FINDINGS OF FACT AND DIRECTOR'S DECISION
In the Matter of the Issuance of a Title V Operating Permit To
Public Service of New Hampshire - Schiller Station
Located in Portsmouth, New Hampshire
Facility Identification # 3301500012; Application # 11-0134

The Clean Air Act Amendments of 1990 (CAAA) established a federal permit program for the nation's largest emission sources (called "major sources"). The CAAA required states to develop and implement this program consistent with federal regulations. The state rules implementing this operating permit program, commonly called "Title V," took effect in New Hampshire on June 30, 1995.

Title V Operating Permits include all air pollution related regulatory requirements that apply to the source. The program does not allow for the addition of new emission units or establishment of new emissions control requirements[1], but rather clarifies the existing air pollution control obligations of major sources by compiling in one document all of a source's compliance requirements. The intent is that by including all applicable requirements in one permit, it will be easier for the source owner, the regulatory agency, and the public to determine if the source is in compliance. The permit contains monitoring, record keeping and reporting requirements designed to ensure that the source can determine compliance with all applicable air regulations. Owners of sources with Title V Operating Permits must certify that the source is in compliance each year, and the permits must be renewed every five years. The public is provided an opportunity to comment on each new or renewed Title V Operating Permit before it is issued.

There are typically four phases in the Title V Operating Permit process:

1. First, the permit application undergoes an initial review by the New Hampshire Department of Environmental Services, Air Resources Division (DES) to ensure that the information submitted is complete and addresses all appropriate regulatory requirements. If so, a "completeness determination" is issued by DES.
2. After the application has been deemed complete, DES undertakes an extensive review, including but not limited to facility site visits and an analysis of historical information. Once DES has completed this review and is confident that the application accurately reflects the facility's operations, DES develops a "draft Title V Operating Permit." The draft Title V Operating Permit contains all applicable regulatory requirements (both state and federal) that pertain to the facility.
3. Once the draft Title V Operating Permit is prepared, a notice is published as required by the New Hampshire Code of Administrative Rules, Env-A 622 *Permit Notice and Hearing Procedures: Title V Operating Permits* (under Env-A 622.02, *Public Notice*). The public, the United Stated Environmental Protection Agency (USEPA), and any other interested parties are invited to submit comments on the draft Title V Operating Permit. An opportunity for a public hearing is also provided.

[1] In New Hampshire, new or modified emission units or emission control requirements are required to be established using the Temporary Permit process as specified in the New Hampshire Code of Administrative Rules, Env-A 607, *Temporary Permits*.

4. After all public comments have been received and evaluated by DES, a final determination regarding the permit is made by the Director of the Air Resources Division (Director). If the determination is favorable, the draft Title V Operating Permit is designated as "proposed" and sent to USEPA for further review. A draft Title V Operating Permit may be modified in response to comments received during the public comment period before it is sent to USEPA as a proposed Title V Operating Permit. A formal document is generated to address public comments and outline the changes made in response to these comments, if any. This document is called the "Findings of Fact and Director's Decision." The proposed Title V Operating Permit is reviewed by USEPA for up to 45 days. If USEPA has no objections within this timeframe, a final Title V Operating Permit is issued.

Any person aggrieved by the Director's decision can file an appeal with the Air Resources Council in accordance with the provisions of Env-A 622.09, *Appeals*.

Facility Description/Background

Public Service of New Hampshire (PSNH) - Schiller Station (PSNH Schiller) is a wood and fossil fuel-fired electricity generating facility owned and operated by Public Service of New Hampshire (PSNH), a subsidiary of Northeast Utilities. The facility includes three utility boilers: one wood and fossil fuel-fired boiler (designated as emission unit SR5) and two fossil fuel-fired boilers (designated as emission units SR4 and SR6). The facility also includes one combustion turbine (designated as emission unit SRCT). In addition to these electricity-generating units, the facility also includes an emergency generator, primary and secondary coal crushers, coal and wood handling systems, and various insignificant and exempt activities.

Emission units SR4 and SR6 are equipped with electrostatic precipitators to control the emissions of particulate matter (PM), and selective non-catalytic reduction (SNCR) systems and overfire air (OFA) to control nitrogen oxide (NOx) emissions. PSNH operates SNCR on units SR4 and SR6 as necessary to maintain compliance with NOx emission limits. PSNH is authorized to also operate fly ash reinjection systems on SR4 and SR6. Emission unit SR5 is equipped with a fabric filter to control the emissions of particulate matter and a SNCR system to control NOx emissions. SR5 is also equipped with a limestone injection system for the control of acid gases while burning coal. Each boiler stack is equipped with a continuous emissions monitoring system (CEMS) and a continuous opacity monitoring system (COMS).

Facility Title V Operating Permit History

PSNH Schiller is subject to the Title V Operating Permit program because it is a major source of air emissions as defined in Env-A 101.115, *Definitions* - "*Major Source*", and also because the three utility boilers are subject to the federal Acid Rain Program as specified in 40 Code of Federal Regulations (CFR) Parts 72, 73, 75, 76[2] and 77.

On March 9, 2007, DES issued Title V Operating Permit TV-OP-053 to PSNH Schiller. The Title V Operating Permit expired on March 31, 2012. Pursuant to Env-A 609.07 *Timely Application*, applications to renew Title V Operating Permits are due to DES six months prior to the expiration date of a facility's existing Title V Operating Permit. DES received PSNH Schiller's renewal application on September 30, 2011. Since the renewal application was received in a timely manner, the application shield provisions of Env-A 609.08, *Application Shield* apply. Also, for the purpose of updating this application, additional information was received on May 7, 2013.

Since the issuance of their original Title V Operating Permit, PSNH Schiller applied for and received four Temporary Permits: TP-B-0501, TP-0039, TP-0085 and TP-0106. Subsequently, PSNH Schiller submitted several applications for minor modifications to the Title V Operating Permit to incorporate these Temporary Permits into the Title V Operating Permit. The purpose of this permitting action is to renew the Title V Operating Permit and also incorporate the requirements of the aforementioned Temporary Permits into the Title V Operating Permit.

DES Review of Application for Renewal of Title V Operating Permit

DES conducted a technical and regulatory compliance review of the Title V Operating Permit renewal application. The current Title V Operating Permit was also reviewed and the applicable requirements were updated as necessary. Once DES completed its review, it prepared a "draft Title V Operating Permit". DES then published a public notice stating that the draft permit was available for review and comment. In accordance with Env-A 622, *Permit Notice and Hearing Procedures: Title V Operating Permits*, a notice of request for public comments and opportunity for a public hearing was published in the *Union Leader* and *Portsmouth Herald* on October 7, 2013. The notice invited public comment and indicated that any comments received during the public comment period would be considered by the Director in reaching a final decision. The public notice specified that the deadline for written comments was November 6, 2013.

No requests for a public hearing were received prior to the November 6, 2013 deadline. However, DES received written comments from The City of Portsmouth, New Hampshire, two environmental organizations, and multiple citizens prior to the November 6, 2013 deadline. Pursuant to Env-A 622.07, *Opportunity for Response*, copies of all comments received by DES were forwarded to PSNH Schiller for their review and comment, if desired. On November 19, 2013, PSNH Schiller notified DES that it did not have further comments on the draft permit. The public comments are addressed in the following discussion.

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[2] Part 76 applies to coal-fired utility units and as per 40 CFR 76.2, *Coal-fired utility unit* means a utility unit in which the combustion of coal (or any coal-derived fuel) on a Btu basis exceeds 50.0 percent of its annual heat input. SR5 is currently not an affected unit because it combusts wood only.

Response to Comments

DES reviewed and considered all comments received during the public comment period. DES determined that additional information was necessary in order to fully address the comments. DES requested additional information from PSNH in a letter dated December 6, 2013 (Attachment A). PSNH supplied the requested information in submittals received at DES on December 20, 2013, January 13, 2014 and March 3, 2014 (Attachment B). A summary of each comment and DES's response is presented below. Each response includes a statement as to whether DES made any changes to the permit or supporting documentation as a result of the comment.

City of Portsmouth

The City is supportive of the Northern Wood Power Project boiler (emission unit SR5). The City has concerns with the continued use of the two utility boilers (i.e., SR4 and SR6). The City requested that PSNH continue to adhere to best practices in the operation of these sources and actively pursue review of these coal fired boilers such that if a major repair or overhaul of one or both of these boilers is needed, that PSNH take steps to replace this older technology with cleaner, more modern, and more efficient technologies available today.

DES Response

DES believes that the conditions in the Title V Operating Permit are adequate to ensure continued operation of the plant in compliance with all currently applicable requirements. PSNH would likely be required to obtain a new Temporary Permit prior to the initiation of a future major repair or overhaul of the existing utility boilers. DES would review that application to ensure that the project complied with all state air permitting and federal Clean Air Act requirements. In accordance with Env-A 100 *et seq.*, the public would be provided the opportunity for review and comment on DES's draft decision.

No amendments to the draft Title V Operating Permit were made as a result of this comment.

Conservation Law Foundation (CLF)

1. **Utility MACT (also known as Mercury and Other Air Toxics Standards or "MATS") Provisions for SR4 & SR6** – *The draft Title V Operating Permit merely includes the date by which SR4 and SR6 are required to comply with MATS. DES must assess whether the current emissions limitations, control technologies, and monitoring and recordkeeping requirements applicable to SR4 and SR6 will assure compliance with the MATS. This evaluation should include a review of each hazardous air pollutant emitted by the facility, whether existing permit limitations will result in compliance with the standard, and if not, include requirements that will assure compliance. For example, demonstration of compliance with the standard for heavy metals may require the installation of particulate matter continuous emissions monitors.*

   DES Response

   Units SR4 and SR6 are affected units under 40 CFR 63 Subpart UUUUU, *National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Steam Generating Units* (also known as Mercury and Other Air Toxics Standards, or MATS). Both units SR4 and SR6 are considered existing electricity generating units (EGUs) under Subpart UUUUU.

Existing EGUs are required to comply with the applicable requirements of Subpart UUUUU by April 16, 2015. The MATS provides multiple compliance options, including emissions averaging, periodic compliance stack testing, and usage of continuous emissions or parametric monitoring systems.

At the time of the issuance of draft Title V Operating Permit, PSNH Schiller was still evaluating compliance options. Since the compliance strategy was not finalized, more specific MATS conditions – other than the single permit condition generally requiring compliance by the future compliance date – could not be included in the draft Title V Operating Permit.

On October 21, 2013, after issuance of the draft Title V Operating Permit, PSNH submitted a request (as provided for in 40 CFR Part 63 Subpart A, Section 63.6(i)) for a 1-year extension to comply with MATS (see Attachment C). PSNH provided supplemental information to its MATS extension request on December 17, 2013. In its request, PSNH stated that its compliance plan includes the installation of new air pollution control equipment (a Dry Sorbent Injection and Activated Carbon Injection System).

DES responded to PSNH's request in a letter dated January 10, 2014 (Attachment D). In its response, DES stated that it intends to grant the 1-year compliance extension through the issuance of a Temporary Permit for the proposed air pollution control equipment. On February 27, 2014, PSNH submitted an application for the Temporary Permit for the installation of a dry sorbent and activated carbon injection system. An electronic version of the application is available via DES's online OneStop Database at: http://des.nh.gov/onestop/

DES will review the Temporary Permit application for compliance with all applicable requirements, including the MATS. Facility-specific MATS testing, monitoring, recordkeeping and reporting requirements will be included in the Temporary Permit. In accordance with Env-A 100 *et seq.*, the public will be provided the opportunity to comment on DES's draft decision at that time.

No amendments to the draft Title V Operating Permit were made as a result of this comment.

2. **Quantification of Emissions from Cocoa Bean Shell/Biomass Project for SR4 and SR6 -** *The Draft Title V Operating Permit and Application Review Summary do not contain a quantification of any operational or emissions data resulting from the cocoa bean shell/"biomass" experiment. In order to verify the pre-project permitting analysis, DES should provide such operational and emissions data in its revisions to the Draft Title V Operating Permit. Stack test results for the trial burning of cocoa bean shells in emission unit SR6 (conducted in March 2009) indicate a possible increase in the maximum hourly emissions of PM. This could subject the units to the requirements of 40 CFR Part 60 Subpart Da, Standards of Performance of Electric Utility Steam Generating Units (Subpart Da).*

   DES Response

   PSNH originally submitted an application on October 16, 2009 (designated as application 09-0256), to allow co-combustion of cocoa bean shells with coal in emission units SR4 and SR6. The application contained emission test data derived from a previously approved trial test burn study conducted by PSNH on unit SR6 on March 3, 2009. DES concluded in 2009, based upon the trial test data, that the co-combustion of cocoa bean shells would not result in

an hourly increase in PM emissions from emission units SR4 or SR6. DES issued Temporary Permit TP-0039 on January 15, 2010, which allowed for the co-firing of cocoa bean shells in units SR4 and SR6. The original evaluation and conclusion is described in more detail in the application review summary for application 09-0256 (available via DES's online database at http://des.nh.gov/onestop/). TP-0039 was subsequently amended on January 26, 2011, to allow the use of biomass with a limitation of no more than 10% by weight of biomass in the coal/biomass mixture. DES has not received any information to indicate that the initial analysis is not valid.

Emission units SR4 and SR6 were installed prior to the applicability date of September 18, 1978 for Subpart Da. As per 40 CFR §60.40Da(c), changes to an existing fossil-fuel-fired steam generating unit to accommodate the use of combustible materials, other than fossil fuels, do not bring that unit under the applicability of Subpart Da. Therefore, as previously described in the application review summary for application 09-0256, co-firing of cocoa bean shells with coal in units SR4 and SR6 does not subject the units to Subpart Da.

No amendments to the draft Title V Operating Permit were made as a result of this comment.

3. **Inadequate monitoring of particulate matter emissions from Units SR4 & SR6 -** *The draft Title V Operating Permit requires stack testing for total suspended particulate matter (TSP) and PM less than 10 microns (PM_{10}) from SR4 and SR6 only once every five years, while SR4 and SR6 are subject to continuous emissions rate and annual TSP limits. The draft Title V Operating Permit and Application Review Summary fail to adequately explain how the monitoring requirements for measuring TSP and PM_{10} from SR4 and SR6 are sufficient to yield reliable data to demonstrate compliance with the permit limits. A single stack test conducted during the 5 year applicability period of a Title V permit is inadequate to measure compliance with an emissions rate limit and an annual limit. The most effective method of monitoring PM emissions from SR4 and SR6 would be PM CEMS. In the absence of a determination that PM CEMS are necessary for particulate monitoring, DES must require stack testing on at least a quarterly basis.*

DES Response

DES agrees that, if stack testing were the sole means of evaluating compliance with PM emission limits, testing once every five years may not be sufficient. However, stack testing is not the sole means of evaluating compliance with emission limits. In addition to the 5-year stack testing frequency requirement, the draft Title V Operating Permit contains parametric monitoring requirements which, in conjunction with the periodic stack testing, are intended to be used to evaluate compliance with the PM emission limits. These monitoring requirements are established under 40 CFR Part 64, *Compliance Assurance Monitoring* (CAM) as described below.

Emission Units SR4 and SR6 are subject to the requirements of CAM. CAM is required for emission units that rely on air pollution control devices to achieve compliance with the applicable emission limits. The intent of the CAM rule is to promote continued operation and maintenance of the pollution control device to assure compliance with the applicable emission limit. Units SR4 and SR6 are each subject to a PM emission limit of 0.10 lb/MMBtu. PM emissions from these units are controlled by two electrostatic precipitators (ESPs, designated as SR4-PC1 and SR6-PC1). Table 8 of the draft Title V Operating Permit includes CAM requirements for the two ESPs.

The CAM requirements included in Table 8 of the draft Title V Operating Permit established secondary voltage as the primary performance indicator for the ESPs. The measurement of secondary voltage (in kVDC) outside the indicator range specified in the CAM plan triggers an inspection, corrective action and a reporting requirement.

DES revisited the PM monitoring requirements as a result of this comment, including a comparison of the CAM requirements included in the draft permit with the CAM guidance issued by USEPA. While DES did not conclude that the installation of a PM CEMS or more frequent PM stack testing was warranted, DES did conclude that additional CAM requirements were warranted.

DES forwarded the current USEPA CAM guidance and an example ESP CAM plan to PSNH and requested that PSNH propose additional CAM measures to ensure consistency with this guidance. PSNH submitted an amended CAM plan on December 20, 2013 (see Attachment B), and its current ESP system Inspection and Preventative Maintenance (I/M) Plan on January 13, 2014 (see Attachment B). DES has added existing inspection and maintenance activities for the ESP to the CAM requirements in Table 8 of the Title V Operating Permit. The amended CAM plan requires that PSNH perform periodic inspections of the ESP system components according to the I/M Plan. Any equipment failures or issues identified during these inspections will require corrective action and reporting to DES. To summarize, the amended Title V Operating Permit utilizes a three-pronged approach for assuring compliance with the PM limit:

1. Periodic (once every 5 years) performance testing to demonstrate compliance with the specified emission limit of 0.10 lb/MMBtu;
2. Continuous parametric monitoring of actual operating conditions of the ESPs; and
3. Periodic inspection and maintenance requirements to ensure that the ESPs continue to operate properly.

With the addition of the inspection and maintenance requirements, the PM monitoring is consistent with USEPA CAM guidance and sufficient to evaluate compliance with PM emission limits.

4. Lack of Federally Enforceable Opacity Standard

The draft Title V Operating Permit fails to include a federally-enforceable opacity standard for SR4 and SR6. DES must include a legal and federally-enforceable opacity standard for SR4 and SR6 in its revisions to the draft Title V Operating Permit.

<u>DES Response</u>

Table 5, Item #38 of the draft Title V Operating Permit does include a federally-enforceable opacity standard for units SR4 and SR6.

No amendments to the draft Title V Operating Permit were made as a result of this comment.

Sierra Club

1. **Compliance with 1-hour Sulfur Dioxide (SO_2) National Ambient Air Quality Standards (NAAQS).**

   a. **The Draft Title V Permit Must be Revised to Include SO_2 Emission Limits Sufficient to Ensure Schiller Does Not Cause Exceedances of the NAAQS in New Hampshire -**

   The draft Title V Operating Permit includes an emission limit of 2.4 lb of SO_2 /MMBtu (calendar day average) for each of SR4 and SR6. As currently written, the Schiller Station draft Title V Operating Permit does not include SO_2 emission limits sufficient to protect human health or to ensure compliance with either the federal SO_2 standards or New Hampshire's own regulations. Further, the "calendar day average" period in the draft Title V Operating Permit is incapable of protecting the 1-hr SO_2 NAAQS.

   Based on the modeling analysis conducted by the Sierra Club, the SO_2 emission limit in the draft Title V permit must be revised to be at least as low as 0.41 lbs/MMBtu on an hourly averaging period, to ensure Schiller does not cause exceedances of the NAAQS in New Hampshire.

   DES Response

   DES has adopted the 1-hour SO_2 NAAQS (see Env-A 300), which was established by USEPA on June 22, 2010. New sources and existing sources that undertake modifications (e.g., installing a new device that meets modeling thresholds or modifying an existing device such that allowable emissions will increase) may be required to demonstrate compliance with the updated NAAQS using air dispersion modeling in order to obtain a permit to construct or modify the device. However, New Hampshire rules do not require all existing stationary sources to adjust their operations and accept limitations to prevent modeled exceedances of the NAAQS as the standards are updated.

   While existing sources may be required to demonstrate modeled compliance with the current NAAQS when and if they make certain changes, PSNH has not undertaken any changes at Schiller Station that would require them to demonstrate modeled compliance with the current NAAQS. Therefore, an ambient air quality dispersion analysis demonstrating modeled compliance with the 1-hour SO_2 NAAQS is not required for the renewal of Schiller Station's Title V Operating Permit, and DES did not impose any new permit conditions in the draft Title V Operating Permit designed to prevent modeled exceedances of the 1-hour SO_2 NAAQS.

   New Hampshire is in the process of evaluating SO_2 emissions from Schiller Station, and other regulated stationary sources, with respect to the 2010 primary 1-hour SO_2 NAAQS as part of the designation process for this new standard, but not as part of the evaluation of the application for renewal of the Title V Operating Permit. (See further discussion of the designation process in response to the Sierra Club's comment 1.b., below). No amendments to the draft Title V Operating Permit were made as a result of this comment.

b. **The Draft Title V Permit Must be Revised to Include SO_2 Emission Limits Sufficient to Ensure Schiller From Interfering with Maintenance of the NAAQS in Neighboring Communities in Maine**

Schiller Station most certainly does send much of its air pollution, including SO_2 pollution, out of New Hampshire and into 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 draft Title V Operating Permit, spreads over a vast area in both states. The draft Title V Operating Permit must be revised to include (hourly) SO_2 emission limits sufficient to prevent Schiller from interfering with maintenance of the NAAQS in neighboring communities in Maine.

DES Response

Section 110 of the Clean Air Act requires states to adopt regulations "prohibiting...any source or other type of emission 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". DES is aware of this requirement and, in fact, it is incorporated into New Hampshire's regulations at Env-A 615.01, *Special Emission Limitations*, as follows:

> Env-A 615.01, *Special Emission Limitations*. The department shall apply special emission limits to a stationary source to ensure that its 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 the NAAQS in those states. Significant deterioration shall be determined using the procedures found in 40 CFR 51, Appendix W.

DES is in the process of addressing its obligations relative to the 2010 1-hour SO_2 NAAQS. With the promulgation of the 2010 primary 1-hour SO_2 NAAQS, a series of analyses are required for a state to determine its attainment status with respect to the new standard. USEPA also established a process with deadlines for states to develop plans to continue to comply with and/or attain the new standard. One of the first steps in this process is for States to submit proposed attainment designations to USEPA for their review and approval.

New Hampshire has started its attainment designation process. In a July 6, 2011 letter from Governor John Lynch to the USEPA, New Hampshire recommended that USEPA designate most of the state as unclassifiable for the 1-hour SO_2 NAAQS, with the exception of a nonattainment area in the central part of the state surrounding the Pembroke, New Hampshire ambient air monitoring station. USEPA agreed with New Hampshire's recommendation and amended 40 CFR 81.330 to establish the nonattainment status of the Pembroke area. This current nonattainment area does not include Portsmouth or other abutting towns. The attainment status of Portsmouth and the majority of New Hampshire has not yet been established. Further, the attainment status for the 2010 1-hour SO_2 NAAQS has not yet been established for any areas in the State of Maine.

It is premature to attempt to address SO_2 emissions from Schiller Station relative to the 2010 1-hour SO_2 NAAQS until the attainment designation process is finalized, because the level and type of limitations required, if any, cannot be determined until that process is complete. For example, since the SO_2 attainment status in Maine has not yet been classified, there are no areas designated as nonattainment. Only when the status of these areas is established in accordance with federal rules and guidance will New Hampshire be able to determine what, if any, actions need to be taken at Schiller Station or at other sources in New Hampshire to fulfill its obligations relative to protecting the NAAQS both in New Hampshire and our neighboring States.

New Hampshire's anticipated future 2010 1-hour SO_2 NAAQS implementation actions are described below. Additional information published by USEPA regarding national implementation of the 2010 1-hour SO_2 NAAQS, including information regarding status of the attainment designation process, is available at http://www.epa.gov/airquality/sulfurdioxide/implement.html.

Historically, a state's attainment status with respect to a NAAQS has been determined using ambient air quality monitoring data only. However, for the 2010 1-hr SO_2 NAAQS, USEPA has indicated that a state may use air dispersion modeling analyses, ambient air monitoring data, or a combination of both to evaluate a state's attainment status. USEPA is still developing the implementation guidance of this new standard through a stakeholder process.

DES, Sierra Club, and many other interested parties have been involved in the USEPA's stakeholder process to provide input to USEPA regarding the use of ambient air dispersion modeling analyses in evaluating a state's attainment of the 1-hour SO_2 NAAQS. At this time, USEPA has not finalized its guidance or rules on the methods and extent to which modeling will be used in the implementation of the new standard. Once USEPA has finalized the implementation rules and provided sufficient guidance, New Hampshire will finalize its planning processes.

This entire process is ongoing and the form, extent, and timing of attainment designations, attainment plans, and, ultimately, emission limitations on existing sources relative to the 1-hour SO_2 NAAQS cannot be predicted at this time. New Hampshire's 1-hour SO_2 attainment evaluation and plan will also address any potential cross-state issues as required by Env-A 615.01 and referenced above. DES remains actively committed to the process and will proceed carefully, deliberately, and with the appropriate opportunity for public participation.

DES is also aware of the Clean Air Act (CAA) Section 126 petition filed by the Town of Eliot, Maine on September 3, 2013. USEPA is currently reviewing this petition. USEPA's response to this petition may require additional review of SO_2 emissions from PSNH Schiller Station.

No amendments to the draft Title V Operating Permit were made as a result of this comment.

2. The Draft Title V Permit Fails to Include Limits for $PM_{2.5}$ and condensable PM

As currently drafted, the Title V Permit fails to provide an emissions limit specific to $PM_{2.5}$. Instead, the permit merely sets limits for TSP emissions from units SR4 and SR6 while specifically qualifying those limits to refer to "the filterable portion only." This language does not distinguish between PM_{10} and $PM_{2.5}$, 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. The draft 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.

DES Response

Per 40 CFR §70.5(c) *Permit Applications*, applications for Title V Operating Permits are required to include emissions from the source of all regulated air pollutants. Particulate matter less than 2.5 microns ($PM_{2.5}$) is a regulated air pollutant. Historically, DES has used particulate matter less than 10 microns (PM_{10}) emissions as a surrogate for $PM_{2.5}$ emissions, which was consistent with previously issued USEPA guidance (*see* October 23, 1997 EPA memorandum *Interim Implementation of New Source Review Requirements for $PM_{2.5}$*, also known as the 1997 PM_{10} Surrogate Policy). USEPA promulgated the Clean Air Fine Particle Implementation Rule on April 25, 2007 (72 FR 20586). In the preamble to this final rule, USEPA stated that it will no longer accept the use of PM_{10} as a surrogate for $PM_{2.5}$ and thus required sources to include $PM_{2.5}$ emissions in their Title V permit applications (72 FR 20659). The "grandfather" provision for $PM_{2.5}$ under the federal PSD program was subsequently repealed by USEPA on May 18, 2011 (76 FR 28646).

The Title V Operating Permit application originally submitted by PSNH did not include $PM_{2.5}$ or condensable PM emission data from PSNH Schiller Station. As a result of this comment, DES requested that PSNH provide $PM_{2.5}$ emission data for each significant and insignificant activity at PSNH Schiller Station (see Attachment A). DES requested, but did not require, that PSNH provide condensable PM emission data. Upon further consultation with USEPA, DES determined that condensable PM emission data is required to be provided in a facility's Title V Operating Permit application and requested that PSNH provide condensable PM data. PSNH submitted this emission data on December 20, 2013, with additional information provided on January 13, 2014 and March 3, 2014. DES has amended the permit application review summary to include the inventory of PM_{10}, $PM_{2.5}$ and condensable PM emissions for PSNH Schiller Station.

While 40 CFR 70.5(c), as implemented based upon current USEPA guidance, does require that PM_{10}, $PM_{2.5}$ and condensable PM emissions information be included in an application for a Title V Operating Permit, PSNH Schiller Station is not currently subject to any applicable requirements for $PM_{2.5}$ or condensable PM. EPA did not require states to address condensable PM in establishing PM_{10} or $PM_{2.5}$ emission limits in New Source Review (NSR) permits prior to January 1, 2011 (see *Federal Register* Notice 73 FR 28321, Implementation of the New Source Review Program for Particulate Matter Less Than 2.5 Micrometers). For example, the PM and PM_{10} Prevention of Significant Deterioration (PSD) applicability emission limitations in Table 5, Item 7 of the draft Title V Operating Permit were established in Permits PO-B-1629 and PO-B-1631 issued on June 25, 1998, when the PM_{10} surrogate policy was in effect and prior to the requirement that condensable PM emissions be included in PSD applicability determinations. Therefore, DES does not agree that emission limits for

$PM_{2.5}$ and condensable PM are required to be established in the PSNH Schiller Station's Title V Operating Permit.

The permit application and permit application review summary were updated to include emission data for $PM_{2.5}$ and condensable PM emissions as a result of this comment. The facility description in Section I of the Title V Operating Permit was amended to clarify that PSNH Schiller Station meets the Title V major source thresholds for PM_{10} and $PM_{2.5}$ emissions. However, no other amendments to the draft Title V Operating Permit were made as a result of this comment.

3. **The Draft Title V Permit Contemplates Impermissibly Infrequent Stack Testing for PM**

As currently written, the draft Title V Operating Permit for Schiller Station would only require stack testing for PM emissions once every five years (i.e., one test per permit cycle). This is impermissibly infrequent, and must be revised. Also, mere opacity monitoring as contemplated in the draft permit, while salutary and an essential part of ensuring overall source compliance with the Clean Air Act, 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 that no harmful levels of PM are being emitted, because of condensable and transparent PM.

Schiller's Title V Operating 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 $PM_{2.5}$.

DES Response

See response to CLF's comment #3.

4. **NH DES May Not Excuse Schiller Station from Compliance with Clean Air Act Requirements**

The draft Title V Operating Permit offers Schiller's operation a shield "from enforcement action brought for noncompliance" with the permit's emission limits where that noncompliance is the "result of an emergency". The "Emergency Conditions" clause of the draft Title V Operating Permit (page 91, Permit Condition XXVII) should be removed before the permit is finalized.

DES Response

The permit language in Condition XXVII *Emergency Conditions* is based upon 40 CFR 70.6(g). DES reviewed New Hampshire's federally approved Title V Operating Permit program as specified in Env-A 609 and determined that it does not include the provisions of 40 CFR 70.6(g). Therefore, Title V Operating Permits issued in New Hampshire should not include the provisions of 40 CFR 70.6(g). DES has amended the permit by removing Condition XXVII.

Multiple Citizens

1. **NH DES should require PSNH Schiller Station to reduce the amount of sulfur dioxide it emits to the air.**

   "I am concerned that New Hampshire is proposing to issue a Title V air permit that allows Schiller Station to emit large amounts of air pollutants like sulfur dioxide into the air my family and I breathe. Schiller Station doesn't have any controls for sulfur dioxide--a dangerous pollutant that can cause asthma attacks and respiratory distress, particularly among children and the elderly."

   "I urge the NHDES to help protect the public's health and require Schiller Station to reduce the amount of sulfur dioxide it emits into the air, instead of continuing to allow Schiller to emit large amounts of this dangerous pollutant."

   DES Response

   DES received numerous similar comments requesting that DES require PSNH Schiller Station to reduce the amount of sulfur dioxide it emits into the air. PSNH Schiller Station is currently subject to numerous requirements that limit its emissions of sulfur dioxide (e.g., Permit Condition VIII B., Table 5, Items 2, 3, 6, 11, 12, 22, and 32, and Conditions VIII.C. and VIII.F.). As described above, PSNH Schiller Station has not undertaken any actions that would require the facility to reduce its emissions of sulfur dioxide beyond those already contained in the Title V Operating Permit. However, as also described above, there are several pending regulatory actions, including (as noted in response to a previous comment) USEPA's review of the CAA Section 126 petition, aimed at evaluating the sulfur dioxide emissions from PSNH Schiller Station, including a review of the 1-hour SO_2 NAAQS designation.

   No amendments to the draft Title V Operating Permit were made as a result of this comment.

Findings of Fact

DES has based its decision with respect to the application for renewal of the Title V Operating Permit for PSNH Schiller Station on the following findings of fact:

1. PSNH Schiller Station filed an application for the renewal of its existing Title V Operating Permit on September 30, 2011, in accordance with the requirements of Env-A 609.18, *Criteria for Permit Renewal.*
2. DES conducted a comprehensive review of the application, including additional information submitted by PSNH. In addition, DES considered comments provided during the public comment period. Based on its review and considerations, DES determined that PSNH Schiller Station is capable of being operated in compliance with all currently applicable state and federal air regulations.
3. DES has determined that the Title V Operating Permit, with amendments made as the result of public comments, contains adequate operating limitations, emissions limitations, monitoring conditions, recordkeeping conditions, and reporting conditions to ensure compliance with all applicable state and federal air regulations.

Director's Decision

After consideration of the Title V Operating Permit Application and all public comments, the application is approved and a Proposed Title V Operating Permit is hereby issued.

Any person aggrieved by this decision may appeal to the N.H. Air Resources Council ("Council") by filing an appeal that meets the requirements specified in RSA 21-O:14 and the rules adopted by the Council, Env-AC 200. The appeal must be filed **directly with the Council within 30 days** of the date of this decision and must set forth fully **every ground** upon which it is claimed that the decision complained of is unlawful or unreasonable. Only those grounds set forth in the notice of appeal can be considered by the Council.

Information about the Council, including a link to the Council's rules, is available at http://nhec.nh.gov/ (or more directly at http://nhec.nh.gov/air/index.htm). Copies of the rules also are available from the DES Public Information Center at (603) 271-2975.

Craig A. Wright

Craig A. Wright
Director
Air Resources Division

4/14/14
Date

Attachments:
A – DES Request for Additional Information
B – PSNH Response to Request for Additional Information
C – PSNH Request for MATS Extension
D – DES Response to Request for MATS Extension

cc: City of Portsmouth
Town of Eliot, ME
Public Commenters
Donald Dahl, USEPA Region I (via e-mail)
Eric Kennedy, MEDEP (via e-mail)

ATTACHMENT A

The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

December 6, 2013

Mr. William Smagula
Vice President - Generation
Public Service Company of New Hampshire
780 North Commercial Street, P.O. Box 330
Manchester, NH 03105

Re: Permit Application Request for Additional Information
Public Service Company of New Hampshire (PSNH) - Schiller Station
400 Gosling Road, Portsmouth, New Hampshire
Facility ID # 3301500012; Application #11-0134

Dear Mr. Smagula:

On October 7, 2013, the New Hampshire Department of Environmental Services, Air Resources Division (DES) issued a draft Title V Operating Permit for the Public Service of New Hampshire (PSNH) Schiller Station facility located in Portsmouth, New Hampshire. During the public comment period, interested parties submitted comments on the draft Title V Operating Permit. DES has determined that additional information from PSNH is warranted in order for DES to make a final decision relative to the Title V Operating Permit application. In accordance with New Hampshire Code of Administrative Rules Env-A 622.08(d), DES hereby requests that PSNH provide additional information as described below. DES requests that PSNH provide a written response to this request within 30 days of the date of this letter.

The following is the list of matters DES requests that PSNH address:

1. Particulate Matter less than 2.5 microns ($PM_{2.5}$) Emissions

Per the Code of Federal Regulations (CFR), 40 C.F.R. §70.5(c) *Permit Applications*, Title V applications are required to include emissions from the source of all regulated air pollutants. Particulate matter less than 2.5 microns ($PM_{2.5}$) is a regulated air pollutant. Historically, DES has used particulate matter less than 10 microns (PM_{10}) emissions as a surrogate for $PM_{2.5}$ emissions, which was consistent with previously issued United States Environmental Protection Agency (USEPA) guidance. However, USEPA discontinued the "surrogate policy" upon publication of the Clean Air Fine Particulate Implementation Rule in 2007 (72 Fed. Reg. 20659). Separate and distinct emission data for $PM_{2.5}$ and PM_{10} are now required in applications for Title V Operating Permits.

The Title V application submitted by PSNH does not include $PM_{2.5}$ emission data from Schiller Station and DES did not previously request this data. DES requests that PSNH provide the following $PM_{2.5}$ emission data for each significant and insignificant activity at Schiller Station:

a. The potential and actual emissions in pounds per hour;
b. The potential and actual emissions in tons per year; and
c. The method, including example calculations and emission factors, used to determine the emissions.

With the exception of Prevention of Significant Deterioration (PSD) applicability review and requirements, DES only requires that the filterable portion of $PM_{2.5}$ be included in air permitting evaluations. Therefore, the $PM_{2.5}$ emission data that DES is requesting at this time need only include the filterable portion of $PM_{2.5}$. If available, DES would appreciate PSNH including condensable $PM_{2.5}$ emission data for informational purposes only.

2. **Particulate Matter Pollution Control Equipment - Compliance Assurance Monitoring Plan**

   The draft Title V Operating Permit included Compliance Assurance Monitoring (CAM) requirements for particulate matter emissions from emission units SR4 and SR6. Two commenters noted that the particulate monitoring required in the draft permit was not sufficient to determine continuous compliance with the particulate matter emission limit of 0.10 lb/MMBtu. DES agrees that additional monitoring requirements for particulate emissions are appropriate. Specifically, DES believes that inspection and maintenance procedures for the electrostatic precipitators (ESPs) should be included in the CAM plan. DES requests that PSNH submit an updated CAM plan that includes preventative maintenance procedures for the two ESPs.

If you have any questions concerning this matter, please contact Padmaja Baru of the Air Resources Division, Permitting and Environmental Health Bureau, by phone at (603) 271-0905 or by e-mail at padmaja.baru@des.nh.gov.

Sincerely,

Gary D. Milbury, Jr.
Air Permit Programs Manager
Permitting & Environmental Health Bureau

By certified mail # 7011 1570 0003 6777 9416

cc: Sheila Burke, PSNH (via email)
Donald Dahl, USEPA (via email)
Caitlin Peale, Conservation Law Foundation (via email)
Zachary Fabish, The Sierra Club (via email)

ATTACHMENT B

Public Service of New Hampshire
A Northeast Utilities Company

PSNH Energy Park
780 North Commercial Street, Manchester, NH 03101

Public Service Company of New Hampshire
P.O. Box 330
Manchester, NH 03105-0330
(603) 634-2851
william.smagula@nu.com

William H. Smagula, P.E.
Vice President - Generation

D32691

December 18, 2013

Mr. Craig A. Wright, Acting Director
Air Resources Division
NH Department of Environmental Services
29 Hazen Drive, PO Box 95
Concord, NH 03302-0095

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Public Service Company of New Hampshire
Schiller Station Facility ID#3301500012: Application #11-0134
Permit Application Request for Additional Information (2)

Dear Mr. Wright:

Public Service Company of New Hampshire (PSNH) is providing the following information in response to Air Resources Division's letter dated December 6, 2013, requesting additional information to support the Division's final decision relative to the Schiller Station's Title V Operating Permit Renewal Application. In response to the Division's request, PSNH is providing the following documents as attachments to this submittal.

1. *DES requests that PSNH provide the following $PM_{2.5}$ emission data for each significant and insignificant activity at Schiller Station:*
   a. *The potential and actual emissions in pound per hour;*
   b. *The potential and actual emissions in tons per year; and,*
   c. *The method, including example calculations and emission factors, used to determine the emissions.*

Schiller's emission inventory has been updated to include $PM_{2.5}$ emissions for each significant and insignificant activity located at the Station. The updated emissions inventory is found in Attachment 1.

2. *DES requests that PSNH submit an updated CAM plan that includes preventative maintenance procedures for the two ESPs.*

Attachment 2 contains an updated CAM plan that includes preventative maintenance procedures as an additional indicator for the two ESPs.

Should you have any questions, please contact Sheila A. Burke, Senior Compliance Consultant – Generation at (603) 634-2512 or sheila.burke@nu.com.

I am authorized to make this submittal on behalf of the facility for which the submission is made. Based on information and belief formed after reasonable inquiry, I certify that the statements and information in the enclosed documents are to the best of my knowledge and belief true, accurate and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Sincerely,

William H. Smagula, P.E.
Vice President – Generation

Enclosures

Cc: Gary D. Millbury, NHARD (via email)
Padmaja Baru, NHARD (via email)
Todd Moore, NHARD (via email)

TABLE 3
CRITERIA POLLUTANT INVENTORY

Public Service Company of New Hampshire
Schiller Station
Portsmouth, New Hampshire

Pollutant	SR4 (biomass)		SR6 (biomass)		SR4 (coal)		SR6 (coal)		SR4 (oil)		SR6 (oil)		SR5 (Wood)	
	Actual Emissions (tons/yr)	Potential Emissions (tons/yr)	Actual Emissions (tons/yr)	Potential Emissions (tons/yr)	Actual Emissions (tons/yr)	Potential Emissions (tons/yr)	Actual Emissions (tons/yr)	Potential Emissions (tons/yr)	Actual Emissions (tons/yr)	Potential Emissions (tons/yr)	Actual Emissions (tons/yr)	Potential Emissions (tons/yr)	Actual Emissions (tons/yr)	Potential Emissions (tons/yr)
Fuel Use	180 tons	19,719 tons	180 tons	19,719 tons	114,928 tons	197,188 tons	108,321 tons	197,188 tons	300,594 gal	33,579,971 gal	69,552 gal	33,579,971 gal	524,791 tons	870,140 tons
SO_2	0.03	3.78	0.03	3.78	1622.60	6033.89	1602.64	6033.89	23.60	5272.06	5.46	5272.06	1.70	63.07
NO_x	0.30	32.54	0.30	32.54	409.69	1156.50	408.20	1156.50	0.01	1158.51	1.39	1158.51	165.90	236.5
PM	0.07	7.99	0.07	7.99	28.38	251.41	6.35	251.41	0.016	251.88	0.003	251.88	2.65	31.50
PM_{10}	0.05	5.92	0.05	5.92	19.02	168.45	4.12	168.45	0.009	158.07	0.002	158.07	1.90	23.31
$PM_{2.5}$	0.05	5.03	0.05	5.03	8.23	72.91	1.78	72.91	0.000	103.26	0.001	103.26	1.32	20.48
Condensible PM	0.02	2.51	0.02	2.51	48.13	341.29	45.36	341.29	0.23	25.18	0.05	25.18	45.98	53.61
CO	0.81	88.73	0.81	88.73	28.73	49.20	27.05	49.20	0.13	83.95	0.17	83.95	7.96	315.4
VOC	0.025	2.51	0.027	2.51	3.45	6.17	2.35	6.17	0.11	12.76	0.03	12.76	15.26	15.80

Fuel Type	Emission Factors									
	SO_2	NO_x	CO	VOC	PM	PM10	PM2.5	Condensible PM	Heat Content	AP-42 Citations
Boilers										
Biomass	0.025 (lb/mmbtu)	0.22 (lb/mmbtu)	0.6 (lb/mmbtu)	0.017 (lb/mmbtu)	0.054 (lb/mmbtu)	0.04 (lb/mmbtu)	0.034 (lb/mmbtu)	0.017 (lb/mmbtu)	15 mmbtu/ton	Table 1.6-1 and 1.6-3
Coal	Site Data	Site Data	0.3 lb/ton	0.05 lb/ton	See Note 5	67% PM	20% PM	0.18-0.03 (lb/mmbtu)	25.5 mmbtu/ton	Tables 1.1-3, 1.1-6, 1.1-19, and onsite data
Oil	1575 lb/1,000 gal	40 lb/1000 gal	5 lb/1000 gal	0.76 lb/1000 gal	0.1 lb/1,000 gal	83% PM	41% PM	1.5 lb/1,000 gal	153.8 mmbtu/1,000 gal	Tables 1.3-1, 1.3-2, 1.3-4 and onsite data
Wood	0.025 (lb/mmbtu)	0.22 (lb/mmbtu)	0.003 (lb/mmbtu)	0.005 (lb/mmbtu)	See Note 2	74% PM	65% PM	0.017 lb/mmbtu	5,054 BTU/lb	Tables 1.6-1, 1.6-3 and onsite data
Gas	0.6 lb/mmscf	140 lb/mmscf	84 lb/mmscf	5.5 lb/mmscf	1.9 lb/mmscf	1.9 lb/mmscf	1.9 lb/mmscf	5.7 lb/mmscf	N/A	Tables 1.4-1 and 1.4-2
Turbines										
#1 Fuel Oil	1.01E-4 lb/mmbtu	0.9 lb/mmbtu	0.11 lb/mmbtu	0.00041 lb/mmbtu	0.0041 lb/mmbtu	100% PM	100% PM	0.0071 lb/mmbtu	133,831 btu/gal	Table 3.1-2a and NH AP-42 Table
Gas	0.0034 (lb/mmbtu)	0.5 lb/mmbtu	0.082 lb/mmbtu	0.0021 lb/mmbtu	0.0013 lb/mmbtu	0.0019 lb/mmbtu	0.0019 lb/mmbtu	0.0047 lb/mmbtu	1,020 btu/scf	Table 3.1-2a
Emergency Generator										
Gas	5.88E-4 lb/mmbtu	0.847 lb/mmbtu	0.557 lb/mmbtu	0.118 lb/mmbtu	7.71E-05 lb/mmbtu	7.71E-05 lb/mmbtu	7.71E-05 lb/mmbtu	9.91E-03 lb/mmbtu	1,020 btu/scf	Table 3.3-2

Notes

1 S for oil is defined as the percent sulfur of the fuel. The sulfur content of the fuel was 1%, therefore 1 was used as S in the calculations
2 Actual emissions are based on 2010 fuel usage
3 Actual emissions of NOx and SO2 from SR4, SR5 and SR6 are based on continuous monitoring data. Emissions of VOC and CO from SR4, SR5 and SR6 were estimated based on AP42 emission factors
4 Natural Gas is used for boiler ignition and is not a primary fuel for SR4, SR5, and SR6. Emissions for Natural Gas in SR5 are based on the permit limit of 1.261 mmcf and AP42 emission factors
5 Actual PM emissions for SR4 (coal), SR5 (wood) and SR6 (coal) are based on unit specific emission factors derived from stack testing as reported to NHDES, and 12,348 BTU/pound of coal
SR4 (actual coal) = 0.02 lb PM / MMBTU, SR5 (actual wood) = 0.001 lb PM/MMBTU, SR6 (actual coal) = 0.0046 lb PM/MMBTU
6 The ESP Efficiency of 99.2% for SR4 and SR6 was derived from stack testing data
7 Potential PM emissions for SR4, SR5 and SR6 are based on permit limitations
8 PM, PM10 and PM2.5 emissions represent the filterable fraction for each particle size range. Condensible particulate is listed separately in the table
9 Actual condensible particulate matter emissions for coal combustion in SR4 and SR6 were estimated based upon an average coal sulfur content of 0.64 percent by weight and 12,348 BTU per pound of coal
10 Potential condensible particulate matter emissions for coal combustion in SR4 and SR6 were based upon an average coal sulfur content of 1.3 pounds of sulfur/MMBTU and 12,750 BTU per pound of coal
11 Potential condensible particulate matter emissions for coal combustion in SR5 was based upon an average coal sulfur content of 1.0 pounds of sulfur/MMBTU and 12,750 BTU per pound of coal
12 Potential condensible particulate matter emissions for wood combustion in SR5 was based upon the heat rating of 720 MMBTU/hr and 8760 hours per year
13 An estimated heat content of 7500 BTU per pound (15 mmBTU/ton) was used for dry biomass combustion in SR4 and SR6
14 The annual average heat content of wood combusted in SR5 was 5,054 BTU per pound
15 The potential heat rating of both SR4 and SR6 is 575 MMBtu/hr for oil and 574 MMBtu/hr for coal

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TABLE 3
CRITERIA POLLUTANT INVENTORY

Public Service Company of New Hampshire
Schiller Station
Portsmouth, New Hampshire

Pollutant	SR5 (Coal)		SR4 (Gas)		SR5 (Gas)		SR6 (Gas)		Combustion Turbine (#1 oil; JP-4)		Combustion Turbine (gas)		Emergency Generator (gas)		Totals	
	Actual Emissions (tons/yr)	Potential Emissions (tons/yr)	Actual Emissions (tons/yr)	Potential Emissions4 (tons/yr)	Actual Emissions (tons/yr)	Potential Emissions3 (tons/yr)	Actual Emissions (tons/yr)	Potential Emissions4 (tons/yr)	Actual Emissions (tons/yr)	Potential Emissions (tons/yr)	Actual Emissions (tons/yr)	Potential Emissions (tons/yr)	Actual Emissions (tons/yr)	Potential Emissions (tons/yr)	Actual Emissions (tons/yr)	Potential Emissions (tons/yr)
Fuel Use	0 tons	204,108 tons	0.12 MMscf	0 MMscf	5.76 MMscf	1,261 MMscf	5.18 MMscf	0 MMscf	36,907 gal	33,000,000 gal	0.00 MMscf	7.546 MMscf	0.06 MMscf	0.75 MMscf	-	-
SO_2	-	333.80	0.00004	-	0.002	0.38	0.00006	-	0.10	46.98	-	4.39	0.00002	0.0002	3256.26	12448.56
NO_x	-	236.5	0.009	-	0.40	88.27	0.01	-	3.43	837.25	-	1143.18	0.03	0.32	995.30	3697.02
PM	-	31.50	0.0001	-	0.01	1.28	0.0002	-	0.02	4.80	-	2.41	0.0000024	0.23	37.37	339.43
PM_{10}	-	21.11	0.0001	-	0.01	1.20	0.0002	-	0.02	4.00	-	2.41	0.0000024	0.23	25.24	364.43
$PM_{2.5}$	-	9.14	0.0001	-	0.01	1.20	0.0002	-	0.02	4.00	-	2.41	0.0000024	0.23	11.80	231.23
Condensable PM	-	269.79	0.0004	-	0.02	3.59	0.0005	-	0.03	0.70	-	0.09	0.0000133	0.0036	138.94	959.87
CO	-	815.4	0.005	-	0.24	52.96	0.008	-	0.42	302.33	-	106.22	0.02	0.21	67.06	509.31
VOC	-	15.80	0.0005	-	0.02	3.45	0.0005	-	0.002	0.38	-	2.22	0.004	0.05	26.17	44.09

SUPPORTING CALCULATIONS
TOTAL FACILITY EMISSIONS FOR ARD-1
Public Service Company of New Hampshire
Schiller Station
Portsmouth, New Hampshire

POTENTIAL EMISSIONS

Pollutant	SR4	SR5	SR6	SRCT	SREG	Total
Hourly (lb/hr)						
SO_2	1,377.6	76.2	1,377.6	17.4	0.001	2,848.8
NO_X	287.5	54.0	287.5	261.0	1.3	891.3
CO	20.3	72.0	65.1	31.9	0.8	190.1
PM	57.5	7.2	57.5	29.0	0.9	152.1
$PM_{2.5}$	23.6	4.7	23.6	8.4	0.9	61.1
CPM	119.9	92.4	119.9	2.8	0.01	335.0
VOC	2.9	3.6	2.9	0.0	0.2	9.6
Annual (tons/yr)						
SO_2	6,033.9	333.8	6,033.9	47.0	0.0	12,448.5
NO_X	1,158.5	236.5	1,158.5	1,143.2	0.3	3,697.0
CO	88.7	315.4	88.7	106.2	0.2	599.3
PM	251.9	31.5	251.9	4.0	0.2	539.4
$PM_{2.5}$	103.3	20.5	103.3	4.0	0.2	231.2
CPM	341.3	269.8	341.3	6.7	0.004	959.1
VOC	12.8	15.8	12.8	2.7	0.0	44.1

2010 ACTUAL EMISSIONS

Pollutant	SR4	SR5	SR6	SRCT	SREG	Total
Op. Hours	7213	7811	6892.25	72.27	27.38	-
Hourly (lb/hr)						
SO_2	456.5	0.4	466.6	5.3	0.016	928.9
NO_X	115.3	42.6	118.9	95.0	23.7	395.3
CO	8.4	2.1	8.1	11.6	1.3	31.5
PM	7.9	0.7	1.8	0.5	16.4	27.3
$PM_{2.5}$	2.3	0.4	0.5	0.5	0.00018	3.7
CPM	13.4	11.5	13.2	0.8	0.023	38.9
VOC	1.0	3.4	1.0	0.043	3.3	8.7
ANNUAL (tons)						
SO_2	1,646.2	1.7	1,608.1	0.2	0.0002	3,256.2
NO_X	415.7	166.2	409.6	3.4	0.3	995.3
CO	30.3	8.2	28.1	0.4	0.0	67.0
PM	28.5	2.7	6.2	0.02	0.2	37.6
$PM_{2.5}$	8.3	1.7	1.8	0.02	0.000002	11.9
CPM	48.4	45.1	45.4	0.03	0.0003	138.9
VOC	3.6	13.3	3.4	0.002	0.05	20.3

Notes:
1. Potential emissions for SR5 are from Temporary Permit TP-0085, reissued March 7, 2006, Table 5.
2. Potential emissions of PM, SO_2 and NO_X for SR4 and SR6 are from Title V Operating Permit TV-OP-053, March 9, 2007, Table 6.
3. Potential emissions of CO and VOC based on AP-42 emission factors (see supporting calculations).
4. Average hourly emissions based on actual annual emissions divided by operating hours.
5. Insignificant activity emissions are separately documented in the insignificant activity inventory information.
6. Potential hourly CPM emissions are based on maximum allowable coal sulfur content for each unit.

SUPPORTING CALCULATIONS
PM2.5 SAMPLE CALCULATIONS
Public Service Company of New Hampshire
Schiller Station
Portsmouth, New Hampshire

SR4 PM2.5 Potential Emissions - Biomass

$PM_{2.5}$ (lb/hr)	=	$PM_{2.5}$ Emission Factor (lb/MMBTU)	x	Biomass Cofiring (%)	x	Max Coal Combustion	x	Biomass Heat Content
1.15 lb/hr	=	0.034 lb/MMBTU	x	10%	x	22.5 tons/hr	x	15.0 MMBTU/ton
$PM_{2.5}$ (tons/yr)	=	$PM_{2.5}$ (lb/hr)	x	8,760 hours/yr	÷	2,000 lbs/ton		
5.03 tons/yr	=	1.15 lb/hr	x	8,760 hours/yr	÷	2,000 lbs/ton		

SR4 PM2.5 Potential Emissions - Coal

$PM_{2.5}$ (lb/hr)	=	PM Emission Limit (lb/MMBTU)	x	$PM_{2.5}$ Fraction (%)	x	Boiler Heat Input (MMBTU/hr)
16.68 lb/hr	=	0.10 lb/MMBTU	x	29%	x	575 MMBTU/hr
$PM_{2.5}$ (tons/yr)	=	$PM_{2.5}$ (lb/hr)	x	8,760 hours/yr	÷	2,000 lbs/ton
73.04 tons/yr	=	16.68 lb/hr	x	8,760 hours/yr	÷	2,000 lbs/ton

SR4 PM2.5 Potential Emissions - Oil

$PM_{2.5}$ (lb/hr)	=	PM Emission Limit (lb/MMBTU)	x	$PM_{2.5}$ Fraction (%)	x	Boiler Heat Input (MMBTU/hr)
23.58 lb/hr	=	0.10 lb/MMBTU	x	41%	x	575 MMBTU/hr
$PM_{2.5}$ (tons/yr)	=	$PM_{2.5}$ (lb/hr)	x	8,760 hours/yr	÷	2,000 lbs/ton
103.26 tons/yr	=	23.58 lb/hr	x	8,760 hours/yr	÷	2,000 lbs/ton

SR4 PM2.5 Actual Emissions - Biomass

$PM_{2.5}$ (lb/year)	=	$PM_{2.5}$ Emission Factor (lb/MMBTU)	x	Biomass Cofiring (tons/yr)	x	Biomass Heat Content (MMBTU/ton)
91.80 lb/yr	=	0.034 lb/MMBTU	x	180 tons	x	15.0 mmbtu/ton
$PM_{2.5}$ (lb/hr)	=	$PM_{2.5}$ (lb/yr)	÷	operating hours/yr		
0.01 lb/hr		91.80 lb/yr	÷	7,213 hours/yr		
$PM_{2.5}$ (ton/yr)	=	$PM_{2.5}$ (lb/yr)	÷	2,000 lbs/ton	÷	2,000 lbs/ton
0.05 tons/yr	=	91.80 lb/hr	÷	2,000 lbs/ton		

SUPPORTING CALCULATIONS
PM2.5 SAMPLE CALCULATIONS
Public Service Company of New Hampshire
Schiller Station
Portsmouth, New Hampshire

SR4 PM2.5 Actual Emissions - Coal

$PM_{2.5}$ (tons/yr)	=	PM Emission Factor (lb/MMBTU)	x	$PM_{2.5}$ Fraction (%)	x	Coal Heat Input (MMBTU/yr)		
8.23 tons/yr	=	0.02 lb/MMBTU	x	29%	x	2,838,262 MMBTU/yr	÷	2,000 lbs/ton
$PM_{2.5}$ (lb/hr)	=	$PM_{2.5}$ (tons/yr)	x	2,000 lbs/ton	÷	operating hours/yr		
2.28 lb/hr	=	8.23 tons/yr	x	2,000 lbs/ton	÷	7,213 hours/yr		

SR4 combusted 114,928 tons of coal in 2010 with an average heat content of 12,348 BTU/lb

SR4 PM2.5 Actual Emissions - Oil

$PM_{2.5}$ (tons/yr)	=	PM Emission Factor (lb/MMBTU)	x	$PM_{2.5}$ Fraction (%)	x	Fuel Use (1000 gal/yr)	x	1 - ESP Control Efficinecy (%)
			÷	2,000 lbs/ton				
0.006 tons/yr	=	12.41 lb/1000 gal	x	41%	x	300,594 Mgal/yr	x	0.8%
			÷	2,000 lbs/ton				
$PM_{2.5}$ (lb/hr)	=	$PM_{2.5}$ (tons/yr)	x	2,000 lbs/ton	÷	operating hours/yr		
0.002 lb/hr	=	0.006 tons/yr	x	2,000 lbs/ton	÷	7,213 hours/yr		

SR4 combusted 300,595 gallons of #6 fuel oil in 2010 with an sulfur content of 1.0% by weight
ESP Control efficiency is 99.2%

AP-42 PM (lb/1000 gal)	=	9.19	x	Weight % Sulfur	+	3.22
12.41 lb/1000 gal		9.19	x	1.0	+	3.22

TABLE I
REVISED LIST OF INSIGNIFICANT ACTIVITIES

Public Service Company of New Hampshire
Schiller Station
Portsmouth, New Hampshire

Insignificant Activity	Annual Actual Emissions (lbs/yr)	Annual Actual Emissions (ton/yr)	Annual Actual Emissions (lbs/hr)	Emissions Notes
Fuel Oil Tank (NT-1) - Total Emissions	48.29	0.02	5.51E-03	Estimated Using USEPA's Tanks 4.09D model
PM_{10} Emissions	-	-	-	Negligible PM Emissions
$PM_{2.5}$ Emissions	-	-	-	Negligible PM Emissions
Fuel Oil Tank (NT-2) - Total Emissions	48.29	0.02	5.51E-03	Estimated Using USEPA's Tanks 4.09D model
PM_{10} Emissions	-	-	-	Negligible PM Emissions
$PM_{2.5}$ Emissions	-	-	-	Negligible PM Emissions
Fuel Oil Tank (SR-2) - Total Emissions	11.32	5.66E-03	1.29E-03	Estimated Using USEPA's Tanks 4.09D model
PM_{10} Emissions	-	-	-	Negligible PM Emissions
$PM_{2.5}$ Emissions	-	-	-	Negligible PM Emissions
Fuel Oil Tank (SR-3) - Total Emissions	17.33	8.66E-03	1.98E-03	Estimated Using USEPA's Tanks 4.09D model
PM_{10} Emissions	-	-	-	Negligible PM Emissions
$PM_{2.5}$ Emissions	-	-	-	Negligible PM Emissions
Boiler Chemical Cleaning - Total Emissions	818.60	0.41	0.09	Naphthalene (6.7#), acetic acid (0.8#), ethylene glycol (0.2#), metals (811.3# - ca, cr, cu, fe, mg, mn, ni, zn)
PM_{10} Emissions	-	-	-	Negligible PM Emissions
$PM_{2.5}$ Emissions	-	-	-	Negligible PM Emissions
50% Urea Storage Tanks (2) - Total Emissions	No Data	No Data	No Data	Negligible - Urea solution has low volatility
PM_{10} Emissions	-	-	-	Negligible PM Emissions
$PM_{2.5}$ Emissions	-	-	-	Negligible PM Emissions
NAOH Storage - Total Emissions	No Data	No Data	No Data	Negligible - NAOH has low volatility
PM_{10} Emissions	-	-	-	Negligible PM Emissions
$PM_{2.5}$ Emissions	-	-	-	Negligible PM Emissions
H2SO4 Storage - Total Emissions	No Data	No Data	No Data	Negligible - H2SO4 has low volatility
PM_{10} Emissions	-	-	-	Negligible PM Emissions
$PM_{2.5}$ Emissions	-	-	-	Negligible PM Emissions
Jet Fuel Tanks - Total Emissions	No Data	No Data	No Data	Negligible - Jet fuel has low volatility
PM_{10} Emissions	-	-	-	Negligible PM Emissions
$PM_{2.5}$ Emissions	-	-	-	Negligible PM Emissions
Coal Yard Diesel Tank - Total Emissions	No Data	No Data	No Data	Negligible - Diesel fuel has low volatility
PM_{10} Emissions	-	-	-	Negligible PM Emissions
$PM_{2.5}$ Emissions	-	-	-	Negligible PM Emissions
Pyrite Dumping (Units 4&6) - Total Emissions	13.30	6.65E-03	1.52E-03	Pyrite dumping 365 tons@ 0.07707 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 0.25%
PM_{10} Emissions	13.30	6.65E-03	1.52E-03	Pyrite dumping 365 tons@ 0.03645 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 0.25%
$PM_{2.5}$ Emissions	2.01	1.01E-03	2.30E-04	Pyrite dumping 365 tons@ 0.00552 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 0.25%
Fly Ash Loading - Total Emissions	568.72	0.28	0.06	Fly ash loading of 41,175 tons@ 0.0292 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 0.5%
PM_{10} Emissions	568.72	0.28	0.06	Fly ash loading of 41,175 tons@ 0.01381 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 0.5%
$PM_{2.5}$ Emissions	86.12	0.04	9.83E-03	Fly ash loading of 41,175 tons@ 0.00209 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 0.5%
Unit 5 Cyclone Dumper - Total Emissions	No Data	No Data	No Data	Outage only, carried out by Clean Harbors
PM_{10} Emissions	No Data	No Data	No Data	Outage only, carried out by Clean Harbors
$PM_{2.5}$ Emissions	No Data	No Data	No Data	Outage only, carried out by Clean Harbors
Chem. Lab - Total Emissions	No Data	No Data	No Data	Negligible emissions
PM Emissions	-	-	-	Negligible PM Emissions
PM_{10} Emissions	-	-	-	Negligible PM Emissions
$PM_{2.5}$ Emissions	-	-	-	Negligible PM Emissions
Small Baghouse on Fly Ash Silo - Total Emissions	13.65	6.82E-03	1.56E-03	Using AP-42 11.12, 0.00099 lb/ton for pneumatic cement silo loading @ 40,147 ton/yr in 2009
PM_{10} Emissions	13.65	6.82E-03	1.56E-03	Using AP-42 11.12, 0.00034 lb/ton for pneumatic cement silo loading @ 40,147 ton/yr in 2009
$PM_{2.5}$ Emissions	6.02	3.01E-03	6.87E-04	Using AP-42 11.12, 0.00015 lb/ton for pneumatic cement silo loading @ 40,147 ton/yr in 2009 and 15% PM2.5 from Table B.2.2 category 3.
Small Baghouse on Wood Fuel Silo (2) - Total Emissions	1.46	7.32E-04	1.67E-04	Using AP-42 11.12, 0.00099 lb/ton for pneumatic cement silo loading @ 4,306 ton/yr in 2009
PM_{10} Emissions	1.46	7.32E-04	1.67E-04	Using AP-42 11.12, 0.00034 lb/ton for pneumatic cement silo loading @ 4,306 ton/yr in 2009
$PM_{2.5}$ Emissions	0.65	3.23E-04	7.37E-05	Using AP-42 11.12, 0.00015 lb/ton for pneumatic cement silo loading @ 4,306 ton/yr in 2009 and 15% PM2.5 from Table B.2.2 category 3.
Small Baghouse on Wood Ash Silo - Total Emissions	188.69	0.09	0.02	Using AP-42 11.12, 0.00099 lb/ton for pneumatic cement silo loading @ 554,975 ton/yr in 2009
PM_{10} Emissions	188.69	0.09	0.02	Using AP-42 11.12, 0.00034 lb/ton for pneumatic cement silo loading @ 554,975 ton/yr in 2009
$PM_{2.5}$ Emissions	83.25	0.04	9.50E-03	Using AP-42 11.12, 0.00015 lb/ton for pneumatic cement silo loading @ 554,975 ton/yr in 2009 and 15% PM2.5 from Table B.2.2 category 3.
Limestone Silo Dust Collector - Total Emissions	-	-	-	Using AP-42 11.12, 0.00099 lb/ton for pneumatic cement silo loading @ 0 ton/yr maximum. Not currently in use.
PM_{10} Emissions	-	-	-	Using AP-42 11.12, 0.00034 lb/ton for pneumatic cement silo loading @ 0 ton/yr maximum. Not currently in use.
$PM_{2.5}$ Emissions	-	-	-	Using AP-42 11.12, 0.00015 lb/ton for pneumatic cement silo loading @ 0 ton/yr maximum. Not currently in use.
Baghouse For Final Coal Crusher - Total Emissions	85.34	0.04	9.74E-03	Using AP-42 11.12, 0.00099 lb/ton for pneumatic cement silo loading @ 251,000 ton/yr in 2009

TABLE I
REVISED LIST OF INSIGNIFICANT ACTIVITIES

Public Service Company of New Hampshire
Schiller Station
Portsmouth, New Hampshire

Insignificant Activity	Annual Actual Emissions (lbs/yr)	Annual Actual Emissions (tons/yr)	Annual Actual Emissions (lbs/hr)	Emissions Notes
PM_{10} Emissions	85.34	0.04	9.74E-03	Using AP-42 11.12, 0.00034 lb/ton for pneumatic cement silo loading @ 251,000 ton/yr in 2009
$PM_{2.5}$ Emissions	37.65	0.02*	4.30E-03	Using AP-42 11.12, 0.00015 lb/ton for pneumatic cement silo loading @ 251,000 ton/yr in 2009 and 15% PM2.5 from Table B.2.2 category 3.
Coal Bunker Dust Collection - Total Emissions	0.85	4.27E-04	9.74E-05	Using AP-42 11.12, 0.00099 lb/ton for pneumatic cement silo loading with a 99% efficiency @ 250,999 ton/yr in 2009
PM_{10} Emissions	0.85	4.27E-04	9.74E-05	Using AP-42 11.12, 0.00034 lb/ton for pneumatic cement silo loading with a 99% efficiency @ 250,999 ton/yr in 2009
$PM_{2.5}$ Emissions	0.38	1.88E-04	4.30E-05	Using AP-42 11.12, 0.00015 lb/ton for pneumatic cement silo loading with a 99% efficiency @ 250,999 ton/yr in 2009 and 15% PM2.5 from Table B.2.2 category 3.
Flyash Blower Exhaust Total Emissions	13.65	6.82E-03	1.56E-03	Using AP-42 11.12, 0.00099 lb/ton for pneumatic cement silo loading @ 40,147 ton/yr in 2009
PM_{10} Emissions	13.65	6.82E-03	1.56E-03	Using AP-42 11.12, 0.00034 lb/ton for pneumatic cement silo loading @ 40,147 ton/yr in 2009
$PM_{2.5}$ Emissions	6.02	3.01E-03	6.87E-04	Using AP-42 11.12, 0.00015 lb/ton for pneumatic cement silo loading @ 40,147 ton/yr in 2009 and 15% PM2.5 from Table B.2.2 category 3.
White Building Heating System - Total Emissions	98.81	0.05	0.01	0.131 MMBTU/HR#2 Oil, 25% capacity @ 5110 hours/yr @ 80.91 lb/1000 gallons
PM_{10} Emissions	1.22	6.11E-04	1.39E-04	0.131 MMBTU/HR#2 Oil, 25% capacity @ 5110 hours/yr @ 1 lb/1000 gallons
$PM_{2.5}$ Emissions	0.29	1.47E-04	3.35E-05	0.131 MMBTU/HR#2 Oil, 25% capacity @ 5110 hours/yr @ 0.24 lb/1000 gallons
Red Building Heating System - Total Emissions	206.73	0.10.	0.02	0.274 MMBTU/HR#2 Oil, 25% capacity @ 5110 hours/yr @ 80.91 lb/1000 gallons
PM_{10} Emissions	2.56	1.28E-03	2.92E-04	0.274 MMBTU/HR#2 Oil, 25% capacity @ 5110 hours/yr @ 1 lb/1000 gallons
$PM_{2.5}$ Emissions	0.61	3.07E-04	7.00E-05	0.274 MMBTU/HR#2 Oil, 25% capacity @ 5110 hours/yr @ 0.24 lb/1000 gallons
Vet Building Heating System - Total Emissions	87.86	0.04	0.01	0.129 MMBTU/HR#2 Oil, 25% capacity @ 5110 hours/yr @ 80.91 lb/1000 gallons
PM_{10} Emissions	1.09	5.43E-04	1.24E-04	0.129 MMBTU/HR#2 Oil, 25% capacity @ 5110 hours/yr @ 1 lb/1000 gallons
$PM_{2.5}$ Emissions	0.26	1.30E-04	2.98E-05	0.129 MMBTU/HR#2 Oil, 25% capacity @ 5110 hours/yr @ 0.24 lb/1000 gallons
Building at New Site Heating System - Total Emissions	258.41	0.13	0.03	0.294 MMBTU/HR#2 Oil, 25% capacity @ 5110 hours/yr @ 80.91 lb/1000 gallons
PM_{10} Emissions	3.19	1.60E-03	3.65E-04	0.294 MMBTU/HR#2 Oil, 25% capacity @ 5110 hours/yr @ 1 lb/1000 gallons
$PM_{2.5}$ Emissions	0.77	3.83E-04	8.75E-05	0.294 MMBTU/HR#2 Oil, 25% capacity @ 5110 hours/yr @ 0.24 lb/1000 gallons
SR Generator (Natural Gas) - Total Emissions	0.48	2.42E-04	5.53E-05	9.5E-3 lb/mmbtu from AP-42 3.2-3 (rich burn < 90% load)
PM_{10} Emissions	0.48	2.42E-04	5.53E-05	9.5E-3 lb/mmbtu from AP-42 3.2-3 (rich burn < 90% load)
$PM_{2.5}$ Emissions	0.48	2.42E-04	5.53E-05	9.5E-3 lb/mmbtu from AP-42 3.2-3 (rich burn < 90% load)
High Yard Generator (Natural Gas) - Total Emissions	213.17	0.11	0.02	9.74 lb/mmbtu from AP42 3.2-2, 0.5 hrs every two weeks, and manufacturer data
PM_{10} Emissions	1.69E-03	8.44E-07	1.93E-07	7.71E-5 lb/mmbtu from AP42 3.2-2, 0.5 hrs every two weeks, and manufacturer data
$PM_{2.5}$ Emissions	1.69E-03	8.44E-07	1.93E-07	7.71E-5 lb/mmbtu from AP42 3.2-2, 0.5 hrs every two weeks, and manufacturer data
Coal Handling/Unloader - Total Emissions	219.63	0.11	0.03	650,000 tons @ 0.000714 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 7.08%
PM_{10} Emissions	219.63	0.11	0.03	650,000 tons @ 0.000338 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 7.08%
$PM_{2.5}$ Emissions	33.26	0.02	3.80E-03	650,000 tons @ 0.0000512 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 7.08%
Coal Truck Loading - Total Emissions	88.92	0.04	0.01	Truck loading 263,173 (from 2009) tons@ 0.000714 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 7.08%
PM_{10} Emissions	88.92	0.04	0.01	Truck loading 263,173 (from 2009) tons@ 0.000338 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 7.08%
$PM_{2.5}$ Emissions	13.47	6.73E-03	1.54E-03	Truck loading 263,173 (from 2009) tons@ 0.0000512 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 7.08%
Wood Truck Dumping - Total Emissions	14.08	7.04E-03	1.61E-03	Truck dumping 554,975 tons@ 0.0000536 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 45%
PM_{10} Emissions	14.08	7.04E-03	1.61E-03	Truck dumping 554,975 tons@ 0.0000254 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 45%
$PM_{2.5}$ Emissions	2.13	1.07E-03	2.43E-04	Truck dumping 554,975 tons@ 0.00000384 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 45%
Unpaved Haul Road - Total Emissions	212.78	0.11	0.02	Road in coal yard used equation $E=k(s/12)^a(W/3)^b$ from EPA AP42 13.2.2-1 k=4.9, s=8.5%, a=0.7, W=21.5 tons, b=0.45
PM_{10} Emissions	212.78	0.11	0.02	Road in coal yard used equation $E=k(s/12)^a(W/3)^b$ from EPA AP42 13.2.2-1 k=1.5, s=8.5%, a=0.9, W=21.5 tons, b=0.45
$PM_{2.5}$ Emissions	21.28	0.01	2.43E-03	Road in coal yard used equation $E=k(s/12)^a(W/3)^b$ from EPA AP42 13.2.2-1 k=0.15, s=8.5%, a=0.9, W=21.5 tons, b=0.45
Boiler Water Treatment Chem. - Total Emissions	No Data	No Data	No Data	Inorganic chemicals all with low volitility
PM_{10} Emissions	-	-	-	Negligible PM Emissions
$PM_{2.5}$ Emissions	-	-	-	Negligible PM Emissions
Wood Handling System and Roof Fans - Total Emissions	323.11	0.16	0.04	Truck dumping 554,975 tons@ 0.00123 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 4.8%
PM_{10} Emissions	323.11	0.16	0.04	Truck dumping 554,975 tons@ 0.0005822 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 4.8%
$PM_{2.5}$ Emissions	48.93	0.02	5.59E-03	Truck dumping 554,975 tons@ 0.0000882 lb/ton using AP-42 13.2.4 U=7.76 mi/hr M = 4.8%

COMPLIANCE ASSURANCE MONITORING PLAN
Public Service of New Hampshire, Schiller Station
Portsmouth, New Hampshire

1.0 FACILITY INFORMATION

Public Service Company of New Hampshire's (PSNH's) Schiller Station, located in Portsmouth, New Hampshire generates electricity by means of combusting fossil fuels and biomass. The emissions units at Schiller Station consist of three generating units; Unit 4 (SR4), Unit 5 (SR5), and Unit 6 (SR6), a coal crusher, combustion turbine (CT), and an emergency generator. For electricity generation, Schiller Station primarily combusts wood in SR 5 and a mixture of coal and biomass in SR4 and SR6. However, Schiller Station can generate electricity using other fuels: SR4 and SR6 can burn No. 6 fuel oil, SR 5 is capable of combusting coal, the emergency generator burns natural gas and propane, and the combustion turbine burns natural gas, kerosene, and JP-4. The control equipment used to reduce pollutant emissions from these sources includes: the use of selective non-catalytic reduction (SNCR) and an electrostatic precipitator (ESP) for units SR4 and SR6; and a baghouse, SNCR, and limestone injection system for unit SR5. 40 CFR 64.2 (b) (vi) exempts control units for which a part 70 or 71 permit specifies a continuous compliance determination method. Therefore, due to the use of the continuous emissions monitoring system which monitors NO_X and SO_2 among other parameters, the SNCR and the limestone injection are not subject to Compliance Assurance Monitoring (CAM) Plan requirements. Emission units subject to a post-1990 emission limitation under Sections 111 or 112 of the Clean Air Act are also exempt for the pollutants regulated under that standard. The PM10 emission limits for SR5 were established in accordance with Title 40 CFR 63 Subpart B and Clean Air Act Section 112 (j); therefore, according to 40 CFR 64.2 (b) (i), SR5 is not subject to the CAM requirements for particulate matter.

2.0 – POLLUTION CONTROL DEVICE SUMMARY

Control Device	Pollutant	Unit(s)	Applicable
Baghouse	PM	SR 5	No (section 112 (j) emission limits) 40 CFR 64.2 (b) (i)
Electrostatic Precipitator	PM	SR4, SR6	X
Selective Non-catalytic Reduction	NO_X	SR4, SR5, SR6	No (CEM)
Limestone Injection System	SO_2	SR5	No (CEM)

3.0 ELECTROSTATIC PRECIPITATOR

In accordance with the applicability criteria listed in 40 CFR 64.2(a), Schiller Station is required to develop a CAM Plan for the SR4 and SR6 electrostatic precipitators (ESPs) as described below:

- Schiller Station is a major source and has a Title V Permit;
- Units SR4 and SR6 are subject to existing Title V Permit limits for particulate matter. The Title V Permit was originally issued on March 9, 2007, and expires on March 31, 2012. This CAM Plan is a component of the renewal application for the Schiller Station Title V Permit.
- The SR4 and SR6 each utilize a control device (electrostatic precipitator [ESP]) to achieve compliance with the particulate matter emissions limitations contained in the permit.
- The pre-controlled, potential PM/PM10 emission rate is above the major source level of 100 tons per year.

Based on these facts, the ESP is subject to the CAM requirements for particulate matter.

3.1 PERFORMANCE INDICATORS

The selected performance indicators for the ESP are secondary voltage (Indicator 1) and periodic inspection and preventative maintenance of the ESP systems (Indicator 2).

Secondary voltage was selected because it is a generally accepted indicator associated with ESP performance, and will readily allow for the detection and correction of the ESP performance issues. The measurement of secondary voltage outside the indicator range would require corrective action.

Periodic inspections of ESP system components are conducted according to the Inspection and Preventative Maintenance Plan for Schiller Unit 4 and Unit 6 (ESP I/M Plan). Equipment failures identified during inspections trigger prompt corrective action.

3.2 MONITORING APPROACH

Indicator 1

The secondary voltage measured at each of the ESP TR sets is monitored by the precipitator control system. Voltage is measured electronically by circuit boards in the control system and displayed locally at each TR set as well as on the control system computer. Monitoring and recording of the secondary voltage indicator is done when the unit is operating and the data collected used to calculate a three hour average value.

Indicator 2
Monitoring of Distributive Control System (DCS), Continuous Emission Monitors (CEMS), the ash system Programmable Logic Controllers (PLCS), precipitator control system transformer-rectifier performance and rapper operation occur daily from within the control room by Station Control Operators.

Weekly and monthly inspections of various components of the ESPs and ash systems are conducted as a preventative measure to identify leaks, signs of deterioration, noise, vibrations or other abnormal conditions that may lead to malfunctions.

Regular overhauls are conducted to clean and inspect the ESPs. Overhauls are conducted on a 12 – 24 month schedule depending on the operating schedule of Units 4 and 6.

3.3 INDICATOR RANGES

Indicator 1
The secondary voltage drop at the TR sets shall be between 25 and 60 kilovolts, direct current (KVDC). If the secondary voltage drop is less than 25 KVDC then the ESP may not generate enough of a charge to attract the particles.

An excursion is defined as secondary voltage level below 25KV (3 hour average value). Excursions trigger an inspection, corrective action and reporting requirements.

Indicator 2
Inspections will be conducted according to the ESP I/M Plan.

An excursion of the Indicator 2 range occurs when there is a failure to conduct an inspection; or, an equipment failure identified during the inspection triggers a corrective action and a reporting requirement.

4.0 CONTROL DEVICE CAM SUMMARY TABLES

TABLE 3 CAM PLAN SUMMARY ELECTROSTATIC PRECIPITATOR UNIT 4 AND UNIT 6		
Indicator	Indicator No. 1 Secondary Voltage	Indication No. 2 Inspection and Maintenance (I/M)
1. Measurement Approach	ESP secondary voltage is electronically measured at each TR set for each precipitator field to monitor ESP operation. The secondary voltage is measured by the precipitator control system at each TR set.	Inspections are performed according to the SR ESP I/M Plan. Maintenance is performed as needed.
2. Indicator Range	An excursion is defined as a secondary voltage level less than 25 kV. Excursions trigger an inspection, corrective action, and a reporting requirement.	Failure to perform an inspection triggers a reporting requirement. Equipment failures identified during an inspection trigger corrective action and a reporting requirement.
3. Performance Criteria a. Data Representativeness	Secondary voltage is measured electronically by circuit boards in the control system	Inspections are performed at the ESP.
b. QA/QC Practice and Procedures	Confirm that the DCS monitoring PC displays zero when the unit is not operating.	Inspections are performed by qualified personnel.
c. Monitoring Frequency	Continuously.	Inspections are performed according to the SR ESP I/M Plan. Maintenance is performed as needed.
d. Data Collection Procedure	Data is collected on a continuous basis using the Distributive Control System (DCS).	Records of the inspections and maintenance are stored in the Plant Maintenance Management System (PMMS).
e. Averaging Period	3-hr.	Not applicable.

INSPECTION AND MAINTENANCE PLAN FOR SCHILLER #4 & 6

Daily when Unit is Operating

1. The Distributed Control System (DCS) monitors, records and alarms secondary voltage readings.
2. The Continuous Emissions Monitor (CEM) monitors, records and alarms opacity.
3. The Ash System Programmable Logic Controller (PLC) monitors and alarms the ash system.
4. The Precipitator Control System monitors T-R performance.
5. The Precipitator Control System monitors rapper operation.

Weekly

1. El. 56 Precipitator Control Room: Check Operation of Collector Rapper control system
2. Check the precipitator hopper area for air leaks.
3. Precipitator Penthouse: Check the operation of the emitter rappers; check for oil leaks; inspect penthouse doors.
4. Check the collector rapper motor/gearbox and verify operation of the collector rappers

Monthly

1. Check operation of penthouse pressurizing fan.
2. Check exterior for visual signs of deterioration and abnormal noises, vibration, leaks, and the like.
3. Check T-R liquid.

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Quarterly

1. Complete opacity monitor audit.

Unit Overhauls (Conducted 12-24 month interval depending on Unit Operation)

1. Conduct internal inspection.
2. Inspect all bushings and insulators and clean as necessary.
3. Inspect all door gaskets and replace as necessary.
4. Inspect door bolts and dogs and clean and lubricate as necessary.
5. Inspect the collector rapper system including hammers and strike plates and repair as necessary.
6. Check all ground connections to the emitter rappers.

7. Inspect emitter rapper and leading and trailing rapper shaft boots.
8. Inspect the inlet and outlet duct work including turning vanes and perforated plates for wear/ holes/ or excessive ash build up.
9. Inspect the penthouse pressurization blower system.
10. Inspect the Power Switching Cabinets.
11. Check for areas of corrosion and deterioration.

ATTACHMENT C

Public Service of New Hampshire

A Northeast Utilities Company

PSNH Energy Park
780 North Commercial Street, Manchester, NH 03101

Public Service Company of New Hampshire
P.O. Box 330
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William H. Smagula, P.E.
Vice President - Generation

October 21, 2013

D32558

Mr. Craig Wright, Director
Air Resources Division
NH Department of Environmental Services
29 Hazen Drive, PO Box 95
Concord, NH 03302-0095

RE: Compliance Extension Request for Public Service of New Hampshire's Schiller Station(TV-OP-053) Facilities Pursuant to the Mercury and Air Toxic Standard (40 CFR 63 Subpart UUUUU)

Dear Mr. Wright:

Public Service of New Hampshire (PSNH) submits the following request for a one year extension of compliance with 40 CFR 63, Subpart UUUUU NESHAP for Coal and Oil Fired Electric Utility Steam Generating Units (MATS) for Schiller Station Units 4 and 6. This extension request applies to all pending compliance deadlines with regard to the MATs rule.

Pursuant to the Federal Clean Air Act (CAA) 122 § (i)(3)(B):

> *A State with a program approved under Title V of the Clean Air Act may issue a permit that grants an extension permitting an existing source up to 1 additional year to comply with [NESHAPs] if such additional period is necessary for installation of controls.*

Further, the EPA states in the Preamble of the MATS Rule, providing guidance to the permitting agencies:

> *... the fourth year that permitting authorities are allowed to grant for installation of controls is an important flexibility that will address situations where an extra year is necessary.* ***That fourth year should be broadly available*** *to enable a facility owner to install controls within 4 years if the 3-year time frame is inadequate for completing the installation. (emphasis added)*

This language and sentiment has been repeated several times by EPA officials, including Ms. Regina McCarthy, Administrator of Environmental Protection Agency that permitting authorities should liberally grant the fourth compliance year to requesting utilities.

PSNH is requesting a one year extension to allow for the procurement and installation of control equipment and emission monitoring equipment at Schiller Station in order to meet new MATS emission limits. Engineering procurement and installation of this equipment has been complicated by the following items:

1) Uncertainty about unit SO2 limits caused by EPA's delays to issuing modeling guidelines for attainment zones with regards to National Ambient Air Quality Standards (NAAQS)
2) Vendor Availability
3) Difficulties of certifying Particulate Matter (PM), Hydrochloric Acid (HCl) and Mercury (Hg) Continuous Emissions Monitoring Systems (CEMS).

Uncertainty Due to NAAQS

Emissions control technologies currently being reviewed by PSNH can provide, in addition to the benefit of reducing HCl emissions for MATS compliance, a co-benefit of further reductions in SO2 emissions that may be required to meet the future SO2 emission limitations imposed by NHDES to ensure compliance with the State of New Hampshire SO2 NAAQS determinations. For example, if Dry Sorbent injection technology is used to control HCl emissions for MATS compliance, the system can be engineered to further reduce SO2 emissions. The potential to install a single emission control technology for both NAAQS and MATS compliance instead of dedicated systems for each pollutant would provide the same environmental benefits, while reducing overall project costs and benefitting New Hampshire electric customers.

With the delay of EPA's SO2 NAAQS Designations Modeling Technical Assistance Document, to allow States to establish the area designations, there is uncertainty associated with the future SO2 emission limits that will be identified throughout the state. This uncertainty has delayed establishment of specific design requirements for the control equipment, therefore delaying PSNH's plans to move forward with the procurement of equipment and required permit for installation. A one year extension of the compliance deadlines to April 16, 2016 will allow for finalization of the NAAQS designations, establishment of required SO2 emission limits for Schiller Station, and completion of the design process to ensure that any emissions control technologies installed for MATS compliance can also be used for NAAQS compliance.

Vendor Availability

As part of the planning process for installing monitoring and control technology or modifying existing equipment, PSNH will be obligated to procure vendors for materials, engineering, and construction labor. As discussed above uncertainties due to future SO2 emissions limitations at Schiller station will force a compression of the MATS procurement schedule potentially reducing the number of vendors available for bids. Furthermore, every applicable coal and oil plant in the United States will be competing for the services of a select few suppliers to comply with MATS requirements reducing the flexibility and availability of vendors' schedules. Since PSNH has been forced to push back its planning process as a result of the NAAQS modeling guideline delay, there will be uncertainty of vendor availability. A one year extension will allow PSNH to procure vendors in an appropriate timeframe that includes unit viability resulting from MATS and NAAQS compliance.

PM, HCl, and Hg CEMS Certification

Meeting the monitoring requirements of MATS is troublesome for all of PSNH's units. MATS require sources to continuously monitor mercury (Hg), hydrochloric acid (HCl), and particulate matter (PM). The performance and certification of the continuous monitoring systems are expected to be difficult, time consuming, and may require permit modifications to allow for certification testing. For example, Performance Specification 11 for PM correlation audits requires a source to de-tune the process to achieve higher mass loadings for the testing. De-tuning would involve operating the control device in conflict with current Title V permit conditions. There are additional concerns regarding the Performance Specification 18 developed for HCl CEMS. The performance specification has yet to be incorporated into the Federal Register and thus has not been proven as a viable certification method. Additionally, the current specification requires the use of NIST-traceable gases, however to date none of these gases have been prepared A one year extension would give the EPA more time to refine CEMS Performance Specifications and certification methods.

Pursuant with 40 CFR § 63.6(i)(6)(i) this compliance extension request includes the following information:

(A) A description of the controls to be installed with the standard

As NHDES is aware, dry sorbent injection (DSI) and activated carbon injection (ACI) systems have been tested to determine if they are viable options for MATS compliance at Schiller Station. Additionally, unit precipitators may require modifications to meet new PM limits.

(B) A compliance schedule, including the date by which each step towards compliance will be reached. At a minimum, the list of dates shall include:

(1) The date by which on-site construction, installation of emissions control equipment, or a process change is planned to be initiated.

It is anticipated that a MATS compliance plan for Schiller Station will be submitted to the NHDES by March 1, 2014. The remainder of 2014 would be used to secure vendors, garner permits, and begin preliminary engineering activities. Physical installation of equipment is anticipated to begin the Summer of 2015.

(2) and (4) The date by which final compliance is to be achieved

Final compliance with MATS will be achieved by April 16, 2016.

(3) The date by which on-site construction, installation of emission control equipment or a process change is to be completed.

It is anticipated that all controls and monitoring equipment will be installed and prepared for testing and commissioning activities by February 1, 2016.

PSNH appreciates your consideration on this request for a one-year MATS extension. Please do not hesitate to contact Sheila Burke of my staff at 634-2512 if you have questions or require additional information.

Very truly yours,

PUBLIC SERVICE OF NEW HAMPSHIRE

William H. Smagula

William H. Smagula, P.E.
Vice President – PSNH Generation

WHS:scr

ATTACHMENT D

The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

January 10, 2014

Mr. William H. Smagula, P.E.
Vice President - PSNH Generation
Public Service Company of New Hampshire
P.O. Box 330
Manchester, NH 03105-0330

Re: Compliance Extension Request for PSNH's Schiller Station to the NESHAP for Coal and Oil-Fired Electric Utility Steam Generating Units (40 CFR 63 Subpart UUUUU)

Dear Mr. Smagula:

The New Hampshire Department of Environmental Services, Air Resources Division (Department) has received your request for a one year compliance extension to the National Emission Standards for Hazardous Air Pollutants from Coal and Oil-Fired Electric Utility Steam Generating Units (MATS) (40 CFR 63 Subpart UUUUU) pursuant to Section 112(i)(3)(B) of the Clean Air Act, as amended (CAA), for the Public Service Company of New Hampshire (PSNH) Schiller Station Units 4 and 6 filed on October 21, 2013, and the supplemental information filed on December 17, 2013. Based on the Department's review of the information provided, the Department intends to grant approval of the compliance extension request pursuant to 40 CFR Part 63 Subpart A (Section 63.6(i)) through the issuance of a Temporary Permit after receipt of additional information in an application for the installation and operation of a Dry Sorbent Injection and Activated Carbon Injection System to control acid gases and mercury emissions from Units 4 and 6 at Schiller Station.

Based on the information provided by PSNH on December 17, 2013, PSNH intends to submit an application for the Dry Sorbent Injection and Activated Carbon Injection system at Schiller Station by February 28, 2014. The application will be reviewed in accordance with New Hampshire Administrative Rules, Chapter Env-A 600, *Statewide Permit System*, requirements. The Department intends to include a compliance plan specifying key actions and milestone dates for the engineering, procurement, installation, commissioning and testing of the pollution control system in the Temporary Permit. In accordance with Section 112(i)(3)(B) of the CAA, the Department intends to grant the compliance extension through the issuance of the Temporary Permit for a period of one year beyond the compliance date specified in 40 CFR 63 Subpart UUUUU (April 15, 2015). The Temporary Permit will include a condition, in accordance with the compliance extension requirements of the CAA, that compliance with 40 CFR 63 Subpart UUUUU for Units 4 and 6 at Schiller Station must be demonstrated through the installation and operation of pollution control equipment by April 16, 2016.

The Department would like to clarify that this extension request pertains to the installation and operation of pollution control equipment for Units 4 and 6 at Schiller Station for compliance with the applicable MATS (40 CFR 63 Subpart UUUUU). While it may be possible to demonstrate through the installation of such control equipment that Schiller Station will not cause or contribute to a violation of the Sulfur Dioxide National Ambient Air Quality Standard (SO_2 NAAQS), this compliance extension request pertains only to compliance with the applicable MATS (40 CFR 63 Subpart UUUUU) requirements. All compliance plan key actions and milestone dates should reflect demonstrating compliance with the MATS by the specified compliance extension date.

The Department looks forward to receiving your application in February of 2014 for the installation and operation of the Dry Sorbent Injection and Activated Carbon Injection System for Units 4 and 6 at Schiller Station. If you have any questions regarding this matter, please contact Michele Roberge at (603) 271-6793 or via email at michele.roberge@des.nh.gov.

Sincerely,

Craig A. Wright

Craig A. Wright
Director
Air Resources Division

cc: EPA Region 1
Marc Cone, Maine DEP
Zachary Fabish, Sierra Club