted a toxic air pollutant dispersion modeling analysis dated October 22, 2010. Please see the discussion for toxic air pollutants in Section 8.0 below in this review.

f. 15A NCAC 02D .1418 "New Electric Generating Units (EGU), Boilers, Combustion Turbines, and I/C Engines.

The combustion turbines located at this facility (ID Nos. ES-1A and ES-1B through ES-6A and ES-6B) are subject to this regulation [15A NCAC 02D .1418(a)]. These turbines are connected to generators with name plate capacities that are greater than 25 megawatts each, they were built after October 31, 2000, and they sell the generated electricity to the grid.

i. The Permittee shall not cause to be discharged into the atmosphere from combustion turbines (ID Nos. ES-1A and ES-1B through ES-5A and ES-5B) any gases which contain nitrogen dioxide (NOx) emissions in excess of 0.15 pounds per million Btu heat input while firing natural gas and 0.18 per million Btu heat input while firing fuel oil during the ozone season. The ozone season is defined as the period of time extending from May 1st to September 30th of each calendar year [15A NCAC 02D .1418(a)(2)]
ii. Turbines (ID Nos. ES-1A and ES-1B through ES-5A and ES-5B) are not subject to PSD (02D .0530) or Non-Attainment (02D .0531) and are therefore subject to the limits listed above in this section.
iii. Turbines (ID Nos. ES-6A and ES-6B) are sets of turbines that are subject to 15A NCAC 02D .0530 and will be required to meet the Best Available Control Technology as currently listed the Title V permit.

Testing [15A NCAC 02Q .0508(f)]
If additional emission testing is required, the testing shall be performed in accordance with General Condition JJ in the Title V permit.

Monitoring [15A NCAC 02Q .0508(f)]

i. The Permittee shall show compliance using a continuous emission monitor (CEMS) that meets the requirements of 15A NCAC 02D .1404(d). For each combustion turbine, the CEMS shall be operated each day during the ozone season that turbine operates. [15A NCAC 02D .1418(d)]
ii. The Permittee shall install, operate, and maintain the CEMS according to 40 CFR Part 75, Subpart H. [15A NCAC 02D .1404(d)(1)]
iii. If data from CEMS required to meet the requirements of 40 CFR Part 75 are not available at a time the associated turbine is operated, the procedures in 40 CFR Part 75, Subpart D shall be used to supply the missing data. [15A NCAC 02D .1404(e)]
iv. The Permittee shall use the CEMS to determine a 24-hour block average for each day beginning May 1 through September 30. [15A NCAC 02D .1404(g)]

Reporting [15A NCAC 02Q .0508]

i. The Permittee shall submit the CEMS data showing the 24-hour daily block values for periods of excess NOx emissions postmarked on or before October 30 of each calendar year for the previous ozone season. If no excess emissions were measured during the ozone season, the Permittee shall submit a summary report stating that there were no excess emissions for the ozone season.

ii. CEMS Monitor Availability - The Permittee shall submit the nitrogen oxide CEMS monitor downtime reports, including monitor availability values (as calculated for 40 CFR Part 75) for the last hour of the reporting period, postmarked on or before October 30 of each calendar year for the previous ozone season.

g. 15A NCAC 02D .1425 "NOx SIP Call Budget

The effective date for this regulation was May 1, 2022.

i. This Rule establishes general provisions and reporting requirements for the NOx SIP Call control period Budgets pursuant to 40 CFR 51.121 through 51.122.

ii. The owner or operator of an EGU or large non-EGU as defined in 15A NCAC 02D .1401 shall submit a report to the Division no later than January 30 of the calendar year after the NOx SIP Call control period listing the NOx emissions from these sources during the NOx SIP Call control period. The NOx emissions in this report shall be determined in accordance with 40 CFR Part 75 for EGUs and large non-EGUs subject to 15A NCAC 02D .1418, and in accordance with 15A NCAC 02D .1424 for large non-EGUs using alternative monitoring.

iii. The information provided by the EGU and large non-EGU sources will be used to evaluate state level NOx budgets in Paragraph (d) of this Rule. The sum of the tons of NOx emitted from all such units in each control period beginning after the effective date of this rule shall not exceed this budget amount.

iv. For North Carolina's NOx Budget Program, the following budgets shall apply:
(1) The total NOx SIP Call control period budget for EGUs is 31,212 tons; and
(2) The total NOx SIP Call control period budget for large non-EGUs is 2,329 tons.

h. 15A NCAC 02Q .0400 "Acid Rain Procedures":

This rule incorporates the acid rain program (40 CFR Part 72) into North Carolina's SIP. The specific requirements for acid rain program are included in the Phase II permit application submitted by NCEMC. The Phase II permit application will be included in the Title V permit as an attachment (Attachment 1, signed October 10, 2024, five pages).

In general, compliance with the acid rain program is determined by USEPA, not DAQ. Continued compliance will be determined by US EPA.

i. 15A NCAC 02Q .0512 "Permit Shield and Application Shield"

Paragraph 02Q .0512(a)(1)(B) allows Title V permits to specifically identify rules that are not applicable to the facility (referred to as a "permit shield"). The renewal permit will include the shield for combustion turbines for non-applicability of 40 CFR 63, Subpart YYYY, and 15A NCAC 02D .0614 (Compliance Assurance Monitoring). See Section 2.3 of Permit.

j. Non-applicable Rules (CAM, MACT, RACT, 112(r))

There are several SIP and Federal rules that could potentially apply to this renewal/modification, but ultimately do not.

i. 15A NCAC 02D .0614 "Compliance Assurance Monitoring" ("CAM"; 40 CFR Part 64)

This rule incorporates the requirements of 40 CFR Part 64 into North Carolina's SIP. CAM applies to individual emission sources based on the following criteria:

- The source is equipped with a control device,
- The source being controlled is subject to a non-exempt emission standard (defined by 15A NCAC 02D .0614(b)(1)),
- The control device is being used to comply with the emission standard, and
- The source being controlled has potential emissions of the pollutant subject to the emission standard greater than major source thresholds.

Each turbine (pollutant-specific emission units) at this facility is controlled using water injection systems, which are used to control NOx emissions. However, the units at this facility are exempt from 02D .0614 (CAM) because their operation falls under several of the exemptions that are specifically listed in 02D .0614(b)(1) of this Rule.

Emission Limit Rule	Triggers CAM? (Yes/No)	Notes
15A NCAC 02Q .0317 for 02D .0530 (PSD Avoidance)	No	This constitutes an emissions cap that is approved pursuant to the rules of Subchapters 02D and 02Q .0500 in accordance with 02D .0614(b)(1)(E).
15A NCAC 02Q .0400 (Acid Rain Permit)	No	This constitutes an emission limitation or standard or other applicable requirement that applies solely under an emissions trading program approved under the rules of Subchapters 02D and 02Q that are incorporated in a permit issued pursuant to 15A NCAC 02Q .0500 in accordance with 02D .0614(b)(1)(C).
15A NCAC 40 CFR Part 97 (CSAPR)	No	This constitutes an emission limitation or standard or other applicable requirement that applies solely under an emissions trading program approved under the rules of Subchapters 02D and 02Q that are incorporated in a permit issued pursuant to 15A NCAC 02Q .0500 in accordance with 02D .0614(b)(1)(C).

ii. 15A NCAC 02D .0900 "Volatile Organic Compounds" and 02D .1400 "Nitrogen Oxides" (Reasonably Available Control Technology; "RACT")

In general, RACT rules apply to areas currently considered as nonattainment for ozone (see 15A NCAC 02D .0902(f) and 02D .1402(d)). Richmond County is not such an area. Therefore, no RACT rules apply to this facility.

iii. 15A NCAC 02D .1111 "Maximum Achievable Control Technology" (MACT, 40 CFR Part 63)
This rule incorporates the MACT rules into North Carolina's SIP.

This facility is not considered a major source of hazardous air pollutants ("HAPs") because it does not have the potential to emit more than 10 tons of any individual HAP or 25 tons of total combined HAPs.

Therefore, rules that apply specifically to major sources such as 40 CFR Part 63, Subpart YYYY for combustion turbines, do not apply to this facility. Also, there are no non-major (area source) MACT rules that apply to this facility.

Also, the natural gas-fired heater that is listed as an insignificant activity, IES-13 is not subject to the GACT for boilers because this heater for warming the pipeline is not included in the definition of a boiler for 40 CFR 63, Subpart JJJJJJ (GACT standards for industrial, commercial, or institutional boiler).

The following calculations of HAP emissions were included in the renewal application for NCEMC – Hamlet:

NCEMC Hamlet Plant
Natural Gas/Fuel Oil Operation - Limited By Current Permit Conditions
HAP Emissions

Pollutant	Emission Factor AP-42 Section 3.1 04/00 - Combustion Turbine Distillate Oil		Emission Factor AP-42 Section 3.1 04/00 - Combustion Turbine Natural Gas			ES-1A - ES-5B Oil Emissions Per CT Emission Rate Max Hourly[a]	ES-1A - ES-5B Oil Emissions Per CT Emission Rate Annual[a]	ES-1A - ES-5B Gas Emissions Per CT Emission Rate Max Hourly[b]	ES-1A - ES-5B Gas Emissions Per CT Emission Rate Annual[b]	ES-1A - ES-5B Total Emission Rate - 10 CTs Max Hourly[d]	ES-1A - ES-5B Total Emission Rate - 10 CTs Annual[c]	ES-6A - ES-6B Oil Emissions Per CT Emission Rate Max Hourly[b]	ES-6A - ES-6B Oil Emissions Per CT Emission Rate Annual[c]	ES-6A - ES-6B Gas Emissions Per CT Emission Rate Max Hourly[b]	ES-6A - ES-6B Gas Emissions Per CT Emission Rate Annual[c]	ES-6A - ES-6B Total Emission Rate - 2 CTs Max Hourly[d]	ES-6A - ES-6B Total Emission Rate - 2 CTs Annual[c]	Total Emissions Emission Rate - 12 CTs Max Hourly[e]	Total Emissions Emission Rate - 12 CTs Annual[e]
	lb/MMBtu	Rating	lb/10^6 scf	lb/MMBtu[g]	Rating	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1,3-Butadiene	1.60E-05	D[f]		4.30E-07	D[f]	4.58E-03	1.96E-03	1.35E-04	9.66E-05	4.58E-02	2.06E-02	4.58E-03	2.25E-03	1.35E-04	1.29E-04	4.58E-02	4.75E-03	4.58E-02	2.53E-02
Acetaldehyde				4.00E-05	C			1.26E-02	8.99E-03	1.26E-01	8.99E-02			1.26E-02	1.20E-02	1.26E-01	2.40E-02	1.26E-01	1.14E-01
Acrolein				6.40E-06	C			2.02E-03	1.44E-03	2.02E-02	1.44E-02			2.02E-03	1.92E-03	2.02E-02	3.84E-03	2.02E-02	1.82E-02
Benzene	5.50E-05	C		1.20E-05	A	1.57E-02	6.74E-03	3.78E-03	2.70E-03	1.57E-01	9.43E-02	1.57E-02	7.73E-03	3.78E-03	3.60E-03	1.57E-01	2.27E-02	1.57E-01	1.17E-01
Ethylbenzene				3.20E-05	C			1.01E-02	7.19E-03	1.01E-01	7.19E-02			1.01E-02	9.60E-03	1.01E-01	1.92E-02	1.01E-01	9.11E-02
Formaldehyde	3.19E-04 (i)			2.67E-04 (i)		9.12E-02	3.91E-02	8.42E-02	6.00E-02	9.32E-01	9.91E-01	9.12E-02	4.48E-02	8.42E-02	8.02E-02	9.12E-01	2.50E-01	9.12E-01	1.24E+00
Naphthalene	3.50E-05	C		1.30E-06	C	1.00E-02	4.29E-03	4.10E-04	2.92E-04	1.00E-01	4.58E-02	1.00E-02	4.92E-03	4.10E-04	3.90E-04	1.00E-01	1.06E-02	1.00E-01	5.64E-02
PAHs	4.00E-05	C		2.20E-06	C	1.14E-02	4.90E-03	6.93E-04	4.94E-04	1.14E-01	5.39E-02	1.14E-02	5.62E-03	6.93E-04	6.60E-04	1.14E-01	1.26E-02	1.14E-01	6.65E-02
Propylene Oxide				2.90E-05	D[f]			9.14E-03	6.52E-03	9.14E-02	6.52E-02			9.14E-03	8.70E-03	9.14E-02	1.74E-02	9.14E-02	8.26E-02
Toluene				1.30E-04				4.10E-02	2.92E-02	4.10E-01	2.92E-01			4.10E-02	3.90E-02	4.10E-01	7.80E-02	4.10E-01	3.70E-01
Xylene				6.40E-05	C			2.02E-02	1.44E-02	2.02E-01	1.44E-01			2.02E-02	1.92E-02	2.02E-01	3.84E-02	2.02E-01	1.82E-01
Arsenic[g]	1.10E-05	D[f]	2.00E-04	1.96E-07	E	5.15E-03	1.35E-03	6.18E-05	4.41E-05	3.15E-02	1.39E-02	3.15E-03	1.55E-03	6.18E-05	5.88E-05	3.15E-02	3.21E-03	3.15E-02	1.71E-02
Barium[g]			4.40E-03	4.31E-06	D			1.36E-03	9.69E-04	1.36E-02	9.69E-03			1.36E-03	1.29E-03	1.36E-02	2.59E-03	1.36E-02	1.23E-02
Beryllium[g]	3.10E-07	D[f]	1.20E-05	1.18E-08	E[f]	8.87E-05	3.80E-05	3.71E-06	2.64E-06	8.87E-04	4.06E-04	8.87E-05	4.36E-05	3.71E-06	3.53E-06	8.87E-04	9.42E-05	8.87E-04	5.00E-04
Cadmium[g]	4.80E-06	D	1.10E-03	1.08E-06	D	1.37E-03	5.88E-04	3.40E-04	2.42E-04	1.37E-02	8.30E-03	1.37E-03	6.74E-04	3.40E-04	3.24E-04	1.37E-02	2.00E-03	1.37E-02	1.03E-02
Chromium[g]	1.10E-05	D	1.40E-03	1.37E-06	D	3.15E-03	1.35E-03	4.32E-04	3.08E-04	3.15E-02	1.66E-02	3.15E-03	1.55E-03	4.32E-04	4.12E-04	3.15E-02	3.91E-03	3.15E-02	2.05E-02
Cobalt[g]			8.40E-05	8.24E-08	D			2.59E-05	1.85E-05	2.59E-04	1.85E-04			2.59E-05	2.47E-05	2.59E-04	4.94E-05	2.59E-04	2.34E-04
Copper[g]			8.50E-04	8.33E-07	C			2.63E-04	1.87E-04	2.63E-03	1.87E-03			2.63E-04	2.50E-04	2.63E-03	5.00E-04	2.63E-03	2.37E-03
Lead[g]	1.40E-05	D	5.00E-04	4.90E-07	D	4.00E-03	1.72E-03	1.54E-04	1.10E-04	4.00E-02	1.83E-02	4.00E-03	1.97E-03	1.54E-04	1.47E-04	4.00E-02	4.23E-03	4.00E-02	2.25E-02
Manganese[g]	6.00E-06 (j)		3.80E-04	3.73E-07	D	1.72E-03	7.35E-04	1.17E-04	8.37E-05	1.72E-02	8.19E-03	1.72E-03	8.43E-04	1.17E-04	1.12E-04	1.72E-02	1.91E-03	1.72E-02	1.01E-02
Mercury[g]	1.20E-06	D	2.60E-04	2.55E-07	D	3.43E-04	1.47E-04	8.03E-05	5.73E-05	3.43E-03	2.04E-03	3.43E-04	1.69E-04	8.03E-05	7.65E-05	3.43E-03	4.90E-04	3.43E-03	2.53E-03
Molybdenum[g]			1.10E-03	1.08E-06	D			3.40E-04	2.42E-04	3.40E-03	2.47E-03			3.40E-04	3.24E-04	3.40E-03	6.47E-04	3.40E-03	3.07E-03
Nickel[g]	4.60E-06	D[f]	2.10E-03	2.06E-06	C	1.32E-03	5.64E-04	6.49E-04	4.63E-04	1.32E-02	1.03E-02	1.32E-03	6.46E-04	6.49E-04	6.18E-04	1.32E-02	2.53E-03	1.32E-02	1.28E-02
Selenium[g]	2.50E-05	D[f]	2.40E-05	2.35E-08	E[f]	7.15E-03	3.06E-03	7.41E-06	5.29E-06	7.15E-02	3.07E-02	7.15E-03	3.51E-03	7.41E-06	7.06E-06	7.15E-02	7.04E-03	7.15E-02	3.77E-02
Vanadium[g]			2.30E-03	2.25E-06	D			7.10E-04	5.07E-04	7.10E-03	5.07E-03			7.10E-04	6.76E-04	7.10E-03	1.35E-03	7.10E-03	6.42E-03
Zinc[g]			2.90E-02	2.84E-05	E			8.96E-03	6.39E-03	8.96E-02	6.39E-02			8.96E-03	8.53E-03	8.96E-02	1.71E-02	8.96E-02	8.09E-02
																		CTs HAPs Total:	2.60
																		Max single HAP:	1.24

Assumptions:

			Distillate Oil	Natural Gas
Number of CTs (ES-1A - ES-5B)	10	Max Heat Input per CT (MMBtu/hr) [h]	286	315
Number of CTs (ES-6A - ES-6B)	2	Average Heat Input per CT (MMBtu/hr) (HHV) [h]	281	300
		Operating hours per year - (ES-1A - ES-5B)	672	3,498
		Operating hours per year - (ES-6A - ES-6B)	1,000	2,000

Natural Gas Heating Value 1,020 Btu/SCF (HHV)

Notes:
(a) Emission Factor (lb/MMBtu) = (Emission Factor, lb/10^6 scf) / (Volumetric Heat Content, Btu/scf) if lb/10^6 scf is given.
(b) Max Hourly Emission Rate (lb/hr) = (Max Heat Input (MMBtu/hr) * Emission Factor (lb/MMBtu))
(c) Annual Emission Rate (ton/yr) = (Heat Input (MMBtu/yr) * Emission Factor (lb/MMBtu) / 2000 lb/ton)
(d) Total Max Hourly Emissions (lb/hr) = Natural Gas (lb/hr) if fuel oil operating hours = 0
Total Max Hourly Emissions (lb/hr) = (maximum(Natural Gas (lb/hr), Distillate Oil (lb/hr)) if fuel oil operating hours > 0
(e) Total Annual Emissions represent combined emissions for gas and oil together (ton/yr) = 12 turbines* (Natural Gas (ton/yr) + Distillate Oil (ton/yr))
(f) Emission Factor based on 1/2 the detection limit.
(g) Emission Factor for natural gas from AP-42 Section 1.4 07/98 - Natural Gas Combustion.
(h) Maximum heat input rate is based on data at an average ambient temperature of 32°F and maximum load operating conditions.
(i) Average emission rate for turbines with water injection. EPA's AP42, Fifth Edition Chapter 3 MS Access database ,https://www3.epa.gov/ttn/chief/ap42/ch03/index.html.
(j) Emission Factor for fuel oil from AP-42 Section 1.3 05/10 - Fuel Oil Combustion.

NCEMC Hamlet Plant
Natural Gas/Fuel Oil Operation - Unlimited Operation
HAP Emissions

Pollutant	Emission Factor AP-42 Section 3.1 04/00 - Combustion Turbine Distillate Oil		Emission Factor AP-42 Section 3.1 04/00 - Combustion Turbine Natural Gas			ES-1A - ES-5B Oil Emissions Per CT Emission Rate Max Hourly [b]	ES-1A - ES-5B Oil Emissions Per CT Emission Rate Annual [c]	ES-1A - ES-5B Gas Emissions Per CT Emission Rate Max Hourly [b]	ES-1A - ES-5B Gas Emissions Per CT Emission Rate Annual [c]	ES-1A - ES-5B Total Emission Rate - 10 CTs Max Hourly [e]	ES-1A - ES-5B Total Emission Rate - 10 CTs Annual [e]	ES-6A - ES-6B Oil Emissions Per CT Emission Rate Max Hourly [b]	ES-6A - ES-6B Oil Emissions Per CT Emission Rate Annual [c]	ES-6A - ES-6B Gas Emissions Per CT Emission Rate Max Hourly [b]	ES-6A - ES-6B Gas Emissions Per CT Emission Rate Annual [c]	ES-6A - ES-6B Total Emission Rate - 2 CTs Max Hourly [e]	ES-6A - ES-6B Total Emission Rate - 2 CTs Annual [e]	Total Emissions Emission Rate - 12 CTs Max Hourly [e]	Total Emissions Emission Rate - 12 CTs Annual [e]
	(lb/MMBtu)	Rating	(lb/10^6 scf)	(lb/MMBtu) [g]	Rating	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
1,3-Butadiene	1.60E-05	D [f]		4.30E-07	D [f]	4.58E-03	1.97E-02	1.35E-04	5.65E-04	4.58E-02	2.03E-01	4.58E-03	1.97E-02	1.35E-04	5.65E-04	4.58E-02	4.05E-02	4.58E-02	2.43E-01
Acetaldehyde				4.00E-05	C			1.26E-02	5.26E-02	1.26E-01	5.26E-01			1.26E-02	5.26E-02	1.26E-01	1.05E-01	1.26E-01	6.31E-01
Acrolein				6.40E-06	C			2.02E-03	8.41E-03	2.02E-02	8.41E-02			2.02E-03	8.41E-03	2.02E-02	1.68E-02	2.02E-02	1.01E-01
Benzene	5.50E-05	C		1.20E-05	A	1.57E-02	6.77E-02	3.78E-03	1.58E-02	1.57E-01	8.35E-01	1.57E-02	6.77E-02	3.78E-03	1.58E-02	1.57E-01	1.67E-01	1.57E-01	1.00E+00
Ethylbenzene				3.20E-05	C			1.01E-02	4.20E-02	1.01E-01	4.20E-01			1.01E-02	4.20E-02	1.01E-01	8.41E-02	1.01E-01	5.05E-01
Formaldehyde	3.19E-04 [i]			2.67E-04 [i]		9.12E-02	3.92E-01	8.42E-02	3.51E-01	9.12E-01	7.44E+00	9.12E-02	3.92E-01	8.42E-02	3.51E-01	9.12E-01	1.49E+00	9.12E-01	8.92E+00
Naphthalene	3.50E-05	C		1.30E-06	C	1.00E-02	4.31E-02	4.10E-04	1.71E-03	1.00E-01	4.48E-01	1.00E-02	4.31E-02	4.10E-04	1.71E-03	1.00E-01	8.96E-02	1.00E-01	5.37E-01
PAHs	4.00E-05	C		2.20E-06	C	1.14E-02	4.92E-02	6.93E-04	2.89E-03	1.14E-01	5.21E-01	1.14E-02	4.92E-02	6.93E-04	2.89E-03	1.14E-01	1.04E-01	1.14E-01	6.25E-01
Propylene Oxide				2.90E-05	D [f]			9.14E-03	3.81E-02	9.14E-02	3.81E-01			9.14E-03	3.81E-02	9.14E-02	7.62E-02	9.14E-02	4.57E-01
Toluene				1.30E-04				4.10E-02	1.71E-01	4.10E-01	1.71E+00			4.10E-02	1.71E-01	4.10E-01	3.42E-01	4.10E-01	2.05E+00
Xylene				6.40E-05	C			2.02E-02	8.41E-02	2.02E-01	8.41E-01			2.02E-02	8.41E-02	2.02E-01	1.68E-01	2.02E-01	1.01E+00
Arsenic [g]	1.10E-05	D [f]	2.00E-04	1.96E-07	F	3.15E-03	1.35E-02	6.18E-05	2.58E-04	3.15E-02	1.38E-01	3.15E-03	1.35E-02	6.18E-05	2.58E-04	3.15E-02	2.76E-02	3.15E-02	1.66E-01
Barium [g]			4.40E-03	4.31E-06	D			1.36E-03	5.67E-03	1.36E-02	5.67E-02			1.36E-03	5.67E-03	1.36E-02	1.13E-02	1.36E-02	6.80E-02
Beryllium [g]	3.10E-07	D [f]	1.20E-05	1.18E-08	E [f]	8.87E-05	3.82E-04	3.71E-06	1.55E-05	8.87E-04	3.97E-03	8.87E-05	3.82E-04	3.71E-06	1.55E-05	8.87E-04	7.94E-04	8.87E-04	4.76E-03
Cadmium [g]	4.80E-06	D	1.10E-03	1.08E-06	D	1.37E-03	5.91E-03	3.40E-04	1.42E-03	1.37E-02	7.32E-02	1.37E-03	5.91E-03	3.40E-04	1.42E-03	1.37E-02	1.46E-02	1.37E-02	8.79E-02
Chromium [g]	1.10E-05	D	1.40E-03	1.37E-06	D	3.15E-03	1.35E-02	4.32E-04	1.80E-03	3.15E-02	1.53E-01	3.15E-03	1.35E-02	4.32E-04	1.80E-03	3.15E-02	3.07E-02	3.15E-02	1.84E-01
Cobalt [g]			8.40E-05	8.24E-08	D			2.59E-05	1.08E-04	2.59E-04	1.08E-03			2.59E-05	1.08E-04	2.59E-04	2.16E-04	2.59E-04	1.30E-03
Copper [g]			8.50E-04	8.33E-07	C			2.63E-04	1.10E-03	2.63E-03	1.10E-02			2.63E-04	1.10E-03	2.63E-03	2.19E-03	2.63E-03	1.31E-02
Lead [g]	1.40E-05	D	5.00E-04	4.90E-07	D	4.00E-03	1.72E-02	1.54E-04	6.44E-04	4.00E-02	1.79E-01	4.00E-03	1.72E-02	1.54E-04	6.44E-04	4.00E-02	3.58E-02	4.00E-02	2.15E-01
Manganese [g]	6.00E-06 [j]		3.80E-04	3.73E-07	D	1.72E-03	7.38E-03	1.17E-04	4.90E-04	1.72E-02	7.87E-02	1.72E-03	7.38E-03	1.17E-04	4.90E-04	1.72E-02	1.57E-02	1.72E-02	9.45E-02
Mercury [g]	1.20E-06	D	2.60E-04	2.55E-07	D	3.43E-04	1.48E-03	8.03E-05	3.35E-04	3.43E-03	1.81E-02	3.43E-04	1.48E-03	8.03E-05	3.35E-04	3.43E-03	3.62E-03	3.43E-03	2.17E-02
Molybdenum [g]			1.10E-03	1.08E-06	D			3.40E-04	1.42E-03	3.40E-03	1.42E-02			3.40E-04	1.42E-03	3.40E-03	2.83E-03	3.40E-03	1.70E-02
Nickel [g]	4.60E-06	D [f]	2.10E-03	2.06E-06	C	1.32E-03	5.66E-03	6.49E-04	2.71E-03	1.32E-02	8.37E-02	1.32E-03	5.66E-03	6.49E-04	2.71E-03	1.32E-02	1.67E-02	1.32E-02	1.00E-01
Selenium [g]	2.50E-05	D [f]	2.40E-05	2.35E-08	E [f]	7.15E-03	3.08E-02	7.41E-06	3.09E-05	7.15E-02	3.08E-01	7.15E-03	3.08E-02	7.41E-06	3.09E-05	7.15E-02	6.16E-02	7.15E-02	3.70E-01
Vanadium [g]			2.30E-03	2.25E-06	D			7.10E-04	2.96E-03	7.10E-03	2.96E-02			7.10E-04	2.96E-03	7.10E-03	5.93E-03	7.10E-03	3.56E-02
Zinc [g]			2.90E-02	2.84E-05	F			8.96E-03	3.74E-02	8.96E-02	3.74E-01			8.96E-03	3.74E-02	8.96E-02	7.47E-02	8.96E-02	4.48E-01
																	CTs HAPs Total:		17.91
																	Max single HAP:		8.92

Assumptions:

			Distillate Oil	Natural Gas
Number of CTs (ES-1A - ES-5B)	10	Max Heat Input per CT (MMBtu/hr) [h]	286	315
Number of CTs (ES-6A - ES-6B)	2	Average Heat Input per CT (MMBtu/hr) (HHV) [h]	281	300
		Operating hours per year - (ES-1A - ES-5B)	8,760	8,760
		Operating hours per year - (ES-6A - ES-6B)	8,760	8,760
Natural Gas Heating Value	1,020	Btu/SCF (HHV)		

Notes:
(a) Emission Factor (lb/MMBtu) = (Emission Factor, lb/10^6 scf) / (Volumetric Heat Content, Btu/scf) if lb/10^6 scf is given.
(b) Max Hourly Emission Rate (lb/hr) = (Max Heat Input (MMBtu/hr) * Emission Factor (lb/MMBtu))
(c) Annual Emission Rate (ton/yr) = (Heat Input (MMBtu/yr) * Emission Factor (lb/MMBtu) / 2000 lb/ton)
(d) Total Max Hourly Emissions (lb/hr) = Natural Gas (lb/hr) if fuel oil operating hours = 0
Total Max Hourly Emissions (lb/hr) = (maximum(Natural Gas (lb/hr), Distillate Oil (lb/hr)) if fuel oil operating hours > 0
(e) Total Annual Emissions represent combined emissions for gas and oil together (ton/yr) = 12 turbines* (Natural Gas (ton/yr) + Distillate Oil (ton/yr))
(f) Emission Factor based on 1/2 the detection limit.
(g) Emission Factor for natural gas from AP-42 Section 1.4 07/98 - Natural Gas Combustion.
(h) Maximum heat input rate is based on data at an average ambient temperature of 32°F and maximum load operating conditions;
(i) Average emission rate for turbines with water injection, EPA's AP42, Fifth Edition Chapter 3 MS Access database :https://www3.epa.gov/ttn/chief/ap42/ch03/index.html.
(j) Emission Factor for fuel oil from AP-42 Section 1.3 05/10 - Fuel Oil Combustion

iv. 15A NCAC 02D .2100 "Risk Management Program" (a.k.a. "Section 112(r) of the Clean Air Act")
This facility does not store any material listed in 40 CFR 68.130 above its respective threshold. Therefore, this rule does not apply to this facility. This was also concluded in the most recent Inspection Report dated 12/19/2024.

7.0 NSPS, PSD Avoidance (Nitrogen Oxides, GHGs), PSD (CO, NOx, $PM_{2.5}$, PM_{10})

i. NSPS (40 CFR Part 60, Subpart GG "Stationary Gas Turbines)
NSPS Subpart GG applies to stationary gas turbines constructed or modified after October 3, 1977, however, 40 CFR 60.4305(b) specifically states that turbines subject to NSPS Subpart KKKK are exempt from Subpart GG. Each turbine at this facility is subject to NSPS Subpart KKKK because each has a heat input at peak load equal to or greater than 10.7 gigajoules (10 MMBtu) per hour, based on the higher heating value of the fuel, and each has commenced construction after February 18, 2005.

ii. NSPS (40 CFR Part 60, Subpart TTTT "Greenhouse Gas Emissions for Electric Generating Units")
In accordance with 40 CFR 60.5508, this subpart establishes emission standards and compliance schedules for the control of greenhouse gas (GHG) emissions from a steam generating unit or an integrated gasification combined cycle (IGCC) facility that commences construction after January 8, 2014, commences reconstruction after June 18, 2014, or commences modification after January 8, 2014, but on or before May 23, 2023.

This subpart also establishes emission standards and compliance schedules for the control of GHG emissions from a stationary combustion turbine that:
- commences construction after January 8, 2014, but on or before May 23, 2023, or
- commences reconstruction after June 18, 2014, but on or before May 23, 2023.

An affected steam generating unit, IGCC, or stationary combustion turbine shall, for the purposes of this subpart, be referred to as an affected electric generating unit (EGU).

All of the turbines at this facility (the last set 6A and 6B installed before April 2013) were constructed prior to January 8, 2014 and have not been reconstructed. Therefore, NSPS Subpart TTTT does not apply to these turbines.

iii. NSPS (40 CFR Part 60, Subpart TTTTa "Greenhouse Gas Emissions for Modified Coal-Fired Steam Electric Generating Units and New Construction and Reconstruction Stationary Combustion Turbine Electric Generating Units"

This subpart establishes emission standards and compliance schedules for the control of GHG emissions from a stationary combustion turbine that commences construction or reconstruction after May 23, 2023.

All the turbines at this facility were constructed prior to (the last set 6A and 6B installed before April 2013) May 23, 2023 and have not been reconstructed. Therefore, NSPS Subpart TTTTa does not apply to this facility.

iv. NSPS (Subpart KKKK Stationary Gas Turbines)
This rule incorporates the NSPS rules into North Carolina's SIP. The only NSPS rule that applies to this facility is Subpart KKKK for Stationary Combustion Turbines.

Subpart KKKK applies to those stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005, and that have a base load rating equal to or greater than 2.9 megawatts (10 million British thermal units per hour). The five Swift Pac turbine units at this facility (ES-1A and B through ES-5A and B) are each 300 million Btu per hour nominal heat input capacity when firing natural gas and 281 million Btu per hour nominal heat input capacity when firing ultra-low No. 2 fuel oil. Therefore, each of these turbines is subject to this rule.

This facility also has one other Swift Pac turbine unit (ES-6A and B) and each turbine is 314.4 million Btu per hour nominal heat input capacity when firing natural gas and 285.5 million Btu per hour nominal heat input capacity when firing ultra-low No. 2 fuel oil. Therefore, each of these turbines is subject to NSPS Subpart KKKK.

In general, this rule limits the emissions of nitrogen oxides ("NOx") and sulfur dioxide ("SO_2") based on the type of fuel being fired. The following NOx emissions standards apply to each turbine ate the facility:

No. 2 fuel oil: 74 parts per million at 15 percent O_2	(4-hour rolling average)
Natural gas: 25 parts per million at 15 percent O_2	(4-hour rolling average)
No. 2 fuel oil or natural gas: 150 ppm at 15 percent O_2	(4-hour rolling average, if turbines operating at less than 75 percent of peak load)

In order to demonstrate compliance with the emission limits, NCEMC limits the sulfur content of fuels burned in the turbines and estimates NOx emissions based on protocol in Appendix E to 40 CFR Part 75. Records of monitoring activities must be kept and reported twice per year. Based on the most recent inspection report (dated 12/21/2023), NCEMC appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

v. PSD Avoidance (15A NCAC 02Q .0317 for 02D .0530) for NOx:
Ten Pratt & Whitney FT8 Swift-Pac simple-cycle gas turbines (ID Nos. ES-1A and 1B through ES-5A and 5B). Each turbine has 300 million Btu per hour nominal heat input capacity each when firing natural gas, and 281 million Btu per hour nominal heat input each when firing ultra-low sulfur No. 2 fuel oil with one generator per pair of turbines.

PSD avoidance for NOx:
This rule allows facilities to accept an enforceable limit in order to avoid applicability of another rule. NCEMC has accepted a limit on NOx emissions in order to avoid additional requirements under 02D .0530.

The table below summarizes the PSD avoidance limits for NOx that are applicable to NCEMC:

Emission Sources	Requirements	Demonstrate compliance	
ES-1A and ES-1B ES-2A and ES-2B ES-3A and ES-3B ES-4A and ES-4B ES-5A and ES-5B ES-6A and ES-6B	Less than 245 tons of NOx per consecutive 12-month time period	Monitor NOx emissions according to NSPS Subpart KKKK Report NOx emissions twice per year	Limits and compliance methods first included in Title V permit 09492T07.

These ten turbines collectively have a 245 ton per year PSD Avoidance limit for NOx.

Richmond County is still designated as attainment for all National Ambient Air Quality Standards. Gas turbines used without heat recovery, such as simple-cycle peaking units like at this facility, have been determined to fall outside the 28-source category list. As such, they are subject to PSD review if the potential emission of any regulated pollutant exceeds 250 tons per 12-month period. As this site is a peaking facility, the facility operates on a limited annual basis, primarily during periods when short-term electrical demand exceeds the base load supply. In order to be permitted as a minor PSD source, the facility was restricted to the emissions of each criteria pollutant to less than 250 tons per 12-month period. Facility-wide nitrogen oxide was determined to be the limiting pollutant. However, to make operation of the oxidation catalyst enforceable, carbon monoxide was also originally included with its own 250 limitation in the original permit R00.

The performance parameters of the oxidation catalyst were monitored through the years when the turbines included the catalyst to ensure optimum control of carbon monoxide emissions. Therefore, initially both carbon monoxide and nitrogen oxide emissions were limited to less than 250 tons per 12-month period.

The sources subject to the initial 250-ton per year restriction were the combustion turbines (ES-1A and B through ES-5A and B), emissions from an emergency generator, a fire pump, and a natural gas compressor. Using AP-42 emission factors, 500 hours per year of operation for the emergency generator and fire pump [EPA definition of potential to emit], and 8760 hours of operation of the natural gas compressor, equals 22 tpy.

Therefore, the PSD avoidance limit for the combustion turbines would then be less than [250 tpy - 22 tpy] = 228 tons per 12-month period. The applicant requested a more conservative limit for the combustion turbines of 224 tons per 12-month period.

When permit 09488R02 was issued on November 30, 2006, the applicability of the turbines was changed to NSPS Subpart KKKK requirements, which superseded the Subpart GG requirements previously in the permit. Subpart KKKK applies to combustion turbines with heat input at full load equal or greater than 10 million Btu per hour which commenced construction, modification, or reconstruction after February 18, 2005. The PSD avoidance condition was changed form 224 tons per year to 245 tons per year for NOx in permit No. 09488R02 to take into account the removal of the diesel emergency generator and the fire pump from the permit.

Monitoring
The tracking of actual NOx emissions has historically been determined by using emission rates developed by the manufacturer of the combustion turbines [Pratt & Whitney]. These emission rates were developed with ambient temperatures ranging from 32 to 90 degrees F. and load ranges from 40 percent natural gas and 25 percent fuel oil up to 100 percent.

A multiple regression analysis was performed and the upper 95th percentile confidence interval used as a model to estimate the NOx emissions. Compliance test data that is approved by the DAQ may be used to validate and update this model for estimating NOx emissions.

NOx emissions from turbine startup and shutdown, are calculated using the manufacturer's data assuming a loading/unloading rate of 5 MW per minute. Each startup and shutdown is to be recorded daily for each turbine.

During the most recent facility inspection by the Fayetteville Regional Office, the agency reviewed the facility daily records of emissions during startup/shutdowns and normal operations during the 12-month rolling average through December 2022. The total amount was 86.99 tons. This value is well below the 12-month rolling average limit of 245 tons per year. Therefore, based on the most recent facility inspection report (signed on 12/19/2024), NCEMC appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

vi. PSD Avoidance (15A NCAC 02Q .0317 for 02D .0530) for GHGs:
Two of the Pratt & Whitney FT8 Swift-Pac simple-cycle gas turbines (ID Nos. ES-6A and B) currently have a PSD avoidance for GHGs. Each turbine has a 314.4 million Btu per hour nominal heat input capacity when firing natural gas, and 285.5 million Btu per hour nominal heat input each when firing ultra-low sulfur No. 2 fuel oil with one generator per pair of turbines.

PSD avoidance for GHGs:
This rule allows facilities to accept an enforceable limit in order to avoid applicability of another rule. NCEMC has accepted a limit on GHG emissions in order to avoid additional requirements under 02D .0530.

For Permit No. 09488T07, this facility submitted Application No. 7700082.10A which added two Swift-PAC turbines, ES-6A and 6B that increased the CO emissions greater than 250 tons per year. As such, the facility went through a PSD modification for CO, NOx, $PM_{2.5}$, and PM_{10}.

The potential emissions of SO_2, H_2SO_4, VOCs and Lead (Pb) were evaluated and found to be below their significance levels. Since the GHGs were already greater than 100,000 tons per year, and another criteria pollutant trigged PSD, the GHGs were also evaluated for PSD and the facility agreed to take a PSD Avoidance condition for less than 75,000 tons per year for a consecutive 12-month period.

During the most recent inspection (12/19/2024) of this facility, monthly records of fuel usage and GHGs emissions from September 2021 to October 2022 were reviewed. The GHGs emissions were 12,546 tons during the time period, which was well below the 75,000 ton per year limit. Continued compliance will be determined with subsequent inspections.

vii. PSD (40 CFR Part 51 and State SIP 15A NCAC 02D .0530) for CO:
This facility is considered a major source under PSD because the potential emissions of CO are greater than 250 tons per year. As a result of a previous PSD major modification review for a major modification (Permit Revision 09488T07, issued October 10, 2012), the Title V permit included an annual emission limit and Best Available Control Technology ("BACT") emission limits for Carbon Monoxide from the ten Pratt & Whitney FT8 Swift-Pac simple-cycle gas turbines (ID Nos. ES-1A and B through ES-5A and B).

Emission Source	Requirements	Demonstrate compliance by: Notes
Swift Pac units 1 through 5	- Annual emission limit for CO. - CO BACT standards based on load and ambient temperature.	Hours of operation (hours represent non startup/shutdown hours - Limit of 1,498 hours per year per turbine maximum operation when firing natural gas, and - Limit of 872 hours per year per turbine when firing No. 2 fuel oil (≤ 0.002% sulfur by weight) BACT emission limits

Based on the most recent inspection report (signed 12/19/2024), NCEMC - Hamlet appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections.

Increment Tracking:
Richmond County has triggered increment tracking under PSD for criteria pollutants PM_{10}, SO_2, and NO_x (all on 2/26/1999). This renewal does not consume or expand increments for any of these pollutants.

viii. Cross State Air Pollution Rule ("CSAPR"; 40 CFR Part 97, Subparts AAAAA, BBBBB, and CCCCC)
This group of rules applies to fossil-fuel-fired combustion sources that: 1) produce electricity for sale, and 2) have a generator capacity greater than 25 megawatts. Each combustion turbine at this facility is subject to CSAPR. CSAPR limits NOx and SO_2 emissions. Compliance with CSAPR is determined by USEPA, not DAQ. The Title V permit contains a reference to CSAPR, but no specific compliance requirements.

40 CFR 97, Subpart BBBBB no longer applies to the combustion sources at this facility. EPA removed NC from its obligations under the good neighbor provision with respect to the ozone season NOx requirements that are contained in BBBBB of Part 97. With EPA's removal of NC ozone season NOx reductions requirements for 1997 ozone NAAQS and EPA's determinations that NC is not subject to ozone season NOx reductions requirements for 2008 ozone NAAQS or newer 2015 ozone NAAQS. Going forward, the DAQ will revise Title V permits for all affected units in NC under the original CSAPR by removing the previously applicable requirements in Subpart BBBBB (40 CFR 97) for ozone season NOx.

History for the removal of BBBBB:
The EPA established the original Cross-State Air Pollution Rule (CSAPR or "Transport Rule")[1] to address the interstate transport of emissions with respect to the 1997 ozone National Ambient Air Quality Standards (NAAQS) and the 1997 and 2006 fine particulate matter (PM2.5) NAAQS. This CSAPR was a federal implementation plan (FIP), requiring the upwind states to eliminate their "significant" contributions to the downwind states' non-attainment of these pollutants. With regard to the NOx ozone season trading program under this rule, EPA required NOx reductions in two phases (Phase 1 and Phase 2) for the affected states including NC.

Then the EPA finalized the CSAPR Update (CSAPR Update)[2] to address the interstate transport of emissions with respect to the 2008 ozone NAAQS. Through this rulemaking, EPA determined that NC did not contribute significantly to nonattainment in or interference with maintenance for the 2008 ozone standard for any downwind states[3].

Thus, EPA did not finalize the FIP for NC for this NAAQS, because the EPA's analysis supporting the final rule did not indicate that NC was linked to any identified downwind nonattainment or maintenance receptors with respect to the 2008 ozone standard[4].

[1] 76 FR 48208 (August 8, 2011).
[2] 81 FR 74504 (October 26, 2016).
[3] 81 FR 74506, 74507.
[4] Id., 81 FR 74524.

In addition, because the 2008 ozone NAAQS is more stringent than the 1997 ozone NAAQS, EPA concluded that North Carolina was not linked to any remaining air quality concerns with respect to the 1997 ozone standard for which the state was regulated in the original CSAPR as above[5].

Addressing the D. C. Circuit Court[6] remand with respect to NC's Phase 2 NOx budget under the 1997 ozone standard, EPA concluded that the emissions from the state did not significantly contribute to nonattainment or interfere with maintenance of either the 1997 ozone NAAQS or 2008 ozone NAAQS in other states, and removed the state from the CSAPR ozone season trading program beginning in 2017 when the Phase 2 ozone season emission budget was scheduled to be implemented[7]. Accordingly, starting with the 2017 ozone season, NC was no longer subject to the CSAPR NOx ozone season trading program requirements (40 CFR 97 Subpart BBBBB) and electric generating units (EGUs) in the state were not allocated further allowances by EPA nor obligated to demonstrate compliance with CSAPR NOx ozone season requirements[8][9].

Finally, it needs to be noted that even for the more stringent 2015 ozone NAAQS, EPA proposed[10] to approve NC's State Implementation Plan (SIP), concluding that North Carolina sources would not significantly contribute to nonattainment or interfere with maintenance of the 2015 ozone NAAQS in any other state. EPA supplemented[11] this approval with the updated modeling analysis based on the most current and technically accurate information, supporting its finding that NC's implementation plan contained adequate measures to prohibit emissions that would significantly contribute or interfere with the maintenance of the 2015 ozone standard in any other states.

8.0 Facility Wide Air Toxics

15A NCAC 02D .1100 "Control of Toxic Air Pollutants"
This is a "State-enforceable only" rule that requires facilities to emit toxic air pollutants at rates such that the acceptable ambient levels (AALs) in 15A NCAC 02D .1104 are not exceeded. In order to demonstrate compliance with the AALs, NCEMC – Hamlet performed air dispersion modeling. The modeling demonstration was approved on August 24, 2011. The modeled emission rates were incorporated into the Title V permit as emission limits starting with permit 09488T07. Based on the application review for the 09488T07 permit, no monitoring, recordkeeping, or reporting is required for the NCEMC to demonstrate compliance with the modeled emission rates because emission levels of TAPs are each below 50% of the respective AAL. NCEMC is expected to continue to comply with this rule.

Table 1: North Carolina Toxics Analysis

Emission Source	Pollutant	Averaging Period	Emission Rate
ES1-A and B ES2-A and B ES3-A and B ES4-A and B ES5-A and B ES6-A and B (IES-13)	Acrolein	1-hour	0.0241 lbs/hr
	Chromium	24-hour	0.906 lbs/day
	Formaldehyde	1-hour	1.04 lbs/hr
	Mercury	24-hour	0.0988 lbs/day
	Nickel	24-hour	0.379 lbs/day
	Sulfuric Acid	1-hour	3.48 lbs/hr
		24-hour	83.5 lbs/day
	1,3 Butadiene	Annual	58.40 lbs/year
	Benzene	Annual	207.0 lbs/year
	Arsenic	Annual	40.13 /lbs/year
	Beryllium	Annual	1.13 lbs/year

[5] Id.
[6] *EME Homer City Generation, L.P., v. EPA*, No. 795 F.3d 118, 129–30, 138, July 28, 2015.
[7] Id.
[8] 81 FR 74555.
[9] States that are Affected by the Cross-State Air Pollution Rule (CSAPR) | US EPA and 40 CFR 97.510(a)(16).
[10] 84 FR 71854 (December 30, 2019).
[11] 86 FR 37942 (July 19, 2021).

Emission Source	Pollutant	Averaging Period	Emission Rate
	Cadmium	Annual	18.14bs/year

9.0 Facility Emissions Review

The facility-wide potential emissions have not changed because of this TV permit renewal. Actual emissions for criteria pollutants and HAPs for the previous five years reporting periods are provided in the header of this permit review.

10.0 Compliance Status

DAQ has reviewed the compliance status of the facility. During the most recent inspection, conducted on 12/19/2024, the facility appeared to be in compliance with all applicable requirements. Further, the facility has had no air quality violations within the last five years. Finally, the renewal application provides a certification from the facility responsible official (RO), indicating compliance with all applicable requirements (Form E5 of the application).

11.0 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 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 provided to the public under 02Q .0521 above.

The 30 day public comment period runs from _____to _____.

The 45-day EPA review period runs from _____to _____-.

Comments from Public Notice and the 45-day EPA review:

12.0 Other Regulatory Considerations

- A P.E. seal is NOT required for this renewal application.
- A zoning consistency determination is NOT required for this renewal application.
- A permit fee is NOT required for this renewal application.
- In response to the growing concern about PFAS, NC DAQ has developed a list of screening questions for Permittees to help us identify potential air emission sources of emerging contaminants.

  Listed below are the questions sent to those industries that are suspected to use per-and polyfluoroalkyl substances based on the DAQ Screening tool (NAICS/SIC PFAS Lookup).

  DAQ Question 1:
  Will your facility use any material or products in your operations that contain fluorinated chemicals? If so, please identify such materials or products and the fluorinated chemicals they contain.

  DAQ Question 2:
  Will your facility formulate/create products or byproducts (directly or indirectly) that contain fluorinated chemicals (across multiple media)? If so, please identify such products or byproducts and the fluorinated chemicals they contain.

DAQ Question 3:
Will your facility generate solid, liquid, or gaseous related emissions, discharges, or wastes/products containing fluorinated chemicals? If so, please identify such waste streams or materials and the fluorinated chemicals they contain.

DAQ Question 4:
Do your facility's processes or operations use equipment, material, or components that contain fluorinated chemicals (e.g., surface coating, clean room applications, solvents, lubricants, fittings, tubing, processing tools, packaging, facility infrastructure, air pollution control units)? Could these processes or operations directly or indirectly (e.g., through leaching, chemical process, heat treatment, pressurization, etc.) result in the release of fluorinated chemicals into the environment?

DAQ Question 5:
List the fluorinated chemicals identified (i.e., through testing or desktop review) above in your response under the appropriate methods/approaches? If one is not, are they on any other known US or International target lists? OTM-45 (air emissions) Methods 533 & 537.1 (drinking water) SW-846: Method 8327 (water) Draft Method 1633 (water, solids, tissue) Total PFAS" Draft Method 1621 for Adsorbable Organic Fluorine (wastewater) Non targeted analytical methods Qualitative approach through suspect screening.

DAQ Question 6:
Are there other facilities or operations in the U.S. or internationally engaged in the same or similar activities involving fluorinated chemicals addressed in your response to the above questions? If so, please provide facility identification information? In addition, are there any ISO (International Organization for Standardization) certification requirements?

DAQ Question 7:
Do you plan to store AFFF on site, use it in fire training at the site, use it for fighting fires at the facility, or include it in a fire fighting system at the site?

DAQ Question 8:
Are other emerging contaminants (e.g., 1,4-dioxane, brome, perchlorate, 1,2,3-Trichloropropane) used in some capacity within your facility or operations?

DAQ Question 9: Do you need technical assistance to answer the questions above.

The NCEMC Hamlet facility and the NCEMC Anson facility have the same responsible official, Facility contact, and Technical Contact. A response from the facility was received on March 24, 2025 stating that "To the best of my (Khalil Porter – Manager, Environmental Affairs, Technical Contact) knowledge, neither facility (NCEMC – Anson nor NCEMC – Hamlet) currently utilizes PFAS or other emerging contaminants in our materials, process chemicals, or emissions and do not have any immediate plans to introduce these substances into our operations".

The following "State-enforceable only" statement will be placed in all permitted facilities that DAQ sends the questions.

State-enforceable only
Disclosure of Information Relating to Emissions of Fluorinated Chemicals [15A NCAC 02Q. 0308(a); 15A NCAC 02Q.0309(b)]

The Permittee shall have an ongoing duty to disclose the presence of materials containing fluorinated chemicals at the facility that have the potential to result in the emission of fluorinated chemicals to the environment. Such disclosures shall be in writing and submitted to the Regional Office Supervisor within thirty days of the Permittee becoming aware of such information, unless such information has already been disclosed to DAQ by the Permittee. The disclosure shall describe the identity, quantity, and use of such material to the extent known. DAQ may require the permittee to conduct analysis or testing of fluorinated chemical emissions as necessary to properly evaluate emissions sources at the facility. As used in this condition, the term "fluorinated chemicals" includes but is not limited to per- and polyfluoroalkyl substances (PFAS).

- Removal of General Condition J "Emergency Provisions [40 CFR 70.6(g)]"
  - EPA has promulgated a rule (88 FR 47029, July 21, 2023), with an effective date of August 21, 2023, removing the emergency affirmative defense provisions in operating permits programs, codified in both 40 CFR 70.6(g) and 71.6(g). EPA has concluded that these provisions are inconsistent with the EPA's current interpretation of the enforcement structure of the CAA, in light of prior court decisions[1]. Moreover, per EPA, the removal of these provisions is also consistent with other recent EPA actions involving affirmative defenses[2] and will harmonize the EPA's treatment of affirmative defenses across different CAA programs.
  - As a consequence of this EPA action to remove these provisions from 40 CFR 70.6(g), it will be necessary for states and local agencies that have adopted similar affirmative defense provisions in their Part 70 operating permit programs to revise their Part 70 programs (regulations) to remove these provisions. In addition, individual operating permits that contain Title V affirmative defenses based on 40 CFR 70.6(g) or similar state regulations will need to be revised.
  - Regarding NCDAQ, it has not adopted these discretionary affirmative defense provisions in its Title V regulations (15A NCAC 02Q .0500). Instead, DAQ has chosen to include them directly in individual Title V permits as General Condition (GC) J.
  - Per EPA, DAQ is required to promptly remove such impermissible provisions, as stated above, from individual Title V permits, after August 21, 2023, through normal course of permit issuance.

13. Recommendations

The permit renewal application for the North Carolina Electric Membership Corporation located at 162 Cooperative Way, Hamlet, Richmond County, North Carolina has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. DAQ xxxxxxxxx____of Air Permit No. 09488T11.