State of New Hampshire
Department of Environmental Services
Air Resources Division

Temporary Permit

Permit No: TP-0189
Date Issued: September 1, 2016

This certifies that:

Public Service of New Hampshire d/b/a Eversource Energy
780 North Commercial Street
Manchester, NH 03101

has been granted a Temporary Permit for:

Two Utility Boilers

at the following facility and location:

Merrimack Station
431 River Road
Bow, NH 03304

Facility ID No: **3301300026**
Application No: **15-0500**, received September 18, 2015 - Temporary Permit, with additional information received on February 8, 2016, April 22, 2016 and June 6, 2016.

which includes devices that emit air pollutants into the ambient air as set forth in the permit application referenced above which was filed with the New Hampshire Department of Environmental Services, Air Resources Division (Division) in accordance with RSA 125-C of the New Hampshire Laws. Request for permit renewal must be received by the Division at least 90 days prior to expiration of this permit and must be accompanied by the appropriate permit application forms.

This permit is valid upon issuance and expires on **March 31, 2018**.

Craig Wright COPY

Director
Air Resources Division

VI. Operating and Emission Limitations

The Owner or Operator shall be subject to the operating and emission limitations identified in Table 4:

Table 4 - Operating and Emission Limitations

Item #	Requirement	Applicable Emission Unit	Regulatory Basis
1.	*NAAQS Attainment Demonstration - SO_2 Emission Limitation* Sulfur dioxide emissions from MK1 and MK2 combined shall not exceed 0.39 lb/MMBtu on a 7-boiler operating day[7] rolling average.	MK1 & MK2	RSA 125-C:11 IV
2.	*The following condition supersedes conditions contained in Table 4, Items 6.a & 8.a of TP-0008* *SO_2 Emission Limitation for Mitigation of Regional Haze* a.) Except as provided in b.) below, actual SO_2 emissions from MK1 & MK2 combined shall be reduced by at least 94.0% based on a 30-boiler operating day rolling average basis. The SO_2 percent reduction shall be calculated at the end of each boiler operating day in accordance with Table 5, Item 2. b.) If the SO_2 percent reduction of 94.0% (as calculated on a 30-boiler operating day rolling average basis) is not met on a boiler operating day, compliance shall alternatively be achieved if on the same day: i. The actual combined SO_2 emissions from MK1 and MK2 are less than or equal to 0.24 lb/MMBtu, as calculated on a 30-boiler operating day rolling average basis; and ii. The actual combined SO_2 emissions from MK1 and MK2 are reduced by at least 93.4%, as calculated on a 30-boiler operating day rolling average basis. c.) The facility is limited to utilizing the alternate compliance option listed in b.) above to no more than 7 boiler operating days during any consecutive 30-boiler operating day period.	MK1 & MK2	Env-A 2302

[7] Boiler operating day means a 24-hour period that begins at midnight and ends the following midnight during which any fuel is combusted at any time in the boiler. It is not necessary for the fuel to be combusted the entire 24-hour period.

Table 4 - Operating and Emission Limitations			
Item #	**Requirement**	**Applicable Emission Unit**	**Regulatory Basis**
3.	*The following condition supersedes the condition contained in Table 4, Item 10 of Temporary Permit TP-0008* *Emergency Stack Operation* a.) Emissions from MK1 shall be vented through the emergency stack (STMK2) only during emergency situations as necessary to prevent severe damage to equipment or potential injury to personnel. b.) No fuel shall be supplied to MK1 while emissions are vented through the emergency stack. c.) Emergency stack may also be used for ventilation during maintenance activities when the boiler is offline.	MK1	RSA 125-C:11 IV

VII. Monitoring and Testing Requirements

The Owner or Operator shall be subject to the monitoring requirements identified in Table 5:

Table 5 - Monitoring and Testing Requirements

Item #	Parameter	Method of Compliance	Frequency	Applicable Unit	Regulatory Basis
1.	SO_2	*Determination of Compliance with SO_2 Emission Limitations* a.) Compliance with the SO_2 lb/MMBtu emission limitations shall be determined as the sum of **all** SO_2 emissions from MK1 and MK2, i.e., emissions from MK1 and MK2 as measured by the CEMS located at the FGD outlet and any emissions from MK1 venting through the emergency stack (STMK2). b.) Demonstrate compliance by using all valid, quality-assured hourly data recorded by the CEMS and any emergency stack emissions to calculate the average emissions rate in lb/MMBtu on a 7- (or 30-) boiler operating day rolling average basis, updated at the end of each new boiler operating day.	Each boiler operating day	MK1 & MK2	Env-A 604.01
		c.) For each boiler operating hour[8], calculate the hourly SO_2 emission rate (lb/MMBtu) as follows: $$Her = \frac{FGD\ Outlet\ SO_2 + Emergency\ Stack\ SO_2}{MK1HI + MK2HI}$$ - (Eq. 1a) Where, FGD Outlet SO_2 = Controlled SO_2 emission rate[9] (lb/hr) from FGD stack (STMK3) monitor Emergency Stack SO_2 = Uncontrolled MK1 SO_2 emissions rate in lb/hr from the emergency stack (STMK2), calculated as per Table 6, Item 1.c MK1HI = MK1 boiler hourly heat input rate (MMBtu/hr)[10] MK2HI = MK2 boiler hourly heat input rate (MMBtu/hr)			
		d.) At the end of each boiler operating day, calculate the 7-(or 30-) boiler operating day rolling averages using Eq. 1b. $$\text{Average } SO_2 \text{ emission rate} = \frac{\sum_{i=1}^{n} Her_i}{n}$$ - (Eq. 1b) Where: Her_i is the hourly emission rate in lb/MMBtu for hour i and n is the number of hourly emissions rate values collected over the averaging period.			

[8] Boiler operating hour means a clock hour during which a boiler combusts any fuel, either for part of the hour or for the entire hour.

[9] Hourly SO_2 mass emission rates $MK1SO_2$, $MK2SO_2$ and FGD OutletSO_2 shall be calculated using 40 CFR 75, Appendix F, Eq. F-1.

[10] Hourly heat input rates shall be calculated using 40 CFR 75, Appendix F, Eq. F-15

Table 5 - Monitoring and Testing Requirements

Item #	Parameter	Method of Compliance	Frequency	Applicable Unit	Regulatory Basis
2.	SO_2	*Determination of Compliance with SO_2 Percent Reduction* a.) Compliance with the percent reduction requirement shall be determined by comparing the sum of uncontrolled SO_2 emission rates for MK1 and MK2 (as measured by CEMS located in the respective boiler duct) **and** the sum of controlled SO_2 emission rate (as measured by CEMS located at the FGD outlet) and any MK1 SO_2 emissions venting through the emergency stack. b.) For each boiler operating hour, calculate the average emission rate in lb/hr for each measurement location by using all valid, quality-assured hourly data recorded by each CEMS.	Each boiler operating day	MK1 & MK2	Env-A 604.01
		c.) Hourly percent reduction (Hpr) shall be calculated as follows: $$Hpr = \frac{(MK1SO_2 + MK2SO_2) - (FGD\ Outlet\ SO_2 + Emergency\ Stack\ SO_2)}{(MK1SO_2 + MK2SO_2)}\ X\ 100$$ - (Eq. 2) Where, $MK1SO_2$ = Uncontrolled SO_2 emission rate in lb/hr for MK1 boiler $MK2SO_2$ = Uncontrolled SO_2 emission rate in lb/hr for MK2 boiler FGD Outlet SO_2 = Controlled SO_2 emission rate in lb/hr from FGD stack (STMK3) monitor Emergency Stack SO_2 = Uncontrolled MK1 SO_2 emissions rate in lb/hr vented through emergency stack (STMK2)			
		d.) At the end of each boiler operating day, calculate the 30- boiler operating day rolling average percent reduction using Equation 3: $$\text{Average percent reduction} = \frac{\sum_{i=1}^{n} Hpr_i}{n}$$ - (Eq. 3) Where: Hpr_i is the hourly percent reduction for hour i and n is the number of hourly percent reduction values collected over 30-boiler operating days.			

VIII. Recordkeeping Requirements

The Owner or Operator shall be subject to the recordkeeping requirements identified in Table 6:

Table 6 - Recordkeeping Requirements

Item #	Requirement	Duration/ Frequency	Applicable Unit	Regulatory Basis
1.	*The following condition supersedes the condition contained in Table 7, Item 5.b of Temporary Permit TP-0008* *Emergency Stack Operation* Maintain records of emergency stack (STMK2) operation including: a.) Date(s) and time(s) during which MK1 emissions were discharged through the emergency stack; b.) Description of the reason for emergency stack operation, corrective action taken (if applicable), and estimates of emissions released during the emergency stack venting operation. c.) MK1 boiler's uncontrolled SO_2 emissions vented through the emergency stack as per Table 4, Item 3 must be quantified using the following methodology: i. Use MK1 CEM[11] data during the venting period, if it is available. ii. If CEM data during emergency stack venting is not available, use CEM data from the last valid hour prior to the emergency stack venting to estimate the emissions. The emission rate may be prorated for the length of time that the emergency venting actually occurred. iii. If current emission data from MK1 CEMS is not available, then estimate the emissions by using historic CEM data, compliance stack tests or AP-42 emission factors, whichever yields the highest emissions.	For each use of emergency stack STMK2	MK1	Env-A 906
2.	*SO_2 Emission Rate Limitation Monitoring Records*: Maintain monitoring records specified in Table 5, Items 1 and 2 including the following information: a.) Operating status (operating/not operating) for MK1 and MK2 for each calendar hour b.) The following emissions data for each boiler operating hour: i. Uncontrolled SO_2 emission rate in lb/hr for MK1; ii. SO_2 emission rate in lb/hr for MK1 emergency	Hourly and daily, as specified	MK1 & MK2	Env-A 906

[11] MK1 CEM located in the boiler duct measures uncontrolled SO_2 emissions.

Table 6 - Recordkeeping Requirements				
Item #	**Requirement**	**Duration/ Frequency**	**Applicable Unit**	**Regulatory Basis**
	stack venting (if applicable); iii. Uncontrolled SO_2 emission rate in lb/hr for MK2; and iv. Controlled SO_2 emission rate in lb/hr & lb/MMBtu at the FGD outlet; c.) The following SO_2 emission rates and percent reduction rates, for each boiler operating day; i. 7-boiler operating day rolling average SO_2 emission rate in lb/MMBtu; ii. 30-boiler operating day rolling average SO_2 emission rate in lb/MMBtu; and iii. 30-boiler operating day rolling average SO_2 percent reduction.			

IX. Reporting Requirements

The Owner or Operator shall be subject to the reporting requirements identified in Table 7:

Table 7 - Reporting Requirements				
Item #	**Requirement**	**Frequency**	**Applicable Emission Unit**	**Regulatory Basis**
1.	Include the information recorded in Table 6, Item 1 in the semi-annual permit deviation/monitoring report required by Table 9, Item 17 of TV-0055.	Semi-annual	MK1	Env-A 910
2.	*Quarterly Emission Reports* Include the following data in the quarterly emissions report required by Table 9, Item 6 of TV-0055: a.) Average SO_2 emission rates and percent reduction rates recorded in accordance with Table 6, Item 2 for each boiler operating day.	Quarterly	MK1 & MK2	Env-A 808.14 & Env-A 910