

**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
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 (SO₂) 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 16th 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



The State of New Hampshire
Department of Environmental Services

Michael P. Nolin
Commissioner



June 12, 2006

Mr. William H. Smagula
Director-Generation
Public Service Company of New Hampshire
780 North Commercial Street
Manchester, NH 03105-0330

Re: Merrimack Station - Planned 2008 Outage for Unit #2

Dear Mr. Smagula:

This letter is in response to your June 7, 2006 letter to the Department of Environmental Services (the Department) in which you provide information regarding future work planned to be performed on Unit #2 (MK2) located at Merrimack Station in Bow, N.H. In particular, Public Service Company of New Hampshire (PSNH) has indicated that during the next major outage on MK2, scheduled for 2008, work will be performed on the MK2 high pressure/intermediate pressure (HP/IP) section of the turbine and the generator section. PSNH has requested that the Department review the planned work and approve a proposed strategy for addressing regulatory issues.

The proposed MK2 HP/IP project entails the replacement of the MK2 steam turbine rotating element and stationary blades with functionally equivalent components. Specifically, the project entails the replacement of the HP/IP rotor, stationary blade rings and inner cylinder casing. Additional work on the turbine may also include replacing the outer cylinder casing. Planned generator work includes the removal of cracks in the tooth-tops of the rotor by grinding and subsequent replacement of the old retaining rings with new, larger retaining rings. In addition, the generator field winding will be rewound with new copper coils.

PSNH has asserted that following the completion of the above described work, MK2 will operate at the same fuel flow and emissions level as prior to the work. PSNH has also indicated that normal full load steam inlet steam conditions for flow, pressure and temperature will remain constant while producing an estimated 6 to 13 additional megawatts. PSNH has estimated that the combined cost of these two projects will be \$ 9 – 15 million. Finally, PSNH has noted that this project is in preparation for the installation of a scrubber at Merrimack Station required by HB 1673 FN. The anticipated increased power output generated by this project will offset the energy demands of the new scrubber which will be installed by 2013.

As discussed during the May 16th meeting, the above work was described as being very similar in nature to work performed by Detroit Edison at the Monroe Power Plant as documented in a May 23, 2000 letter from the US Environmental Protection Agency. In that situation and

this situation it was asserted that the work performed would not result in a significant increase in emissions and would not trigger a review under the New Source Review (NSR) program. In order to expedite the review process, PSNH has proposed to establish "actual" or "baseline" emissions prior to performing the work and comparing those levels to "representative actual annual emissions" following completion of the work as outlined in the NSR program. This "actual" to "representative actual annual emissions" test will allow for documentation of PSNH's position that there will be no increase in emissions as a result of the proposed work. The Department agrees to the approach outlined in your June 7th correspondence and requests that PSNH submit the necessary documentation at least 60 days prior to the 2008 outage for MK2.

If you have any questions regarding this determination, please contact Craig Wright, Administrator, Bureau of Permitting and Environmental Health at (603) 271-6791.

Sincerely,



Robert R. Scott
Director
Air Resources Division



**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

**RECEIVED
NEW HAMPSHIRE**

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, 321.75¹ 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

¹ 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, SO₂, and NO_x are provided in Attachment 2. The baseline for NO_x and SO₂ 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

	SO2	NOx	CO	PM	VOCs
	tons/yr	tons/yr	tons/yr	tons/yr	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

	Capacity	Coal	#2 Oil
	Factor %	tons/yr	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

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

Projected Capacity Factor and Representative Actual Emissions

	SO2	NOx	CO	PM	VOCs	Capacity
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	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	Coal 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
2007 SO2 - NOX EMISSIONS CALCULATIONS

Month	COAL AS BURNED				% OIL AS BURNED				#2 OIL AS BURNED						
	MK1 Tons	MK2 Tons	TOTAL Tons	% Sulfur	MK1 Sulfur	MK2 Sulfur	TOTAL Sulfur	% Avg Sulfur	MK1 CEM Tons SO2	MK2 CEM Tons SO2	TOTAL CEM Tons SO2	MK1 Gal.	MK2 Gal.	TOTAL Gal.	% Sulfur
JAN	32,573	92,454	125,027	1.59	13,024	1.46	13,049	1.50	193	1,047	3,742	-	266	266	0.02
FEB	26,943	64,351	91,294	1.58	13,046	1.54	12,778	1.56	149	953	3,162	-	2,321	2,321	0.02
MAR	28,874	94,336	123,210	1.41	13,208	1.40	12,927	1.40	184	892	3,327	903	58	961	0.02
APR	31,333	49,307	80,640	1.71	13,263	1.50	13,001	1.58	104	1,072	2,344	95	-	95	0.01
MAY	33,359	13,150	46,509	1.35	13,370	1.16	13,442	1.29	53	961	1,312	-	2,161	2,161	0.01
JUN	29,329	83,669	112,998	1.32	13,162	1.38	13,148	1.36	198	921	3,207	83	3,726	3,809	0.01
JUL	34,065	91,622	125,687	1.31	13,194	1.28	13,050	1.29	194	962	3,270	-	630	630	0.01
AUG	32,411	90,645	123,056	1.55	13,112	1.48	13,132	1.50	252	1,045	3,601	-	109	109	0.01
SEP	28,712	69,741	98,453	1.51	13,221	1.41	13,055	1.44	185	855	2,872	891	-	891	0.01
OCT	31,245	79,340	110,585	1.43	13,158	1.50	13,009	1.48	225	916	3,057	140	1,489	1,629	0.02
NOV	31,215	89,815	121,030	1.48	12,992	1.28	12,905	1.33	248	915	3,322	92	92	184	0.02
DEC	33,332	94,244	127,576	1.50	12,946	1.35	12,892	1.38	264	943	3,469	62	575	637	0.02
* ADDJ															
YR TOTALS	373,391	912,674	1,286,065						971	2,248	36,484	2,266	11,427	13,693	
YR AVERAGE				1.48	13,138	1.40	13,004	1.43							0.01
10*12 BTU	9,811,158	23,737,47	33,549									0.0003	0.0016	0.0019	

1093	0.007	1.093
- COAL-AVE lb SULFUR PER MMBTU		
- #2 OIL - AVE lb SULFUR PER MMBTU		
- OVERALL AVE lb SULFUR PER MMBTU		
2.175	4.000	0.182
- AVERAGE LBS SO2 PER MMBTU		
- NH STATE REG MAX		
- MK1 AVERAGE LBS NOx/MMBTU		
- MK2 AVERAGE LBS NOx/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

MERRIMACK STATION
2006 SO₂ - NO_x EMISSIONS CALCULATIONS

Month	COAL AS BURNED					% COAL AS BURNED					#2 OIL AS BURNED						
	MK1 Tons	MK2 Tons	TOTAL Tons	% Sulfur	MK1 Sulfur	MK1 %	MK2 Sulfur	MK2 %	Avg Sulfur	% Sulfur	MK1 Tons SO ₂	MK2 Tons SO ₂	TOTAL Tons SO ₂	MK1 Gal.	MK2 Gal.	TOTAL Gal.	% Sulfur
JAN	30,088	90,657	120,745	1.21	13,086	1.15	13,087	1.16	209	434	809	2,194	3,003	4,813	4,179	8,992	0.04
FEB	24,956	86,161	111,117	1.31	13,333	1.08	13,261	1.14	179	327	808	1,374	2,182	3,708	5,721	9,429	0.94
MAR	31,789	88,337	120,126	1.53	13,330	1.23	13,345	1.31	227	424	990	1,979	2,968	1,193	1,780	2,973	0.04
APR	24,221	50,411	74,632	1.60	13,396	1.25	13,319	1.36	175	239	734	1,240	1,973	2,258	142	2,400	0.04
MAY	23,614	27,330	50,944	1.90	13,060	1.20	12,863	1.53	59	71	846	777	1,622	4,135	6,100	10,235	0.04
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
JUL	34,367	96,757	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
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
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
OCT	27,517	92,176	119,693	1.15	13,106	1.16	13,116	1.18	202	424	778	2,241	3,019	2,005	618	2,623	0.11
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
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
* ADJ	(296)	(4,660)	(4,956)	1.48	13,114	1.27	13,010	1.32	-	-	-	-	-	-	-	-	-
YR TOTALS	319,301	937,595	1,256,896	1.48	13,114	1.27	13,010	1.32	1,658	3,304	9,998	22,728	32,728	25,927	29,070	54,997	0.05
YR AVERAGE	8,374,437	24,399,855	32,771											0.0036	0.0040	0.0076	

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

1.997 - AVERAGE LBS SO₂ PER MMBTU
 4.000 - NH STATE REG MAX
 0.372 - MK1 AVERAGE LBS NO_x/MMBTU
 0.264 - MK2 AVERAGE LBS NO_x/MMBTU

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



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Thomas S. Burack, Commissioner

March 31, 2008

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

Re: Merrimack Station – 2008 Merrimack Unit #2 Outage

Dear Mr. Smagula:

The New Hampshire Department of Environmental Services, Air Resources Division (DES) has reviewed your letter dated January 31, 2008, regarding planned projects to be completed on Merrimack Station Unit #2 (MK2) during the April 2008 outage. In particular, Public Service Company of New Hampshire (PSNH) submitted its assessment of projected future actual emissions from MK2 of pollutants regulated under the New Source Review, Prevention of Significant Deterioration (PSD), and Nonattainment New Source Review programs (hereinafter referred to as NSR) to support its position that modifications to the steam turbine and generator for MK2 will not result in increased emissions and, therefore, do not trigger the need for review under new Hampshire's NSR program.

PSNH submitted this information under the provisions of 40 C.F.R. 52.21(b)(21)(iv), commonly referred to as the "WEPCO rule," which allows utilities to make non-routine modifications that would otherwise be subject to NSR permitting if they demonstrate that future actual emissions will not increase as a result. The WEPCO rule also requires that a "no emissions increase" demonstration continue for 5 years (or a longer period not to exceed 10 years if such a period is more representative of the modified unit's normal post-change operations) after the modification is completed. Subject to these requirements and for the reasons discussed below, DES has conditionally determined that NSR permitting requirements do not apply to PSNH's modifications to MK2 at this time.

In determining whether an activity triggers NSR, a two step test is specified by the Clean Air Act and U.S. Environmental Protection Agency (EPA) regulations (which DES has adopted). The first step is to determine if such activity is a physical or operational change. If it is, the second step is to determine whether emissions will increase because of the change. In its January 31, 2008 letter, PSNH provided DES with a demonstration that future actual emissions will not increase as a result from the work scheduled for the April 2008 MK2 outage.

While DES has conditionally determined that NSR permitting requirements do not apply to the planned modifications to MK2, this determination is based solely on the future actual annual emissions projections provided by PSNH, as DES currently has no method available to confirm or dispute the future actual emissions projections. DES does concur with PSNH's determination that the 24-month period from January 2006 through December 2007 is the representative emissions baseline period.

DES Web site: www.des.nh.gov
P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095
Telephone: (603) 271-1370 • Fax: (603) 271-1381 • TDD Access: Relay NH 1-800-735-2964

In regard to the type and level of post-change emissions that may be properly excluded from the calculation of future actual emissions for purposes of determining NSR applicability, DES believes that a future meeting to discuss this issue would be beneficial.

If you have any questions regarding this letter, please contact Gary Milbury of the Permitting & Environmental Health Bureau at (603) 271-2630 or via email at gmilbury@des.nh.gov.

Sincerely,



Craig A. Wright
Chief Air Programs Manager
Air Resources Division

caw/gdm

**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
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 (SO₂) 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 16th 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



The State of New Hampshire
Department of Environmental Services

Michael P. Nolin
Commissioner



June 12, 2006

Mr. William H. Smagula
Director-Generation
Public Service Company of New Hampshire
780 North Commercial Street
Manchester, NH 03105-0330

Re: Merrimack Station - Planned 2008 Outage for Unit #2

Dear Mr. Smagula:

This letter is in response to your June 7, 2006 letter to the Department of Environmental Services (the Department) in which you provide information regarding future work planned to be performed on Unit #2 (MK2) located at Merrimack Station in Bow, N.H. In particular, Public Service Company of New Hampshire (PSNH) has indicated that during the next major outage on MK2, scheduled for 2008, work will be performed on the MK2 high pressure/intermediate pressure (HP/IP) section of the turbine and the generator section. PSNH has requested that the Department review the planned work and approve a proposed strategy for addressing regulatory issues.

The proposed MK2 HP/IP project entails the replacement of the MK2 steam turbine rotating element and stationary blades with functionally equivalent components. Specifically, the project entails the replacement of the HP/IP rotor, stationary blade rings and inner cylinder casing. Additional work on the turbine may also include replacing the outer cylinder casing. Planned generator work includes the removal of cracks in the tooth-tops of the rotor by grinding and subsequent replacement of the old retaining rings with new, larger retaining rings. In addition, the generator field winding will be rewound with new copper coils.

PSNH has asserted that following the completion of the above described work, MK2 will operate at the same fuel flow and emissions level as prior to the work. PSNH has also indicated that normal full load steam inlet steam conditions for flow, pressure and temperature will remain constant while producing an estimated 6 to 13 additional megawatts. PSNH has estimated that the combined cost of these two projects will be \$ 9 – 15 million. Finally, PSNH has noted that this project is in preparation for the installation of a scrubber at Merrimack Station required by HB 1673 FN. The anticipated increased power output generated by this project will offset the energy demands of the new scrubber which will be installed by 2013.

As discussed during the May 16th meeting, the above work was described as being very similar in nature to work performed by Detroit Edison at the Monroe Power Plant as documented in a May 23, 2000 letter from the US Environmental Protection Agency. In that situation and

this situation it was asserted that the work performed would not result in a significant increase in emissions and would not trigger a review under the New Source Review (NSR) program. In order to expedite the review process, PSNH has proposed to establish "actual" or "baseline" emissions prior to performing the work and comparing those levels to "representative actual annual emissions" following completion of the work as outlined in the NSR program. This "actual" to "representative actual annual emissions" test will allow for documentation of PSNH's position that there will be no increase in emissions as a result of the proposed work. The Department agrees to the approach outlined in your June 7th correspondence and requests that PSNH submit the necessary documentation at least 60 days prior to the 2008 outage for MK2.

If you have any questions regarding this determination, please contact Craig Wright, Administrator, Bureau of Permitting and Environmental Health at (603) 271-6791.

Sincerely,



Robert R. Scott
Director
Air Resources Division



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

RECEIVED
NEW HAMPSHIRE

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, 321.75¹ 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

¹ 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, SO₂, and NO_x are provided in Attachment 2. The baseline for NO_x and SO₂ 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

	SO2	NOx	CO	PM	VOCs
	tons/yr	tons/yr	tons/yr	tons/yr	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

	Capacity	Coal	#2 Oil
	Factor %	tons/yr	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

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

Projected Capacity Factor and Representative Actual Emissions

	SO2	NOx	CO	PM	VOCs	Capacity
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	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	Coal 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
2007 SO2 - NOx EMISSIONS CALCULATIONS

Month	COAL AS BURNED				% COAL AS BURNED				#2 OIL AS BURNED						
	MK1 Tons	MK2 Tons	TOTAL Tons	% Sulfur	MK1 btu/lb	MK2 Sulfur	TOTAL Sulfur	% Sulfur	MK1 Tons SO2	MK2 CEM Tons SO2	TOTAL CEM Tons SO2	MK1 Gal.	MK2 Gal.	TOTAL Gal.	% Sulfur
JAN	32,573	92,454	125,027	1.59	13,024	1.46	13,049	1.50	193	1,047	3,742	-	266	266	0.02
FEB	26,943	64,351	91,294	1.58	13,046	1.54	12,778	1.56	149	953	3,162	-	2,321	2,321	0.02
MAR	28,874	94,336	123,210	1.41	13,208	1.40	12,927	1.40	184	892	3,327	903	58	961	0.02
APR	31,333	49,307	80,640	1.71	13,263	1.50	13,001	1.58	104	1,072	2,344	95	-	95	0.01
MAY	33,359	13,150	46,509	1.35	13,370	1.16	13,442	1.29	53	961	1,312	-	2,161	2,161	0.01
JUN	29,329	83,669	112,998	1.32	13,162	1.38	13,148	1.36	198	921	3,207	83	3,726	3,809	0.01
JUL	34,065	91,622	125,687	1.31	13,194	1.28	13,050	1.29	194	962	3,270	-	630	630	0.01
AUG	32,411	90,645	123,056	1.55	13,112	1.48	13,132	1.50	252	1,045	3,601	-	109	109	0.01
SEP	28,712	69,741	98,453	1.51	13,221	1.41	13,055	1.44	185	855	2,872	891	-	891	0.01
OCT	31,245	79,340	110,585	1.43	13,158	1.50	13,009	1.48	225	916	3,057	140	1,489	1,629	0.02
NOV	31,215	89,815	121,030	1.48	12,992	1.28	12,905	1.33	248	915	3,322	92	92	184	0.02
DEC	33,332	94,244	127,576	1.50	12,946	1.35	12,892	1.38	264	943	3,469	62	575	637	0.02
* ADDJ															
YR TOTALS	373,391	912,674	1,286,065						971	2,248	36,484	2,266	11,427	13,693	
YR AVERAGE				1.48	13,138	1.40	13,004	1.43							0.01
10*12 BTU	9,811,158	23,737,47	33,549									0.0003	0.0016	0.0019	

1093	0.007	1.093
- COAL-AVE lb SULFUR PER MMBTU	- #2 OIL - AVE lb SULFUR PER MMBTU	- OVERALL AVE lb SULFUR PER MMBTU
2.175	4.000	0.182
- AVERAGE LBS SO2 PER MMBTU	- NH STATE REG MAX	- MK1 AVERAGE LBS NOx/MMBTU
0.186		0.186
- MK2 AVERAGE LBS NOx/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

MERRIMACK STATION
2006 SO₂ - NO_x EMISSIONS CALCULATIONS

Month	COAL AS BURNED					% COAL AS BURNED					#2 OIL AS BURNED						
	MK1 Tons	MK2 Tons	TOTAL Tons	% Sulfur	MK1 Sulfur	MK1 %	MK2 Sulfur	MK2 %	Avg Sulfur	% Sulfur	MK1 Tons SO ₂	MK2 Tons SO ₂	TOTAL Tons SO ₂	MK1 Gal.	MK2 Gal.	TOTAL Gal.	% Sulfur
JAN	30,088	90,657	120,745	1.21	13,086	1.15	13,087	1.16	209	434	809	2,194	3,003	4,813	4,179	8,992	0.04
FEB	24,956	86,161	111,117	1.31	13,333	1.08	13,261	1.14	179	327	808	1,374	2,182	3,708	5,721	9,429	0.94
MAR	31,789	88,337	120,126	1.53	13,330	1.23	13,345	1.31	227	424	990	1,979	2,968	1,193	1,780	2,973	0.04
APR	24,221	50,411	74,632	1.60	13,396	1.25	13,319	1.36	175	239	734	1,240	1,973	2,258	142	2,400	0.04
MAY	23,614	27,330	50,944	1.90	13,060	1.20	12,863	1.53	59	71	846	777	1,622	4,135	6,100	10,235	0.04
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
JUL	34,367	96,757	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
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
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
OCT	27,517	92,176	119,693	1.15	13,106	1.16	13,116	1.18	202	424	778	2,241	3,019	2,005	618	2,623	0.11
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
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
* ADJ	(296)	(4,660)	(4,956)	1.48	13,114	1.27	13,010	1.32	-	-	-	-	-	-	-	-	-
YR TOTALS	319,301	937,595	1,256,896	1.48	13,114	1.27	13,010	1.32	1,658	3,304	9,998	22,728	32,728	25,927	29,070	54,997	0.05
YR AVERAGE	8,374,437	24,399,855	32,771											0.0036	0.0040	0.0076	

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

1.997 - AVERAGE LBS SO₂ PER MMBTU
 4.000 - NH STATE REG MAX
 0.372 - MK1 AVERAGE LBS NO_x/MMBTU
 0.264 - MK2 AVERAGE LBS NO_x/MMBTU

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



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Thomas S. Burack, Commissioner

March 31, 2008

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

Re: Merrimack Station – 2008 Merrimack Unit #2 Outage

Dear Mr. Smagula:

The New Hampshire Department of Environmental Services, Air Resources Division (DES) has reviewed your letter dated January 31, 2008, regarding planned projects to be completed on Merrimack Station Unit #2 (MK2) during the April 2008 outage. In particular, Public Service Company of New Hampshire (PSNH) submitted its assessment of projected future actual emissions from MK2 of pollutants regulated under the New Source Review, Prevention of Significant Deterioration (PSD), and Nonattainment New Source Review programs (hereinafter referred to as NSR) to support its position that modifications to the steam turbine and generator for MK2 will not result in increased emissions and, therefore, do not trigger the need for review under new Hampshire's NSR program.

PSNH submitted this information under the provisions of 40 C.F.R. 52.21(b)(21)(iv), commonly referred to as the "WEPCO rule," which allows utilities to make non-routine modifications that would otherwise be subject to NSR permitting if they demonstrate that future actual emissions will not increase as a result. The WEPCO rule also requires that a "no emissions increase" demonstration continue for 5 years (or a longer period not to exceed 10 years if such a period is more representative of the modified unit's normal post-change operations) after the modification is completed. Subject to these requirements and for the reasons discussed below, DES has conditionally determined that NSR permitting requirements do not apply to PSNH's modifications to MK2 at this time.

In determining whether an activity triggers NSR, a two step test is specified by the Clean Air Act and U.S. Environmental Protection Agency (EPA) regulations (which DES has adopted). The first step is to determine if such activity is a physical or operational change. If it is, the second step is to determine whether emissions will increase because of the change. In its January 31, 2008 letter, PSNH provided DES with a demonstration that future actual emissions will not increase as a result from the work scheduled for the April 2008 MK2 outage.

While DES has conditionally determined that NSR permitting requirements do not apply to the planned modifications to MK2, this determination is based solely on the future actual annual emissions projections provided by PSNH, as DES currently has no method available to confirm or dispute the future actual emissions projections. DES does concur with PSNH's determination that the 24-month period from January 2006 through December 2007 is the representative emissions baseline period.

DES Web site: www.des.nh.gov
P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095
Telephone: (603) 271-1370 • Fax: (603) 271-1381 • TDD Access: Relay NH 1-800-735-2964

In regard to the type and level of post-change emissions that may be properly excluded from the calculation of future actual emissions for purposes of determining NSR applicability, DES believes that a future meeting to discuss this issue would be beneficial.

If you have any questions regarding this letter, please contact Gary Milbury of the Permitting & Environmental Health Bureau at (603) 271-2630 or via email at gmilbury@des.nh.gov.

Sincerely,



Craig A. Wright
Chief Air Programs Manager
Air Resources Division

caw/gdm