

FEB 27 2009



## CONSERVATION LAW FOUNDATION

ORIGINAL

N.H.P.U.C. Case No.	DC11-250
Exhibit No.	87
Witness	Elizabeth A. Stanton
DO NOT REMOVE FROM FILE	

February 26, 2009

**VIA CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

Gary A. Long, President and Chief Operating Officer  
Public Service Company of New Hampshire  
780 North Commercial Street  
Manchester, New Hampshire 03101

Robert A. Bersak, Esq., Registered Agent  
780 North Commercial Street  
Manchester, New Hampshire 03101

Re: Notice of Intent to File Clean Air Act Citizen Suit

Dear Messrs. Long and Bersak:

Conservation Law Foundation ("CLF") provides this Notice of Intent to file a citizen suit against Public Service Company of New Hampshire ("PSNH") pursuant to Clean Air Act ("CAA") § 304(a)(3), 42 U.S.C. § 7604(a)(3). Activities undertaken by PSNH at its Merrimack Station facility located at 97 River Road in Bow, New Hampshire, constitute proposing to construct and / or constructing a new or modified major emitting facility without a permit required under CAA subchapter I part C (relating to significant deterioration of air quality) and / or part D (relating to nonattainment) and violations of the permitting requirements set forth in the New Hampshire State Implementation Plan ("NHSIP"). These modifications have resulted or will result in significant increases in air pollutant emissions.

The CAA authorizes the court to issue injunctions and to apply appropriate civil penalties. CAA § 304(a)(3), 42 U.S.C. § 7604(a)(3); *Sierra Club v. Franklin County Power of Illinois*, 546 F.3d 918, 935 (7<sup>th</sup> Cir. 2008). PSNH is liable for up to \$25,000 for each day of each violation. See CAA § 113, 42 U.S.C. § 7413(b)(1) (state implementation plan violations) and 7413(b)(3) (failure to comply with new source requirements).

) North Main Street, Concord, New Hampshire 03301-4930 • 603-225-3060 • Fax: 603-225-3059 • www.clf.org

MASSACHUSETTS: 62 Summer Street, Boston, Massachusetts 02110-1016 • Phone: 617-350-0990 • Fax: 617-350-4030  
MAINE: 14 Maine Street, Brunswick, Maine 04011-2026 • 207-729-7733 • Fax: 207-729-7373  
RHODE ISLAND: 55 Dorrance Street, Providence, Rhode Island 02903 • 401-351-1102 • Fax: 401-351-1130  
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## CONSERVATION LAW FOUNDATION

### *Background*

Merrimack Station is among the most polluting power plants in New England. PSNH reports that in 2007, the plant emitted 36,485 tons of sulfur dioxide, 3,224 tons of nitrogen oxide, over 137 pounds of mercury compounds, and nearly 4 million tons of carbon dioxide.

PSNH is required under New Hampshire law to install by 2013 wet flu gas desulphurization scrubbers that will reduce mercury emissions from the plant by eighty percent (“Scrubber Project”). See RSA 125-O:11, *et seq.* (“Scrubber Law”). When the law was passed in 2006, the estimated cost of the scrubber installation was \$250 million dollars. In an August 7, 2008, quarterly earnings report (10-Q) filed with the Securities and Exchange Commission, PSNH’s parent company, Northeast Utilities, disclosed that the estimated cost for the Scrubber Project is now \$457 million dollars. PSNH has represented that it has commenced construction on the project, and that the project “is already half done.” See Gary A. Long, *Need for Bow Scrubber Project is Real* (Concord Monitor, February 8, 2009).

### *Legal Framework*

Preconstruction review is required for all major sources of air pollution before new source construction or modification. The prevention of significant deterioration (“PSD”) program governs attainment pollutants, *see* CAA subchapter I, part C and 40 C.F.R. 52.21; the New Source Review (“NSR”) program governs non-attainment pollutants. *See* CAA subchapter I, part D; 40 C.F.R. 52.24. New Hampshire state implementing regulations for these programs have been promulgated by the New Hampshire Department of Environmental Services (“DES”) and approved by the United States Environmental Protection Agency. *See* New Hampshire Code of Administrative Rules (“N.H. Admin. Rules”) Env-A chapter 600 *et seq.*; 40 CFR 52.1520; 40 CFR 52.1525.

A temporary permit is required before construction of new or modified sources in certain categories. *See* RSA 125-C:11; N.H. Admin. Rules Env-A 607.01. Nothing in RSA 125-O:13 disturbs that requirement. *See* RSA 125-O:13 (“The achievement of this requirement is contingent upon obtaining all necessary permits and approvals from federal, state, and local regulatory agencies and bodies.”).

The term “construction” is defined under the CAA and New Hampshire law to include modifications. A modification is defined as “any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.” CAA § 169(2)(c), 42 U.S.C. § 7479(2)(c) (incorporating NSPS definition of modification set forth at CAA § 111(a)(4); 42 U.S.C. § 7411(a)(4)); CAA § 171(4), 42 U.S.C. § 7501(4); N.H. Admin. Rules Env-A 101.52.

## CONSERVATION LAW FOUNDATION

For preconstruction permitting purposes, interrelated activities must be aggregated and treated as a single project. *See* Draft EPA NSR Workshop Manual § III.B.1 (October 1990); February 15, 1989 EPA WEPCO Applicability Determination; *see also* EPA Final Rule, PSD / NA-NSR: Aggregation and Project Netting (Jan. 12, 2009) (“Our aggregation policy aims to ensure the proper permitting of modifications that involve multiple physical and / or operational changes. Thus, multiple, nominally separate activities that are sufficiently interrelated should be grouped together and considered a single project for the purpose of [ ] the NSR applicability test.”).

### *Violations*

During 2008, PSNH made substantial modifications to Merrimack Station Unit 2 (“MK2”) to accommodate the scrubber that (i) increased the power output of that unit somewhere in the range of 6 to 13 megawatts, and possibly more; and (ii) have resulted or will result, based on PSNH’s own data, in significant net emissions increases from the facility.

In April and May of 2008, PSNH removed a high pressure / intermediate pressure (“HP/IP”) turbine, and replaced it with a new HP / IP turbine. *See* Testimony of PSNH Technical Business Manager Lynn Tillotson, December 4, 2008, Redacted Hearing Transcript, New Hampshire Public Utilities Commission (“PUC”) Docket No. DE 08-113, p. 16, lines 10-22 (hereinafter, “Tillotson Testimony”). The new turbine components include the HP/IP rotor with integral shroud rotating blading, integral shroud stationary blading, nozzle block, inner and outer cylinder casings, associated seals and piping, and inspection ports. *See* February 20, 2009, PSNH Response to Data Request TS-01, PUC Docket No. DE 08-145, attached hereto as *Exhibit 1*.

PSNH also replaced the generator rotor; air heater tube; boiler floor; selective catalytic reducer (“SCR”) catalyst; secondary superheater inlet bank; station batteries; excitation switchgear voltage regulator; sootblowers; SCR sub-grit, insulation, and lagging; distributed control computer system; primary superheater bypass valve; secondary superheater bypass valve; main boiler feedpump control valve; SCR expansion joints; and coal bunker gates. *Id.* PSNH installed ash conditioning equipment on an existing flyash storage tank. *Id.* These projects were all treated as capital expenditures. *Id.* Substantial other work was performed on the unit during the outage, including “numerous other corrective and preventative tasks.” *Id.*

PSNH “worked to modify boiler combustion temperatures,” and “[t]ube shields were removed from the boiler reheater to increase heat transfer and improve steam temperatures,” in order to “accommodate the design and engineering of a scrubber system.” *See* September 2, 2008, PSNH Response to PUC Request for Information, PUC Docket No. DE-08-103 at 8.

The outage was longer than the routine annual scheduled maintenance outage, *see* Tillotson Testimony, p. 16, lines 10-15, beginning April 1 and ending on May 22. *See*

## CONSERVATION LAW FOUNDATION

February 20, 2009, PSNH Response to Data Request TS-01, PUC Docket No. DE 08-145.

The purpose was to increase turbine efficiency, increase output, and reduce maintenance outages. *See* Tillotson Testimony, p.17, lines 1-22. Increased output would provide “additional megawatts to offset the scrubber installation.” *Id.* This work was performed with the assistance of outside turbine installation contractors. *See id.*, p. 18, lines 9-10; p. 19, lines 11-12. The turbine ultimately failed. *See id.*, pp. 18-20. An additional three and one-half week outage to accommodate further work on the new turbine occurred between June 20 and July 14, 2008. *See id.* at 19, line 8. The initial cost estimate for this project was in the range of \$9 million to \$15 million dollars. *See* June 7, 2006, Letter from Mr. William H. Smagula, P.E. to NH DES ARD Director Robert R. Scott at 3, attached hereto at *Exhibit 2*.

As of February 20, 2009, the cost of the MK2 modifications was \$11.4 million dollars. *See* February 20, 2009, PSNH Response to Data Request TS-01 in PUC Docket No. DE 08-145. PSNH contracted for “an expected base increase of about 6 megawatts,” in addition to MK2’s pre-modification output, and the “contract was also structured such that it was a pay-for-performance.” Tillotson Testimony, p. 24, lines 8-12. Accordingly, “to the extent that [PSNH] could find ways to operate the turbine more efficiently and get additional output, the contractor would be providing more costs, they would be paid more money, and the upper range of that was 12 megawatts.” *Id.* at p. 24, lines 12-13; p. 25, lines 14-16.<sup>1</sup>

The MK2 work took place over the course of at least eleven and one-half weeks in 2008, *five years* before July 2013, when the Scrubber Law requires the scrubber to be operational. The new generation capacity of six to twelve megawatts or more enabled by the work will not be offset in any amount by scrubber power requirements until the scrubber is operational, resulting in significant additional air pollution, including global warming pollution.

The physical changes made to MK2 to accommodate the scrubber did not constitute routine maintenance, repair, or replacement. “[R]outine maintenance, repair and replacement occurs regularly, involves no permanent improvements, is typically limited in expense, is usually performed in large plants by in house employees, and is treated for accounting purposes as an expense.” *Sierra Club v. Morgan*, 2007 WL 3287850, No. 07-C-251-S (W.D. Wis. Nov. 7, 2007) (citing *U.S. v. Ohio Edison Co.*, 276 F.Supp.2d 829, 834 (S.D. Ohio 2003)). The facts here, including the project’s purpose—to increase output to accommodate the scrubber, reduce outages, and enhance operational

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<sup>1</sup> PSNH’s counsel during this proceeding, Mr. Gerald M. Eaton, made clear his displeasure that Mrs. Tillotson had been as forthcoming as she was with respect to the new turbine’s anticipated capacity: “I wish the last two answers could be part of the confidential record. Mrs. Tillotson is a very knowledgeable person, and went into far more detail than I wanted her to do.” December 4, 2008, Redacted Hearing Transcript, PUC Docket No. DE 08-113, p. 25, lines 21-24.

## CONSERVATION LAW FOUNDATION

efficiencies—cost, duration of outages, project capitalization, and use of outside consultants, all demonstrate that the MK2 work does not constitute routine maintenance, repair, and replacement. *See generally, id.*

### ***MK2 Modifications Will Result in Significant Net Increases in SO<sub>2</sub> and NO<sub>x</sub>***

PSNH projects MK2 post -modification emissions increases for NO<sub>x</sub>, SO<sub>2</sub>, CO, PM, and VOCs. *See* January 31, 2008, letter from Mr. Smagula to Director Scott at Attachment 1, attached hereto at *Exhibit 3*. For 2009, PSNH has projected a 527 ton per year (“tpy”) post-modification increase in NO<sub>x</sub>, and a 1,166 tpy post-modification increase for SO<sub>2</sub>. *See id.* Both appear to be “significant” for PSD and non-attainment NSR purposes. *See* 40 C.F.R. 52.21 (b)(23) & (b)(40) (“significant means, in reference to a net emissions increase . . . a rate of emissions that would equal or exceed any of the following rates: . . . Nitrogen oxides: 40 tpy, Sulfur dioxide: 40 tpy . . .”); 40 CFR 52.21(b)(41) & (b)(48); 40 CFR 51.165(a)(1)(x)(A) & (a)(1)(xxviii).

PSNH has represented to DES that these projected increases are those attributable to the modification: “In accordance with EPA guidance, the projection of post-change emissions does not include the portion of emissions that could have been accommodated before the change and is unrelated to the change.” *See* January 31, 2008, Letter from Mr. Smagula to Director Scott at 3. It therefore appears that the projected increases are net increases.

### ***Additional Planned Modifications to MK2***

PSNH anticipates that further repair or replacement of the new turbine will be necessary. *See* January 16, 2009, Prehearing Conference Transcript, statements by PSNH counsel Robert A. Bersak, PUC Docket No. DE 08-145. On January 21, 2009, PSNH made an interconnection request to the Independent System Operator Administered Transmission System to increase the winter net capacity of MK2 to 353.3 megawatts (an increase of 31.75 megawatts over its current 321.75 winter claimed capacity) by the projected commercial operation date of December 14, 2009. It does not appear that PSNH has applied for a permit for this work.

### ***Aggregation***

PSNH was required to aggregate, for purposes of the preconstruction permit process, the activities performed on MK2 to accommodate the scrubber, any other non-routine modifications made in connection with those activities, and the scrubber installation work. EPA has long cautioned that “[a] deliberate decision to split an otherwise ‘significant’ project into two or more smaller projects to avoid PSD review would be viewed as circumvention and would subject the entire project to enforcement action if construction on any of the small projects commences without a valid PSD permit.” Draft EPA NSR Workshop Manual § III.B.1 (October 1990); February 15, 1989 EPA WEPCO Applicability Determination (“WEPCO cannot evade PSD and NSPS applicability by

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carving out, and seeking separate treatment of, significant portions of an otherwise integrated renovation program. Such piecemeal actions, if allowed to go unchallenged, could readily eviscerate the clear intent of the Clean Air Act's new source provisions."); *see also* EPA Final Rule, PSD / NA-NSR: Aggregation and Project Netting (Jan. 12, 2009).

That a company may take the position that projects were "undertaken as separate business decisions," and / or are "based on independent economic justifications" does not overcome the aggregation requirement. *See* July 5, 2005, EPA Southwire Co. PSD Applicability Opinion.

PSNH has represented in correspondence to DES regulators that the MK2 work is being undertaken to comply with the Scrubber Law. *See* June 7, 2006, Letter from Mr. Smagula to Director Scott ("[T]o maintain the generation output and value to customers, the large power consumption of a scrubber system—as much as 6 to 10 megawatts, *justified the need to fully assess balance of plant improvements necessary to offset the additional load. . . . installation of a scrubber will require . . . balance of plant work, MK2 high pressure / intermediate pressure (HP / IP) turbine and generator work*, in addition to the installation of the scrubber vessel. . . . Completion of the MK2 HP/IP turbine and generator projects is expected to maintain the reliability and output of MK2, and *allow for the operation of a scrubber.*") (emphasis supplied); January 31, 2008, letter from Mr. Smagula to Director Scott (" . . . the balance of plant projects planned to be completed during the 2008 MK2 outage, including the HP/IP project and associated generator repair work, *are necessary in order to maintain the output of MK2 and comply with RSA 125-O:13 which requires PSNH to install a wet scrubber at Merrimack Station, no later than July 2013.*") (emphasis supplied).

Nevertheless, PSNH sought to exclude the MK2 capacity expansion work from the Scrubber Project construction permit application process, and therefore avoid any transparent public review of all project elements.

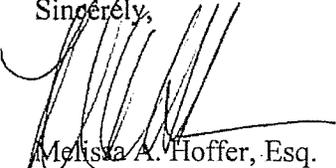
The activities undertaken by PSNH, as set forth above, including the replacement of the HP / IP turbine and generator, constitute proposed construction and construction of a modified major emitting facility without obtaining the permits required under CAA subchapter I parts C (PSD) and / or D (nonattainment) and a federally enforceable violation of the NHSIP which requires that a temporary permit be obtained prior to commencement of construction of a new or modified stationary source. N.H. Admin. Rules Env-A 600 *et seq.*

CLF reserves all rights to amend this notice and identify additional claims as further facts are developed. If you believe that any portion of this Notice is in error and / or if you wish to discuss any portion of this Notice, please contact me at the address and phone

CONSERVATION LAW FOUNDATION

number listed below. CLF would be pleased to discuss alternatives for a cooperative resolution of the violations identified in this Notice.

Sincerely,



Melissa A. Hoffer, Esq.  
Vice President, Director  
Conservation Law Foundation  
New Hampshire Advocacy Center  
27 North Main Street  
Concord, New Hampshire 03301  
(603) 225-3060

Cc:

Lisa Jackson, Administrator (by certified mail)  
U.S. Environmental Protection Agency  
Ariel Rios Building  
1200 Pennsylvania Ave., NW  
Washington DC 20460

Ira W. Leighton, Acting Regional Administrator (by certified mail)  
U.S. Environmental Protection Agency  
1 Congress Street, Suite 1100  
Boston, Massachusetts 02114-2023

Governor John Lynch (by certified mail)  
State of New Hampshire  
Office of the Governor  
107 North Main Street, Room 208  
Concord, New Hampshire 03301

Thomas Burack, Commissioner (by certified mail)  
New Hampshire Department of Environmental Services  
29 Hazen Drive  
Concord, New Hampshire 03301

Robert Scott, Director, Air Resources Division (by certified mail)  
New Hampshire Department of Environmental Services  
29 Hazen Drive  
Concord, New Hampshire 03301

**Exhibit 1**



**Public Service  
of New Hampshire**

780 N. Commercial Street, Manchester, NH 03101

Public Service Company of New Hampshire  
P. O. Box 330  
Manchester, NH 03105-0330  
(603) 634-3355  
(603) 634-2438

bersara@psnh.com

The Northeast Utilities System

**Robert A. Bersak**  
Assistant Secretary and  
Assistant General Counsel

February 20, 2009

Via E-Mail

**To:** *Service List, Docket No. DE 08-145,  
Petition of Freedom Logistics, LLC and Halifax-American Energy Company, LLC*

**Re:** *Responses to Tech Session Questions*

Attached please find PSNH's responses to the five questions posed during the February 3, 2009, Technical Session in this proceeding.

Sincerely,

Robert A. Bersak  
Assistant Secretary and  
Assistant General Counsel

Public Service Company of New  
Hampshire  
Docket No. DE 08-145

Data Request TS-01

Dated: 02/03/2009  
Q-STAFF-001  
Page 1 of 1

**Witness:** William H. Smagula  
**Request from:** New Hampshire Public Utilities Commission Staff

**Question:**  
Please provide the total cost and components of the turbine project.

**Response:**  
The total cost of the turbine project is \$11.4 million. The Contractor may be entitled to a performance payment upon final performance testing.

The turbine components included the HP/IP rotor with integral shroud rotating blading, integral shroud stationary blading, nozzle block, inner and outer cylinder casings, associated seals and piping, inspection ports.

Public Service Company of New  
Hampshire  
Docket No. DE 08-145

Data Request TS-01

Dated: 02/03/2009  
Q-STAFF-002  
Page 1 of 3

**Witness:** William H. Smagula  
**Request from:** New Hampshire Public Utilities Commission Staff

**Question:**

Please provide a listing of work done at Merrimack Unit 2 during the turbine outage, separated into capital and O&M.

**Response:**

In April and May 2008, Merrimack Unit 2 underwent its scheduled major unit inspection outage. The outage began on April 1 and ended on May 22 lasting just under 52 days. Capitalized projects and major operations and maintenance work completed during the outage are listed below. There were also numerous other corrective and preventative tasks performed throughout the unit.

***Capitalized Projects***

HP/IP turbine replacement:

Installation of a new HP/IP turbine including the HP/IP rotor, stationary blade rings, and inner and outer cylinder casings.

Generator rotor replacement:

Completed the replacement of the generator. This replacement incorporated improved design features and allowed for a shorter outage duration.

Air heater tube replacement:

The tubular air heater had been on a multi-year replacement program. The hot-end air heater replacement of the tubes began in 2007. The remaining tubes were installed during this outage.

Boiler floor replacement:

The boiler floor replacement project involved the replacement of the boiler floor sections, supports and headers.

Selective catalytic reducer (SCR) catalyst replacement:

The SCR was installed on the unit in 1995. The 4 catalyst layers are on a replacement schedule to maintain optimum NOx reductions. Layer 4 of the catalyst was replaced during the outage. This effort included vacuuming, sampling, thermocouples, staging removal, and demobilization.

Secondary superheater (SSH) inlet bank replacement:

During prior inspections 23 pendants in the SSH inlet tube bank were identified with reduced tube wall thickness, typical in this area of the boiler caused by ash erosion and corrosion. The replacement of pendants involved removing a side wall section to remove and replace the (23) pendant sections in the most cost effective manner.

Ash conditioning equipment:

Ash conditioning equipment was installed on an existing flyash storage tank. This conditioning equipment will provide the option for either dry or wet loading of flyash into the tanks.

Station batteries relocation and replacement:

Station batteries are required safety equipment to provide stand-alone power to critical systems such as emergency lighting and the several emergency pumps. The batteries were installed in a dedicated battery room with a forced ventilation system consistent with good industry practice.

Excitation switchgear voltage regulator replacement:

The older analog components were replaced with new digital components which have self diagnostics and more readily available spare parts.

Sootblowers removal and replacement:

Sootblower maintenance and replacement is an on-going annual outage effort. During this outage 13 sootblowers and associated supporting equipment were replaced.

Selective catalytic reducer sub-girt, insulation and lagging replacement for duct DO4C:

To eliminate a potential safety hazard, an area of the SCR duct had sub-girt, insulation and lagging replaced.

Computer System: Replaced the distributed control system (DCS) system.

Primary Superheater (PSH) Bypass Valve: Replaced the 202 PSH bypass control valves.

Secondary Superheater (SSH) Bypass Valve: Replaced the 207 SSH bypass valve.

Main boiler feed pump (MBFP) control valve: Replaced the MBFP FCV 5 control valve.

SCR Expansion Joints: Replaced a number of SCR expansion joints consistent with the expansion joint program.

Coal Bunker Gates: Replaced E, F & G coal bunker gates.

***Projects Charged to Operation and Maintenance***

**Boiler Maintenance**

Cyclones pin replacement and refractory installation: 468,000 pin studs were installed and refractory was applied by hand (ramming) to the slag necks and sprayed into the boiler floor section.

Secondary superheater inlet / intermediate / outlet alignment checks and shield repair / replacement: Additional boiler tube maintenance included vacuuming the furnace area, inspections, alignments, shield repairs, and selected replacements.

Vertical reheat superheater (VRSH) inspection of OXI stop and installation of additional OXI stop: 693 of 1207 VRSH tube shields were removed and areas sandblasted in order to apply the erosion inhibitor Oxi-Stop, as needed.

Air heater wall tie replacement: Sixteen wall ties that extend from north to south on the hot side of the air heater were replaced. In addition, tie supports were installed in two places from east to west to keep the ties in place.

Penthouse inspection and repairs of refractory walls: An inspection was performed and found the boiler penthouse was in good condition with only 1-2 inches of ash buildup, confirming the 2007 repairs were successful. The refractory walls were also inspected and in general found to be in good shape. Incidental repairs of the refractory wall were made as necessary.

Nondestructive examinations of the boiler: A variety of inspection and non-destructive testing was performed throughout the boiler.

**Other Balance of Plant Maintenance**

Stack maintenance: The inner stack liner was washed and inspected. Repairs were made as needed.

Precipitator: Repairs were made to the precipitator box casing, and the new and old precipitators, ducts, hopper rooms and gutter system were vacuumed and inspected.

Miscellaneous planned maintenance work included valve inspection and repair, the corrosion fatigue inspection program, and general system maintenance.

Public Service Company of New  
Hampshire  
Docket No. DE 08-145

Data Request TS-01

Dated: 02/03/2009  
Q-STAFF-003  
Page 1 of 1

**Witness:** William H. Smagula  
**Request from:** New Hampshire Public Utilities Commission Staff

**Question:**

Was the cost of any of the work performed during the turbine outage included in the budgeted cost for the scrubber or was the cost of the turbine work separate from the scrubber budget?

**Response:**

The turbine outage work was not included in the budgeted cost for the scrubber. The turbine work has always been a discrete project with its own budget.

Public Service Company of New  
Hampshire  
Docket No. DE 08-145

Data Request TS-01

Dated: 02/03/2009  
Q-STAFF-004  
Page 1 of 1

**Witness:** William H. Smagula  
**Request from:** New Hampshire Public Utilities Commission Staff

**Question:**

Please provide the net book value of Merrimack Unit 2 as of April 30, 2008.

**Response:**

PSNH closes its books on a quarterly basis, so it does not have a net book value for Merrimack Unit 2 as of April 30, 2008. Moreover, because Merrimack Station is a multi-unit station, information on the cost of Unit 2 alone excludes the cost of common facilities used at both units. The cost of common facilities is not allocated to each unit.

Therefore, PSNH is providing information on the net book value of Merrimack Station Units 1 and 2, plus common facilities, as of December 31, 2008 (the date of the most recent closing). The net book value as of that date is \$92,074,046.

Public Service Company of New  
Hampshire  
Docket No. DE 08-145

Data Request TS-01

Dated: 02/03/2009  
Q-STAFF-005  
Page 1 of 1

**Witness:** William H. Smagula  
**Request from:** New Hampshire Public Utilities Commission Staff

**Question:**  
What is the salvage value for old turbine?

**Response:**  
The old turbine was sold as scrap metal for a value of \$34,745.

**Exhibit 2**



**Public Service  
of New Hampshire**

The Northeast Utilities System

June 7, 2006

Mr. Robert R. Scott, Director  
Air Resources Division  
NH Dept of Environmental Services  
29 Hazen Drive, PO Box 95  
Concord, NH 03302-0095

Public Service Company of New Hampshire  
Merrimack Station – Scrubber Project  
2008 Merrimack Unit #2 Outage

Dear Mr. Scott,

This correspondence is a follow-up to discussions held on May 16, 2005 between representatives of Public Service of New Hampshire (PSNH) and NH Department of Environmental Services, Air Resources Division (DES), specifically Craig Wright, Michele Andy, Gary Milbury, and Jeff Underhill of DES and Bill Smagula, Lynn Tillotson, and Laurel Brown of PSNH.

Engineering Study and Assessment

As discussed at the May 16, 2006 meeting, PSNH is preparing for the installation of a scrubber at Merrimack Station. As required by the recently enacted House Bill 1673-FN, a scrubber must be installed and operational at Merrimack Station no later than July 1, 2013. In anticipation of a statutory requirement, PSNH retained Sargent & Lundy to complete a comprehensive, multi-phased engineering study to evaluate multi-pollutant control technology options for the Merrimack Station and to identify the most cost effective and operationally feasible option for mercury control as well as potential challenges. This evaluation included an assessment of the boiler, balance of plant equipment, turbine-generator systems, and site work. This assessment was done to ensure the existing station equipment will perform reliably and the unit's cost will remain competitive since the large investment necessary to install a scrubber necessitates the continued operation of Merrimack Unit #2 (MK2) well beyond 2013. Lastly, to maintain the generation output and value to customers, the large power consumption of a scrubber system – as much as 6 to 10 megawatts, justified the need to fully assess balance of plant improvements necessary to offset the additional load.

Mr. Robert R. Scott, Director  
June 7, 2006  
Page 2

Phase I of this study confirmed that the installation and operation of a scrubber at Merrimack Station is a viable option that will result in reductions in mercury and sulfur dioxide (SO<sub>2</sub>) emissions. However, the installation of a scrubber will require a new stack, material storage and handling system, wastewater treatment system, balance of plant work, MK2 high pressure/intermediate pressure (HP/IP) turbine and generator work, in addition to the installation of the scrubber vessel.

#### Planned Maintenance Outages

In order to meet the July 2013 deadline, it will be necessary for PSNH to complete as much of the balance of plant work as possible during planned maintenance outages in the years preceding 2013. This will require careful planning and coordination given Merrimack Station's anticipated outage schedules. Planned maintenance outages occur on MK2 every year. PSNH typically performs annual maintenance on MK2 in the spring to prepare for the higher summer demand periods; while maintenance on MK1 is completed in the fall. The length of a particular outage varies depending on the scope of work being completed and whether or not it is a "major" outage. A "major" outage, when turbine and/or generator work is done, may last 8 to 10 weeks. Routine turbine maintenance and generator inspections, as well as routine generator maintenance, are completed every 5 years. The next major outage on MK2 is scheduled for 2008, and then again in 2013.

#### Regulatory Review

Prior to 2002, maintenance outage work had been scheduled, budgeted, and completed without regulatory review by DES. Beginning in 2002, PSNH began meeting with representatives of DES, at their request, to discuss capital maintenance projects scheduled to be completed during each planned maintenance outage at Merrimack Station. Following this approach, the individual projects identified as necessary by Sargent & Lundy would be included in the review conducted immediately prior to the outage during which the work is scheduled to be completed. However, due to long lead time for equipment delivery and the need to complete the work during the next planned major outage, two projects – the MK2 HP/IP turbine and generator work – warrant immediate discussion and review.

#### Balance of Plant Projects Summary

The MK2 HP/IP project entails the replacement of one steam turbine rotating element and stationary blades with functionally equivalent components. In order to maintain MK2's generation output capability, the new blades will be energy efficient blades and of a more reliable design. These blades are designed for maximum efficiency using three-dimensional flow analysis to optimize the steam turbine design. State of the art blade tip seals will provide additional efficiency improvements. The HP/IP rotor, stationary blade rings and inner cylinder casing will be replaced. The outer cylinder casing may also be replaced.

Mr. Robert R. Scott, Director  
June 7, 2006  
Page 3

The associated generator repair work involves the removal of cracks in the tooth-tops of the rotor, where retaining rings are shrunk onto the rotor to hold copper bars in place. Once the cracks are removed by grinding, a long retaining ring assembly with new, larger retaining rings will be used to re-assemble the generator rotor. The generator field winding must be rewound with new copper coils as part of this repair.

Following the completion of the HP/IP turbine and generator work, PSNH will be operating MK2 at the same fuel flow and emissions levels as it was operated prior to this equipment being repaired and/or replaced. The HP/IP turbine work will not change the amount of coal burned. Normal full load steam inlet conditions for flow, pressure and temperature will also be held constant, while producing an expected 6 to 13 additional megawatts. Because the coal flow remains constant, air emissions will not change or increase as a result of these projects.

Completion of the MK2 HP/IP turbine and generator projects is expected to maintain the reliability and output of MK2, and allow for the operation of a scrubber. Although the total combined cost of these two projects is estimated to be \$9M – \$15M, much of the budgeted expense is associated with the routine disassembly, inspection, and reassembly of both the high speed rotating equipment and the generator. The replacement of the HP/IP turbine work is being done as a lower cost option to expensive, more frequent, and time consuming repairs.

#### Anticipated Schedule

PSNH has identified the next major outage, in 2008, as the appropriate outage to complete the MK2 HP/IP turbine and generator maintenance. Completion of these two projects during the 2008 outage will allow PSNH to complete the necessary maintenance and balance of plant work in time to allow for the operation of the scrubber prior to June 2013. Completion of this work during 2008 will reduce the construction crews on site, eliminate conflicts with the construction of the scrubber system, and be more manageable for Merrimack Station resources.

In order to complete the MK2 HP/IP turbine and generator maintenance during the spring 2008 outage, PSNH will have to place an order for equipment by July 2006. The lead time required for equipment delivery is approximately 2 years. Traditionally, PSNH has placed orders for equipment prior to regulatory review; however, PSNH is proceeding cautiously in order to manage risks associated with the scrubber project (due entirely to the magnitude of the project) and balance of plant work (due to the cost of the HP/IP turbine and generator maintenance work).

#### Approach for Expedited Review

As previously stated, the HP/IP turbine and generator work will not result in an increase in emissions. As part of the scrubber project, emissions of mercury and sulfur dioxide will be reduced significantly when the scrubber becomes operational. These projects are maintenance activities that are routinely performed throughout the industry and are necessary to maintain

Mr. Robert R. Scott, Director  
June 7, 2006  
Page 4

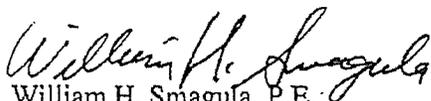
turbine and system efficiencies and reliability and, therefore, are not major modifications subject to Prevention of Significant Deterioration/New Source Review (PSD/NSR) permitting requirements. PSNH acknowledges that the issue of routine and non-routine physical changes is among the PSD/NSR applicability issues that continue to be debated at a national level and that a resolution of the issues may be years away. In order to satisfy the MK2 2008 outage work and schedule, PSNH has chosen an approach for the HP/IP turbine and generator projects that will expedite the regulatory review and does not require PSNH and DES to reach a resolution relative to the routine or non-routine nature of these projects. Due to the reasons stated previously, it would not be in the best interest of PSNH or PSNH customers to delay the regulatory review and completion of the HP/IP turbine and generator work.

In order to expedite the discussion and review process, PSNH has agreed to establish "baseline" emissions and substantiate "representative actual annual emissions" for Merrimack Station. Based on previous discussions with DES, it is our understanding that this approach allows an "actual" to "representative actual annual emissions" test for the purposes of quantifying an emissions increase and, therefore, eliminates the necessity for a NSR/PSD applicability determination. PSNH accepts this "actual to representative actual annual emissions" approach as a means of documenting its position that there will be no increase in emissions as a result of the HP/IP turbine and generator projects at Merrimack Station.

As discussed at the May 16<sup>th</sup> meeting, PSNH requests that DES concur, in writing, with this "actual" to "representative actual annual emissions" approach. With DES agreement of this approach, PSNH will provide the necessary documentation prior to the MK2 2008 planned maintenance outage, including a baseline determination, representative actual annual emissions, and supporting data to define normal source operations, if necessary.

If you would like to discuss the HP/IP turbine and generator work, or the approach outlined above, please contact me at 634-2851.

Sincerely,

  
William H. Smagula, P.E.  
Director - Generation

cc: Craig A. Wright, DES ARD

**Exhibit 3**



**Public Service  
of New Hampshire**

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) 634-2236  
Fax (603) 634-2213  
macdojm@psnh.com

January 31, 2008

The Northeast Utilities System

John M. MacDonald  
Vice President - Energy Delivery and Generation

Mr. Robert R. Scott, Director  
Air Resources Division  
NH Dept. of Environmental Services  
29 Hazen Drive, PO Box 95  
Concord, NH 03302-0095

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**FEB 04 2008**

**AIR RESOURCES DIVISION**

Public Service Company of New Hampshire  
Merrimack Station – Clean Air Project  
2008 Merrimack Unit #2 Outage

Dear Mr. Scott:

In response to your letter dated June 12, 2006, Public Service Company of New Hampshire submits baseline emissions data and projected actual emissions data for Merrimack Unit #2 (MK2). This submittal is being made as part of an approach, agreed upon by PSNH and the Department of Environmental Services, Air Resources Division (DES), to allow for an expedited regulatory review of balance of plant projects planned to be completed during MK2's 2008 outage. As requested, the emissions data provided in Attachment 1 is being submitted 60 days prior to the upcoming MK2 outage scheduled to begin on April 1, 2008. Please note, while this project has been generally referred to as the scrubber project during its young life, PSNH has adopted the name, The Clean Air Project, as its formal description. We will endeavor to use this new name going forward.

Project Overview

As indicated in my letter to you dated June 7, 2006, the balance of plant projects planned to be completed during the 2008 MK2 outage, including the HP/IP project and associated generator repair work, are necessary in order to maintain the output of MK2 and comply with RSA 125-O:13 which requires PSNH to install a wet scrubber at Merrimack Station, no later than July 2013. Given the large power consumption of the proposed scrubber system, the completion of this energy efficiency project is vital to Merrimack Station's long term operation.

The HP/IP project involves the replacement of one of the six steam turbine components with a functionally equivalent component. The new, state of the art turbine blades will be energy

efficient. As part of this project, the HP/IP rotor, stationary blade rings, and inner and outer cylinder casings will be replaced. The repair work to the generator involves an in-kind replacement of the generator rotor. The replacement of the generator rotor is the most cost effective approach to repairing the generator and is being completed as an alternate to the previously proposed repair approach which included installation of a long retaining ring assembly, rewinding with new copper coils, etc. The replacement of the generator requires a shorter critical-path outage duration and eliminates unknowns and risks associated with repair work.

### Merrimack Unit #2 Operation

Merrimack Station is PSNH's prime base load electric generating station currently produces approximately 475 net megawatts of electricity, 321.75<sup>1</sup> of which is produced by MK2. Following the completion of the MK2 HP/IP turbine project and associated generator work MK2 is expected, per the contract guarantee, to produce an additional 6.5 megawatts of electricity. The actual net unit output will range between 6 and 13 megawatts – an increase that is necessary to support the large power consumption of the future, new scrubber system –due to the increased efficiency of the turbine blades. As a result of this energy efficiency project, MK2 will produce more energy without increasing fuel consumed.

Following the completion of the HP/IP turbine project and associated generator work, MK2 will be operated at the same fuel flow rates and emissions levels as it was operated prior to the MK2 2008 outage. Normal full load steam inlet conditions for flow, pressure and temperature will remain at their previous values. Because the coal flow will remain constant, there is no change or increase in air emissions associated with the HP/IP turbine and generator project.

Given the base load operation of Merrimack Station, PSNH anticipates that actual annual emissions from MK2 in the future will be very similar to historical emissions. A review of historical data for the period 1996 through 2007 reveals slight variability in MK2's annual average capacity factor, operating hours, and total fuel burned, largely the result of annual maintenance outage schedules which typically range between four and nine weeks and unplanned outages. Historical data is enclosed as Attachment 2.

### Regulatory Review

The approach proposed by PSNH for regulatory review is based on EPA guidance documents, specifically those applicable to Detroit Edison's Monroe Power Plant and Otter Tail Power's Coyote Station where similar projects have been undertaken. The proposed approach is also based on existing federal PSD regulations which allow electric utilities to determine applicability using projected actual emissions. This approach, which has previously been called the "actual-to-representative-actual-annual" emissions test, allows utilities to compare projected future

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<sup>1</sup> MK2's current winter claimed capability.

annual emissions that will occur following a non-routine physical or operational change to actual baseline emissions preceding the change. Baseline emissions, calculated using utilization rate, fuel use and applicable emission factors, are based on an average annual emissions rate in tons per year for each pollutant emitted. Projected actual emissions are based on the maximum annual rate, in tons per year, at which a regulated PSD pollutant is projected to be emitted, less any emissions that could have been accommodated during the baseline period and are not related to the change. The proposed approach allows PSNH to document that there is no emissions increase associated with the MK2 HP/IP turbine and generator project.

#### Baseline Emissions

PSNH understands that baseline is calculated based on the average emissions, representative of normal operation, during 2 consecutive years during the previous 5 year period. PSNH has calculated baseline emissions for MK2 based on the annual average of emissions during two consecutive calendar years, or twenty-four consecutive months, preceding the 2008 outage, specifically 2006-2007. In addition to the enclosed historical data, summaries of emissions for the previous 5 years (2003-2007) as well as baseline for TSP, CO, VOCs, SO<sub>2</sub>, and NO<sub>x</sub> are provided in Attachment 2. The baseline for NO<sub>x</sub> and SO<sub>2</sub> was calculated using emissions data contained in PSNH's Quarterly Emissions Inventory Reports, as previously filed with DES and the NH Public Utilities Commission. Copies of these reports for the years 2006-2007 are also enclosed in Attachment 3. Baseline emissions for CO and VOCs were calculated using AP42 emissions factors published by DES and available on its web site. Baseline emissions for PM were calculated using the emissions rate documented during the most recent stack test. These calculations are identical to those used in PSNH's annual emissions reports and emissions based fees.

#### Projected Actual Emissions

Projected actual emissions for 2008 and 2009 have been calculated using forecasted annual capacity factors, fuel use, hours of operation and emissions rates. Projected emissions for 2008 are based on the average for the previous 5-year period, while projected emissions for 2009 are based on hours of operation, fuel use, and emissions similar to 2006. As previously stated, given the base load operation of Merrimack Station, PSNH anticipates that MK2's projected actual emissions will be comparable to its historical actual emissions. Projected actual emissions and forecasted capacity factors for MK2 are enclosed in Attachment 1. Historic capacity factors are contained in Attachments 1 and 2. In accordance with EPA guidance, the projection of post-change emissions does not include the portion of emissions that could have been accommodated before the change and is unrelated to the change. See letter from Francis X. Lyons, Regional Administrator, US EPA, to Henry Nickel, Counsel for the Detroit Edison Company, Hunton & Williams, dated May 23, 2000. Maximum potential emissions (i.e., emissions that can be accommodated prior to the change) currently allowed under TP-B-0462 and existing state and federal applicable requirements are contained in Attachment 4.

Mr. Robert R. Scott, Director  
January 28, 2008  
Page 4 of 4

Future Recordkeeping and Reporting

As specified under 40 CFR 52.21(b)(21)(v) and 40 CFR 52.24(f)(13)(v), PSNH will maintain and submit to DES, on an annual basis for a period of 5 years, information demonstrating that there are no emissions increases as a result of the HP/IP turbine and generator project. This information may include annual utilization data, emissions data, fuel use, etc. PSNH may exclude emissions increases that are caused by other factors including, for example, increases associated with variability in control technology operation and performance or coal characteristics. Emissions increases may also exclude increases associated with increased use of MK2 due to the growth in electrical demand for the utility system as a whole since the baseline period. See Detroit Edison Applicability Determination Detailed Analysis, dated May 23, 2000.

In addition to documenting that there is no increase in emissions associated with the HP/IP turbine and generator project, the enclosed baseline and projected actual emissions fulfills the request for documentation contained in your letter dated June 12, 2007. Should you have any questions or require additional information relative to the MK2 HP/IP turbine and generator project or the enclosed data, please contact me at 634-2851 or Laurel L. Brown, Senior Environmental Analyst, at 634-2331.

Sincerely,



William H. Smagula, P.E.  
Director – Generation

Enclosures

cc. Thomas S. Burack, Commissioner, DES  
Harold E. Keyes, PSNH Merrimack Station

**PSNH Merrimack Station  
Merrimack Unit #2**

**Attachment 1**

**Historic Emissions Data**

	<b>SO2</b> tons/yr	<b>NOx</b> tons/yr	<b>CO</b> tons/yr	<b>PM</b> tons/yr	<b>VOCs</b> tons/yr
2003	17,387	2,685	196	218	43
2004	20,582	3,067	211	233	46
2005	22,948	3,283	220	234	48
2006	22,729	3,304	236	256	52
2007	25,062	2,250	228	249	50

**Historic Operational Data**

	<b>Capacity</b> Factor %	<b>Coal</b> tons/yr	<b>#2 Oil</b> gal/yr
2003	73.90	768,969	28,826
2004	80.50	841,129	22,867
2005	79.10	870,802	77,190
2006	83.90	937,595	29,070
2007	82.90	912,674	11,427

**Baseline Period: January 2006 - December 2007**

**Baseline Emissions**

<b>SO2</b> tons/yr	<b>NOx</b> tons/yr	<b>CO</b> tons/yr	<b>PM</b> tons/yr	<b>VOCs</b> tons/yr
23,896	2,777	232	253	51

**Projected Capacity Factor and Representative Actual Emissions**

	<b>SO2</b> tons/yr	<b>NOx</b> tons/yr	<b>CO</b> tons/yr	<b>PM</b> tons/yr	<b>VOCs</b> tons/yr	<b>Capacity</b> Factor %
2008	21,742	2,918	218	238	48	80.1
2009	25,062	3,304	236	256	52	83.9

PSNH Merrimack Station  
Merrimack Unit #2

Attachment 2

Year	SO2 tons/yr	NOx tons/yr	CO tons/yr	PM tons/yr	VOCs tons/yr	Capacity Factor %	Nox lbs/mmBtu	SO2 lbs/mmBtu	Coai tons/yr	# 2 Oil gal/yr
1996	23,579.51	13,818.20	187.46	1,595.40	41.23	69.9	0.95	2.44	746,923	18,215
1997	26,128.10	9,804.50	223.47	1,837.00	49.16	83.0	0.88	2.15	860,559	13,054
1998	21,669.00	4,745.00	191.62	1,886.70	42.14	70.2	0.48	2.10	752,201	23,826
1999	20,518.00	4,628.00	180.78	1,416.50	39.76	68.5	0.47	2.16	692,942	16,645
2000	26,152.00	4,202.00	219.70	231.90	48.32	78.6	0.38	2.27	849,914	31,723
2001	24,562.00	3,130.00	201.17	216.20	44.25	74.8	0.30	2.31	788,202	14,317
2002	20,902.00	2,872.00	200.15	210.48	44.03	75.7	0.27	1.90	757,879	13,459
2003	17,387.00	2,684.80	195.80	217.76	43.06	73.9	0.26	1.58	768,969	28,826
2004	20,582.00	3,067.00	210.92	232.67	46.39	80.5	0.28	1.71	841,129	22,867
2005	22,948.00	3,283.00	219.70	234.11	48.30	79.1	0.29	1.93	870,802	77,190
2006	22,729.00	3,304.00	235.64	256.19	51.83	83.9	0.26	1.79	937,595	29,070
2007	25,062.40	2,249.60	228.20	249.24	50.20	82.9	0.18	1.97	912,674	11,427



MERRIMACK STATION  
2006 SO<sub>2</sub> - NO<sub>x</sub> EMISSIONS CALCULATIONS

Month	COAL AS BURNED								#2 OIL AS BURNED										
	MK1 Tons	MK2 Tons	TOTAL Tons	% Sulfur	MK1 btu/lb	% Sulfur	MK2 btu/lb	Avg Sulfur	MK1 CEM Tons NOx	MK2 CEM Tons NOx	MK1 CEM Tons SO <sub>2</sub>	MK2 CEM Tons SO <sub>2</sub>	TOTAL CEM Tons SO <sub>2</sub>	MK1 Gal.	MK2 Gal.	TOTAL Gal.	% Sulfur	btu/lb	lbs/gal
JAN	30,088	90,657	120,745	1.21	13,066	1.15	13,097	1.16	209	434	809	2,194	3,003	4,813	4,179	8,992	0.04	19,474	7.020
FEB	24,956	86,161	91,117	1.31	13,333	1.08	13,261	1.14	179	327	808	1,374	2,182	3,708	5,721	9,429	0.04	19,474	7.020
MAR	31,789	88,337	120,126	1.53	13,330	1.23	13,345	1.31	227	424	990	1,979	2,988	1,193	1,780	2,973	0.04	19,474	7.020
APR	24,221	50,411	74,632	1.80	13,396	1.25	13,319	1.36	175	239	734	1,240	1,973	2,258	142	2,400	0.04	19,564	7.060
MAY	23,614	27,330	50,944	1.90	13,050	1.20	12,853	1.53	59	71	846	777	1,622	4,135	6,100	10,235	0.04	19,564	7.060
JUN	25,429	91,612	117,041	1.60	13,113	1.41	12,889	1.45	55	169	759	2,260	3,019	2,151	929	3,080	0.03	19,428	7.060
JUL	34,367	98,757	131,124	1.42	12,875	1.32	12,660	1.34	71	182	1,048	2,374	3,422	83	169	252	0.03	19,617	7.068
AUG	34,161	96,238	130,399	1.59	12,895	1.29	12,770	1.37	72	190	1,263	2,535	3,798	-	87	87	0.03	19,617	7.068
SEP	4,801	69,673	74,474	1.59	12,895	1.24	12,870	1.27	11	152	192	1,710	1,902	1,257	5,892	7,149	0.03	19,617	7.068
OCT	27,517	92,176	119,693	1.15	13,106	1.16	13,116	1.16	202	424	778	2,241	3,019	2,005	618	2,623	0.11	19,444	7.060
NOV	28,916	91,964	120,880	1.23	13,128	1.24	12,914	1.24	200	375	852	2,122	2,973	2,729	-	2,729	0.11	19,444	7.060
DEC	29,738	80,939	110,677	1.81	13,124	1.57	13,157	1.63	198	317	920	1,923	2,844	1,595	3,453	5,048	0.11	19,444	7.060
* ADDJ	(296)	(4,660)	(4,956)	1.48	13,114	1.27	13,010	1.32	-	-	-	-	-	-	-	-	-	-	-
YR TOTALS	319,301	937,595	1,256,896						1,658	3,304	9,998	22,728	32,728	25,927	29,070	54,997			
YR AVERAGE				1.48	13,114	1.27	13,010	1.32									0.05	19,506	7.047
10 <sup>12</sup> BTU	8.374437	24.39665	32.771											0.0036	0.0040	0.0078			

1.015 - COAL-AVE lb SULFUR PER MMBTU  
 0.026 - #2 OIL - AVE lb SULFUR PER MMBTU  
 1.015 - OVERALL AVE lb SULFUR PER MMBTU

1.997 - AVERAGE LBS SO<sub>2</sub> PER MMBTU  
 4.000 - NH STATE REG MAX  
 0.372 - MK1 AVERAGE LBS NO<sub>x</sub>/MMBTU  
 0.264 - MK2 AVERAGE LBS NO<sub>x</sub>/MMBTU

NOTES:

- 1) ALL ANALYSES USED ARE "AS RECEIVED" ON THE FUEL ANALYSIS SHEETS.
  - 2) SULFUR VALUES ARE PERCENT BY WEIGHT.
  - 3) MONTHLY COMPOSITE ANALYSES USED FOR BOTH UNITS FOR REPORTING PURPOSES, EVEN DURING MONTHS WHEN TEST BURNS OCCURRED.
  - 4) COAL TONS ARE PRORATED BURN.
- \* STARRED ENTRY IS AERIAL SURVEY ADJUSTMENT, FUEL ANALYSIS IS EQUAL TO STATION Y-T-D WEIGHTED AVERAGE (December was adjusted)  
 Emissions are based on Average emissions rate of the current year

**Current Permit Limits**

max gross heat input	3,473 mmBtu/hr
max annual gross heat input	30,423,480 mmBtu
max sulfur content of coal burned	2.80 lb/mmBtu
max sulfur content of #2 fuel oil	0.40 % by weight
max fuel consumption (coal)	136.20 tons/hr
max fuel consumption (coal)	1,193,078.0 tons per 12-mo
max fuel consumption (#2 oil)	1,656.0 gal/hr
max fuel consumption (#2 oil)	14,500,000.0 gallons per 12-mo
NOx	15.40 tons per day 5,621.00 tpy calculated = 15.4 tpd * 365
SO2	85,185.74 tpy calculated = 2.8 lb/mmBtu * 3473 mmBtu/hr * 8760 * 2 / 2000