NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: TBD

Region: Mooresville Regional Office
County: Rowan
NC Facility ID: 8000163
Inspector's Name: Emily Supple
Date of Last Inspection: 01/27/2022
Compliance Code: W / Violation - procedures

Facility Data

Applicant (Facility's Name): Plant Rowan County

Facility Address:
Plant Rowan County
5755 NC 801 Highway
Salisbury, NC 28147

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: 02Q .0504
NSPS: n/a
NESHAP: n/a
PSD: n/a
PSD Avoidance: n/a
NC Toxics: n/a
112(r): n/a
Other: n/a

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Rebecca Young Compliance Team Leader (704) 278-6657 5755 NC 801 Highway Salisbury, NC 28147	Jesse English Plant Manager (704) 278-6601 5755 NC 801 Highway Salisbury, NC 28147	Scott McMillan Project Manager (205) 992-0057 3535 Colonnade Parkway Birmingham, AL 35243

Application Data

Application Number: 8000163.22A
Date Received: 01/13/2022
Application Type: Modification
Application Schedule: TV-Sign-501(b)(2) Part II

Existing Permit Data
Existing Permit Number: 08758/T26
Existing Permit Issue Date: 02/01/2022
Existing Permit Expiration Date: 09/30/2023

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2020	9.60	204.30	27.03	285.55	82.87	16.29	11.25 [Formaldehyde]
2019	10.11	236.51	29.27	310.60	81.60	17.71	12.22 [Formaldehyde]
2018	10.20	243.72	29.31	311.12	81.51	17.92	12.18 [Formaldehyde]
2017	9.00	199.02	26.08	272.74	68.82	15.59	10.72 [Formaldehyde]
2016	10.61	247.89	27.78	295.05	95.41	17.13	11.48 [Formaldehyde]

Review Engineer: Russell Braswell

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

Comments / Recommendations:
Issue 08758/T27
Permit Issue Date: TBD
Permit Expiration Date: September 30, 2023

1. Purpose of Application and Discussion:

Plant Rowan County (PRC; the facility) currently operates a facility in Rowan County under Title V permit 08758T26. The facility is a power plant that operates five turbines (Units 1 through 5) and activities that support the turbines (such as storage tanks). PRC has previously modified two of the turbines (Units 1 and 3) using the 2-step significant modification process allowed by 15A NCAC 02Q .0501(b)(2). As a result, PRC was required to submit an additional application within 12 months of resumption of operations in order to complete the 2-step significant modification process.

PRC submitted the current application in order to fulfill the 2-step requirement for Units 1 and 3. The application states that Units 1 and 3 resumed operations in March and April, 2021, respectively. The application does not request any changes to the permit except the removal of the 2-step requirement for Units 1 and 3.[1]

Note that the Title V permit also includes a 2-step significant modification requirement for Units 4 and 5. That requirement will remain in the permit because this application does not address Units 4 and 5.

2. Application Chronology:

- January 13, 2022 Application received.
- March 24, 2022 Initial internal draft to RCO staff.
- March 29, 2022 Updated draft to MRO and PRC staff.
- April 22, 2022 The Public Notice and EPA Review periods began.
- XXXX The Public Notice period ended.
- XXXX The EPA Review period ended.
- XXXX Permit issued.

3. Changes to the Existing Permit:

The following table lists the changes Plant Rowan County, Air Permit No. 08758T26:*****

Page No.	Section	Description of Changes
Throughout	Throughout	• Updated permit formatting to match current DAQ standard. There should be no changes in compliance requirements as a result of formatting changes. • Removed references to 02Q .0504 with regards to Unit 1 and Unit 3 because the Permittee has completed the requirements for this rule and these emission sources.
10	2.1 A.3.a.ii	• Noted that startup is limited to 120 total minutes during a block 24-hour period. This change is only for clarity, and does not affect the Permittee's compliance requirements.
12	2.1 A.5	• Noted that Unit 1 resumed operation in March 2021. Therefore, the recordkeeping years will be CY2022 through CY2026.

[1] The application requests the removal of references to 40 CFR Part 97, Subpart BBBBB. However, references to that rule have already been removed from the permit.

Page No.	Section	Description of Changes
13	2.1 A.6	• Noted that Unit 3 resumed operation in April 2021. Therefore, the recordkeeping years will be CY2022 through CY2026.
19	2.1 B.3.a.ii	• Noted that startup is limited to 360 total minutes during a block 24-hour period. This change is only for clarity, and does not affect the Permittee's compliance requirements.
33	3. (new)	• Created Section 3 for list of insignificant activities.
34	4. (new)	• Created Section 4 for General Conditions.

* This list is not intended to be a detailed record of every change made to the permit but a summary of those changes.

4. Compliance Status and Other Regulatory Concerns:

- *Compliance status:* This facility was most recently inspected on January 27, 2022 by Emily Supple. PRC appeared to be in compliance with the Title V permit at the time of that inspection.

- *Compliance history:* Since the previous Title V permit renewal, PRC has been issued one Notice of Violation. On October 19, 2021, DAQ issued an NOV to PRC because a required audit on the NOx/O_2 CEMS for Unit 2 had not been performed.

- *Application fee:* Applications for significant modification require an application fee. The appropriate fee was received electronically on January 18, 2022.

- *PE Seal*: Pursuant to 15A NCAC 02Q .0112 "Application requiring a Professional Engineering Seal," a professional engineer's seal (PE seal) is required to seal technical portions of air permit applications in some circumstances. The PE Seal requirement was addressed in the Part 1 application. See Attachment 1, Section 6 for a discussion of zoning consistency requirements.

- *Zoning:* The requirement for a zoning consistency determination was addressed in the Part 1 application. See Attachment 1, Section 6 for a discussion of zoning consistency requirements.

5. Facility Emissions Review

The table on the first page of this application review presents the criteria pollutant (plus total HAP) from the latest available approved facility emissions inventory (2020). The HAP emitted in the largest quantity from the facility is formaldehyde.

This facility is classified as Title V because it has actual emissions of criteria pollutants (specifically, NOx, CO, and PM10) greater than 100 tpy. Neither the Part 1 nor Part 2 applications will affect the Title V classification.

This facility is classified as a major source for PSD purposes because it has actual emissions of PSD pollutants greater than the major source thresholds. Neither the Part 1 nor Part 2 applications will affect the PSD classification. The Part 1 application was not a major modification for PSD purposes. Any changes to PSD Increment Tracking as a result of the Part 1 application are discussed in Attachment 1, Section 5.

This facility is classified as a major source of hazardous air pollutants (HAP) because it has potential emissions of individual HAP (specifically formaldehyde) greater than 10 tpy. Neither the Part 1 nor Part 2 applications will affect the major source classification.

6. Draft Permit Review Summary:

Initial draft: A draft of the permit and this application review were sent to RCO staff on March 24, 2022. Comments on this draft indicated typos in the permit and application review. After correcting the indicated issues, a second draft was prepared.

Second draft: A new draft of the permit and this application review were sent to MRO, SSCB, and PRC staff. A summary of the comments and DAQ's responses are below:

SSCB comment 1:	Section 2.1 A.3.a.ii and 2.1 B.3.a.ii have "periods of excess emissions due to start-up and/or shutdown shall not exceed two hours in any 24-hour block period." Is this time limit two clock hours, or 120 total minutes?
Response:	After reviewing the original application, this time limit should be 120 total minutes. When performing NAAQS modeling, it appears the applicant originally modeled two-hour startup periods, i.e., there were 120 minutes of start-up/shutdown time in a 24-hour period. This limit will be corrected to read "shall not exceed two hours (120 total minutes) in any 24-hour block" for clarity.
PRC comment 1:	The beginning and ending reporting dates for 02D .0530(u) conditions in the draft permit are off by one year.
Response:	Corrected.
PRC comment 2:	The permit and review are inconsistent as to when the application was received. Should be January 13, 2022.
Response:	Corrected.
PRC comment 3:	PRC self-reported that the NOx CEMS audit had not been completed (referenced in Section 4 of the review). Correct the review to reflect this.
Response:	As originally written, it appeared that DAQ had notified PRC of the missed CEMS audit, when in reality this was not the case. This has been corrected.
PRC comment 4:	Why does the first page of the draft application review state the facility is in "violation – procedures"?
Response:	That is the current status for this facility listed in DAQ's database. I will forward this question to DAQ's Compliance Branch.

7. Public Notice, EPA Review, 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 is provided to the public under 02Q .0521 above. South Carolina is an affected State and Mecklenburg County is an affected local program.

The public notice and EPA review periods began on XXXXX

The public notice period ended on XXXXX

The EPA review period ended on XXXXX

8. Recommendations

This permit application has been reviewed by NC DAQ to determine compliance with all procedures and requirements. NC DAQ has determined that this facility appears to be complying with all applicable requirements.

Recommend issuance of Permit No. 08758T27. MRO has received a copy of this permit as described in Section 6.

Attachment 1 to Review of Application 8000163.22A
Plant Rowan County
Review of Applications 8000163.20A & .20B

(page numbers in this attachment may differ from the original document due to formatting differences)

Review Engineer: Russell Braswell **Review Engineer's Signature:** **Date:** *Russell Braswell* February 3, 2021	**Comments / Recommendations:** **Issue** 08758/T24 **Permit Issue Date: February 4, 2021** **Permit Expiration Date:** September 30, 2023 (no change)

1. **Description of Facility and Purpose of Application:**

Plant Rowan County ("PRC", "the facility") currently operates a power plant in Rowan County under Title V permit 08758T23. The facility consists of three simple-cycle gas turbines and two combined-cycle gas turbines that operate as a single unit. The primary fuel source for the facility is natural gas, although four of the turbines can operate with No. 2 fuel oil.

PRC submitted these applications to modify the Title V permit to allow for routine upgrade of two of the simple-cycle turbines (Units 1 and 3) in a similar manner to the recent upgrade to Unit 2. PRC expects this upgrade to increase annual emissions from Units 1 and 3. As part of these applications, PRC demonstrated that the upgrade will not trigger the requirements of Prevention of Significant Deterioration and/or New Source Review ("PSD"; "NSR") and will not count as a modification for the purposes of New Source Performance Standards ("NSPS").

These applications were submitted as the first part of a two-part significant modification as allowed by 15A NCAC 02Q .0501(b)(2). For such applications, no Public Notice or EPA Review period is required. PRC will be required to submit a second Title V permit application, and the Title V permit will go through the Public Notice and EPA Review processes at that time.

While PRC was preparing these applications, 15A NCAC 02D .0530(u) required that facilities submit a permit application in order to use projected actual emissions to avoid applicability of PSD. On October 1, 2020, the text of this rule was changed such that only a notification is required for those modifications that indicate a reasonable possibility less than 50% of the applicable threshold for a particular pollutant. In pre-application meetings, PRC noted that this revision has not yet been approved by the US EPA and included in North Carolina's State Implementation Plan. Therefore, PRC requested that the permit still be modified with the inclusion of a .0530(u) permit condition with all its required monitoring, recordkeeping, and reporting requirements.

2. **Application Chronology:**

- September 21, 2020 Pre-application meeting with DAQ and PRC staff.
- October 9, 2020 Applications 8000163.20A & .20B received in Raleigh Central Office.

- November 2, 2020 — Initial draft of the Title V permit and technical review sent to Title V Supervisor (Mark Cuilla) for initial review. For a summary of comments received, see Attachment 1.
- November 9, 2020 — Corrected drafts of the Title V permit and technical review sent to DAQ staff (Tom Anderson, Samir Parekh, Bruce Ingle, Jennifer Womick, Emily Supple) and PRC staff (Scott McMillan, Jesse English). For a summary of comments received, see Attachment 2.
- December 23 2020 – January 29, 2021 — Email and phone correspondence with PRC staff regarding proposed changes to NOx CEMS monitoring requirements. Comments and concerns were resolved on January 29, 2021
- February 4, 2021 — Permit issued.

3. Regulatory Overview:

PRC is subject to several rules, but the only rule affected by the proposed upgrades is 02D .0530 "Prevention of Significant Deterioration". Because the proposed upgrade does not meet the definition of modification or reconstruction, 02D .0524 "New Source Performance Standards" and 02D .1111 "Maximum Achievable Control Technology" will not be affected (see Section 4.c for details). Compliance with other rules in the permit will not be affected by the upgrades.

4. Discussion:

a. Project description:

In the permit application, PRC described the need and nature of the proposed upgrades to each unit as:

> "During normal operation, components of combustion turbines are exposed to stresses. To ensure proper operation of these units, the equipment manufacturer recommends inspections and parts replacement on a routine basis. The typical hot gas path outage involves replacing parts (e.g. shrouds, [etc.]) and subsequent tuning of the turbine operations and other ancillary equipment. The vendor has recommended that [PRC] replace certain parts with a newer version of each component for a partial upgrade of the vendor's AGP Peaker Technology during the upcoming maintenance outage. [PRC] performed the AGP Peaker Technology upgrade on Rowan Unit 2 in 2019.
>
> "The portion of the Advanced Gas Path (AGP) Peaker technology being implemented includes replacing the existing combustor liner and flowsleeve to a low differential pressure combustor technology and upgrading the existing turbine shrouds, nozzles, and buckets with higher temperature tolerant materials in the stage 1 and stage 2 sections of the turbine and improvements to the turbine section seals."

As a result of the above, PRC expects longer intervals between service outages, slightly higher firing temperatures, and a marginal increase in efficiency and electrical output. PRC also predicts a higher annual utilization, an increase in annual fuel consumption, and therefore, an increase in actual emissions from Units 1 and 3.

b. Use of Projected Actual Emissions to Avoid PSD:

In order to avoid a PSD review for a modification, the applicant must demonstrate that the modification does not increase emissions of any pollutant above its significance threshold. The applications calculate the baseline actual emissions from Units 1 and 3 and then calculates the projected future emissions from those units with the proposed upgrade in place. In addition, any previous increase in emissions from a substantially related[1] modification must be aggregated with the current application when determining the projected future emissions.

1. Aggregation of Projects for PSD Permitting:

As a general rule, projects that are not substantially related should be considered separately when determining applicability of PSD. In order to determine if two or more projects are substantially related, EPA has suggested examining the different factors regarding the specific projects, such as the timing of activities and the technical and economic dependencies of the projects.

When considering the time between projects, EPA has stated "once three years have passed, it is difficult to argue that they are *substantially* related and constitute a single project" (74 FR 2380). In the previous three years, PRC has been issued three Title V permits. Table 1 shows a brief overview of these permits and the reason for their issuance:

Table 1: Recent Permit Revisions

Permit Revision	Description
T20, issued April 17, 2017	This permit revision allowed PRC to perform upgrades to Unit 4 and Unit 5, while demonstrating that a PSD review was not required.
T21, issued October 22, 2018	This permit revision renewed the Title V permit and Title IV permit.
T22, issued April 4, 2019	This permit revision was issued to administratively correct errors in the permit introduced in the T21 revision.
T23, issued November 17, 2019	This permit revision allowed for upgrades to Unit 2 (the same upgrades proposed for Units 1 and 3) while demonstrating that that a PSD review was not required.

Of all of the recent permit revisions, only the upgrades allowed by the T20 and T23 revisions resulted in a change of emissions from the facility. Therefore, only these actions will be examined for potential aggregation with the current application.

It should be noted that EPA has qualified the three-year guideline. EPA has stated "Previous agency statements can be taken out of context or misunderstood when reviewing projects having a different set of facts. For example, while the [3M Memo] was considered by some as the EPA's guiding policy on project aggregation, parties could certainly misconstrue portions of that statement to

[1] EPA initially suggested the term "intrinsic relationship" as a test for requiring project aggregation in a memorandum from John B. Rasnic to EPA Region 5, titled "Applicability of New Source Review Circumvention Guidance to 3M—Maplewood, Minnesota" (a.k.a. "the 3M memo"). Subsequently, EPA has suggested the synonymous term "substantially related" instead (*see* 83 FR 57331). EPA has affirmed this term initially on January 15, 2009 (*see* 74 FR 2376) and reaffirmed this term on November 15, 2018 (*see* 83 FR 57324).

suggest that all projects occurring within the same timeframe should be aggregated…" (83 FR 57330). Therefore, the fact that the T20 and T23 permit revisions were issued within the past three years is, by itself, not sufficient evidence to require project aggregation. The technical and economic dependencies of these projects must also be examined.

When determining the technical and economic dependencies of two projects, EPA has stated "activities occurring in unrelated portions of a major stationary source (e.g., a plant that makes two separate products and has no equipment shared among the two processing lines) [may] not be substantially related", and "[t]o be 'substantially related,' there should be an apparent interconnection—either technically or economically—between the physical and/or operational changes…" (74 FR 2378). Additionally, EPA has stated "Such an approach—i.e. to aggregate projects simply because they may occur close in time or may support the same overall purpose of the facility—fails to take proper account of the actual interrelationship of activities" (83 FR 57330).

On the surface, the upgrades allowed by the T20 and T23 revisions appear to be related to the current proposed upgrades. Both projects involve a similar upgrade being applied to similar emission sources that serve a similar purpose and are located at the same facility. However, each unit at this facility operates independently from the others. One or more units at the facility can be out of service while the remainder are operating. The units do not share common parts with any other unit. The successful upgrade of any of the units does not depend on the previous or future upgrades to any of the other units. Therefore, there appears to be no technical dependence between the two projects.

Based on the lack of technical dependence between the T20, T23, and currently proposed projects, DAQ concludes that no other previous modifications should be aggregated with the current application for PSD permitting.

Furthermore, because Units 1 and 3 are technically independent of each other, the upgrades for each can be considered separately.

2. Calculate the Project Baseline Emissions

Because no other modifications will be aggregated with the proposed Units 1 and 3 upgrades, and Units 1 and 3 are independent of each other, the baseline actual emissions need only be calculated for Units 1 and 3 separately.

15A NCAC 02D .0530(b)(1) defines the baseline actual emissions as the average annual emission rate of that pollutant during "…any consecutive 24-month period selected by the owner or operator within the five-year period immediately preceding the date that a complete permit application is received by the Division…" The application establishes the baseline period as September 2017 to August 2019 for Unit 1 and March 2016 to February 2018 for Unit 3. Table 2 calculates the baseline actual emissions for Units 1 and 3:

Table 2: Baseline Actual Emissions for Units 1 and 3[2]

Pollutant	Unit 1		Unit 3	
	Emission Factor (lb/MMBtu)	Baseline Actual Emissions (ton/yr)	Emission Factor (lb/MMBtu)	Baseline Actual Emissions (ton/yr)
NOx	0.0353	32.53	0.0378	33.18
CO	0.0182	16.77	0.0184	16.17
PM	0.0103	9.46	0.0103	9.07
PM10	0.0103	9.46	0.0103	9.07
PM2.5	0.0103	9.46	0.0103	9.07
VOC	0.0015	1.41	0.0016	1.36
SO_2	0.0006	0.59	0.0007	0.60

Baseline Heat Input (MMBtu/yr)	
Unit 1	1,843,821
Unit 3	1,756,021

During the baseline periods, Units 1 and 3 burned 99.01% and 97.8% natural gas, respectively. The remainder of the heat input came from No. 2 fuel oil. PRC derived the emission factors used in the analysis based on CEMS data, permit limits, and AP-42. See Attachment 1 for details regarding the baseline period and emission factors used in the application.

3. Calculate the Projected Actual Emissions

PRC estimated the expected growth in utilization of the facility based on its proprietary dispatching model, which its parent company Southern Power Company uses to predict utilization and make suitable business decisions. PRC used the dispatching model to analyze the next five years. Based on the dispatching model, the 12-month highest heat input for Unit 1 will occur between April 2025 and March 2026, and for Unit 3 will occur between April 2021 and March 2022.

According to the application, the upgrade "is not anticipated to affect annual average emissions rates on a lb/mmBtu basis" (application at 3). In other words, PRC does not expect the upgrades to have any effect on emission factors, so the projected change in emissions will be based solely on heat input. Using this information, the projected actual emissions can be calculated:

[2] Note that 02D .2609(a) requires that particulate emissions be determined using EPA Methods 5 *and* 202. i.e. "PM" and "particulate matter" is the sum of filterable and condensable particulates.

Table 3: Projected Actual Emissions for Units 1 and 3

Pollutant	Unit 1 Emission Factor (lb/MMBtu)	Unit 1 Projected Actual Emissions (ton/yr)	Unit 3 Emission Factor (lb/MMBtu)	Unit 3 Projected Actual Emissions (ton/yr)
NOx	0.0353	34.22	0.0378	33.68
CO	0.0182	17.64	0.0184	16.41
PM	0.0103	9.95	0.0103	9.21
PM10	0.0103	9.95	0.0103	9.21
PM2.5	0.0103	9.95	0.0103	9.21
VOC	0.0015	1.48	0.0016	1.39
SO_2	0.0006	0.62	0.0007	0.60

Projected Heat Input (MMBtu/yr)	
Unit 1	1,939,265
Unit 3	1,782,375

4. Compare the Projected Change in Emissions to the Significance Level

A "significant emissions increase" is defined as any increase in emissions greater than the threshold listed in 40 CFR 52.166(b)(23). Tables 4 and 5 compare the change in projected actual emissions for each pollutant to its respective threshold:

Table 4: Projected Change in Emissions from Unit 1

Pollutant	Baseline Emissions (ton/yr)	Projected Emissions (ton/yr)	Projected Change in Emissions (ton/yr)	Significant Emissions Increase (ton/yr)	Over Threshold?
NOx	32.53	34.22	1.69	40	No
CO	16.77	17.64	0.87	100	No
PM	9.46	9.95	0.49	25	No
PM10	9.46	9.95	0.49	15	No
PM2.5	9.46	9.95	0.49	10	No
VOC	1.41	1.48	0.07	40	No
SO_2	0.59	0.62	0.03	40	No

Table 5: Projected Change in Emissions from Unit 3

Pollutant	Baseline Emissions (ton/yr)	Projected Emissions (ton/yr)	Projected Change in (ton/yr)	Significant Emissions (ton/yr)	Over Threshold?
NOx	33.18	33.68	0.50	40	No
CO	16.17	16.41	0.24	100	No
PM	9.07	9.21	0.14	25	No
PM10	9.07	9.21	0.14	15	No
PM2.5	9.07	9.21	0.14	10	No
VOC	1.36	1.39	0.03	40	No
SO_2	0.60	0.60	0.01	40	No

As can be seen in the above tables, no emission increase is greater than the respective threshold. Therefore, the proposed upgrade projects will not trigger a new PSD review.

5. Compliance Requirements for Use of Projected Actual Emissions

In order to demonstrate that the projected actual emissions included in the application were accurate, PRC will monitor emissions from Units 1 and 3 for five years following the completion of the upgrade on each individual unit. The annual emissions will be compared to the projected emissions. If there is a discrepancy, PRC may be required to again demonstrate that the upgrade project did not trigger a PSD review.

The Title V permit will be modified to include a specific condition for 15A NCAC 02D .0530(u) "Use of Projected Actual Emissions" for Units 1 and 3. The projected annual emissions will be included in the permit for future comparison. Note that this does not constitute an emission limit, and that an exceedance of these projected emissions does not necessarily indicate a violation.

c. Modification and Reconstruction under New Source Performance Standards ("NSPS") and Maximum Achievable Control Technology ("MACT")

Units 1 and 3 are currently not subject to NSPS Subpart KKKK because they were constructed before February 18, 2005 and have not been reconstructed or modified since that date (see 40 CFR 60.4305(a)). The proposed upgrade could potentially meet the definition of either reconstruction or modification under NSPS.

Units 1 and 3 are currently considered an existing stationary turbine under MACT Subpart YYYY because they were constructed before January 14, 2003 and have not been reconstructed since that date (see §63.6090(a)(1)). Such sources do not have to meet the requirements of the MACT (see §63.6090(b)(4)). The proposed modification could potentially meet the definition of reconstruction under MACT.

1. Modification under NSPS:

In general, NSPS defines "modification" in §60.14(a) to be any physical change that increases emission rates. The definition provides several exceptions. Specifically, §60.14(e)(2) exempts "An increase in production rate of an existing facility, if that increase can be accomplished without

a capital expenditure on that facility." In §60.2, NSPS defines a "capital expenditure" as "an expenditure for a physical or operational change to an existing facility which exceeds the product of the applicable "annual asset guideline repair allowance percentage" specified in the latest edition of Internal Revenue Service (IRS) Publication 534[3] and the existing facility's basis, as defined by section 1012 of the Internal Revenue Code…" If the cost of the project is less than the threshold calculated by the annual asset guideline repair allowance, then the project will not be considered a capital expenditure, and therefore will not be considered a modification.

In the application, PRC estimates the cost basis for Units 1 and 3, based on the US Energy Information Agency's document "Assumptions to the Annual Energy Outlook 2001", 59.9 million dollars per Unit, at a minimum. According to the IRS publication, the repair allowance percentage is 4%, meaning that any project that costs less than 4% of 59.9 million dollars (i.e. 2.4 million dollars) would not be a capital expenditure. PRC estimates that the proposed upgrade will cost 1.7 million dollars per unit, and therefore will not be a capital expenditure. Because this project is not a capital expenditure, it is not considered a modification under NSPS per §60.14(e)(2).

2. Reconstruction under NSPS and MACT:

NSPS defines "reconstruction" in §60.15(b) as the replacement of components of an existing facility such that the total cost of the new components exceeds 50% of the cost of constructing a comparable new facility. MACT uses a similar definition in §63.2.

The application estimates the total cost of the proposed upgrade with be 1.7 million dollars, which is far less than 50% of a new comparable unit. Therefore, this project will not be considered reconstruction under either NSPS or MACT.

3. Compliance Requirements for NSPS and MACT:

Because the status of Units 1 and 3 will not change under either NSPS or MACT, no change to the permit requirements for either of these rules will be necessary.

5. Facility Emissions Review

The application states that the upgrade projects "may not increase the unit's design capacity or potential to emit" (application at 3) and "the vendor data does not clearly demonstrate there will be an increase…in hourly NSPS regulated emissions" (application at 4). Therefore, potential emissions from this facility are not expected to change. Actual emissions are expected to increase by the amounts calculated above.

This facility previously calculated the initial PSD Increment Tracking based on the facility-wide maximum potential operations, which are not expected to change. Therefore, PSD Increment Tracking will not be affected by the proposed upgrade.

[3] The current version of IRS Publication 534 does not include this term. The most recent version that included the term appears in Revenue Procedure 83-35 (published May 16, 1983). In published applicability determinations, EPA has used this method after it was dropped from the IRS publication. For example, see EPA Applicability Determination Index, control number 0600027, issued February 9, 2001.

6. Other Regulatory Concerns

- This facility was most recently inspected on November 9, 2020 by Emily Supple. PRC appeared to be in compliance with the existing Title V permit at that time.
- A zoning consistency determination was received for these applications on October 28, 2020.
- An application fee of $988 was received for each of these applications.
- A PE seal was not required for these permit applications.
- These applications were submitted as a 2-step significant modification under 15A NCAC 02Q .0501(b)(2). No public notice is required for this type of application. PRC will be required to submit an additional application within one year of completing the upgrades on Units 1 and 3 (see below).
- The existing permit contains a specific condition for 15A NCAC 02Q .0504, which requires that PRC submit a Title V application after completing an upgrade project on Unit 2. This specific condition will be updated to also include a permit submittal requirement for Units 1 and 3.
- The existing permit contains references for 15A NCAC 02D .1109 "112(j) Case-by-Case Maximum Achievable Control Technology" (specifically for boilers and process heaters). This rule has expired, and therefore all references to this rule have been removed from the permit.
- DAQ has been standardizing the use of data gathered by continuous emission monitoring systems ("CEMS") for compliance with PSD limits. To this end, DAQ has determined that data substitution and maximum monitor downtime should be included where CEMS data is used to demonstrate compliance with PSD. Therefore, the new permit will require PRC to use the data substitution procedure for NOx in 40 CFR Part 75 in order to demonstrate compliance with the NOx PSD limits. Note that PRC is already gathering data under this procedure as part of compliance with the Title IV acid rain permit. In addition, the permit will specify a maximum monitor downtime of 5%.

7. Summary of Changes to Title V Permit

The following table lists the changes Plant Rowan County, Air Permit No. 08758T23:

Pages*	Section*	Description of Changes
n/a	Throughout	• Updated permit dates/numbers. • Fixed formatting
10 and 21	2.1 A.3 and 2.1 B.3	• Added definition and allowable limit of monitor downtime. • Added requirement for data substitution when demonstrating compliance via CEMS data. • Added requirement to include report excess emissions and monitor downtime.
14 - 15	2.1 A.5 and 2.1 A.6	• Added these conditions based on the .20A and .20B applications.
16	2.1 A.7 (formerly 2.1 A.5)	• Added requirements to submit permit applications for Units 1 and 3 based on the .20A and .20B applications.

Pages*	Section*	Description of Changes
n/a	2.1 D.6 (former) and 2.1 E.4 (former)	• Removed these conditions because 02D .1109 no longer applies to this facility.
31 and 36	2.1 D.6 (formerly 7) and 2.1 E.4 (formerly 5)	• Removed references to the Case-by-Case MACT and 02D .1109 because that rule no longer applies.
41	3.	• Updated General Conditions to v5.5.

* This refers to the current permit unless otherwise stated.

8. Recommendations

Issue permit 08758T24.

Attachment 1 to Review of Applications 8000163.20A & 20B
Plant Rowan County

Baseline and Emission Factor Calculations

The following calculations were performed by PRC and included in the applications as Attachments A and B

Baseline calculations

Unit 1

CEMS Heat input (mmBtu) and NOx (tons)			
Year	Month	NOx tons	Heat Input
2017	September	3.92	231737
2017	October	3.14	171537
2017	November	1.48	76401
2017	December	0.19	9779
2018	January	2.50	35780
2018	February	0.00	0
2018	March	0.00	65
2018	April	0.00	0
2018	May	2.13	116403
2018	June	3.28	183868
2018	July	3.38	188633
2018	August	5.84	328467
2018	September	7.05	406302
2018	October	4.46	259703
2018	November	0.16	8535
2018	December	0.52	14967
2019	January	0.59	26804
2019	February	0.71	35777
2019	March	0.85	42355
2019	April	0.83	43876
2019	May	5.98	378579
2019	June	4.48	287494
2019	July	8.01	501057
2019	August	5.56	339526
Annual Average	September 2017 – August 2019	32.53	1,843,821

Unit 3

CEMS Heat input (mmBtu) and NOx (tons)			
Year	Month	NOx tons	Heat Input
2016	March	3.59	211210
2016	April	5.46	331038
2016	May	1.82	109656
2016	June	2.34	128804
2016	July	6.89	394454
2016	August	7.63	420018
2016	September	6.13	354860
2016	October	1.65	92855
2016	November	0.01	72
2016	December	0.13	1015
2017	January	0.00	43
2017	February	0.00	0
2017	March	0.59	9561
2017	April	1.35	75431
2017	May	2.25	122759
2017	June	1.39	76634
2017	July	5.77	321062
2017	August	5.98	332903
2017	September	4.66	262530
2017	October	1.80	98359
2017	November	1.70	94051
2017	December	0.28	9353
2018	January	4.96	65374
2018	February	0.00	0
Annual Average	March 2016 – February 2018	33.18	1,756,021

Emission factor calculations

Rowan County 1 Emission Factors

Pollutant	Emission Factor (lb/mmBtu)	Emission Factor Source/Notes:
NOx	0.0353	CEMS - 24-month annual average from Sep. 2017 to Aug. 2019 - (See Appendix A)
SO2	0.0006	CEMS - 24-month annual average from Sep. 2017 to Aug. 2019
CO	0.0182	Permit Limit for NG + oil - weighted avg - (See calc. backup below)
VOC	0.0015	Permit Limit for NG + oil - weighted avg - (See calc. backup below)
PMf	0.0055	Permit Limit for gas + oil - weighted avg - (See calc. backup below)
PM10	0.0103	PM Rate for NG + oil - weighted avg - (See calc. backup below)
PM2.5	0.0103	PM Rate for NG + oil - weighted avg - (See calc. backup below)

lb/MMBtu Emission Factor Calculations

Fuel Type	Baseline data (September 2017 - August 2019)		Permit Limit (lb/mmBtu)		AP-42 Table 3.1 (lb/mmBtu)	Permit Limit (lb/mmBtu)	(lb/mmBtu)
	mmBtu	% HI	CO	VOC	PM_cond.	PM ("front half")	PM10/PM2.5
Natural Gas	3,648,324	99.01%	0.018	0.0015	0.0047	0.0055	0.0102
Oil	36,560	0.99%	0.037	0.004	0.0072	0.009	0.0162

Rowan County 3* Emission Factors

Pollutant	Emission Factor (lb/mmBtu)	Emission Factor Source/Notes:
NOx	0.0378	CEMS - 24-month annual average from Mar. 2016 to Feb. 2018 - (See Appendix A)
SO2	0.0007	CEMS - 24-month annual average from Mar. 2016 to Feb. 2018
CO	0.0184	Permit Limit for NG + oil - weighted avg - (See calc. backup below)
VOC	0.0016	Permit Limit for NG + oil - weighted avg - (See calc. backup below)
PMf	0.0056	Permit Limit for gas + oil - weighted avg - (See calc. backup below)
PM10	0.0103	PM Rate for NG + oil - weighted avg - (See calc. backup below)
PM2.5	0.0103	PM Rate for NG + oil - weighted avg - (See calc. backup below)

lb/MMBtu Emission Factor Calculations

Fuel Type	Baseline data (April 2017 - March 2019)		Permit Limit (lb/mmBtu)		AP-42 Table 3.1 (lb/mmBtu)	Permit Limit (lb/mmBtu)	(lb/mmBtu)
	mmBtu	% HI	CO	VOC	PM_cond.	PM ("front half")	PM10/PM2.5
Natural Gas	3,435,527	97.8%	0.018	0.0015	0.0047	0.0055	0.0102
Oil	76,514	2.2%	0.037	0.004	0.0072	0.009	0.0162

lb/mmBtu (CO & VOC) = ((Permit limit lb/mmBtu gas)*(Baseline mmBtu gas)+(BACT lb/mmBtu oil) *(Baseline mmBtu oil))/(Baseline mmBtu gas + Baseline mmBtu oil)

lb/mmBtu (PMf) = ((PM/PM10 permit limit lb/mmBtu gas)*(Baseline mmBtu gas)+(PM/PM10 permit limit lb/mmBtu oil)*(Baseline mmBtu oil))/(Baseline mmBtu gas + Baseline mmBtu oil)

lb/mmBtu (PM10 & 2.5) = ((lb/mmBtu (PMf)) + ((AP-42 PM cond. lb/mmBtu gas)*(Baseline mmBtu gas) +(AP-42 PM cond. lb/mmBtu oil)*(Baseline mmBtu oil))/(Baseline mmBtu gas + Baseline mmBtu oil)

Attachment 2 to Review of Applications 8000163.20A & 20B
Plant Rowan County
Comments Received on Initial Draft (sent November 2 and 9, 2020)

- Mark Cuilla, received by email on November 5, 2020

  1. The email indicated typos in the draft permit and review.

     Response: The indicated issues have been corrected.

  2. The equipment list in Section 1 of the permit should keep track of the different Part 1 applications for Units 1, 2, and 3.

     Response: The footnotes to Section 1 now indicate the three separate Part 1 applications for these sources.

  3. The initial draft permit changed the reporting requirements for the specific condition for NSPS Subpart GG from quarterly to semiannual. We can't make a change that contravenes a standard or makes the permit less stringent without going to notice. We could reserve this for the Part II processing.

     Response: I agree. These specific conditions will not be changed as part of this permit revision.

  4. The table of changes does not mention the removal of 02D .1109.

     Response: I have corrected this omission.

- Samir Parekh, received by email on November 19, 2020

  1. Because this facility is using NOx CEMS to demonstrate compliance with PSD limits, the PSD conditions should require data substitution, monitor downtime limits, and reporting of emissions from SSM (see Duke – HF Lee).

     Response: After further discussion, I have included this language in the permit.

- Scott McMillian, received by email on November 20, 2020

  1. This email pointed out typos in the initial draft permit and review.

     Response: The indicated issues have been corrected.

Based on the above changes, an additional draft will be sent to the applicant.

Attachment 3 to Review of Applications 8000163.20A & 20B
Plant Rowan County

Comments Received on Second Draft (sent November 30, 2020)

- Scott McMillian, received by email on December 22, 2020

The received comments objected to the inclusion of Part 75 NOx data substitution, limit on monitor downtime, and the requirement to report all excess emissions including periods of startup, shutdown, and malfunction. Specifically, there were concerns with:

1. The requirement to perform Part 75 data substitution to demonstrate compliance with a short-term emission limit (specifically, the 24-hour average NOx emission limits). SPC pointed out that EPA has specifically noted that this data substitution method is not for a short-term limit, referencing 77 FR 9375.

   Response: In this entry in the Federal Register, EPA noted that Part 75 data substitution had been removed from MACT Subpart UUUUU because "quantification of total mass emissions is not the focus" of that rule. However, the same is not necessarily true for PSD and BACT, given the underlying connection to NAAQS and air dispersion modeling. Therefore, DAQ still feels it is appropriate to require substituted data for compliance with a 24-hour emission limit for PSD.
2. SPC's ability to perform Part 75 data substitution and report excess emissions in a timely manner per 02D .0535. SPC has previously performed Part 75 data substitution on a quarterly basis as allowed by the acid raid permit.

   Response: As an alternative, I suggested alternative methods of determining an appropriate maximum expected concentration to be used as the default substitution value. After examining alternatives, SPC agreed to Part 75 data substitution instead.
3. The 5% monitor downtime limit, because it could lead to scenarios where low operating hours and a single instance of monitor downtime could exceed the limit. Note that these units are generally used for peak electricity demand, leading to long periods of inactivity.

   Response: In a phone call on January 8, 2020, Samir Parekh (engineer of DAQ's Stationary Source Compliance Branch) clarified that when examining monitor downtime during long periods of inactivity, it is possible to use (as an example) data from the previous quarter in order to avoid the described scenario. This is handled by SSCB on a case-by-case basis.
4. The requirement to report excess emissions during startup, shutdown, and malfunction because the permit specifically allows (under certain scenarios) excess emissions during these periods.

   Response: I corrected the reporting requirement to specifically exclude excess emissions that were otherwise allowed by other conditions in the permit. PRC agreed to the corrected reporting requirements.

After additional conversations and correspondence, SPC eventually agreed to all three points by email on January 26, 2021. PRC approved the final draft of the permit on January 29, 2021.