



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

DEVAL L. PATRICK
Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

June 12, 2013

Mr. Michael J. Horrigan
General Manager
Taunton Municipal Lighting Plant
1314 Somerset Avenue
Taunton, MA 02780

RE: Taunton
Transmittal No.: X253756
Application No.: SE-13-002
Class: OP
FMF No.: 130277
AIR QUALITY PLAN APPROVAL

Dear Mr. Horrigan:

The Massachusetts Department of Environmental Protection (“MassDEP”), Bureau of Waste Prevention, has reviewed your Non-major Comprehensive Plan Application (“Application”) listed above. This Application concerns the proposed replacement of the Unit No. 9 wind box, which is fed by the Unit No. 9A combustion turbine exhaust gas, as well as the installation of new dual fuel burners for Unit No. 9 at your power plant located at 1314 Somerset Avenue, Taunton, Massachusetts (“Facility”). The Application bears the seal and signature of Mr. Steven J. Babcock, Massachusetts Registered Professional Engineer number 39761.

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 “Air Pollution Control,” regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-J, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP’s review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner/operator (“Permittee”) must comply in order for the Facility to be operated in compliance with this Plan Approval.

1. DESCRIPTION OF FACILITY AND APPLICATION

The Facility is a municipal power production facility located on Somerset Avenue in Taunton, Massachusetts. The facility produces a maximum of 140 megawatts (MW) to the electric utility distribution grid. Cleary-Flood Station is a dispatch-type facility where operation is solely demand-based.

Power generation equipment includes two boilers (Units No. 8 and 9) and one combustion turbine (Unit No. 9A). Unit No. 8 is capable of producing 300,000 pounds per hour of 920 psig steam at approximately 900°F. This steam is fed to a steam turbine capable of producing up to 28.3 MW of electrical power.

Unit No. 9 is capable of producing 557,000 pounds per hour of 1,875 psig of steam at approximately 1,000°F. This steam is fed to a steam turbine capable of producing up to 90.0 MW of electrical power. This boiler can be fresh air-fired or fired using the combustion turbine exhaust as its combustion air source.

Unit No. 9 commenced construction prior to August 17, 1971, so it is not subject to New Source Performance Standards (NSPS) at 40 CFR 60, Subpart D.

The proposed maintenance project will not result in an increase in maximum hourly heat input for any fuels or an increase in the potential emission rate of any subject pollutants. For steam electric generating units, 40 CFR 60.14(h) define a modification that triggers NSPS requirements as:

“No physical change, or change in the method of operation, at an existing electric utility steam generating unit shall be treated as a modification for the purposes of this section provided that such change does not increase the maximum hourly emissions of any pollutant regulated under this section above the maximum hourly emissions achievable at that unit during the 5 years prior to the change.”

Since the project will not increase maximum hourly emissions of any pollutant from current levels the NSPS modification requirements will not be triggered.

A project may also trigger NSPS requirements if it meets the definition of reconstruction under 40 CFR 60.15. Reconstruction is defined as a project with a fixed capital cost of new components that exceeds 50 percent of the fixed capital cost to construct a comparable new source. The overall cost of the maintenance project is estimated to be \$8.5 million, which represents less than 10 percent of the cost of a new replacement boiler and therefore the reconstruction provision under 40 CFR 60.15 is not triggered by the project.

U.S. EPA has established National Emissions Standards for Hazardous Air Pollutants (NESHAP) for the emissions of hazardous air pollutants (HAPs) for specific source categories

under 40 CFR 63. TMLP is a minor source of HAP emissions. Further, Unit No. 9 is currently exempt from the requirements of 40 CFR 63, Subpart UUUUU for electric steam generating units as oil firing represents less than 10 percent of its annual heat input.

Similar to the NSPS program, NESHAP rules include a reconstruction provision for large projects on existing units. In accordance with 40 CFR 63.2, reconstruction under the NESHAP rules consists of a project with a fixed capital cost of new components that exceeds 50 percent of the fixed capital cost to construct a comparable new source. The cost of the maintenance project will be less than 10 percent of the cost of a new unit and therefore the reconstruction provision of the NESHAP will not be triggered.

The existing NO_x RACT Emission Control Plan (ECP), which is embodied in Approval No. 4B03021 (Transmittal No. W045943), dated August 4, 2005 contains provision for the fuels proposed for this modification, so further revision is unnecessary.

In addition to the maintenance-based improvements on Unit No. 9, TMLP will be converting 2014 fuel sulfur limitations embodied in 310 CMR 7.05. Additionally, TMLP will only purchase 0.50 percent sulfur No. 6 residual oil for firing in Unit No. 8.

Unit No. 9A/H will be converted from No. 6 oil firing to No. 2 distillate oil and natural gas firing. This will require replacement of the burners, which is exempt from Plan Approval pursuant to 310 CMR 7.02(2)(b)14.

2. EMISSION UNIT (EU) IDENTIFICATION

Each Emission Unit (EU) identified in Table 1 is subject to and regulated by this Plan Approval:

Table 1			
EU#	Description	Design Capacity	Pollution Control Device (PCD)
EU-8	<u>Boiler No. 8</u> Combustion Engineering Model No. VU-60	398,000,000 Btu/hr	None
EU-9	<u>Boiler No. 9</u> Riley Stoker Model No. ISR-22	1,034,000,000 Btu/hr	
EU-9A	<u>Combustion Turbine No. 9A</u> General Electric Model No. MS-5001	300,000,000 Btu/hr	Water Injection ⁽¹⁾
EU-9A/H	<u>Boiler No. 9A/H</u> Cleaver Brooks Model No. WT600X-62	38,300,000 Btu/hr	None

Table 1 Key:

EU = Emission Unit Number
PCD = Pollution Control Device
Btu/hr = British thermal units per hour

Table 1 Note:

1. Water injection is used on a discretionary basis – generally not needed to achieve NO_x compliance.

3. APPLICABLE REQUIREMENTS

A. OPERATIONAL, PRODUCTION and EMISSION LIMITS

The Permittee is subject to, and shall not exceed the Operational, Production, and Emission Limits as contained in Table 2 below:

Table 2			
EU#	Operational / Production Limit	Air Contaminant	Emission Limit
EU-8	1. None	Sulfur in Fuel	<u>No. 6 Fuel Oil</u> : 0.28 lb S/MMBtu (heat input, HHV); equivalent to 0.5 percent sulfur by weight <u>No. 2 Fuel Oil</u> : 0.17 lb S/MMBtu (heat input, HHV)
	2. None	PM	0.12 lb/MMBtu (heat input, HHV)
	3. None	NO _x	488 tons/12-month rolling period 0.28 lb/MMBtu (heat input, HHV) ⁽¹⁾ Startup/Shutdown: 111.4 lb/hr ⁽²⁾
	4. None	CO	272 tons/12-month rolling period 200 ppmvd @ 3% O ₂ ⁽¹⁾ Startup/Shutdown: 71.1. lb/hr ⁽²⁾
EU-9	5. None	Sulfur in Fuel	<u>No. 2 Fuel Oil</u> : 0.028 lb S/MMBtu (heat input, HHV); equivalent to 0.05 percent sulfur by weight
	6. None	PM	0.03 lb/MMBtu (heat input, HHV)
	7. None	NO _x	1,268 tons/12-month rolling period Natural Gas : 0.17 lb/MMBtu (heat input, HHV) ⁽¹⁾ No. 2 Oil : 0.27 lb/MMBtu (heat input, HHV) ⁽¹⁾ Startup/Shutdown: Natural Gas : 175.8 lb/hr ⁽²⁾ No. 2 Oil : 279.2 lb/hr ⁽²⁾

Table 2 (continued)			
EU#	Operational / Production Limit	Air Contaminant	Emission Limit
EU-9	8. None	CO	707 tons/12-month rolling period 200 ppmvd @ 3% O ₂ ⁽¹⁾ Natural Gas: 0.074 lb/MMBtu (heat input, HHV) ⁽¹⁾ No. 2 Oil: 0.078 lb/MMBtu (heat input, HHV) ⁽¹⁾ <u>Startup/Shutdown:</u> Natural Gas: 76.5 lb/hr ⁽²⁾ No. 2 Oil: 80.7 lb/hr ⁽²⁾
EU-9/9A ⁽³⁾	9. None	NO _x	1,636 tons/12-month rolling period Natural Gas: 0.24 lb/MMBtu (heat input, HHV) ⁽¹⁾ No. 2 Oil: 0.28 lb/MMBtu (heat input, HHV) ⁽¹⁾ <u>Startup/Shutdown:</u> Natural Gas: 320.2 lb/hr ⁽²⁾ No. 2 Oil: 373.5 lb/hr ⁽²⁾
	10. None	CO	912 tons/12-month rolling period 200 ppmvd @ 3% O ₂ ⁽¹⁾ Natural Gas: 0.074 lb/MMBtu (heat input, HHV) ⁽¹⁾ No. 2 Oil: 0.078 lb/MMBtu (heat input, HHV) ⁽¹⁾ <u>Startup/Shutdown:</u> Natural Gas: 98.7 lb/hr ⁽²⁾ No. 2 Oil: 104.1 lb/hr ⁽²⁾
EU-9A/H	11. None	Sulfur in Fuel	<u>No. 2 Fuel Oil:</u> 0.28 lb S/MMBtu (heat input, HHV); equivalent to 0.05 percent sulfur by weight
	12. None	PM	0.12 lb/MMBtu (heat input, HHV)
	13. None	NO _x	(Annual boiler tuning)

Table 2 (continued)			
EU#	Operational / Production Limit	Air Contaminant	Emission Limit
EU-8 EU-9	14. None	(Specification Used Oil Fuel)	Total Halogens: ≤ 4,000 ppm PCBs: < 50 ppm (EU #8) - Sulfur: 0.28 lb/MMBtu (heat input, HHV) (EU #9) - Sulfur: 0.028 lb/MMBtu (heat input, HHV) As: ≤ 5 ppm Cd: ≤ 2 ppm Cr: ≤ 10 ppm Pb: < 100 ppm HHV: ≥ 120,000 Btu/gallon Flash Point: ≥ 100°F Maintain and substantiate a minimum combustion efficiency of 99.5 percent

Table 2 Key:

EU = Emission Unit Number	ppmvd = parts per million by volume, dry
S = Sulfur	CEMS = continuous emissions monitoring system
PM = Total Particulate Matter	PCBs = polychlorinated biphenyls
NO _x = Oxides of Nitrogen	As = arsenic
CO = Carbon Monoxide	Cd = cadmium
lb/MMBtu = pounds per million Btu	Cr = chromium

Table 2 Key: (continued)

HHV = higher heating value	Pb = lead
lb/hr = pounds per hour	

Table 2 Notes:

1. Emission limit is based on a calendar day average from CEMS data.
2. Startup/Shutdown conditions as defined in Operating Permit No. 4V08055, Special Terms and Conditions, Section 5, Proviso C.1).
3. Unit 9 and 9A in combined-cycle operation.

B. COMPLIANCE DEMONSTRATION

The Permittee is subject to, and shall comply with, the monitoring, testing, record keeping, and reporting requirements as contained in Tables 3, 4, and 5 below:

Table 3	
EU#	Monitoring and Testing Requirements
EU-8 EU-9	1. Monitor fuel oil purchases such that only fuel oil containing no greater than the sulfur limits specified in Table 2 is purchased for use in [each] unit. Existing stocks on-site on the date of this Approval may be consumed.
	2. Monitor sulfur content of each new shipment of fuel oil received. Sulfur content of the fuel can be demonstrated through fuel analysis. The analysis of sulfur content of the fuel shall be in accordance with the applicable American Society for Testing Materials (ASTM) test methods or any other method approved by MassDEP and EPA. Fuel sulfur information may be provided by fuel suppliers.
	3. In accordance with Approval No. 4B87036, when firing specification used oil fuel, a minimum combustion efficiency of 99.5% shall be achieved and substantiated annually. The as-burned specification used oil fuel shall be tested quarterly or as blended with virgin oil to demonstrate compliance with standards set forth in 310 CMR 7.05(8). Quarterly sampling and testing of used or unused oil collected on-site is only required in quarters in which such oil is combusted on-site.
Facility-wide	4. The Permittee shall monitor all operations to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	5. If and when MassDEP requires it, the Permittee shall conduct emission testing in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13.

Table 3 Key:

- EU = Emission Unit Number
- EPA = U.S. Environmental Protection Agency

Table 4	
EU#	Record Keeping Requirements
EU-8 EU-9	1. Maintain oil analysis results used to demonstrate compliance with fuel oil sulfur content requirements.
	2. The Permittee shall maintain records of monitoring and testing as required by Table 3.
	3. The Permittee shall maintain a copy of this Plan Approval, underlying Application, and the most up-to-date SOMP for the EU(s) approved herein on-site.

Table 4 (continued)	
EU#	Record Keeping Requirements
EU-8 EU-9	4. The Permittee shall maintain a copy of this Plan Approval, underlying Application, and the most up-to-date SOMP for the EU(s) approved herein on-site.
	5. The Permittee shall maintain adequate records on-site to demonstrate compliance with all operational, production, and emission limits contained in Table 2 above. Records shall also include the actual emissions of air contaminant(s) emitted for each calendar month and for each consecutive twelve month period (current month plus prior eleven months). These records shall be compiled no later than the 15 th day following each month. An electronic version of the MassDEP approved record keeping form, in Microsoft Excel format, can be downloaded at: http://www.mass.gov/dep/air/approvals/aqforms.htm#report .
	6. The Permittee shall maintain a record of routine maintenance activities performed on the approved EU(s) and monitoring equipment. The records shall include, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.
	7. The Permittee shall maintain a record of all malfunctions affecting air contaminant emission rates on the approved EU(s) and monitoring equipment. At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; the date and time corrective actions were initiated and completed; and the date and time emission rates and monitoring equipment returned to compliant operation.
	8. The Permittee shall maintain records to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	9. The Permittee shall maintain records required by this Plan Approval on-site for a minimum of five (5) years.
	10. The Permittee shall make records required by this Plan Approval available to MassDEP and USEPA personnel upon request.

Table 4 Key:

- EU = Emission Unit Number
SOMP = Standard Operating and Maintenance Procedure

Table 5	
EU#	Reporting Requirements
EU-8 EU-9	1. The Permittee shall submit to MassDEP all information required by this Plan Approval over the signature of a “Responsible Official” as defined in 310 CMR 7.00 and shall include the Certification statement as provided in 310 CMR 7.01(2)(c).
	2. The Permittee shall notify the Southeast Regional Office of MassDEP, BWP Permit Chief by telephone at (508) 946-2824, email at Thomas.Cushing@state.ma.us , or fax at (508) 947-6557, as soon as possible, but no later than one (1) business day after discovery of an exceedance(s) of Table 2 requirements. A written report shall be submitted to the Permit Chief at MassDEP within three (3) business days thereafter and shall include: identification of exceedance(s), duration of exceedance(s), reason for the exceedance(s), corrective actions taken, and action plan to prevent future exceedance(s).
	3. The Permittee shall provide a copy to MassDEP of any record required to be maintained by this Plan Approval within 30-days from MassDEP’s request.
Facility- Wide	4. The Permittee shall report annually to MassDEP, in accordance with 310 CMR 7.12, all information as required by the Source Registration/Emission Statement Form. The Permittee shall note therein any minor changes (under 310 CMR 7.02(2)(e), 7.03, 7.26, etc.), which did not require Plan Approval.
	5. The Permittee shall submit to MassDEP for approval a stack emission pretest protocol, at least 30 days prior to emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.
	6. The Permittee shall submit to MassDEP a final stack emission test results report, within 45 days after emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.

Table 5 Key:

EU = Emission Unit Number

4. SPECIAL TERMS AND CONDITIONS

The Permittee is subject to, and shall comply with, the following special terms and conditions:

- A. The Permittee shall comply with the Special Terms and Conditions as contained in Table 6 below:

Table 6	
EU#	Special Terms and Conditions
Facility- Wide	1. As a part of the modifications associated with this Approval, the Permittee shall direct the exhaust emissions from the starter diesel (Emission Unit No. EU-SD) to stack No. 9.
	2. The Permittee shall reduce the fuel sulfur content of the of the No. 6 oil to be fired in Unit No. 8 and 9A/H to no greater than 0.5 percent sulfur by weight. In addition, the Permittee shall convert Unit No. 9 from No. 6 fuel oil to No. 2 fuel oil with a fuel sulfur content not to exceed 0.05 percent by weight. Fuel supplies on hand as of the date of this Approval may be consumed prior to purchasing fuels with the characteristics described herein.
	3. The Permittee shall maintain and submit to MassDEP, on an annual basis for a period of five (5) years from the date the facility resumes regular operation, information demonstrating that the physical and operational change(s) did not result in a “significant net emissions increase” of NO _x or VOC emissions, and therefore does not constitute a “major modification.”
	4. In accordance with 310 CMR 7.00, Appendix C(4)(b)2., within 30 days from the date of this plan approval, the Permittee shall submit to MassDEP and Operating Permit Minor Modification application (Form BWP AQ 10) that reflects this Plan Approval and any associated requirements that apply to the facility, including but not limited to changes in fuel sulfur contents and emission limitations..

Table 6 Key:

EU = Emission Unit Number

- B. The Permittee shall install and use an exhaust stack, as required in Table 7, on each of the Emission Units that is consistent with good air pollution control engineering practice and that discharges so as to not cause or contribute to a condition of air pollution. Each exhaust stack shall be configured to discharge the gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted gases, including but not limited to rain protection devices known as “shanty caps” and “egg beaters.” The Permittee shall install and utilize exhaust stacks with the following parameters, as contained in Table 7 below, for the Emission Units that are regulated by this Plan Approval:

Table 7				
EU#	Stack Height Above Ground (feet)	Stack Inside Exit Dimensions (feet)	Stack Gas Exit Velocity Range (feet per second)	Stack Gas Exit Temperature Range (°F)
EU-8 EU-9 EU-SD	187	10.0	75-91	440

5. GENERAL CONDITIONS

The Permittee is subject to, and shall comply with, the following general conditions:

- A. Pursuant to 310 CMR 7.01, 7.02, 7.09 and 7.10, should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the Facility, then the Permittee shall immediately take appropriate steps including shutdown, if necessary, to abate said nuisance condition(s).
- B. If asbestos remediation/removal will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that all removal/remediation of asbestos shall be done in accordance with 310 CMR 7.15 in its entirety and 310 CMR 4.00.
- C. If construction or demolition of an industrial, commercial or institutional building will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that said construction or demolition shall be done in accordance with 310 CMR 7.09(2) and 310 CMR 4.00.
- D. Pursuant to 310 CMR 7.01(2)(b) and 7.02(7)(b), the Permittee shall allow MassDEP and / or USEPA personnel access to the Facility, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.
- E. This Plan Approval does not negate the responsibility of the Permittee to comply with any other applicable Federal, State, or local regulations now or in the future.
- F. Should there be any differences between the Application and this Plan Approval, the Plan Approval shall govern.
- G. Pursuant to 310 CMR 7.02(3)(k), MassDEP may revoke this Plan Approval if the construction work is not commenced within two years from the date of issuance of this Plan Approval, or if the construction work is suspended for one year or more.
- H. This Plan Approval may be suspended, modified, or revoked by MassDEP if MassDEP determines that any condition or part of this Plan Approval is being violated.
- I. This Plan Approval may be modified or amended when in the opinion of MassDEP such is necessary or appropriate to clarify the Plan Approval conditions or after consideration of a written request by the Permittee to amend the Plan Approval conditions.
- J. The Permittee shall conduct emission testing, if requested by MassDEP, in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13. If required, a pretest

protocol report shall be submitted to MassDEP at least 30 days prior to emission testing and the final test results report shall be submitted within 45 days after emission testing.

- K. Pursuant to 310 CMR 7.01(3) and 7.02(3)(f), the Permittee shall comply with all conditions contained in this Plan Approval. Should there be any differences between provisions contained in the General Conditions and provisions contained elsewhere in the Plan Approval, the latter shall govern.

6. MASSACHUSETTS ENVIRONMENTAL POLICY ACT

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and 301 CMR 11.00, Section 11.04, provide certain “Fail-Safe Provisions,” which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.

7. APPEAL PROCESS

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and post-marked within twenty-one (21) days of the date of issuance of this Plan Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought. Additionally, the request must state why the Plan Approval is not consistent with applicable laws and regulations.

The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

This request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with

the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Enclosed is a stamped approved copy of the application submittal.

Should you have any questions concerning this Plan Approval, please contact Charles Kitson by telephone at (508) 946-2733, or in writing at the letterhead address.

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

Thomas Cushing
Permit Chief
Bureau of Waste Prevention

Enclosure

ecc: Taunton Board of Health
Taunton Fire Department
Mark Medeiros, TMLP
Steve Babcock, AMEC
Yi Tian, MassDEP/BWP - Boston