



July 24, 2014

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**VIA CERTIFIED MAIL**

**Re: Petition to Object to the Proposed Title V Permit for Public Service Company of New Hampshire's Schiller Station, Issued by the New Hampshire Department of Environmental Services**

Dear Administrator McCarthy, Administrator Spalding, and Manager McDonnell,

Enclosed, please find a copy of the Sierra Club's Petition to Object to the Proposed Title V Permit for Public Service Company of New Hampshire's Schiller Station, issued by the New Hampshire Department of Environmental Services. Also enclosed is a disc containing an electronic copy of the petition, and all exhibits and modeling files cited therein.



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

IN THE MATTER OF THE PROPOSED TITLE V	)	
PERMIT FOR	)	
	)	
<b>PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE</b>	)	PERMIT ID NO.
	)	TV-0053
	)	
SCHILLER STATION	)	
PROPOSED TITLE V/STATE OPERATING PERMIT	)	
IN ROCKINGHAM COUNTY, NEW HAMPSHIRE	)	
	)	
ISSUED BY THE NEW HAMPSHIRE	)	
DEPARTMENT OF ENVIRONMENTAL SERVICES	)	
	)	

**PETITION TO OBJECT TO THE PROPOSED TITLE V PERMIT FOR  
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE'S SCHILLER STATION,  
ISSUED BY THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL  
SERVICES**

As per Section 505 of the Clean Air Act ("CAA"), the Sierra Club hereby respectfully petitions the Environmental Protection Agency ("EPA") to object to the proposed Title V permit issued by the New Hampshire Department of Environmental Services ("NH DES") for Public Service Company of New Hampshire's ("PSNH") Schiller Station coal-fired power plant at 400 Gosling Road, Portsmouth, New Hampshire. The draft permit as issued contains provisions that are not in compliance with applicable requirements under the CAA, and accordingly objection by the EPA is proper. 42 U.S.C. § 7661d(b). Specifically, (1) the permit fails to impose sufficiently stringent sulfur dioxide ("SO<sub>2</sub>") to prevent Schiller Station from causing an exceedences of National Ambient Air Quality Standards ("NAAQS") within New Hampshire; (2) the permit fails to impose sufficiently stringent SO<sub>2</sub> limits to prevent exceedences of the NAAQS in neighboring Maine; (3) the permit fails to include required emissions limits for PM<sub>2.5</sub>; and (4) the proposed permit requirements for stack testing are impermissibly infrequent. These objections were timely raised in Sierra Club's comments to NH DES (hereinafter "Sierra Club Comments"), attached hereto as Exhibit 1. Accordingly, the EPA should object to the permit's issuance by NH DES.

## **I. INTRODUCTION**

### **A. Legal Background**

#### **1. The CAA Title V Program**

All major stationary sources of air pollution are required to apply for operating permits under Title V of the CAA. *See* 42 U.S.C. § 7661a(a) (“[I]t shall be unlawful . . . to operate . . . a major source . . . except in compliance with a permit issued by a permitting authority under this subchapter.”). Title V permits must provide for all federal and state regulations in one legally-enforceable document, thereby ensuring that all CAA requirements are applied to the facility and that the facility is in compliance with those requirements. *See* 42 U.S.C. §§ 7661a(a) and 7661c(a); *see also* 40 C.F.R. § 70.6(a)(1).

The CAA provides that permits issued under a Title V program “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.” 42 U.S.C. § 7661c(a). In addition to emission limitations and standards, each Title V permit must contain sufficient monitoring, record-keeping, reporting, and inspection and entry requirements to assure continuous compliance by sources with all existing applicable emission control requirements. *See* 42 U.S.C. § 7661c(c); 40 C.F.R. § 70.6(a)(1), 40 C.F.R. § 70.6(a)(3).

Title V permits must contain all “those operational requirements and limitations that assure compliance with all applicable requirements at the time of permit issuance.” 40 C.F.R. § 70.6(a)(1). Thus, the term “all applicable requirements” includes standards and/or requirements found in the State Implementation Plan (“SIP”). *See also* 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”). Indeed, EPA may not even approve a Title V permitting program unless it is persuaded that the permitting authority will “assure that upon issuance or renewal permits incorporate emissions limitations and other requirements in an applicable implementation plan.” 42 U.S.C. § 7661a(b)(5)(C).

A Title V permit is issued for a term of no more than five years, 40 C.F.R. § 70.6(a)(2) with a timely and complete application for renewal filed by the source at least six months prior to the date of permit expiration. 40 C.F.R. § 70.5(a)(1)(iii). Permit renewals are subject to the same procedural requirements, including those for public participation and EPA review, which apply to initial permit issuance. *See* 40 C.F.R. § 70.7(c)(1)(i).

#### **2. Federal Regulation of Sulfur Dioxide**

The CAA is intended to protect air resources so as to promote the public health and welfare of the nation. *See* 42 U.S.C. § 7401(b)(1). Pursuant to the Act, EPA is required to promulgate NAAQS for SO<sub>2</sub>, particulate matter, and other pollutants. *See* 42 U.S.C. § 7409. Primary NAAQS must be set at a level adequate to protect public health, with an adequate

margin of safety. 42 U.S.C. § 7409(b). Secondary NAAQS must be set at a level that is protective of the public welfare. 42 U.S.C. §7409(b)(2). The NAAQS are then implemented through enforceable source-specific emission limitations and other air quality rules established by each state, which are designed to achieve the NAAQS. 42 U.S.C. § 7410(a). Such rules are collected into SIPs, which are subject to EPA approval.

In June of 2010, EPA issued a new SO<sub>2</sub> primary standard, recognizing that the prior 24-hour and annual SO<sub>2</sub> standards did not adequately protect the public against adverse respiratory effects associated with short term (5 minutes to 24 hours) SO<sub>2</sub> exposure. 35 Fed. Reg. 35,520 (June 22, 2010) (hereinafter “Final Rule”). The new SO<sub>2</sub> NAAQS standard is a 1-hour standard set at 75 parts per billion (“ppb”), or 196 micrograms per cubic meter (“μg/m<sup>3</sup>”). 40 C.F.R. § 50.17(a). The standard was established in the form of the 99<sup>th</sup> percentile of the annual distribution of the daily maximum one-hour average concentrations. *Id.* at § 50.17(b).

Due to both the shorter averaging time and the numerical difference, the new one-hour SO<sub>2</sub> NAAQS is far more stringent than the prior SO<sub>2</sub> NAAQS. When setting the new one-hour SO<sub>2</sub> NAAQS, EPA determined exposure to SO<sub>2</sub> in even very short time periods—such as five minutes—causes decrements in lung function, aggravation of asthma, and respiratory and cardiovascular morbidity. *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) (noting that the health effects of SO<sub>2</sub> 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>. 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 - 5,900 premature deaths and 54,000 asthma attacks a year. U.S. EPA, *Final Regulatory Impact Analysis (RIA) for the SO<sub>2</sub> National Ambient Air Quality Standards (NAAQS)* tbl. 5.14 (2010), *available at* <http://www.epa.gov/ttnecas1/ria.html>. Put differently, levels of SO<sub>2</sub> air pollution above the standard in the NAAQS are expected to cause thousands of premature deaths and tens of thousands of asthma attacks every year.

### 3. New Hampshire Regulation of Sulfur Dioxide

After promulgation of the 2010 federal 1-hour SO<sub>2</sub> NAAQS, New Hampshire revised its own regulations pertaining to SO<sub>2</sub> ambient air quality standards. *See* Env-A 304. These new regulations were effective as of September 1, 2012, and incorporate the federal standards. *Id.* Under New Hampshire’s regulations, SO<sub>2</sub> ambient levels are not to exceed “75 parts per billion (ppb), 1-hour average concentration.” Env-A 304.01(a).

States are required to not only ensure that NAAQS are attained within their own boundaries, they are also charged with preventing air pollution from blowing into adjoining states and interfering with air quality standards there. Under section 110 of the CAA, states must adopt regulations “prohibiting . . . any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will . . . contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard.” 42 U.S.C. § 7410(a)(2)(D).

New Hampshire has specific language in its state regulations and federally-approved SIP that gives effect to this requirement:

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 interfere with the measures taken in those states to prevent significant deterioration of air quality and shall not prevent the attainment or maintenance of National Ambient Air Quality Standards in those states.

New Hampshire Approved SIP, Env-A 616.01.<sup>1</sup> As such, NH DES is both required and empowered to craft emission limits for air pollutants from stationary sources to prevent air pollution from those sources from negatively impacting attainment of air quality standards in neighboring states.<sup>2</sup>

#### 4. Federal Regulation of Particulate Matter

Particulate matter (“PM”) is treated under the CAA as two distinct air pollutants: PM<sub>10</sub> (PM that is equal to or less than 10 micrometers in diameter) and PM<sub>2.5</sub> (PM that is 2.5 micrometers in diameter or smaller). See National Ambient Air Quality Standards, available at <http://www.epa.gov/air/criteria.html>. Not only do these two pollutants have different physical and behavioral characteristics, see U.S. EPA, Clean Air Fine Particle Implementation Rule, 72 Fed. Reg. 20,586, 20,599 (Apr. 25, 2007) (“PM<sub>2.5</sub> . . . differs from PM<sub>10</sub> in terms of atmospheric dispersion characteristics, chemical composition, and contribution from regional transport”), PM<sub>10</sub> and PM<sub>2.5</sub> pose different levels of risk to human health. While PM<sub>10</sub> particles are small enough to be inhaled and accumulate in the respiratory system, PM<sub>2.5</sub> particles, because of their extremely small size, can penetrate deep into the lungs, enter the bloodstream, and cross the blood-brain barrier. See U.S. EPA, *Integrated Science Assessment for Particulate Matter* (2009), available at [http://www.epa.gov/ncea/pdfs/partmatt/Dec2009/PM\\_ISA\\_full.pdf](http://www.epa.gov/ncea/pdfs/partmatt/Dec2009/PM_ISA_full.pdf). As a result, PM<sub>2.5</sub> pollution is even more dangerous and can cause even more severe and long-term adverse health effects than PM<sub>10</sub>. See, e.g., L.K Fonken et al., *Air Pollution Impairs Cognition, Provokes Depressive-Like Behaviors and Alters Hippocampal Cytokine Expression and Morphology*, *Molecular Psychiatry* 16, 988 (2011).

Because of the separate needs to control PM<sub>10</sub> and PM<sub>2.5</sub> emissions, EPA strengthened the 24-hour PM<sub>2.5</sub> standard in 2006 to 35 µg/m<sup>3</sup>, while leaving the 24-hour PM<sub>10</sub> standard of 150 µg/m<sup>3</sup> in place. U.S. EPA, National Ambient Air Quality Standards for Particulate Matter, 71 Fed. Reg. 61,144 (Oct. 17, 2006). The agency also revoked the annual PM<sub>10</sub> standard, but retained a daily standard of 150 µg/m<sup>3</sup>. *Id.* EPA also announced in the 2007 implementation rule that the agency will no longer accept the use of PM<sub>10</sub> emissions information as a surrogate for

<sup>1</sup> See also Env-A 615.01. (“The department shall apply special emission limits to a stationary source to ensure that its air quality impacts on adjacent states . . . shall not prevent the attainment or maintenance of the NAAQS in those states.”)

<sup>2</sup> Notably, in NH DES’s September 13, 2013 letter to EPA enclosing its SO<sub>2</sub> NAAQS SIP submission, DES points to the section of regulations at Env-A 600, including Env-A 616, as evidence of its ability to properly regulate sources and set emission standards necessary to meet its obligations for implementation of the NAAQS. See <http://des.nh.gov/organization/divisions/air/do/sip/documents/so2-infra-sip-2010.pdf>.

PM<sub>2.5</sub> emissions information with regard to Title V permits. 72 Fed. Reg. at 20,659 (Apr. 25, 2007). EPA explained its decision as follows:

Under the Title V regulations, sources have an obligation to include in their Title V permit applications all emissions for which the source is major and all emissions of regulated air pollutants. The definition of regulated air pollutant in 40 C.F.R. 70.2 includes any pollutant for which a NAAQS has been promulgated, which would include both PM<sub>10</sub> and PM<sub>2.5</sub>. To date, some permitted entities have been using PM<sub>10</sub> emissions as a surrogate for PM<sub>2.5</sub> emissions. *Upon promulgation of this rule, EPA will no longer accept the use of PM<sub>10</sub> as a surrogate for PM<sub>2.5</sub>. Thus, sources will be required to include their PM<sub>2.5</sub> emissions in the Title V permit applications, in any corrections or supplements to these applications, and in applications submitted upon modification and renewal.*

*Id.* (citing 40 C.F.R. §§ 70.5(c)(3)(i), 70.5(b), and 70.7(a)(1)(i); 40 C.F.R. §§ 71.5(c)(3)(i), 71.5(b), and 71.7(a)(1)(i)) (emphasis added). Thus, consistent with the EPA's treatment of emissions information for particulate matter, a Title V permit must include separate and distinct limitations and monitoring requirements for PM<sub>2.5</sub> emissions.

Additionally, there are two different types of direct PM emissions: filterable (composed of solids) and condensable PM (vapor or gas that condenses to liquid or solid at stack exit). PM<sub>2.5</sub> is largely comprised of condensable PM, rather than filterable. See U.S. EPA, *Point Source Inventory Development 5-2, 5-3, available at* [http://www.epa.gov/apti/course419b/studentmanual/sm\\_chapter\\_5.pdf](http://www.epa.gov/apti/course419b/studentmanual/sm_chapter_5.pdf). As such, Title V permits must contain adequate monitoring provisions to ensure that both types of PM are reflected in a source's emission reports.

## **B. Factual Background**

Schiller Station is a three-boiler electricity generating facility owned and operated by PSNH, a subsidiary of Northeast Utilities. Two of Schiller's boilers, SR4 and SR6, burn primarily coal, while the third, SR5, was converted in 2006 to combust biomass. Title V Operating Permit, Application No. 11-0134 (April 2014) (hereinafter "Proposed Permit") at 6, attached hereto as Exhibit 2. Each boiler is rated at 50 megawatts ("MW"), for a combined facility output of 150 MW. The two coal-burning boilers each have a 574 million British thermal units ("MMBtu") per hour rating. *Id.* at 7. Schiller Station is located in Portsmouth, New Hampshire, just across the river from the communities of Kittery and Eliot, Maine.

Schiller Station emits large quantities of air pollutants, particularly SO<sub>2</sub>, as its coal-fired boilers also lack any controls for SO<sub>2</sub>. In 2013, it emitted over 1,400 tons of SO<sub>2</sub>, and it emitted 960 tons in just the first quarter of 2014, according to EPA's Clean Air Markets Database.

In light of Schiller Station's high SO<sub>2</sub> emissions, air modeling expert Steven Klafka, on behalf of the Sierra Club, has conducted air dispersion modeling analyses employing EPA's AERMOD program to measure Schiller's allowable (based on permitted heat inputs and SO<sub>2</sub> emission factors in pounds per MMBtu; these limits are what are carried forward in the Proposed

Permit) and peak (based on maximum hourly emissions obtained from EPA's Clean Air Markets Data and Maps database) emissions to determine whether the Plant was violating the NAAQS. See Steven Klafka, "Schiller Station Portsmouth New Hampshire Sierra Club Evaluation of Compliance with 1-hour SO<sub>2</sub> NAAQS, August 29, 2012" (hereinafter, "Klafka August 2012 Report") attached as Exhibit 3. This modeling report predicts violations of the 1-hour SO<sub>2</sub> NAAQS caused by Schiller Station over a wide area in both New Hampshire and Maine. *Id.* at 3, Fig. 1. Indeed, the modeling predicts impacts significantly higher than the NAAQS.

Specifically, the modeling predicts peak impacts from Schiller Station of over 400 µg/m<sup>3</sup> and 900 µg/m<sup>3</sup> in Maine and New Hampshire respectively. *Id.* at 5. Further, in order to prevent exceedences of the NAAQS, the modeling report determined that emissions would have to be limited by more than 80%, to 0.49 pounds of SO<sub>2</sub> per MMBtus, or 565.3 pounds per hour, on an hourly averaging period. *Id.* at 6.

Subsequently, this modeling was revised to include as base inputs actual hourly emissions from Schiller Station taken from EPA's Clean Air Markets Database; this modeling demonstrated that not only do the limits in the Proposed Permit allow Schiller Station to cause severe exceedences of the SO<sub>2</sub> NAAQS, but that it has in fact historically caused exceedences of the standard in both New Hampshire and Maine. See Steven Klafka, "Schiller Station Portsmouth New Hampshire Sierra Club Evaluation of Compliance with 1-hour SO<sub>2</sub> NAAQS, July 24, 2014" at 4 (hereinafter, "Klafka July 2014 Report"), attached hereto as Exhibit 4.

### **C. Procedural Background**

Schiller Station's prior Title V permit was issued March 9, 2007, and expired on March 31, 2012. Title V Operating Permit, No. TV-OP-053. NH DES received PSNH's renewal application on September 30, 2011.

Previously, in 2002, in response to a discrepancy observed by NH DES between the modeled and actual property boundary lines for Schiller Station, modeling was performed for Schiller. See Permit Application Review Summary, October 30, 2012, at 2, attached hereto as Exhibit 5. This modeling determined that, at the then-permitted emissions limit of 2.9 lbs/MMBtu for all three Schiller boilers, Schiller was predicted to cause exceedences of the then-governing SO<sub>2</sub> NAAQS. *Id.* NH DES therefore entered into an agreement with PSNH to set the emission limits for the boilers at 2.4 lbs/MMBtu. In 2012, NH DES requested that PSNH submit an application for a temporary permit to incorporate the agreed-upon 2.4 lbs/MMBtu limits and PSNH complied with an application dated June 18, 2012. *Id.* NH DES subsequently noticed the draft temporary permit for public comment, with a comment deadline of August 29, 2012. The Sierra Club submitted comments, enclosing the August 29, 2012 Klafka Report and pointing out that aerial dispersion modeling demonstrated that the 2.4 lbs/MMBtu limit NH DES proposed was still insufficient to protect against exceedences of the 2010 SO<sub>2</sub> NAAQS in New Hampshire or Maine. Nonetheless, on October 20, 2012, NH DES issued a final temporary permit retaining the 2.4 lbs/MMBtu limit.

On October 2, 2013, NH DES finalized a draft Title V permit to replace the one that expired in the spring of 2012, and opened a public comment period on the draft until November

6, 2013. The Sierra Club submitted timely comments on the draft. *See* Sierra Club Comments. In pertinent part, the Sierra Club argued that the draft permit set SO<sub>2</sub> limits in dramatically higher than what is necessary to adequately protect human health in either New Hampshire or in neighboring Maine, failed to set limits to capture PM<sub>2.5</sub> and condensable PM, and failed to require sufficiently frequent stack testing for PM.

According to the CAA, within 45 days of receipt of a proposed Title V permit, the Administrator of the EPA “shall . . . object” to the permit’s issuance if it “contains provisions that are determined by the Administrator as not in compliance with the applicable requirements” of the CAA and “the requirements of an applicable implementation plan.” 42 U.S.C. § 7661d(b)(1). If EPA does not object during this period, any person may petition the Administrator for issuance of an objection. *Id.* at § 7661d(b)(2). EPA’s 45-day review period of the Schiller Station Proposed Permit began on Apr 14, 2014, and ended on May 29, 2014; the 60-day public petition period will end on July 28, 2014, making this petition timely.

## **II. GROUNDS FOR OBJECTION TO PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE’S PROPOSED PERMIT**

The Sierra Club hereby petitions EPA to object to the Schiller Station proposed Title V permit on four separate grounds. First, the permit fails to impose sufficiently stringent SO<sub>2</sub> limits to protect human health and prevent Schiller Station from causing exceedences of the NAAQS within New Hampshire. *See* Sierra Club Comments at 7-8. Second, the SO<sub>2</sub> limits are also insufficient to prevent Schiller Station from interfering with maintenance of the NAAQS in neighboring Maine. *See id.* at 8-14. Third, the Proposed Permit fails to include any emissions limits for PM<sub>2.5</sub>. *See id.* at 14-15. Finally, the requirements for stack testing for PM in the Proposed Permit are impermissibly infrequent. *See id.* at 15-16.

### **A. The Proposed Permit Violations Fail to Prevent Exceedences of the SO<sub>2</sub> NAAQS**

#### **1. The SO<sub>2</sub> Limits in the Proposed Permit Fail to Ensure that Schiller Does Not Cause Exceedences of the NAAQS in New Hampshire**

As written, the Schiller Station Proposed Permit does not include SO<sub>2</sub> emission limits sufficient to protect human health or to ensure compliance with either the federal SO<sub>2</sub> standards or New Hampshire’s own regulations. Both the federal NAAQS and New Hampshire regulations set the ambient air quality standard for SO<sub>2</sub> at 75 ppb—or 196 µg/m<sup>3</sup>—on an hourly average. *See* 40 C.F.R. § 50.17(a); Env-A 304.01. Emission limits must therefore be sufficiently restrictive to ensure that these standards are attained, which means both a sufficiently restrictive numerical emissions limit as well as an appropriate 1-hour averaging period for that limit.

The Proposed Permit, however, retains the prior emissions limits for Schiller Station of 2.4 lbs of SO<sub>2</sub> per MMBtu on a 24-hour averaging period.<sup>3</sup> *See* Proposed Permit at 15. However, the modeling performed by the Sierra Club indicates that, to avoid causing exceedences of both

<sup>3</sup> Because each boiler is rated at 574 MMBtu/hour, this translates to a mass limit of 1,378 pounds of SO<sub>2</sub> per boiler per hour, or about 2,755 pounds for both coal-fired boilers together.

the SO<sub>2</sub> NAAQS and New Hampshire regulations, the *limit must be less than 0.49 lbs/MMBtu*. See Klafka July 2014 Report at 6. Thus, the proposed numerical limit must be reduced by roughly 80%.

Further, the “calendar day average” period in the Proposed Permit is incapable of meeting the 1-hour standard. Proposed Permit at 15. As written, the Proposed Permit contemplates Schiller emitting from each of its boilers 2.4 lbs/MMBtu when the emissions from a given 24-hour period are averaged out. This means that in any given hour, emissions could exceed—perhaps greatly exceed—the limit. For example, Schiller could emit at 4.8 lbs/MMBtu for 12 hours, and emit nothing for the remainder of the day, and still comply with the provisions in the Proposed Permit, while nonetheless emitting twice as much SO<sub>2</sub> per hour as its numerical limit, and vastly more than what the Klafka July 2014 Report calculates as safe to meet air quality standards and thus protect human health.

As such, the SO<sub>2</sub> emission limit in the Proposed Permit must be revised to be at least as low as 0.49 lbs/MMBtu on an hourly averaging period, to ensure that New Hampshire’s air quality is protected as required by both federal and New Hampshire regulations.<sup>4</sup> See 40 C.F.R. § 50.17(a); Env-A 304.01. The Schiller Station Proposed Permit fails to include emission limits and averaging periods on SO<sub>2</sub> emissions sufficient to prevent the facility from causing ambient concentrations in excess of health-based standards.

In response, NH DES attempts to argue that, since it was not imposing any new permit changes, aerial dispersion modeling was not necessary for it to renew the Schiller permit. See PSNH-Schiller Station Title V Operating Permit - Findings of Fact and Director's Decision, April 14, 2014, at 8. This argument completely misses the point, however, as, whether or not NH DES *required* modeling, such modeling has been performed, and has been presented to NH DES on multiple occasions throughout the permitting process. This modeling shows that that the proposed emissions limits are insufficient to prevent exceedances of the SO<sub>2</sub> NAAQS in New Hampshire, and in fact have allowed historical exceedances to occur.

## **2. The SO<sub>2</sub> Limits in the Proposed Permit are Insufficient to Prevent Schiller from Interfering with Maintenance of the NAAQS in Maine**

In addition to being insufficient to meet air quality standards within New Hampshire, the SO<sub>2</sub> emission limits in the Proposed Permit are insufficient to prevent Schiller Station from sending dangerous quantities of SO<sub>2</sub> pollution into neighboring Maine. This is in direct contravention to the requirements placed on NH DES to set limits on a case-by-case basis for stationary sources like Schiller to insure that air pollution does not cross state lines and cause nonattainment of air quality standards.

Under the CAA, New Hampshire is charged with preventing air pollution emitted within its boundaries from blowing into adjoining states and causing violations of air quality standards there. Section 110 of the CAA requires that states adopt regulations “prohibiting . . . any source or other type of emissions activity within the State from emitting any air pollutant in amounts

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<sup>4</sup> Indeed, as the Klafka July 2014 Report does not consider any background SO<sub>2</sub>, it is likely the limit would have to be even lower, since other sources in the region aside from Schiller Station emit sulfur pollution.

which will . . . contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard.” 42 U.S.C. § 7410(a)(2)(D).

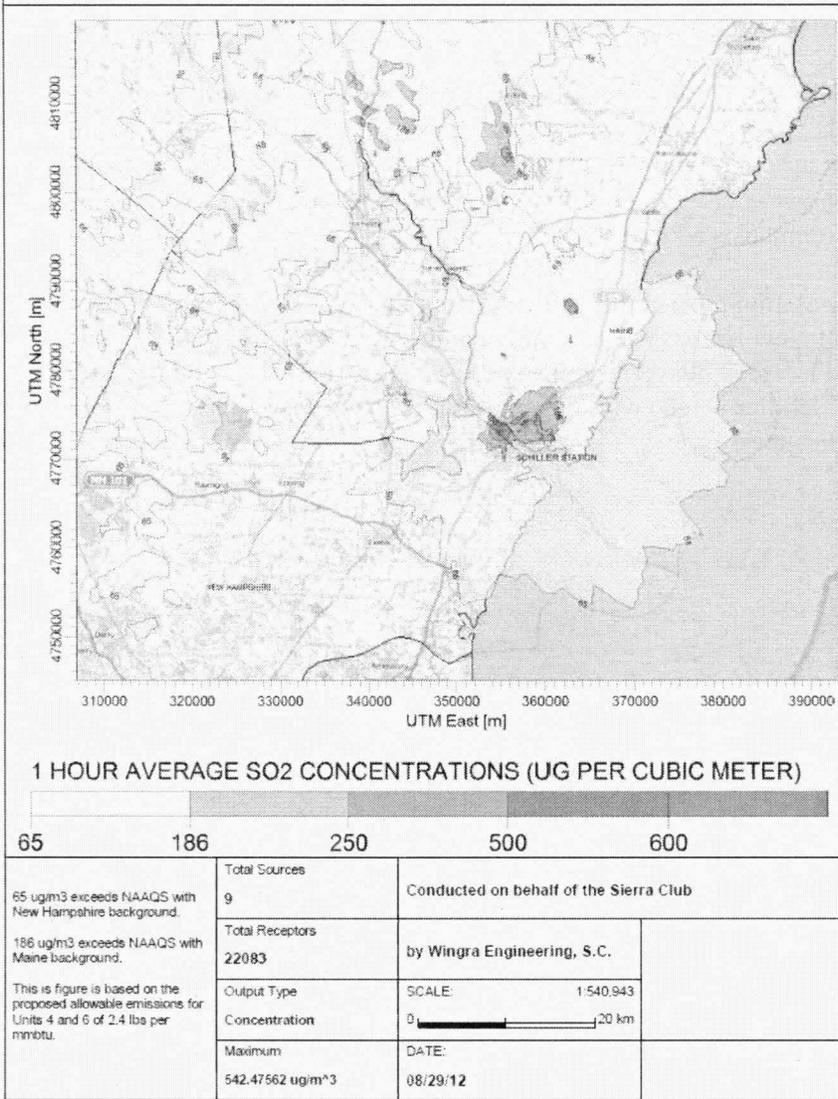
Under NH DES’s own federally-approved regulations in its SIP, this means that New Hampshire must “*apply special emission limits to stationary sources on a case-by-case basis to insure that their air quality impacts on adjacent states . . . shall not prevent the attainment or maintenance of National Ambient Air Quality Standards in those states.*” New Hampshire SIP Env-A 616.01 (emphasis added).<sup>5</sup>

Schiller Station most certainly does send much of its air pollution, including SO<sub>2</sub> pollution, out of New Hampshire and into neighboring Maine communities, as Schiller is located just across the Piscataqua River from Maine. Moreover, air dispersion modeling shows that the pollution from Schiller—even with the emission limits in the Proposed Permit—spreads over a vast area in both states:

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<sup>5</sup> See also Env-A 615.01. (“The department shall apply special emission limits to a stationary source to ensure that its air quality impacts on adjacent states . . . shall not prevent the attainment or maintenance of the NAAQS in those states.”)

Figure 3 - Regional View  
 1-hour SO<sub>2</sub> NAAQS Compliance Analysis for Schiller Station, NH



Klafka August 2012 Report at Figure 3.

Indeed, the modeling shows that Schiller Station—at the emission levels in the Proposed Permit—is predicted to cause peak concentrations of SO<sub>2</sub> in Maine of over 900 µg/m<sup>3</sup>, compared to the standard of 196 µg/m<sup>3</sup>. Klafka July 2014 Report at 5. Notably, the impacts in Maine are significantly *higher* than those in New Hampshire. *Id.*

*Table 1 - SO<sub>2</sub> Modeling Results for Schiller Station Modeling Analysis*

3-Year Time Period	Emissions Type <sup>5, 6, 7</sup>	Average Emissions from Each Unit (lbs/hr)	Maximum Impact In New Hampshire (µg/m <sup>3</sup> )	Maximum Impact In Maine (µg/m <sup>3</sup> )	NAAQS (µg/m <sup>3</sup> )
2006 – 2008	Allowable	1,377.6	395.5	952.7	196.2
	Maximum	1,129.1	324.4	780.0	
	Actual SO <sub>2</sub> & Velocity	508.2	164.1	389.3	
2007 – 2009	Allowable	1,377.6	400.7	956.2	
	Maximum	1,129.1	326.8	783.6	
	Actual SO <sub>2</sub> & Velocity	466.8	171.3	365.2	
2008 – 2010	Allowable	1,377.6	410.4	883.7	
	Maximum	1,129.1	334.6	723.9	
	Actual SO <sub>2</sub> & Velocity	448.1	182.9	323.2	
2009 – 2011	Allowable	1,377.6	437.1	902.8	
	Maximum	1,129.1	358.8	739.7	
	Actual SO <sub>2</sub> & Velocity	323.7	179.0	257.9	
2010 – 2012	Allowable	1,377.6	435.0	925.0	
	Maximum	1,129.1	361.4	758.0	
	Actual SO <sub>2</sub> & Velocity	215.3	145.5	190.1	
4/2010 – 3/2013	Allowable	1,377.6	427.7	947.3	
	Maximum	1,129.1	352.1	775.2	
	Actual SO <sub>2</sub> & Velocity	211.1	157.8	246.4	

Indeed, modeling of historical, actual emissions provides further confirmation that the limits proposed in the Proposed Permit are insufficient. Sierra Club retained Steven Klafka to model emissions from Schiller Station using as inputs actual, hour-by-hour emissions of SO<sub>2</sub> as reported in the EPA Clean Air Markets Database for every hour from 2006 up through March of 2013. This modeling shows that Schiller Station has historically caused exceedences of the standard in the 2010 SO<sub>2</sub> NAAQS in Maine for the 2006-2008, 2007-2009, 2008-2010, 2009-2011, and April 2010-March 2013 time periods, and that subsequently—despite Schiller Station operating at historically low levels for much of that period. See Klafka July 2014 Report at 5.

Critically, these concentrations are without reference to background concentrations of SO<sub>2</sub>. With even a small ambient background from other sources (e.g., vehicle traffic, other fossil fuel-fired facilities, etc.), the combined total would be in excess of the limit. Put another way, the modeling demonstrates that Schiller Station all by itself prevents attainment and interferes with maintenance of the NAAQS in Maine. Clearly, the limits proposed by NH DES in the draft permit fail to insure that air quality is protected in downwind states, as the New Hampshire SIP requires.<sup>6</sup>

<sup>6</sup> Nor is the potential argument that Schiller does not often emit SO<sub>2</sub> at levels as high as it is permitted particularly compelling. First, the SO<sub>2</sub> NAAQS is a short-term, hourly standard, reflecting the need to protect against the harmful effects of SO<sub>2</sub> exposure that can accrue in as little as five minutes. See, e.g., <http://www.epa.gov/airquality/sulfurdioxide/health.html>. The possibility of Schiller emitting SO<sub>2</sub> at levels that only

In the face of this, NH DES appears to rely on only 28 days of monitoring data from a single point in Maine from 15 years ago to suggest that Schiller's emissions of SO<sub>2</sub> are not problematic, despite the fact that said monitoring recorded actual concentrations of SO<sub>2</sub> well over the 75 ppb standard of the health-based NAAQS. See October 4, 2013 Memorandum from Jeff Underhill to Craig Wright, "Review of 1999 SO<sub>2</sub> Monitoring Data for Eliot, ME" (hereinafter "the October Memo"), attached hereto as Exhibit 6.

As a preliminary matter, the 28 days of monitoring data from 1999 is evidence of nothing. Not only is reliance on a single monitor data point problematic, here the monitor was in operation *for less than a full month*. The SO<sub>2</sub> NAAQS is evaluated against at least *three years'* worth of data. See Final Rule, 75 Fed. Reg. at 35,520. Moreover, EPA has repeatedly stated that, for SO<sub>2</sub>, monitor data is unlikely to accurately ascertain impacts from large sources like Schiller Station. See, e.g., *id.* 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 SO<sub>2</sub> Guideline Document at 2-5 to 2-6, *available at* [http://www.epa.gov/ttn/oarpg/t1/memoranda/so2\\_guide\\_092109.pdf](http://www.epa.gov/ttn/oarpg/t1/memoranda/so2_guide_092109.pdf) ("A small number of ambient SO<sub>2</sub> 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 & Chemical Co. v. E.P.A.*, 666 F.3d 1174, 1184 (9th Cir. 2012) ("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.'"). Indeed, with specific regard to the SO<sub>2</sub> NAAQS, EPA has stated that "even if monitoring does not show a violation," that absence of data is not determinative of attainment status unless it is confirmed by aerial dispersion modeling. Final Rule, 75 Fed. Reg. at 35,551.

Nor was NH DES's determination of where to place the 1999 monitor informed by a modeling analysis to ascertain where peak ambient concentrations of SO<sub>2</sub> were likely to occur, contrary to EPA guidance. Compare NH DES "An Assessment of Airborne Particulate Matter in Eliot, Maine" (August 2000) (hereinafter, "the August 2000 Report") at 4, attached hereto as Exhibit 7 (noting that the monitor location was selected after looking at aerial photographs and because "[e]lectricity was readily available, the location was reasonably secure, and the landowner was willing to allow DES to use the property"—not because careful modeling analysis indicated the site was ideal for monitoring air quality) with EPA Draft Monitoring Technical Assistance Document at 11, *available at* <http://www.epa.gov/airquality/sulfurdioxide/pdfs/SO2MonitoringTAD.pdf> ("Modeling is a powerful tool that should be strongly considered to inform the identification of potential monitoring sites").

In sum, the few weeks of monitor operation simply do not provide enough data to be of

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sometimes cross the threshold is still nonetheless enormously problematic from an air quality and human health perspective. Second, to the extent that Schiller may claim that it does not contribute to exceedences of the NAAQS because of its low-level operation, NH DES would merely be tightening up some slack in the permit by setting emission limits appropriately protective of human health and the environment.

any use in ascertaining impacts on air quality fifteen years later.<sup>7</sup> In fact, NH DES *itself* properly disregarded as unconvincing the August 1999 monitor data in determining—based on subsequent air modeling in 2002—that Schiller’s permitted emissions were too high. See Permit Application Review Summary, October 30, 2012, at 2. The same exact situation exists here.

More importantly, the monitor data actually shows multiple hours of high concentrations, including a daily maximum of 128 ppb, or 171% of the proposed standard, on August 23, 1999. NH DES appears to dismiss this data by suggesting that the wind was not blowing directly from Schiller to the monitor during the peak readings, and that it was instead blowing from the south. But the monitor in 1999 was placed somewhat to the east of Schiller—a southerly wind is by no means inconsistent with that monitor measuring pollution from the plant, particularly where the wind was changing directions throughout the day, as it was on August 23, 1999, when the peak concentration was recorded. See October Memo at A-8 (noting wind coming from 180 degrees from North—or from the south—as well as 3 degrees from North, on the day of peak recorded).

Similarly, NH DES’s suggestion that perhaps the peak readings reflect emissions from a ship and not Schiller Station are extremely speculative at best—not only does NH DES admit that “there was not one [ship] on record” in the channel when the high readings were recorded (see October Memo at A-11), but it would take a truly massive ship running its engines at near capacity to emit anywhere near the quantity of SO<sub>2</sub> Schiller was emitting at the time. Clean Air Markets Database data indicates that Schiller was emitting roughly 1,200 pounds of SO<sub>2</sub> per hour during the period in which NH DES’s monitors recorded their highest ambient concentrations; a ship would have to burn 30,000 pounds of 2% sulfur fuel oil per hour to emit that much SO<sub>2</sub>, which is the burn rate consistent with a 10,000 container class vessel (a ship so large it cannot go through the Panama Canal) cruising at 24 knots. The Piscataqua channel in the area discussed is too narrow and too shallow (roughly 35 feet deep) for such a large ship to be present, and for a ship to be present during the 6-hour time period DES discusses, it would have to be barely moving at all, and therefore unlikely to be emitting significantly.<sup>8</sup>

As such, the 14-year-old 28 days’ worth of monitoring data from a single monitor in Maine provide no assurance that Schiller will not interfere with attainment of the 2010 SO<sub>2</sub> NAAQS in Maine; reliance on such tenuous data as an assurance that air quality is protected would be arbitrary and capricious. To the contrary, rigorous modeling analyses show that that limits proposed in the Proposed Permit are grossly insufficient to protect air quality and that therefore these limits violate NH DES’s obligations in New Hampshire’s own SIP to protect downwind air quality. For these reasons, the Schiller Station Title V permit must be revised to have more restrictive, hourly emission limits for SO<sub>2</sub>.

NH DES also asserts, in its response to comments on the draft Title V permit for Schiller,

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<sup>7</sup> This is particularly true when the data themselves may not even be accurate to begin with. The August 2000 Report notes that “normal quality assurance for SO<sub>2</sub> monitoring includes strict temperature control of the environment that the monitor is housed in (i.e., heating and/or air conditioning)” but that “a climate-controlled mobile monitoring trailer was not available” and thus “DES was unable to provide” the requisite strict temperature control for its monitor. August 2000 Report at 7.

<sup>8</sup> Indeed, NH DES speculates on the presence of ships based on records of *tugboats* guiding ships in the channel. If a ship is being guided by a tugboat, it is unlikely to be running its engines—and therefore emitting much SO<sub>2</sub>—to any significant degree.

that it is premature to address SO<sub>2</sub> emissions from Schiller Station until attainment designations for the 2010 SO<sub>2</sub> NAAQS have been finalized. PSNH-Schiller Station Title V Operating Permit - Findings of Fact and Director's Decision, April 14, 2014, at 9. However, such an argument is directly contrary to the plain language of the New Hampshire SIP. New Hampshire's SIP requires that special emission limits be applied "to stationary sources on a case-by-case basis to insure that their air quality impacts on adjacent states shall not interfere with the measures taken in those states to prevent significant deterioration of air quality and shall not prevent the attainment or maintenance of National Ambient Air Quality Standards in those states." New Hampshire Approved SIP, Env-A 616.01. Nothing about the provision indicates that it is contingent on area designations—nor could it, as area designations would trigger requirements to prepare and submit for EPA approval *new* SIP provisions; reading Env-A 616.01 as New Hampshire appears to do renders it entirely superfluous and meaningless.<sup>9</sup>

Moreover, such an argument is inconsistent with New Hampshire's own prior practice. In 2002, NH DES used modeling to determine that the SO<sub>2</sub> emission limits for Schiller Station were too high and allowed levels of pollution problematic for the then-governing SO<sub>2</sub> NAAQS. See Permit Application Review Summary, October 30, 2012, at 2. Based on this modeling, NH DES set lower emission limits for Schiller in that prior round of permitting. *Id.* The situation here and now is identical, and the requirements of Env-A 616.01 compel an identical result.

Again, as described above, modeling clearly demonstrates that Schiller Station has continuously been responsible for emissions constituting near or all of the NAAQS in Maine, thus indisputably interfering with achievement of SO<sub>2</sub> levels below the health-based standards, and triggering the requirement in Env-A 616.01 that emission limits be set on a "case-by-case basis to insure" that air quality in Maine is not negatively impacted.

#### **B. The Proposed Permit Fails to Include Emissions Limits for PM<sub>2.5</sub>**

As previously discussed, particulate matter, or PM, is treated as two separate pollutants under the CAA: PM<sub>10</sub> and PM<sub>2.5</sub>. See National Ambient Air Quality Standards, *available at* <http://www.epa.gov/air/criteria.html>. EPA has stated that because PM<sub>2.5</sub> now has a separate and distinct NAAQS, PM<sub>10</sub> can no longer be treated as a surrogate for PM<sub>2.5</sub>. Therefore, consistent with the EPA's treatment of emissions information for these pollutants, the Title V permit for Schiller Station must include separate and distinct limitations and standards for PM<sub>2.5</sub> emissions. Further, permitting must address condensable PM. Condensable PM is a common component of both PM<sub>10</sub> and PM<sub>2.5</sub> and, therefore, the primary PM<sub>10</sub> and PM<sub>2.5</sub> NAAQS include consideration of both the filterable and condensable fractions of PM. See EPA Basic Information on Particulate Matter, *available at* <http://www.epa.gov/airquality/particlepollution> (stating that, with regard to the NAAQS, "[p]articulate matter, also known as particle pollution or PM, is a complex mixture of extremely small particles *and liquid droplets.*") (emphasis added).

Thus, the PM<sub>2.5</sub> NAAQS is an applicable requirement with which a Title V permit's emissions limitations and standards must assure compliance. Yet, the Proposed Permit fails to

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<sup>9</sup> Further, in the analogous situation of a petition under Section 126 of the Clean Air Act, the Third Circuit recently held that the failure of EPA to issue designations does not prevent or postpone requirements under other portions. See *Genon Rema, LLC v. U.S. EPA*, 722 F.3d 513, 526 (3rd Cir. 2013)

provide an emissions limit specific to PM<sub>2.5</sub>. Instead, the permit merely sets limits for “total suspended particulate” emissions while specifically qualifying those limits to refer to “the filterable portion only.” Proposed Permit at 15.<sup>10</sup> This language does not distinguish between PM<sub>10</sub> and PM<sub>2.5</sub>, nor does it state which type of PM must be held to this limit, and it fails to set any limit at all for condensable PM. Yet this is the only PM limit in place for Schiller’s coal-fired units. Clearly, the permit must be revised to distinguish between the two types of PM and properly incorporate the applicable standards under the NAAQS, and to include limits for condensable PM.

In response to comments regarding the lack of consideration of PM<sub>2.5</sub> and condensable PM in the draft permit, NH DES correctly required PSNH to provide PM<sub>2.5</sub> and condensable PM emission data for Schiller Station and subsequently amended the permit application review summary to include inventories of PM<sub>10</sub>, PM<sub>2.5</sub>, and condensable PM emissions. PSNH-Schiller Station Title V Operating Permit - Findings of Fact and Director's Decision at 11. The Proposed Permit now shows that Schiller Station meets the Title V major source thresholds for PM<sub>2.5</sub> as well as PM<sub>10</sub>. Proposed Permit at 6. Yet the Proposed Permit *still* fails to provide emissions limits for either PM<sub>2.5</sub> or condensable PM.

EPA has confirmed that preexisting technical impediments to the separate regulation of PM<sub>2.5</sub> have now been resolved. 73 Fed. Reg. at 28,340. In the final PM<sub>2.5</sub> implementation rule that for Title V permits, EPA announced “as of the promulgation of this final rule, the EPA will no longer accept the use of PM<sub>10</sub> emissions information as a surrogate for PM<sub>2.5</sub> emissions information given that both pollutants are regulated by a National Ambient Air Quality Standard and therefore are considered regulated air pollutants.” Clean Air Fine Particle Implementation Rule; Final Rule, 72 Fed. Reg. 20,586, 20660 (April 25, 2007) (footnotes omitted).

Separate permit limits and standards for PM<sub>10</sub> and PM<sub>2.5</sub> are necessary in order to demonstrate that the Title V permit assures compliance with both NAAQS and to protect public health. The Proposed Permit should be revised to provide for separate PM<sub>10</sub> and PM<sub>2.5</sub> limits and to include monitoring provisions for PM<sub>2.5</sub> and condensable PM.

**C. The Proposed Permit Fails to Require Continuous Emissions Monitoring to Assure Adequate Monitoring of PM Emissions**

The Proposed Permit for Schiller Station only requires stack testing for total suspended particulate matter (TSP) and PM<sub>10</sub> emissions once *every five years*. Proposed Permit at 49. This is impermissibly infrequent, and must be revised. Federal regulations make clear that monitoring and reporting requirements must match the time period over which an emission limitation is measured. See 40 C.F.R. § 70.6(a)(3)(i)(B); 40 C.F.R. § 70.6(c)(1). The D.C. Circuit Court of Appeals has explicitly stated that “a monitoring requirement insufficient ‘to assure compliance’ with emission limits has no place in a [Title V] permit unless and until it is supplemented by more rigorous standards.” See *Sierra Club v. EPA*, 536 F.3d 673, 677 (D.C. Cir. 2008). As further explained by the Court, annual testing is unlikely to assure compliance with a daily emission limit. *Id.* at 675. Under its Compliance Assurance Monitoring (CAM) Rule, EPA

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<sup>10</sup> In fact, the Proposed Permit does not even require *monitoring* for PM<sub>2.5</sub>. See Proposed Permit at 49 (requiring stack testing for “TSP and PM<sub>10</sub>,” but not for PM<sub>2.5</sub>)

requires that certain major source owners “establish . . . appropriate range(s) . . . for the selected indicator(s) such that operation within the ranges provides a reasonable assurance of ongoing compliance with emission limitations or standards.” 40 C.F.R. § 64.3(a)(2); *see also* 42 U.S.C. § 7414(a)(3) (authorizing the EPA to “require enhanced monitoring and submission of compliance certifications” from major sources).

Here, it is obvious that stack testing once every five years will not assure compliance with short-term emission limit. *See* Proposed Permit at 49 (stack testing for PM is to be conducted “[e]very five years”).<sup>11</sup> The frequency of monitoring must instead correlate in some manner to the averaging time used to determine compliance. In particular, monitoring must assure *continuous* compliance where emission limits have instantaneous parameters. As it stands now, the permit’s infrequent and intermittent compliance testing requirements—one test per permit cycle—will neither assure nor demonstrate compliance with the permit’s PM limitations.

NH DES maintains that the stack testing, supplemented by electrostatic precipitator (“ESP”) monitoring, is sufficient to evaluate compliance with PM emission limits. PSNH-Schiller Station Title V Operating Permit - Findings of Fact and Director's Decision, April 14, 2014, at 6; Proposed Permit at 55. In order to comply with the CAM Rule, ESP performance as an indicator must provide a reasonable assurance of ongoing compliance with the Plant’s PM emission limitations. *See* 40 C.F.R. 70.6(a)(1), 70.2 (defining “applicable requirements”); *see also* 45 CSR §30-5.1(a), §30-2.7 (defining “applicable requirements”). Here, it does not. Although ESP performance may improve as total power input increases, this is not always the case. Indeed, multiple factors can reduce the effectiveness of ESP controls *despite* total power input, rendering power input an unreliable proxy for PM emissions monitoring. For instance, changes in PM concentration, size distribution, and gas flow rate can negatively impact the effectiveness of ESP controls and allow for greater particulate emissions than normally assumed. In addition, malfunctioning and other issues with ESP equipment components can serve to reduce the effectiveness of ESP controls.

Nor is use of opacity monitoring as a surrogate for PM monitoring an adequate solution. Opacity monitoring falls short of assuring compliance with applicable PM standards in that it fails to capture secondary particulate matter emissions, i.e., the particulate matter that condenses from vapor *after* leaving the exhaust stack. Due to the exclusion of condensable PM emissions, mere monitoring of opacity does not provide assurance that overall PM emissions for Schiller Station are within the limits prescribed.<sup>12</sup> Mere opacity monitoring as contemplated in the draft permit, while salutary and an essential part of ensuring overall source compliance with the CAA, is inadequate for ensuring compliance with applicable standards, for while the presence of opacity violations is indicative of PM violations, the *absence* of opacity violations does not mean no harmful levels of PM are being emitted, because of condensable and transparent PM.

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<sup>11</sup> Even ignoring the 0.10 lb/MMBtu PM standard, the 251.85 tons per year limit establishes a periodicity and therefore averaging period for which the draft permit’s proposed monitoring regime is *five times* longer. *See* Proposed Permit at 15.

<sup>12</sup> As noted above, the NAAQS for PM<sub>10</sub> and PM<sub>2.5</sub> take into consideration both filterable and condensable particulate matter. *See* <http://www.epa.gov/airquality/particulatepollution/> (stating that, with regard to the NAAQS, “[p]articulate matter, also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets.”) (emphasis added).

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The Schiller Title V permit must be revised accordingly, with continuous emissions monitoring for PM, or at the very least annual or more frequent stack testing for PM, and testing that includes monitoring of emissions of PM<sub>2.5</sub> as well as condensable PM. The conditions within the Proposed Permit for stack testing and ESP monitoring and maintenance are insufficient to ensure that Schiller stays within its PM emissions limits.

### **III. CONCLUSION**

For the reasons cited above, the Sierra Club respectfully requests that the Administrator of the EPA grant this Petition to Object to the Schiller Station Title V Permit and order the NH DES to include in a new permit: (1) hourly SO<sub>2</sub> emission limits sufficiently stringent to avoid causing harmful air pollution and violating NAAQS in both New Hampshire and in neighboring Maine communities; and (2) more frequent monitoring provisions to assure compliance with the permit's PM emission limits, namely continuous emissions monitoring.

Respectfully submitted,

/s/

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