



**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Part 52**

**[EPA-R04-OAR-2015-0449; FRL-9947-62-Region 4]**

**Air Plan Approval; North Carolina; Regional Haze Progress Report**

**AGENCY:** Environmental Protection Agency.

**ACTION:** Proposed rule.

**SUMMARY:** The Environmental Protection Agency (EPA) is proposing to approve a State Implementation Plan (SIP) revision submitted by the State of North Carolina through the North Carolina Division of Air Quality (NC DAQ) on May 31, 2013. North Carolina's May 31, 2013, SIP revision (Progress Report) addresses requirements of the Clean Air Act (CAA or Act) and EPA's rules that require each state to submit periodic reports describing progress towards reasonable progress goals (RPGs) established for regional haze and a determination of the adequacy of the state's existing SIP addressing regional haze (regional haze plan). EPA is proposing to approve North Carolina's Progress Report on the basis that it addresses the progress report and adequacy determination requirements for the first implementation period for regional haze.

**DATES:** Comments must be received on or before **[insert 30 days after the date of publication in the Federal Register]**.

**ADDRESSES:** Submit your comments, identified by Docket ID No. EPA-R04-OAR-2015-

0449 at <http://www.regulations.gov>. Follow the online instructions for submitting comments.

Once submitted, comments cannot be edited or removed from Regulations.gov. EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <http://www2.epa.gov/dockets/commenting-epa-dockets>.

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**SUPPLEMENTARY INFORMATION:**

**I. Background**

Under the Regional Haze Rule,<sup>1</sup> each state was required to submit its first implementation plan addressing regional haze visibility impairment to EPA no later than December 17, 2007. *See* 40 CFR 51.308(b). North Carolina submitted its regional haze plan on that date, and like many other states subject to the Clean Air Interstate Rule (CAIR), relied on CAIR to satisfy best available retrofit technology (BART) requirements for emissions of sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) from electric generating units (EGUs) in the State. On June 7, 2012, EPA finalized a limited disapproval of North Carolina's December 17, 2007 regional haze plan submission because of deficiencies arising from the State's reliance on CAIR to satisfy certain regional haze requirements. *See* 77 FR 33642. In a separate action taken on June 27, 2012, EPA finalized a limited approval of North Carolina's December 17, 2007, regional haze plan submission, as meeting some of the applicable regional haze requirements as set forth in sections 169A and 169B of the CAA and in 40 CFR 51.300-51.308. *See* 77 FR 38185. On October 31, 2014, the State submitted a regional haze plan revision to correct the deficiencies identified in the June 27, 2012, limited disapproval by replacing reliance on CAIR with reliance on the State's Clean Smokestacks Act (CSA) as an alternative to NO<sub>x</sub> and SO<sub>2</sub> BART for BART-eligible EGUs formerly subject to CAIR. EPA approved that SIP revision on May 13, 2016, resulting in a full approval of North Carolina's regional haze plan.

Each state is also required to submit a progress report in the form of a SIP revision every five years that evaluates progress towards the RPGs for each mandatory Class I Federal area

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<sup>1</sup> 40 CFR part 51, subpart P.

within the state and for each mandatory Class I Federal area outside the state which may be affected by emissions from within the state. *See* 40 CFR 51.308(g). Each state is also required to submit, at the same time as the progress report, a determination of the adequacy of its existing regional haze plan. *See* 40 CFR 51.308(h). The first progress report is due five years after submittal of the initial regional haze plan.

On May 31, 2013, as required by 40 CFR 51.308(g), NC DAQ submitted to EPA, in the form of a revision to North Carolina's SIP, a report on progress made towards the RPGs for Class I areas in the State and for Class I areas outside the State that are affected by emissions from sources within the State. This submission also includes a negative declaration pursuant to 40 CFR 51.308(h)(1) that the State's regional haze plan is sufficient in meeting the requirements of the Regional Haze Rule (40 CFR 51.300 *et seq.*). EPA is proposing to approve North Carolina's Progress Report on the basis that it satisfies the requirements of 40 CFR 51.308(g) and (h) now that EPA has fully approved the State's regional haze plan.

## **II. Requirements for the Regional Haze Progress Report and Adequacy**

### **Determinations**

#### **A. Regional Haze Progress Report**

Under 40 CFR 51.308(g), states must submit a regional haze progress report as a SIP revision every five years and must address, at a minimum, the seven elements found in 40 CFR 51.308(g). As described in further detail in section III below, 40 CFR 51.308(g) requires: (1) a description of the status of measures in the approved regional haze plan; (2) a summary of

emissions reductions achieved; (3) an assessment of visibility conditions for each Class I area in the state; (4) an analysis of changes in emissions from sources and activities within the state; (5) an assessment of any significant changes in anthropogenic emissions within or outside the state that have limited or impeded progress in Class I areas impacted by the state's sources, (6) an assessment of the sufficiency of the approved regional haze plan; and (7) a review of the state's visibility monitoring strategy.

**B. Adequacy Determinations of the Current Regional Haze Plan**

Under 40 CFR 51.308(h), states are required to submit, at the same time as the progress report, a determination of the adequacy of their existing regional haze plan and to take one of four possible actions based on information in the progress report. As described in further detail in section III below, 40 CFR 51.308(h) requires states to: (1) submit a negative declaration to EPA that no further substantive revision to the state's existing regional haze plan is needed; (2) provide notification to EPA (and to other state(s) that participated in the regional planning process) if the state determines that its existing regional haze plan is or may be inadequate to ensure reasonable progress at one or more Class I areas due to emissions from sources in other state(s) that participated in the regional planning process, and collaborate with these other state(s) to develop additional strategies to address deficiencies; (3) provide notification with supporting information to EPA if the state determines that its existing regional haze plan is or may be inadequate to ensure reasonable progress at one or more Class I areas due to emissions from sources in another country; or (4) revise its regional haze plan to address deficiencies within one year if the state determines that its existing regional haze plan is or may be inadequate

to ensure reasonable progress in one or more Class I areas due to emissions from sources within the state.

### **III. What is EPA's Analysis of North Carolina's Regional Haze Progress Report and Adequacy Determination?**

On May 31, 2013, NC DAQ submitted a revision to North Carolina's regional haze plan to address progress made towards the RPGs for Class I areas in the State and for Class I areas outside the State that are affected by emissions from sources within North Carolina. This submittal also includes a determination of the adequacy of the State's existing regional haze plan. North Carolina has five Class I areas within its borders: Great Smoky Mountains National Park (GSMNP), Joyce Kilmer-Slickrock Wilderness Area (JOKI), Linville Gorge Wilderness Area (LIGO), Shining Rock Wilderness Area (SHRO), and Swanquarter Wildlife Refuge (SWAN). Both the Great Smoky Mountains and Joyce Kilmer-Slickrock Areas are located in North Carolina and Tennessee. In its regional haze plan, the State also identified, through an area of influence modeling analysis based on back trajectories, one Class I area in one neighboring state potentially impacted by North Carolina sources: James River Face Wilderness Area in Virginia. *See* 77 FR 11858, 11869 (February 28, 2012).

#### **A. Regional Haze Progress Report**

The following sections summarize: (1) each of the seven elements that must be addressed by a progress report under 40 CFR 51.308(g); (2) how North Carolina's Progress

Report addressed each element; and (3) EPA's analysis and proposed determination as to whether the State satisfied each element.

***1. Status of Control Measures:***

40 CFR 51.308(g)(1) requires a description of the status of implementation of all measures included in the regional haze plan for achieving RPGs for Class I areas both within and outside the state.

The State evaluated the status of measures included in its 2007 regional haze plan in accordance with 40 CFR 51.308(g)(1). Specifically, in its Progress Report, North Carolina summarizes the status of the emissions reduction measures that were included in the final iteration of the Visibility Improvement State and Tribal Association of the Southeast (VISTAS) regional haze emissions inventory and RPG modeling used by the State in developing its regional haze plan. The measures include, among other things, applicable Federal programs (e.g., mobile source rules, Maximum Achievable Control Technology standards), Federal consent agreements, and Federal and state control strategies for EGUs.<sup>2</sup> The State also discusses the status of several measures that were not included in the final VISTAS emissions inventory and were not relied upon in the initial regional haze plan to meet RPGs. The State notes that the emissions reductions from these measures will help ensure Class I areas impacted by North

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<sup>2</sup> North Carolina's progress report discusses the status of CAIR, CSAPR, and the CSA as of the date of submission. As noted above, North Carolina subsequently submitted a SIP revision to replace its reliance on CAIR as NO<sub>x</sub> and SO<sub>2</sub> BART for BART-eligible units formerly subject to CAIR with reliance on the CSA as a BART Alternative, and EPA approved that SIP revision on May 13, 2016.

Carolina sources achieve their RPGs. In aggregate, as noted in sections III.A.2 and III.A.6 of this document, the emissions reductions from the identified measures are expected to exceed the emissions reductions projected in North Carolina's regional haze plan.

EPA proposes to find that North Carolina's analysis adequately addresses 40 CFR 51.308(g)(1) for the reasons discussed below. The State documents the implementation status of measures from its regional haze plan in addition to describing additional measures not originally accounted for in the final VISTAS emissions inventory that came into effect since the VISTAS analyses for the regional haze plan were completed. The State's Progress Report also provides detailed information on EGU control strategies in its regional haze plan and the status of existing and future expected controls for North Carolina's EGUs because, in its regional haze plan, North Carolina identified SO<sub>2</sub> emissions from coal-fired EGUs as the key contributor to regional haze in the VISTAS region. North Carolina discusses the status of the CSA, which the State identified as the primary state control strategy in its regional haze plan, and the resulting emissions reductions.<sup>3</sup> Under the CSA, power plants were required to reduce their NO<sub>x</sub> emissions by 77 percent in 2009 and their SO<sub>2</sub> emissions by 73 percent in 2013. The State notes that all of the CSA subject units are controlled with a scrubber for SO<sub>2</sub> control and a selective catalytic reduction unit or a selective non-catalytic reduction for NO<sub>x</sub> control, or have retired,

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<sup>3</sup> According to the State, in 2011, regulated sources under the CSA emitted 73,454 tons per year (tpy) of SO<sub>2</sub> and 39,284 tpy of NO<sub>x</sub>, well below the CSA's annual emissions caps for SO<sub>2</sub> and NO<sub>x</sub>. The State also notes that the 2018 current emissions projection of SO<sub>2</sub> from the sources subject to CSA is 18,420 tpy, which is approximately 80 percent lower than the original 2018 projections used in the North Carolina regional haze plan.



which will result in more SO<sub>2</sub> and NO<sub>x</sub> emissions reductions than those projected in the regional haze plan.

**2. *Emissions Reductions and Progress:***

40 CFR 51.308(g)(2) requires a summary of the emissions reductions achieved in the state through the measures subject to 40 CFR 51.308(g)(1).

In its regional haze plan and Progress Report, North Carolina focuses its assessment on SO<sub>2</sub> emissions from EGUs because of VISTAS' findings that ammonium sulfate accounted for more than 70 percent of the visibility-impairing pollution in the VISTAS states and that SO<sub>2</sub> point source emissions in 2018 represent more than 95 percent of the total SO<sub>2</sub> emissions in the State.<sup>4</sup> As discussed in section III.A.5, below, North Carolina determined that sulfates continue to be the largest contributor to regional haze for Class I areas in the State.

In its Progress Report, North Carolina presents SO<sub>2</sub> emissions data for EGUs in the State and notes that North Carolina's EGU sector represents over 50 percent of statewide SO<sub>2</sub> emissions from stationary sources. SO<sub>2</sub> emissions reductions from 2002 to 2011 for North Carolina EGUs (387,373 tpy) are greater than the SO<sub>2</sub> emissions reductions from 2002 to 2018 estimated in North Carolina's regional haze plan for these EGUs (367,528 tpy). Additionally, the State updated the 2018 SO<sub>2</sub> emissions projections for North Carolina EGUs in its regional

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<sup>4</sup> For additional information, see North Carolina's December 17, 2007, regional haze plan at page 24.

haze plan. These updated 2018 SO<sub>2</sub> EGU emissions projections are approximately 80 percent lower than the projected 2018 SO<sub>2</sub> emissions in the regional haze plan.<sup>5</sup>

North Carolina states that coal-fired EGUs in North Carolina emitted a total of 370,000 tpy of SO<sub>2</sub> in 2007, whereas in 2011, these same EGUs emitted a total of 73,000 tpy of SO<sub>2</sub>, a reduction of 297,000 tpy, due largely to the installation and operation of scrubbers. The State expects that future SO<sub>2</sub> emissions will decline further from more natural gas use and the continued retirement of older, smaller coal-fired EGUs without scrubbers. NO<sub>x</sub> emissions from these EGUs dropped from a total of approximately 57,400 tpy in 2007 to approximately 39,300 tpy of NO<sub>x</sub> in 2011, an 18,100 tpy reduction.

North Carolina identified the retirement of over 100 EGUs at 35 facilities located in eight nearby states that VISTAS modeling indicates potentially impact visibility in North Carolina's Class I areas. These units emitted more than 550,000 tpy of SO<sub>2</sub> in 2011. The State believes that this is another indicator that the Class I areas in North Carolina are on track to meet their RPGs. North Carolina also discussed the SO<sub>2</sub> emissions reductions that occurred at non-EGU facilities identified in its regional haze plan as contributing one percent or more to visibility impairment at any Class I area.

EPA proposes to conclude that North Carolina has adequately addressed 40 CFR 51.308(g)(2). As discussed above, the State provides estimates, and where available, actual

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<sup>5</sup> See page 32 of the May 31, 2013, submission.

emissions reductions of visibility-impairing pollutants resulting from the measures relied upon in its regional haze plan. The State appropriately focused on SO<sub>2</sub> emissions from its EGUs in its Progress Report because the State had previously identified these emissions as the most significant contributors to visibility impairment at North Carolina's Class I areas and those areas that North Carolina sources impact.

**3. *Visibility Progress:***

40 CFR 51.308(g)(3) requires that states with Class I areas provide the following information for the most impaired and least impaired days for each area, with values expressed in terms of five-year averages of these annual values:<sup>6</sup> (i) current visibility conditions; (ii) the difference between current visibility conditions and baseline visibility conditions; and (iii) the change in visibility impairment over the past five years.

North Carolina provides figures with visibility monitoring data that address the three requirements of 40 CFR 51.308(g)(3) for the State's five Class I areas. North Carolina reported current conditions as the 2006-2010 five-year time period and used the 2000-2004 baseline period for its Class I areas.<sup>7</sup> Table 1, below, shows the current visibility conditions and the difference between current visibility conditions and baseline visibility conditions.

**Table 1: Baseline Visibility, Current Visibility, and Visibility Changes in Class I areas in North Carolina**

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<sup>6</sup> The "most impaired days" and "least impaired days" in the regional haze rule refers to the average visibility impairment (measured in deciviews) for the 20 percent of monitored days in a calendar year with the highest and lowest amount of visibility impairment, respectively, averaged over a five-year period. 40 CFR 51.301.

<sup>7</sup> For the first regional haze plans, "baseline" conditions were represented by the 2000-2004 time period. See 64 FR 35730 (July 1, 1999).

<b>Class I Area</b>	<b>Baseline (2000 – 2004)</b>	<b>Current (2009 – 2013)</b>	<b>Difference</b>
<b><i>20% Worst Days</i></b>			
Great Smoky Mountain National Park	30.3	26.6	-3.7
Joyce Kilmer-Slickrock	30.3	26.6	-3.7
Linville Gorge	28.6	25.1	-3.5
Shining Rock	28.5	25.8	-2.7
Swanquarter	24.7	24.2	-0.5
<b><i>20% Best Days</i></b>			
Great Smoky Mountain National Park	13.6	12.3	-1.3
Joyce Kilmer-Slickrock	13.6	12.3	-1.3
Linville Gorge	11.1	11	-0.1
Shining Rock	8.2	7.25	-0.95
Swanquarter	12	12.9	0.9

All North Carolina Class I areas saw an improvement in visibility on the 20 percent worst days from 2006-2010 and between baseline and 2006-2010 conditions. All North Carolina Class I areas except for Swanquarter Wildlife Refuge saw an improvement in visibility on the 20 percent best days from 2006-2010 and between baseline and 2006-2010 conditions.

At Swanquarter, a 0.9 dv increase was recorded in the 20 percent best-day average between 2006-2010 conditions (12.9 dv) and the 2000-2004 baseline (12.0 dv). This could be due, in part, to the fact that the visibility data for 2008 at Swanquarter did not meet EPA's data completeness criteria and was therefore removed from the 2006-2010 average, resulting in a

four-year average during this review period.<sup>8</sup> Regardless, North Carolina believes that planned changes to operating status and emission controls on large sources within the Swanquarter area of influence provide sufficient evidence that by 2018, the 20 percent best days will be protected.<sup>9</sup> Furthermore, the 20 percent best-day average at Swanquarter has continued to improve, dropping to 12.2 dv for 2007-2011.<sup>10</sup> Based on the visibility data reported in the Western Regional Air Partnership Technical Support System, the 20 percent best-day five year averages have continued to improve through 2014 and have dropped below the baseline beginning with the 2008-2012 average.<sup>11</sup>

North Carolina's Progress Report includes revised RPGs for the five Class I areas within the State. North Carolina's original RPGs were based on the VISTAS modeling run available at the time of the 2007 SIP revision. In 2008, VISTAS provided updated modeling results that changed the modeled progress for North Carolina's Class I areas. North Carolina seeks to include revised RPGs that reflect this modeled progress. Table 2 identifies the RPGs for North Carolina's Class I areas in the State's regional haze plan and the updated RPGs proposed in its Progress Report.

**Table 2: Updated RPGs for North Carolina's Class 1 Areas (deciviews)**

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<sup>8</sup> See USEPA (2003) "Guidance for Tracking Progress Under the Regional Haze Rule,"

[http://www.epa.gov/ttn/oarp/t1/memoranda/rh\\_tpurhr\\_gd.pdf](http://www.epa.gov/ttn/oarp/t1/memoranda/rh_tpurhr_gd.pdf), pp. 2-8.

<sup>9</sup> See pp. 43-49 of the May 31, 2013, submission.

<sup>10</sup> See pp. 41-42 of the May 31, 2013, submission.

<sup>11</sup> See <http://vista.cira.colostate.edu/tss/Results/HazePlanning.aspx> website for dv between 2011-2014.

<b>Class I Areas</b>	<b>RPG 20% Worst Days (2007 regional haze plan)</b>	<b>RPG 20% Worst Days (2013 progress report)</b>	<b>RPG 20% Best Days (2007 regional haze plan)</b>	<b>RPG 20% Best Days (2013 progress report)</b>
GSMNP	23.7	23.5	12.2	12.1
JOKI	23.7	23.5	12.2	12.1
LIGO	22.0	21.7	9.6	9.5
SHRO	22.1	21.9	6.9	6.9
SWAN	20.4	20.3	11.0	10.9

EPA proposes to approve the updated RPGs for North Carolina’s Class I areas because they reflect more recent modeling. Also, EPA proposes to conclude that North Carolina has adequately addressed 40 CFR 51.308(g)(3) because the State provides the information regarding visibility conditions and visibility changes necessary to meet the requirements of the regulation. The Progress Report includes current conditions based on the Interagency Monitoring of Protected Visual Environments (IMPROVE) monitoring data for the years 2006-2010, the difference between current visibility conditions and baseline visibility conditions, and the change in visibility impairment over the five-year period 2006-2010.

**4. Emissions Tracking:**

40 CFR 51.308(g)(4) requires an analysis tracking emission changes of visibility-impairing pollutants from the state’s sources by type or category over the past five years based on the most recent updated emissions inventory.

In its Progress Report, North Carolina presents data from statewide actual emissions inventories for 2008 and projected emissions inventories developed for the years 2009 and 2010. The State compares these data to the baseline emissions inventory for 2002. The pollutants

inventoried include volatile organic compounds (VOC), NO<sub>x</sub>, fine particulate matter (PM<sub>2.5</sub>), and SO<sub>2</sub>. The emissions inventories include the following source classifications: point, area, non-road mobile, and on-road mobile sources.

North Carolina includes the emissions inventories from the regional haze plan for 2002 and 2009, and summarizes emissions data from EPA's 2008 National Emissions Inventory. North Carolina's analysis shows that 2008 emissions are lower than 2002 emissions. North Carolina estimates on-road mobile source emissions in the 2008 and 2010 inventories using the MOVES2010a model. This model tends to estimate higher emissions than its previous counterpart, the MOBILE6 model used by the State to estimate on-road mobile source emissions for the 2002 and 2009 inventories, especially for NO<sub>x</sub> emissions. North Carolina has concluded that MOVES model predictions for NO<sub>x</sub> can be 1.7 to 2.1 times higher than MOBILE6. Despite the change in methodology, a declining trend in all pollutants can be seen between 2002 and 2008 as seen in Table 4.

North Carolina also includes an emission inventory for 2010 in its Progress Report. The State estimates 2010 point source emissions by taking the emissions reported by sources for 2010 and adding the latest emissions for the small sources that only report emissions every five years. This procedure differs from the procedure used by the State in its regional haze plan that included only those sources that reported emissions in 2002. In its 2010 inventory, North Carolina estimated that small sources that did not report contribute one percent of total NO<sub>x</sub> emissions, seven percent of total VOC emissions, one percent of total SO<sub>2</sub> emissions, and seven percent of total PM<sub>2.5</sub> emissions. North Carolina estimates area source emissions by growing the

existing 2007 emissions inventory to 2010 and estimates non-road mobile source emissions using the EPA's NONROAD2008 model for those sources covered by the model and growing the 2007 airport, locomotive, and commercial marine emissions to 2010.

North Carolina estimates on-road mobile source emissions for 2010 using MOVES2010a with the latest vehicle miles traveled (VMT) and speed data. If 2010 speeds and VMT were not available for a particular county, interpolated or projected 2010 data was used. Using MOVES2010a, the on-road mobile emissions are higher than those that would be predicted using the older model. As seen in Tables 3 and 5, the 2010 emissions inventory is significantly lower than the 2002 emissions inventory despite including additional stationary point sources and the use of MOVES, which predicts higher NOx emissions than its predecessor MOBILE6.2.

**Table 3: 2002 Emissions Inventory Summary for North Carolina (tpy)**

<b>Source Category</b>	<b>VOC</b>	<b>NOx</b>	<b>SO<sub>2</sub></b>	<b>PM<sub>2.5</sub></b>
<b>Point</b>	61,484	196,731	522,093	26,953
<b>Area</b>	250,044	41,517	5,815	83,520
<b>On-road Mobile</b>	263,766	327,329	12,420	4,623
<b>Non-road Mobile</b>	94,480	84,284	7,693	7,348
<b>Total</b>	<b>669,774</b>	<b>649,861</b>	<b>548,021</b>	<b>122,444</b>

**Table 4: Actual 2008 Annual Emission Summary for North Carolina (tpy)**

<b>Source Category</b>	<b>VOC</b>	<b>NOx</b>	<b>SO<sub>2</sub></b>	<b>PM<sub>2.5</sub></b>
<b>Point</b>	39,053	97,879	274,541	27,987
<b>Area</b>	149,264	43,672	13,937	48,807
<b>On-road Mobile</b>	122,503	253,849	1,190	7,895
<b>Non-road Mobile</b>	72,754	52,469	980	4,924
<b>Total</b>	<b>383,573</b>	<b>447,869</b>	<b>290,648</b>	<b>89,613</b>



**Table 5: 2010 Emissions Inventory Summary for North Carolina (tpy)**

<b>Source Category</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>	<b>SO<sub>2</sub></b>	<b>PM<sub>2.5</sub></b>
<b>Point</b>	42,504	90,155	151,210	13,966
<b>Area</b>	83,274	11,353	5,105	23,114
<b>On-road Mobile</b>	101,731	256,381	1,205	8,905
<b>Non-road Mobile</b>	66,773	65,353	2,829	5,455
<b>Total</b>	<b>294,281</b>	<b>423,242</b>	<b>160,350</b>	<b>51,441</b>

When comparing the 2010 emissions (Table 5) with the projected 2009 emissions (Table 6), the total emissions of each pollutant are lower in 2010 with the exception of NO<sub>x</sub>. The slight increase in 2010 NO<sub>x</sub> emissions is likely due to the use of MOBILE6 to estimate on-road mobile source NO<sub>x</sub> emissions for 2009 and the use of MOVES to estimate on-road mobile source NO<sub>x</sub> emissions for 2010. As noted above, MOVES predicts higher NO<sub>x</sub> emissions than MOBILE6.

**Table 6. 2009 Emissions Inventory Summary for North Carolina (tpy)**

<b>Source Category</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>	<b>SO<sub>2</sub></b>	<b>PM<sub>2.5</sub></b>
<b>Point</b>	62,161	101,236	284,802	26,360
<b>Non-road Mobile</b>	74,056	70,997	1,892	5,760
<b>Area</b>	200,873	45,382	6,281	90,729
<b>On-road Mobile</b>	168,676	201,609	1,503	3,493
<b>Total</b>	<b>505,766</b>	<b>419,224</b>	<b>294,478</b>	<b>126,342</b>

EPA proposes to conclude that North Carolina has adequately addressed 40 CFR 51.308(g)(4). North Carolina tracked changes in emissions of visibility-impairing pollutants from 2002-2010 for all source categories and analyzed trends in emissions from 2002-2010, the most current quality-assured data available for these units at the time of progress report development. The 2010 emissions were also compared to the projected 2009 emissions, which were with the exception of NO<sub>x</sub>, as discussed above. While ideally the five-year period to be analyzed for emissions inventory changes is the time period since the current regional haze plan

was submitted, there is an inevitable time lag in developing and reporting complete emissions inventories once quality-assured emissions data becomes available. Therefore, EPA believes that there is some flexibility in the five-year time period that states can select.

**5. *Assessment of Changes Impeding Visibility Progress:***

40 CFR 51.308(g)(5) requires an assessment of any significant changes in anthropogenic emissions within or outside the state that have occurred over the past five years that have limited or impeded progress in reducing pollutant emissions and improving visibility in Class I areas impacted by the state's sources.

In its Progress Report, North Carolina documented that sulfates, which are formed from SO<sub>2</sub> emissions, continue to be the biggest single contributor to regional haze for Class I areas in the State and therefore focused its analysis on large SO<sub>2</sub> emissions from point sources. In addressing the requirements at 40 CFR 51.308(g)(5), North Carolina references its analyses that SO<sub>2</sub> emissions from point sources show an overall downward trend over the period 2006 to 2010 and examines other potential pollutants of concern affecting visibility in Class I areas in North Carolina. After ammonium sulfate, primary organic matter is the next largest contributor to visibility impairment at Class I areas in North Carolina. The State demonstrates that there are no significant changes in emissions of SO<sub>2</sub>, PM<sub>2.5</sub>, or NO<sub>x</sub> that have impeded progress in reducing emissions and improving visibility in Class I areas impacted by North Carolina sources. Furthermore, the Progress Report shows that the State is on track to meeting its 2018 RPGs for

Class I areas in North Carolina. For these reasons, EPA proposes to conclude that North Carolina's Progress Report has adequately addressed 40 CFR 51.308(g)(5).

**6. *Assessment of Current Strategy:***

40 CFR 51.308(g)(6) requires an assessment of whether the current regional haze plan is sufficient to enable the state, or other states, to meet the RPGs for Class I areas affected by emissions from the state.

The State believes that it is on track to meet the 2018 RPGs for the North Carolina Class I areas and will not impede Class I areas outside of North Carolina from meeting their RPGs based on the trends in visibility and emissions presented in its Progress Report. In its Progress Report, North Carolina provided reconstructed light extinction figures for the 20 percent worst days for all Class I areas in the Southeast for 2006 through 2010. The 20 percent worst days extinction clearly demonstrates that sulfates continue to be the major concern, with EGUs being the largest contributor. As identified in Table 3-1 of the Progress Report, the State estimates that SO<sub>2</sub> emissions from EGUs in North Carolina have decreased by approximately 387,400 tons per year from 2002 to 2011 and expects that these emissions will continue to decrease through the first regional haze planning period.

The only coal-fired EGU in North Carolina which is in the area of influence (as defined by North Carolina's methodology) of the James River Face Class I area in Virginia was retired in April 2012. The SO<sub>2</sub> emission reductions resulting from this retirement are expected to contribute to achieving the RPGs for the James River Face Class I area.

EPA proposes to conclude that North Carolina has adequately addressed 40 CFR

51.308(g)(6). EPA views this requirement as a qualitative assessment that should evaluate emissions and visibility trends and other readily available information, including expected emissions reductions associated with measures with compliance dates that have not yet become effective. In its assessment, the State references the improving visibility trends and the downward emissions trends in the State, with a focus on SO<sub>2</sub> emissions from North Carolina EGUs. These trends support the State's determination that the State's regional haze plan is sufficient to meet RPGs for Class I areas within and outside the State impacted by North Carolina sources.

**7. *Review of Current Monitoring Strategy:***

40 CFR 51.308(g)(7) requires a review of the state's visibility monitoring strategy and an assessment of whether any modifications to the monitoring strategy are necessary.

In its Progress Report, North Carolina summarizes the existing monitoring network in North Carolina and in Tennessee to monitor visibility in North Carolina's Class I areas in North Carolina and concludes that no modifications to the existing visibility monitoring strategy are necessary. The primary monitoring network for regional haze, both nationwide and in North Carolina, is the IMPROVE network. There are currently three IMPROVE sites in North Carolina (LIGO, SHRO, and SWAN). In addition, an IMPROVE site just across the border in Tennessee serves as the monitoring site for both the Great Smoky Mountains National Park and Joyce Kilmer-Slickrock Wilderness Area, both of which lie partly in Tennessee and partly in North Carolina.

The State also explains the importance of the IMPROVE monitoring network for tracking visibility trends at Class I areas in North Carolina. North Carolina states that data produced by the IMPROVE monitoring network will be used nearly continuously for preparing the 5-year progress reports and the 10-year SIP revisions, each of which relies on analysis of the preceding five years of data, and thus, the monitoring data from the IMPROVE sites needs to be readily accessible and to be kept up to date. The VIEWS website has been maintained by VISTAS and the other Regional Planning Organizations to provide ready access to the IMPROVE data and data analysis tools.

In addition to the IMPROVE measurements, some ongoing long-term limited monitoring supported by Federal Land Managers provides additional insight into progress toward regional haze goals. North Carolina benefits from the data from these measurements, but is not responsible for associated funding decisions to maintain these measurements into the future.

A continuous nitrate monitor operates at the Millbrook site in Raleigh and a second continuous nitrate monitor operates at the Rockwell monitoring site in Rowan County. The State plans to operate these monitors as long as funding and supplies allow. North Carolina began operating a continuous sulfate monitor at the Millbrook in August 2007 and is currently operating aethalometers at the Millbrook and Rockwell sites.

In addition, the NC DAQ and the local air agencies in the State operate a comprehensive PM<sub>2.5</sub> network of the filter based Federal reference method monitors, continuous mass monitors, filter-based speciated monitors, and continuous speciated monitors. These PM<sub>2.5</sub> measurements

help the NC DAQ characterize air pollution levels in areas across the State, and therefore aid in the analysis of visibility improvement in and near the Class I areas in North Carolina.

EPA proposes to conclude that North Carolina has adequately addressed the sufficiency of its monitoring strategy as required by 40 CFR 51.308(g)(7). The State reaffirmed its continued reliance upon the IMPROVE monitoring network; assessed its entire visibility monitoring network, including additional continuous sulfate and PM<sub>2.5</sub> monitors, used to further understand visibility trends in the State; and determined that no changes to its monitoring strategy are necessary.

**B. Determination of Adequacy of Existing Regional Haze Plan**

Under 40 CFR 51.308(h), states are required to take one of four possible actions based on the information gathered and conclusions made in the progress report. The following section summarizes: (1) the action taken by North Carolina under 40 CFR 51.308(h); (2) North Carolina's rationale for the selected action; and (3) EPA's analysis and proposed determination regarding the State's action.

In its Progress Report, North Carolina took the action provided for by 40 CFR 51.308(h)(1), which allows a state to submit a negative declaration to EPA if the state determines that the existing regional haze plan requires no further substantive revision at this time to achieve the RPGs for Class I areas affected by the state's sources. The basis for the State's negative declaration is the findings from the Progress Report, including the findings that: visibility has improved at Class I areas (with the exception of the best-days visibility at SWAN as discussed

above) in North Carolina; SO<sub>2</sub> emissions from the State's sources have decreased beyond the 2018 projections in the regional haze plan; additional EGU control measures not relied upon in the State's regional haze plan have occurred or will occur in the implementation period; and the EGU SO<sub>2</sub> emissions in North Carolina are already below the levels projected for 2018 in the regional haze plan and are expected to continue to trend downward. EPA proposes to conclude that North Carolina has adequately addressed 40 CFR 51.308(h) because the visibility trends at the Class I areas impacted by the State's sources and the emissions trends of the State's largest emitters of visibility-impairing pollutants indicate that the RPGs for Class I areas impacted by source in North Carolina will be met.

#### **IV. Proposed Action**

EPA is proposing to approve North Carolina's Regional Haze Progress Report, SIP revision, submitted by the State on May 31, 2013, as meeting the applicable regional haze requirements set forth in 40 CFR 51.308(g) and (h). EPA also proposes to approve the updated RPGs for North Carolina's Class I areas.

#### **V. Statutory and Executive Order Reviews**

Under the CAA, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable federal regulations. *See* 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, EPA's role is to approve state choices, provided that they meet the criteria of the CAA. Accordingly, this proposed action merely proposes to approve state law as meeting federal requirements and does not impose additional requirements beyond those imposed by state law. For that reason, this proposed action:

- Is not a significant regulatory action subject to review by the Office of Management and Budget under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 13563 (76 FR 3821, January 21, 2011);
- Does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- Is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);
- Does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Public Law 104-4);
- Does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- Is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- Is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);
- Is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the CAA; and



- Does not provide EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898 (59 FR 7629, February 16, 1994).

The SIP is not approved to apply on any Indian reservation land or in any other area where EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian country, the rule does not have tribal implications as specified by Executive Order 13175 (65 FR 67249, November 9, 2000), nor will it impose substantial direct costs on tribal governments or preempt tribal law.

**List of Subjects in 40 CFR Part 52**

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen oxides, Particulate matter, Reporting and recordkeeping requirements, Sulfur dioxide, Volatile organic compounds.

**AUTHORITY:** 42 U.S.C. 7401 *et seq.*

Dated: June 1, 2016.

Heather McTeer Toney,  
Regional Administrator,  
Region 4.

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