

**BEFORE THE ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

IN THE MATTER OF THE PROPOSED)
AIR QUALITY TITLE V OPERATING)
PERMIT FOR)
)
DUKE ENERGY PROGRESS, LLC)
)
ROXBORO STEAM ELECTRIC PLANT)
PROPOSED PERMIT NO. 01001T49)
)
ISSUED BY THE NORTH CAROLINA)
DEPARTMENT OF ENVIRONMENTAL)
QUALITY, DIVISION OF AIR QUALITY)

**PETITION REQUESTING THAT THE ADMINISTRATOR OBJECT TO
ISSUANCE OF THE PROPOSED TITLE V OPERATING PERMIT FOR
THE ROXBORO STEAM ELECTRIC PLANT**

Pursuant to Section 505 of the Clean Air Act, the Sierra Club hereby petitions the Administrator of the United States Environmental Protection Agency (“EPA”) to object to the proposed Title V operating permit (“Proposed Permit”) issued by the North Carolina Department of Environmental Quality, Division of Air Quality (“DAQ”) for Duke Energy Progress, LLC’s (“Duke Energy”) Roxboro Steam Electric Plant, a coal-burning power plant located at 1700 Dunnaway Road, Semora, North Carolina 27343, in Person County (“Roxboro Plant” or “Plant”). The Proposed Permit is not in compliance with applicable requirements under the Clean Air Act; therefore, objection by EPA is proper.¹

Specifically, the permit lacks the conditions necessary to ensure compliance with applicable requirements that prohibit the exceedance of governing ambient air quality standards—*i.e.*, sufficiently stringent numerical limits on the emission of sulfur dioxide (“SO₂”). In addition, the permit lacks a schedule for compliance with current violations of applicable requirements and of the existing permit. These objections were timely raised in Sierra Club’s comments on DAQ’s draft Title V permit renewal for the Roxboro Plant (“Draft Permit”), submitted on May 4, 2016 and attached hereto as Exhibit 1.² DAQ has not offered—and, indeed, cannot offer—any reasonable justification for its failure to impose more stringent limits on SO₂ emissions. For these reasons, and as discussed in greater detail below, EPA should object to issuance of the Proposed Permit.

¹ 42 U.S.C. § 7661d(b).

² Sierra Club Comments on DAQ’s Intent to Issue an Air Quality Title V Operating Permit to Duke Energy Progress for its Roxboro Steam Electric Plant, Permit No. 01001T49 (May 4, 2016) (“Sierra Club Comments”).

I. Governing Law and Regulations

A. The Clean Air Act, Implementation Plans, and the Title V Permitting Program

The Clean Air Act is intended to protect and enhance the public health and public welfare of the nation.³ To this end, EPA promulgates primary and secondary National Ambient Air Quality Standards (“NAAQS”) for six “criteria” pollutants—sulfur dioxides, nitrogen oxides, particulate matter, carbon monoxide, ozone, and lead.⁴ Primary NAAQS are health-based standards set at a level adequate to protect the public from the harmful effects of exposure to the criteria pollutants with an adequate margin of safety.⁵ State and regional air quality agencies that are delegated implementation authority under the Clean Air Act develop and implement plans that include applicable requirements,⁶ the compliance with which advances attainment of the federal NAAQS and other standards. These applicable requirements are then executed with respect to individual facilities through permitting programs established under Title V of the Act, which govern the operation of major emissions sources within a given state.⁷

More specifically, major stationary sources of air pollution are prohibited from operating except in compliance with a Title V operating permit.⁸ Title V permits must require compliance with all applicable federal, state, and local regulations in one legally enforceable document, thereby ensuring that all Clean Air Act requirements are applied to the facility.⁹ These permits “shall include enforceable emission limitations and standards . . . and such other conditions as are necessary to assure compliance with applicable requirements of this chapter, including the requirements of the applicable implementation plan.”¹⁰ Title V permits must also contain monitoring, recordkeeping, reporting, and other requirements to assure continuous compliance by sources with all applicable requirements.¹¹

As EPA explained in the preamble to its Title V program rule, the program was created to ensure that a major stationary source’s operating requirements are clear and that the source’s compliance with those requirements is likewise clear, so that the public can monitor and enforce compliance.¹² “[R]egulations are often written to cover broad source categories,” leaving it “unclear which, and how, general regulations apply to a source.”¹³ Title V permits are intended to bridge this gap by “mak[ing] more readily enforceable a source’s pollution control

³ See 42 U.S.C. § 7401(b)(1).

⁴ *Id.* at § 7409.

⁵ *Id.*

⁶ 40 C.F.R. § 70.2 (1) (defining “applicable requirements” to mean “[a]ny standard or other requirement provided for in the applicable implementation plan approved or promulgated by EPA.”)

⁷ See 42 U.S.C. §§ 7410, 7661.

⁸ 42 U.S.C. § 7661a(a).

⁹ See 42 U.S.C. § 7661c; 40 C.F.R. § 70.6(a)(1) (requiring that all Title V permits contain all “those operational requirements and limitations that assure compliance with all applicable requirements at the time of permit issuance”).

¹⁰ See 42 U.S.C. § 7661c(a).

¹¹ See 40 C.F.R. Part 70.

¹² U.S. EPA, Operating Permit Program, 57 Fed. Reg. 32,250, 32,251 (July 21, 1992).

¹³ *Id.*

requirements” and “tailor[ing] and clarify[ing] how the general rules apply to the specific source,”¹⁴ thus providing an easy way “to establish whether a source is in compliance.”¹⁵ An interested person should be able to understand from a permit how much pollution the permitted facility is legally authorized to emit and how that facility is monitored for compliance. Members of the public should not be forced to retain experts and pay for highly technical air dispersion modeling or other resource-intensive analyses in order to determine whether a source is violating applicable requirements and its permit. Instead, the permitting agency must translate any narrative applicable requirements into quantifiable and readily enforceable permit conditions.

In addition, a Title V permit must include a compliance schedule for “requirements for which the source is not in compliance at the time of permit issuance.”¹⁶ Permits must contain “a description of the compliance status of the source” and, for sources not in compliance at the time of permit issuance, “a narrative description of how the source will achieve compliance” with applicable requirements.¹⁷ Thus, Title V permits must spell out enforceable, specific steps to be taken by sources with histories of noncompliance in order to return those sources to compliance.

B. North Carolina-Specific Regulations

EPA delegated to North Carolina the authority to administer the Title V operating permit program within the state. North Carolina adopted laws and regulations that grant the North Carolina Department of Environmental Quality the authority to fulfill this delegation, including administering a Title V permit program.¹⁸ Permits issued by DAQ under that program must include enforceable emission limitations and standards and such other conditions as are necessary to assure compliance with all applicable requirements at the time of permit issuance¹⁹—that is, any standard or requirement provided for in North Carolina’s state implementation plan (“SIP”).²⁰

The North Carolina SIP includes provisions—*i.e.*, applicable requirements—expressly prohibiting pollution that causes the exceedance of an ambient air quality standard and affirmatively requiring permit conditions to prevent such pollution. Specifically, North Carolina regulations provide that:

No facility or source of air pollution shall cause *any ambient air quality standard in this Section to be exceeded or contribute to a violation of any ambient air quality standard in this Section.*²¹

¹⁴ S. Rep. 101-228, 1990 USCAAN 3385, 3730 (Dec. 20, 1989).

¹⁵ *Id.*

¹⁶ 42 U.S.C. § 7661c(a); 40 C.F.R. § 70.6(c)(3).

¹⁷ 40 C.F.R. § 70.5(c)(8); *id.* § 70.6(c)(3).

¹⁸ *See generally* 15A N.C.A.C. 2Q.0501 *et seq.*

¹⁹ *See* 42 U.S.C. § 7661c(a); 40 C.F.R. § 70.6(a)(1).

²⁰ 40 C.F.R. § 70.2 (defining applicable requirements).

²¹ 15A N.C.A.C. § 2D.0401(c) (emphasis added).

In addition, the “Emission Control Standards” of North Carolina’s regulations—Section 2D.0501(c)—require that:

In addition to any control or manner of operation necessary to meet emission standards in this Section, any source of air pollution shall be operated with such control or in such manner that the source *shall not cause the ambient air quality standards of Section .0400 of this Subchapter to be exceeded at any point beyond the premises on which the source is located.*²²

Those regulations, which represent a specific strategy by North Carolina for ensuring clean air, further require that:

When controls more stringent than named in the applicable emission standards in this Section are required *to prevent violation of the ambient air quality standards* or are required to create an offset, *the permit shall contain a condition requiring these controls.*²³

These regulatory provisions contemplate precisely the permitting scenario in which DAQ now finds itself: emissions from a stationary source are causing concentrations of harmful pollutants above the governing health-based standard and an applicable requirement in the implementation plan must be translated into facility-specific numerical limits in order to prevent the illegal pollution. The last sentence of Section 2D.0501(c), quoted above, makes quite explicit the need for such translation, imposing upon DAQ a duty to adopt the specific permit conditions necessary to prevent violation of ambient air quality standards.

C. The 2010 National Ambient Air Quality Standard for Sulfur Dioxide

In June of 2010, recognizing the inadequacy of the primary SO₂ NAAQS that had been adopted nearly four decades earlier, EPA revoked the 24-hour and annual standards (the 1971 SO₂ NAAQS) and issued a new primary NAAQS for sulfur dioxide (the 2010 SO₂ NAAQS).²⁴ In order to protect the public against adverse respiratory effects associated with short-term exposure, the new SO₂ NAAQS is a one-hour standard set at 75 parts per billion (“ppb”).²⁵

Due to both the shorter averaging time and the concentration value, the 2010 SO₂ NAAQS is far more stringent than the 1971 SO₂ NAAQS.²⁶ When setting the new standard, EPA determined that exposure to sulfur dioxide for even very short periods of time—such as five minutes—causes decrements in lung function, aggravation of asthma, and respiratory and

²² 15A N.C.A.C. § 2D.0501(c) (emphasis added).

²³ *Id.* (emphasis added).

²⁴ U.S. EPA, Final Rule, Primary National Ambient Air Quality Standard for Sulfur Dioxide, 75 Fed. Reg. 35,520 (June 22, 2010) (codified at 40 C.F.R. § 50.17(a)).

²⁵ 40 C.F.R. § 50.17(a).

²⁶ U.S. EPA, Final Regulatory Impact Analysis (RIA) for the SO₂ National Ambient Air Quality Standards (NAAQS) tbl. 5.14 (2010), available at www.epa.gov/ttnecas1/regdata/RIAs/fso2ria100602full.pdf (“2010 SO₂ NAAQS RIA”).

cardiovascular morbidity.²⁷ Indeed, there is a very tight correlation between exposure to sulfur dioxide and asthma, and short-term SO₂ exposure is linked to increased visits to emergency departments and hospital admissions—particularly, in at-risk populations including children, the elderly, and asthmatics.²⁸ As such, the new, more stringent NAAQS is projected to have enormous benefits for public health. EPA has estimated that the new standard will prevent 2,300 to 5,900 premature deaths and 54,000 asthma attacks a year.²⁹ In other words, where SO₂ concentrations are higher than 75 ppb, EPA expects premature deaths and asthma attacks to occur.

Following EPA’s promulgation of the 2010 SO₂ NAAQS, North Carolina updated its regulations pertaining to SO₂ ambient air quality standards, revising those regulations to include the new federal standard: “The primary one-hour annual ambient air quality standard for oxides of sulfur is 75 parts per billion.”³⁰ Accordingly, the one-hour, 75-ppb ambient air quality standard now governs in North Carolina.³¹

II. Factual and Procedural Background

A. Operations at Duke Energy’s Roxboro Plant

Duke Energy owns and operates a 50-year-old, fossil fuel-fired power plant northwest of the City of Roxboro in Person County. The Roxboro Plant’s four coal-burning boilers have a total nameplate capacity of approximately 2,558 megawatts and came online between 1966 and 1980. Despite being equipped with ratepayer-funded pollution control technology—*i.e.*, flue gas desulfurization systems or “scrubbers”—the Roxboro Plant remains a significant source of SO₂ pollution. In 2015, the Plant’s coal-burning units emitted approximately 21 million pounds of sulfur dioxide as well as 14 million pounds of nitrogen oxides and 9 million tons of carbon dioxide. Of particular concern, the Roxboro Plant’s scrubbers have not been operated at maximum efficiency, likely resulting in additional, avoidable SO₂ pollution. Moreover, Duke has been purchasing lower quality, higher sulfur coal.³²

Duke Energy installed scrubbers at the Plant in 2007 (Units 2 and 4) and in 2008 (Units 1 and 3). The scrubbers were designed to achieve 97% removal efficiency of the sulfur dioxide exiting the boilers. During the first few months following installation, the scrubbers were found to be achieving 98% removal efficiency, and SO₂ emission rates declined dramatically.³³ However, after several months of operating with average SO₂ emission rates below

²⁷ See U.S. EPA, Integrated Science Assessment for Sulfur Oxides—Health Criteria (2008); 75 Fed. Reg. at 35,525; see also U.S. EPA, Our Nation’s Air: Status and Trends Through 2008, 4 (2010) (health effects of SO₂ exposure include aggravation of asthma, leading to wheezing, chest tightness, increased medication use, hospital admissions, and emergency room visits), available at <http://www.epa.gov/airtrends/2010/report/airpollution.pdf>.

²⁸ 75 Fed. Reg. at 35,525–26.

²⁹ 2010 SO₂ NAAQS RIA, tbl. 5.14.

³⁰ 15A N.C.A.C. § 2D.0402(d).

³¹ *Id.*; 78 Fed. Reg. 47,191-02.

³² See Sierra Club Comments at 6; Ranajit Sahu, Analysis of Scrubber Operation: Duke Energy – Roxboro Power Plant (June 22, 2016), attached hereto as Exhibit 2 (“Sahu Scrubber Analysis”).

³³ *Id.*

0.12 lbs/MMBtu—the rate found necessary to prevent violation of the one-hour, 75-ppb standard³⁴—the Plant’s rates increased and remained consistently far higher than the rates achieved during the first months of scrubber operation.³⁵ For each of the coal-burning units at the Roxboro Plant, the emission rate increases coincide with self-reported declines in the efficiency of the Plant’s scrubbers. As illustrated by annual scrubber efficiency data reported by Duke Energy and presented in Table 1 below, the Roxboro Plant’s scrubbers were operating at or near their design efficiencies in 2008, but became less effective at removing sulfur dioxide in the years that followed.

Table 1 – Reported Efficiencies (%) for Roxboro Plant Scrubbers at Full Operating Load³⁶

	2008	2009	2010
Unit 1	98	94	86.9
Unit 2	97.1	89.3	88.5
Unit 3	98.1	91.8	86.7
Unit 4	97	90.4	89.3

In 2009, Duke reported scrubber efficiencies between 94% and 89.3% for the Roxboro units. In 2010, Duke’s self-reported annual scrubber efficiencies fell lower still, between 89.3% and 86.7%. Although scrubber efficiency testing do not appear to have been conducted for 2011 and thereafter, SO₂ removal efficiencies calculated based on fuel coal sulfur content and actual SO₂ emissions reveal an even further underutilization of the Roxboro Plant’s scrubbers—with efficiencies consistently below 90% and as low as 86.3%.³⁷

Table 2 – Calculated Efficiencies (%) for Roxboro Plant Scrubbers at Full Operating Load³⁸

	2011	2012	2013	2014	2015
Unit 1	90.6	89.3	88.3	90.4	92.9
Unit 2	91.4	88.6	90.6	92.7	93
Unit 3	92.4	90.3	90.8	91.6	93.2
Unit 4	92	90.8	90.7	92	93

In addition to the sub-par operation of the Plant’s scrubbers, Duke’s own reporting of fuel type shows that, since mid-2012, the sulfur content of the coal being burned at the Roxboro Plant has been around 1.5 and 2%—roughly 50 to 100% higher than the sulfur content of coal burned during prior years.³⁹ If scrubber performance is calculated based on a simple comparison of pre- and post-scrubber installation SO₂ emission rates (which assumes the continued burning of coal with sulfur content around 1%), the annual scrubber efficiencies between 2011 and 2015 are consistently lower than 90%, with the worst performance at Unit 4 in 2014.⁴⁰

³⁴ See *infra* Section II.B.

³⁵ Sahu Scrubber Analysis, Table 3.

³⁶ *Id.* Table 1.

³⁷ *Id.* at 5, Table 3.

³⁸ *Id.*, Table 3.

³⁹ *Id.*

⁴⁰ *Id.*, Table 4.

Thus, the switch to burning coal with higher sulfur content is likely a contributing factor to the recent SO₂ emission rate increases at the Plant. But despite such increases in SO₂ emissions and the resulting impacts on downwind air quality, Duke has defended its fuel type choice: according to former Duke Energy Vice President Vince Stroud, “we’re spending almost \$4 billion as a company on various environmental plans, mostly for scrubbers, in the last few years, so we might as well go for the cheaper, high-sulfur coal.”⁴¹ Acknowledging the coal switch at another of the company’s plants, Duke spokeswoman Catherine Butler stated: “[h]igher sulfur coal provides a cost savings to our customers.”⁴² However, Duke’s customers pay rates that are set periodically by the North Carolina Utility Commission and do not reflect Duke’s real-time, actual expenditures for scrubber reagents and fuel. The comments of company representatives fail to identify the increased profits that Duke’s shareholders will enjoy as a result of cutting costs by burning dirty coal that degrades air quality.

B. Sulfur Dioxide Pollution from the Roxboro Plant

In light of the SO₂ emission rate increases, the Sierra Club commissioned an independent, third-party air dispersion modeling consultant, Air Resource Specialists (“ARS”),⁴³ to evaluate whether the Plant was violating the applicable requirements that it not cause exceedances or violations of the 75-ppb standard for sulfur dioxide. Recognizing the “strong source-oriented nature of SO₂ ambient impacts,”⁴⁴ EPA concluded that air dispersion modeling is “the most technically appropriate, efficient, and readily available method for assessing short-term ambient SO₂ concentrations in areas with large point sources.”⁴⁵ In promulgating the 2010 SO₂ NAAQS, EPA explained that “it is more appropriate and efficient to principally use modeling to assess compliance for medium to larger sources.”⁴⁶ As compared with modeling, EPA repeatedly has stated that air quality monitor data is unlikely to accurately ascertain SO₂ impacts from sources like the Roxboro Plant.⁴⁷ More recently, EPA stated: “because ambient SO₂ concentrations are not the result of complex chemical reactions . . . , they can be modeled accurately using well-understood air quality modeling tools, especially in areas where one or only a few sources

⁴¹ Gregory Zuckerman, “High-Sulfur Coal Has Investors Glowing,” *The Wall Street Journal*, Apr. 24, 2006, available at <http://online.wsj.com/articles/SB114583391429033632>.

⁴² Ben Bradford, *Hazy Regs Cloud Duke’s Sulfur Emissions at Asheville Plant*, WFAE, Feb. 24, 2015, available at <http://wfae.org/post/hazy-regs-cloud-dukes-sulfur-emissions-asheville-plant>.

⁴³ ARS has a long track record of conducting modeling and environmental compliance analyses for both industry and regulators. Retaining ARS entailed a substantial investment of resources.

⁴⁴ 75 Fed. Reg. at 35,370.

⁴⁵ *Id.* at 35,551.

⁴⁶ *Id.* at 35,570; see also *Montana Sulphur & Chem. Co. v. EPA*, 666 F.3d 1174 (9th Cir. 2012) (affirming use of modeling to ascertain SO₂ pollution impacts); U.S. EPA, Final Response to Petition From New Jersey Regarding SO₂ Emissions From the Portland Generating Station, 76 Fed. Reg. 69,052 (Nov. 7, 2011) (using modeling to set emission limits sufficient to prevent air pollution).

⁴⁷ See, e.g., 75 Fed. Reg. at 35,570 (noting that for medium to large sources monitoring is “less appropriate, more expensive, and slower to establish”); U.S. EPA 1994 SO₂ Guideline Document at 2-5 to 2-6, available at http://www.epa.gov/ttn/oarpg/t1/memoranda/so2_guide_092109.pdf (“A small number of ambient SO₂ monitors usually is not representative of the air quality for an area. . . . [D]ispersion modeling will generally be necessary to evaluate comprehensively a source’s impacts”); see also *Montana Sulphur & Chem. Co. v. E.P.A.*, 666 F.3d at 1184 (“EPA explained that it was ‘not practical, given the number and complexity of sulfur dioxide sources, to install a sufficient number of monitors to provide the spatial coverage provided by air quality dispersion models.’”).

exist.”⁴⁸ In any event, the nearest ambient air quality monitor is located more than 12 miles away from the Plant, too far a distance to justify reliance on monitor data for assessment of compliance with the requirement not to cause exceedances of the 75-ppb standard.

ARS utilized AERMOD, the air dispersion model developed and approved by EPA,⁴⁹ and followed applicable federal and state modeling guidance. The modeling was based on actual emissions data collected from the Plant’s continuous emission monitoring system and real-time meteorological data collected by the National Weather Service at the Danville Airport. All assumptions made were conservative, so as to underestimate the impact of pollution from the Plant. For example, the modeling assumed that the background SO₂ concentration was zero; therefore, all impacts calculated are solely attributable to emissions from the Plant.⁵⁰

The results of the ARS analysis of the Roxboro Plant’s emissions were stunning: sulfur dioxide emissions from the Plant have caused and are continuing to cause unsafe ambient air conditions downwind of the Plant.⁵¹ The Plant is regularly and repeatedly causing SO₂ levels far in excess of the ambient air quality standard included in North Carolina regulations. The analysis revealed that, on one out of *every three days* between 2012 and 2015, the Plant caused SO₂ concentrations higher than 75 ppb in the surrounding community’s air.⁵² On certain days, levels of SO₂ pollution were nearly *three times higher* than the 75-ppb standard. Elevated SO₂ concentrations were found as far away as ten miles from the plant, across Hyco Lake, and in the vicinity of the Woodland Elementary School.⁵³ Many North Carolinians, including members of the Sierra Club, live and recreate in the area of SO₂ pollution impact and, given the fact that exposure to sulfur dioxide for even very short periods of time can result in serious adverse health effects—especially to vulnerable populations, such as children—they have good reason to be concerned.

Sierra Club shared the results of the modeling analysis with DAQ including a recommendation that a numerical emission limit of 0.12 lbs/MMBtu was needed to prevent exceedances of the 75-ppb standard.⁵⁴ Nevertheless, DAQ adopted numerical limits that will allow Duke to emit sulfur dioxide at a rate more than *double* its average emission rate in recent

⁴⁸ U.S. EPA, Data Requirements Rule for the 1-Hour Sulfur Dioxide (SO₂) Primary National Ambient Air Quality Standard (NAAQS), 79 Fed. Reg. 27,447, 27,449 (May 13, 2014).

⁴⁹ According to sworn testimony by a scientist in EPA’s Air Quality Modeling Group, the AERMOD model is “readily capable of accurately predicting . . . whether individual sources cause or contribute to a violation of the SO₂ NAAQS. . . . the performance of the AERMOD model was extensively evaluated based on a total of 17 field study data bases These evaluations demonstrate the overall good performance of the AERMOD model based on technically sound model evaluation procedures, and also illustrate the significant advancement in the science of dispersion modeling represented by the AERMOD model as compared to other models.” *Nat’l Envtl. Dev. Association’s Clean Air Project v. EPA*, Docket No. 10-1252, Decl. of Roger W. Brode at 2–3 (Jan. 18, 2011).

⁵⁰ Air Resource Specialists, Inc., Air Quality Dispersion Modeling, 1-Hour Average Standard for Sulfur Dioxide, Duke Energy – Roxboro Plant, Expert Report (June 21, 2016), attached hereto as Exhibit 3 (“ARS Modeling Report”).

⁵¹ *Id.* at 4, 19–29.

⁵² *Id.* at 19.

⁵³ *Id.* at 21–24.

⁵⁴ Sierra Club Comments at 5.

years.⁵⁵ Indeed, if the Roxboro coal units emit as much sulfur dioxide as allowed under the Proposed Permit, surrounding communities could be exposed to SO₂ pollution at unsafe concentrations almost daily⁵⁶ including, on some days, concentrations more than twenty times higher than the 75-ppb standard that EPA has judged as safe. Without action by DAQ to enforce the narrative prohibition on such pollution or to revise the Title V permit to include a numerical emission limit that would allow the public to itself monitor for compliance and enforce that prohibition, people living downwind of the Plant could face unhealthy air for years to come.

C. Comments on the Draft Permit

The Roxboro Plant's current Title V permit was issued on February 7, 2014 and was set to expire on January 31, 2019.⁵⁷ DAQ received Duke Energy's renewal application on June 26, 2014 and its application to modify the permit on June 26, 2015. On April 4, 2016, DAQ opened a public comment period for the Draft Permit, which retains the numerical emission limits for sulfur dioxide that were established before North Carolina's adoption of the 75-ppb standard during a prior permit renewal process. Compliance with those limits will do nothing to alleviate the unsafe SO₂ concentrations in downwind communities that the Roxboro Plant has been causing for years. In fact, Duke could actually *increase* the Plant's SO₂ emissions and still comply with the proposed numerical limits.

According to the Draft Permit, those limits (0.547 lbs/MMBtu for each unit)⁵⁸ were based on a modeling analysis received on May 16, 2007.⁵⁹ In 2007, the ambient air quality standards in effect in North Carolina were the 24-hour/140-ppb and annual/30-ppb standards that had been adopted by EPA in 1971. As discussed above, the 1971 standards were revoked and replaced with the one-hour, 75-ppb standard in 2010. Compliance with numerical limits developed based on obsolete standards cannot prevent the downwind exceedance of the now-governing 75-ppb ambient air quality standard. In short, the numerical limits included in the Draft Permit do nothing to protect the public and require nothing of Duke.

On May 4, 2016, the Sierra Club submitted timely, detailed comments on the Draft Permit, urging DAQ to establish modeling-based, numerical emission limits stringent enough to ensure that the people who live near the Roxboro Plant and who recreate on Hycy Lake would no longer be exposed to unsafe amounts of sulfur dioxide. Among other issues raised in those comments, the Sierra Club criticized the Draft Permit as failing to comply with requirements under the Clean Air Act and the North Carolina SIP due to the impermissibly lenient proposed numerical limits for SO₂ emissions.⁶⁰ More specifically, the Sierra Club called for modeling-based numerical limits that are stringent enough to ensure that compliance with such limits will ensure compliance with the narrative prohibition that the Plant not cause downwind exceedances

⁵⁵ Compare the Draft Permit's 0.547 lbs/MMBtu limit with 0.23 lbs/MMBtu average SO₂ emission rate between 2012 and 2015. See U.S. EPA, Air Markets Program Database, *available at* <https://ampd.epa.gov/ampd/>.

⁵⁶ ARS Modeling Report at 4, 26, 29.

⁵⁷ DAQ, Air Quality Permit, Permit No. 01001T48 ("2014 Roxboro Permit"). It appears that the permit was reissued on April 13, 2016 to give effect to an administrative amendment/name change.

⁵⁸ Draft Permit at 8, 19.

⁵⁹ *Id.* at 11, 21.

⁶⁰ See generally Sierra Club Comments.

of the 75-ppb standard—*i.e.*, one-hour limits of approximately 0.12 lb/MMBtu (an emission rate that the Plant was achieving before scrubber efficiency declined and Duke began buying dirtier coal).⁶¹ Sierra Club’s comments also requested that DAQ hold a public hearing on the Draft Permit.⁶²

III. GROUNDS FOR OBJECTION TO DAQ’S PROPOSED TITLE V PERMIT FOR DUKE ENERGY’S ASHEVILLE PLANT

The Sierra Club hereby petitions EPA to object to the Proposed Permit for the Roxboro Plant because the permit fails to impose conditions that ensure compliance with applicable requirements that prohibit the exceedance of the 75-ppb standard for sulfur dioxide and fails to establish a schedule for compliance with current violations of those applicable requirements and of the existing permit. The people who live in the neighborhoods downwind of Duke’s Plant and who are exposed to unsafe levels of sulfur dioxide on a regular basis have waited long enough for relief. The Clean Air Act entitles them to relief. Accordingly, we respectfully urge EPA to object to the Proposed Permit.

A. The Proposed Permit Lacks the Permit Conditions Necessary to Monitor and Enforce Compliance with All Applicable Requirements.

The Roxboro Permit fails to translate the narrative provisions of the SIP into specific permit conditions the compliance with which the public can readily monitor and enforce. The plain language of North Carolina’s regulations prohibits sources like the Roxboro Plant from causing an exceedance of or contributing to the violation of an ambient air quality standard.⁶³ Here, the relevant ambient air quality standard for sulfur dioxide is 75 ppb.⁶⁴ Therefore, a Title V permit for a major SO₂-emitting source must include permit conditions that ensure that the source will not cause downwind concentrations of sulfur dioxide great than 75 ppb. Because the Proposed Permit lacks such permit conditions, EPA should object.

1. *North Carolina’s Narrative Prohibitions of Pollution that Causes the Exceedance of or Contributes to the Violation of an Ambient Air Quality Standard Are Applicable Requirements.*

As discussed above, North Carolina’s regulations prohibit air pollution sources from “caus[ing] any ambient air quality standard . . . to be exceeded” and from “contribut[ing] to a violation of any ambient air quality standard”⁶⁵ and also require that all sources “shall be operated with such control or in such manner that the source shall not cause . . . ambient air quality standards . . . to be exceeded at any point beyond the premises on which the source is

⁶¹ *Id.* at 5.

⁶² *Id.* at 1, 11.

⁶³ 15A N.C.A.C. § 2D.0401(c); *id.* § 2D.0501(c).

⁶⁴ *Id.* § 2D.0402(d).

⁶⁵ *Id.* § 2D.0401(c).

located.”⁶⁶ These provisions are part of the SIP and, as such, are applicable requirements under the Clean Air Act.⁶⁷

Those applicable requirements⁶⁸—were created by North Carolina long before the 2010 SO₂ NAAQS were promulgated. The fact that these requirements were drafted in such a way that compliance with them necessarily implicates the particular ambient air quality standards that North Carolina has since adopted does not diminish their enforceability. Rather, it underscores DAQ’s responsibility to translate those narrative provisions with respect to the governing ambient air quality standard—for sulfur dioxide: 75 ppb—into specific permit conditions when renewing Title V permits. Moreover, DAQ does not dispute that these provisions are applicable requirements. In fact, the Permit itself points to Section 2D.0501(c) as the “applicable regulation” associated with the 0.547 lbs/MMBtu SO₂ limits.⁶⁹

2. *The Title V Operating Permit for the Roxboro Plant Must Include Permit Conditions that Ensure Compliance with All Applicable Requirements.*

The Clean Air Act,⁷⁰ federal regulation,⁷¹ and North Carolina’s own regulation⁷² are clear. Title V permits “shall include enforceable emission limitations and standards . . . and such other conditions *as are necessary to assure compliance with applicable requirements* of this chapter, including the requirements of the applicable implementation plan”⁷³ and “shall specify emission limitations and standards, including operational requirements and limitations, *that assure compliance with all applicable requirements* at the time of permit issuance.”⁷⁴ These provisions require the adoption of specific permit conditions that have been shown to assure compliance with the applicable requirements that a pollution source not cause the exceedance of governing ambient air quality standards.

In addition, Section 2D.0501(c) expressly directs the permitting authority to impose additional permit conditions that effectuate the prohibition on violating an ambient air quality standard. Where more stringent limits than provided by regulation are necessary to prevent SO₂ concentrations above 75 ppb, “the permit *shall contain* a condition requiring these controls.”⁷⁵ This language imposes upon DAQ a clear duty to set additional permit conditions necessary to prevent air pollution at concentrations above governing ambient air quality standards—in the case of sulfur dioxide: 75 ppb.

Indeed, DAQ apparently recognizes the need to translate the narrative provision of Section 2D.0501(c) into numerical emission limits; it has done just that as part of a prior renewal

⁶⁶ *Id.* § 2D.0501(c).

⁶⁷ 40 C.F.R. § 70.2 (defining applicable requirements); 15A N.C.A.C. § 2Q.0103(5) (same).

⁶⁸ 15A N.C.A.C. § 2D.0401(c); *id.* § 2D.0501(c).

⁶⁹ Draft Permit at 8, 19.

⁷⁰ 42 U.S.C. § 7661c(a).

⁷¹ 40 C.F.R. § 70.6(a)(1).

⁷² 15A N.C.A.C. § 2Q.0508(b).

⁷³ *See* 42 U.S.C. § 7661c(a) (emphasis added).

⁷⁴ 40 C.F.R. § 70.6(a)(1); 15A N.C.A.C. § 2Q.0508(b) (emphasis added).

⁷⁵ 15A N.C.A.C. § 2D.0501(c) (emphasis added).

of the Roxboro Permit when it set modeling-based, numerical limits designed to prevent exceedances of the ambient air quality standard in force and effect at the time—namely, the now-revoked 1971 SO₂ NAAQS.⁷⁶ Nevertheless, DAQ has failed to establish permit conditions that will prevent downwind concentrations of sulfur dioxide from exceeding 75 ppb. This failure and the decision to retain numerical emission limits that are based on a 45-year-old standard that has since been expressly revoked⁷⁷ are unreasonable as well as arbitrary and capricious.

As discussed in our comments, DAQ must include modeling-based, numerical emission limits for sulfur dioxide in the Roxboro Permit. Those limits must be stringent enough to ensure that, when met, the Plant will not cause downwind exceedances of the 75-ppb standard for sulfur dioxide. The ARS modeling analysis demonstrates that the proposed emission limits are insufficient to prevent the exceedance of the 75-ppb ambient air quality standard and that a limit of 0.12 lb/MMBtu is warranted. Without such a limit, the permit cannot ensure compliance with the applicable requirements identified above. Whether such additional permit conditions are required is a question of fact, not a matter of agency discretion. Here, the facts demonstrate that such conditions are required.

3. *EPA's Decisions on Other Title V Permits Require an Objection to the Proposed Permit.*

EPA's prior actions on other Title V permits justify an objection to the Roxboro Permit on the grounds that it lacks numerical emission limits stringent enough to ensure compliance with narrative prohibitions on exceeding or violating the 75-ppb standard for sulfur dioxide. For example, in a recent decision regarding the New Hampshire Department of Environmental Services' ("NHDES") reissuance of the Schiller coal plant's Title V permit, EPA objected to the permit on the grounds that the permit did not include numerical emission limits stringent enough to ensure that the plant would not cause violations of the 2010 SO₂ NAAQS.⁷⁸

Like North Carolina, New Hampshire's SIP includes an applicable requirement that prohibits a major source from causing a violation of a NAAQS, and it requires NHDES to set limits to ensure compliance with that applicable requirement—though, in New Hampshire, the prohibition is against causing NAAQS violations in downwind states:

The division shall apply special emission limits to stationary sources on a case-by-case basis to insure that their air quality impacts on adjacent states . . . shall not prevent the attainment or maintenance of National Ambient Air Quality Standards in those states.⁷⁹

In that proceeding, Sierra Club argued that NHDES had a duty to translate the applicable requirement into numerical SO₂ emission limits that ensured the Schiller plant would not cause a violation of the NAAQS in Maine when it reissued the plant's Title V permit. Sierra Club submitted AERMOD modeling demonstrating that the proposed permit limits were not stringent

⁷⁶ Draft Permit at 11, 21.

⁷⁷ 75 Fed. Reg. 35,550.

⁷⁸ *In the Matter of Pub. Serv. of NH*, Order on Petition No. VI-2014-04 (July 28, 2015) ("Schiller Order").

⁷⁹ N.H. Code Admin. R. Env-A 616.01.

enough to ensure compliance with the prohibition on causing NAAQS violations in downwind states. NHDES refused to impose the requisite stricter limits, arguing that Sierra Club was impermissibly trying to enforce the NAAQS and short circuit EPA's area designation process. NHDES argued that establishing the numerical limits necessary to prevent NAAQS violations through the Title V permitting process was "premature" and that the people of Maine would have to wait for the full NAAQS designation and SIP process to play out before NHDES would act to include emissions limits effecting the applicable requirement not to violate the NAAQS in the Title V permit.⁸⁰

EPA flatly rejected NHDES's argument. Though EPA's analysis occurred in the context of interstate transport (because transport was the focus of the applicable requirement at issue), EPA's reasoning in objecting to the Schiller permit bears directly on EPA's review of the Roxboro Permit. EPA concluded that, where the SIP included an applicable requirement barring violations of NAAQS, the permitting authority must translate such applicable requirement via specific permit limits. Moreover, EPA agreed with the Sierra Club that air dispersion modeling demonstrated the insufficiency of the proposed limits.⁸¹ Thus, EPA objected, in part, to the Schiller permit, finding that:

Although NH Rule 616 is an applicable requirement for purposes of New Hampshire's Title V program, there is no . . . reasonable interpretation provided in the permit record explaining that either (1) the rule does not apply to the Proposed Permit; or (2) the terms and conditions of the current permit are adequate to satisfy NH Rule 616. . . .

Specifically, the permit record must include the state's interpretation and application of Rule 616 as it applies to the case-specific facts of the Schiller facility, including consideration of the information identified in the Petition and the public comments.⁸²

Moreover, EPA specifically rejected NHDES's argument that, because there is a separate, parallel area designation process, NHDES did not need to translate an applicable requirement prohibiting NAAQS violations into numerical emission limits in a Title V permit renewal context. NHDES argued that "it [was] in the process of addressing its obligations relative to the 2010 1-hour SO₂ NAAQS through the designations process" and that it was "premature to attempt to address SO₂ emissions from Schiller Station relative to the 2010 1-hour SO₂ NAAQS until the attainment designation process is finalized, because the level and type of limitations required, if any cannot be determined until that process is complete." Again, EPA flatly rejected NHDES's contention, explaining that the prohibition of NAAQS violations in downwind states was an applicable requirement and that:

[A] permit must comply with all applicable requirements that are part of an approved SIP. The petition cites to NH Rule 616, which is a part of the New

⁸⁰ Schiller Order at 8.

⁸¹ *Id.* at 9–10.

⁸² *Id.*

Hampshire SIP and is a Title V applicable requirement for sources in New Hampshire.⁸³

In addition, in its decision with respect to a petition to object to the Homer City Title V permit in Pennsylvania, EPA identified the relevant inquiry as whether petitioners have demonstrated that the emission limits they request are necessary to assure compliance with an applicable requirement included in the SIP.⁸⁴ This is the core issue in this matter.

Finally, a comparison of the Pennsylvania regulation at issue in the Homer City matter and the North Carolina regulations to which we point here is instructive. The provision identified as an applicable requirement in the Homer City petition was a general prohibition of air pollution: “No person may permit air pollution as that term is defined in the act.”⁸⁵ Repeatedly characterizing Pennsylvania’s pollution prohibition as “broad,” “general,” and “sweeping,” EPA deferred to PaDEP’s interpretation of its rule as not imposing any independent duties other than what PaDEP was already doing.⁸⁶ North Carolina’s regulations could not be more different: (1) they expressly prohibit behavior that will lead to pollution at concentrations above governing air quality standards, and (2) they expressly require that, when issuing a permit, DAQ set specific conditions necessary to prevent exceedances of such standards. Despite the clear mandate of these regulations, the Proposed Permit fails to include the conditions necessary to ensure compliance with all applicable requirements. Accordingly, EPA should object to the issuance of the Proposed Permit.

B. The Proposed Permit Lacks a Schedule for Compliance with Current Violations of Applicable Requirements and the Plant’s Existing Permit.

As discussed above, Section 2D.0501(c) sets forth applicable requirements with which operators must comply. Specifically, that section requires that a source of air pollution “shall be operated with such control or in such manner that the source shall not cause the ambient air quality standards of Section .0400 of this Chapter to be to be exceeded at any point beyond the premises on which the source is located.” As the air dispersion modeling submitted herewith demonstrates, the Roxboro Plant has caused, and likely will continue to cause, the exceedance of the 75-ppb ambient air quality standard for sulfur dioxide at points beyond the Plant’s premises. Because the Section 2D.0501(c) requirement is included as a condition of the Plant’s current Title V permit,⁸⁷ Duke has been operating the Roxboro Plant in violation of that permit.

In addition to its duty to set numerical emission limits that translate this applicable requirement when issuing a Title V permit, DAQ must provide “a description of the compliance status of the source.”⁸⁸ Where, as here, a permittee is operating a source of air pollution in violation of its existing permit, the permitting agency must provide “a narrative description of

⁸³ *Id.* at 10.

⁸⁴ *Id.* at 15 (“[T]itle V permits do need to include conditions necessary to assure compliance with applicable requirements.”).

⁸⁵ 25 Pa Code § 121.7.

⁸⁶ Homer City Order at 19.

⁸⁷ 2014 Roxboro Permit at 56, Sec. 3.II.

⁸⁸ 40 C.F.R. § 70.5(c)(8).

how the source will achieve compliance” with applicable requirements⁸⁹ and establish a compliance schedule for “requirements for which the source is not in compliance at the time of permit issuance.”⁹⁰ The Roxboro Permit includes none of these components. Sierra Club requests that EPA object to the permit on these grounds as well.

IV. CONCLUSION

For the reasons cited above, the Sierra Club respectfully requests that the Administrator grant this Petition to Object to the issuance of the proposed Title V operating permit for the Roxboro Plant and order DAQ to include in a new permit modeling-based, numerical emission limits for sulfur dioxide stringent enough to guarantee that pollution from the Roxboro Plant will not cause exceedances of the one-hour, 75-ppb ambient air quality standard downwind of the Plant.

Respectfully submitted this 23rd day of June, 2016,

/s/ Bridget M. Lee

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⁸⁹ 40 C.F.R. § 70.6(c)(3).

⁹⁰ 42 U.S.C. § 7661c(a); 40 C.F.R. § 70.6(c)(3).