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Dominion®

August 28, 2008

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Southeast Regional Office
20 Riverside Drive
Lakeville, MA 02347

Ms. Ida McDonnell
U.S. Environmental Protection Agency
New England, Region 1
One Congress Street
Boston, MA 02114-2023

Subject: **Dominion Energy Brayton Point, LLC – Brayton Point Station**
310 CMR 7.02 Major Comprehensive Plan Approval and Prevention of Significant Deterioration Permit Application for the Closed Cycle Cooling and Unit No. 3 Dry Scrubber and Fabric Filter Projects

Dear Mr. Winkler & Ms. McDonnell,

Dominion Energy Brayton Point, LLC (Brayton Point), is submitting the attached 310 CMR 7.02 Major Comprehensive Plan Approval and Prevention of Significant Deterioration Permit Application for the Closed Cycle Cooling and Unit No. 3 Dry Scrubber and Fabric Filter Projects, for Brayton Point Station, located in Somerset, MA.

The Closed Cycle Cooling Project will allow Brayton Point Station to comply with the U.S. Environmental Protection Agency (EPA) Region 1 Order for Compliance signed on December 17, 2007, for Brayton Point Station to implement the National Pollutant Discharge Elimination System (NPDES) permit for Brayton Point Station. The Massachusetts Department of Environmental Protection (Mass DEP) issued a similar order on March 27, 2008 (collectively, the Orders). The Closed Cycle Cooling Project consists of installing natural draft cooling tower(s) and supporting equipment to convert the entire facility from once through cooling to closed cycle cooling in order to meet the heat and flow effluent limits of the NPDES permit, and related equipment and operating changes.

The Unit No. 3 Dry Scrubber and Fabric Filter Project will allow Brayton Point Station to comply with 310 CMR 7.29 SO_2 requirements. Currently, a wet Flue Gas Desulfurization system (FGD) is permitted for the project; however, Dominion is proposing to change the SO_2 control technology on Unit No. 3 from the permitted FDG system to a dry scrubber and fabric filter combination. The dry scrubber will have a fabric filter (FF) baghouse for particulate

control and additional Powder Activated Carbon injection points upstream of the dry scrubber/FF system to increase the removal of mercury. The dry scrubber will exhaust to atmosphere through the existing Unit No. 3 stack.

If you have any questions regarding this application for Brayton Point Station, please do not hesitate to contact Scott Lawton of Dominion Electric Environmental Services at (401) 457-9157.

Sincerely,

Pamela F. Faggert

Pamela F. Faggert

Attachment

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310 CMR 7.02 Major Comprehensive Plan Approval and Prevention of Significant Deterioration Application for the Closed Cycle Cooling and Unit 3 Dry Scrubber / Fabric Filter Projects at Dominion Energy Brayton Point, LLC

Submitted To:

Massachusetts Department of Environmental Protection
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and

United States Environmental Protection Agency
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Submitted By:

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August 2008

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1.0 INTRODUCTION

1.1 Project Overview

Dominion Energy Brayton Point, LLC (Brayton Point), is a fossil fuel-fired generating facility located in Somerset, Massachusetts (see Figure 1-1). On December 17, 2007, U.S. Environmental Protection Agency (EPA) Region 1 signed an Order for Compliance for Brayton Point to implement the National Pollutant Discharge Elimination System (NPDES) permit for Brayton Point Station. The Closed Cycle Cooling Project consists of installing natural draft cooling tower(s) and supporting equipment to convert the entire facility from once through cooling to closed cycle cooling in order to meet the heat and flow effluent limits of the NPDES permit, and related equipment and operating changes.

The Massachusetts Department of Environmental Protection (Mass DEP) issued a similar order on March 27, 2008 (collectively, the Orders). The Orders require all air permit applications to be submitted by September 1, 2008. Since September 1, 2008 falls on a holiday (Labor Day) all applications will be submitted on or before September 2, 2008.

The natural draft cooling tower(s) will be approximately 500 feet tall, and approximately 220 feet diameter at the exhaust exit. Each will be designed to circulate approximately 360,000 gallons per minute of water. A very small fraction of that water will exit the towers as drift droplets. Those drift droplets will contain dissolved solids (e.g., salts), which could become particulate matter when the water evaporates. Some of that particulate matter will be particulate matter less than 10 microns in diameter (PM-10PM-10) and particulate matter less than 2.5 microns in diameter (PM-2.5).

Brayton Point is also proposing a modification to its existing Massachusetts 310 CMR 7.02 Plan Approval for sulfur dioxide control on the Unit 3 boiler. Dominion intends to install a Dry Scrubber and Fabric Filter (DS/FF) system. The Unit 3 DS/FF Project is unrelated to the Closed Cycle Cooling Project, but is concurrent with the Closed Cycle Cooling Project.

1.2 Regulatory Summary

The air related regulatory requirements applicable to the proposed facility include:

- EPA New Source Performance Standards (NSPS) (40 CFR 60)
- New Source Review (NSR) which includes a demonstration of compliance with National Ambient Air Quality Standards (NAAQS) (40 CFR 51)
- Prevention of Significant Deterioration (PSD) Regulations including Best Available Control Technology (BACT) (40 CFR 52)
- Clean Air Act Amendments of 1990 (Public Law 101-549)

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LEGEND

Project Site

Note: On-site water features shown on the 1985 USGS map are outdated; please refer to Figure 2 for a more accurate depiction of the site.

Scale 1:24,000
1 inch = 2,000 feet

0 500 1,000 2,000 Feet

Basemap: 1985 USGS Quadrangles, MassGIS

Brayton Point Cooling Tower Project **Somerset, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 1-1
Station Location

- Mass DEP Major Comprehensive Plan Approval (310 CMR 7.02 - BWP AQ 02)
- Mass DEP Emission Limits (310 CMR 7.02, 7.09)
- Mass DEP Requirements for BACT, (310 CMR 7.02)
- Mass DEP Noise Control Regulations and Policy (310 CMR 7.10 and Mass DEP Noise Policy 90-001)

Because the potential emission rate of particulate matter from the Closed Cycle Cooling Project exceeds modification thresholds, the Closed Cycle Cooling Project is subject to Mass DEP plan approval regulations (310 CMR 7.02). Consistent with prior Mass DEP permitting for Brayton Point Station, the Unit 3 DS/FF Project is being included in the plan approval application because stack parameters are different than those evaluated in the prior application.

The Closed Cycle Cooling Project PM-10PM-10 emissions exceeds the significant emission rate for a PSD modification, and the Unit 3 DS/FF Project also exceeds the PSD significant emission rate for PM-10 on a "past-actual to future-actual" basis. This application therefore also serves as the PSD air permit application, subject to review and approval by EPA. Specific sections are marked "Air Plan Approval Only" or "PSD Permit Only" as appropriate.

In addition, the Project is subject to Massachusetts Environmental Policy Act (MEPA) review (EOEA Nos. 14235 and 13022). The MEPA certificate for EEA No. 14235 (Cooling Tower Project) is attached (Appendix J) and the MEPA certificate for the Unit 3 DS/FF Project Notice of Project Change, submitted August, 2008 will be provided when available.

1.3 Outline of Application

The remainder of this application is organized as follows.

Section 2 provides a detailed description and estimate of emissions for the proposed Project.

Section 3 describes the Federal, state and local air quality regulations applicable to the Project.

Section 4 is the Best Achievable Control Technology (BACT) Analysis for the Project.

Section 5 describes the air quality modeling methodology and results for compliance demonstration.

Appendix A includes the application forms; Appendix B contains Supporting Calculations; and additional Appendices provide supplemental information.

2.0 PROJECT DESCRIPTION AND EMISSIONS

2.1 Description of Project Site

Brayton Point is New England's largest fossil-fueled power station, with a total installed generating capacity of about 1,600 megawatts (MW) and supplies 16 percent of the electricity used in Massachusetts and 8 percent of New England's needs. The Station has three coal-fired units (Units 1-3), and one oil- and natural gas-fired unit (Unit 4). Units 1 and 2 are ~250 MW tangential-fired units that began commercial operation in 1963 and 1964, respectively, and burn coal as their primary fuel, supplemented with natural gas or No. 6 fuel oil. Unit 3 is a ~650 MW supercritical once through double reheat wall-fired unit that began commercial operation in 1969 and burns coal as its primary fuel, supplemented with No. 6 fuel oil or natural gas. Unit 4 is a ~450 MW wall-fired unit that began commercial operation in 1974 and burns No. 6 fuel oil and natural gas as its primary fuel, or in combination. Associated facilities include an aboveground fuel oil storage tank farm and associated piping transfer systems, a coal storage pile and coal handling equipment, a marine fuel receiving terminal, a wastewater treatment system, active and closed landfills for wastewater treatment system solids and electric switching and transmission equipment.

Brayton Point Station is situated on approximately 256 acres in Somerset, Massachusetts and is located about 30 miles south of Boston and 13 miles east of Providence, R.I. The station is located south of US I-195 and east of the City of Fall River (Figure 1-1) and is accessed by a public street (Brayton Point Road) and is bounded on the east by the Taunton River, the Lee River to the west, Mt. Hope Bay to the south, and undeveloped fields to the north.

The proposed Closed Cycle Cooling Project will be located in the northwestern portion of Brayton Point's facility. The Unit 3 DS/FF project will be located immediately south of Unit 3.

Figure 2-1 shows an aerial view of the site and surroundings. The figure shows the coastal setting along Mount Hope Bay and the diverse nature of the surrounding land uses. The area surrounding the proposed plant includes a mix of water, industrial, commercial, urban and suburban residential land uses. The preliminary locations for the natural draft cooling towers are shown in the figure.

2.2 Project Description

Cooling Tower Project

Brayton Point plans to build and operate natural draft cooling tower(s), on an approximate ten-acre portion of the northwest corner of the facility. Supporting activities will include new water storage basins, relocation of existing wastewater treatment system, and installation of new project piping to convey the cooling water to the new cooling towers.

Brayton Point Cooling Tower Project **Somerset, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 2-1

Aerial View of Site and Surroundings

Unit 3 DS/FF Project

Brayton Point intends to install a DS/FF system on Unit 3. Dry Scrubber (DS) systems are widely utilized in the coal-fired power plant industry to reduce emissions of SO2 from the combustion of coal. The hot flue gas from each boiler will be ducted to a dry flue gas desulfurization scrubbing system, which is followed by a fabric filter. The scrubbed flue gas from the discharge of the fabric filter would be emitted to the atmosphere through the existing Unit No. 3 stack.

In the absorber system, SO2 is removed from the flue gas with a lime reagent (CaO). The removal of the SO2 occurs according to the following reactions:

$Ca(OH)2 + SO2 => CaSO3 \cdot ½H2O + ½H2O$ (dominant reaction)

$CaSO3 \cdot ½H2O + ½O2 + 1½H2O => CaSO4 \cdot 2H2O$ (minimal CaSO3 available)

The resulting cooled flue gas is then ducted to the fabric filter where the dry reaction byproducts are removed from the flue gas. These byproducts are the mixture of unreacted calcium hydroxide, calcium sulfite, calcium sulfate, lime grit, and fly ash, which are all removed from the fabric filter with a pulse-jet cleaning system. Additional SO2 reduction takes place in the baghouse. The pulse jet system sends the solids to the fabric filter hoppers. A portion of the solids are recycled back to the DS system for additional SO2 removal.

Powder Activated Carbon (PAC) injection systems are utilized to reduce emissions of Hg from the combustion of coal. PAC is injected into the hot flue gas upstream of the DS/FF. The gas phase mercury in the flue gas contacts the PAC and attaches to its surface. The PAC with the mercury attached, is then collected by the particulate control device.

The Unit 3 PAC injection system is as-described in the June 2006 Non-Major Comprehensive Plan Approval (NMCPA) application. PAC is currently injected upstream of the electrostatic precipitators (ESPs). This application proposes installing an additional PAC injection location upstream of the DS/FF.

2.3 Cooling Towers - Source Emissions Discussion

EPA, in its AP-42 emission factor document[1], describes cooling tower drift as follows:

> *"Because wet cooling towers provide direct contact between the cooling water and the air passing through the tower, some of the liquid water may be entrained in the air stream and be*

1 "Compilation of Air Pollutant Emission Factors", Office of Air Quality Planning and Standards, US EPA (AP-42), Chapter 13 Section 4, 1/95, available at http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s04.pdf

carried out of the tower as "drift" droplets. Therefore, the particulate matter constituent of the drift droplets may be classified as an emission.

Because the drift droplets generally contain the same chemical impurities as the water circulating through the tower, these impurities can be converted to airborne emissions. Large drift droplets settle out of the tower exhaust air stream and deposit near the tower. This process can lead to wetting, icing, salt deposition, and related problems such as damage to equipment or to vegetation. Other drift droplets may evaporate before being deposited in the area surrounding the tower, and they also can produce PM-10 emissions. PM-10 is generated when the drift droplets evaporate and leave fine particulate matter formed by crystallization of dissolved solids. [EPA AP-42 13.4, 1/95]"

The EPA AP-42 document goes on to say:

*"a **conservatively high** PM-10 emission factor can be obtained by (a) multiplying the total liquid drift factor by the total dissolved solids (TDS) fraction in the circulating water and (b) assuming that, once the water evaporates, all remaining solid particles are within the PM-10 size range."*

The emphasis on *conservatively high* is in the original document.

Dominion utilized the following EPA AP-42 method for calculating the PM-10 emissions from the Brayton Point Closed Cycle Cooling project

$$H_2O\ Drift\ \left(\frac{lb}{hr}\right) = \left(FlowRate\quad \frac{gal}{\min}\right)\left(Drift\ Percent\quad (\%)\right)\left(Conversion\quad \left(\frac{\min}{hr}\right)\right)\left(DensityH_2O\frac{lb}{gal}\right)\left(\#\ of\ Cooling\quad Towers\quad\right)$$

$$PM\ Emissions\left(\frac{lb}{hr}\right) = \frac{\left(H_2O\ Drift\ \left(\frac{lb}{hr}\right)\right)\left(lbTDS\right)}{1{,}000{,}000\ lbH2O}$$

$$PM\ Emissions\quad (TPY\ ) = \left(PM\ Emissions\quad \left(\frac{lb}{hr}\right)\right)\left(Hours\quad of\ Operation\quad \frac{hr}{yr}\right)$$

Table 2-1 Given Parameters and Results

Parameter	Value	Description
Flow Rate	360,000	gallons/minute circulating water flow
# of Cooling Towers	2	
Drift Percent	0.0005%	drift rate (best available drift eliminators)
Density H_20	8.57	pounds/gallon salt water density
Maximum TDS	48,000	maximum dissolved solids concentration (ppmw)
Operating Hours	8,760 hrs	hours/year potential operation
Min to Hour Conversion Factor	60	Minutes per hour
PM Emissions (lb/hr)	88.8	pounds/hour solids drift (2 towers)
PM Emissions (tons/yr)	389	tons/year potential solids drift (2 towers)

This therefore represents a *conservatively high* PM-10 and PM-2.5 emission rate estimate. The emission rate is a function of:

1. gallons per minute circulating water flow;
2. drift rate; and
3. solids concentration.

2.4 Unit 3 Dry Scrubber / Fabric Filter – Source Emissions Discussion

While emissions of most pollutants are expected to decline with the use of the Unit 3 DS/FF, expected actual emissions of particulate matter will increase by 178 tons. The projected increase in PM emissions will occur because the proposed fabric filter, while still meeting BACT, is projected to have higher actual PM emissions than the existing ESPs. Stack test data (filterable PM only) for Unit 3 with the existing ESPs shows very low particulate emissions.

Unit 3 potential emissions after the DS/FF project will remain unchanged from the current emission rates, as described in the June 2006 NMCPA application. The data in the table below are taken from Table 3-2 of that application:

Table 2-2 Unit 3 Proposed Potential Emissions (tons/yr)

Pollutant	Unit 3 Proposed Potential Emissions (tons/yr)
NOx	11,146
CO	4,111
VOC	58.9
SO2	59,941
PM-10	1,982
Sulfuric Acid	1,586
Ammonia	25.0
Lead	0.0107
Mercury	0.0503

2.5 Condensable Particulate Emissions

Particulate emissions generally consist of two categories: filterable and condensable.

It is not expected that the particulate emissions from the Closed Cycle Cooling Project, will consist of condensable particulate emissions. As described in Section 2.3 above, the expected particulate emissions are salts.

Regarding the Unit 3 DS/FF Project, previous permitting, modeling, and testing have been exclusively on filterable particulate emissions. However, with the planned air pollution control retrofit, the potential emissions have sufficient conservatism that they can be considered to include both filterable and condensable particulate emissions.

3.0 APPLICABLE REGULATORY REQUIREMENTS

Under federal and state air laws, the Mass DEP and the EPA has promulgated air quality regulations that establish ambient air quality standards and emission limits. These standards and limits impose design constraints on new facilities and provide the basis for an evaluation of the potential impacts of proposed projects on ambient air quality. This section briefly describes these regulations and their relevance to the proposed Project. These regulations include: (1) National Ambient Air Quality Standards (NAAQS); (2) New Source Review (NSR) and Prevention of Significant Deterioration (PSD) requirements; and (3) New Source Performance Standards (NSPS) for criteria pollutants. In Massachusetts, compliance with these regulatory requirements and separate Massachusetts requirements are implemented through the Mass DEP Air Plan Approval process.

Regulatory requirements are summarized in Table 3-1, below:

Table 3-1 Summary of Applicable Requirements

Regulatory Program	Applicability
Ambient Air Quality Standards and Policies	Applies and compliance is documented through air quality dispersion modeling in the PSD permit & air plan approval processes
Prevention of Significant Deterioration (PSD) Review	Applies and is satisfied through this PSD air permit application
Non-Attainment New Source Review	Does not apply
New Source Performance Standards	Does not apply
National Emission Standards for Hazardous Air Pollutants	Does not currently apply
Emissions Trading Programs	Facility is subject to RGGI and NOx Budget; CAIR and CAMR recently vacated
310 CMR 7.29 – Emissions Standards for Power Plants	Applies and is satisfied through the attached Emission Control Plan amendment (Appendix D)
Visible Emissions	Applies and will be complied with
Short-term NO_2 Policy	Does not apply
Noise Control Regulation and Policy	Applies and is satisfied through the noise analysis (Appendix E) in the air plan approval process
Air Plan Approval	Applies and is satisfied through this air plan approval application
Operating Permit	Applies and will be satisfied through an operating permit modification application after PSD permit and air plan approval are issued

3.1 Ambient Air Quality Standards and Policies

The EPA has developed NAAQS for six air contaminants, known as criteria pollutants, for the protection of public health and welfare. These criteria pollutants are sulfur dioxide (SO2); particulate matter having a diameter of 10 microns or less (PM-10); particulate matter having a diameter of 2.5 microns or less (PM-2.5); nitrogen dioxide (NO2); carbon monoxide (CO); ozone (O3); and lead (Pb). The Mass DEP has also promulgated these limits, plus it has also adopted a 1-hour ambient guideline limit for NO_2 as the Massachusetts Ambient Air Quality Standards (MAAQS). The state and federal ambient air quality standards are listed in Table 3-2.

Table 3-2 National and Massachusetts Ambient Air Quality Standards

Pollutant	Averaging Period	NAAQS (µg/m3)		MAAQS (µg/m3)	
		Primary	Secondary	Primary	Secondary
Nitrogen Dioxide	Annual(1)	100	Same	100	Same
Sulfur Dioxide	Annual(1)	80	--	80	--
	24-hour(2)	365	--	365	--
	3-hour (2)	--	1,300	--	1,300
PM-10	24-hour(2,4)	150	Same	--	--
PM-2.5	Annual(5)	15	Same	--	--
	24-hour(6)	35	Same	--	--
Carbon Monoxide	8-hour(2)	10,000	Same	10,000	Same
	1-hour(2)	40,000	Same	40,000	Same
Ozone	8-hour(7)	0.08	Same	0.075 ppm	Same
Lead	3-month(1)	1.5	--	1.5	--

(1) Not to be exceeded.

(2) Not to be exceeded more than once per year.

(3) Not to be exceeded more than an average of 1 day per year over 3 years.

(4) Not to be exceeded by the arithmetic average of the annual arithmetic averages from 3 successive years.

(5) Not to be exceeded by the annual arithmetic mean.

(6) Not to be exceeded, the 98th percentile 24-hour concentration.

(7) Not to be exceeded, the average of the annual fourth-highest daily maximum. EPA is reducing the standard to 0.075 µg/m3

Source: 40 CFR 50 and 310 CMR 6.00

The NAAQS consist of primary and secondary standards. Primary standards are intended to protect human health. Secondary standards are intended to protect public welfare from known or anticipated adverse effects associated with the presence of air pollutants, such as damage to property or vegetation. NAAQS have been developed for various durations of exposure. Generally, the NAAQS for short-term periods (24 hours or less) refer to limits that generally cannot be exceeded for exposures averaged over 3 months or longer (typically 1 year).

One of the basic goals of federal and state air regulations is to ensure that ambient air quality, including the impact of background, existing sources, and new sources, is in compliance with ambient standards. Toward this end, all areas of the country have been classified as in "attainment," "non-attainment", or "unclassified" for a particular contaminant.

The Town of Somerset in Bristol County is presently designated as unclassified (treated as attainment) or attainment for SO_2, CO, PM-2.5, Pb and PM-10. The entire Commonwealth of Massachusetts, including Bristol County is classified as moderate non-attainment for O_3 (8-hr standard).

Mass DEP regulates compliance with NAAQS and MAAQS through the Massachusetts Air Plan Approval process, discussed below.

3.2 Prevention of Significant Deterioration (PSD) Review

Prevention of Significant Deterioration review is a federally mandated program for review of new major sources of criteria pollutants or major modifications to existing sources. The Closed Cycle Cooling Project qualifies as a major modification to an existing PSD source for PM-10. Additionally, the Unit 3 DS/FF project also qualifies as a major modification to an existing PSD source for PM-10 based on the "past-actual to future-actual" netting analysis currently applied to electric generation facilities. Details of that netting analysis are included in Appendix B.

Prior permitting of the air pollution control systems at Brayton Point Station have not been subject to PSD review because the modifications qualified under a pollution control exemption. That pollution control exemption is no longer available.

EPA administers the PSD permitting process in Massachusetts. This application serves as both the Mass DEP plan approval application and the EPA PSD permit application; some specific sections are marked "Plan Approval Only" or "PSD Permit Only" as appropriate.

Under the PSD Review program, this documents that both the Closed Cycle Cooling Project and the Unit 3 DS/FF Project meet BACT. This PSD permit application also includes an analysis of primary and secondary NAAQS, a secondary impact analysis, and a growth analysis.

3.3 Non-Attainment New Source Review

If an area is designated as "non-attainment" for a given contaminant and if the proposed facility is a major source of the non-attainment contaminant, a procedure known as Non-Attainment New Source Review (NSR) applies. The Non-Attainment NSR regulations have more stringent requirements than PSD review for source control and for securing emissions offsets.

Reconstruction is defined in 40 CFR 60.15 as "replacement of components of an existing facility to such an extent that: 1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and 2) It is technologically and economically feasible to meet the applicable standards set forth in this part."

Since the addition of pollution control devices does not constitute "replacement of components," the cost calculation does not enter into the applicability determination.

3.5 National Emission Standards for Hazardous Air Pollutants

Realizing that numerous pollutants did not meet the specific criteria for development of a NAAQS, Congress included Section 112 in the 1970 Amendments of the CAA to specifically address this problem. Section 112 provides the EPA with a vehicle for developing standards for potentially hazardous pollutants.

The regulations that have been developed to implement Section 112(b) are presented in 40 CFR Parts 61 and 63.

The Closed Cycle Cooling Project is not subject to any standards under 40 CFR 61 or 63. Note that 40 CFR 63 Subpart Q applies to "industrial process cooling towers that are operated with chromium-based water treatment chemicals." The Closed Cycle Cooling Project serves an electric generating process, not an industrial process, and in any event will not use any chromium-based water treatment chemicals.

Unit 3 is not subject to any standards under 40 CFR 61 or 63. As of March 15, 2005, utility boilers were delisted from Section 112 Maximum Achievable Control Technology (MACT) consideration in conjunction with passage of the Clean Air Mercury Rule. On February 8, 2008, the D.C. Circuit vacated EPA's rule removing power plants from the Clean Air Act list of sources of hazardous air pollutants. At the same time, the Court vacated the Clean Air Mercury Rule. Per EPA's website[2] EPA is reviewing the Court's decisions and evaluating its impacts.

3.6 Emissions Trading Programs

Pursuant to 40 CFR 72, Units 1-4 are affected units under the Acid Rain Program. Neither the Closed Cycle Cooling Project nor the Unit 3 DS/FF project changes Brayton Point Station's status under the Acid Rain Program.

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2 http://epa.gov/air/mercuryrule/

The DC Circuit Court vacated the Clean Air Mercury Rule on February 8, 2008, and the Clean Air Interstate Rule on July 11, 2008. In response, Mass DEP may continue the NOx Budget program (310 CMR 7.28) past its sunset date of 12/31/08. Neither the Cooling Tower Project nor the Unit 3 DS/FF project changes Brayton Point Station's status under CAMR, CAIR, or NOx Budget programs.

The Brayton Point Station is subject to Regional Greenhouse Gas Initiative (RGGI) requirements per 310 CMR 7.70, a market-based CO_2 reduction program. Neither the Cooling Tower Project nor the Unit 3 DS/FF Project changes Brayton Point Station's status under the RGGI program.

3.7 310 CMR 7.29 – Emissions Standards for Power Plants

310 CMR 7.29 regulations control emissions of NOx, SO2, Hg, and CO2 from affected facilities in Massachusetts, including Brayton Point Station. The Unit 3 DS/FF Project is part of Brayton Point Station's installation of new emission control technology to meet 310 CMR 7.29 standards.

As required by the regulation, Brayton Point filed an Emission Control Plan (ECP) for the Brayton Point Station on December 20, 2001, and subsequently amended on July 29, 2004 and December 6, 2005. The most recent amendment, filed August 25, 2008, updates Dominion's proposal to comply with Rule 7.29 requirements to reflect installation of the Unit 3 DS/FF rather than a wet scrubber. The ECP amendment is included in Appendix D for reference.

3.8 Visible Emissions

Opacity from the cooling towers will only consist of condensed water vapor, which is specifically excluded from regulation under 310 CMR 7.06(1)(b).

Opacity from combustion is limited by Massachusetts regulation (310 CMR 7.06) which states opacity shall not exceed 20% opacity for a period or aggregate period of time in excess of two minutes during any one hour provided that, at no time during the said two minutes shall the opacity exceed 40% The Unit 3 DS/FF project will not affect the ability of Unit 3 to comply with this limit.

3.9 Short-term NO_2 Policy

On April 20, 1978 and in an update on November 3, 1980 Mass DEP adopted a policy entitled "New Source Performance Criteria for Allowable Ambient NO_2 Concentrations." The policy applies only to new major sources or modifications to an existing source, which would result in increased emissions of 250 tpy of NO_x. The Cooling Tower Project and the Unit 3 DS/FF Project do not cause increased emissions of NOx; therefore this policy does not apply.

3.10 Noise Control Regulation and Policy

Mass DEP regulations, set forth in 310 CMR 7.10 and as interpreted in the Mass DEP Noise Policy 90-001, limit noise increases to 10 dBA over the existing L_{90} ambient level at the closest residence and at property lines. For developed areas, the Mass DEP has utilized a "waiver provision" at the property line in certain cases. This may occur when the impact is in an area that is not noise-sensitive such as an adjacent industrial parcel. The ambient noise level may also be established by other means with Mass DEP consent. Mass DEP also prohibits "pure tone" sounds, defined as any octave band level that exceeds the levels in the two adjacent octave bands by 3 dB or more. A full discussion of noise considerations is provided in Appendix E.

3.11 Air Plan Approval

The Closed Cycle Cooling Project and the Unit 3 DS/FF project are subject to Mass DEP Air Plan Approval (permit) requirements under 310 CMR 7.02. The purpose of Air Plan Approval review is to ensure that the new source will be in compliance with all applicable federal and DEP air regulatory requirements, including emission standards and ambient air quality criteria.

In addition to the federal and state limits and standards described above which are implemented through the Mass DEP Air Plan Approval review, Massachusetts regulations require the application of BACT for each regulated pollutant. The proposed Project will incorporate BACT for the criteria pollutants. Massachusetts BACT is based on the maximum degree of reduction of any regulated air contaminant that the Mass DEP determines, on a case-by-case basis, is achievable taking into account energy, environmental, and economic impacts. A BACT determination can never result in a less stringent emission limitation than an applicable emission standard. Depending on the circumstances, BACT may parallel with the emission standard or may be more stringent than the emission standard. BACT itself is a standard that balances emission control benefits with costs.

Mass DEP reviews compliance with its noise regulation and policy through the Air Plan Approval process.

3.12 Operating Permit

Brayton Point Station is subject to the operating permit requirements in 310 CMR 7.00, Appendix C. Brayton Point Station has an operating permit pursuant to this program (sometimes referred to as a "Title V" permit because the program was originally initiated by Title V of the Clean Air Act Amendments of 1990). After receipt of an Air Plan Approval, Dominion will apply to modify the operating permit to reflect the conditions of the Air Plan Approval.

4.0 BACT ANALYSIS

The Unit 3 DS/FF project is not subject to BACT because no increase in permitted emission limits is requested. The Closed Cycle Cooling Project will meet BACT through the use of drift eliminators that control drift to 0.0005% of the circulating water flow. Details are described in this Section.

4.1 Best Achievable Control Technology (BACT) Requirement

BACT is defined in the 310 CMR 7.00 as,

> . . . an emission limitation based on the maximum degree of reduction of any regulated air contaminant emitted from or which results from any regulated facility which the Department, on a case-by-case basis taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems and techniques for control of each such contaminant. The best available control technology determination shall not allow emissions in excess of any emission standard established under the New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants or under any other applicable section of 310 CMR 7.00, and may include a design feature, equipment specification, work practice, operating standard, or combination thereof.

BACT is defined in 40 CFR 52.21(b)(12) as,

> …an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best

> available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.

The Mass DEP and EPA require a "top-down" approach to a BACT analysis. The process begins with the identification of control technology alternatives for each pollutant. Technically infeasible technologies are eliminated and the remaining technologies are ranked by control efficiency. These technologies are evaluated based on economic, energy and environmental impacts. If a technology, starting with the most stringent, is eliminated based on these criteria, the next most stringent technology is evaluated until BACT is selected.

BACT is expressed as an emission rate, and may be achieved from one or the combination of: (1) change in the raw material processes; (2) a process modification; and (3) add-on controls. Each technique for achieving BACT is evaluated below.

In evaluating BACT, Brayton Point reviewed air pollution control technology information and emission limits from several sources, including:

- The RACT/BACT/LAER Clearinghouse (RBLC)[3];
- Recent permits issued by the Mass DEP ;
- State Implementation Plan (SIP) limits for that particular class or category of sources;
- South Coast Air Quality Management District BACT Determinations;[4] and

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3 http://cfpub.epa.gov/rblc

4 http://www.aqmd.gov/bact/AQMDBactDeterminations.htm

- California Air Resource Board's ("CARB") BACT Clearinghouse Database.[5]

4.2 Cooling Tower Project: Evaluation of Emissions Limiting Techniques

This section reviews potential emissions limiting techniques to determine their applicability to the Closed Cycle Cooling Project.

4.2.1 Change in Raw Materials

In this case, the "raw material" is the water being used to reject the heat in the cooling towers. Other options include:

- Air Cooled Condensers. Air cooled condensers would reject heat into the air without the use of evaporating water. These were evaluated in the NPDES permit renewal process and rejected for several reasons, including unavailability of land, noise impacts, and performance losses.

- Once-Through Cooling. Brayton Point Station currently uses once-through cooling to reject the heat into the waters of Mount Hope Bay. The Station is under EPA and Mass DEP Orders to discontinue once-through cooling.

- Fresh Water. The use of water with lower solids content would reduce particulate emissions from the cooling towers. There is no adequate supply of fresh water available, and in any event the environmental impacts consuming the needed quantities of using fresh water would likely outweigh any benefits of particulate emissions reduction.

4.2.2 Process Modifications

Process modifications are typically considered for industrial processes that use chemicals where a change in the process methods or conditions may result in lower emissions. In this case, the "process" is the natural draft cooling tower(s). Process modification options include:

- Mechanical Draft Cooling Towers. These would not result in any decrease in particulate emissions, because the same amount and quality of water circulate through the towers, and the drift rate achievable with a mechanical draft cooling tower is no better than the drift rate achievable with a natural draft cooling tower. In fact, actual particulate ambient impacts may be higher for mechanical draft cooling towers, because the emission points are considerably closer to the ground.

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5 http://www.arb.ca.gov/bact/bact.htm

- Reduction in Cycles of Concentration. Dominion intends to maintain approximately 1-½ cycles of concentration in the cooling tower circulating water. Reducing the cycles of concentration would reduce the salinity in the circulating water, which would in turn reduce particulate emissions. However, reductions in the cycles of concentration would increase the total water intake and discharge, and the thermal discharge to Mount Hope Bay, endangering Dominion's ability to comply with the EPA and Mass DEP Orders.

- Reduction in Air Velocity: Slower air velocities will generally cause less formation of drift droplets. The use of natural draft cooling towers already incorporates a significant reduction in air velocity relative to mechanical draft cooling towers. No additional reductions are feasible while maintaining other design parameters.

4.3 Cooling Tower Project: Add-on Controls

Cooling towers use drift eliminators (sometimes called mist eliminators) to capture mist droplets before they exit the towers. The drift eliminator technology is the same for natural draft as mechanical draft cooling towers. EPA, in its AP-42 emission factor document[6], describes drift eliminators as follows:

> *"To reduce the drift from cooling towers, drift eliminators are usually incorporated into the tower design to remove as many droplets as practical from the air stream before exiting the tower. The drift eliminators used in cooling towers rely on inertial separation caused by direction changes while passing through the eliminators. Types of drift eliminator configurations include herringbone (blade-type), wave form, and cellular (or honeycomb) designs. The cellular units generally are the most efficient. Drift eliminators may include various materials, such as ceramics, fiber reinforced cement, fiberglass, metal, plastic, and wood installed or formed into closely spaced slats, sheets, honeycomb assemblies, or tiles. The materials may include other features, such as corrugations and water removal channels, to enhance the drift removal further."*

Dominion will use high-efficiency drift eliminators. While final design is in-progress, Dominion expects to use commercially available mist eliminators.

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6 "Compilation of Air Pollutant Emission Factors", Office of Air Quality Planning and Standards, US EPA (AP-42), Chapter 13 Section 4, 1/95, available at http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s04.pdf

4.4 Cooling Tower Project: Comparisons to Regulations & Guidance

Brayton Point is unaware of any specific SIP requirements for any state for cooling tower PM emissions. Regarding policies and guidance, New Jersey's State Of The Art manual[7], the South Coast Air Quality Management District BACT guidelines[8], and the Bay Area Air Quality Management District's BACT workbook[9] do not address cooling tower emissions.

4.5 Comparisons to Recent Approvals

The California Air Resource Board BACT database[10] contains no recent determinations for cooling towers. A review of the EPA RACT/BACT/LAER Clearinghouse (RBLC)[11] finds the following recent determinations for cooling towers:

Table 4-1 Recent Determinations for Cooling Towers

Facility	Date Permit Issued	Circulating Water Flow (gpm)	Drift Rate (%)
Entergy Louisiana LLC Little Gypsy Generating Plant	11/30/2007	5,000	0.001
Basin Electric Power Cooperative Dry Fork Station	10/15/2007	N/A	0.005
Aventine Renewable Energy – Aurora West LLC	9/27/2007	N/A	0.0005
Great River Energy Spiritwood Station	9/14/2007	80,000	0.0005
Minnesota Steel Industries LLC	9/7/2007	N/A	0.005
Homeland Energy Solutions LLC	8/8/2007	50,000	0.0005
Archer Daniels Midland Corn Processing - Cedar Rapids	6/29/2007	150,000	0.0005
Marathon Petroleum Co LLC Garyville Refinery	12/27/2006	up to 96,250	0.005
Progress Energy Florida Anclote Power Plant	12/22/2006	660,000	0.0005
Hillsborough County Dept. of Solid Waste Management	11/3/2006	N/A	0.001
Sunoco Inc. Toledo Refinery	9/29/2006	20,500	0.005
Asalliance Biofuels, LLC Asa Bloomingburg, LLC	8/10/2006	55,000	0.005

7 http://www.nj.gov/dep/aqpp/sota.html

8 http://aqmd.gov/bact/BACTGuidelines.htm

9 http://www.baaqmd.gov/pmt/bactworkbook/

10 http://www.arb.ca.gov/bact/bact.htm

11 http://cfpub.epa.gov/rblc/

Facility	Date Permit Issued	Circulating Water Flow (gpm)	Drift Rate (%)
Western Greenbrier Co-Generation, LLC	4/26/2006	55,000	0.0005
Progress Energy Florida Crystal River Power Plant	4/4/2006	180,000	0.0015
Cleco Power, LLC Rodemacher Brownfield Unit 3	2/23/2006	301,874	0.005
Aventine Renewable Energy, Inc.	11/1/2005	N/A	0.005
Diamond Wanapa I LP Wanapa Energy Center	8/8/2005	2,783	0.0005
Public Service Company of Colorado Comanche Station	7/5/2005	140,650	0.0005
Crescent City Power, LLC	6/6/2005	35,000	0.005
		290,200	0.0001
Newmont Nevada Energy, LLC TS Power Plant	5/5/2005	N/A	0.0005
Trigen-Nassau Energy Corp.	3/31/2005	N/A	0.0005
Omaha Public Power District OPPD – Nebraska City Station	3/9/2005	N/A	0.0005
Darrington Energy LLC Darrington Energy Cogeneration Plant	2/11/2005	N/A	0.001
BP West Coast Products LLC BP Cherry Point Cogeneration Project	1/11/2005	N/A	0.001
Dome Valley Energy Partners Welton Mohawk Generating Station	12/1/2004	170,000	0.0005
Nucor Steel, Hertford, NC	11/23/2004	N/A	0.008
Wisconsin Public Service WPS – Weston Plant	10/19/2004	N/A	0.002
Energy New Orleans Michoud Electric Generating Plant	10/12/2004	1,728	0.005 (Design 0.001)
Longview Power LLC Maidsville Station	3/2/2004	N/A	0.0002
Exxon Mobil - Baton Rouge Refinery	2/18/2004	Up to 40,000	0.003
Abengoa Bioenergy Corp. – York	1/21/2004	N/A	0.005
Ace Ethanol, LLC – Stanley	1/21/2004	N/A	0.005
Nucor Steel, Montgomery, IN	11/21/2003	Up to 60,000	0.0005
Allegheny Energy Supply LLC La Paz Generating Facility	9/4/2003	141,400	0.0005
		173,870	0.0005
United Wisconsin Grain Producers UWGP – Fuel Grade Ethanol Plant	8/14/2003	22,000	0.005
Mid American Energy Co.	6/17/2003	349,400	0.0005
Wallula Generation, LLC Wallula Power Plant	1/3/2003	N/A	0.0005
Interstate Power & Light Emery Generating Station	12/20/2002	140,000	0.005
Genova Arkansas I, LLC	8/23/2002	190,000	0.001
PCS Phosphate Co.	7/30/2002	N/A	0.0005
		N/A	0.002

Facility	Date Permit Issued	Circulating Water Flow (gpm)	Drift Rate (%)
Mustang Power LLC Mustang Energy Project	2/12/2002	N/A	0.004
Mustang Power LLC Horseshoe Energy Project	2/12/2002	94,638	0.001
South Texas Electric Cooperative Inc. Sam Rayburn Generation Station	1/17/2002	N/A	0.0005
Ventures Lease Company, LLC Plaquemine Cogeneration Facility	12/26/2001	N/A	0.005

As shown in the table, the vast majority of projects have drift rates of 0.0005% or greater. The West Virginia DEP permit for Longview Power Maidsville Station (effective 3/2/04) limits the cooling tower drift rate to 0.002%, not 0.0002%; the RBLC entry is apparently in error. The RBLC entry for Crescent City Power states "THIS FACILITY WAS NEVER CONSTRUCTED. THE PSD PERMIT WAS RESCINDED ON 11/1/06." Therefore, the RBLC database does not contain any entries for operating facilities meeting drift rates lower than 0.0005%.

4.5 Cooling Tower Project: Proposed BACT

Consistent with the analysis presented above, Dominion proposes the use of natural draft cooling tower(s) with 0.0005% drift eliminators as BACT.

4.6 Unit 3 DS/FF Project: Evaluation of Emissions Limiting Techniques (PSD Permit Only)

This section reviews potential emissions limiting techniques to determine their applicability to the Dominion Unit 3 DS/FF Project, specifically for particulate matter (PM-10 and PM-2.5).

4.6.1 Change in Raw Materials

The raw material used in Unit 3 is coal. While slight changes to particulate matter emission rates are possible for different coal types, generally the variation in emission rates is small and not consistent. Available EPA guidance[12] states:

> "Historically, EPA has not considered the BACT requirement as a means to redefine the design of the source when considering available control alternatives. For example, applicants proposing to construct a coal-fired electric generator, have not been required by EPA as part of a BACT

12 New Source Review Workshop Manual, October 1990

analysis to consider building a natural gas-fired electric turbine although the turbine may be inherently less polluting per unit product."

Based on this guidance, a fundamental change to the Unit 3 fuel supply is not BACT for particulate matter.

4.6.2 Process Modifications

Process modifications are typically considered for industrial processes that use chemicals where a change in the process methods or conditions may result in lower emissions. In this case, the process is the Unit 3 Boiler. Per the EPA guidance referenced above, a fundamental change to the boiler process is not warranted as BACT for particulate matter. The Unit 3 boiler already minimizes particulate matter formation by operating within the recommended load ranges, controlling the rate of load changes, ensuring steady, uniform fuel feed, and by proper design and operation of the combustion air delivery systems.

4.7 Unit 3 DS/FF Project: Add-on Controls (PSD Permit Only)

EPA, in its AP-42 emission factor document[13], identifies the following particulate matter control devices:

- Electrostatic precipitator (ESP),
- Fabric filter (or baghouse),
- Wet scrubber,
- Cyclone or multiclone collector, or
- Side stream separator.

Of these, ESPs and fabric filters are expected to achieve approximately equivalent control of PM-10 and PM-2.5; the other alternatives will generally provide inferior control of PM-10 and PM-2.5. Brayton Point is proposing a fabric filter as a more appropriate and logical control device to use downstream of the proposed dry scrubber.

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13 "Compilation of Air Pollutant Emission Factors", Office of Air Quality Planning and Standards, US EPA (AP-42), Chapter 1 Section 1, 9/98, available at http://www.epa.gov/ttn/chief/ap42/ch01/final/c01s01.pdf

4.8 Unit 3 DS/FF Project: Comparisons to Regulations & Guidance (PSD Permit Only)

Brayton Point is unaware of any specific SIP requirements for any state for coal-fired boiler PM emissions. Regarding policies and guidance, New Jersey's State Of The Art manual states that solid fuel emission limits should be determined on a case-by-case basis. The South Coast Air Quality Management District BACT guidelines and the Bay Area Air Quality Management District's BACT workbook do not address coal fired boilers except to note that new coal fired boilers are not allowed.

4.9 Unit 3 DS/FF Project: Comparisons to Recent Approvals (PSD Permit Only)

The California Air Resource Board BACT database contains no recent determinations for coal fired boilers. A review of the RBLC finds several determinations for particulate matter from coal fired boilers in the last five years. Details are provided in Appendix K. A wide range of emission rates is found in the RBLC data, with significant variation in reporting format, and some uncertainty regarding whether specific entries include condensable emissions. There are 53 entries that report particulate matter emissions in pounds per million Btu as the main units. Of these the emission limits range from 0.01 to 0.18 pounds per million Btu, with the average rate of 0.03 pounds per million BTU. Generally, entries with higher emission rates include condensable particulate in those emission rates, and entries with lower emission rates do not.

4.10 Unit 3 DS/FF Project: Proposed BACT (PSD Permit Only)

Brayton Point proposes a filterable-only particulate matter emission limit of 0.015 pounds per million Btu, achieved using a fabric filter. Fabric filtration technology constitutes BACT as described above, and 0.015 pounds per million Btu is at the low end of the range of recent approvals. Specification of a BACT emission rate for condensable particulate for the Unit 3 DS/FF project is not appropriate because of the considerable uncertainty that still surrounds the compliance test method, and keeping in mind that this is an air pollution control retrofit project at an existing source (which will dramatically reduce SO2 which is a PM-2.5 precursor).

5.0 AIR QUALITY DISPERSION MODELING

5.1 Overview

The EPA *Guideline on Air Quality Models* (EPA, 2005) recommends that an air quality dispersion modeling analysis be performed to assess the pollutant impact in the vicinity of the Project. Air quality dispersion modeling was used to document that Project emissions will not cause or contribute to any violation of applicable ambient air quality standards. Methods and results are presented in this Section.

Brayton Point submitted modeling protocols to the EPA and Mass DEP on February 28, 2008. Mass DEP issued an approval on May 5, 2008. (do we make a statement here about EPA not approving our protocol and we modeled in accordance with the protocol?

5.2 Ambient Air Quality Standards

The EPA has developed NAAQS for six criteria pollutants, discussed in Section 3.1. Of these, Mass DEP requires ambient air quality modeling for direct emissions of NO2, SO2, PM-10, PM-2.5, and CO. These state and federal ambient air quality standards are listed in Table 3-1.

The NAAQS consist of primary and secondary standards. Primary standards are intended to protect human health. Secondary standards are intended to protect public welfare from known or anticipated adverse effects associated with the presence of air pollutants, such as damage to property or vegetation. NAAQS have been developed for various durations of exposure. Generally, the NAAQS for short-term periods (24 hours or less) refer to limits that generally cannot be exceeded for exposures averaged over 3 months or longer (typically 1 year).

5.3 Land Use Analysis

The Project site is in the Town of Somerset, Massachusetts on Brayton Point at the confluence of the Lee River and the Taunton River. Figure 5-1 presents the USGS map with a 3-kilometer radius around the Project shown. The area surrounding the Project site includes water, a mix of industrial, commercial, urban and suburban residential land uses. Somerset is located in Bristol County in the southeastern part of the Commonwealth of Massachusetts. The site lies approximately two miles west of the city of Fall River.

5.3.1 Urban/Rural Analysis

The USGS topographic quadrangle maps in the vicinity of the Project were used to determine whether the land-use pattern in the environs of the Project is urban or rural for modeling purposes. The EPA recommended procedure in *Revision to the Guideline on Air Quality Models* (EPA, 2005) was followed to determine urban/rural classification using the Auer (1978) land use technique. The land use within the total area circumscribed by a

3 km radius circle around the facility has been classified using the meteorological land use typing scheme shown in Table 5-1. If the land use types I1, I2, C1, R2 and R3 account for 50 percent or more of the area, then urban dispersion coefficients should be used. Otherwise, rural dispersion coefficients should be used in the modeling analysis.

Table 5-1 Identification and Classification of Land Use

Type	Use and Structures	Vegetation
I1	Heavy Industrial Major chemical, steel and fabrication industries; generally 3-5 story buildings, flat roofs	Grass and tree growth extremely rare; < 5% vegetation
I2	Light-Moderate Industrial Rail yards, truck depots, warehouses, industrial parks, minor fabrications; generally 1-3 story buildings, flat roofs	Very limited grass, trees almost absent; < 5% vegetation
C1	Commercial Office and apartment buildings, hotels; > 10 story heights, flat roofs	Limited grass and trees; < 15% vegetation
R1	Common Residential Single family dwellings with normal easements; generally one story, pitched roof structures; frequent driveways	Abundant grass lawns and light-moderately wooded; > 70% vegetation
R2	Compact Residential Single, some multiple, family dwellings with close spacing; generally < 2 story, pitched roof structures; garages (via alley), no driveways	Limited lawn sizes and shade trees; < 30% vegetation
R3	Compact Residential Old multi-family dwellings with close (< 2m) lateral separation; generally 2 story, flat roof structures; garages (via alley) and ashpits, no driveways	Limited lawn sizes, old established shade trees; < 35% vegetation
R4	Estate Residential Expansive family dwellings on multi-acre tracts	Abundant grass lawns and lightly wooded; > 95% vegetation
A1	Metropolitan Natural Major municipal, state or federal parks, golf courses, cemeteries, campuses, occasional single story structures	Nearly total grass and lightly wooded; > 95% vegetation
A2	Agricultural Rural	Local crops (e.g.,corn, soybean); > 95% vegetation
A3	Undeveloped Uncultivated; wasteland	Mostly wild grasses and weeds, lightly wooded; > 90% vegetation
A4	Undeveloped Rural	Heavily wooded; > 95% vegetation
A5	Water Surfaces Rivers, lakes	

As discussed in Section 3.1, above, the entire Commonwealth of Massachusetts is classified as a serious non-attainment area for O_3. However, because O_3 is not directly emitted, it is considered a secondary pollutant that is photochemical produced as a function of both VOC and NOx emissions. Therefore, VOC and NO_x are regulated as the precursors of O_3. Non-attainment NSR relative to O_3 is required only for new major sources of VOC and/or NO_x or major modifications at existing major sources.

Brayton Point Station is a major source, however this project is not a major modification for NOx or VOC. Therefore, Non-Attainment NSR does not apply.

3.4 New Source Performance Standards

New Source Performance Standards (NSPS) regulate the amount of air contaminants that may be emitted from a given process. For combustion sources, emission standards are typically expressed in terms of mass emissions per unit of fuel combusted, fuel quality, or exhaust gas concentration. The EPA has established NSPS for various categories of new sources.

The Closed Cycle Cooling project is not subject to any NSPS.

The Unit 3 DS/FF project does not trigger any requirements under 40 CFR 60 Subpart Da. 40 CFR Part 60, Subpart Da, applies to electric utility steam generating units greater than 250 MMBtu/hr, which commence construction (including reconstruction) or modification after September 18, 1978. As described below, the proposed emission control equipment does not trigger NSPS applicability under modification or reconstruction provisions.

A modification is defined in 40 CFR 60.14(a) as "Except as provided under paragraphs (e) and (f) of this section, any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act." 40 CFR 60.14(e)(5) states that "The addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or is replaced by a system which the Administrator determines to be less environmentally beneficial".

Installation of the Unit 3 DS/FF project does not increase the maximum short-term (lb/hr) emission rates or potential emissions of any of the pollutants regulated under NSPS Subpart Da (NOx, SO2 and PM); also the Unit 3 DS/FF project involves adding an air pollution control device. As such, Unit 3 is not subject to the requirements of Subpart Da.

Brayton Point Cooling Tower Permitting Project **Somerset, Massachusetts**

Epsilon

Figure 5-1

USGS Locus Map

The land use analysis used the USGS map shading technique. Figure 5-1 shows the 3-kilometer radius around the Project. The remaining areas are designated as rural. The results of the analysis indicate that greater than 50 percent of the land around the facility is classified as rural. Therefore, rural dispersion coefficients are used in the air quality modeling analysis. This determination is consistent with prior modeling analyses performed for Brayton Point Station.

5.4 Topography

The topography at and immediately adjacent to the Project site is relatively flat, while the surrounding area, other than the water bodies, the terrain is irregular, reaching an elevation of just over 300 feet. The base elevation of the cooling towers will be approximately 32 feet (9.75 meters) above mean sea level (amsl).

The terrain within 10 km of the Project site does not rise above the height of the cooling tower(s) [500 feet (152.4 meters) amsl]. The highest terrain in the modeling domain has an elevation of approximately 306 feet (93 meters) and is located to the south of the site at a distance of approximately 6,500 meters away. A portion of the USGS topographic map, including the site location depicting terrain in the vicinity of the proposed site, is shown in Figure 5-1.

5.5 Meteorological Data for Dispersion Modeling

The regional meteorology in Somerset is best approximated with meteorological data collected by the National Weather Service (NWS) station at TF Green Airport in Warwick, Rhode Island. TF Green Airport, located just south of Providence, is approximately 11 miles to the west of the Project site at an elevation of 58 feet amsl (17.7 meters). There is another NWS surface observation station close by in New Bedford, MA. New Bedford is approximately 12.5 miles to the east-southeast of Brayton Point. New Bedford is very close to the ocean, and Brayton Point is not located along the open ocean; rather it is inland along the Mt Hope Bay. Both the Project site and TF Green Airport locations are in a very similar setting, i.e., near Mount Hope Bay, and a similar distance away from the open ocean. Therefore the TF Green surface observations are representative of similar topographic influences that affect the Brayton Point location.

While limited on-site meteorological data was available from 10-meter and 50-meter stations, insufficient data was available to perform an air quality modeling analysis. The data was not collected with the intention of performing air quality dispersion modeling, and has not been validated or formatted for that use.

The surface data was processed along with five years of concurrent upper air sounding data from the NWS station in Chatham, Massachusetts. The Chatham station is located approximately 61 miles to the east of Brayton Point. The Gray, Maine upper air station is an alternative site frequently used for projects in New England that are not near the

coastline. Gray is located approximately 20 miles north of Portland, ME, at an inland location. For this project, the more representative choice for upper air soundings is Chatham, which is closer and represents the marine/land influence in the atmosphere that would be more typical at Brayton Point than the soundings from an inland station.

The use of Providence (Warwick, RI) surface observations with Chatham, MA upper air soundings were consistent with prior air quality dispersion modeling performed for the Brayton Point Station. The upper air and surface files have been obtained from the National Climatic Data Center and processed with the AERMET meteorological processing program, which is part of the AERMOD modeling system. Five years (2002, 2004-2007) of hourly surface data collected at the TF Green Airport station were used, which included wind speed and direction, temperature, cloud cover and ceiling height. The 2002, 2004-2007 years were used because they were the most recent years with a sufficient amount of data available for regulatory purposes (greater than 90 %). The year 2003 was found to have less than the required 90 percent available data for modeling. Therefore, following regulatory procedures, the years 2002, 2004-2007 were used in this air quality modeling analysis. Table 5-2 lists the assumptions made in the processing of the data in AERMET.

Table 5-2 AERMET Processing Assumptions

Parameter	Values Used
QA Values (Surface and Upper Air)	Default
Randomizing Parameter	Randomize Wind Directions
Surface Characteristic Frequency	Seasonal
Wind Sector	Sector 1: 0 - 110 degrees Sector 2: 110 - 360 degrees
Land-Use Category	Rural
Anemometer Height	6.1 meters

The AERSURFACE program, a tool provided by EPA, was used to assess the surface characteristics near the meteorological observation site. Table 5-3 shows the seasonal albedo, Bowen ratio and surface roughness derived from each land use category in each wind sector in the vicinity of the meteorological station, T.F. Green Airport, Warwick Rhode Island. The land use pattern in the area around the airport appeared to be more urban to the northeast than the rest of the surrounding area, so two sectors were modeled. The two sectors chosen were from 0 to 110 degrees (Sector 1) and from110 to 360 degrees (Sector 2). AERSURFACE was run for the Winter, Spring, Summer and Fall seasons. The values for albedo, Bowen ratio and surface roughness produced by AERSURFACE were used in the AERMET Stage 3 processing of the meteorological data.

Table 5-3 Surface Characteristics Derived from AERSURFACE

Season	Sector	Albedo	Bowen Ratio	Surface Roughness
Winter	**1**	0.38	0.39	0.028
Winter	**2**	0.38	0.39	0.028
Spring	**1**	0.15	0.52	0.051
Spring	**2**	0.15	0.52	0.051
Summer	**1**	0.15	0.49	0.060
Summer	**2**	0.15	0.49	0.059
Fall	**1**	0.15	0.63	0.052
Fall	**2**	0.15	0.63	0.051

Annual frequency distributions of the winds (wind roses) were plotted for each of the processed meteorological data sets. Wind rose plots depict incorporate the frequency of occurrence of winds categorized by 16 wind direction sectors and wind speed. The annual wind roses are presented in Appendix F. Winds were most frequent from the southwest in 2002, from the northwest in 2004 and consistently frequent from the West-Northwest for the years 2005-2007.

5.6 Background Air Quality Data

To estimate background pollutant levels representative of the area, the most recent monitoring values were obtained from the following EPA website. Data for 2005 through 2007 were acquired from http://www.epa.gov/air/data/.

Background concentrations were determined from the closest available monitoring stations to the Brayton Point facility. A summary of the background air quality concentrations are presented in Table 5-4.

The closest PM-10 monitor is located at 212 Prairie Avenue in Providence, RI, approximately 13 miles to the west-northwest of the Project. For the 24-hour average PM-10, the 4th highest 24-hour average highest PM-10 concentrations measured over the three most recent years of monitoring were selected as the representative background value. For the annual average PM-10 background concentration, the highest yearly observation was used.

There is a PM-2.5 monitoring station at 659 Globe Street in Fall River, approximately 2 miles west of Brayton Point. For the 24-hour average PM-2.5, the 98th percentile 24-hour average values were averaged from the three most recent years of monitoring. The background annual average PM-2.5 is the average of the yearly observation from the three most recent years.

Background concentrations for each year for CO were taken from about 12.5 miles northwest from the Brayton Point facility at the CO monitoring station at Francis School at 64 Bourne Avenue in East Providence, RI. Each year, the second highest CO values for each of the three years (2005-2007) were used to find the background level. The background level was chosen by taking the highest second-high value that occurred within the three years selected (2005-2007).

As with PM-2.5, the Fall River, MA station was chosen at 659 Globe Street for SO2. For the short-term averages the second maximum for each year was chosen and the maximum annual measured concentration. Then, the highest value from the years 2005 to 2007 was chosen as the background level.

For NO_2, the closest monitoring station is located in East Providence at the Francis School on 64 Bourne Avenue, which is the same location as the CO monitoring station. The maximum annual measured concentration for each year is summarized in Table 5-4 and the highest value over the three years was chosen as the background level for NO_2.

Table 5-4 Observed Ambient Air Quality Concentrations and Selected Background Levels

	Averaging Period	Station	2005	2006	2007	Background Level	NAAQS
PM-10 (µg/m³)	24-Hour	Providence[1]	48/46/39	48/48/33	30/27/27	46	150
	Annual	Providence[1]	19	18	15	19	50
PM-2.5 (µg/m³)	24-Hour	Fall River[2]	22	25	26	24	35
	Annual	Fall River[2]	10.1*	8.1	9.1	9.1	15
CO (ug/m3)	1-Hour	East Providence[3]	3,111	2,778	2,000	3,111	40,000
	8-Hour	East Providence[3]	1,778	1,778	1,222	1,778	10,000
SO2 (ug/m3)	3-Hour	Fall River[2]	158	148	121	158	1300
	24-Hour	Fall River[2]	52	52	57	57	365
	Annual	Fall River[2]	13.3	13.3	8.0	13.3	80
NO2 (ug/m3)	Annual	East Providence[3]	15.1	13.2	9.4	15.1	100

Notes:

* Indicates that the mean does not satisfy summary criteria (number of observations for at least one quarter was less than 75%)

For the 24-hr background value, the three highest measured values are listed for each of the 3 years. The background value used is the 4th highest over the 3 year period.

[1] 212 Prairie Avenue in Providence, RI

[2] 659 Globe Street in Fall River, MA

[3] Francis School, 64 Bourne Avenue, East Providence, RI

5.7 Good Engineering Practice (GEP) Stack Height Evaluation

The GEP stack height evaluation of the facility has been conducted in accordance with the EPA revised *Guidelines for Determination of Good Engineering Practice Stack Height* (EPA, 1985). The formula, as defined by the EPA guidelines, for the GEP stack height is:

$H_{GEP} = H_b + 1.5L$

where

H_{GEP} = GEP stack height,

H_b = Height of adjacent or nearby structures,

L = Lesser of height or maximum projected width of adjacent or nearby building, i.e., the critical dimension, and

Nearby = Within 5L of the stack from downwind (trailing edge) of the building.

The natural draft cooling tower(s) proposed for the Project are large and may sometimes cause aerodynamic downwash of the plumes exiting the top of the tower. Previous experience with natural draft towers indicates that downwash is limited to high winds and/or low cooling tower thermal emissions (e.g., at start-up). Therefore a GEP analysis was conducted for each tower so that downwash effects will be considered in the air quality modeling. The Building Profile Input Program, Prime version (BPIP-Prime) was used to determine the wind direction specific inputs to the AERMOD model.

Because the diameter of the towers varies with height, the towers will be entered into BPIP-Prime as 3-tiered tanks. The structure dimensions are based on preliminary engineering designs. The first tier extended from the base to 90 ft high, and was 372 ft in diameter. The second tier extended from the base to 196 ft high and was 295 ft in diameter. The final tier extended the full height of the cooling tower (500 ft), and was 222 ft in diameter (the exit diameter of the cooling tower). This selection of tiers approximates the tower shape with sufficient accuracy to identify GEP stack height. Application of the GEP formula to each of the proposed cooling towers in BPIP-Prime indicates a GEP height of 823 feet (251 m) with the tallest tier as the controlling structure.

The distance between the cooling towers and the stacks exceeds 5L. Therefore, the plumes from the existing stacks will not experience downwash effects associated with the cooling towers. However, the existing stacks do experience downwash effects from nearby structures.

The BPIP-Prime analysis indicates a GEP height for each of the four stacks at 530 feet (161.57 meters). Boiler 3 is found to be the controlling structure with a height of 212 feet (64.62 meters). In addition to Boiler 3 causing the maximum GEP height, for certain wind

directions Stack 1 is also influenced by the SCR1 structure which has a height of 175.5 feet (53.49 meters). Boiler 3 is the controlling structure for all directions for Stack 2 and Stack 3. Stack 4 is influenced by both Boiler 3 and Boiler 4 structures at 162.5 feet (49.5 meters).

All four stacks are non-GEP height stacks and direction-specific building downwash parameters were input to AERMOD for each of these sources.

5.8 Air Quality Model Selection

The EPA approved air quality model used for this analysis is the AERMOD model (07026). Using the regulatory default options, AERMOD was used to identify maximum impact concentrations. The AERMOD model is a steady state plume model using Gaussian distributions that calculates concentrations at each receptor for every hour in the year. The model is designed for rural or urban applications and can be used with a rectangular or polar system of receptors that are allowed to vary with terrain. AERMOD is designed to operate with two preprocessor codes: AERMET processes meteorological data for input to AERMOD, and AERMAP processes terrain elevation data and generates receptor information for input to AERMOD. The AERSURFACE program, a tool provided by EPA, was used to assess the surface characteristics near the meteorological observation site and those data used as input to AERMET. The AERMOD model was selected for the air quality modeling analysis because of several model features that properly simulate the proposed facility environs, including the following:

- Concentration averaging time ranging from one hour to one year;
- Estimating cavity impacts; and
- Use of actual representative hourly average meteorological data.

The AERMOD model incorporates the Plume Rise Model Enhancements (PRIME), the latest EPA building downwash algorithm for the improved treatment of building downwash. PRIME can also account for the stack placement relative to the building thereby allowing for the ability to calculate impacts in the cavity region near the stack.

A complete technical description of the AERMOD model may be found in the *User's Guide for AERMOD* (EPA, 2004).

5.9 Receptor Grid

A polar network of receptors consisting of a discrete receptor grid was used for the AERMOD modeling analysis. The receptors commence at the property line out to 2 kilometers at 100 meter spacing, then 200 meter spacing out to 4 kilometers, 500 meter spacing out to 7 kilometers and 1,000 meter spacing out to 10 kilometers. The terrain elevation for each receptor was obtained electronically from USGS digital terrain data (30m DEM) using the BEE-Line AERMAP program. The terrain processor within the AERMAP

software program is used to assign elevations and a height scale for each receptor. During the processing, three receptors were entered by hand (at 10km, 170º, 180º and 190º) because the AERMAP program could not process these receptors due to a lack of USGS data in that area. Receptors were also placed around the Brayton Point property line at a spacing of every 25 meters.

5.10 AERMOD Modeling

The Brayton Point facility was modeled hour-by-hour using refined modeling techniques for the five years of hourly meteorological data from TF Greene Airport. The AERMOD model was used for the refined modeling with the regulatory default option set. This automatically selects the EPA recommended options for stack tip downwash, effects of elevated terrain, calm and missing data processing routines, and uses the upper-bound concentration estimates for sources influenced by building downwash from super-squat buildings.

The predicted air quality levels of the PM-10 impacts due to the proposed natural draft cooling towers and all four main stacks were assessed through the modeling analysis. For PM-2.5, the impacts for the cooling tower project and all four main stacks is added to the measured (98^{th} percentile for 24-hour) background from the Fall River monitoring station and compared to the NAAQS.

For SO_2, NOx, and CO, the impacts from all four main stacks are added to the measured background (with appropriate averaging time) from the appropriate monitoring station and compared to the NAAQS. This is consistent with the recent Mass DEP approach for documenting that the project will not cause an exceedance of any federal or Massachusetts ambient air quality standard (310 CMR 7.02(3)(j)1), specifically the approach followed in the June 2006 310 CMR 7.02 Non-Major Comprehensive Plan Approval Application as part of 310 CMR 7.29 Air Project, approved by Mass DEP.

5.11 Source Parameters

Cooling Towers

Although the exhaust diameter for the cooling tower(s) is quite large, the exhaust will tend to behave as a more typical "stack." There will be consistent, predictable exhaust flow, with momentum plume rise and thermal plume rise. The plume rise is usually much larger than the source diameter, justifying the assumption that the source diameter does not have a major effect on plume rise. The cooling tower structure itself was considered as the controlling structure for downwash.

Broadly there are two main operating conditions for the cooling towers. In design conditions both towers are in-use. In one-tower operation there is a single tower operating; this would typically occur if one tower was down for maintenance or if operating conditions warrant 1 tower operation. Both operating scenarios were modeled and the

results are presented in Section 5.12. Results are consistently lower for the one-tower operation because the per-tower emission rate and exhaust parameters are the same. The cooling tower design conditions used in the air modeling are presented in Table 5-5.

Table 5-5 Cooling Tower Design Conditions

Parameter	Design Conditions (2 towers)
Exit Air Volume Rate:	11,680 cubic meters per second (24,750,000 cubic feet per minute), wet basis
Exit Air Density:	1,090 grams/cubic meter (0.0679 pounds/cubic foot), wet basis
Exit Air Mass Flowrate:	12,700 kilograms/second (1,680,000 pounds/minute), wet basis
Exit Velocity:	3.31 m/s (650 feet/minute)
Particulate Emission Rate:	5.6 grams/second (44.4 pounds/hour) per tower

At design conditions, approximately 420,000 gallons/hour of water exhausts out the top of each tower. The heat rejection is about 4000 MMBtu/hr/tower. Physical cooling tower exhaust parameters are described in Table 5-6, below.

Table 5-6 Stack Characteristics for the Natural Draft Cooling Towers

Units	UTM E (km)	UTM N (km)	Base Elevation	Stack Height	Stack Diameter
Cooling Tower 1	317.604	4620.466	9.75 meters (32 feet)	152.4 meters (500 feet)	67.6 meters (222 feet)
Cooling Tower 2	317.751	4620.332	9.75 meters (32 feet)	152.4 meters (500 feet)	67.6 meters (222 feet)

Coordinates are Zone 19, North American Datum 1927 (NAD27)

The cooling towers were modeled as point sources with stack exit temperatures that vary hourly. The exhaust temperature can vary depending on the temperature and relative humidity of the ambient air. Hourly exhaust temperatures were computed based on the curves provided by a cooling tower vendor. The cooling towers were assumed to operate continuously.

Unit 3 DS/FF

Because of the relatively close proximity between the four Brayton Point Station stacks, all four stacks will be considered in the modeling analysis. The Unit 3 DS/FF will use the existing Unit 3 stack. Units 1, 2, and 3 have stack heights of 352.8 feet (107.5 meters)

above ground-level (AGL) and Unit 4 has a stack height of 500.5 feet (152.6 meters) AGL. Units 1 and 2 have stack diameters of 14.5 feet (4.4 meters), Unit 3 has a stack diameter of 19.5 feet (5.9 meters), and Unit 4 has a stack diameter of 18.5 feet (5.6 meters).

The Unit 1, 2, and 4 emission rates and exhaust parameters are based on prior air quality dispersion modeling (June 2006 310 CMR 7.02 Non-Major Comprehensive Plan Approval Application as part of 310 CMR 7.29 Air Project, submitted to Mass DEP). The Unit 3 exhaust parameters are new.

Modeled cases are shown in the Table 5-7 below. These five cases were selected from screening evaluations performed in the June 2006 NMCPA, based on two criteria: 1) highest potential overall station impact for particulate matter; and 2) highest potential station impact for other criteria pollutants including cases with the Unit 3 DS/FF operational. For Units 1, 2, & 4, no differentiation is made between condensable and filterable particulate. For Unit 3, following current EPA and Mass DEP modeling guidance the PM-2.5 emission rate includes filterable particulate only.

Cooling tower emissions are consistent for each of these cases (5.6 grams per second per tower PM-10 and PM-2.5).

Table 5-7 AERMOD Modeling Cases for Brayton Point Boiler Stacks

Unit	Fuel	SDA on/off	Boiler Load	Exhaust Temperature, Fahrenheit	Exhaust Velocity, feet/second	PM-10, grams/second	PM-2.5, grams/second	SO2, grams/second	CO, grams/second	NO2, grams/second
CASE 1: Max PM emission rate all units										
1	Coal	On	Maximum	185	99.0	22.7	22.7	186.5	23.5	107.7
2	Coal	On	Maximum	185	99.0	22.7	22.7	186.5	23.5	107.7
3	Coal	On	Maximum	167	98.0	57.1	10.7	175.4	118.3	320.6
4	Oil	N/A	Maximum	380	111.6	18.2	18.2	1,464.9	47.2	163.3
CASE 2: worst case impact per 2006 NMCPA for: 24-hr PM-10										
1	Coal	On	Intermediate	150	50.4	14.2	14.2	134.2	14.7	67.4
2	Coal	On	Intermediate	150	50.4	14.2	14.2	134.2	14.7	67.4
3	Coal	On	Maximum	167	98.0	57.1	10.7	175.4	118.3	320.6
4	Oil	N/A	Intermediate	350	54.6	9.2	9.2	786.8	24.0	83.0
CASE 3: worst case impact per 2006 NMCPA for: 8-hr CO, annual PM & NO2										
1	Coal	On	Intermediate	150	50.4	14.2	14.2	134.2	14.7	67.4
2	Coal	On	Intermediate	150	50.4	14.2	14.2	134.2	14.7	67.4
3	Coal	On	Intermediate	162	60.7	35.3	6.6	108.6	57.5	155.8
4	Oil	N/A	Intermediate	350	54.6	9.2	9.2	786.8	24.0	83.0
CASE 4: worst case impact per 2006 NMCPA for: 1-hr CO										
1	Coal	On	Intermediate	150	50.4	14.2	14.2	134.2	14.7	67.4
2	Coal	On	Intermediate	150	50.4	14.2	14.2	134.2	14.7	67.4
3	Coal	On	Intermediate	162	60.7	35.3	6.6	108.6	57.5	155.8
4	Oil	N/A	Maximum	380	111.6	18.2	18.2	1464.9	24.0	83.0
CASE 5: worst case impact per 2006 NMCPA for: SO2 3-hour, 24-hour, annual										
1	Coal	Off	Maximum	265	91.8	22.7	22.7	698.0	23.5	107.7
2	Coal	Off	Maximum	265	91.8	22.7	22.7	698.0	23.5	107.7
3	Coal	On	Maximum	167	98.0	57.1	10.7	175.4	118.3	320.6
4	Oil	N/A	Maximum	380	111.6	18.2	18.2	732.5	47.2	163.3

The load conditions shown above represent the following operating conditions:

.

Load Condition	Unit 1	Unit 2	Unit 3	Unit 4
Heat Input - MMBtu/hr				
Full Load	2,250	2,250	5,655	4,800
Intermediate Load	1,612	1,612	3,500	2,578
Minimum Load	989	989	2,000	566
Gross Generation – MW				
Full Load	267	267	650	472
Intermediate Load	163	163	445	242
Minimum Load	92	92	255	31

Stack coordinates (NAD27) are:
Unit 1: 317590.0 meters E; 4619806.0 meters N
Unit 2: 317564.0 meters E; 4619829.0 meters N
Unit 3: 317527.0 meters E; 4619847.0 meters N
Unit 4: 317483.0 meters E; 4619899.0 meters N

5.12 Predicted Project Air Quality Impacts

Five operating cases (shown in Table 5-7) were modeled with AERMOD for five pollutants (PM-10, PM-2.5, SO2, CO, and NO2). Particulate matter emissions were modeled from the two cooling towers and all four stacks. The other pollutants are not released from the cooling towers; therefore modeling for those pollutants consisted of only stack emissions.

Predicted concentrations for the combined impact from the station are shown in Table 5-8. Modeled impacts were added to ambient measured background levels to document compliance with the National Ambient Air Quality Standards.

A discussion of the meteorological conditions for the periods presented in Table 5-8 are presented in Appendix G. The modeled contributions from each individual source at Brayton Point are shown in Table 5-9.

Table 5-8 Comparison of Full Facility Predicted AERMOD Results with the National Ambient Air Quality Standard

Pollutant	Averaging Period	Project Predicted Concentration ($\mu g/m^3$)	Receptor Location (UTM-E, UTM-N, Elev.) (meters)	Period	Monitored Background Concentration (μg/m3)	Total Impact (μg/m3)	NAAQS (μg/m3)	Operating Scenario (case)
PM-10	24-Hr H2H	21.9	316929.0, 4618803.0, 1.5	8/15/05	46	67.9	150	3
		1.7	318092.5, 4620713.0, 12.9	2002	19	20.7	50	3
PM-2.5	24-Hr H8H	9.3	316979.0, 4618889.5, 1.5	11/13/06	24	33.3	35	3
		1.4	318092.5, 4620713.0, 12.9	2002	9.1	10.5	15	3
Annual NO_2	Annual	5.4	317084.4, 4621063.5, 5.7	2005	15.1	20.5	100	2
SO_2	3-Hr H2H	722.3	316929.0, 4618803.0, 1.5	5/10/06 hr 9	158	880.3	1300	5
Annual	24-Hr H2H	289.6	316979.0, 4618889.5, 1.5	5/24/05	57	346.6	365	5
		14.1	316981.8, 4621345.5, 14.6	2005	13.3	27.4	80	5
CO	1-Hr H2H	88.1	317876.3, 4621811.5, 8.6	9/9/02 hr 9	3,111	3,199	40,000	1
	8-Hr H2H	50.0	316929.0, 4618803.0, 1.5	5/10/06 hr 16	1,778	1,828	10,000	2
Annual								

Note: H2H means High-Second-High, H8H means High-Eighth-High.

Table 5-9 Predicted AERMOD Source Contributions to Table 5-8 Results

Pollutant	Averaging Period	Project Predicted Concentration ($\mu g/m^3$)	Cooling Tower 1 ($\mu g/m^3$)	Cooling Tower 2 ($\mu g/m^3$)	Unit 1 ($\mu g/m^3$)	Unit 2 ($\mu g/m^3$)	Unit 3 ($\mu g/m^3$)	Unit 4 ($\mu g/m^3$)
PM-10	24-Hr H2H	21.9	0.32	0.90	6.85	6.19	7.57	0.05
		1.7	0.28	0.34	0.37	0.32	0.35	0.01
PM-2.5	24-Hr H8H	9.3	0.23	0.37	4.57	3.58	0.60	0.002
		1.4	0.28	0.34	0.37	0.32	0.07	0.01
Annual NO_2	Annual	5.4	0.00	0.00	1.46	1.52	2.14	0.27
SO_2 Annual	3-Hr H2H	722.3	0.00	0.00	335.22	322.34	61.70	3.08
	24-Hr H2H	289.6	0.00	0.00	149.20	119.29	20.47	0.64
		14.1	0.00	0.00	5.68	5.78	1.24	1.39
CO	1-Hr H2H	88.1	0.00	0.00	14.16	14.18	58.80	0.96
	8-Hr H2H	50.0	0.00	0.00	9.67	9.85	30.13	0.31
Annual								

Note: H2H means High-Second-High, H8H means High-Eighth-High.

5.13 Cumulative Modeling

Consistent with the approach followed in the June 2006 310 CMR 7.02 Non-Major Comprehensive Plan Approval Application as part of 310 CMR 7.29 Air Project, cumulative impact modeling will not be performed for SO_2, NOx, or CO. These pollutants net emissions increase were below the PSD significant emission rates and therefore are not subject to PSD review.

The Project impacts are above the PM-10 24-hour and annual Significant Impact Level (SIL). Per the procedures in the air quality modeling protocols, Dominion sought to identify sources within 10 kilometers of the SIA with actual PM-10 emissions greater than 100 tons, and sources with 20 kilometers of the SIA with actual PM-10 emissions greater than 1000 tons. Dominion also sought to identify PSD increment-consuming sources. Pending confirmation from Mass DEP and Rhode Island Department of Environmental Management, Dominion believes there are no sources satisfying these criteria in the area around Brayton Point. Similarly, there are no sources within 10 kilometers of the SIA with actual PM-2.5 emissions greater than 100 tons, and sources with 20 kilometers of the SIA with actual PM-2.5 emissions greater than 1000 tons.

Therefore no cumulative modeling was conducted and the modeled impacts from the Brayton Point sources (natural draft cooling tower(s) and main stacks) presented in Table 5-8 demonstrate NAAQS compliance.

5.14 Additional Impacts Analysis – Visibility (PSD Permit Only)

Under the Clean Air Act through PSD program, visibility degradation in Class I areas (national parks and wilderness areas) must be addressed. These areas have been designated by the federal government as pristine natural environments, and as such have limits on increases in air pollution levels. Visibility is an Air Quality Related Value (AQRV) under the jurisdiction of the Federal Land Managers (FLM) of Class I areas. The FLMs of the Class I areas are representatives of the National Park Service (NPS) or the U.S. Forest Service (USFS), or the U.S. Fish and Wildlife Service (FWS) depending on the specific Class I area of interest.

A visibility analysis of the proposed project's plume was conducted using the EPA VISCREEN program (Version 1.01 dated 88341). Previous PSD applications for sources in Massachusetts have followed this approach.

The VISCREEN model (EPA, 1988) provides the capability of assessing plume contrast (Cp) and plume perceptibility (Delta E) against two backgrounds, sky and terrain.

For the Project, visibility impacts are a function of particle emissions. Particles are capable of either scattering or absorbing light. These constituents can either increase or decrease the light intensity (or contrast) of the plume against its background. VISCREEN plume

contrast calculations are performed at three wavelengths within the visible spectrum (blue, green, and red). Plume perceptibility as determined by VISCREEN is determined from plume contrast at all visible wavelengths and "is a function of changes in both brightness and color" (EPA, 1992).

The VISCREEN model provides three levels of analysis; Level 1, Level 2, and Level 3. The first two Levels are screening approaches. The Level 1 assessment uses a series of conservative model-defined values. If the source passes the criteria set forth by the Level 1 assessment (i.e., Delta E 2.0 and Cp (L=0.55 micrometer) 0.05), potential for visibility impairment is not expected and no further analysis is required.

A VISCREEN analysis was performed on the nearest Class I area, Lye Brook Wilderness Area in southern Vermont (approximately 210 km to the northwest of the project). Model inputs for the Level1 VISCREEN analysis for the two Brayton Point natural draft cooling towers and Unit 3 are as follows:

- PM Emissions: 68.25 g/s
- NOx Emissions: 320.64 g/s
- Background Visible Range: 40 km
- Source Observer Distance: 213.1 km
- Minimum Source Distance: 213.1 km
- Maximum Source Distance: 219.7 km

The VISCREEN model assumes two sun angles (scattering angles of 10º and 140º). Further, results are also provided for two tests:

1. The plume is located inside the boundary of the Class I area; and
2. The plume is located outside of the Class I area boundary.

Table 5-10 and Table 5-11 present the model results of the VISCREEN analysis that demonstrate that all visibility impacts at the Lye Brook Wilderness area are acceptable. The VISCREEN output file is presented in Appendix H.

Table 5-10 VISCREEN Model Results for Visual Impacts Inside the Lye Brook Class I Area

Background	Theta (°)	Azimuth (°)	Distance (km)	Alpha (°)	Delta E		Contrast (μm)	
					Criteria	Plume	Criteria	Plume
Sky	10	84	213.1	84	2.00	0.074	0.05	0.000
Sky	140	84	213.1	84	2.00	0.020	0.05	-0.001
Terrain	10	84	213.1	84	2.00	0.003	0.05	0.000
Terrain	140	84	213.1	84	2.00	0.001	0.05	0.000

Table 5-11 VISCREEN Model Results for Visual Impacts Outside the Lye Brook Class I Area

Background	Theta (°)	Azimuth (°)	Distance (km)	Alpha (°)	Delta E		Contrast (μm)	
					Criteria	Plume	Criteria	Plume
Sky	10	75	206.3	94	2.00	0.077	0.05	0.000
Sky	140	75	206.3	94	2.00	0.021	0.05	-0.001
Terrain	10	65	198.8	104	2.00	0.004	0.05	0.000
Terrain	140	65	198.8	104	2.00	0.001	0.05	0.000

5.15 Additional Impacts Analysis – Secondary Impacts (PSD Permit Only)

PSD regulations require analysis of air quality impacts on sensitive vegetation types, with significant commercial or recreational value, or sensitive types of soil. Evaluation of impacts on sensitive vegetation is typically performed by comparison of predicted project impacts with screening levels presented in *A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils and Animals* (EPA, 1980). These procedures specify that predicted impact concentrations used for comparison account for project impacts to ambient background concentrations.

Particulate concentrations, and deposition, are not addressed in this screening procedure. PSD Review is only triggered for particulate matter. Therefore, the screening procedure is not needed for the Closed Cycle Cooling Project or the Unit 3 DS/FF Project.

Salt deposition has not been analyzed in prior PSD air quality modeling demonstrations to our knowledge, and is not an appropriate subject for EPA review through this PSD permit application. Salt deposition modeling, described in Appendix I for informational purposes only, documents salt deposition rates within the range of normal background for marine environments, and below available benchmarks for significance.

5.16 Additional Impacts Analysis – Growth Analysis (PSD Permit Only)

PSD regulations also include requirements for a growth analysis, which includes: a projection of the associated industrial, commercial, and residential source growth that will occur in the area due to the source; and an estimate of the air emissions generated by the above associated industrial, commercial, and residential growth.

The peak construction work force is estimated to be 600 persons. A very sizeable skilled construction force is available for this project in the greater Boston area and eastern Massachusetts. Because the area can readily support the Project's construction labor needs, new housing, commercial and industrial construction will not be necessary to support the Project during the construction period.

Once the Closed Cycle Cooling and Unit 3 DS/FF Projects are ready for commissioning, Brayton Point may add a few operators to its permanent staff. Should any new personnel move to the area, a significant housing market is already established and available. Therefore, no new housing or support services are expected.

Thus, no new significant emissions from secondary growth during either the construction phase or operations are anticipated.

APPENDIX A

Permit Forms

Enter your transmittal number → X224106 (Transmittal Number)

Your unique Transmittal Number can be accessed online: http://mass.gov/dep/service/online/trasmfrm.shtml or call MassDEP's InfoLine at 617-338-2255 or 800-462-0444 (from 508, 781, and 978 area codes).

Massachusetts Department of Environmental Protection

Transmittal Form for Permit Application and Payment

1. Please type or print. A separate Transmittal Form must be completed for each permit application.

2. Make your check payable to the Commonwealth of Massachusetts and mail it with a copy of this form to: DEP, P.O. Box 4062, Boston, MA 02211.

3. Three copies of this form will be needed.

Copy 1 - the original must accompany your permit application. **Copy 2** must accompany your fee payment. **Copy 3** should be retained for your records

4. Both fee-paying and exempt applicants must mail a copy of this transmittal form to:

MassDEP
P.O. Box 4062
Boston, MA
02211

*** Note:**
For BWSC Permits, enter the LSP.

A. Permit Information

BWPAQCPA
1. Permit Code: 7 or 8 character code from permit instructions

2. Name of Permit Category

COMPREHENSIVE AIR PLAN APPROVAL
3. Type of Project or Activity

B. Applicant Information – Firm or Individual

DOMINION ENERGY BRAYTON POINT LLC
1. Name of Firm - Or, if party needing this approval is an individual enter name below:

2. **Last Name** of Individual | 3. **First Name** of Individual | 4. MI

ONE BRAYTON POINT ROAD
5. Street Address

SOMERSET	MA	02726	508-646-5338	
6. City/Town	7. State	8. Zip Code	9. Telephone #	10. Ext. #

MEREDITH SIMAS (11. Contact Person) | meredith.simas@dom.com (12. e-mail address (optional))

C. Facility, Site or Individual Requiring Approval

BRAYTON POINT STATION
1. Name of Facility, Site Or Individual

2. Street Address

3. City/Town	4. State	5. Zip Code	6. Telephone #	7. Ext. #

8. DEP Facility Number (if Known) | 9. Federal I.D. Number (if Known) | 10. BWSC Tracking # (if Known)

D. Application Prepared by (if different from Section B)*

EPSILON ASSOCIATES INC.
1. Name of Firm Or Individual

3 CLOCK TOWER PLACE SUITE 250
2. Address

MAYNARD	MA	01754	978-897-7100	
3. City/Town	4. State	5. Zip Code	6. Telephone #	7. Ext. #

AJ JABLONOWSKI (8. Contact Person) | 9. LSP Number (BWSC Permits only)

E. Permit - Project Coordination

1. Is this project subject to MEPA review? ☒ yes ☐ no
If yes, enter the project's EOEA file number - assigned when an Environmental Notification Form is submitted to the MEPA unit: 14235 and 13022 (EOEA File Number)

F. Amount Due

DEP Use Only

Permit No:

Rec'd Date:

Reviewer:

Special Provisions:

1. ☐ **Fee** Exempt (city, town or municipal housing authority)(state agency if fee is $100 or less).
There are no fee exemptions for BWSC permits, regardless of applicant status.
2. ☐ Hardship Request - payment extensions according to 310 CMR 4.04(3)(c).
3. ☐ Alternative Schedule Project (according to 310 CMR 4.05 and 4.10).
4. ☐ Homeowner (according to 310 CMR 4.02).

(pending fast-track agreement with MassDEP)		
Check Number	Dollar Amount	Date

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality
BWP AQ 02 Non-Major Comprehensive Plan Approval
BWP AQ 03 Major Comprehensive Plan Approval
Comprehensive Plan Approval Project Summary Application

X224106
Transmittal Number

Facility ID (if known)

A. Facility Data

INSTRUCTIONS

This form is to be completed when filing for a comprehensive Plan Approval (CPA). A CPA is required for projects exceeding the thresholds for that of a Limited Plan Approval (LPA) and in other cases as determined by the Department. When filing a CPA, one or more of the following forms is also required according to the type of project:
BWP AQ CPA-1 to BWP AQ CPA-5 for equipment;
BWP AQ SFP-1 to BWP AQ SFP-5 for VOC application and noise;
BWP AQ SFC-1 to BWP AQ SFC-6 for pollution control equipment.

1. Dominion Energy Brayton Point LLC - Brayton Point Station
Facility Name
1 Brayton Point Road, Somerset MA 02726
Location

2. Is the project for a new facility? ☐ Yes ☒ No

3. Previously approved? ☒ Yes ☐ No

If yes, list the previously issued air quality approval(s) for this process and associated emission limits in the table provided.

Application Number	Approval Date
4V95056 (Title V Operating Permit)	January 6, 2000 (original approval date)
4B06002 (Non-Major CPA)	December 20, 2006
4B05053 (Amended ECP Final Approval)	March 26, 2006

4. Which permit category are you applying for? ☐ BPW AQ 02 ☒ BWP AQ O3

B. Applicability

1. POTENTIAL EMISSIONS are to be calculated from the maximum capacity of the equipment to emit pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the equipment to emit a pollutant, including air pollution control equipment, restriction on hours of operation, or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation is specifically stated in (a) plan approval(s) or if the facility proposes to incorporate such a restriction into this current plan approval. Fugitive emissions, to the extent quantifiable, are included in determining the potential emissions. Unless otherwise documented, potential emissions shall be based on 8,760 hours per year operation of source.

Current Potential Emissions means the potential emissions for the entire facility as it currently exists. If this is for a new facility, then enter N/A in this column.

Actual Baseline Emissions means the highest actual emissions for the facility in either of the previous two years. If this is for a new facility, then enter N/A in this column.

Proposed Potential Emissions means the potential emissions for this proposed project alone.

B. Applicability (cont.)

Air Containment*	Current Potential Emissions (TPY)** (after control)	Actual Baseline Emissions (TPY)	Proposed Potential Emissions (TPY) (after control)
Particulate	4,189	384	4,578
SO_x	41,759 (7.29 basis)	25,782	41,759 (7.29 basis)
NO_x	10,440 (7.29 basis)	6,213	10,440 (7.29 basis)
VOC	190	91	190
HOC	N/A	0	N/A
Lead	N/A	<0.1	N/A
CO	7,387	1,410	7,387
HAP	N/A	0.32	N/A
Other	35 (NH3)	1.5	35 (NH3)

*Complete only for air quality contaminants that will be affected by this project.
**TPY = tons per year

2. Is this project subject to:

- 310 CMR 7.00 Appendix A- Nonattainment Review? ☐ Yes ☒ No

  If yes, also complete section C- Nonattainment Review.

- Was netting used to avoid applicability? ☐ Yes ☒ No

  If yes, also complete Section III – Nonattainment Review

- Prevention of Significant Deterioration Permit (PSD) 40 CFR 52.21? ☒ Yes ☐ No
  Note: PSD applications are filed with the U.S. Environmental Protection Agency (EPA).
  If yes, also complete section D – PSD.

- Was netting used to prevent PSD? ☐ Yes ☒ No
  Note: PSD questions should be directed to EPA.
  If yes, also complete section D – PSD.

- New Source Performance Standards (40 CFR 60)? ☐ Yes ☒ No

If yes, which subpart?

B. Applicability (cont.)

- National Emissions Standards for Hazardous Air Pollutants (NESHAPS) – 40 CFR 61:

  ☐ Yes ☒ No If yes, which subpart?

- Maximum Achievable Control Technology (MACT), 40 CFR 63?

  ☐ Yes ☒ No If yes, which subpart?

C. Nonattainment Review

This section must be completed only if the construction or modification occurring at the facility is subject to 310 CMR 7.00 Appendix A (Nonatttainment Review) ***or*** would be subject to Nonatttainment Review if netting did not occur.

Offsets and **Netting**

1. If the proposed project would be subject to 310 CMR 7.0 Appendix A - Nonattainment Review in the absence of netting, or if emission reduction credits are used as offsets as part of the application, what is being shutdown, curtailed or further controlled to obtain the emission reduction credit (netting is not allowed to avoid review under 310 CMR 7.02):

   Emission reduction credits must be part of an enforceable plan approval to be used for either "netting out" or "offsetting emission increases".

   (NOT APPLICABLE)

2. For the source of emission credits, complete the following table:

Air Containment	Actual Baseline Emissions (TPY)	New Potential Emissions (TPY) (after control)	Emission Reduction Credit (TPY)

Actual Baseline Emissions means the average actual emissions for the source of emission credits in the previous two years.

New Potential Emissions means the potential emissions for the source of emission credits after project completion.

Emission Reduction Credit means the difference of Actual Baseline and New Potential Emissions.

C. Nonattainment Review (cont.)

3. If emission reduction credits come from a facility other than where the construction or modification occurs, provide the name and location of the facility:

(NOT APPLICABLE)

D. Affirmative Demonstration of Compliance

The signature below provides the affirmative demonstration pursuant to 310 CMR 7.02 (3) that any facility (ies) in Massachusetts, owned or operated by the proponent for this project (or by an entity controlling, controlled by or under common control with such proponent) that is subject to 310 CMR 7.00, et seq., is in compliance with, or on a Department approved compliance schedule to meet, all provisions of 310 CMR 7.00, et seq., and any plan approval, order, notice of noncompliance or permit issued thereunder. This form must be signed by a responsible official working at the location of the proposed new or modified facility. Even if an agent has been designated to fill out this form, the responsible official must sign it. (Refer to the definition given in 310 CMR 7.00.)

Certification: I certify that I have examined the responses provided herein and that to the best of my knowledge they are true and complete.

Diane Leopold
Print name

Signature of responsible official

VP F&H Merchant Operations
Position / title

Dominion Energy Brayton Point LLC
Representing

Date

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality

BWP AQ CPA-1 (for use with BWP AQ 02, 03)

Comprehensive Plan Approval Application for Fuel Utilization Facilities

X224106
Transmittal Number

Facility ID (if known)

A. Applicability

This form is to be used to apply for approval to construct, substantially reconstruct or alter a fuel utilization facility, such as but not limited to a boiler, oven, space heaters, fuel-burning engines, turbines, or other stationary fuel burning devices, subject to 310 CMR 7.02 (3).

Please refer to 310 CMR 7.02 (5)(a). Simple burner replacement on existing units having an energy input capacity less than 100,000,000 Btu per hour may submit form BWP-AQ CPA-2, Comprehensive Plan Application for Burner Replacement.

B. Materials that Constitute a Comprehensive Plan Approval Application

Proposed projects that are subject to the Comprehensive Plan Approval Application requirements for fuel utilization facilities must submit the following items to the appropriate Regional Office for review and approval.

☐ **Manufacturer's Specifications** and Brochures*

The Following Item Must be Submitted in Duplicate and Must Bear the Seal And Signature of a Massachusetts Registered Professional Engineer

☒ **CPA forms** should reflect both existing units and the new or modified units at the facility.

☒ **Supplemental forms** for associated air pollution control equipment – If such equipment is present, the appropriate form must be included.

☐ **Standard Operating Procedure** – Clear, logical, sequential itemization of the manner in which the equipment is to be operated (normal and upset modes).*

☐ **Standard Maintenance Procedure** – Must describe the scheduling of routine maintenance and equipment adjustments.*

☒ **Plot Plan** – Scaled drawing indicating the outlines of the structures owned by the landlord of the building containing this project, as well as the locations of significant nearby structures and terrain features. Indicate the heights of the structures and the location and height of the stack(s) above ground level.*

☒ **Topographic Map** – United States Geodetic Survey (USGS) map, or equivalent, showing the topographic contours for a distance of 1500 feet beyond the boundary lines in every direction.

☐ **Roof Plan** – Scaled drawing indicating the locations of the stack(s) and all fresh air intakes, windows, and doors. (This can be part of **Plot Plan**.)*

☐ **Elevation Plan** – Scaled drawing locating the stack(s), fresh air intakes, windows, and doors.*

☐ **Breech/Stack Plan** – Scaled drawing to show the location of sampling ports, barometric dampers, and opacity monitor(s).*

☒ **Calculations** – Detailed calculation sheets showing the manner in which the pertinent quantitative data was determined.

☒ **Potential Emissions** – Detailed listing of proposed restrictions limiting potential emissions (see section E).

☒ **Miscellaneous** – The Department may require other materials if it considers them necessary to the plan's review. For example, modeling studies may be required, or monitoring data, or a noise survey. These special items are requested on the more complex or larger applications.

☐ **BACT Analysis**

* - Plans will be provided as soon as they are available. Specifications and procedures will be submitted no more than 60 days after Dominion accepts the proposed equipment.

C. Existing and Modified or New Combustion Unit(s) Data

Include all fuel utilization facilities at this address; attach another sheet when necessary. In this and subsequent sections, "Existing" refers to those combustion units that will remain in use at the facility, but will be unchanged by this project.

		Unit 3			
1.	Is Unit Existing, to be Modified, or New?	Existing			
2.	Description (boiler, oven, space heater, diesel, etc.)	Boiler			
3.	Manufacturer*	Babcock & Wilcox			
4.	Model number*	UP-52			
5.	Output rating (at 212° F) (indicate if Btu/hr or lbs. of steam/hr)	~650 MW			
6.	Input rating (in Btu per hour)	5,655 MMBtu/hr			
7.	For boilers, indicate the steam usage breakdown				
	a. % of steam for space heating use	0			
	b. % of steam for air conditioning use	0			
	c. % of steam for hot water or process use	100			
8.	For boilers, indicate if WT, FT, CIS, HRT	Radiant & Convection Surface			
9.	Boiler operating pressure [psigl]	3,800			
10.	Thermal efficiency at 100% rating	90.16% (Coal)			
11.	Maximum breaching temperature (°F)	255 F (Coal)			
12.	Furnace volume (if applicable)	371,007 ft^3			
13.	Grate area (if applicable)	N/A			
14.	Indicate how combustion air is supplied to the boiler room	Forced draft fan			

*If undetermined at time of application, indicate probable unit "or equivalent". Specific make and model must be provided prior to final approval.

C. Existing and Modified or New Combustion Unit(s) Data (cont.)

15.	Describe combustion unit cleaning method	Unit 3				
	a. Air blown (yes or no)	Yes				
	b. Steam blown (yes or no)	No				
	c. Brushed and vacuumed (yes or no)	No				
	d. Other (describe)	Sonic in Economizer				
	e. Frequency of cleaning	As required				

D. Fuel Data

1.	Primary fuel	Unit 3				
	a. Type and grade	Coal				
	b. Sulfur content	<1.6% wt				
	c. Gross heating value (give units)	12,500 Btu/lb				
	d. Ash content (% by dry weight)	May exceed 9%				
	e. Proposed fuel supplier	Various				
2.	Standby or auxiliary fuel					
	a. Type and grade	Natural Gas @ 10% MCR	Residual oil @ 100% MCR	distillate oil @ 100% MCR		
	b. Sulfur content	negligible	<2.2% wt	0.17% wt		
	c. Gross heating value (give units)	1,025 btu/SCF	18,000 Btu/lb	20,000 Btu/lb		
	d. Ash content (% by dry weight)	N/A	<=4%	<=4%		
	e. Proposed fuel supplier:	Various	Various	Various		
3.	Fuel additive					
	a. Manufacturer		Martin-Marietta or similar			
	b. Additive name		Ultramag-Hus or similar			
	c. Purpose of additive		Vanadium Control			

E. Potential Emissions

POTENTIAL EMISSIONS are used to determine applicability to air pollution control regulations and compliance fees. Unless otherwise restricted, potential emissions are calculated from the maximum operational capacity of the equipment as described in section C operated 8,760 hours per year. If you wish to limit potential emissions you must complete this section; this will be treated as part of the facility design and the limitation will be specifically stated in this Plan Approval.

1. In order to issue a permit limiting the facility's potential emissions, the Department must have a method to monitor compliance with the restriction. In other words, an enforceable permit condition must be available to the Department. The following questions require the facility to set a limit on the maximum amount of fuel combusted (per month and per year) and therefore, the maximum amount of emissions possible. This will become the means to monitor and enforce the restriction. Alternative methods of restricting potential emissions will be evaluated on a case-by-case basis and the applicant should contact the Department before proposing such alternatives. Any such alternative method must be consistent with the U.S. EPA's June 13, 1989 guidance entitled, "Guidance on Limiting Potential to Emit in New Source Permitting" (Copies of this guidance are available from DEP offices).

Proposed Fuel Restriction

Enter amount and units (gallons, cubic feet, etc.)

		Unit 3				
a.	Maximum per month:					
	primary fuel	N/A				
	auxiliary	N/A				
b.	Maximum per year:					
	primary fuel	N/A				
	auxiliary fuel	N/A				

2. Describe any other physical or operational limitation on the capacity of the equipment to emit a pollutant, including air pollution control equipment, restriction on hours of operation, etc., that will be used to restrict emissions:

N/A

F. Oil Viscosity Control Data

1. For #4, #5, or #6 fuel oil, indicate below the method used to maintain proper atomizing viscosity [e.g., oil tank heater, oil line heater, pre-heater type, or other (such as room heat)]:

   Fuel oil heaters for oil viscosity control

2. Description of Oil Viscosity Controller (if applicable):

   Dynatrol
   a. Manufacturer

   EC-312GA
   b. Model number

   DCS
   c. Recorder?

G. Burner Data

For fuel dependant parameters, assume primary fuel is being used.

		Unit 3			
1.	Burner manufacturer	Babcock & Wilcox			
2.	Burner model number	DRB XCL			
3.	Type of atomization (steam, air, press, mesh, rotary cup)	Mech (Coal)			
4.	Number of burners in each	40 (coal)			
5.	Max fuel firing rate (all burners firing) (Gal/hr, lbs./hr, cubic ft per hr, etc.)	452,000 lb/hr (coal)			
6.	If oil, temperature and viscosity at max rating	140-220 F @ 150 SSU			
7.	Normal fuel firing rate (indicate units)	452,000 lb/hr (coal)			
8.	Max theoretical air requirement (scfm)	1,450,000 cfm (coal)			
9.	Percent excess air at 100% rating	18% (coal)			
10.	Turndown ratio	2.5:1 (coal)			

11. Auto/Manual
    Burner modulation control (on/off, low/high fire, full automatic, manual)
12. Coal & Oil: Elec Spark/Gas; Gas: Elec/Igniters
    Main burner flame ignition method (electric spark, auto gas pilot, hand held torch, other)

H. Combustion Unit Operating Schedule

				Unit 3			
1.	Winter schedule	hrs/days	days/week	24/7			
2.	Spring schedule	hrs/days	days/week	24/7			
3.	Summer schedule	hrs/days	days/week	24/7			
4.	Autumn schedule	hrs/days	days/week	24/7			

I. Noise Suppression Equipment

The installation of some fuel burning units can cause a noise nuisance if precautions are not taken. This is especially true for diesel or turbine generators. Form BWP AQ SFP-3 must accompany the Plan Application for those units requiring noise suppression.

		Unit 3			
1.	Manufacturer of silencer	IDE Process Corp & others			
2.	Model Number	3-60-168H3S & others			

J. Auxiliary Equipment

1. Opacity Monitoring Equipment

		Unit 3			
a.	Manufacturer	United Sciences			
b.	Model number	500C			
c.	Lens cleaning method	Manual			
d.	Alarm type	Audible			
e.	Recorder manufacturer	CEM DAHS/DCS			
f.	Recorder model number	CEM DAHS			

The above device is required on all stacks serving equipment rated at an energy input capacity of 40,000,000 Btu per hour or greater which burn liquid or solid fuel. Other facilities, may also be required to install such equipment if the Department determines that it is necessary (310 CMR 7.04 (2)).

2. Boiler Draft

a.	Type (forced, included, or natural)	Balanced			
b.	Method used to control draft	Central Control			

J. Auxiliary Equipment (cont.)

3. **Air Pollution Control Equipment**

(Applicable supplemental forms must be submitted for these, see instructions)

a. Type (scrubber, ESP, cyclone, etc.)	SCR	Dry scrubber	Fabric filter	PAC
b. Manufacturer	B&W	TBD	TBD	Wheelabrator
c. Model number	TBD	TBD	TBD	TBD

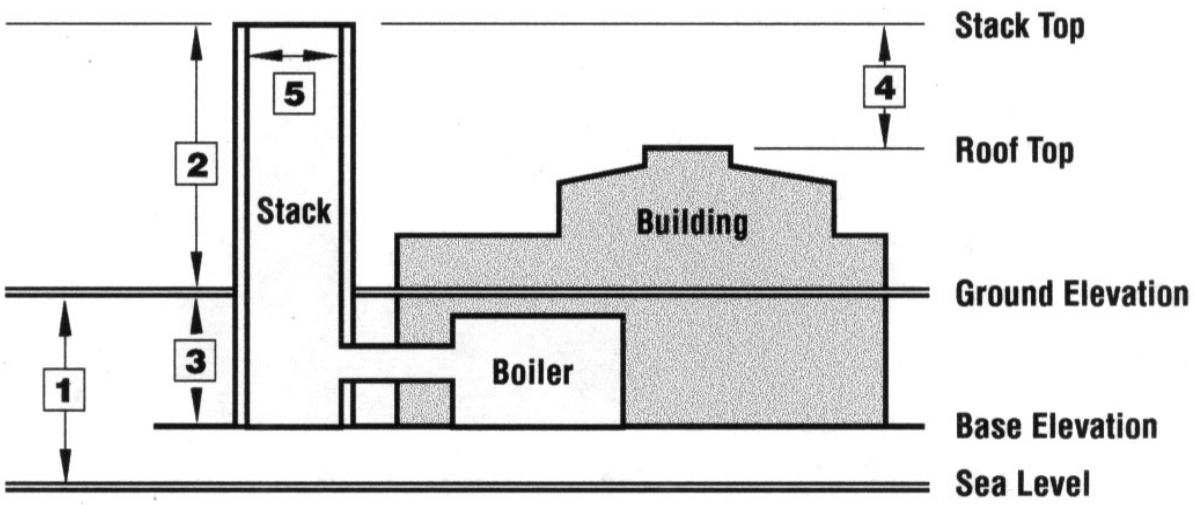
4. Does this application represent Best Available Control Technology (BACT) as required in Regulation 310 CMR 7.02(3)(j) 6?

a. ☒ Yes ☐ No

b. Describe

The Unit 3 DS/FF Project is not subject to Massachusetts BACT because there will not be any potential emission increases greater than 1 ton/year for any pollutant.

K. Existing and New or Modified Stack Data



Questions for the above diagram

	Stack 3			
1. Ht. of ground above sea level (arrow 1)	14.5 ft	ft	ft	ft
2. Ht. of stack top above ground (arrow 2)	352.8 ft	ft	ft	ft
3. Ht. of ground above stack base (arrow 3)	-0.5 Ft	ft	ft	ft
4. Ht. of stack top above roof (arrow 4)	142.3 ft	ft	ft	ft

K. Existing and New or Modified Stack Data (cont.)

		Stack 3			
5.	Stack exit size (inside) (arrow 5)	234 In	in	in	ft
6.	Is stack existing, new, or modified?	existing			
7.	Which combustion units on which stacks?	Unit 3			
8.	Inside shell material	brick			
9.	Outside shell material	concrete			
10.	Max gas exit velocity	118 ft/s (expected)			
11.	Min gas exit velocity	34 ft/s (expected)			
12.	Maximum stack gas exit temperature (^{0}F)	295			
13.	Maximum stack gas volume (acfm)	2,113,300			
14.	Type of rain protection	None			

NOTE: The rain protection device should be of such a design as to allow the unimpeded escape of the stack gases. “Rain Hats” are prohibited.

L. Energy Conservation Devices

		Unit 1	Unit 2	Unit 3	Unit 4
1.	Feed water economizer (yes or no)	☒ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N
2.	Combustion air preheater (yes or no)	☒ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N
3.	Blowdown heat recovery (yes or no)	☐ Y ☒ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N
4.	Oxygen trim control (yes or no)	☒ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N
5.	Other (describe)	☒ Y ☐ N ARP	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N

M. Miscellaneous

1. 4911
   Standard Industrial Classification (SIC) code(s) for this facility?
2. ~240
   Number of employees at this facility?
3. Yes, site-generated waste oil fuel only (Transmittal 120431 (Class A); Permit S-09-020 (Class B(3)))
   Is waste or recycled oil burned at this facility?
4. No. 6 Fuel Oil ash is collected in facility’s wastewater treatment system. An outside contractor has dredged solids. The solids are transported to onsite lined landfills.
   If numbers 4, 5, 6, fuel oil is used, identify who removes and disposes of the fuel oil sludge.

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality

BWP AQ CPA-1 (for use with BWP AQ 02, 03)

Comprehensive Plan Approval Application for Fuel Utilization Facilities

X224106
Transmittal Number

Facility ID (if known)

N. CPA Preparer

1. AJ Jablonowski, PE
   Person who complied the plans applications materials
2. Epsilon Associates, Inc.
   Representing
3. 3 Clock Tower Place, Suite 250, Maynard MA 01754
   Address
4. 978-897-7100
   Telephone number
5. August 26, 2008
   Date completed

O. Certifications

The seal and signature of a Massachusetts Registered Professional Engineer must be entered at right, and they must be the original seal impression or stamp and the original signature of the engineer. This is to certify that the information contained in this form has been checked for accuracy, and that the design represents good air pollution control engineering practice.

AJ Jablonowski
Print name

Authorized signature

Senior Consultant
Position/title

Epsilon Associates
Representing

August 28, 2008
Date

39123
PE number

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality

BWP AQ CPA-3 (for use with BWP AQ 02, 03)

Comprehensive Plan Approval Application for Non Fuel Emissions

X224106
Transmittal Number

Facility ID (if known)

A. Applicability

This form is to be used to apply for approval to construct, substantially reconstruct or alter a facility, where the portion of the facility being constructed, substantially reconstructed or altered would result in an increase in potential emissions of equal to or greater than five tons per year of any criteria pollutant, or equal to or greater than five tons per year of any single other air contaminant.

Please note that an emission reduction of the same air contaminant at the facility may not be subtracted from the emissions resulting from the construction, substantial reconstruction or alteration to bring emissions below the five tons per year threshold. Products of combustion from any fuel utilization facility are not included in the sum. Please refer to 310 CMR 7.02(5)

B. Materials that Constitute a Comprehensive Plan Approval Application – Non Fuel Emissions

Proposed projects, which are subject to Comprehensive Plan Approval Application requirements for industrial and commercial facilities, must submit the following items to the appropriate Regional Office for technical review and approval.

☐ **Manufacturer's Specifications** and brochures for process equipment, add-on air pollution control equipment, fans/blowers, etc.

The following items should be submitted in duplicate and must bear the seal and signature of a Massachusetts Registered Professional Engineer

☒ **CPA Forms** should reflect the new or modified process equipment at the facility.

☒ **Supplemental Forms** for add-on air pollution control equipment fuel equipment, or for volatile organic compounds (VOCs), if applicable.

☐ **Standard Operating Procedure And Standard Maintenance Procedure** – See section J and section K of this form.*

☒ **Plot Plan** – Scaled drawing indicating the outlines of the significant structures within 1500 feet of the building containing this project. Topographic contours may be shown on this plan or on separate plan.

☒ **Potential Emissions** – Detailed listing of proposed restrictions limiting potential emissions (see section E).

* - Specifications and procedures will be submitted no more than 60 days after Dominion accepts the proposed equipment.

☒ **Topographic Map** – United States Geodetic Survey (USGS) map, or equivalent, showing the topographic contours for a distance of 1500 feet beyond the boundary lines in every direction. (This may be part of Plot Plan.)

☐ **Roof Plan; Building Elevation Plan** – Scaled drawings indicating the locations of all fresh air intakes, windows, and doors.*

☒ **Schematic Process Diagram** – Dimensioned plan showing process equipment, hoods, ductwork, dampers, fans, temperature/pressure sensing devices, other monitors, air pollution control equipment, and all vents, by-passes, or discharges to atmosphere.

☒ **Calculations** – Detailed calculation sheets showing the manner in which the pertinent quantitative data was determined. This is especially important for calculated emission rates, sizing of air pollution control equipment, and sizing of air moving equipment.

☒ **Miscellaneous** – The Department may require other materials if it considers them necessary to the plans review. For example, modeling studies may be required, or monitoring data, or a noise survey. These special items are not usually requested except on the more complex or larger projects.

☒ **BACT Analysis**

C. Project Description

1. For the purpose of determining a potential emission rate (or rates), give the maximum operating times proposed for this project.

   24
   a. hours/day

   7
   b. days/week

   52
   c. weeks/year

2. Fully describe the process equipment that will be constructed, substantially reconstructed or altered, identifying:

   a. maximum capacity of process equipment

   b. chemical identity of all raw materials

   c. chemical identity of all finished products

   d. sequence of process events keyed to the Process Diagram required in Section B

   e. process temperatures

   f. process pressures

   Use additional sheets of paper if necessary. If volatile organic compounds (VOC) are used in the application of coatings, attach separate formulation sheets and submit a BWP AQ SFP-1 form.

   See attached plan approval application report. Two cooling towers have a combined water flow of 720,000 gallons/minute circulating water, with dissolved solids up to 48,000 parts per million by weight. Chemical addition includes sodium hypochlorite (bleach) and much smaller amounts of other chemicals (e.g. anti-foam) as needed. Design hot water temperature 113 F. Natural draft cooling towers operate at about ambient pressure; piping includes needed pumping pressure.

3. Specify maximum consumption/usage rates of each raw material:

   See attached plan approval application report. At design conditions 48,000 gallons/minute water is withdrawn from the river, 14,000 gallons/minute water is evaporated, and 34,000 gallons/minute water is returned to the river.

4. Describe storage/handling procedures for raw materials:

   See attached plan approval application report. Water is pumped though the upper supply basin and the lower discharge basin.

C. Project Description (cont.)

5. Specify maximum production rate(s) of finished products:

   Not applicable

6. Describe storage/handling procedures for finished products:

   Not applicable

7. Describe features of equipment layout designed to allow for future growth, emission control device add-on, or stack testing ports:

   Not applicable.

8. Describe how fugitive emissions will be minimized especially during process upsets, or disruptions:

   Not applicable

9. Explain those aspects of the design that have been required because of other environmental concerns, or safety concerns, or other regulations, such as; construction materials handling practices system interlocks, waste disposal procedures, etc.:

   See plan approval application text. Cooling tower(s) are being installed to comply with EPA and Mass DEP orders to implement the 2003 NPDES permit.

D. Emissions Data

1. Maximum Gaseous Emissions Rates:

Chemical Name	Before Control (pounds/hour)	After Control (pounds/hour)	After Control (ppm of volume)
Not applicable			
a.			
b.			
c.			

2. Maximum Particulate Emissions Rates:

Chemical Name	Before Control (pounds/hour)	After Control (pounds/hour)	After Control (grains/DSCF)*
PM/PM-10/PM-2.5	Not available	88.8 (2 tower operation)	~0.0004
a.			
b.			
c.			

* grains per dry standard cubic foot

3. Indicate how the above emission rates were obtained, and attach appropriate calculations and documentation:

See plan approval application text. Particulate emission rate is a function of circulating water flow rate, drift rate, and dissolved solids concentration.

4. a. Describe the potential for visible emissions (opacity) from this project:

None, exclusive of water vapor

b. Describe the potential for odor impacts from this project:

None expected

E. Potential Emissions

POTENTIAL EMISSIONS are used to determine applicability to air pollution control regulations and compliance fees. Unless otherwise restricted, potential emissions are calculated from the maximum operational capacity of the equipment as described in section C operated 8,760 hours per year. If you wish to limit potential emissions you must complete this section; this will be treated as part of the facility design and the limitation will be specifically stated in this Plan Approval.

1. In order to issue a permit limiting the facility's potential emissions, the Department must have a method to monitor compliance with the restriction. In other words, an enforceable permit condition must be available to the Department. The following questions require the facility to set a limit on the maximum amount of raw materials used (per month and per year) and therefore, the maximum amount of emissions possible. This will become the means to monitor and enforce the restriction. Alternative methods of restricting potential emissions will be evaluated on a case-by-case basis and the applicant should contact the Department before proposing such alternatives. Any such alternative method must be consistent with the U.S. EPA's June 13, 1989 guidance entitled, "Guidance on Limiting Potential to Emit in New Source Permitting". (Copies of this guidance are available from DEP offices).

Note: This raw material restriction will become the facility's allowable usage. This amount can never be exceeded without prior Department approval.

Raw Material	Amount Used in Equipment 1		Amount Used in Equipment 2		Amount Used in Equipment 3		Total Used	
	per month	per year	per month	per year	per month	per year	per month	per year
Recirculating Water	32 billion gallons	379 billion gallons					32 billion gallons	379 billion gallons

Use additional paper if necessary

2. Describe any other physical or operational limitation on the capacity of the equipment to emit a pollutant, including air pollution control equipment, restriction on hours of operation, or on the type or amount of material combusted, stored or processed that will be used to restrict emissions:

Circulating water dissolved solids 48,000 ppmw.

F. Air Pollution Control Equipment

If new air pollution control equipment is proposed or if existing control equipment will be modified or affected by this project, then an equipment specific Supplemental Form must be submitted.

1. Is Emission Control System:

   ☒ Proposed? ☐ None?

   Existing? (if existing, supply previous Approval number)

   Drift eliminators
   a. If proposed or existing, describe:

   Not applicable
   b. If existing, described purpose changed:

2. Control Efficiency:

   Capture Efficiency (CE)

   Not applicable
   Percent by weight pollutants captured by the ventilation system

   Destruction Efficiency (DE)

   not applicable
   Percentage by weight pollutants destroyed or captured in control device

   Overall Control Efficiency:

   Drift rate limited to 0.0005% of circulating water flow
   Percentage by weight of overall efficiency of the control system (CE X DE)/100

   Describe how capture efficiency was derived:
   Vendor guarantee

3. Does this application represent Best Available Control Technology (BACT) as stated in Regulation 310 CMR 7.O2 (3)(j)6?

   ☒ Yes ☐ No

   a. If yes, is required supplementary documentation attached?

   ☒ Yes ☐ No

   b. If no, explain why this project is exempt:

   (not applicable)

G. Air Handling System

This section is for the description of fans and those flow parameters associated with the processes and/or the air pollution control equipment.

		Fan A	Fan B	Fan C
1.	Identify fan (from process schematic)	Not applicable		
2.	Fan Manufacturer			
3.	Fan Model Number			
4.	Fan Type (axial, centrifugal etc.)			
5.	Capacity (in SCFM)			

Manufacturer's fan performance curve or rating curve, with operating point indicated, must be submitted with this application if the fans are an integral part of the installed or modified equipment.

6. Fan Operating Point in this System

	Fan A	Fan B	Fan C
a. Actual RPM			
b. Temperature at the fan (^{o}F)			
c. Fan pressure (static pressure, in H_2O)			
d. Actual flow rate of fan (ACFM)			
e. Actual horsepower requirements			

H. Miscellaneous Data

1. Number of employees at this facility

   ~240

2. Standard Industrial Classification (SIC) Code for this facility

   4911

3. Does municipal water supply to your process operations have the required back-flow preventer?

   ☐ Yes ☐ No Not applicable to this project

   If Yes, is it registered with the DEP Division of Water Supply?

   ☐ Yes ☐ No

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality

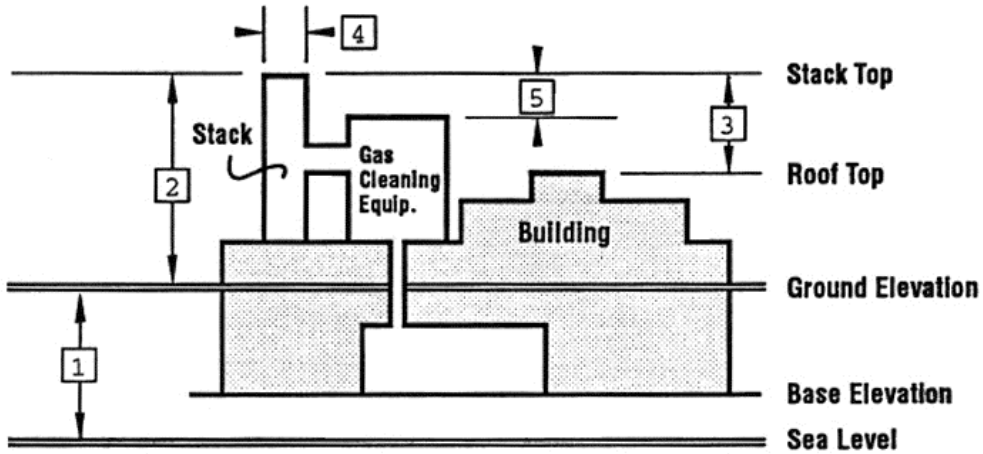
BWP AQ CPA-3 (for use with BWP AQ 02, 03)

Comprehensive Plan Approval Application for Non Fuel Emissions

X224106
Transmittal Number

Facility ID (if known)

I. Exhaust Stack Description



Questions for the above diagram

32ft 1. Height of Ground Above Sea Level (arrow 1)	500 ft. 2. Height of Stack Top above Ground (arrow 2)
Not applicable 3. Height of Stack Top above Roof (arrow 3)	222 feet 4. Stack Exit Size (inside) (arrow 4)
Not applicable 5. Height of Stack Top above Control Equip. (arrow 5)	Vertical 6. Discharge direction (horizontal or vertical)
51 & 52 7. Identify Stack Nos. as they appear on Process Schematic	Concrete 8. Inside shell material
Concrete 9. Outside Shell Material	3.31 (design basis) 10. Range of gas exit velocity (ft/sec)
~32F to ~112 F 11. Range of stack gas exit temp. (°F)	24,320,000 (design basis) 12. Range of stack gas volume (acfm)
none 13. Type of Rain Protection	

The stack parameters will be evaluated to assure they provide sufficient protection from building, terrain, and stack tip downwash effects. Also, the “dew point” of the exhaust gases will be considered in the evaluation.

Note: The rain protection device should be of such a design as to allow the unimpeded escape of the stack gases. “Rain Hats” are prohibited.

J. Standard Operating Procedure

Describe the start-up, operational, shutdown, and emergency procedures for the equipment that is integral to this project. The inscription must present, in sequence, the major steps that must be taken by the operator(s) to correctly and safely run the system. For each step, specify the duration and purpose, especially as it relates to maintaining safe operation and minimizing the emission of air contaminants. This inscription must detail the inter-relationship of the timing devices, the temperature indicators, the pressure indicators, the flow rate indicators, etc. **Specify which steps are under manual control and which are under automatic control**. Discuss the types, amounts, and duration of the release(s) of air contaminants during system fluctuations. Specify what measurements are observed and recorded to monitor performance. Use additional paper if necessary.

See plan approval application text. Standard operating procedures will be submitted no more than 60 days after Dominion accepts the proposed equipment.

K. Standard Maintenance Procedure

Describe preventive maintenance procedures for this **entire system**. Include such items as cleaning, part replacement, scrubbing solution renewal/replacement schedules, method of leak testing, frequency of leak testing and/or effluent sampling to establish adequacy of control systems. Include Manufacturer's maintenance requirements. Each air pollution control device requires a separate and detailed maintenance procedure. You are required to keep organized records at the facility that will document the monitored operating parameters, and the history of maintenance activities for the most recent two-year period. Describe your proposed record keeping system. Use additional paper if necessary.

See plan approval application text. Standard maintenance procedures will be submitted no more than 60 days after Dominion accepts the proposed equipment.

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality

BWP AQ CPA-3 (for use with BWP AQ 02, 03)

Comprehensive Plan Approval Application for Non Fuel Emissions

X224106
Transmittal Number

Facility ID (if known)

L. Plans Application Preparer

1. AJ Jablonowski, PE
   Person who complied the plans application materials
2. Epsilon Associates, Inc.
   Representing
3. 3 Clock Tower Place, Suite 250
   Address
   Maynard MA 01754
4. 978-897-7100
   Telephone number
5. August 26, 2008
   Date completed

M. Certification

The seal and signature of a Massachusetts registered professional engineer must be entered below. This certifies that the information contained in this form has been checked for accuracy, and that the design represents good air pollution control engineering practice. (These must be originals. No photocopies, etc., of the seal and signature will be accepted.)

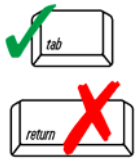
AJ Jablonowski
Print name

Authorized signature

Epsilon Associates, Inc.
Representing

August 28, 2008 — Date
39123 — PE number

Senior Consultant
Position/title



Important: When filling out forms on the computer, use only the tab key

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality

BWP AQ SFP-3 **(for use with BWP AQ 02, 03)**

Supplemental Form for Survey of Noise Potential

X224106
Transmittal Number

Facility

This form is to be submitted together with BWP AQ CPA 03 and BWP AQ CPA 01, *prior* to the modification or the installation of equipment (such as diesel engines, electric generators, or turbines) which has the potential to cause a noise nuisance condition, or a submittal in response to a Department **Notice of Noncompliance** citing a noise nuisance condition.

B. Noise Source

1. Description:

Two Natural Draft Cooling Towers and their Circulating Water Pumps, the Unit 3 dry scrubber system and associated absorbers, fans and ducting, and the fabric filters, ash handling and storage equipment.

2. Indicate operating schedule:

24 hours per day
a. hours/day

7 days per week
b. days/week

Up to 52 weeks per year
c. weeks/year

3. Comments: The 5 locations for which ambient and facility octave band data is provided are Homes, Perkins, Bayside, Gardeners Neck, and Jackson Ave. The Cooling Towers will not always operate at full capacity, but the analysis was performed for full capacity operation.

C. Noise Abatement Equipment

1. TBD
Manufacturer

TBD
Model number

2. Describe type, location, performance characteristics:

Sections of the ID Fan and Booster Fan Ducting for the dry scrubbers have acoustical lagging. Pumping and compressor systems will have noise mitigation where required.

D. Full Octave Band Analysis

The following community noise profiles will require the use of sound pressure level measuring equipment in the neighborhood of the installation.

1. Lowest **Ambient** Sound Pressure Levels During Operating Hours of Noise Source.

a. At property line: NO DATA AVAILABLE

"A" Weighted	31.5	63.0	125	250	500	1K	2K	4K	8K	16K
not	available									

b. At the nearest inhabited building:

Receptor	"A" Weighted	31.5	63.0	125	250	500	1K	2K	4K	8K	16K
Home St.	38	50	47	46	39	31	34	28	24	16	n/a
Perkins St.	47	63	56	53	49	46	38	38	16	15	n/a
Bayside Ave.	45	60	57	54	43	43	39	34	28	19	n/a
Gardeners Neck Rd,	37	58	53	45	34	33	33	25	15	14	n/a
Jackson Ave.	42	54	53	48	42	37	38	33	21	14	n/a

The following noise profiles are required only for a submittal in response to a department **Notice of Noncompliance** citing a noise nuisance condition. Applications for new equipment can skip this section and go ahead to section D3.

2. Neighborhood Sound Pressure Levels with Source Operating without Abatement Equipment.

a. At property line: *Not required for new equipment*

"A" Weighted	31.5	63.0	125	250	500	1K	2K	4K	8K	16K
Not	Required									

Comment: The attached noise report dated August 25, 2008 contains the SoundPlan modeling results.

Comment: The Sound Level Monitoring and Prediction Protocol dated August 25, 2008 is attached.

D. Full Octane Band Analysis (cont.)

b. At the nearest inhabited building: *Not required for new equipment*

"A" Weighted	31.5	63.0	125	250	500	1K	2K	4K	8K	16K
Not	required									

3. **Expected** Neighborhood Sound Pressure Levels after Installation of Noise Abatement Equipment.

a. At property line:

Property line	"A" Weighted	31.5	63.0	125	250	500	1K	2K	4K	8K	16K
North	48	57	51	42	37	40	43	44	39	3	n/a
East	43	57	52	44	38	38	38	36	30	2	n/a
South	48	74	68	56	48	42	40	39	31	7	n/a
West	56	69	65	53	48	47	49	51	50	31	n/a

b. At nearest inhabited building:

Receptor	"A" Weighted	31.5	63.0	125	250	500	1K	2K	4K	8K	16K
Home St.	43	52	48	46	40	36	39	37	29	16	n/a
Perkins St.	50	64	58	54	50	48	44	41	31	15	n/a
Bayside Ave.	54	69	64	56	49	49	49	48	44	20	n/a
Gardeners Neck Rd,	45	65	60	50	43	42	41	36	22	14	n/a
Jackson Ave.	47	55	54	49	43	42	43	40	32	14	n/a

Comment: The predicted property line sound levels do not include ambient levels as there were no ambient data taken at the property line.
Note: The Department may request that actual measurements be taken after the installation of the noise abatement equipment to verify compliance.

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality

BWP AQ SFP-3 **(for use with BWP AQ 02, 03)**

Supplemental Form for Survey of Noise Potential

X224106
Transmittal Number

Facility

E. Manufacturer's Noise Profile on New Equipment

The applicant must attach the manufacturer's noise generation data for the equipment being proposed for installation. This data must specify the sound pressure levels for a complete 360 turn around the equipment, and at various distances from the equipment. **To be provided after award of contracts**.

F. Plot Plan

The plot plan required in form BWP AQ CPA 01 and BWP AQ CPA 03 must include location of the noise source(s) and the distances from the source(s) to the property lines and the nearest inhabited residences, as well as indications of possible future construction areas.

G. Community Sound Level Criteria

Approval of the proposed new equipment or proposed corrective measures will not be granted if the installation:

1. Increases broadband sound level by more than 10 dB (A)

2. Produces a "pure tone" condition – when any octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by more than 3 decibels or more.

3. Creates a potential condition of air pollution as defined in 310 CMR 7.01.

Note: These criteria are measured both at the property line and at the nearest inhabited residence. Ambient is defined as the background A-weighted sound pressure level that is exceeded 90% of the time measured during equipment operation hours. The ambient may also be established by other means with the consent of the department.

H. Certification

The seal and signature of a Massachusetts Registered Professional Engineer must be entered below. This certifies that the information contained in this form has been checked for accuracy, and that the design represents good air pollution control engineering practice. (These must be originals. No photocopies, etc., of the seal and signature will be accepted.)

Lee R. LePage, PE August 28, 2008

Program Manager

Shaw Environmental

Print name

Authorized signature

Position/title

Representing

Date

P.E.#

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality

BWP AQ SFC-1 **(for use with BWP AQ CPA-3)**

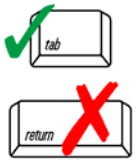
Supplemental Form for Dry Air Filters (BP 3 FF)

X224106
Transmittal Number

Facility

A. Plan Application Requirements

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



This form is to be submitted together with form BWP AQ CPA-1, CPA-3, or CPA-4, whenever the construction, substantial reconstruction or alteration of a **Dry Air Filter** is desired.

B. Project Location

1. Name of facility:

   Dominion Energy Brayton Point, LLC – Brayton Point Station

2. Location of project site:

1 Brayton Point Road	Somerset, MA	02726
Street	City/Town	Zip code

C. Equipment Specifications

1. Manufacturer: TBD
2. Model Number - attach manufacturer's specifications: TBD
3. What is the capacity of the unit? 1,755,650 maximum with lime injection ACFM
   8 maximum in. W.G. pressure drop
4. How many compartments are in the unit? 8 or 10 per baghouse
5. How many filter elements are in each compartment? 1,000
6. What type of filter material is used? PPS
7. Is the filter material: X woven ☐ non-woven
8. Maximum recommended temperature: 375 ^{o}F
9. Describe the filter elements: Bags
   tubes, envelopes, cartridges, etc.
10. What is the real area per filter element? 30 ft^2
    feet

D. Operating Conditions for this Permit

1. What is the average inlet gas flow? 1,755,650 maximum with lime injection ACFM, wet
2. What is the moisture content in the inlet? 2 to 12%
   lbs./min
   grains/ACF
3. What is the face velocity? TBD
   ft/sec

D. Operating Conditions for this Permit (cont.)

4. What are the gas temperature (^{O}F, dry bulb) for the:

230 to 295 F	160 to 170 F w/lime injection
inlet	outlet

5. What is the pressure drop across the unit (in W.G.)?

2 (across FF)	8 (across FF)
minimum	maximum

NOTE: Supporting calculations and explanatory notes must be attached.

E. Particulate Collection Data

1. Describe the particle size weight to be emitted by the proposed unit:

	% of Total Weight	% of Friction Collected
a. < 1 micron:	TBD	TBD
b. 1 micron < 10 microns:	TBD	TBD
c. 10 microns < 50 microns:	TBD	TBD
d. > 50 microns:	TBD	TBD

2. What is the overall particulate collection efficiency? TBD upon final project design
3. What is the inlet particulate concentration? (gr/ACF) TBD upon final project design
4. What is the outlet particulate concentration? (gr/ACF) TBD upon final project design
5. What is the emission rate? (lbs/hr) 0.015 lb/MMBtu filterable

F. Cleaning Procedures and Particulate Disposal

1. Describe the cleaning mechanism: Pulse Jet
   pulse jet, reverse jet, sonic, rapping, or other
2. What is the estimated time between cleaning phases? Based on pressure differential
   seconds
3. How many filter elements are cleaned at the same time? One compartment-online cleaning
4. Describe the controller: PLC based on differential pressure
   timer, pressure gauge, other?
5. What is the number of filter elements in operation during the cleaning phase? All compartments remain in service during online cleaning

F. Cleaning Procedures and Particulate Disposal (cont.)

6. Describe the collection hoppers and unloading schedule: Hoppers are emptied sequentially on a timed basis

7. How is the unloading schedule documented? In the PCL/DCS system

8. What is the ultimate disposal method? Landfill and potential re-use

9. Is the dust subject to 310 CMR 30.00, pertaining to Hazardous Waste? ☐ Yes ☒ No

G. Air Flow Data

1. What is the air flow into the filter system (ACFM)?

611,510 w/lime injection	1,755,650 w/lime injection
Minimum	Maximum

2. Describe what measure are taken to evenly distribute inlet air to all filter elements:

The design includes flow modeling and proper ductwork design of the inlet plenums to ensure proper flow distribution within the fabric filter.

2. What is the air to cloth ratio? (ACFM divided by the effective filter area):

4.42 at maximum flow conditions

NOTE: Detailed fan specifications must be supplied with this application. See form BWP AQ CPA-3 for instructions.
Detailed fan specifications will be provided to the Department upon final project design.

H. Drawing of Dry Air Filter Unit

A schematic drawing of the dry air filter unit must be **attached** to this form. The drawing must show all access doors, catwalks, ladders, and exhaust ductwork. In addition, the location of each pressure and temperature indicator must be shown.

A fabric filter drawing will be provided to the Department upon final project design.

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality

BWP AQ SFC-1 **(for use with BWP AQ CPA-3)**

Supplemental Form for Dry Air Filters (BP 3 FF)

X224106
Transmittal Number

Facility

I. Failure Notification

1. How is the failure of the dry air filter made known to the operator during normal operations, (e.g. audible alarm, flashing lights, temperature indicator, pressure indicator, etc.)?

   Alarm indication at the HMI control screen.

2. Describe the record keeping procedures to be used in identifying the cause, duration and resolution of each failure (use a separate page if necessary):

   The BP3 Fabric Filter system record keeping procedures will be developed to identify the cause, duration, and resolution of each equipment failure. They will be similar to what is currently employed at the facility.

NOTE: The regional office must be notified immediately by telephone in the event of a dry air filter failure.

J. Certification

The seal and signature of a Massachusetts Registered Professional Engineer must be entered below. This certifies that the information contained in this form has been checked for accuracy, and that the design represents good air pollution control engineering practice. (These must be originals; no photocopies, etc. of the seal and signature will be accepted.)

AJ Jablonowski, PE
Print name

Authorized signature

Senior Consultant
Position/title

Epsilon Associates, Inc.
Representing

August 26, 2008
Date

39123
P.E. Number

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality Control

BWP AQ SFC-4 (for use with BWP AQ 02,03 and BWP AQ CPA-3)

Supplemental Form for Adsorption Equipment (BP 3 DS)

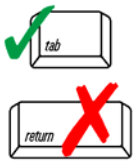
X224106
Transmittal Number

Facility

A. Plan Applications Requirements

This form is to be submitted together with form BWP AQ CPA-3, whenever the modification or the installation of **Adsorption Equipment** is desired.

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



B. Project Location

1. Name of facility:

Dominion Energy Brayton Point, LLC – Brayton Point Station

2. Location and Project Site:

1 Brayton Point Road
Street Address

Somerset	MA	02726
City/town	State	Zip code

C. Equipment Specifications

TBD	Unit 3 Dry Scrubber (DS) System
1. Manufacturer	2. Model number

3. Give the following information relative to the adsorbate:

2,113,280 ACFM maximum flow	160 to 170 F at outlet
a. Total volume of process exhaust to adsorber(s) (SCFM)	b. Operating temperature of adsorber (^{O}F)

Expected to vary from 2 to 12% by weight
c. Inlet moisture content: lbs./min

d. Will the process steam be cooled? ☐ Yes ☐ No

If yes, explain:

N/A

e. List the chemical compounds to be adsorbed (generic name for each):

Chemical Name	Inlet Range (lbs./hr)	Inlet Range (ppm)
Flu gas Sulfur Dioxide	System will be designed to handle an inlet flue gas maximum SO_2 concentration of 11,500 lb/hr.	

C. Equipment Specifications (cont.)

f. Total concentration in air steam to be treated: The BP3 DS system will be designed to handle an inlet flue gas with a maximum of 9.1E-5 lb SO_2 per actual ft^3 of inlet flue gas.
lb./ft^3 & ppm

g. Temperature at the inlet: The BP3 DS system will be designed to handle expected inlet flue gas temperatures of 230 to 295
^{O}F If variable, give range

h. Temperature at the outlet: The BP3 DS system outlet flue gas temperature is expected to be 160 to 170°F
^{O}F If variable, give range

i. Describe the pre-cleaner, if applicable *: N/A

***Note:** An additional supplemental form for this equipment may be required.

D. Adsorber Information

Detailed supporting documentation is an essential part of this submittal. Attach all relevant materials to support design assumptions and parameters.

1. Construction material of the adsorber: Carbon steel/stainless steel

2. Type of adsorbent to be used: Lime and water
give base material, mesh size, grade, etc.

3. surface area of the adsorbent? The surface area of the lime and water droplets will be great and sufficient to accomplish the required removal of SO_2 from the flue gas.
m^2/g
ft^2/lb.

4. Amount of adsorbent used per bed: The amount of lime reagent used by the BP3 DS system will vary depending on the inlet flue gas SO_2 content and the required SO_2 removal.
lbs.

5. Pore size distribution: The size of the lime-water droplets will be small in order to insure that proper SO_2 removal occurs.
angstroms

6. Polarity of the adsorbent: The lime-water will be alkali and readily react with the flue gas SO_2.

7. Estimated removal efficiency of the chemical compounds: The DS system will be designed to remove a maximum of 90% SO_2 from the inlet flue gas at full load design conditions.
%

8. How many vessels will the equipment have? Two (2) 50% reactor vessels.

9. Number of beds per vessel N/A

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality Control

BWP AQ SFC-4 (for use with BWP AQ 02,03 and BWP AQ CPA-3)

X224106
Transmittal Number

Facility

Supplemental Form for Adsorption Equipment (BP 3 DS)

D. Adsorber Information (cont.)

10. Face area per bed: N/A square feet
11. Depth of the bed: N/A feet
12. Velocity at face of bed: N/A feet per minute
13. Pressure drop across the unit: 2 to 4 in wg across reactor vessel
    (in. of H_2O)
    (mm of Hg)
14. Bed volume N/A cubic feet
15. Is the system designed to be pressurized for increased efficiency? ☐ Yes ☒ No
16. If yes, what is the system pressure? N/A in. of H_2O
    N/A mm of Hg
17. Hours of operation for the production line(s): 24 hours/day operation. System will operate to meet the required SO_2 annual average emission limits. hrs/day
    7 – or as required to meet the SO_2 annual average emission limits. days/week
    52 – or as required to meet the SO_2 annual average emission limits. week/year
18. How is the break point time determined and how is cleaning schedule maintained (explain briefly)?
    Certain system components can be cleaned online and during station maintenance outages.
19. Is the system: ☐ regenerative? ☒ non-regenerative?
    The BP1 SDA system design is based on non-regenerative chemistry producing a solid byproduct from the reaction of flue gas SO_2 with lime-water reagent. Reagent is recycled to maximize reaction with flue gas SO_2
20. If regenerative, how will the saturated adsorbent be stripped?
    N/A
21. If by steam, how many lbs./hr? N/A
    N/A @ psig
    N/A @ °F

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality Control

BWP AQ SFC-4 (for use with BWP AQ 02,03 and BWP AQ CPA-3)

X224106
Transmittal Number

Facility

Supplemental Form for Adsorption Equipment (BP 3 DS)

D. Adsorber Information (cont.)

22. Is direction of stripping opposite to adsorption? ☐ Yes ☐ No N/A

23. Time required to adequately strip (min.)? N/A –the concept of stripping does not apply to the design of the system.
minutes

24. How will the bed be cooled & dried prior to re-use? N/A – the concept of stripping does not apply to the design of the system.

NOTE: The downstream design should be indicated on the attached Adsorption Flow Diagram.

25. For non-regenerative adsorbers, indicate the disposal method for the contaminated adsorbent (assigned site(s), contract(s) with licensed haulers, etc.):

The project design includes truck transport of the solid byproducts offsite, to be handled and disposed of in an environmentally acceptable manner. Methods for beneficial reuse is being researched.

26. Are these contaminants subject to 310 CMR 30.00 pertaining to the control of **Hazardous Waste**?

☐ Yes ☒ No

If yes, identify the company that will be disposing of the contaminated scrubbing liquid:

N/A

E. Miscellaneous Data

1. Will the collected chemical compounds be re-used?

☐ Yes ☒ No

If yes, describe collection and separation:

N/A

If no, describe the disposal method (assigned site(s), contract(s) with licensed haulers, etc.):

The BP3 DS system solid byproduct will be recycled. The solid byproduct will then be removed for disposal off site or possibly reused.

2. Chemical activity of adsorbate with adsorbent: Within the BP3 DS system, the lime-water reagent will react with the flue gas SO_2 to achieve the required SO_2 removal.

3. Give the retentively of adsorbate with adsorbent: The lime-water reagent reacts chemically with the flue gas SO2 to form a calcium sulfite/sulfate based byproduct. The byproduct solids will retain the sulfur in a stable form.

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality Control

BWP AQ SFC-4 (for use with BWP AQ 02,03 and BWP AQ CPA-3)

Supplemental Form for Adsorption Equipment (BP 3 DS)

X224106
Transmittal Number

Facility

E. Miscellaneous Data (cont.)

4. How will the unit be winterized?

The BP3 DS system will be winterized using a combination of design methods. For example, where applicable, enclosures and/or heat tracing will be employed.

F. Standard Operating and Maintenance Procedures

See form BWP AQ CPA-3 for instructions concerning the required standard operating and maintenance procedures for this control equipment. **A standard operating and maintenance procedure for this control equipment will be submitted no later than 60 days after commencement of operation of the proposed control equipment.**

G. Failure Notification

1. How is the failure of the collection equipment made known to the operator (e.g. audible alarm, lights, etc.)?

   The BP3 DS system will be designed to be reliable. Any equipment failures will be made known to the operators by various means including lights and audible alarms. The system is designed with various alarm indication that notify the operator via the system HMI control screens.

2. Describe the record keeping procedures that will be used to identify the cause, duration, and resolution of each failure (use separate page if necessary):

   The BP3 DS system record keeping procedures will be developed to identify the cause, duration, and resolution of each equipment failure. They will be similar to what is currently employed at the facility.

H. Certification

The seal and signature of a Massachusetts Registered Professional Engineer must be entered below. This certifies that the information contained in this form has been checked for accuracy, and that the design represents good air pollution control engineering practice. (These must be originals; no photocopies, etc. of the seal and signature will be accepted.)

AJ Jablonowski
Print name

Authorized signature

Senior Consultant
Position/title

Epsilon Associates, Inc
Representing

August 26, 2008
Date

39123
PE number

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality Control

BWP AQ SFC-4 (for use with BWP AQ 02,03 and BWP AQ CPA-3)

Supplemental Form for Adsorption Equipment (BP 3 PAC)

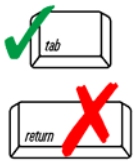
X224106
Transmittal Number

Facility

A. Plan Applications Requirements

This form is to be submitted together with form BWP AQ CPA-3, whenever the modification or the installation of **Adsorption Equipment** is desired.

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



B. Project Location

1. Name of facility:

Dominion Energy Brayton Point, LLC-Brayton Point Station

2. Location and Project Site:

1 Brayton Point Road
Street Address

Somerset	MA	02726
City/town	State	Zip code

Note: The data represented in this form should be consistent with previous forms.

C. Equipment Specifications

Chemco Systems, LP	Presently referred to as BP3 PAC System
1. Manufacturer	2. Model number

3. Give the following information relative to the adsorbate:

1,660,000 SCFM (estimated at 68ºF, 1 atm,wet)	Expected to be 230ºF - 295ºF
a. Total volume of process exhaust to adsorber(s) (SCFM)	b. Operating temperature of adsorber (ºF)

Expected to vary from 2 to 12% by weight
c. Inlet moisture content: lbs./min

d. Will the process steam be cooled? ☐ Yes ☒ No

If yes, explain:

N/A

e. List the chemical compounds to be adsorbed (generic name for each):

Chemical Name	Inlet Range (lbs./hr)	Inlet Range (ppm)
Flue gas mercury (Hg)	System will be designed to handle an inlet flue gas maximum Hg concentration of 0.0378 lb/hr.	

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality Control

BWP AQ SFC-4 (for use with BWP AQ 02,03 and BWP AQ CPA-3)

Supplemental Form for Adsorption Equipment (BP 3 PAC)

X224106
Transmittal Number

Facility

C. Equipment Specifications (cont.)

f. Total concentration in air steam to be treated: The BP3 PAC system will be deigned to handle an inlet flue gas with a maximum of 2,240,906 acfm (@ 300º) resulting in a ratio of 2.8 x 10^{-10} lb Hg per actual ft^3 of inlet flue gas.
lb./ft^3 & ppm

g. Temperature at the inlet: The BP3 PAC system will be designed to handle expected inlet flue gas temperatures of 200 to 300ºF.
^{O}F If variable, give range

h. Temperature at the outlet: The BP3 PAC system outlet flue gas temperature is expected to be 200 to 300ºF when the PAC system is in service.
^{O}F If variable, give range

i. Describe the pre-cleaner, if applicable *: N/A

***Note:** An additional supplemental form for this equipment may be required.

D. Adsorber Information

Detailed supporting documentation is an essential part of this submittal. Attach all relevant materials to support design assumptions and parameters.

1. Construction material of the adsorber: Carbon steel material

2. Type of adsorbent to be used: Powder Activated Carbon (PAC) particle
give base material, mesh size, grade, etc.

3. surface area of the adsorbent? The surface area of the PAC particle will be great and sufficient to accomplish the required removal of Hg from the flue gas.
m^2/g ft^2/lb.

4. Amount of adsorbent used per bed: The amount of PAC used by the BP3 PAC system will vary depending on the inlet flue gas Hg content and the required Hg removal.
lbs.

5. Pore size distribution: The size of the PAC particle will be small in order to insure that proper Hg removal occurs.
angstroms

6. Polarity of the adsorbent: The PAC will be dry and readily react with the flue gas Hg.

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality Control

BWP AQ SFC-4 (for use with BWP AQ 02,03 and BWP AQ CPA-3)

X224106
Transmittal Number

Facility

Supplemental Form for Adsorption Equipment (BP 3 PAC)

D. Adsorber Information (cont.)

7. Estimated removal efficiency of the chemical compounds: The BP3 PAC system Hg removal efficiency will vary depending on the required Hg removal. The system will be designed to remove a maximum of 80% Hg from the inlet flue gas at full load design conditions.

8. How many vessels will the equipment have? BP3 will be equipped with one PAC system.

9. Number of beds per vessel: N/A

10. Face area per bed: N/A square feet

11. Depth of the bed: N/A feet

12. Velocity at face of bed: N/A feet per minute

13. Pressure drop across the unit: N/A

(in. of H_2O)

(mm of Hg)

14. Bed volume: N/A cubic feet

15. Is the system designed to be pressurized for increased efficiency? ☐ Yes ☒ No

16. If yes, what is the system pressure? N/A in. of H_2O

N/A mm of Hg

17. Hours of operation for the production line(s):

24 - maximum PAC operation. System will operate to meet the required Hg annual average emission limits. hrs/day

7 – or as required to meet the Hg annual average emission limits. days/week

52 – or as required to meet the Hg annual average emission limits. week/years

18. How is the break point time determined and how is cleaning schedule maintained (explain briefly)?

Break point time is not applicable with this system. The PAC system will be designed to minimize the need for cleaning. Mercury collection performance is expected to indicate the need for maintenance.

19. Is the system: ☐ regenerative? ☒ non-regenerative?

The BP3 PAC system design is based on non-regenerative chemistry producing a solid byproduct.

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality Control

BWP AQ SFC-4 (for use with BWP AQ 02,03 and BWP AQ CPA-3)

Supplemental Form for Adsorption Equipment (BP 3 PAC)

X224106
Transmittal Number

Facility

D. Adsorber Information (cont.)

20. If regenerative, how will the saturated adsorbent be stripped?

N/A

21. If by steam, how many lbs/hr?

N/A

N/A
@ psig

N/A
@ °F

22. Is direction of stripping opposite to adsorption? ☐ Yes ☐ No N/A

23. Time required to adequately strip (min.)? N/A
minutes

24. How will the bed be cooled & dried prior to re-use? N/A

NOTE: The downstream design should be indicated on the attached Adsorption Flow Diagram.

25. For non-regenerative adsorbers, indicate the disposal method for the contaminated adsorbent (assigned site(s), contract(s) with licensed haulers, etc.):

The project design includes truck transport of the solid byproduct with the SDA byproduct offsite, to be handled and disposed of in an environmentally acceptable manner.

26. Are these contaminants subject to 310 CMR 30.00 pertaining to the control of **Hazardous Waste**?

☐ Yes ☒ No

If yes, identify the company that will be disposing of the contaminated scrubbing liquid:

N/A

E. Miscellaneous Data

1. Will the collected chemical compounds be re-used?

☒ Yes ☐ No

If yes, describe collection and separation:

The BP3 PAC system solid byproduct will be collected in the fabric filter with the SDA byproduct. A portion of the solids are recycled back to the DS system recycled back to the Ash Reduction Process (ARP)

If no, describe the disposal method (assigned site(s), contract(s) with licensed haulers, etc.):

N/A

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality Control

BWP AQ SFC-4 (for use with BWP AQ 02,03 and BWP AQ CPA-3)

Supplemental Form for Adsorption Equipment (BP 3 PAC)

X224106
Transmittal Number

Facility

E. Miscellaneous Data (cont.)

2. Chemical activity of adsorbate with adsorbent: Within the BP3 PAC system, the flue gas Hg attaches to the PAC particles to achieve the required Hg removal.

3. Give the retentively of adsorbate with adsorbent: The PAC sorbent adsorbs the flue gas Hg and retains the Hg in a stable form for disposal.

4. How will the unit be winterized? The BP3 PAC system will be winterized using a combination of design methods. For example, where applicable, enclosures and/or heat will be employed.

F. Standard Operating and Maintenance Procedures

See form BWP AQ CPA-3 for instructions concerning the required standard operating and maintenance procedures for this control equipment. **A standard operating and maintenance procedure for this control equipment will be submitted no later than 60 days after commencement of operation of the proposed control equipment.**

G. Failure Notification

1. How is the failure of the collection equipment made known to the operator (e.g. audible alarm, lights, etc.)?

   The BP3 PAC system will be designed to be reliable. Any equipment failures will be made known to the operators by various means including lights and audible alarms.

2. Describe the record keeping procedures that will be used to identify the cause, duration, and resolution of each failure (use separate page if necessary):

   The BP3 PAC system record keeping procedures will be developed to identify the cause, duration, and resolution of each equipment failure. They will be similar to what is currently employed at the facility.

H. Certification

The seal and signature of a Massachusetts Registered Professional Engineer must be entered below. This certifies that the information contained in this form has been checked for accuracy, and that the design represents good air pollution control engineering practice. (These must be originals; no photocopies, etc. of the seal and signature will be accepted.)

AJ Jablonowski
Print name

Authorized signature

Senior Consultant
Position/title

Epsilon Associates, Inc
Representing

August 26, 2008
Date

39123
PE number

APPENDIX B

Supporting Calculations
and Figures

DOMINION ENERGY BRAYTON POINT LLC
COOLING TOWER EMISSIONS CALCULATIONS
aj/EPSILON AUGUST 2008

360,000	gallons/minute circulating water flow, max one tower
2	maximum number of towers
720,000	gallons/minute circulating water flow, max for both towers
0.0005%	drift rate (best available drift eliminators)
3.6	gallons/minute water drift (720,000 X 0.0005%)
8.57	pounds/gallon salt water density
1850	pounds/hour water drift (3.6*8.34*60, rounded)
48000	maximum dissolved solids concentration (ppmw)
88.8	pounds/hour solids drift (1800*48000/10^6)
8760	hours/year potential operarion
389	tons/year potential solids drift (86.4*8760/2000)

Unit 3 DS/FF PM10 NETTING ANALYSIS
Brayton Point Station
Aug-08

PAST-ACTUAL

source registration data		
Year	PM-10 Tons	Coal Tons
2005	129.2	1,615,081
2006	121.2	1,514,611
2007	147.3	1,840,809
average:	**132.6**	1,656,834

FUTURE ACTUAL

0.015	lb/MMBtu expected future actual PM10 emission rate
12,500	Btu/lb coal heat content from 2006 source registration
25	MMBtu/ton coal heat content
0.375	lb/ton expected future actual PM10 emission rate
1,656,834	expected future actual coal use
310.7	expected future actual PM10 emission rate, tons/year

178.1 net expected actual PM10 increase, tons/year

H-SKETCH-159-D

UNIT 3 STACK, 500.5 FT AGL

COOLING TOWER (TYP), 500 FT AGL

NATURAL DRAFT COOLING TOWER 365' DIA

SOUND WALL 505' DIA

CP-7 N 214+74.2636 E 75+49.5226 Elev. 42.32 CB W/LEAD PLUG

CP-6 N 209+88.8338 E 79+28.4716

N211+52.00 E84+42.00

N211+52.00 E90+92.00

CP-5 N 208+37.2445 E 93+95.7238

E-W STA BASELINE S. 33° - 44' E.

N-S STA BASELINE

STA 80+00

STA 90+00

STA 100+00

STA 110+00

STA 180+00

STA 190+00

STA 200+00

STA 210+00

STA 220+00

STA 230+00

CALLED NORTH

FOX HILL COVE

SLUDGE LANDFILL TRENCHES (CAPPED)

CELL #8

CELL #7

CELL #6

CELL #4

CELL #2

CELL #3

CELL #1

SLUDGE LANDFILL (CAPPED) CELL #9

COAL ASH MANAGEMENT AREA

EL. 9.5

TEMPORARY COAL ASH STORAGE EL. VARIES

COAL ASH STRUCTURAL FILL EL. 30+

CELL #14

650'-0"

CELL #10

CELL #10A

BLOCK WALL

"J" BASIN AREA

POND

PROPERTY LINE

375' TRANSMISSION RIGHT OF WAY

LINE #E-183 FRANKLIN ST.

LINE #C-181 CHARTLY

LINE #305 WEST FARNUM

LINE #303 WEST MEDWAY

LINE #E-184 READ ST.

LINE #D-182 SO. WRENTHAM

115 KV

345 KV

115 KV

CONTROLLED ACCESS AREA

ENTRANCE TO LOWER LEVEL

I-195

LEE RIVER

DISCHARGE CHANNEL

EXTERIOR LAYDOWN AREA

POWERHOUSE

UNIT 4

UNIT 3

UNIT 2

UNIT 1

SCR UNIT #3

SCR UNIT #1

OIL TANK YARD

82 TK. No 4

82 TK. No 5

82 TK. No 3

BRAYTON POINT

MOUNT HOPE BAY

TAUNTON RIVER

COAL STORAGE AREA

CONVEYOR

BOAT RAMP

PARKING AREA

BRAYTON POINT BEACH

BRAYTON POINT ROAD

O'NEIL ROAD

PROPERTY LINE

E DOCK

A DOCK

B DOCK

TERMINAL

MARINE

NOTES:

1. CONTROL POINT COORDINATES ARE BASED ON THE PLANT GRID COORDINATE SYSTEM.
2. ELEVATIONS ARE ON NGVD29 DATUM. CB = CONCRETE BOUND

CP #	MARKINGS	MASS GRID N/E COORDINATES	MASS GRID ANGLE AND DIST TO NEXT POINT
5	NAIL IN POLE	N2721230.3129/E740761.9777	1468.96' @ N46°37'54"W TO CP6
6	CONCRETE BOUND	N2722239.0248/E739694.1114/EL.42.49'	681.34' @ N86°48'49"E TO CP7
7	CONCRETE BOUND	N2722915.5484/E739774.9464/EL.42.32'	1167.89' @ N87°46'37"E TO CP8

200' 0 200' 400' 600'

SCALE: 1" = 200'

REVISION
DESCRIPTION
DESCRIPTION
TASK = PM*
08-08-2005

Dominion

FOSSIL & HYDRO ENGINEERING

PRELIMINARY COOLING TOWER LOCATION
BRAYTON POINT STATION, SOMERSET MA

DSGN – DSGN SUPV – DATE: 02-25-2008
DGNSPEC FOR FILE VERIFICATION
DRWN – ENGR SUPV – DRAWING NO. H-SKETCH-159 REV. D
CHKD – LEAD ENGR –
DISPL ENGR – SCALE – UNLESS OTHERWISE NOTED SH 1 OF 1

DELIVERING ISSUE FOR: TASK = PM*

DELIVERING 39.34" x 24.75"

.../H-SKETCH-159 Preliminary Cooling Tower Coordinates Rev D.dgn 02/26/2008 04:21:07 PM

PLOT PLAN

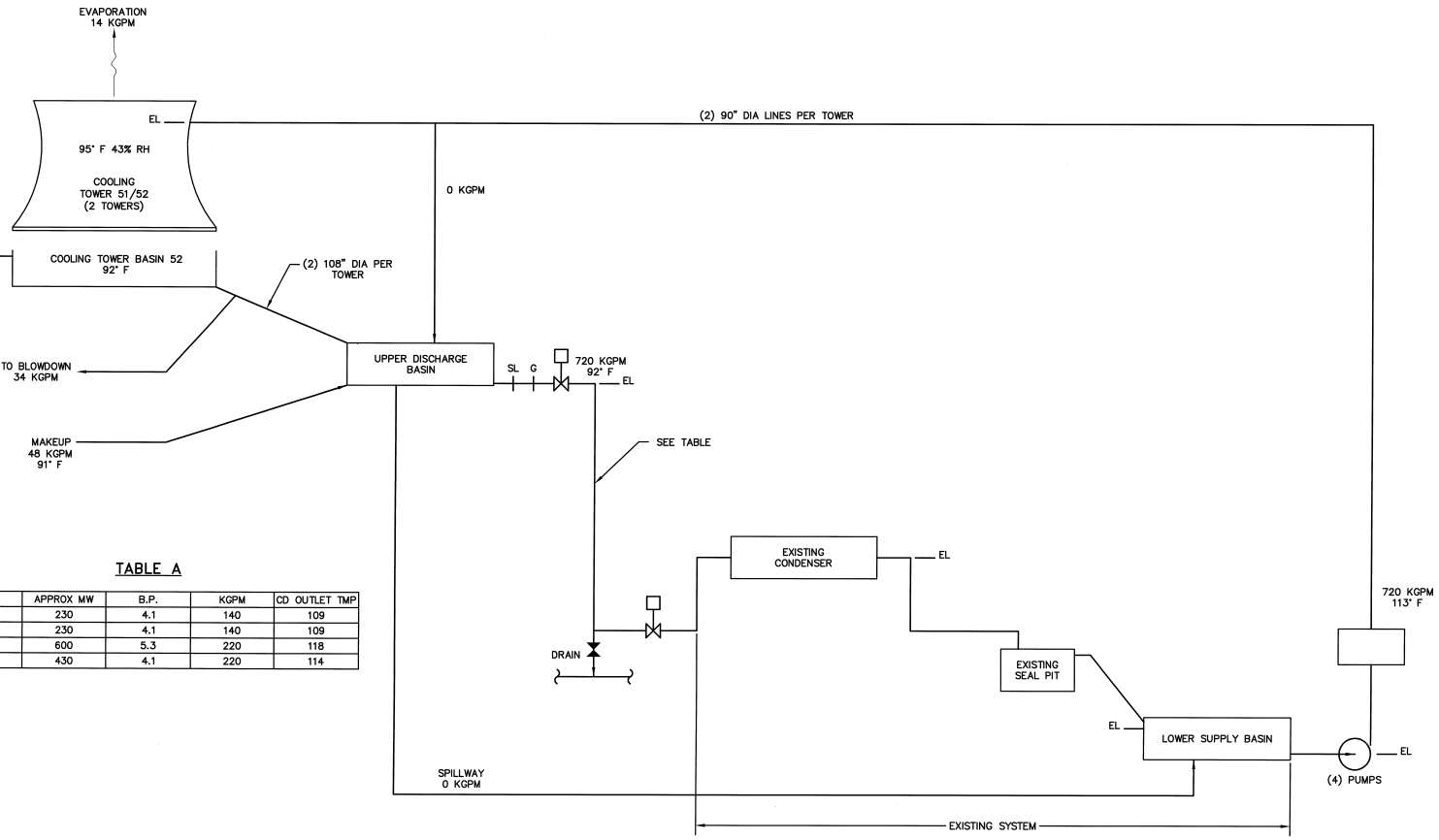


TABLE A

	APPROX MW	B.P.	KGPM	CD OUTLET TMP
BP1	230	4.1	140	109
BP2	230	4.1	140	109
BP3	600	5.3	220	118
BP4	430	4.1	220	114

DESIGN POINT (ALL FOUR UNITS)
SUMMER PEAK

Stone & Webster
A Shaw Group Company
Stoughton, MA.

Dominion

FOSSIL & HYDRO ENGINEERING

SIMPLIFIED PROCESS SCHEMATIC H-1

CLOSED CYCLE COOLING WATER SYSTEM

BRAYTON POINT STATION UNIT 1, 2, 3 & 4

DSGN 3-5-08 DSGN SUPV DATE: 3/5/08 DQNSPEC FOR FILE VERIFICATION
DRWN 3-5-08 ENGR SUPV DRAWING NO. REV. A
CHKD LEAD ENGR H-
DISPL ENGR SCALE NTS UNLESS OTHERWISE NOTED SH 1 OF 1

REV. C ORIGINAL ISSUE FOR ISSUED FOR CLIENT REVIEW
TASK #

S&W DRAWING NO. 40052-HC-

SCHEMATIC PROCESS DIAGRAM

APPENDIX C

EPA and Mass DEP Orders

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I - NEW ENGLAND

IN THE MATTER OF	)	DOCKET NO. 08-007
	)	
Dominion Energy Brayton Point, LLC,	)	
Brayton Point Power Station	)	
Somerset, Massachusetts	)	
NPDES Permit No. MA0003654	)	FINDINGS
	)	
	)	AND
	)	
Proceedings under Section 309(a)(3)	)	ORDER FOR COMPLIANCE
of the Clean Water Act, as amended,	)	
33 U.S.C. § 1319(a)(3)	)	

I. STATUTORY AUTHORITY

The following Findings are made and ORDER issued pursuant to Section 309(a)(3) of the Clean Water Act, as amended (the "Act"), 33 U.S.C. § 1319(a)(3), which grants to the Administrator of the U.S. Environmental Protection Agency ("EPA") the authority to issue orders requiring persons to comply with Sections 301, 302, 306, 307, 308, 318 and 405 of the Act and any permit condition or limitation implementing any of such sections in a National Pollutant Discharge Elimination System ("NPDES") permit issued under Section 402 of the Act, 33 U.S.C. § 1342. This authority has been delegated to EPA Region I's Regional Administrator, and in turn to the Director of the Office of Environmental Stewardship.

The Order herein is based on a finding that the Company will be in violation of Section 301 of the Act, 33 U.S.C. § 1311, and the conditions of NPDES Permit No. MA0003654 upon the effective date of the previously stayed permit conditions ("Effective Date"). Pursuant to Section 309(a)(5)(A) of the Act, 33 U.S.C. § 1319(a)(5)(A), the Order provides a schedule for compliance which the Director of the Office of Environmental Stewardship has determined to be reasonable.

II. DEFINITIONS

Unless otherwise defined herein, terms used in this Order shall have the meaning given to those terms in the Clean Water Act, 33 U.S.C. § 1251 et. seq., the regulations promulgated thereunder, and any applicable NPDES permit. For the purposes of this Order, "NPDES Permit" means the Dominion Energy Brayton Point, LLC, (the "Company" or the "Permittee" or "Dominion") Brayton Point Power Station NPDES Permit No. MA0003654, and all amendments or modifications thereto and renewals thereof as are applicable, and in effect at the time.

III. FINDINGS

The Director of the Office of Environmental Stewardship makes the following findings of fact:

1. Dominion Energy Brayton Point, LLC, Brayton Point Power Station has a place of business in Somerset, Massachusetts from which it discharges condenser cooling water, process wastewater and storm water.

2. The Company is a person under Section 502(5) of the Act, 33 U.S.C § 1362(5). The Company is the owner of an electrical power generating station (the "Facility") from which it discharges pollutants, as defined in Section 502(6) and (12) of the Act, 33 U.S.C. § 1362(6) and (12), from a point source, as defined in Section 502(14) of the Act, 33 U.S.C. § 1362(14), to Mount Hope Bay. Mount Hope Bay flows into Narragansett Bay which, in turn, empties into the Atlantic Ocean. All are waters of the United States as defined in 40 C.F.R. § 122.2 and, therefore, navigable waters under Section 502(7) of the Act, 33 U.S.C. § 1362(7).

3. On October 6, 2003, the Director of the Office of Ecosystem Protection of EPA, Region I,

issued the Permit under the authority given to the Administrator of EPA by Section 402 of the Clean Water Act, 33 U.S.C. § 1342. On November 5, 2003, the company filed a petition for review of the Permit with EPA's Environmental Appeals Board ("EAB"). The contested provisions of the Permit were stayed and all other provisions of the Permit became effective on May 26, 2004. Following resolution of the appeal before the EAB, EPA notified the Company by letter dated October 1, 2007 that the conditions of the Permit that had been stayed pending appeal would take effect on November 1, 2007. Those terms of the Permit were again stayed until December 17, 2007 and will take effect on December 18, 2007.

4. The Permit authorizes the Permittee to discharge pollutants from the Facility to Mount Hope Bay, subject to the effluent limitations, monitoring requirements and other conditions specified in the Permit.

5. Part I.A.4.a. of the Permit establishes a flow limit for outfall serial number 001, Discharge Canal, of 40 million gallons per day (average monthly) and 42 million gallons per day (maximum daily).[1]

6. Part I.A.4. b. of the Permit for outfall serial number 001, Discharge Canal, establishes an annual heat load limit to Mount Hope Bay of 1.7 Trillion BTUs.

7. Part I.A.4. c. of the Permit establishes a limit for the combined withdrawal of intake water of 56.2 million gallons per day ("MGD").

8. The Permittee discharges process water from outfall serial number 001, Discharge Canal,

---

[1] This flow rate is the total blowdown from any cooling tower(s) used at the facility plus flow from the wastewater treatment facility. During periods of once-through cooling, the permittee may increase the flow rate to a flow rate of 56 million gallons per hour. The permittee may not increase to this flow rate for more than 122 hours per year.

at a flow rate that will exceed the Permit's effluent limitation for flow upon the Effective Date.

9. The Permittee discharges a heat load from outfall serial number 001, Discharge Canal, to Mount Hope Bay that will exceed the Permit's annual heat load limitation upon the Effective Date.

10. The Permittee's total water intake will exceed the Permit's limit for water intake of 56.2 MGD upon the Effective Date.

11. Section 301(a) of the Act, 33 U.S.C. § 1311(a), makes unlawful the discharge of pollutants to waters of the United States except in compliance with, among other things, the terms and conditions of a NPDES permit issued pursuant to Section 402 of the Act, 33 U.S.C. § 1342.

12. The Permittee's discharge of pollutants to Mount Hope Bay in excess of the limits contained in its NPDES Permit, will violate Section 301(a) of the Act, 33 U.S.C. § 1311(a) upon the Effective Date.

13. The Company will need to install closed-cycle cooling in order to comply with the previously stayed Permit limits. EPA issues this Order to provide a schedule for the Company to come into compliance with the Permit.

14. The Company has worked cooperatively with EPA in the development of this Order.

IV. ORDER

Accordingly, pursuant to Section 309(a)(3) of the Clean Water Act, it is hereby ordered that the Permittee shall:

1. Comply with the following schedule for construction and implementation of closed cycle

cooling at Brayton Point Power Station and for meeting the limits contained in the Permittee's NPDES Permit:

a. By January 2, 2008, commence the process to obtain all permits and approvals necessary to convert Brayton Point Station to closed cycle cooling in order to meet NPDES permit limits. This shall include the engineering to support the permitting, the permit applications, and all necessary supplementary data.

b. From January 2, 2008 until all permits and approvals are issued, provide timely and complete responses to all requests from each permitting and approval authority.

c. By January 10, 2008, initiate requests for pre-application meetings with permitting authorities.

d. By January 15, 2008, request approval from the United States Coast Guard for placement of monitoring equipment necessary to comply with Part I.26.a.1.iii of the Permit

e. By February 28, 2008, submit air modeling protocol to agencies for review.

f. By July 1, 2008, submit applications for all local permits.

g. By September 1, 2008, submit application(s) for air permit(s).

h. By October 1, 2008, complete submission of all other necessary permit applications and notices necessary to convert Brayton Point Station to closed cycle cooling.

i. Within five days of obtaining all permits and approvals or April 6, 2009, whichever is later, issue the Notice to Proceed with Engineering and Procurement for cooling tower construction to Dominion's contractor.

j. Within five days of obtaining all permits and approvals or April 6, 2009, whichever is later, issue the Notice to Proceed with Engineering and Procurement for the Pump Structure and Piping System.

k. Within nine months of obtaining all permits and approvals, commence construction of foundations for cooling towers.

l. No later than May 15th of the calendar year prior to the anticipated tie-in date for each unit, Dominion shall request a planned outage for that unit from ISO New England in accordance with, and pursuant to, ISO New England Operating Procedure No. 5, Revision No. 8, effective October 13, 2006 or as amended.

m. Within 29 months of obtaining all permits and approvals, complete tower construction.

n. Within 29 months of obtaining all permits and approvals, complete all piping installation for tie-in of condenser units to cooling towers.

o. Within 29 months of obtaining all permits and approvals, commence tie-in of condenser units to cooling towers.

p. Within 31 months of obtaining all permits and approvals, complete tie-in of condenser units 4 and 3.

q. Within 33 months of obtaining all permits and approvals, complete tie-in of condenser unit 2.

r. Within 36 months of obtaining all permits and approvals, complete tie-in of all condensor units such that all permit limits are met.

2. Where any compliance obligation requires Dominion to obtain a federal, state, or local permit or approval, Dominion shall submit timely and complete applications and responses to requests for information and take all other actions necessary to obtain all such permits or approvals. Dominion may seek relief under the Force Majeure provisions below for any delay in the performance of any such obligation resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation, if Dominion has submitted timely and complete applications and has taken all other actions necessary to obtain all such permits or approvals.

Interim Effluent Limits

3. In the interim period from the effective date of this Order and during the Permittee's compliance with paragraphs 1 and 2 of this Section IV, the Permittee shall comply with the following effluent standards and limits:

a. for thermal discharges, intake cooling water withdrawals, and effluent flow,

comply with all the requirements and conditions of the Memorandum of Agreement II ("MOA II") (Attachment 1) except that:

(1) During the period from the beginning of tie-in of condensor unit 4 and continuing until tie-in of condensor unit 3, the flow limitations of part 8.b. of MOA II will not be required to be met through "piggyback operation." Instead, the flow limitations will be met by blocking the existing unit 4 discharge at the tri-bridge and directing warm water from the tied-in unit to the cooling tower(s).

(2) During the period from the beginning of tie-in of condensor unit 4 and continuing until complete tie-in of all condensor units, the "delta T" limitation of part 8.c. of MOA II will apply when unit 4 is not in "piggyback operation" as long as the tie-in occurs between October 1 and May 31.

b. operate the intake screen wash for condenser units 1, 2, and 3 whenever the intake is in use.

c. during "targeted" chlorination, as discussed in Attachment 2, the total residual oxidant concentration shall not, at any time, exceed 0.2 milligrams/liter at the discharge from the unit being chlorinated during any one chlorination cycle as measured at the seal pit. The sampling type and frequency will be a daily grab sample for each generating unit.

d. comply with all other effluent limitations, monitoring requirements and other conditions specified in its NPDES Permit.

4. Within three (3) weeks of Coast Guard approval for the placement of monitoring

equipment necessary to comply with Part I.26.a.1.iii of the Permit, Dominion shall install monitoring equipment at the locations identified in Figure 6 of the Permit and commence monitoring in accordance with the Permit requirements.

5. As the following power generating units are tied into the cooling towers, the discharge from Brayton Point Station must comply with the following interim effluent limitations:

Unit 3	flow = 518 million gallons per day heat = MOA II limit
Unit 2	flow = 259 MGD heat = 2.01 trillion BTUs total per month

V. REPORTS ON COMPLIANCE

6. Beginning on the fifteenth day of April, 2008 and continuing until completion of construction, tie-in, and compliance with all of the NPDES limitations, Dominion shall report to EPA on its compliance with its obligations pursuant to paragraphs 1 through 5 every three months. Each progress report submitted under this Paragraph shall:

   a. Describe activities undertaken during the reporting period directed at achieving compliance with this Administrative Order;

   b. Describe the expected activities to be taken during the next reporting period in order to achieve compliance with this Administrative Order; and

   c. Report on compliance with the provisions outlined in paragraphs 3, 4 and 5 above.

7. Where this Order requires a specific action to be performed within a certain time frame, Dominion shall submit a written notice of compliance or noncompliance with each deadline. Notification must be mailed within fourteen (14) calendar days after each required deadline. The timely submission of a required report shall satisfy the

requirement that a notice of compliance be submitted.

8. If noncompliance is reported, notification should include the following information:

   a. A description of the noncompliance;

   b. A description of any actions taken or proposed by the Permittee to comply with the lapsed schedule requirements;

   c. A description of any factors that explain or mitigate the noncompliance; and

   d. An approximate date by which the Permittee will perform the required action.

9. After a notification of noncompliance has been filed, compliance with the past-due requirement shall be reported by submitting any required documents or providing EPA with a written report indicating that the required action has been achieved.

10. The reporting requirements set forth in this Section do not relieve Dominion of its obligation to submit any other reports or information as required by State, Federal or local law.

11. Within fourteen days of learning that it will fail, or has failed, to comply with a requirement of this Order, the Dominion shall provide written notice of such failure to EPA.

12. Submissions required by this Order shall be in writing and shall be mailed to the following address:

    USEPA - New England
    Office of Environmental Stewardship
    1 Congress Street
    Suite 1100 (SEW)
    Boston, MA 02114-2023
    Attn: Steven Couto

VI. FORCE MAJEURE

13. "Force majeure," for purposes of this Administrative Order, is defined as any event arising from causes beyond the control of Dominion, of any entity controlled by Dominion, or of Dominion's contractors, that delays or prevents the performance of any obligation under this Administrative Order despite all practicable efforts by Dominion to fulfill the obligation. The requirement that Dominion exercise "all practicable efforts to fulfill the obligation" includes using all practicable efforts to anticipate any potential force majeure event and all practicable efforts to address the effects of any such event (a) as it is occurring and (b) after it has occurred to prevent or minimize any resulting delay to the greatest extent possible. "Force Majeure" does not include normal inclement weather, unanticipated or increased costs or expenses of work, the financial difficulty of performing such work, or the failure of Dominion to make complete and timely application of any required approval or permit unless caused by a separate force majeure event. "Force Majeure" may include, but is not limited to, acts of God including floods, blizzards, hurricanes, and other extreme weather, labor strikes, fires, judicial orders, orders by governmental officials or ISO New England that direct Dominion to operate Brayton Point to supply electricity, ISO New England's failure to grant Dominion's request for an outage to permit unit tie-ins when that request was timely as specified in paragraph 1, and an inability to tie-in a unit due to the restrictions in paragraph 3 of this Order, including the Delta T, that are not waived by EPA. Under the definition of "Force Majeure" as set forth above in this paragraph, "Force Majeure" may or may not include construction, labor, and equipment delays.

14. If any event occurs or has occurred that may delay the performance of any obligation under this Administrative Order or causes Dominion to be in potential violation of any provision of this Order, whether or not caused by a force majeure event, Dominion shall provide notice orally or by electronic or facsimile transmission to:

Steven Couto, SEW
Water Technical Unit
Office of Enforcement
One Congress Street
Boston, Massachusetts 02114
617-918-1765
fax: 617-918-0765
couto.steven@epa.gov

within five (5) business days of when Dominion first knew that the event might cause a delay. In addition, Dominion shall notify the EPA in writing as soon as practicable but in no event later than ten (10) days following the date Dominion first knew that the event caused or may cause such delay or potential violation. In this written notice, Dominion shall provide an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Dominion's rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of Dominion, such event may cause or contribute to an endangerment to public health, welfare or the environment. Dominion shall include with any written notice all reasonably obtainable documentation supporting the claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude Dominion from asserting any claim of force majeure for that event for the period of time

of such failure to comply, and for any additional delay caused by such failure. Dominion shall be deemed to know of any circumstance of which Dominion, any entity controlled by Dominion, or Dominion's contractors knew or should have known by the exercise of due diligence.

15. If EPA agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Administrative Order that are affected by the force majeure event will be extended by EPA for such time as is necessary to complete those obligations. Any subsequent schedule deadlines that EPA agrees are affected by the force majeure event will also be extended. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. EPA will notify Dominion in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

16. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, EPA will notify Dominion in writing of its decision.

VII. DISPUTE RESOLUTION

17. If Dominion objects to any EPA determination made pursuant to this Order regarding the adequacy of the work performed hereunder or whether a force majeure has occurred, it shall notify EPA in writing of its objection(s) within 15 days of such action, unless the objection(s) has been resolved informally. EPA and Dominion shall engage in a period of formal negotiations for 30 days from EPA's receipt of Dominion's written objection(s).

18. Any agreement reached by the parties pursuant to this Section shall be in writing and shall, upon signature of both parties, be incorporated into and become an enforceable part of this Order.

VIII. GENERAL PROVISIONS

19. This Order does not constitute a waiver or a modification of the terms and conditions of the NPDES Permit. The NPDES Permit remains in full force and effect. EPA reserves the right to seek any and all remedies available under Section 309 of the Act, 33 U.S.C. § 1319, as amended, for any violation cited in this Order.

20. This Order shall become effective upon receipt by Dominion.

12/17/07
Date

Susan Studlien
Susan Studlien, Director
Office of Environmental Stewardship
Environmental Protection Agency, Region 1

BRAYTON POINT STATION
MEMORANDUM OF AGREEMENT II

The New England Office of the United States Environmental Protection Agency (U.S. EPA), the Massachusetts Department of Environmental Protection (MA DEP), the Massachusetts Executive Office of Environmental Affairs (EOEA), the Rhode Island Department of Environmental Management (RIDEM) (hereinafter collectively referred to as the "Government Signatories"), and New England Power Company (NEP) hereby enter into this Memorandum of Agreement (MOA II) regarding the operations of the NEP Brayton Point Station and NPDES issues related thereto.

1. The Brayton Point Station is currently operating under the terms of an NPDES permit co-issued by U.S. EPA and MA DEP under the federal Clean Water Act and the Massachusetts Clean Waters Act, respectively (the "Discharge Permit"). The Discharge Permit was issued on June 16, 1993, became effective on July 16, 1993, and is scheduled to expire on July 16, 1998.

2. On October 22, 1996, RIDEM wrote to U.S. EPA and MA DEP requesting that those agencies "expedite such permitting actions as are necessary in order to ensure that operational changes necessary to reverse unprecedented declines in Mount Hope Bay fisheries stocks are underway before the spawning season next spring." In its letter, RIDEM also stated that it "believes that sufficient grounds exist for EPA and DEP to initiate the process of modifying or revoking and reissuing the permit." RIDEM's views were, in part, based on concerns raised in an August 1996

report issued by RIDEM titled, "Comparison of Trends in the Finfish Assemblage of Mt. Hope Bay and Narragansett Bay in Relation to Operations at the New England Power Brayton Point Station" (the "August 1996 RIDEM Fishery Report"). Based on the August 1996 RIDEM Fishery Report and other information, U.S. EPA, MA EOEA and MA DEP shared the concerns of RIDEM and decided to commence a process for determining near-term revisions to the Brayton Point Station Discharge Permit.

3. The Government Signatories believe that the RIDEM report, other data, and the studies in progress provide an ample basis to require action to be taken to limit the impacts on Mount Hope Bay of the Brayton Point Station prior to the renewal of the Discharge Permit. NEP believes that there is insufficient evidence of causality of or continuing potential impact by the Brayton Point Station on the restoration of a healthy fishery in Mount Hope Bay to require permit changes prior to the renewal.

4. The Government Signatories believe that the unique factors described below combine to support entering this MOA II, including what they believe is a need for immediate action to reduce impacts to the environment, the impending expiration of the existing Discharge Permit, and the desire to avoid costly potential litigation and enable their staffs to focus attention on the pending permit reissuance.

5. This MOA II is intended to present a joint statement of the parties' voluntary agreement as to their plans and intentions regarding NEP's operation of Brayton Point Station with respect to circulating water discharges and flows, and regarding the

Government Signatories' response to such operations pending formal reissuance of the Discharge Permit. This MOA II is intended to state the commitment of each party to carry out its terms. This MOA II is not, however, a regulatory action, such as a permit or rule.

6. On February 6, 1997, the parties to this MOA II entered into a short-term Memorandum of Agreement (MOA I) pursuant to which NEP agreed to short-term immediate modifications to operations at Brayton Point Station.

7. This MOA II is effective upon completion of signatures and each of its conditions will continue in effect until the effective date of corresponding conditions in a new permit, or if there are not corresponding conditions in such permit, until the effective date of that permit. However, any party may seek to negotiate a modification to the terms of this MOA II at any time. All the parties to this MOA II agree to work cooperatively toward expediting the reissuance process of the five year Discharge Permit.

8 Pursuant to this MOA II, NEP agrees to institute the following measures.

a. With respect to the heat rejection from Brayton Point Station, the following limits shall apply.

(i) For the months of April and May, 1997, the maximum monthly heat rejection for each month will be 4.1×10^{12} Btus, and the total for the two month period will not exceed 7.25×10^{12} Btus.

(ii) For the months of June, July, August and September of each year this MOA II is in effect, the maximum monthly heat rejection for each month will be 3.4×10^{12}, and the total for the four month period will not exceed 13×10^{12} Btus. However, the Government Signatories and NEP recognize that providing electricity during periods of high load when the NEPOOL Operating Procedure No. 4 ("OP-4") is in effect necessitates additional measures. Therefore, if projections by NEPOOL anticipate the potential of Brayton Point Unit No. 4 being called upon to start-up and operate during OP-4, once OP-4 actions 1 through 6 have been implemented and to the extent necessary to accommodate such conditions, NEP shall be granted up to an additional 0.25×10^{12} Btus per month, not to exceed a total of up to an additional 0.5×10^{12} Btus for the period of June through September; the heat rejection covered by such additional allocations which will only be granted if NEPOOL implements OP-4 action 6 would include all heat rejection associated with that OP-4

event during actions 1 through 6 and beyond. Any amount of additional Btus as provided in the sentence above will be accounted for and deducted from the total maximum heat rejection as provided in subparagraph 8.a.(iii) for the succeeding eight month period. Furthermore, NEP will consult with NEPOOL dispatch to minimize the heat rejection associated with Brayton Point Unit No. 4 during OP-4, consistent with maintaining the reliability of electric supply.

(iii) For the months of October through May of each year this MOA II is in effect, the maximum monthly heat rejection for each month will be 4.1×10^{12}, and the total for the eight month period will not exceed 29 $\times 10^{12}$ Btus.

b. From the date of this MOA II through May 31, 1997, and from October 1 through May 31 of each year this MOA II is in effect, (i) the Brayton Point Station circulating water discharge flow rate, excluding service water and waste water system discharges, will not exceed a monthly average of 0.925 billion gallons per day, and (ii) to meet the discharge flow rate, NEP shall implement a flow reduction/minimization program that includes

piggyback operation on Unit No. 4, unless piggyback operations will substantially interfere with operation of the plant or can reasonably be anticipated to cause an increase in the "delta T" above the 30°F as provided in paragraph 8.c. below, and, at NEP's discretion, scheduled maintenance, pump optimization and/or any other necessary measures.

c. When in piggyback operation on Unit No. 4, the "delta T" at Brayton Point Station will not exceed 30°F.

d. From June 1 through September 30 of each year this MOA II is in effect, the Brayton Point Station circulating discharge flow rate, excluding service water and wastewater system discharges, (i) shall not exceed a monthly average daily flow of 1.13 billion gallons per day, (ii) shall not exceed an average daily flow of 1.08 billion gallons per day for the combined months of June through September, and (iii) NEP will use best management practices to minimize the circulating water discharge flow rate during these periods of time and these best management practices will be included in a standard operating procedure to be developed by NEP and submitted to the Government Signatories for review and comment.

e. During the life of this MOA II, Brayton Point Station will continuously operate the traveling screens at Units 1, 2, 3 and 4 whenever the intake for each unit is in use in order to minimize the impingement of fish and other marine organisms resulting from the intake of cooling water, unless the screens are inoperable due to repair/maintenance requirements. When the screens are operated continuously for Units 1, 2 and 3, flow limits for the intake screen wash for those units (discharge number 017) must be increased to 5.2 MGD for both the daily average and the daily maximum to accommodate increased screen wash.

f. The Government Signatories support and desire and have requested that NEP reduce flow by achieving a flow limitation and by operating Unit No. 4 in the piggyback operation mode in accordance with paragraph 8(b.) of this MOA II, and to continuously operate the traveling screens. The Government Signatories believe that the reduction in flow and the piggyback operation as well as the continuous operation of the traveling screens will reduce potential entrainment and impingement of marine organisms and thus provide environmental benefits. NEP has agreed to this flow and screen operation regime, but has not determined what, if any, impact it believes such actions will have on

the marine environment. However, both the Government Signatories and NEP understand and acknowledge that to enable NEP to conduct piggyback operations and continuously operate the traveling screens, Brayton Point Station may experience a "delta T" of up to 30°F when Unit 4 is conducting piggyback operations, and an increase of the flow at discharge number 017 to 5.2 MGD daily average and daily maximum to accommodate increased screen wash; and the Government Signatories will not in any way discourage NEP from operating Unit No. 4 in piggyback consistent with this MOA II, notwithstanding the other terms or conditions of this MOA II or other requirements.

g. No later than the 15th day of each succeeding month, NEP will provide the Government Signatories a written report on performance of the conditions of this paragraph 8.

9. Under the MOA I, NEP stated that it was conducting or agreed to conduct certain listed studies in order to increase knowledge about environmental conditions in Mount Hope Bay and to determine the role, if any, of Brayton Point Station in influencing those conditions. The parties to this MOA II agree that the list of studies shown in Attachment 1 may help support decisions relating to renewal of the Discharge Permit and agree to consider these studies along with other relevant information

in developing the new permit. NEP agrees to immediately begin evaluation of advanced technologies, focusing on but not limited to helper cooling towers, in order to assess relative benefits to environmental resources, reliability, design considerations, performance under field testing, costs, and length of time needed for implementation, as well as an overall assessment of the advantages and disadvantages of the technologies, as part of Study 19 of Attachment 1 so that NEP may expedite installation of such technologies should EPA and MA DEP approve of such measures in the context of decisions regarding reissuance of the Discharge Permit. Nothing in this MOA, however, shall limit any authority of the U.S. EPA or MA DEP to require any additional studies or analyses by NEP beyond those listed in Attachment 1 to this MOA II, including any authority to require additional studies to support renewal of the Discharge Permit.

10. The Government Signatories and NEP agree that the measures to be implemented by NEP pursuant to this MOA II will not in any way be considered as precedent for any future renewal, modification, or reissuance of the Brayton Point Station's Discharge Permit; provided, however, that nothing in this MOA II is intended to preclude any of the studies or information to be generated by the studies under Paragraph 9 of this MOA II from being used as appropriate to support future permit modification, renewal or reissuance.

11. This MOA II does not constitute a permit or approval. Brayton Point Station's Discharge Permit under federal and state law remains in effect and nothing in this MOA II excuses NEP, or

its successors in interest with respect to Brayton Point Station, from compliance with the Discharge Permit and all other applicable federal, state or local requirements. The Government Signatories expressly reserve any rights they may have in response to violations of the permit to seek all remedies available under Sections 309 and 505 of the federal Clean Water Act, 33 U.S.C. §§ 1319 and 1365, Massachusetts General Laws Chapter 21, §§ 42-46, and Rhode Island General Law 46-12. Furthermore, nothing in this MOA II shall limit U.S. EPA from taking any action it deems necessary under Section 504 of the Clean Water Act, 33 U.S.C. § 1364.

12. Either the Government Signatories or NEP may seek to reopen the terms of this MOA II or terminate this MOA II upon a showing of good cause, based upon new information and/or analysis not available at the date this MOA II was entered into. It is the intent of the Government Signatories not to take action to modify, revoke-and-reissue, or revoke the Discharge Permit unless there is new information and/or analysis that was not available when this MOA II was entered into, NEP violates this MOA II, or the action is with regard to conditions of the Discharge Permit not covered by the terms of this MOA II.

13. To the extent that this MOA II requires any actions to be taken by NEP, any failure of performance of NEP under this MOA II shall be excused by the Government Signatories to the extent that such failure arises from (a) causes beyond the reasonable control of NEP, or (b) the need to generate electricity in order to prevent blackouts that might endanger public health or safety.

NEP will notify by telephone, as soon as possible, the U.S. EPA and the MA DEP of conditions arising under subparagraphs (a) and (b) of this paragraph 13, and provide, as soon as possible thereafter, the U.S. EPA and MA DEP a written explanation of the reasons for the actions taken by NEP to respond to the conditions arising under subparagraphs (a) and (b) of this paragraph 13.

14. By entering into this MOA II, NEP does not admit to any liability or responsibility for actions relating to the Brayton Point Station's Discharge Permit that are the subject of this MOA II; does not admit to any violation of any applicable federal, state, or local law, rule, regulation, permit, or ordinance; reserves all its rights and does not waive any defenses or positions it may have in any ongoing or future administrative or judicial proceeding relating to the issues addressed in this MOA II, including the renewal of the Discharge Permit. Also, neither NEP or the Government Signatories admit, confirm, or acquiesce in any fact, allegation, or conclusion of law contained in this MOA II.

15. In the event that NEP should ever sell, lease, or transfer ownership or control of its Brayton Point Station, NEP agrees to inform the purchaser, lessee, or transferee of the existence and terms of this MOA II, and NEP will not sell, lease, or transfer ownership or control of its Brayton Point Station unless the purchase, lease, or transfer agreement includes the express requirement to comply with the terms of this MOA II and the purchaser, lessee, or transferee conveys to the Government

Signatories a written agreement to comply with the terms of this MOA II.

16. This MOA II shall be executed in multiple counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

Attachment 1

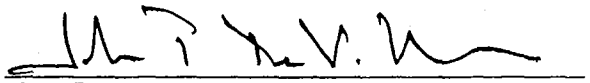
Studies Related to Mount Hope Bay and Brayton Point Station

1. Enhanced Trawl Survey
2. Winter Flounder Tagging Program
3. Benthic Survey
4. Brown University Study
5. Hydrothermal Model
6. Thermal Plume Mapping
7. DO Model
8. DO Field Survey
9. Nutrients
10. Primary Productivity
11. Phyto and Zooplankton Study
12. BOD Survey
13. Thermobiotic Assessment
14. Creel Survey
15. Discharge Canal Census
16. Effluent Toxicity Testing
17. Entrainment/Impingement Impact
18. Fine Mesh Screen Study
19. Heat and Flow Reductions with Alternative Technologies and/or Existing Station Equipment
20. Population Model
21. Heat Balance

Brayton Point Station Memorandum of Agreement II Signature Page

Signed the 3rd day of April, 1997,

For: THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
NEW ENGLAND REGION

By: 

JOHN P. DEVILLARS
Regional Administrator

Brayton Point Station

Memorandum of Agreement II

Massachusetts Executive Office of Environmental Affairs

Signature Page

Signed this day, April 3, 1997

For: Massachusetts Executive Office of Environmental Affairs

Trudy Coxe
Secretary

Brayton Point Station Memorandum of Agreement II Signature Page

Signed this 4 day of April, 1997, for:

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Timothy R. E. Keeney, Director

April 4, 1997
Date

BRAYTON POINT STATION
MEMORANDUM OF AGREEMENT II

SIGNATURE PAGE

Signed this 3rd day of April, 1997.

FOR:

NEW ENGLAND POWER COMPANY

Jeffrey D. Tranen
President

Chlorine may be used as a biocide. Bromine compounds also may be used on an experimental basis, subject to approval of a test plan by the Regional Administrator and the Director. No other biocide shall be used without explicit approval from the Regional Administrator and the Director.

(1) A chlorine management program "Targeted Chlorination" shall be used for controlling biological growths in the condenser system. Units 1 and 2 presently use Targeted Chlorination. Targeted Chlorination will be installed in Units 3 and 4 before chlorination commences on these units. Current plans include installation of Targeted Chlorination on Unit 3 and not Unit 4. The Targeted Chlorine program may use higher local chlorine injection concentrations and longer application durations (exceeding 2 hours) than guideline (40 CFR 423) values providing the mass (pounds) of TRO consumed by the unit being chlorinated shall be less than the mass of chlorine that would be consumed by the conventional chlorination methods allowed by the guideline values of 0.2 mg/l TRO discharge concentration multiplied by the cooling water flow in the discharge for a maximum of 2 hours in any one day.

The multiple nozzle system shall be so interlocked either electronically or mechanically or by an alternate design to prevent more than one nozzle simultaneously injecting high concentration chlorine (sodium hypochlorite) into the condenser inlet. The Total Residual Oxidant, TRO, concentration shall not at any time exceed 0.2 mg/l at the discharge from the unit being chlorinated during any one chlorination cycle as measured at the seal pit.

(2) Each unit shall be independently chlorinated: simultaneous multi-unit chlorination is prohibited. Units 1, 2, and 3 shall use Targeted Chlorination. Unit 4 shall not be chlorinated until such time that the Regional Administrator and the Director approves in writing a chlorination program for this unit.

(3) The Discharge 001 shall be sampled and analyzed for TRO once per week during the chlorination cycles, and, when possible, during Unit 3 treatment.

The TRO Instantaneous Maximum concentration shall not exceed 0.065 mg/l at the point of discharge into Mt. Hope Bay, Par. I.A.2.a. based upon samples manually taken and analyzed or based upon a continuous TRO monitor installed at the same location.

For the steam electric power plants, the terms "Maximum Concentration" and "Instantaneous Maximum" are intended to mean the maximum TRO concentration in the short term (2 hours or less) as defined in the guidelines, 40 CFR 423. This interpretation differs from the NPDES Permit requirement, 40 CFR 122.2 and Part II of this permit, where the two terms of "Maximum Daily Discharge" and "Average Daily Discharge" concentrations are limited to the 24-hour duration values. Therefore, the "Maximum Concentration" and "Instantaneous Maximum" TRO concentrations shall always mean the "value that shall not be exceeded" for both the guideline value (40 CFR 423) 0.2 mg/l or the State Water Quality value of 0.1 mg/l.

(4) Continuous chlorination of each service water system may be used. The Total Residual Oxidant (TRO) concentration shall not exceed 0.2 mg/l daily average and 0.4 instantaneous maximum in the service water discharge prior to mixing with any other stream (Par. I.A.2.a). At least one grab sample shall be taken daily of each service water discharge.

(5) There shall be no chlorination of the circulating condenser cooling water systems of any unit should the Discharge 001 temperature exceed 95 °F. The continuous chlorination of the service water systems will be allowed during these maximum temperature exceedances.

(6) The use of the typical (bulk) chlorination process as defined in 40 CFR 423 must be approved by the Regional Administrator and the Director prior to its use on any unit.

The chlorination cycle for the circulating cooling water systems shall not exceed a total of two hours in any one day for each unit cooling water discharge unless the permittee can demonstrate that it is needed for macro-invertebrate control or for the targeted chlorination process.

The Total Residual Oxidant (TRO) concentration shall not exceed 0.2 mg/l at any time prior to mixing at the seal pit, prior mixing with any other steam, Par. I.A.2.a. A minimum of 4 samples (not less than 10 minutes between samples) shall be taken during any one chlorination cycle each day that a unit is treated. Only 1/2 of a unit condenser will be treated at one time.

(7) A permanent log must be maintained at each unit available for inspection by EPA and the State showing as a minimum: the date and time of each chlorination cycle (cooling water and service water systems), the reported TRO values for all samples analyzed, the pounds of chlorine injected per treatment cycle, and the name of the technician performing the chlorination (when manual analyses are conducted).

The number of exceedances of the TRO maximum concentration during any chlorination cycle will be reported for each unit in the monthly DMR (Par. I.A.2.a).

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the Matter of

Dominion Energy Brayton Point, LLC
(Successor-in-interest to
USGen New England, Inc.)

ADMINISTRATIVE ORDER
File No. UAO-BO-08-1N001
Somerset, MA

I. THE PARTIES

1. The Department of Environmental Protection ("MassDEP") is a duly constituted agency of the Commonwealth of Massachusetts established pursuant to M.G.L. c. 21A, §7. Its principal office is located at One Winter Street in Boston, Massachusetts 02108.

2. Dominion Energy Brayton Point, LLC (hereinafter "Dominion," "the Company," or the "Permittee"), is a Virginia corporation with a place of business in Somerset, Massachusetts.

3. MassDEP and the Company will hereinafter be referred to herein as "the Parties."

II. STATUTORY AUTHORITY

4. This ORDER is issued pursuant to M.G.L. c. 21, § 44(1) which authorizes MassDEP to order a discharger to apply forthwith for a permit, or for a new permit, or to take other appropriate action under rules and regulations adopted by it, subject to the provisions of M.G.L. c. 30A, and to cease and desist from making or allowing further discharges beyond a specified date until compliance with the order is fully achieved, whenever it appears that there are discharges of pollutants without a required permit, or that such discharges are in violation of a permit issued under this chapter, or in contravention of any regulation, standard or plan adopted by MassDEP.

III. DEFINITIONS

5. Unless otherwise defined herein, terms used in this Order shall have the meaning given to those terms in the Clean Water Act (the "Federal CWA"), 33 U.S.C. § 1251 et. seq., the regulations promulgated thereunder, and any applicable NPDES permit. For the purposes of this Order, "NPDES Permit" means the Company's Brayton Point Power Station NPDES Permit No. MA0003654, and all amendments or modifications thereto and renewals thereof as are applicable, and in effect at the time.

IV. FINDINGS OF FACT

6. Dominion Energy Brayton Point, LLC, Brayton Point Power Station has a place of business in Somerset, Massachusetts, from which it discharges condenser cooling water, process wastewater and storm water.

7. The Company is a person under Section 26A of the Massachusetts Clean Waters Act (the "Massachusetts CWA"), M.G.L. c. 21, §§ 26-53A, and 314 C.M.R. 3.00. The Company is the owner of an electrical power generating station (the "Facility") from which it discharges pollutants, as defined in M.G.L. c. 21, § 26A, from a point source, as defined in 314 C.M.R. 3.02, to Mount Hope Bay. Mount Hope Bay flows into Narragansett Bay which, in turn, empties into the Atlantic Ocean. All are waters of the Commonwealth as defined in M.G.L. c. 21, § 26A.

8. On October 6, 2003, the Director of the Office of Ecosystem Protection of the Environmental Protection Agency ("EPA"), Region I, and Glenn Haas, Director of Watershed Management for MassDEP, jointly issued the Permit under the authority given to the Administrator of EPA by Section 402 of the Federal CWA, 33 U.S.C. § 1342, and to the Director by the Massachusetts CWA .[1] On November 5, 2003, the Company filed a petition for review of the Permit under the Federal CWA with EPA's Environmental Appeals Board ("EAB"). The Company also filed parallel appeals of the Permit and associated State Water Quality Certification under the Massachusetts CWA with MassDEP. The contested provisions of the Permit were stayed and all other provisions of the Permit became effective on May 26, 2004. Following resolution of the appeal before the EAB, EPA notified the Company by letter dated October 1, 2007 that the conditions of the Permit that had been stayed pending the appeal under the Federal CWA would take effect on November 1, 2007. Those conditions of the Permit were again stayed until December 17, 2007 and took effect on December 18, 2007. The conditions of the Permit that had been stayed pending the appeal under the Massachusetts CWA will take effect on the date a Final Decision providing for the dismissal of the appeals of the Permit and associated State Water Quality Certification under the Massachusetts CWA is issued by the Commissioner or her designee (the "Effective Date").

9. The Permit authorizes the Permittee to discharge pollutants from the Facility to Mount Hope Bay, subject to the effluent limitations, monitoring requirements and other conditions specified in the Permit.

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[1] States that have received authorization from EPA under § 402(b) administer the NPDES permit program within their boundaries in lieu of the federal government. 33 U.S.C. § 1342(b), (c). To date, Massachusetts has not received such authorization. Although EPA issues NPDES permits in Massachusetts, the state maintains permitting authority under Massachusetts law. *See* M.G.L. c. 21, § 43; 314 C.M.R. 3.00. Generally, when EPA issues a NPDES permit in Massachusetts, MassDEP simultaneously issues a discharge permit under Massachusetts law, as it did in this case.

10. Part LA.4.a. of the Permit establishes a flow limit for outfall serial number 001, Discharge Canal, of 40 million gallons per day (average monthly) and 42 million gallons per day (maximum daily).[2]

11. Part LA.4. b. of the Permit for outfall serial number 001, Discharge Canal, establishes an annual heat load limit to Mount Hope Bay of 1.7 Trillion BTUs.

12. Part I.A.4. c. of the Permit establishes a limit for the combined withdrawal of intake water of 56.2 million gallons per day ("MGD").

13. The Permittee discharges process water from outfall serial number 001, Discharge Canal, at a flow rate that will exceed the Permit's effluent limitation for flow upon the Effective Date.

14. The Permittee discharges a heat load from outfall serial number 001, Discharge Canal, to Mount Hope Bay that will exceed the Permit's annual heat load limitation upon the Effective Date.

15. The Permittee's total water intake will exceed the Permit's limit for water intake of 56.2 MOD upon the Effective Date.

16. Section 43(2) of the Massachusetts CWA, M.G.L. c. 21, § 43(2) , makes unlawful the discharge of pollutants to waters of the Commonwealth except in conformance with, among other things, the terms and conditions of a permit issued under that Section.

17. The Company's discharge of pollutants to Mount Hope Bay in excess of the limits contained in its NPDES Permit, will result in a violation of a permit issued under M.G.L. c. 21, § 43 upon the Effective Date.

18. The Company will need to install closed-cycle cooling in order to comply with the previously stayed Permit limits. EPA issued an Order on December 17, 2007 to the Company to provide a schedule for the Company to come into compliance with the Permit.

19. The Company worked cooperatively with EPA in the development of the EPA Order. The Company, likewise, has worked cooperatively with MassDEP in the development of this Order.

V. ORDER

For the reasons stated above, MassDEP hereby Orders the following. This Order shall be binding on the Company and on its successors, heirs, and assigns. The Company shall not violate this Order, and shall not allow or suffer its employees, agents, or

[2] This flow rate is the total blowdown from any cooling tower(s) used at the facility plus flow from the wastewater treatment facility. During periods of once-through cooling, the permittee may increase the flow rate to a flow rate of 56 million gallons per hour. The permittee may not increase to this flow rate for more than 122 hours per year.

contractors to violate this Order. Pursuant to M.G.L. c. 21A, § 16 and 310 CMR 5.00, MassDEP hereby determines that the deadlines set forth below constitute reasonable time for coming into compliance with MassDEP's requirements. Accordingly, the Company shall:

20. Comply with the following schedule for construction and implementation of closed cycle cooling at Brayton Point Power Station and for meeting the limits contained in the Permittee's NPDES Permit:

    a. By the Effective Date, commence the process to obtain all permits and approvals necessary to convert Brayton Point Station to closed cycle cooling in order to meet NPDES permit limits. This shall include the engineering to support the permitting, the permit applications, and all necessary supplementary data;

    b. From the Effective Date until all permits and approvals are issued, provide timely and complete responses to all requests from each permitting and approval authority.

    c. By the Effective Date, initiate requests for pre-application meetings with permitting authorities.

    d. By the Effective Date, request approval from the United States Coast Guard for placement of monitoring equipment necessary to comply with Part T.26.a. 1 .iii of the Permit.

    e. By the effective Date, submit air modeling protocol to MassDEP for review.

    f. By July 1, 2008, submit applications for all local permits.

    g. By September 1, 2008, submit application(s) for air permit(s).

    h. By October 1, 2008, complete submission of all other necessary permit applications and notices necessary to convert Brayton Point Station to closed cycle cooling.

    i. Within five days of obtaining all permits and approvals or April 6, 2009, whichever is later, issue the Notice to Proceed with Engineering and Procurement for cooling tower construction to Dominion's contractor.

    j. Within five days of obtaining all permits and approvals or April 6, 2009, whichever is later, issue the Notice to Proceed with Engineering and Procurement for the Pump Structure and Piping System.

    k. Within nine months of obtaining all permits and approvals, commence construction of foundations for cooling towers.

    l. No later that May 15 of the calendar year prior to the anticipated tie-in date for each unit, Dominion shall request a planned outage for that unit from ISO New

England in accordance with, and pursuant to, ISO New England Operating Procedure No. 5, Revision No. 8, effective October 13, 2006 or as amended.

m. Within 29 months of obtaining all permits and approvals, complete tower construction.

n. Within 29 months of obtaining all permits and approvals, complete all piping installation for tie-in of condenser units to cooling towers.

o. Within 29 months of obtaining all permits and approvals, commence tie-in of condenser units to cooling towers.

p. Within 31 months of obtaining all permits and approvals, complete tie-in of condenser units 4 and 3.

q. Within 33 months of obtaining all permits and approvals, complete tie-in of condenser unit 2.

r. Within 36 months of obtaining all permits and approvals, complete tie-in of all condensor units such that all permit limits are met.

21. Where any compliance obligation requires Dominion to obtain a federal, state, or local permit or approval, Dominion shall submit timely and complete applications and responses to requests for information and take all other actions necessary to obtain all such permits or approvals. Dominion may seek relief under the Force Majeure provisions below for any delay in the performance of any such obligation resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation, if Dominion has submitted timely and complete applications and has taken all other actions necessary to obtain all such permits or approvals.

Interim Effluent Limits

22. In the interim period from the effective date of this Order and during the Permittee's compliance with paragraphs 20 and 21 of this Section V, the Permittee shall comply with the following effluent standards and limits:

    a. for thermal discharges, intake cooling water withdrawals, and effluent flow, comply with all the requirements and conditions of the Memorandum of Agreement II ("MOA II") (Attachment 1) except that:

        (1) During the period from the beginning of tie-in of condensor unit 4 and continuing until tie-in of condensor unit 3, the flow limitations of part 8.b. of MOA II will not be required to be met through "piggyback operation." Instead, the flow limitations will be met by blocking the existing unit 4 discharge at the tri-bridge and directing warm water from the tied-in unit to the cooling tower(s).

(2) During the period from the beginning of tie-in of condensor unit 4 and continuing until complete tie-in of all condensor units, the "delta T" limitation of part 8.c. of MOA II will apply when unit 4 is not in piggyback operation" as long as the tie-in occurs between October 1 and - May31.

b. operate the intake screen wash for condenser units 1, 2, and 3 whenever the intake is in use.

c. during "targeted" chlorination, as defined in Attachment 2, the total residual oxidant concentration shall not, at any time, exceed 0.2 milligrams/liter at the discharge from the unit being chlorinated during any one chlorination cycle as measured at the seal pit. The sampling type and frequency will be a daily grab sample for each generating unit.

d. comply with all other effluent limitations, monitoring requirements and other conditions specified in its NPDES Permit.

23. Within three (3) weeks of Coast Guard approval for the placement of monitoring equipment necessary to comply with Part I.. 26.a. 1 .iii of the Permit, Dominion shall install monitoring equipment at the locations identified in Figure 6 of the Permit and commence monitoring in accordance with the Permit requirements.

24. As the following power generating units are tied into the cooling towers, the discharge from Brayton Point Station must comply with the following interim effluent limitations:

Unit 3	flow = 518 million gallons per day heat = MOA II limit
Unit 2	flow = 259MGD heat = 2.01 trillion BTUs total per month

VI. REPORTS ON COMPLIANCE

25. Beginning on the fifteenth day of April, 2008 and continuing until completion of construction, tie-in, and compliance with all of the NPDES limitations, Dominion shall report to MassDEP on its compliance with its obligations pursuant to paragraphs 20 through 24 every three months. Each progress report submitted under this Paragraph shall:

a. Describe activities undertaken during the reporting period directed at achieving compliance with this Administrative Order;

b. Describe the expected activities to be taken during the next reporting period in order to achieve compliance with this Administrative Order; and

c. Report on compliance with the provisions outlined in paragraphs 22, 23 and 24 above.

26. Where this Order requires a specific action to be performed within a certain time frame, Dominion shall submit a written notice of compliance or noncompliance with each deadline. Notification must be mailed within fourteen (14) calendar days after each required deadline. The timely submission of a required report shall satisfy the requirement that a notice of compliance be submitted.

27. If noncompliance is reported, notification should include the following information:

    a. A description of the noncompliance;

    b. A description of any actions taken or proposed by the Permittee to comply with the lapsed schedule requirements;

    c. A description of any factors that explain or mitigate the noncompliance; and

    d. An approximate date by which the Permittee will perform the required action.

28. After a notification of noncompliance has been filed, compliance with the past-due requirement shall be reported by submitting any required documents or providing MassDEP with a written report indicating that the required action has been achieved.

29. The reporting requirements set forth in this Section do not relieve Dominion of its obligation to submit any other reports or information as required by State, Federal or local law.

30. Within fourteen days of learning that it will fail, or has failed, to comply with a requirement of this Order, the Dominion shall provide written notice of such failure to MassDEP.

31. Submissions required by this Order shall be in writing and shall be mailed to the following address:

David Johnston, Deputy Regional Director
MassDEP
Southeast Regional Office
20 Riverside Drive
Lakeville, MA 02346

VII. FORCE MAJEURE

32. "Force majeure," for purposes of this Administrative Order, is defined as any event arising from causes beyond the control of Dominion, of any entity controlled by Dominion, or of Dominion's contractors, that delays or prevents the performance of any obligation under this Administrative Order despite all practicable efforts by Dominion to fulfill the obligation. The requirement that Dominion exercise "all practicable efforts to fulfill the obligation" includes using all practicable efforts to anticipate any potential force majeure event and all practicable efforts to address the effects of any such event

(a) as it is occurring and (b) after it has occurred to prevent or minimize any resulting delay to the greatest extent possible. "Force Majeure" does not include normal inclement weather, unanticipated or increased costs or expenses of work, the financial difficulty of performing such work, or the failure of Dominion to make complete and timely application of any required approval or permit unless caused by a separate force majeure event. "Force Majeure" may include, but is not limited to, acts of God including floods, blizzards, hurricanes, and other extreme weather, labor strikes, fires, judicial orders, orders by governmental officials or ISO New England that direct Dominion to operate Brayton Point to supply electricity, ISO New England's failure to grant Dominion's request for an outage to permit unit tie-ins when that request was timely as specified in paragraph 1, and an inability to tie-in a unit due to the restrictions in paragraph 3 of this Order, including the Delta T, that are not waived by MassDEP. Under the definition of "Force Majeure" as set forth above in this paragraph, "Force Majeure" may or may wit include construction, labor, and equipment delays.

33. If any event occurs or has occurred that may delay the performance of any obligation under this Administrative Order or causes Dominion to be in potential violation of any provision of this Order, whether or not caused by a force majeure event, Dominion shall provide notice orally or by electronic or facsimile transmission to:

David Johnston, Deputy Regional Director
MassDEP
Southeast Regional Office
20 Riverside Drive
Lakeville, MA 02346
By telephone at (508) 946-2708
By facsimile at (508) 047-6557
By email to: david.Johnston@state.ma.us

within five (5) business days of when Dominion first knew that the event might cause a delay. In addition, Dominion shall notify MassDEP in writing as soon as practicable but in no event later than ten (10) days following the date Dominion first knew that the event caused or may cause such delay or potential violation. In this written notice, Dominion shall provide an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Dominion's rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of Dominion, such event may cause or contribute to an endangerment to public health, welfare or the environment. Dominion shall include with any written notice all reasonably obtainable documentation supporting the claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude Dominion from asserting any claim of force majeure for that event for the period of time of such failure to comply, and for any additional delay caused-by such failure Dominion shall be deemed to know of any circumstance of which Dominion, any entity controlled by Dominion, or Dominion's contractors knew or should have known by the exercise of due diligence.

34. If MassDEP agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Administrative Order that are affected by the force majeure event will be extended by MassDEP for such time as is necessary to complete those obligations. Any subsequent schedule deadlines that MassDEP agrees are affected by the force majeure event will also be extended. An extension of the time for performance of the obligations affected by the force majeure event shall not of itself extend the time for performance of any other obligation. MassDEP will notify Dominion in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

35. If MassDEP does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, MassDEP will notify Dominion in writing of its decision.

VIII. DISPUTE RESOLUTION

36. If Dominion objects to any MassDEP determination made pursuant to this Order regarding the adequacy of the work performed hereunder or whether a force majeure has occurred, it shall notify MassDEP in writing of its objection(s) within 15 days of such action, unless the objection(s) has been resolved informally. MassDEP and Dominion shall engage in a period of formal negotiations for 30 days from MassDEP' s receipt of Dominion's written objection(s).

37. Any agreement reached by the parties pursuant to this Section shall be in writing and shall, upon signature of both parties, be incorporated into and become an enforceable part of this Order.

IX. GENERAL PROVISIONS

38. This Order does not constitute a waiver or a modification of the terms and conditions of the NPDES Permit. The NPDES Permit remains in full force and effect. MassDEP reserves the right to seek any and all remedies available under M.G.L. c. 21, § 44(1) for violation of this Order.

39. This Order shall become effective on the date a Final Decision providing for the dismissal of the appeals of the Permit and associated State Water Quality Certification under the Massachusetts CWA referenced in paragraph 8 above is issued by the Commissioner or her designee.

X. APPEALS

40. Dominion is hereby notified that it may request an adjudicatory hearing on this Order by filing a Notice of Claim for an Adjudicatory Appeal ("Notice of Claim") pursuant to General Laws c. 30A, § 10, and 310 C.M.R. 1.00. Complete adjudicatory appeal applications require the submittal of a Notice of Claim, a copy of this Unilateral Administrative Order and an Adjudicatory Appeal Fee Transmittal Form, a copy of which is attached hereto for convenience. A completed Fee Transmittal Form, including an appeal fee payment of $100.00, must be mailed to MassDEP's Lockbox at:

Department of Environmental Protection
Box 4062
Boston, MA 02211

The Notice of Claim (including a copy of the $100.00 appeal fee payment check and the completed Fee Transmittal Form) must be sent by United States mail or hand-delivered to MassDEP within 21 days after the date of issuance of this Order. The Notice of Claim must be addressed to:

Case Administrator
Department of Environmental Protection
One Winter Street – 2nd Floor
Boston, MA 02108

The Notice of Claim shall clearly and concisely set forth the facts related to the proceeding, the reasons the Order is considered to be inconsistent with General Laws c. 21, §§26-53 and 314 C.M.R. 3.00 and 4.00, and the relief sought through the adjudicatory appeal. Failure to submit all necessary information in accordance with 310 C.M.R. 1.00 may result in a dismissal by MassDEP of the Notice of Claim for an Adjudicatory Hearing. Failure to pay the filing fee as required is grounds for dismissal of the request for hearing. Upon a showing of undue financial hardship, MassDEP may waive the adjudicatory hearing filing fee. A person who believes that payment of the $100.00 filing fee would be an undue financial hardship must file, together with the request for adjudicatory hearing as provided above, an affidavit setting forth the facts the appellant believes constitute the undue financial hardship.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

By: _____
Glenn Haas, Acting Assistant Commissioner for Resource Protection
Department of Environmental Protection
1 Winter Street – 3rd Floor
Boston, MA 02108

Date: 3/27/08

APPENDIX D

310 CMR 7.29 Emission
Control Plan Amendment

Pamela F. Faggert
Vice President and Chief Environmental Officer

Dominion Resources Services, Inc.
5000 Dominion Boulevard, Glen Allen, VA 23060
Phone: 804-273-3467

Dominion®

August 25, 2008

Mr. John Winkler
Massachusetts Department of Environmental Protection
Southeast Regional Office
20 Riverside Drive
Lakeville, MA 02347

Subject: Dominion Energy Brayton Point, LLC – Brayton Point Station
310 CMR 7.29 Emission Control Plan Amendment (Transmittal No. X001323)

Dear Mr. Winkler,

Dominion Energy Brayton Point, LLC (Dominion), is submitting the attached Emission Control Plan (ECP) amendment, in accordance with 310 CMR 7.29(6)(h), for Brayton Point Station, located in Somerset, MA. The original ECP for Brayton Point Station submitted to the Department on December 20, 2001 included Selective Catalytic Reduction (SCR) on Units No. 1 and 3 and wet Flue Gas Desulfurization (FGD) and a new stack on Unit No. 3. The first amendment to the ECP was submitted on July 29, 2004 to support a change in SCR project design (i.e. use of aqueous ammonia). The second ECP amendment was submitted on November 21, 2005 which included the addition of spray dryer absorber (SDA), fabric filter (FF) and Powder Activated Carbon (PAC) Injection systems on Units No. 1 and 2, PAC on Unit No. 3 and the Ash Reduction Process (ARP). As part of the ECP submittals, the facility has proposed control strategies to significantly reduce NO_x, SO_2, mercury and greenhouse gas emissions to comply with 310 CMR 7.29.

The Station has made significant progress in the implementation of the ECP. The Unit No. 1 and 3 SCRs went into commercial operation on December 19, 2006 and August 17, 2006, respectively. The ARP went into commercial operation on August 11, 2006. The Units No. 1, 2 and 3 PAC injection systems at the inlet to the Electrostatic Precipitators (ESP) went into commercial service on December 17, 2007. The Units No. 1 and 2 SDA/FF are expected to go into commercial operation during the fourth quarter 2008.

With this ECP amendment Dominion is proposing to switch the SO_2 control technology on Unit No. 3 from the currently permitted wet FGD system to a Dry Scrubber technology. The dry scrubber will have a fabric filter baghouse for particulate control and an additional Powder Activated Carbon injection points upstream of the dry scrubber/FF system to increase the removal of mercury. The dry scrubber will exhaust to atmosphere through the existing Unit No. 3 stack. The proposed Unit No. 3 dry scrubber, FF and PAC systems are planned to be in commercial operation during the first quarter 2014.

The addition of the wet FGD system originally proposed for Unit No. 3 qualified as a Pollution Control Project in 2003 and therefore was exempt from PSD permitting even though it would have resulted in a significant increase in actual PM-10 emissions. The proposed dry scrubber/FF system on Unit No. 3 will also result in a significant increase in actual PM-10 emissions. Since the Pollution Control Project exemption is no longer available under the PSD program, a PSD permit will be required for the dry scrubber/FF system. It should be noted that the PM-10 actual emission increase from the proposed dry scrubber/FF system will only be approximately half of the increase associated with the wet FGD system.

The proposed dry scrubber/FF system on Unit No. 3 will not cause any potential emission increases greater than one ton per year. However, the project requires a PSD permit and therefore a 310 CMR 7.02 Plan Approval will also be required. The PSD and 310 CMR 7.02 Plan Approval applications will be submitted on or before September 2, 2008 in conjunction with the Brayton Point Closed Cycle Cooling Project that will be constructed during the same time frame.

Dominion believes this amendment to the Station's ECP represents a comprehensive compliance strategy that will now include two SCR systems, three dry scrubber/FF/PAC systems, three PAC injection systems and the ARP. In order to keep the project on schedule, Dominion respectfully requests the Department's prompt review and approval of the revised ECP in accordance with the fast track permitting agreement between Dominion and the Department, which is currently under development. If you have any questions regarding this revised ECP filing for Brayton Point Station, please do not hesitate to contact Scott Lawton of Dominion Electric Environmental Services at (401) 457-9157.

Sincerely,

Pamela F. Faggert

Pamela F. Faggert

Attachment

cc: E. Braczyk, MassDEP Northeast Regional Office
G. Moran, MassDEP Southeast Regional Office
E. Kunce, MassDEP Boston
D. Johnston, MassDEP Southeast Regional Office

Enter your transmittal number → X001323 (Transmittal Number)

Your unique Transmittal Number can be accessed online: http://mass.gov/dep/service/online/trasmfrm.shtml or call MassDEP's InfoLine at 617-338-2255 or 800-462-0444 (from 508, 781, and 978 area codes).

Massachusetts Department of Environmental Protection

Transmittal Form for Permit Application and Payment

1. Please type or print. A separate Transmittal Form must be completed for each permit application.

2. Make your check payable to the Commonwealth of Massachusetts and mail it with a copy of this form to: DEP, P.O. Box 4062, Boston, MA 02211.

3. Three copies of this form will be needed.

Copy 1 - the original must accompany your permit application. **Copy 2** must accompany your fee payment. **Copy 3** should be retained for your records

4. Both fee-paying and exempt applicants must mail a copy of this transmittal form to:

MassDEP
P.O. Box 4062
Boston, MA
02211

*** Note:**
For BWSC Permits, enter the LSP.

A. Permit Information

1. Permit Code: 7 or 8 character code from permit instructions	2. Name of Permit Category
BWP AQ 25	Emission Standard for Power Plants

3. Type of Project or Activity: Emission Control Plan

B. Applicant Information – Firm or Individual

1. Name of Firm - Or, if party needing this approval is an individual enter name below: Dominion Energy Brayton Point, LLC

2. **Last Name** of Individual	3. **First Name** of Individual	4. MI

5. Street Address: 5000 Dominion Blvd.

6. City/Town	7. State	8. Zip Code	9. Telephone #	10. Ext. #
Glen Allen	VA	23060-6711	804-273-3641	

11. Contact Person	12. e-mail address (optional)
Diane Leopold	Diane.Leopold@Dom.com

C. Facility, Site or Individual Requiring Approval

1. Name of Facility, Site Or Individual: Dominion Energy Brayton Point, LLC

2. Street Address: 1 Brayton Point Road

3. City/Town	4. State	5. Zip Code	6. Telephone #	7. Ext. #
Somerset	MA	02766	508-646-5200	

8. DEP Facility Number (if Known)	9. Federal I.D. Number (if Known)	10. BWSC Tracking # (if Known)
1200061		

D. Application Prepared by (if different from Section B)*

1. Name of Firm Or Individual: Dominion Resources Services, Inc.

2. Address: 40 Point Street

3. City/Town	4. State	5. Zip Code	6. Telephone #	7. Ext. #
Providence	RI	02903	401-457-9157	

8. Contact Person	9. LSP Number (BWSC Permits only)
Scott Lawton	

E. Permit - Project Coordination

1. Is this project subject to MEPA review? ☐ yes ☒ no
   If yes, enter the project's EOEA file number - assigned when an Environmental Notification Form is submitted to the MEPA unit:

EOEA File Number

F. Amount Due

DEP Use Only

Permit No:

Rec'd Date:

Reviewer:

Special Provisions:

1. ☒ **Fee** Exempt (city, town or municipal housing authority)(state agency if fee is $100 or less).
   There are no fee exemptions for BWSC permits, regardless of applicant status.
2. ☐ Hardship Request - payment extensions according to 310 CMR 4.04(3)(c).
3. ☐ Alternative Schedule Project (according to 310 CMR 4.05 and 4.10).
4. ☐ Homeowner (according to 310 CMR 4.02).

Check Number	Dollar Amount	Date
N/A	N/A	N/A

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Air Quality

BWP AQ 25

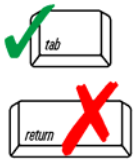
Emission Standards for Power Plants – Emission Control Plan (ECP)

X001323
Transmittal Number

Facility ID# (if known)

A. Facility Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Facility:

Dominion Energy Brayton Point, LLC - Brayton Point Station
Facility Name

1 Brayton Point Road
Street Address

Somerset | MA | 02726-0440
City/Town | State | Zip Code

Mailing Address(if different from above):

Street/PO Box

City/Town | State | Zip Code

2. Facility Contact Person:

Ken Small
Name

Sr. Environmental Compliance Coordinator
Title

508-646-5220
Telephone Number

3. Facility Owner:

Dominion Energy Brayton Point, LLC
Owner or Corporation Name

5000 Dominion Boulevard
Richmond, VA 23060

4. Compliance Contact:

Barry A. Ketschke
Name

Director F&H Station III
Title

508-646-5236
Telephone Number

B. Facility Description

List all units at the affected facility that will be used to demonstrate compliance with 310 CMR 7.29(5).

*__See Attachment A__

C. Affected Facility Unit (Complete Section C for each unit)

		Unit #1	Unit #2	Unit #3	Unit #4
1.	Unit Number	Unit #1	Unit #2	Unit #3	Unit #4
2.	Manufacturer	Combustion Engineering	Combustion Engineering	Babcock & Wilcox	Riley Stoker
3.	Model Number	19407-Type CC	19617 - Type CC	UP-52	1SR
4.	Maximum Continuous Rated Design Capacity:				
	a. Fuel heat Input	2,250 MMBtu/hr	2,250 MMBtu/hr	5,655 MMBtu/hr	4,800 MMBtu/hr
	b. Electrical Output	255 MW (net)	255 MW (net)	633 MW (net)	446 MW (net)
5.	Date of Installation	8/1/1963	7/1/1964	7/29/1969	12/19/1974

The unit specific data supplied in Section C of the ECP for heat input and electrical output are unit ratings and may not be consistent with actual measured CEMS data (which also contains a margin of error). The dates of installation specified in the Section C of the ECP are the dates of initial commercial operation.

D. Compliance Path

1. Will this affected facility comply with the emission standards in 310 CMR 7.29(5) by repowering a unit subject to 40 CFR Part 72 at the affected facility?

   ☐ Yes ☒ No

2. Will any unit at this affected facility be required to receive a plan approval pursuant to 310 CMR 7.02 for construction, substantial reconstruction or alteration of a facility subject to 40 CFR Part 72 for the purpose of compliance with 310 CMR 7.29?

   ☒ Yes ☐ No

   If yes, identify which units.
   Units No. 1, 2 & 3

E. Emissions Control for Nitrogen Oxides, Sulfur Dioxides, Particulate Matter, Mercury, Carbon Dioxide, and Carbon Monoxide (Complete Section E for each unit)

For each unit, indicate Existing Controls (if none, check "None" ONLY):

Unit Number:	Existing Controls:		
Unit #1	☒ Electrostatic Precipitators (ESP) ☒ Low NO_x Burners	☐ SNCR ☒ SCR	☐ None
Unit #2	☒ Electrostatic Precipitators (ESP) ☒ Low NO_x Burners	☐ SNCR ☐ SCR	☐ None
Unit #3	☒ Electrostatic Precipitators (ESP) ☒ Low NO_x Burners	☐ SNCR ☒ SCR	☐ None
Unit #4	☒ Electrostatic Precipitators (ESP) ☒ Low NO_x Burners	☐ SNCR ☐ SCR	☐ None

***See Attachment B for a complete list of existing and proposed controls**

F. Compliance Methods

A description of how the facility will comply with the emission standards contained in 310 CMR 7.29(5) for:

1. NO_x In accordance with the previously approved ECP and plan approvals, Brayton Point has installed Selective Catalytic Reduction (SCR) systems on Units No. 1 and 3. Brayton Point currently utilizes aqueous ammonia solution (19.5% NH_3 concentration maximum) to generate ammonia for injection at the SCR inlet. Aqueous ammonia is stored on-site in four 55,000-gallon storage tanks. These new controls in conjunction with the existing emission controls have resulted in significant reductions in NO_X emissions and allow the facility to continue to comply with the NO_X requirements of 310 CMR 7.29.

2. SO_2 In accordance with the previously approved ECP and plan approvals, Brayton Point has installed Spray Dryer Absorber (SDA) systems on Units No. 1 and 2. Each SDA system is also be equipped with a Fabric Filter (FF) baghouse to control particulate emissions. Additionally, a Dry Scrubber or increased natural gas firing capability is proposed for Unit #3. The Dry Scrubber system will also be equipped with a Fabric Filter (FF) baghouse to control particulate emissions. These new controls in conjunction with the existing emission control strategies have resulted in significant reductions in SO_2 emissions and will allow the facility to continue to comply with the SO_2 requirements of 310 CMR 7.29.

   Please note that in conjunction with the 310 CMR 7.29 control project, the EPRICON system has been removed from Unit 1 and the Chemithon Flue Gas Conditioning system has been removed from Unit 3; the replacement for this flue gas conditioning was described in the previously approved plan approvals.

3. CO_2 (e.g. sequestration, off-site reductions, on-site efficiency improvements)

   See Attachment C.

4. Hg See Attachment D.

G. Optimization Section

A description of how emission reduction measures implemented to achieve reductions in one pollutant will optimize reductions of other pollutants, for example mercury and CO_2.

Mercury:

As required by 310 CMR 7.29, baseline mercury emission stack testing was performed in 2001 and 2002 for Units 1, 2, 3 and 4. Stack test results indicated that combustion in Units 1, 2, and 3 already results in some of the mercury in the coal being emitted as oxidized mercury (Hg) that is well controlled by the existing ESPs. In May 2004, MADEP finalized revisions to 310 CMR 7.29 to incorporate the final mercury rule. The rule prescribes control requirements and/or emission limits for the coal-fired or ash re-burning units and establishes a mercury emissions cap of 146.6 pounds per year from Units 1, 2 and 3 based on the 2001-2002 mercury emission stack test results. As of January 1, 2008, Units 1, 2 and 3 are required to achieve 85% mercury emission control or meet an average total mercury emission rate of 0.0075 lb/GW-hr. As of October 1, 2012, Units 1, 2 and 3 will be required to achieve 95% mercury emission control or meet an average total mercury emission rate of 0.0025 lb/GW-hr.

The combination of Dry Scrubbers, Fabric Filters and PAC has been demonstrated to have higher mercury removal efficiencies than ESPs alone.

CO_2 / Greenhouse gases:

The facility intends to comply with the reduction obligations largely through on-site or off-site projects that reduce, avoid or sequester carbon dioxide (CO_2) or other greenhouse gases. As part of the 310 CMR 7.29 compliance projects that includes the SCR systems and scrubbers, an ash reduction process (ARP) has been installed. The ARP removes unburned carbon from the flyash from the combustion of coal. Removing the excess carbon allows the flyash to meet the specifications for beneficial use as a substitute for Portland cement in making concrete. The availability of this flyash means that less conventional Portland cement will be needed in the concrete mix, thus reducing greenhouse gas emissions associated with that raw materials production.

H. Proposed Schedule

Submit a proposed schedule with interim milestones for each activity leading to compliance with the requirements in 310 CMR 7.29(5). Such information shall include, but not be limited to, sufficient information to allow DEP to consult with the Division of Energy Resources and the Department of Telecommunications and Energy, to address any concerns with potential impacts to the reliability of the New England power system.

***See Attachment E**

I. Signature of the Facility Contact Responsible for Compliance with 310 CMR 7.29

The signature below is required pursuant to 310 CMR 7.29(6)(b)5. Even if an agent has been designated to fill out this form, the responsible official must sign it.

I certify that I have examined the responses provided herein and that to the best of my knowledge they are true and complete.

Diane Leopold
Print Name

Diane Leopold
Signature of Responsible Official

VP F&H Merchant Operations
Position/Title

Dominion Energy Brayton Point, LLC
Representing

August 25, 2008
Date

Attachment A

Brayton Point Station (ORIS Code 1619) consists of four (4) large utility boilers for electrical generation. Units #1, #2, and #3 are primarily fired by coal with No. 6 fuel oil as back-up, and to co-fire natural gas. Unit #4 burns natural gas and No. 6 residual fuel oil. Supporting auxiliary equipment includes coal, oil, and ash handling and storage systems. Brayton Point Station currently has monitoring plans in place that meet the requirements of 40 CFR Part 75.

Of the four units at the facility, Units #1, 2 and 3 will be modified to satisfy the requirements of 310 CMR 7.29 (the Regulation). Unit #4 will not be physically altered. The balance of oil versus natural gas in Unit #4 may be adjusted as needed to ensure that the emissions limitations of the Regulation are met.

The units are currently fueled as follows:

Brayton Point Station Current Fuel Characteristics

Item	Unit 1	Unit 2	Unit 3	Unit 4
Primary Fuel	Coal	Coal	Coal	Residual Oil/ Natural Gas
Backup Fuel	Natural Gas @ 25% MCR	Natural Gas @ 25% MCR	Natural Gas @ 10% MCR	
Backup fuel	Residual Oil @ 100% MCR	Residual Oil @ 100% MCR	Residual Oil @ 100% MCR	

Notes:

(1) Units #1, #2, and #3, also have the capability to combust small quantities of distillate oil.

(2) Maximum Capability Rating (MCR)

(3) The Station also includes four 2.5-MW diesel generators that are used for safe shutdown of the Station in the event of an electrical grid system failure. The generators are also capable of providing a small amount of electrical generation to the grid.

Attachment B

Unit No.	Pollution Control Measures (PCM)
1	Selective Catalytic Reduction (SCR)
	Ash Reduction Process
	R-C Electrostatic Precipitators
	Low NOx Burners with Over-Fire Air
	Management of Lower Sulfur Fuels
	Spray Dryer Adsorber (SDA)
	Fabric Filter Baghouse
	Powder Activated Carbon
2	Ash Reduction Process
	R-C Electrostatic Precipitators
	Low NOx Burners with Over-Fire Air
	Management of Lower Sulfur Fuels
	Epricon Flue Gas Conditioning System
	Spray Dryer Adsorber (SDA)
	Fabric Filter Baghouse
	Powder Activated Carbon
3	Selective Catalytic Reduction (SCR)
	Ash Reduction Process
	R-C Electrostatic Precipitators
	Low NOx Burners with Over-Fire Air
	Management of Lower Sulfur Fuels
	Increase Natural Gas Firing Capability*[1]
	Dry Scrubber*
	Fabric Filter Baghouse*
	Powder Activated Carbon*[2]
4	Electrostatic Precipitators
	Management of Lower Sulfur Fuels
	Low NOx Burners
	Flue Gas Recirculation

[1] – This includes the potential to increase the natural gas firing capability of Unit No. 3 beyond the current limit of 10%. If this option is pursued all necessary permits will be obtained to accommodate the increased natural gas firing capability.

[2] – PAC is currently permitted to be injected upstream of the Unit No. 3 Electro-Static Precipitators. This ECP amendment proposes to also inject PAC upstream of the Dry Scrubber and Fabric Filter on Unit No. 3.

* - Proposed controls addressed in this ECP amendment.

Attachment C

Brayton Point intends to comply with 310 CMR 7.29 CO2 compliance obligations largely through on-site or off-site projects that reduce, avoid or sequester carbon dioxide (CO2) or other greenhouse gases. As part of the 310 CMR 7.29 compliance projects that includes the SCR systems and scrubbers, an ash reduction process (ARP) has been installed. The ARP removes unburned carbon contained from the flyash from the combustion of coal. Removing the excess carbon allows the flyash to meet the specifications for beneficial use as a substitute for Portland cement in making concrete. The availability of this flyash means that less conventional Portland cement will be needed in the concrete mix, thus reducing the greenhouse gas emissions associated with that raw material's production.

Brayton Point currently has a BWP-AQ-27 Application for Certification of Green House Gas (GHG) Credits under MassDEP review to certify the GHG reductions from the ARP process. Once this application is conditionally approved, Brayton point expects to submit one or more verification applications for this project.

Depending on its compliance volume position of GHG Credits, Brayton Point may additionally enter into an agreement(s) with a third party(ies) for the procurement of verified Massachusetts GHG Credits and/or may pay into the Massachusetts GHG Expendable Trust.

Attachment D

The following describes Brayton Point's mercury control strategy:

Annual Mercury Emissions Cap of 146.6 pounds– October 1, 2006

The Station is currently injecting PAC upstream of the existing ESPs on Units 1, 2 and 3 as required to allow collection of mercury in the ESP. The Station has optimized ESP performance[1] for improved mercury capture along with maintaining particulate collection.

0.0075 lb/net GWHr or 85% Mercury Collection Efficiency - January 1, 2008

The Station has installed SDA/FF systems on Units 1 and 2 with PAC injection upstream of the SDA to collect mercury. The PAC injection upstream of the ESPs will serve as a backup. Unit 3 will continue to inject PAC upstream of the ESPs as required to allow collection of mercury in the ESP. The Station will optimize the mercury control on the three units to obtain the most cost-effective combination.

0.0025 lb/net GWHr or 95% Mercury Collection Efficiency - October 1, 2012

In addition to the existing mercury control strategies listed above, with this EPC amendment Brayton Point is proposing to install a Dry Scrubber, Fabric Filter and PAC injection system on Unit No.3 for further control of mercury.

Notes:

[1] - In accordance with Plan Approval 4B06002, optimizing ESP performance may include taking the "old" (Koppers) ESPs out-of-service for Units 1, 2 and/or 3 in order to increase mercury capture with powder activated carbon by the existing "new" Research-Cottrell ESPs.

Attachment E

The following is a description of the milestones achieved to date and the proposed schedule for the revisions to the Emission Control Plan for Brayton Point Station. The following table provides the commercial operation date for each Emission Control installed in accordance with Plan Approval 4B04025.

Table E-1

Emission Control	Commercial Operation Date
Unit No. 1 SCR	December 19, 2006
Unit No. 3 SCR	August 17, 2006
Ash Reduction Process	August 11, 2006

The following table provides the commercial operation date and proposed schedule for each Emission Control installed in accordance with Plan Approval 4B06002.

Table E-2

Emission Control	Commercial Operation Date
Unit No. 1 PAC for existing Precipitators	December 17, 2007
Unit No. 2 PAC for existing Precipitators	December 17, 2007
Unit No. 3 PAC for existing Precipitators	December 17, 2007
Unit No. 1 FF & PAC	April 2008
Unit No. 2 FF & PAC	October 2008
	Proposed Schedule
Unit No. 1 SDA	o Contracts let: 4th Quarter 2005 o Maintenance unit outage: System tie-in occurred during scheduled 1st Quarter 2008 Outage o Construction commenced: 3rd Quarter 2006 o Systems in service / shakedown period: 2nd/3rd Quarter 2008 o Systems performance testing: 4th Quarter 2008 o Systems commercial operation: 4th Quarter 2008
Unit No. 2 SDA	o Contracts let: 4th Quarter 2005 o Maintenance unit outage: System tie-in occurred during scheduled 3rd Quarter 2007 Outage o Construction commenced: 4th Quarter 2007 o Systems in service / shakedown period: 1st/2nd/3rd Quarter 2008 o Systems performance testing: 4th Quarter 2008 o Systems commercial operation: 4th Quarter 2008

The following table provides the proposed schedule for the Emission Control that will be included in the Plan Approval that will be submitted on or before September 2, 2008 for the Cooling Tower Project and the Unit No. 3 Dry Scrubber, Fabric Filter and Powder Activated Carbon Projects.

Table E-3

Emission Control	Proposed Schedule
Unit No.3 Dry Scrubber, FF and PAC	o Contracts let: 4th Quarter 2010 o Maintenance unit outage: System tie-in will occur during scheduled 3rd /4th Quarter 2013 Outage o Construction commences: 4th Quarter 2010 o Systems in service / shakedown period: 4th Quarter 2013 o Systems performance testing: 4th Quarter 2013 / 1st Quarter 2014 o Systems commercial operation: 1st Quarter 2014

In accordance with the Department's letter dated November 26, 2003, Brayton Point Station has proceeded with the proposed emission control plan in a two-phase approach. Phase one included the controls listed in Tables E-1 and E-2 while Phase Two will consist of the controls listed in Tables E-3.

APPENDIX E

Noise Protocol and Analysis
(Plan Approval Only)

SOUND LEVEL MONITORING and PREDICTION PROTOCOL

Brayton Point Station

Somerset, Massachusetts

Prepared for:

Dominion Energy Brayton Point, LLC
One Brayton Point Road
Somerset, MA 02726

Prepared by:

Shaw Environmental, Inc.
11 Northeastern Boulevard
Salem, NH 03079

August 25, 2008

SOUND LEVEL PROTOCOL
FOR BRAYTON POINT STATION NATURAL DRAFT COOLING TOWERS AND UNIT 3 DRY SCRUBBER

Introduction

Dominion Energy Brayton Point, LLC (Dominion) is proposing to install two Natural Draft Cooling Towers for Units 1-4, and a dry flue gas scrubber (dry scrubber) for Unit 3, at the Brayton Point Station (Station). Shaw Environmental has been requested to prepare this sound level monitoring and prediction protocol to support the air permits for these new systems. The test protocol will be used to determine compliance of the Station, cooling towers and dry scrubbers, with their Conditional Approval noise requirements.

The Cooling Tower Project consists of two natural draft cooling towers and supporting equipment that will be installed to convert the Station from once-through cooling to closed-cycle cooling. The two natural draft cooling towers will each be approximately 500 feet tall, and approximately 222 feet diameter at the exhaust exit. Each will be designed to circulate approximately 360,000 gallons per minute of water.

Dominion is also proposing a modification to its existing Massachusetts 310 CMR 7.02 Plan Approval No. 4B06002 (Air Project) for sulfur dioxide control on the Unit 3 boiler. Dominion intends to install a dry scrubber system for Unit 3 which will be similar to the air pollution control systems recently installed on Units 1 and 2.

The Mass DEP has the authority to regulate noise under 310 CMR 7.10, which is part of the Commonwealth's air pollution control regulations. Under the DEP regulations, noise is considered to be an air contaminant and, thus, 310 CMR 7.10 prohibits "unnecessary emissions" of noise. Mass DEP administers this regulation through Noise Policy DAQC 90-001 dated February 1, 1990. The policy limits a source to a 10-dBA increase in the measured ambient sound level (L90) at the nearest residences.

The ambient level for this project was measured late at night, prior to the Air Project , with the Station operating. For a source which will or could operate 24-hour per day, the ambient level typically is measured during the quietest nighttime period (midnight to 4 a.m.). The Mass DEP policy further prohibits "pure tone" conditions where one octave band level is 3 dB or more above the two adjacent octave band levels.

The Plan Approval Application for the pollution control modifications identified the existing ambient noise levels based on noise measurements. It is intended to follow precedent by using the ambient levels identified in Section 5 of the April 2003 document *Noise Control Supplement to 310 CMR 7.02 Plan Approval Application* as part of the 310 CMR 7.29 Implementation at Brayton Point Generating Station. These ambient baseline levels are provided in the last column of Table 1, below.

Table 1 also describes the specific measurement locations. The locations and numbers correspond to those used previously by TRC in the Air Plan Approval Application for the Air Project. The last column of this Table provides the ambient measurements in terms of L_{90} at these positions. This is the statistical value of the measured sound that is exceeded for 90% of the time; it is the value required by Mass DEP for specifying ambient noise.

Table 1 Locations and Baseline Ambient Sound Levels.

Location		Description	Night time L_{90}
Number	Name		
1	Home St	At the intersection of Kenneth Ave. *This represents the nearest residents north of the site.*	38
2	Jackson Ave	Near the intersection of Brayton Point Road. *This elevated location represents the nearest residents northeast of the site.*	42
3	Perkins St	At the intersection of Carey Street. *This represents the nearest residents east of the site.*	47
4	Bayside Ave	Near the shoreline of the Lees River. *This represents the nearest residents west of the site.*	45
5	New Gardners Neck Rd	In Swansea, near the intersection of Mattapoisett Ave. *This represents the nearest residents southwest of the site.*	37

Sound Level Modeling

The expected sound levels from the Natural Draft Cooling Towers and the Unit 3 Dry Scrubber System will be predicted using the SoundPlan computer program. The program takes into account the primary existing and future noise sources, reflections from ground and water, terrain elevation, ground attenuation, the loss from barriers and buildings, as well as atmospheric absorption and hemispherical radiation. The model will be run for typical downwind conditions.

Shaw Environmental will integrate vendor supplied sound level data as well as data from Shaw's historical database for the proposed cooling towers and dry scrubber into its existing SoundPlan computer model for the Brayton Point Station, together with appropriate mitigation. Since the existing station sound model contains a wet scrubber for the Unit 3 plant, this will be replaced with a dry scrubber system.

The modeling will investigate the various mitigation options, with the purpose of achieving the Mass DEP criterion of ambient plus 10 dBA. Based on the results of the sound modeling, Dominion will implement the appropriate mitigation techniques to meet the noise criterion.

Compliance Sound Survey

A post-construction sound survey will be carried out to verify that the combined sound levels of the existing plant, cooling towers and air pollution control systems, during normal, continuous operation, do not exceed the MADEP criterion of ambient + 10 dBA.

The measurements will be made with a precision Type 1 sound level meter(s) with statistical octave or 1/3 octave capability.

The sound level meter(s) shall be field calibrated before and after each survey.

The meter(s) shall have current calibration certificates traceable to the National Institute of Standards and Technology (NIST).

The measurements will be undertaken for a period of 30 minutes at each of the locations identified in Table 1. Statistical data shall be collected including the Minimum, L_{90}, L_{50}, L_{10} and L_{eq}.

The meter(s) shall be paused during any intrusive noise, such as a local passing vehicle, or aircraft over-flight, or these events shall be excluded from the data at the time of evaluation.

Weather conditions shall be noted during the survey, including wind speed and direction, percent cloud cover, and relative humidity.

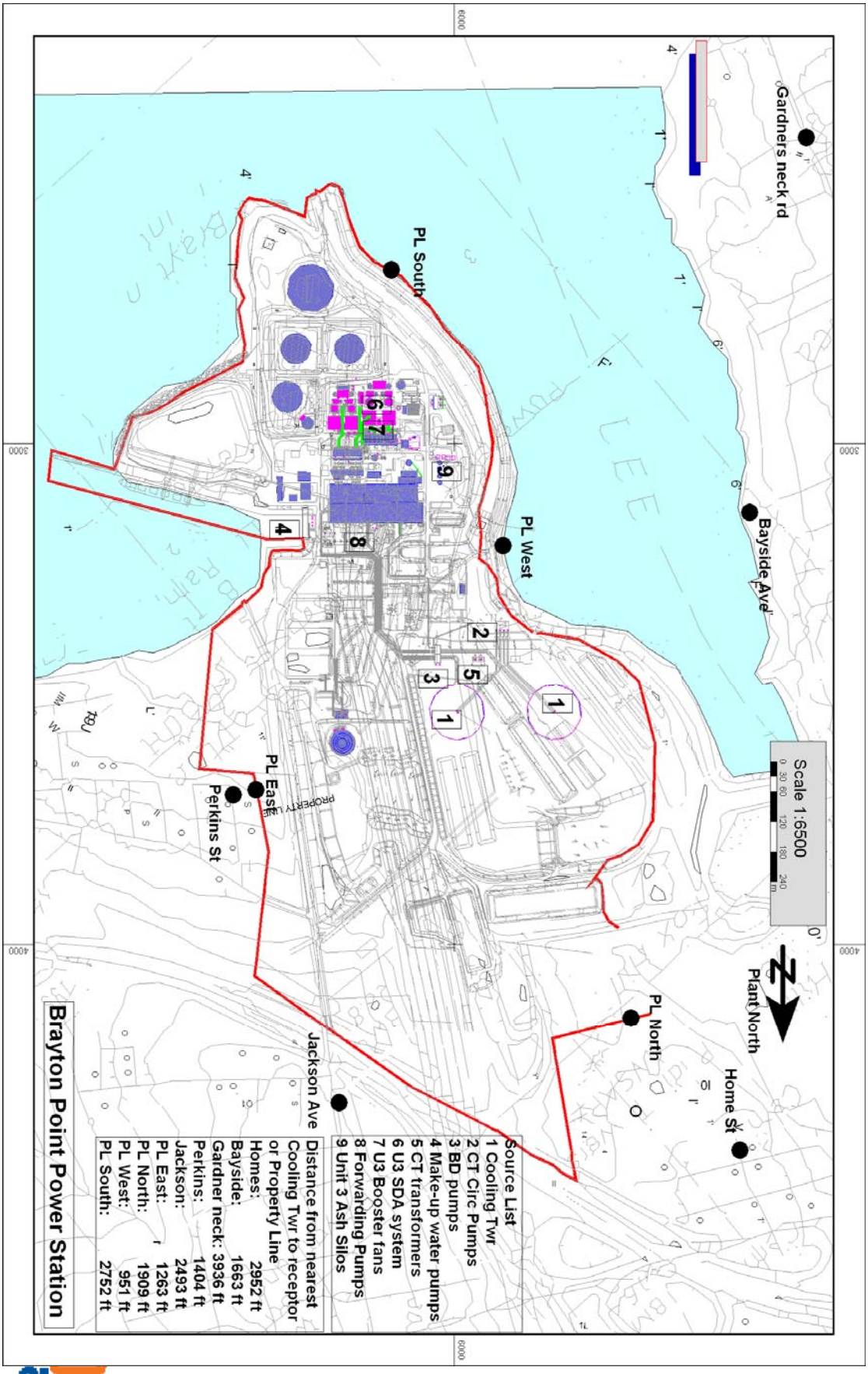
The weather conditions for the Compliance Sound Level Survey should be similar to those present during the initial ambient sound level survey.

The noise sources controlling the L_{90} readings shall be noted, along with other audible sources.

The measurements shall be saved in the instrument's internal memory, and downloaded to a computer for analysis.

At locations where the Interstate I-195 significantly impacts the sound level, a sampling methodology will be used which directly determines this traffic impact on the L_{90}.

The following figure shows the Station and the five residential receptors.


Gardners neck rd
PL South
PL West
Bayside Ave
PL East
Perkins St
Jackson Ave
PL North
Home St
Plant North
Scale 1:6500
Brayton Point Power Station
Source List
1 Cooling Twr
2 CT Circ Pumps
3 BD pumps
4 Make-up water pumps
5 CT transformers
6 U3 SDA system
7 U3 Booster fans
8 Forwarding Pumps
9 Unit 3 Ash Silos
Distance from nearest
Cooling Twr to receptor
or Property Line
Homes: 2952 ft
Bayside: 1663 ft
Gardner neck: 3936 ft
Perkins: 1404 ft
Jackson: 2493 ft
PL East: 1263 ft
PL North: 1909 ft
PL West: 951 ft
PL South: 2752 ft

NOISE REPORT

Brayton Point Station

Somerset, Massachusetts

Prepared for:

Dominion Energy Brayton Point, LLC

One Brayton Point Road

Somerset, MA 02726

Prepared by:

Shaw Environmental, Inc.

11 Northeastern Boulevard

Salem, NH 03079

August 25, 2008

NOISE REPORT – ATTACHMENT TO BWP AQ SFP-3

1 Introduction

The United States Environmental Protection Agency, Region 1 (EPA) has directed Dominion Energy Brayton Point, LLC (Brayton Point) to convert from Open Cycle Cooling to Closed Cycle Cooling for generating Units 1-4 at the Brayton Point Station. To accomplish this Brayton Point will be installing a cooling tower system consisting of up to two Natural Draft Cooling Towers. In addition, a Dry Scrubber with Fabric Filters will be installed on Unit 3 to complete the air pollution control projects.

Noise from the Unit 3 dry scrubber and cooling towers will be subject to Massachusetts Department of Environmental Protection (Mass DEP) plan approval regulations (310 CMR 7.02). The proposed equipment will be designed to minimize acoustic impact on the environment consistent with allowed increase over baseline ambient sound levels. The following report evaluates sound produced by the proposed Unit 3 Scrubber and cooling towers in light of existing environmental sound levels.

2 Noise Regulations and Guidelines

The Mass DEP has the authority to regulate noise under 310 CMR 7.10, which is part of the Commonwealth's air pollution control regulations. Under the Mass DEP regulations, noise is considered to be an air contaminant and, thus, 310 CMR 7.10 prohibits "unnecessary emissions" of noise.

Mass DEP administers this regulation through Noise Policy DAQC 90-001 dated February 1, 1990. The policy limits a source to a 10-dBA increase in the ambient sound measured (L_{90}) at the property line for the Project and at the nearest residences. For developed areas, the Mass DEP has utilized a "waiver provision" at the property line in certain cases. This is appropriate when are there are no noise-sensitive land uses at the property line and the adjacent property owner agrees to waive the 10-dBA limit.

3 Existing Ambient Sound Levels

3.1 Noise Measurement Methodology

The Plan Approval Application for the pollution control modifications identified existing ambient noise levels based on late night noise measurements which were obtained in 2003. These measurements served as the baseline ambient sound levels for the environmental control projects. Dominion proposes to rely on these prior measurements to identify the ambient noise level for the Unit 3 dry scrubber and the cooling tower project. Specifically, Brayton Point proposes to use the ambient noise levels identified in Section 5 of the April 2003 document *Noise Control Supplement to 310 CMR 7.02 Plan Approval Application as part of 310 CMR 7.29 Implementation at Brayton Point Generating Station*.

The specific measurement locations are described below and correspond to the scheme used in the Air Plan Approval Application for the Brayton Point Air Pollution Control Retrofit program.

- Location 1: Home Street at the intersection of Kenneth Avenue. This represents the nearest residents north of the site.
- Location 2: Jackson Avenue, near the intersection of Brayton Point Road. This represents the nearest residents northeast of the site and is an elevated location.
- Location 3: Perkins Street at the intersection of Carey Street. This represents the nearest residents east of the site.
- Location 4: Bayside Avenue in Swansea, near the shoreline of the Lees River. This represents the nearest residents west of the site.
- Location 5: New Gardners Neck Road in Swansea, near the intersection of Mattapoisett Avenue. This represents the nearest residents southwest of the site.

The measured nighttime L_{90} sound levels (dBA) at these locations are shown in the Table 1 column 2 below.

3.2 Sound Level Prediction Methodology using SoundPlan Noise Model

The station's previous SoundPlan noise model was modified to replace the previously modeled Wet Scrubbers with Dry Scrubbers, and the Mechanical Draft Cooling Towers with 2 Natural Draft Towers. The noise model and noise mitigation includes the recently completed ARP system and the dry scrubbers on Units 1 and 2 with 6 inches of acoustical insulation on the Booster Fan casings and ducts. The 6 inch AR insulation is 6 to 8 lb/cu ft density mineral wool with 20 gauge galvanized steel lagging with 1/16 in rubber bonded to the lagging.

The expected sound levels from proposed equipment were calculated using the SoundPlan computer model. This model uses the CONCAWE and ISO 9613-2 industrial standards for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation). The Sound Plan model allows for octave band calculation of noise from multiple noise sources, as well as computation of diffraction around building edges, and reflections off water surfaces and solid ground areas. In this manner, all significant noise sources and geometric propagation effects are accounted for in the noise modeling. Terrain height contour elevations were imported into the model. The model was run with standard meteorology conditions of 20 degrees C (68 degrees F), 50% relative humidity, and downwind conditions in all directions. Ground attenuation credit is used by the model where appropriate, in accordance with ISO 9613-2.

The Sound Plan model was run to calculate single point facility sound levels for nine selected locations including property lines (four cardinal directions), and the nearest residences. Receptor sound levels for each of the sources listed above were calculated using the following data and corrections:

- Source sound power level (in octave bands),
- Source directivity,
- Distance between source and receptor,
- Air absorption (20C and 50 percent relative humidity),
- Ground effect,
- Reflections from building and barrier structures,
- Barrier attenuation (from earth contours and or man-made structures).

The Natural Draft Cooling Tower sound levels were predicted with the SoundPlan noise model using the EEI (*Electric Power Plant Environmental Noise Guide, Edison Electric Institute, 1978)* methodology for ND Tower prediction. The noise methodology contained in the EEI Guide is derived from extensive measurement programs at a variety of electric generation facilities. These SoundPlan predicted levels agreed with the sound level vs distance curves which Stone & Webster (S&W) previously generated from measurements taken from the rim out to distances of 2000'-3000' on 12 large electric utility domestic ND cooling towers.

The S&W measurements were taken in the 1970s to develop a new tower noise prediction methodology because the existing Ellis technique generated levels 10 dBA higher than actual. The S&W data set included towers from 140,000 gpm to 600,000 gpm. The results of this research were published in several journals including the Proceeding of the American Power Conference, 1976. The study also included a similar analysis of mechanical draft cooling towers.

The EEI methodology, published in their Power Plant Environmental Noise Guide, is similar to the S&W methodology. They used S&W's 12 tower data set, plus data by others from 11 additional towers, and developed standard tower sound power levels. (The sound power levels are the acoustic source strength and are used in noise models such as SoundPlan.) These EEI sound power levels, when used in the SoundPlan noise model, generate farfield sound levels which agreed with both S&W's farfield measurements, and the added EEI measurements.

4 Proposed Equipment and Operational Noise

4.1 Cooling Tower System

The cooling tower system will consist of up to two hyperbolic natural draft towers of the counter flow design each approximately 365 ft. diameter at the base and 500 ft. tall. The maximum

flowrate through each tower will be 360,000 gpm. These towers will be located on the structural fill area to the north of the generating units and to the west of the transmission lines.

Makeup Water Pumps

Four new 50% capacity makeup water pumps will be installed inside the existing circulating water pump structure for Units 3 (two in each bay). These will provide service water for the entire station from the Taunton River side. The service water will then be reused as make-up to the cooling towers. Preliminary design parameters for the vertical pit type makeup water pumps are: 4 @ 12,000 gpm and 900 HP each located inside the existing Unit 1-3 screen house

Cooling Tower Pumps

The circulating water system for the cooling towers consists of a cooling tower pump station located at the northern end of the new lower basin structure which will convey heated water to the cooling tower fill distribution systems. The pump station will contain four vertical wet pit type cooling tower pumps. Preliminary design parameters for the cooling tower pumps are: 4 @ 180,000 gpm and 5,300 HP each.

Blowdown Pumps

Preliminary design parameters for the two vertical pit type blowdown pumps which will be located outside are 2 @ 24,000 gpm and 800 HP each.

Forwarding Pumps (for blowdown cooling)

Preliminary design parameters for the two vertical pit type forwarding pumps which will be located outside are: 2 @ 24,000 gpm and 800 HP each.

Auxiliary Power Transformers

The conceptual design of the cooling tower electrical system includes two 15/20 MVA, 115-4.16kV outdoor transformers. According to NEMA TR-1, the approximate sound level would be 74 decibels each at full load. In actual operation both transformers do not operate at full load so the two likely scenarios are both operating at partial load (approx 72 decibels each) or one operating at full load (74 decibels) and the other de-energized

Existing Cooling Water Pumping Systems

Existing circulating water pumps (CWS) for Units 1-4 open-cycle cooling system will be removed and replaced with the above components.

4.2 Unit 3 Air Pollution Control System

The air pollution control system proposed for Unit 3 will be a dry type flue gas scrubber system similar in concept to the dry scrubbers recently installed on Units 1 and 2. The system will be configured as two 50% capacity parallel scrubber and fabric filter trains each similar in size to a Unit 1 or Unit 2 scrubber and fabric filter system. The noise mitigation will also be similar to units 1 and 2 with 6 inches of acoustical insulation on the Booster Fan casings and ducts. The 6 inch AR insulation is 6 to 8 lb/cu ft density mineral wool with 20 gauge galvanized steel lagging with 1/16 in rubber bonded to the lagging.

5. Noise Modeling Results

Table 1 presents the modeled results at the Project's five residential receptor locations with the new cooling towers assuming a 10 dBA mitigation on the Cooling Tower pumps. Table 1, Column 3 (with Cooling Towers) summarizes the project calculated levels for:

(I) cooling towers only and;

(II) levels with the Ash Reduction Process (ARP) system, the Unit 1, 2 and 3 scrubbers, and the cooling towers. The Unit 3 scrubber was assumed to have the same 6 inch AR insulation mitigation as that installed on Units 1 and 2.

Column 4 provides the Cumulative Future sound levels including the 2006, 2007 and 2012 environmental projects. This is the sum of the Column 2 Measured Baseline levels, plus the Column 3(II) calculated project levels.

Column 5 gives the increase over the 2003 measured baseline. Column 6 gives the allowable increase of 10 dB over the measured baseline with the natural draft cooling towers in the 2012 model. The calculated project sound level increase at Bayside of 9.2, is 0.8 dBA below the required level of 55 dBA (Ambient of 45 plus 10 dBA). The next highest increase is at Gardners Neck Road, which is 1.8 dBA below the required level of 47 dBA (Ambient of 37 plus 10 dBA). The level at Perkins is lower than what might be expected because of the significant shielding afforded by the existing earthen barrier along the Brayton Point Station entry road.

Table 1: Brayton Point 2012 Noise Modeling Results Summary (dBA)

1 Receptor	2 Measured Late Night L_{90} Baseline	3 Calculated Project Noise (with NDCT)		4 Cumulative Future Noise Level (Ambient + Project)	5 Increase Over Baseline	6 Allowed increase with ND cooling towers
		I Cooling Towers only	II 2006, 2007, 2012 Project plus Cooling Towers	2012 Total	2012 Total	2012
Home St.	38	41.8	41.9	43.4	5.4	10
Jackson Ave	42	44.3	45.1	46.8	4.8	10
Perkins St	47	41.8	46.2	49.6	2.6	10
Bayside Ave	45	52.6	53.6	54.2	9.2	10
Gardners Neck	37	41.5	44.5	45.2	8.2	10

The Mass DEP conditional approval issued 6/27/2003 and revised 8/22/2005 and 12/20/2006 states "A post construction compliance sound survey shall be conducted to define actual sound impacts in comparison to impacts proposed in the application approved herein." Brayton Point will quantitatively evaluate whether the proposed equipment will meet the predicted noise levels within this report. Brayton Point will rely on a comparison between the installed Unit 1 and 2 SDA/FF equipment and the equipment proposed for Unit 3 for its quantitative evaluation.

Examination of the octave band sound pressure levels from each cooling tower indicates that there will be no pure tones according to the Mass DEP noise policy at any of the receptor locations.

6 Conclusion

Results of the noise model indicate that the new ambient levels (Unit 3 scrubber and the cooling tower system with mitigation) plus existing 2003 ambient levels will be less than 10 dBA at all five locations.

There will be no pure tones according to the Mass DEP noise policy at any of the receptor locations for either the mitigated or unmitigated condition.

APPENDIX F

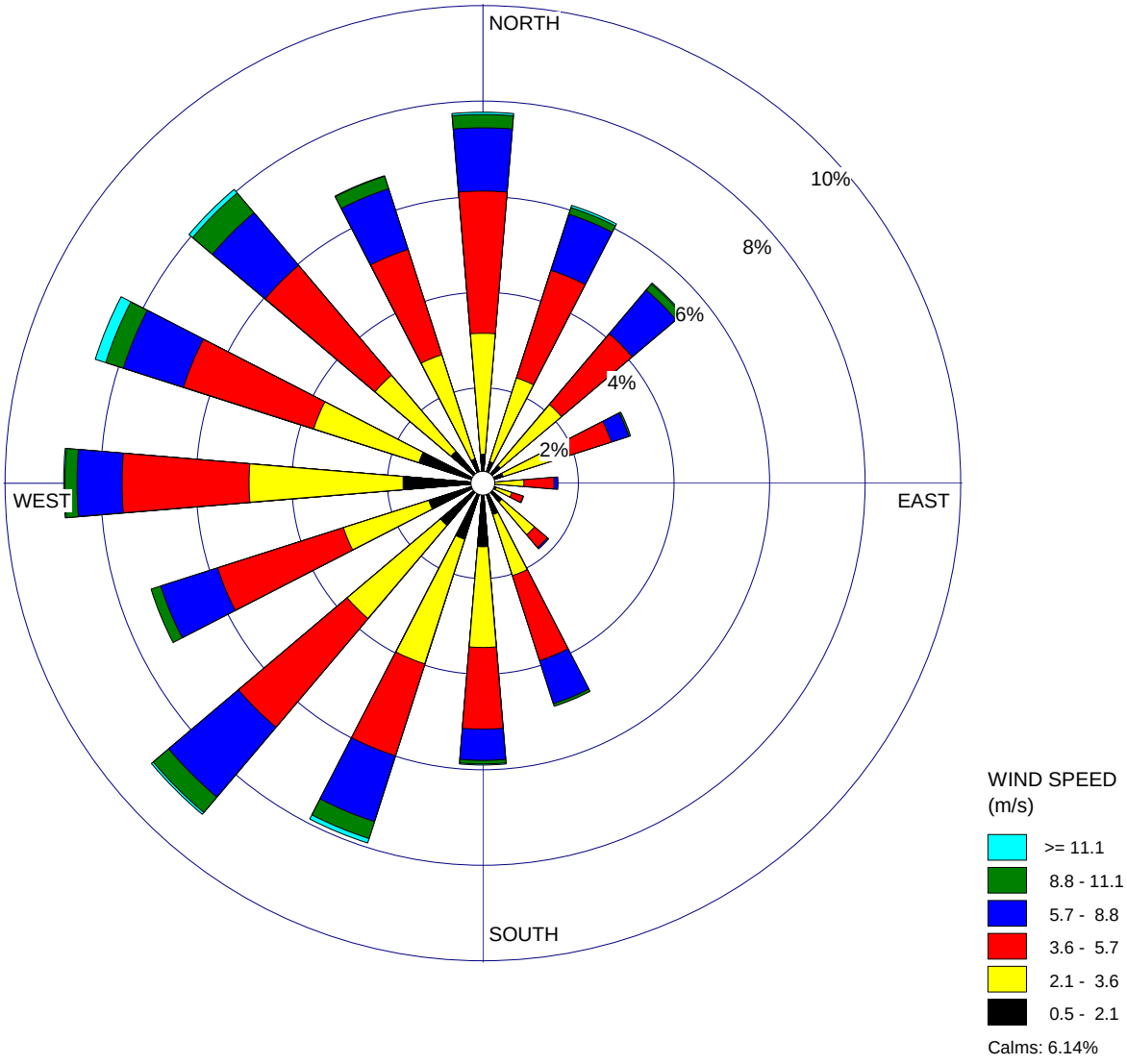
Wind Roses

WIND ROSE PLOT:

2002 Annual Wind Rose at T.F. Green Airport, Providence, RI

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:

Prepared for
Dominion - Brayton Point

DATA PERIOD:

2002
Jan 1 - Dec 31
00:00 - 23:00

COMPANY NAME:

CALM WINDS:

6.14%

TOTAL COUNT:

8274 hrs.

AVG. WIND SPEED:

4.14 m/s

Epsilon ASSOCIATES INC.

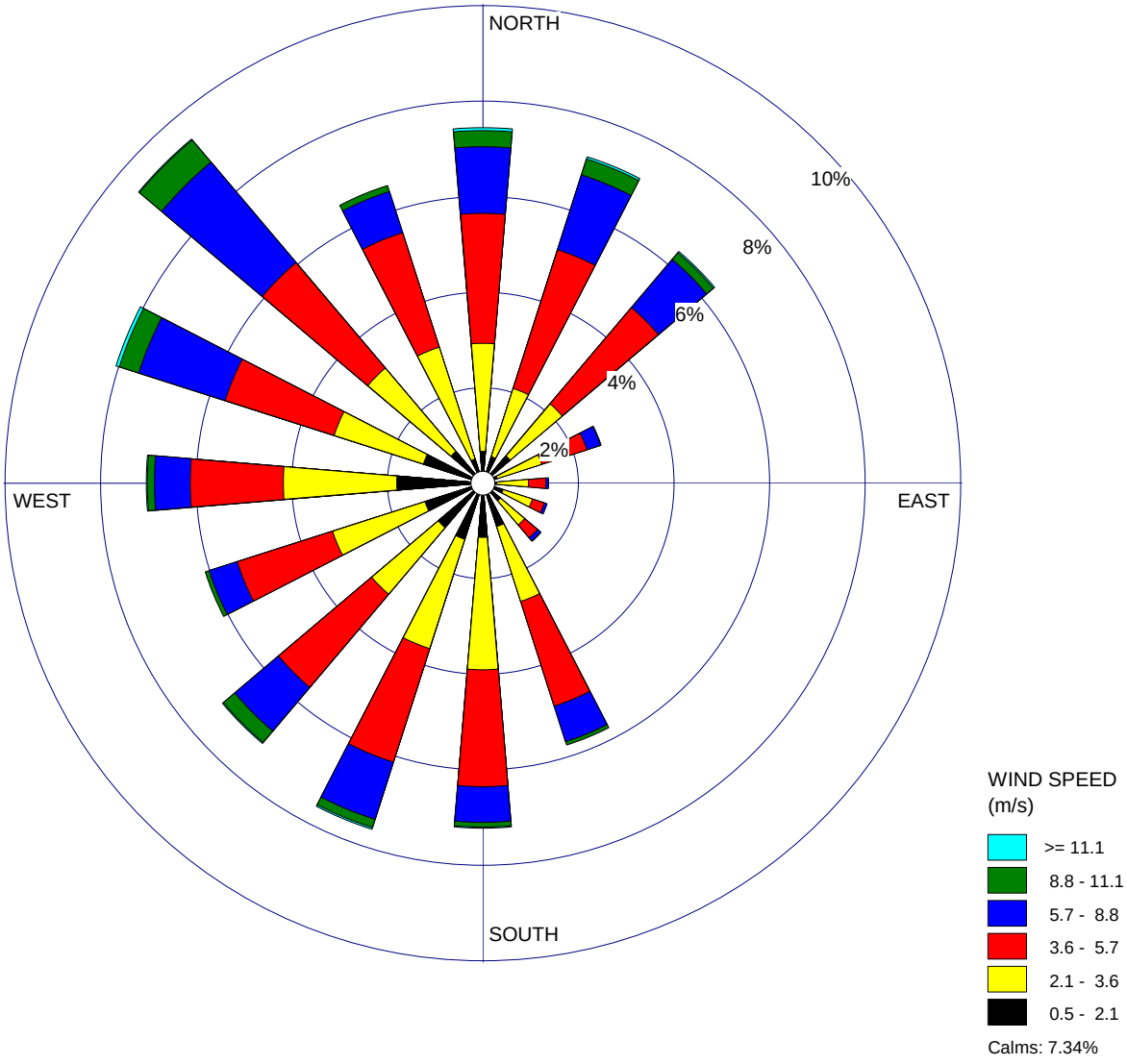
2352

WIND ROSE PLOT:

2004 Annual Wind Rose at T.F. Green Airport, Providence, RI

DISPLAY:

Wind Speed
Direction (blowing from)



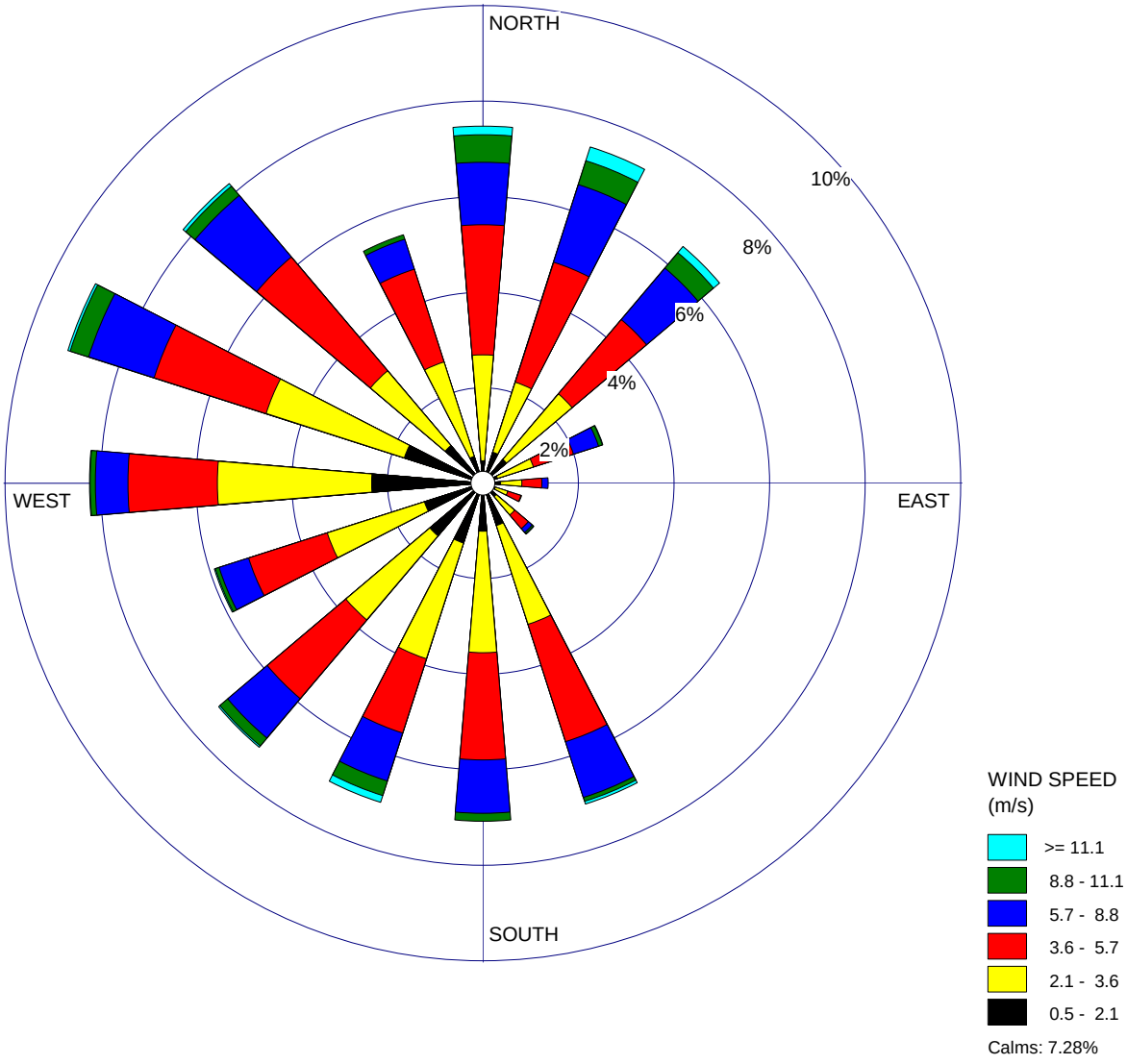
COMMENTS: Prepared for Dominion - Brayton Point	DATA PERIOD: **2004** **Jan 1 - Dec 31** **00:00 - 23:00**	COMPANY NAME:	
	CALM WINDS: **7.34%**	TOTAL COUNT: **8284 hrs.**	Epsilon ASSOCIATES INC.
	AVG. WIND SPEED: **4.06 m/s**		PROJECT NO.: **2352**

WIND ROSE PLOT:

2005 Annual Wind Rose at T.F. Green Airport, Providence, RI

DISPLAY:

Wind Speed
Direction (blowing from)



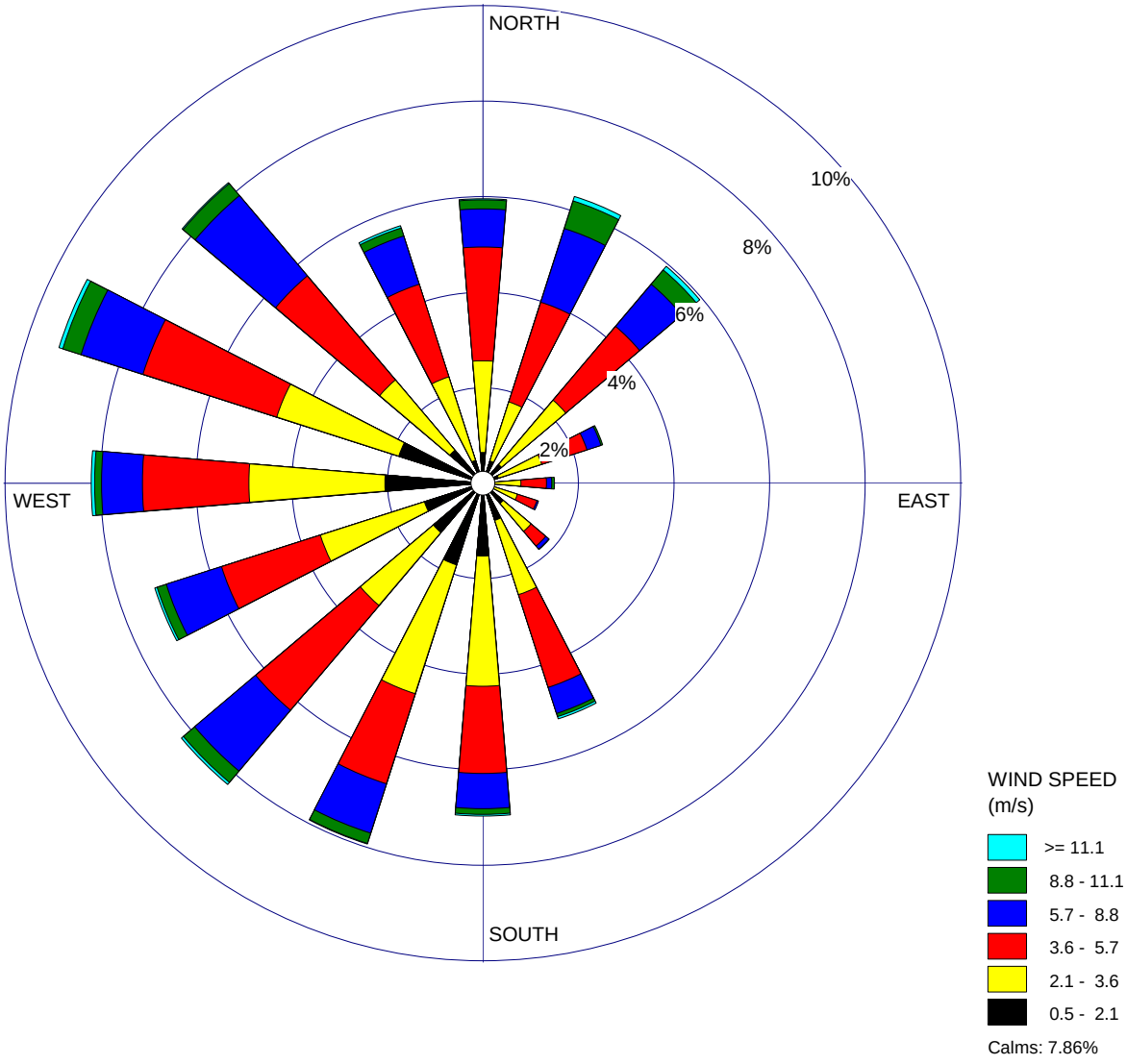
COMMENTS: Prepared for Dominion - Brayton Point	DATA PERIOD: **2005** **Jan 1 - Dec 31** **00:00 - 23:00**	COMPANY NAME:	
	CALM WINDS: **7.28%**	TOTAL COUNT: **8355 hrs.**	Epsilon ASSOCIATES INC.
	AVG. WIND SPEED: **4.06 m/s**		PROJECT NO.: **2352**

WIND ROSE PLOT:

2006 Annual Wind Rose at T.F. Green Airport, Providence, RI

DISPLAY:

Wind Speed
Direction (blowing from)



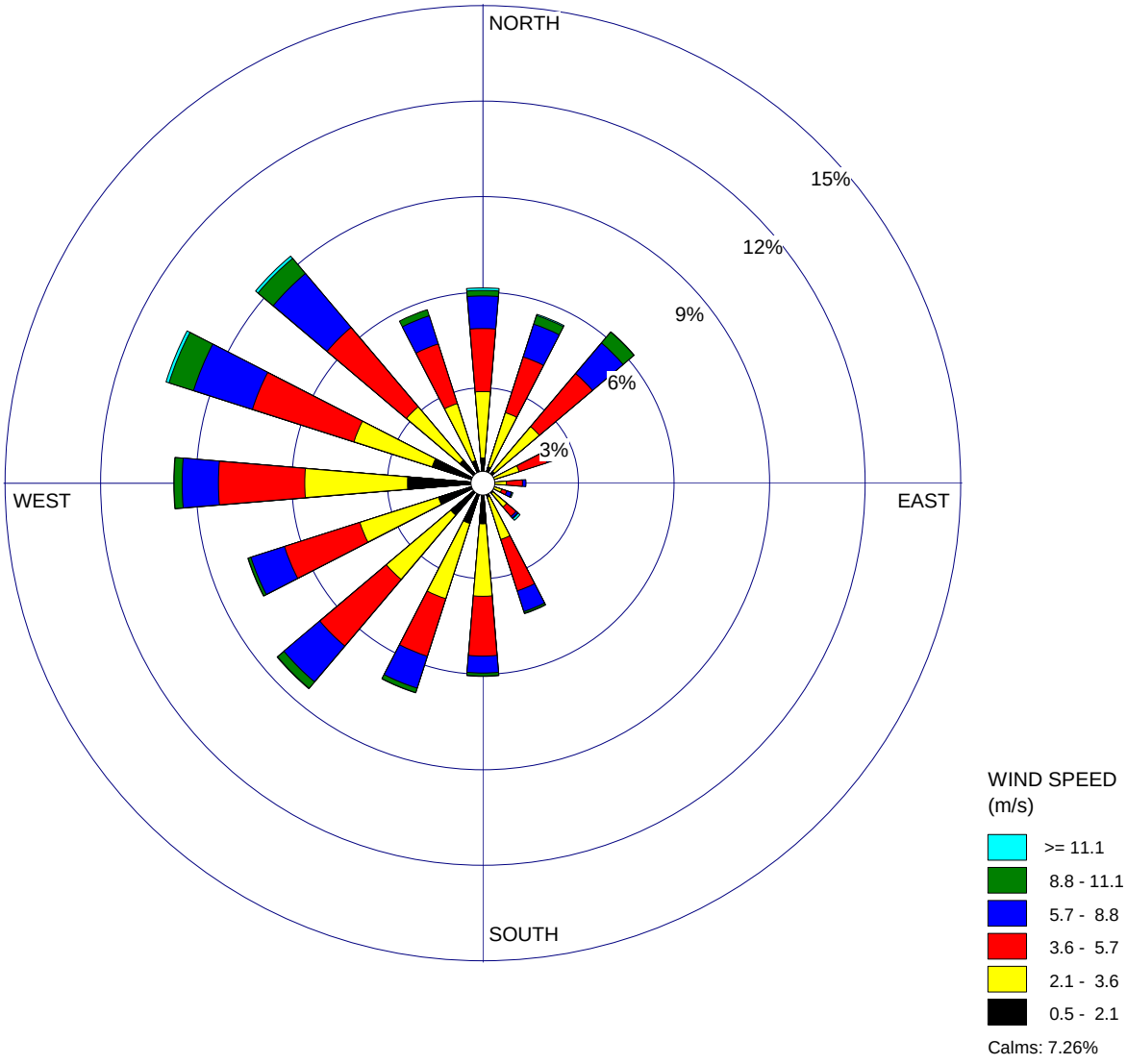
COMMENTS: Prepared for Dominion - Brayton Point	DATA PERIOD: **2006** **Jan 1 - Dec 31** **00:00 - 23:00**	COMPANY NAME:	
	CALM WINDS: **7.86%**	TOTAL COUNT: **8414 hrs.**	Epsilon ASSOCIATES INC.
	AVG. WIND SPEED: **4.02 m/s**		PROJECT NO.: **2352**

WIND ROSE PLOT:

2007 Annual Wind Rose at T.F. Green Airport, Providence, RI

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS: Prepared for Dominion - Brayton Point	DATA PERIOD: **2007** **Jan 1 - Dec 31** **00:00 - 23:00**	COMPANY NAME:	
	CALM WINDS: **7.26%**	TOTAL COUNT: **8357 hrs.**	Epsilon ASSOCIATES INC.
	AVG. WIND SPEED: **4.05 m/s**		PROJECT NO.: **2352**

APPENDIX G

Meteorological Conditions for
Controlling Predicted Impact Periods

APPENDIX G METEOROLOGICAL CONDITIONS

Predicted concentrations for the combined impact from Brayton Point Station (2 natural draft cooling towers and 4 main stacks) are shown in Table 5-8 of the Air Plan Application. A discussion of the meteorological conditions in the area (based on TF Green Airport observations) for the periods presented in Table 5-8 are presented below (in the order that they appear in the table).

August 15, 2005 (PM_{10} 24-hr H2H)

This 24-hour period was characterized by winds from the NNE to NE sector ranging from 3.1 to 7.2 m/s throughout the day. It was a cloudy day with relative humidity ranging from 73% to 91%. The morning hours were stable, with an unstable midday, then characterized by a stable atmosphere again after sunset.

November 13, 2006 ($PM_{2.5}$ 24-hr H8H)

This 24-hour period can be characterized as a cloudy day with winds from the NNE to NE at 4.6 to 7.7 m/s. Hour 10 and hour 18 had missing parameters this day.

May 10, 2006 Hour ending 9 (SO_2 3-hr H2H), Hour ending 16 (CO 8-hr H2H)

May 10, 2006 was a cloudy day. The 3-hour period (hrs 7, 8 and 9) was characterized by fairly strong winds (9.3 m/s) from the sector between NNE and NE. There was upward heat flux causing an unstable atmosphere. This continues through the daytime hours (hrs 9-16), and the winds were steady out of the NNE to NE with speeds ranging from 6.7 to 9.3 m/s.

May 24, 2005 (SO_2 24-hr H2H)

May 24,2005 was a cloudy, humid day. The relative humidity remained above 87% for the entire day. The day was characterized by light winds (1.5 m/s) from the south giving way to increasing winds (up to 11.3 m/s) as they shifted to the east and northeast.

September 9, 2002 Hour 9 (CO 1-hr H2H)

This hour was characterized by light winds (1.5 m/s) from the south. The relative humidity was 61% with a near neutral atmosphere. Three tenths of the sky had cloud cover.

APPENDIX H

VISCREEN Model Output

Visual Effects Screening Analysis for
Source: BraytonPt 2 Natural Draft CTs & Unit 3
Class I Area: Lye Brook

*** Level-1 Screening ***

Input Emissions for

Particulates	68.25	G	/S
NOx (as NO2)	320.64	G	/S
Primary NO2	.00	G	/S
Soot	.00	G	/S
Primary SO4	.00	G	/S

**** Default Particle Characteristics Assumed

Transport Scenario Specifications:

Background Ozone:	.04 ppm
Background Visual Range:	40.00 km
Source-Observer Distance:	213.10 km
Min. Source-Class I Distance:	213.10 km
Max. Source-Class I Distance:	219.70 km
Plume-Source-Observer Angle:	11.25 degrees
Stability:	6
Wind Speed:	1.00 m/s

R E S U L T S

Asterisks (*) indicate plume impacts that exceed screening criteria

Maximum Visual Impacts INSIDE Class I Area
Screening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	84.	213.1	84.	2.00	.074	.05	.000
SKY	140.	84.	213.1	84.	2.00	.020	.05	-.001
TERRAIN	10.	84.	213.1	84.	2.00	.003	.05	.000
TERRAIN	140.	84.	213.1	84.	2.00	.001	.05	.000

Maximum Visual Impacts OUTSIDE Class I Area
Screening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	75.	206.3	94.	2.00	.077	.05	.000
SKY	140.	75.	206.3	94.	2.00	.021	.05	-.001
TERRAIN	10.	65.	198.8	104.	2.00	.004	.05	.000
TERRAIN	140.	65.	198.8	104.	2.00	.001	.05	.000

APPENDIX I

SACTI Salt Deposition Modeling

APPENDIX J SACTI SALT DEPOSITION MODELING

1 Overview

As described in the air plan approval/PSD permit application (Section 2.3), water droplets can escape the cooling towers as drift, and salt in that drift can deposit in the vicinity of the cooling towers. This analysis quantifies the potential salt deposition rates, and compares to available threshold values.

2 Model Selection

The Seasonal Annual Cooling Tower Impact (SACTI) model (version dated 11-1-90) was used to predict salt deposition rates. A journal article (Policastro et al., 1994) provides an excellent description of the fundamentals of the code and a description of the model evaluation study. SACTI drift deposition algorithms have been validated against field data[1].

SACTI accounts for the thermodynamic and latent heat effects of the moist warm cooling tower plume. It treats the influence of the cooling tower structure itself on the airflow and the cooling tower plume rise, and accounts for the orientation of the line of cooling towers to the wind direction. However, SACTI does not account for the effects of other buildings around the cooling towers, nor for the effects of terrain.

SACTI uses representative wind directions to compare the orientation of the towers with the wind direction and therefore to assess plume merging scenarios. The model accounts for enhanced plume merging when the wind is lined up with the orientation of the cooling tower cells.

Minimum required inputs are hourly surface meteorological data for at least one year, corresponding mixing depths from twice-daily radiosondes, cooling tower geometry, vertical speed (or momentum flux) from the tower mouth, total thermal output of the cooling tower to the atmosphere, and drift drop mass flux, chemical composition, and drop size distribution.

SACTI is a hybrid statistical-deterministic model which identifies a series of combinations of meteorological variables that represent the full range of atmospheric conditions affecting plume dispersion and drift deposition over a time period of a season or a year. 16 wind direction sectors are assumed by SACTI, with sector width of 22 ½ degrees. SACTI is comprised of three models: PREP, MULT and TABLES. PREP, a meteorological preprocessor, determines plume categories based on hourly meteorological data and cooling tower exhaust conditions. Representative cases are generated for each plume category. MULT carries out plume and drift predictions for each of the representative cases.

---

[1] Policastro, et.al, Atmospheric Environment, 1994

TABLES generates summary reports from the data generated by the PREP and MULT programs. Summary tables show the resulting modeled drift deposition by wind direction and distance.

3 Model Inputs

SACTI was run 5 years of meteorological data (surface data from Providence RI, with mixing heights from Chatham MA for 1985, 86, 88, 89, and 90). Monthly clearness index and solar insolation values from Newport, RI were used for this analysis. These values were obtained from Appendix B of the SACTI User's Guide, and are presented in Table 1.

Table 1. Clearness Index and Solar Insolation Values for Newport, RI

Month	Clearness Index	Solar Insolation (mj/m^2)
January	0.45	6.48
February	0.49	9.66
March	0.52	13.80
April	0.49	16.52
May	0.52	20.45
June	0.54	22.50
July	0.54	21.62
August	0.52	18.78
September	0.54	15.89
October	0.53	11.42
November	0.47	7.32
December	0.46	5.90

Cooling tower input parameters were based on tower information provided by the vendor. The modeling assumed the worst-case circulating water salt concentration of 48,000 ppmw. Input parameters are shown in the Table 2 below.

Table 2. Brayton Point Cooling Tower Model Inputs for SACTI

Parameter	Value(s)	Model
Tower Height (m)	151.4	PREP
Effective Exit Diameter (m)	94.2	PREP
Total Heat Rejection (MW)	2356.2	PREP
Effective Input Airflow (kg/s)	25399.6	PREP
Number of Ports	2	MULT
Coordinates of CT1 (m)	-69.72, 121.31	MULT
Coordinates of CT2 (m)	69.72, -121.31	MULT
Total Drift Rate (g/s)	233.4	MULT
Cooling Water Salt Conc. (g salt/g water)	0.048	MULT
Salt Density (g/cm^3)	2.17	MULT
Number of Drop Sizes	10	MULT
Drop Diameter (μm)	Mass Fraction	MULT
1	0.12	
10	0.08	
15	0.20	
35	0.20	
65	0.20	
115	0.10	
170	0.05	
230	0.04	
375	0.008	
525	0.002	

4 Model Results

The maximum salt deposition rate over the 5 year period, 11.58 kg/km^2-month, is predicted at 2100 meters to the East of the cooling towers. There was no salt deposition predicted within 1300 m of the towers. The domain average predicted deposition rate is 0.332 kg/km^2-month, which results in a total average deposition of 104.3 kg/month over the 10km radius domain.

5 Comparison to Standards

EPA has not established any standards for the protection of vegetation from salt deposition. While not applicable to this project, the Nuclear Regulatory Commission provides the following guidance in its review procedures for salt deposition from cooling towers[2]: "If the degree of impact falls into the first order category (... a few kilograms of salt drift per hectare per year), the reviewer may conclude that these impacts are not of sufficient magnitude to warrant further evaluation."

The maximum deposition rate predicted by SACTI equates to 1.4 kilograms of salt drift per hectare per year; the domain average deposition rate equates to 0.04 kilograms of salt drift per hectare per year.

[2] NUREG 1555, §5.33.2

APPENDIX J

MEPA Certificate

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Deval L. Patrick
GOVERNOR

Timothy P. Murray
LIEUTENANT
GOVERNOR

Ian A. Bowles
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
http://www.mass.gov/envir

May 23, 2008

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: Brayton Point Generating Station
PROJECT MUNICIPALITY	: Somerset
PROJECT WATERSHED	: Mount Hope Bay
EOEA NUMBER	: 14235
PROJECT PROPONENT	: USGen New England, Inc.
DATE NOTICED IN MONITOR	: April 23, 2008

Pursuant to the Massachusetts Environmental Policy Act (G. L. c. 30, ss. 61-62H) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I determine that this project **does not require** the preparation of an Environmental Impact Report (EIR).

While the project will provide a significant benefit to the Mount Hope Bay marine environment, the proponent will be required to demonstrate that the project, in conjunction with other air emissions at the facility, will not cause or significantly contribute to exceedance of National Ambient Air Quality Standards (NAAQS) for any air pollutant. I note that the Department of Environmental Protection's (MassDEP) comment letter identifies a number of technical issues that must be addressed in order to assess the projects air quality impacts for MassDEP's permitting purposes. I am confident that MassDEP's rigorous, ongoing review will adequately address these remaining air quality impacts.

As described in the Environmental Notification Form, the proposed project consists of a retrofit to Brayton Point Station's existing open-cycle cooling system with a closed-cycle cooling system to comply with heat and flow limits specified in the October 2003 final National Pollutant Discharge Elimination System (NPDES) permit issued by the United States Environmental Protection Agency. The closed-cycle cooling system will consist of two natural draft cooling towers and supporting equipment.

The Brayton Point Station site consists of approximately 250 acres of land on Brayton Point, a peninsula in Somerset. The site is bordered by the Lee River to the west, the Taunton River to the east, a residential neighborhood and U.S. 195 to the north, and Mount Hope Bay to the south. This existing industrial facility, which has been operating since the 1960's, generates approximately 1,600 megawatts (MW) of power. It consists of boilers and associated air pollution control systems, including emission stacks. An Ash Reduction Process (ARP) enables the proponent to recycle 100% of the fly ash created. Coal ash is re-burned to produce a high quality ash with low carbon content that can be used as a replacement of Portland cement in the production of concrete. The facility includes a coal pile, a pier for barge deliveries, storage domes, an electrical distribution system, a stormwater treatment system, wastewater treatment system, access roads and parking lots.

Permits and Jurisdiction

The project is subject to environmental review pursuant to Section 11.03 (1)(b)(2), Section 11.03 (3)(b)(1)(e) and Section 11.03 (8)(b)(2) because it requires a state permit and consists of the creation of five or more acres of impervious land, the new fill or structure or Expansion of existing fill or structure in a velocity zone or regulated floodway, and the modification of an existing major stationary source resulting in a "significant net increase" in actual emissions of greater than 15 tons per year (tpy)of particulate matter (PM) as PM10. The project requires a Major Comprehensive Air Plan Approval, a Wastewater Treatment System Plan Approval, a modification to the Chapter 91 License, and a 401 Water Quality Certification from the MassDEP and Federal Coastal Zone Consistency Review from the Office of Coastal Zone Management (CZM). The project will also require an Order of Conditions from the Somerset Conservation Commission (and a Superseding Order of Conditions from the MassDEP if the local Order is appealed), a Federal Aviation Administration (FAA) Notification, a Prevention of Significant Deterioration (PSD) Permit from the US Environmental Protection Agency (EPA) and a Section 10/404 Permit from the Army Corps of Engineers (ACOE).

The proponent is not seeking financial assistance from the Commonwealth. Therefore, MEPA jurisdiction applies to those aspects of the project within the subject matter of required permits with the potential to cause Damage to the Environment. In this case, MEPA jurisdiction extends to air quality, water quality, tidelands, land and wetlands.

Water Quality and Habitat

Brayton Point is the largest industrial discharger to Mount Hope Bay. The station currently withdraws a total of approximately one billion gallons of water from the Taunton River and/or the Lee River intake structures and circulates it through the facility to condense the steam used to produce electricity. The water is then discharged back to the Bay at elevated temperatures of up to 95° Fahrenheit.

The NPDES permit for Brayton Point has been the subject of review by EPA, MassDEP, the Rhode Island Department of Environmental Management, Coastal Zone Management, the Division of Marine Fisheries (Marine Fisheries), Conservation Law Foundation, Save the Bay and many other state and federal agencies and public advocacy groups. EPA, in close coordination with MassDEP the RI Department of Environmental Management, issued a NPDES

permit to ensure compliance with state and federal water quality standards and address the facility's impact on Mount Hope Bay. The decision established limitations on the volume, temperature and composition of the discharge, and established monitoring and reporting requirements. The permit does not authorize continued use of "once-through" cooling water and is based on the assumption that the facility would convert to closed-cycle and use mechanical-draft cooling tower technology to meet the permit's flow and heat load allowances. The volume of water and generation of waste heat will be reduced by over 95%.

The cessation of once-through cooling will ensure that Brayton Point will no longer withdraw and discharge nearly one billion gallons of water per day from Mount Hope Bay, greatly reducing the entrainment and impingement impacts on fish and other aquatic life, in addition to alleviating impacts associated with discharging large quantities of heat to the Bay. These changes are expected to help restore important estuarine habitat in the bay.

It is well established and documented that the Mount Hope Bay and the Taunton River provide valuable habitat for a diverse assemblage of finfish and invertebrates. The cooling process will result in the evaporation of 9,000 to 14,000 gallons of Taunton River water per minute. Marine Fisheries has raised concerns that the plume drift over nearby salt marshes could at times cause a high salinity precipitate adversely impacting these resource areas.
In addition, the salinity of the discharge waters will increase up to 1.5 times that of the ambient intake waters. The proponent should consult with Marine Fisheries to address the concerns raised in its comment letter.

Wetlands

Because Brayton Point is surrounded by the Lee and Taunton Rivers, much of the site may be included within the Riverfront Protection Area (RPA). The facility has been committed to this industrial use since the 1960s. The impacts to wetlands are limited to modification of discharge structures on site. Approximately 19,000 square feet of Land Under the Ocean, 300 linear feet of Coastal Bank, Designated Port Area, and Riverfront Area will be impacted. The site is also proximate to Salt Marsh, Coastal Beach, Land Containing Shellfish, and Bordering Vegetated Wetland. There were no plans available in the ENF to determine whether the extent of construction proposed would alter these areas.

The ENF indicates that compliance with the Stormwater Management Standards effective in January 2008 will be affected. Structures associated with and essential to an electric generating facility may be permitted pursuant to 310 CMR 10.24(7)(a)(5). I note that that those portions of the project subject to jurisdiction under Chapter 91 are exempt from the Riverfront Area requirements pursuant to 310 CMR 10.58(6)(i).

I advise the proponent that any Notice of Intent or 401 Water Quality Certification application submitted to MassDEPs' Wetlands Program must include plans illustrating the wetlands resource areas and details of the proposed construction and any temporary and/or permanent impacts to the each wetland resource; a narrative and plans showing how wetlands impacts have been avoided or minimized, as well as mitigation measures that are proposed to be taken; and detailed analyses, plans and calculations for compliance with Stormwater Management Standards.

Waterways

The project site is located within a Designated Port Area within the Town of Somerset. As indicated within the ENF, submittal of a Chapter 91 Waterways License application for a water-dependent use, as defined at 310 CMR 9.12, is required for this project. I note that any application submitted to the Chapter 91 Waterways Program shall include historic documentation, including copies of authorizations and/or licenses together with their accompanying plans, as further described pursuant to 310 CMR 9.11(3)(b) and (c). I advise the proponent to contact MassDEP's Waterways Program to address the Chapter 91 required material.

Air Quality

The ENF indicates that actual emissions would increase by 15 tons per year (tpy) of particulate matter (PM) as PM10. MassDEP has noted in its detailed comment letter that the potential emissions of 379 tons/year of PM 10 and PM2.5 may need to be permitted which could result in PM10 and PM2.5 actual emissions to be far in excess of 15 tons/year.

MassDEP agrees that currently there is uncertainty on how the potential PM2.5 and PM10 emissions will be predicted and how compliance with the future PM10 emission limit will be demonstrated. In consideration of this uncertainty, the proponent must provide in the plan approval application, to be submitted to MassDEP, information supporting the use of the ENF referenced methodology. The plan approval application will need to address, as a minimum, the following: copies of peer reviews on the calculation methodology; identification of projects that utilized this calculation methodology in air quality permitting and project(s) current status; a summary of available PM10 and PM2.5 stack (tower) emission test data in comparison to predicted emissions based on the referenced methodology; and proposed stack (tower) emission test method(s) and monitoring, including water droplet size distribution of the drift exiting the towers, to document compliance with PM10 and PM2.5 proposed emission limits developed utilizing the referenced calculation methodology.

I note that on a related matter concerning PM10 and PM2.5 emissions, Brayton Point Station will include additional modifications to Unit 3, a 633 MW net coal fired boiler, in the cooling tower plan approval application that must be submitted to MassDEP. The modifications will consist of the construction of spray dryer absorber (SDA) and fabric filter (FF) for the control of acid gases and particulate. This action may be subject to a Notice of Project Change from the MEPA Office for a previously submitted ENF (EEA No. 13022). The SDA/FF is likely to cause a net emission increase of potential PM emissions.

The ENF indicates that modeling will be performed to document that the project will not cause or significantly contribute to the violation of National Ambient Air Quality Standards (NAAQS) for any air pollutant. Condensed water vapor from the cooling towers will cause a visible exhaust plume and depending on weather conditions the condensed water vapor may cause ground level fogging or icing. MassDEP has stated in its comment letter that fogging and icing impacts are mitigated through the use of natural draft towers, which are much taller than

mechanical draft cooling towers and reduce the likelihood of condensed water vapor reaching ground level.

A Major Comprehensive Plan Application (CPA) Approval will be required base upon a potential emission rate of 379 tons/year of PM10 and PM2.5. As indicated the CPA will need to include a demonstration of compliance with NAAQS, application of Best Available Control Technology (BACT) for particulate matter, and a demonstration of compliance with the MassDEP's noise policy.

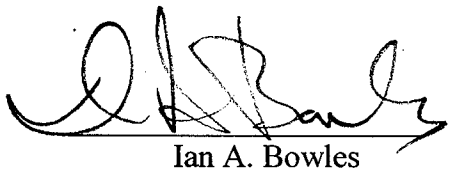
Visual/Historic

As a general matter, the cooling towers will have significant visual impacts to the immediate area. I strongly encourage the proponent to implement all feasible means of minimizing and mitigating these impacts.

The Massachusetts Historical Commission (MHC) will be reviewing the project as a consulting party in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800). MHC requests that the proponent undertake a visual effect study to evaluate the visual effects of the project on the character and setting of historic properties and historic districts in the visual area of potential effect for the project. Prior to undertaking this study, the proponent should consult with the Lead Federal Agency, which should notify the MHC and other consulting parties directly to consult on determining an appropriate study area and the methods and scope for the visual effect study (36 CFR 800.4(a)).

Conclusion

The ENF and ongoing permit processes have disclosed the potential impacts and proposed mitigation in detail; these issues are subject to ongoing review under local, state and federal permitting processes. Based on a review of the information provided in the ENF and consultation with relevant public agencies, I find that the potential impacts of this project do not warrant the preparation of an EIR.



May 23, 2008
Date

Ian A. Bowles

Comments Received:

04/24/08	Massachusetts Aeronautics Commission (forwarded by K. Lesser, Epsilon)
04/25/08	Russell Castonguay
05/08/08	Petition from the Mount Hope Condominium Resident Association
05/09/08	MA Office of Coastal Zone Management
05/12/08	Mass Audubon and the Taunton River Watershed

Comments Received(continued):

05/13/08	Department of Environmental Protection SERO
05/13/08	Division of Marine Fisheries
05/16/08	Massachusetts Historical Commission

IAB/ACC/acc

APPENDIX K

EPA RACT/BACT/LAER Clearinghouse Data

EPA RACT/BACT/LAER CLEARINGHOUSE DATA:
COAL FIRED BOILERS WITH LB/MMBTU PARTICULATE LIMITS IN THE LAST FIVE YEARS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	RBLCID	FACILITYNAME	PERMIT DATE	FACILITYDESCRIPTION	OTHERPERMITTINGINFORMATION	PROCESSNAME	FUEL	THRUPUT	THRUPUTUNIT	PROCESSNOTES	POLLUTANT	CTRLDESC	EMIS LIMIT1	EMIS LIMIT1 UNIT	EMIS LIMIT1 AVGTIME CONDITION	EMISLIMIT2	EMISLIMIT2UNIT	EMISLIMIT2AVGTIMECONDITION	STDEMISLIMIT	STDUNITLIMIT	STDLIMITAVGTIMECONDITION	POLLUTANT COMPLIANCE NOTES
2	OH-0314	SMART PAPERS HOLDINGS, LLC	1/31/2008	PAPER PRODUCTION, COATED AND UNCOATED PAPER PRODUCTS	THIS IS A PDS MODIFICATION TO TWO EXISTING BOILERS, TO INCREASE THEIR OPERATING HOURS, PRODUCE STEAM FOR THE PLANT, AND GENERATE MORE ELECTRICITY TO SELL TO THE POWER GRID. 429 MMBTU/H PULVERIZED COAL BOILER INSTALLED IN 1928. 249 MMBTU/H SPREADER STOKER COAL-FIRED BOILER INSTALLED IN 1975. OLD BOILERS INCREASING OPERATING HOURS. THE DAILY AVERAGE OPERATING RATE FOR BOTH BOILERS IS NOT TO EXCEED 603 MMBTU/H.	PULVERIZED DRY BOTTOM BOILER	COAL	420	MMBTU/H	EXISTING BOILER INSTALLED 1928, INCREASING USE TO PRODUCE STEAM FOR THE FACILITY AND TO SELL ELECTRICITY TO THE POWER GRID. COGENERATION PROJECT AT FACILITY. NUMBER 2 FUEL OIL BURNERS FOR SUPPLEMENTAL FIRING. RESTRICTED TO 219,000 MWHOURS ELECTRIC OUTPUT ON A GROSS BASIS. TOTAL COMBINED DAILY AVERAGE OPERATING RATE FOR BOTH BOILERS SHALL NOT EXCEED 603 MMBTU/HR	Particulate Matter (PM)		0.11	LB/MMBTU					0.11	LB/MMBTU		OLD BOILER, NO CONTROLS
3	OH-0314	SMART PAPERS HOLDINGS, LLC	1/31/2008	PAPER PRODUCTION, COATED AND UNCOATED PAPER PRODUCTS	THIS IS A PDS MODIFICATION TO TWO EXISTING BOILERS, TO INCREASE THEIR OPERATING HOURS, PRODUCE STEAM FOR THE PLANT, AND GENERATE MORE ELECTRICITY TO SELL TO THE POWER GRID. 429 MMBTU/H PULVERIZED COAL BOILER INSTALLED IN 1928. 249 MMBTU/H SPREADER STOKER COAL-FIRED BOILER INSTALLED IN 1975. OLD BOILERS INCREASING OPERATING HOURS. THE DAILY AVERAGE OPERATING RATE FOR BOTH BOILERS IS NOT TO EXCEED 603 MMBTU/H.	SPREADER STOKER COAL-FIRED BOILER	COAL	249	MMBTU/H	EXISTING BOILER INSTALLED 1975, INCREASING USE TO PRODUCE STEAM FOR THE FACILITY AND TO SELL ELECTRICITY TO THE POWER GRID. COGENERATION PROJECT AT FACILITY. TOTAL COMBINED DAILY AVERAGE OPERATING RATE FOR BOTH BOILERS SHALL NOT EXCEED 603 MMBTU/HR	Particulate Matter (PM)		0.11	LB/MMBTU					0.11	LB/MMBTU		
4	OH-0314	SMART PAPERS HOLDINGS, LLC	1/31/2008	PAPER PRODUCTION, COATED AND UNCOATED PAPER PRODUCTS	THIS IS A PDS MODIFICATION TO TWO EXISTING BOILERS, TO INCREASE THEIR OPERATING HOURS, PRODUCE STEAM FOR THE PLANT, AND GENERATE MORE ELECTRICITY TO SELL TO THE POWER GRID. 429 MMBTU/H PULVERIZED COAL BOILER INSTALLED IN 1928. 249 MMBTU/H SPREADER STOKER COAL-FIRED BOILER INSTALLED IN 1975. OLD BOILERS INCREASING OPERATING HOURS. THE DAILY AVERAGE OPERATING RATE FOR BOTH BOILERS IS NOT TO EXCEED 603 MMBTU/H.	SPREADER STOKER COAL-FIRED BOILER	COAL	249	MMBTU/H	EXISTING BOILER INSTALLED 1975, INCREASING USE TO PRODUCE STEAM FOR THE FACILITY AND TO SELL ELECTRICITY TO THE POWER GRID. COGENERATION PROJECT AT FACILITY. TOTAL COMBINED DAILY AVERAGE OPERATING RATE FOR BOTH BOILERS SHALL NOT EXCEED 603 MMBTU/HR	Particulate Matter < 10 μ (PM10)		0.072	LB/MMBTU		77.2	T/YR					
5	*WY-0064	DRY FORK STATION	10/15/2007	ONE PC BOILER RATED A 385 MW (NET)		PC BOILER (ES1-01)	COAL				Particulate Matter < 10 μ (PM10)	FABRIC FILTER (BAGHOUSE)	0.012	LB/MMBTU	ANNUAL	45.6	LB/H	ANNUAL	199.8	T/YR	ANNUAL	

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1	RBLCID	FACILITYNAME	PERMIT DATE	FACILITYDESCRIPTION	OTHERPERMITTINGINFORMATION	PROCESSNAME	FUEL	THRUPUT	THRUPUTUNIT	PROCESSNOTES	POLLUTANT	CTRLDESC	EMISLIMIT1	EMISLIMIT1UNIT	EMISLIMIT1AVGTIMECONDITION	EMISLIMIT2	EMISLIMIT2UNIT	EMISLIMIT2AVGTIMECONDITION	STDEMISLIMIT	STDUNITLIMIT	STDLIMITAVGTIMECONDITION	POLLUTANTCOMPLIANCE NOTES
6	ND-0024	SPIRITWOOD STATION	9/14/2007	LIGNITE FIRED COMBINED HEAT AND POWER PLANT RATED AT A NOMINAL 99 MWE (NET) AND A MAXIMUM OF 112 MWE (GROSS). BOILER IS RATED AT 1280.		ATMOSPHERIC CIRCULATING FLUIDIZED BED BOILER	LIGNITE	1280	MMBTU/H	BENEFICIATED (DRIED) LIGNITE IS THE PRIMARY FUEL, RAW LIGNITE IS THE BACKUP.	Particulate Matter (PM), Organic Condensables	SPRAY DRYER AND BAGHOUSE	0.018	LB/MMBTU	3 HOUR							THE PERMIT ONLY LIMITS TOTAL PM10 (FILTERABLE AND CONDENSABLE) TO 0.030 LB/MMBTU. THE FILTERABLE PM10 LIMIT IS 0.012 LB/MMBTU AND THE MAXIMUM EXPECTED CONDENSABLE PM10 EMISSION RATE IS 0.018 LB/MMBTU.
7	ND-0024	SPIRITWOOD STATION	9/14/2007	LIGNITE FIRED COMBINED HEAT AND POWER PLANT RATED AT A NOMINAL 99 MWE (NET) AND A MAXIMUM OF 112 MWE (GROSS). BOILER IS RATED AT 1280.		ATMOSPHERIC CIRCULATING FLUIDIZED BED BOILER	LIGNITE	1280	MMBTU/H	BENEFICIATED (DRIED) LIGNITE IS THE PRIMARY FUEL, RAW LIGNITE IS THE BACKUP.	Particulate Matter (PM), Filterable	BAGHOUSE	0.015	LB/MMBTU	3 H				0.015	LB/MMBTU		
8	ND-0024	SPIRITWOOD STATION	9/14/2007	LIGNITE FIRED COMBINED HEAT AND POWER PLANT RATED AT A NOMINAL 99 MWE (NET) AND A MAXIMUM OF 112 MWE (GROSS). BOILER IS RATED AT 1280.		ATMOSPHERIC CIRCULATING FLUIDIZED BED BOILER	LIGNITE	1280	MMBTU/H	BENEFICIATED (DRIED) LIGNITE IS THE PRIMARY FUEL, RAW LIGNITE IS THE BACKUP.	Particulate Matter < 10 µ (PM10)	BAGHOUSE	0.012	LB/MMBTU	3 H							
9	*UT-0070	BONANZA POWER PLANT WASTE COAL FIRED UNIT	8/30/2007	110 MW WASTE COAL FIRED UNIT		CIRCULATING FLUIDIZED BED BOILER, 1445 MMBTU/HR WASTE COAL FIRED	WASTE COAL/ BITUMINOUS BLEND				Particulate Matter (PM)	PULSE-JET FABRIC FILTER BAGHOUSE	0.03	LB/MMBTU	24-HOUR BLOCK AVERAGE (12 AM TO 12 AM)							
10	*UT-0070	BONANZA POWER PLANT WASTE COAL FIRED UNIT	8/30/2007	110 MW WASTE COAL FIRED UNIT		CIRCULATING FLUIDIZED BED BOILER, 1445 MMBTU/HR WASTE COAL FIRED	WASTE COAL/ BITUMINOUS BLEND				Particulate Matter (PM), Filterable	PULSE-JET FABRIC FILTER BAGHOUSE	0.012	LB/MMBTU	24-HOUR BLOCK AVERAGE							
11	*UT-0070	BONANZA POWER PLANT WASTE COAL FIRED UNIT	8/30/2007	110 MW WASTE COAL FIRED UNIT		CIRCULATING FLUIDIZED BED BOILER, 1445 MMBTU/HR WASTE COAL FIRED	WASTE COAL/ BITUMINOUS BLEND				Particulate Matter < 10 µ (PM10)	PULSE-JET FABRIC FILTER BAGHOUSE	0.012	LB/MMBTU	24-HOUR BLOCK AVERAGE							
12	FL-0295	CRYSTAL RIVER POWER PLANT	5/18/2007	EXISTING POWER PLANT CONSITS OF FOUR FFFSG UNITS, TWO NATURAL DRAFT COOLING TOWERS, THREE MECHANICAL COOLING TOWERS, COAL/ASH HANDLING FACILITIES, AND RELOACATABLE DIESEL FIRED GENRATORS.	OTHER POLLUTANT EMISSIONS: SAM 449 TPY PM10 68.3 TPY AIR FACILITY NO. 0170004 DESCRIPTION OF POLLUTANT ABATEMENT STRATEGY: AFTER CAIR/CAMR PROJECTS ARE COMPLETE FFFSG UNIT WILL HAVE: ESP (PM); SCR (NOX); WET FGD (SO2) , AND ALKALI INJECTION (SAM).	FFFSG UNITS 4 AND 5	COAL	760	MW	AS PART OF ITS CAIR/CAMR STRATEGY, THE FACILITY IS INSTALLING SCR AND WET FGD SYSTEMS ON UNITS 4 AND 5. TO TAKE FULL ADVANTAGE OF THESE CONTROLS, THE PROJECT INCLUDES AN INCREASE IN THE FUEL SULFUR CONTENT. THE FACILITY IS ALSO REQUIRED TO INSTALL ALKALI INJECTION ON THESE UNITS TO CONTROL SAME EMISSIONS. THE BACT LIMITS FOR UNITS 4 AND 5 ARE IDENTICAL.	Particulate Matter < 10 µ (PM10)	MODIFIED ESP (IMPROVEMENTS)	0.03	LB/MMBTU								ALTERNATIVE LIMIT: 216 LB/HR (STACK TEST)

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1	RBLCID	FACILITYNAME	PERMIT DATE	FACILITYDESCRIPTION	OTHERPERMITTINGINFORMATION	PROCESSNAME	FUEL	THRUPUT	THRUPUTUNIT	PROCESSNOTES	POLLUTANT	CTRLDESC	EMIS LIMIT1	EMIS LIMIT1 UNIT	EMIS LIMIT1 AVGTIME CONDITION	EMISLIMIT2	EMISLIMIT2UNIT	EMISLIMIT2AVGTIMECONDITION	STDEMISSLIMIT	STDUNITLIMIT	STDLIMITAVGTIMECONDITION	POLLUTANT COMPLIANCE NOTES
13	*PA-0257	SUNNYSIDE ETHANOL,LLC	5/7/2007	THIS PA IS FOR A 88 MILLION GALLON PER YEAR ETHANOL PRODUCTION PLANT POWERED BY A 24.7 MW COAL FIRED COGENERATION PLANT. THE PLANT IS LOCATED AT CURWENSVILLE BOROUGH IN CLEARFIELD COUNTY.		CFB BOILER	COAL	496.8	MMBTU/H		Particulate Matter < 10 µ (PM10)	CYCLONE AND BAGHOUSE	0.01	LB/MMBTU	FILTERABLE	0.05	LB/MMBTU	CONDENSABLE				
14	OK-0118	HUGO GENERATING STA	2/9/2007	GENERATING STATION		COAL-FIRED STEAM EGU BOILER (HU-UNIT 2)		750	MW		Particulate Matter < 10 µ (PM10)	FABRIC FILTER BAGHOUSE	0.015	LB/MMBTU	FILTERABLE	0.025	LB/MMBTU	TOTAL				
15	WY-0063	WYGEN 3	2/5/2007	100 MW PULVERIZED COAL FIRED ELECTRIC UTILITY		PC BOILER	SUB-BITUMINOUS COAL	1300	MMBTU/H		Particulate Matter (PM), Filterable	BAGHOUSE	0.012	LB/MMBTU	3 X 120 MINUTE TEST							
16	TX-0491	MEADWESTVACO TEXAS LP PULP AND PAPER MILL	1/24/2007	THE SOURCE IS A LARGE WOOD-FIRED BOILER FOR STEAM PRODUCTION LOCATED IN A PULP AND PAPER MILL. THE STEAM IS USED FOR BOTH PROCESSES AND FOR ELECTRICAL PRODUCTION IN THE PLANT.	PSD-TX-785M6	NO. 6 POWER BOILER	SCRAP WOOD AND BARK			SEE FACILITY NOTES	Particulate Matter < 10 µ (PM10)	VENTURI WET SCRUBBER	0.1	LB/MMBTU								
17	TX-0489	SOUTHWESTERN PUBLIC SERVICE COMPANY-HARRINGTON STATION	10/17/2006	COAL-FIRED ELECTICAL GENERATING FACILITY		UNIT 3 BOILER	PBR COAL	3870	MMBtu/h	COAL-FIRED, TANGENTIALLY ARRANGED, 3,870 MMBTU/H BOILER USED TO PRODUCE STEAM TO DRIVE A 389 MW (DESIGN CAP.) ELECTRICAL GENERATOR.	Particulate Matter < 10 µ (PM10)	COAL CRUSHERS OPERATE AT BELOW ATMOSPHERIC PRESSURE WITH COAL DUST CONTROLLED	0.09	LB/MMBTU	1,520 T/YR							
18	NE-0041	AGP SOY PROCESSING	9/11/2006	SOY PROCESSING PLANT	PERMIT IS FOR 382 MMBTU CFB COAL-FIRED BOILER	STEAM GENERATION	COAL	382	MMBtu/H		Particulate Matter (PM)	GOOD COMBUSTION PRACTICES	0.041	LB/MMBTU								
19	NE-0041	AGP SOY PROCESSING	9/11/2006	SOY PROCESSING PLANT	PERMIT IS FOR 382 MMBTU CFB COAL-FIRED BOILER	STEAM GENERATION	COAL	382	MMBtu/H		Particulate Matter (PM), Filterable	FABRIC FILTER	0.015	LB/MMBTU								
20	WV-0024	WESTERN GREENBRIER CO-GENERATION, LLC	4/26/2006	NOMINAL 98 NET MEGAWATT WASTE COAL-FIRED STEAM ELECTRIC CO-GENERATION FACILITY. BOILER IS CFB TECHNOLOGY. FACILITY INCLUDES KILN TO PRODUCE CEMENTITIOUS MATERIAL FROM ASH GENERATED IN BOILER.	CURRENTLY UNDER APPEAL	CIRCULATING FLUIDIZED BED BOILER (CFB)	WASTE COAL	1070	mmbtu/h	NOMINAL 1,070 MMBTU WASTE-COAL FIRED CFB. MAXIMUM COAL THROUGHPUT AT WORST-CASE FUEL SCENARIO IS 157 TPH. ANNUAL HEAT INPUT SHALL NOT EXCEED 8,908,920 MMBTU. SULFUR AND ASH CONTENTS SHALL NOT EXCEED 1.47% AND 63.71%, RESPECTIVELY.	Particulate Matter (PM)	BAGHOUSE	0.03	LB/MMBTU	30-DAY			0.03	LB/MMBTU	30-DAY	TOTAL PARTICULATE (FILTERABLE + CONDENSIBLE)
21	WV-0024	WESTERN GREENBRIER CO-GENERATION, LLC	4/26/2006	NOMINAL 98 NET MEGAWATT WASTE COAL-FIRED STEAM ELECTRIC CO-GENERATION FACILITY. BOILER IS CFB TECHNOLOGY. FACILITY INCLUDES KILN TO PRODUCE CEMENTITIOUS MATERIAL FROM ASH GENERATED IN BOILER.	CURRENTLY UNDER APPEAL	CIRCULATING FLUIDIZED BED BOILER (CFB)	WASTE COAL	1070	mmbtu/h	NOMINAL 1,070 MMBTU WASTE-COAL FIRED CFB. MAXIMUM COAL THROUGHPUT AT WORST-CASE FUEL SCENARIO IS 157 TPH. ANNUAL HEAT INPUT SHALL NOT EXCEED 8,908,920 MMBTU. SULFUR AND ASH CONTENTS SHALL NOT EXCEED 1.47% AND 63.71%, RESPECTIVELY.	Particulate Matter < 10 µ (PM10)	BAGHOUSE	0.03	LB/MMBTU	30-DAY			0.03	LB/MMBTU	30-DAY	FILTERABLE + CONDENSIBLE

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22	WV-0024	WESTERN GREENBRIER CO-GENERATION, LLC	4/26/2006	NOMINAL 98 NET MEGAWATT WASTE COAL-FIRED STEAM ELECTRIC CO-GENERATION FACILITY. BOILER IS CFB TECHNOLOGY. FACILITY INCLUDES KILN TO PRODUCE CEMENTITIOUS MATERIAL FROM ASH GENERATED IN BOILER.	CURRENTLY UNDER APPEAL	CIRCULATING FLUIDIZED BED BOILER (CFB)	WASTE COAL	1070	mmbtu/h	NOMINAL 1,070 MMBTU WASTE-COAL FIRED CFB. MAXIMUM COAL THROUGHPUT AT WORST-CASE FUEL SCENARIO IS 157 TPH. ANNUAL HEAT INPUT SHALL NOT EXCEED 8,908,920 MMBTU. SULFUR AND ASH CONTENTS SHALL NOT EXCEED 1.47% AND 63.71%, RESPECTIVELY.	Particulate Matter (PM), Filterable	BAGHOUSE	0.015	LB/MMBTU	30-DAY				0.015	LB/MMBTU	30-DAY	ASH CONTENT SHALL NOT EXCEED 63.71%,
23	CO-0055	LAMAR LIGHT & POWER POWER PLANT	2/3/2006	UTILITY ELECTRIC POWER FACILITY	A CIRCULATING FLUIDIZED BED BOILER USING BITUMINOUS/SUB-BITUMINOUS COALS WILL BE BE INSTALLED. THIS WILL REPLACE AN EXISTING NATURAL GAS FIRED BOILER. OTHER AUXILIARY SOURCES: COAL HANDLING & PREPARATION, LIMESTONE HANDLING & PREPARATION, INERT (SAND) HANDLING. RAIL MOVEMENT WITH WITH DIESEL LOCOMOTIVE, EMERGENCY ELECTRIC GENERATOR AND FIRE WATER PUMP ENGINES, FUGITIVE DUST SOURCES.	CIRCULATING FLUIDIZED BED BOILER	COAL COAL (BITUMINOUS/ SUBBITUMINOUS)	501.7	MMBTU/H	LIMESTONE INJECTED FOR SO2 CONTROL, SAND ISUSED AS INERT MATERIAL FOR FOR REGULATION OF CIRCULATING OF BED TEMPERATURE	Particulate Matter < 10 µ (PM10)	HIGH EFFICIENCY(MEMBRANE) LINED FABRIC FILTER BAGHAUSE FOR FILTEARABLE PARTICULATE MATTER. MAXIMIZATION OF HEAT EXTRACTION FROM COMBUSTION GASES PRIOR TO BAGHAUSE	0.012	LB/MMBTU	DURATION OF TESTS	0.02	LB/MMBTU	DURATION OF TESTS	10	% OPACITY	6 MINUTES AVERAGE	
24	MO-0071	KANSAS CITY POWER & LIGHT COMPANY - IATAN STATION	1/27/2006	KCPL HAS APPLIED FOR THE AUTHORITY TO INSTALL A PULVERIZED COAL BOILER, AN AUXILLIARY BOILER, ASSOCIATED STORAGE, HANDELING AND POLLUTION CONTROL EQUIPMENT, A FUEL OIL STORAGE TANK AND A LANDFILL, ALL ADJACENT TO THE EXISTING IATAN GENERATION STATION (INSTALLATION ID 165-0007)		PULVERIZED COAL BOILER - UNIT 1	COAL	4000	T/H	THE UNIT 1 BOILER SHALL UTILIZE A LOW-SULFUR LESS THAN 1.4 LBS PER MMBTU SUBBITUMINOUS COAL AS A PRIMARY FUEL. THE HEAT INPUT TO THE BOILER SHALL NOT EXCEED 7,800 MMBTU/HR	Particulate Matter < 10 µ (PM10)	BAGHOUSE	0.0244	LB/MMBTU	30 DAYS ROLLING AVERAGE							PM10 = 0.0244 LB/MMBTU INCLUDES BOTH FILTERABLE AND CONDENSABLE FILTERABLE PM10 = 0.014 LB/MMBTU, BASED ON 3-HOUR ROLLING AVERAGE FILTERABLE PM = 0.015 LB/MMBTU, BASED ON 3 HOUR ROLLING AVERAGE
25	MO-0071	KANSAS CITY POWER & LIGHT COMPANY - IATAN STATION	1/27/2006	KCPL HAS APPLIED FOR THE AUTHORITY TO INSTALL A PULVERIZED COAL BOILER, AN AUXILLIARY BOILER, ASSOCIATED STORAGE, HANDELING AND POLLUTION CONTROL EQUIPMENT, A FUEL OIL STORAGE TANK AND A LANDFILL, ALL ADJACENT TO THE EXISTING IATAN GENERATION STATION (INSTALLATION ID 165-0007)		PULVERIZED COAL BOILER - UNIT 2	PULVERIZED COAL	4000	T/H	UNIT 2 PULVERIZED COAL BOILER AND ASSOCIATED POLLUTION CONTROL EQUIPMENT. UNIT 2 BOILER SHALL UTILIZE A LOW-SULFUR SUBBITUMINOUS COAL AS THE PRIMARY FUEL. NO 2 FUEL OIL WITH A SULFUR CONTENT OF LESS THAN 0.05% SHALL BE USED FOR LIGHT OFF, STARTUP AND FLAME STABILIZATION.	Particulate Matter < 10 µ (PM10)	KCPL SHALL INSTALL A FABRIC FILTRATION SYSTEM (BAGHOUSE) FOR THE UNIT 2 BOILER TO REDUCE PM10 EMISSIONS.	0.0236	LB/MMBTU	30 DAYS ROLLING AVERAGE FILTABLE/COND.	0.014	LB/MMBTU	3 HOURS ROLLING AVERAGE - FILTRABLE PM10	0.015	LB/MMBTU	3 HOURS ROLLING AVERAGE	

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1	RBLCID	FACILITYNAME	PERMIT DATE	FACILITYDESCRIPTION	OTHERPERMITTINGINFORMATION	PROCESSNAME	FUEL	THRUPUT	THRUPUTUNIT	PROCESSNOTES	POLLUTANT	CTRLDESC	EMISLIMIT1	EMISLIMIT1UNIT	EMISLIMIT1AVGTIMECONDITION	EMISLIMIT2	EMISLIMIT2UNIT	EMISLIMIT2AVGTIMECONDITION	STDEMISLIMIT	STDUNITLIMIT	STDLIMITAVGTIMECONDITION	POLLUTANTCOMPLIANCENOTES
26	VA-0296	VIRGINIA TECH	9/15/2005		VPI'S COAL SUPPLIERS ARE UNABLE TO CONSISTENTLY PROVIDE COAL WHICH MEETS THE ASH CONTENT LIMITS IN CONDITION 11 OF THE PERMIT. SINCE PARTICULAT EMISSIONS FOR A STOKER BOILER AR NOT RELATED TO ASH CONTENT, THIS AMENDMENT REMOVES ASSOCIATED CONDITIONS FORM THE PSD PERMIT. WHILE AMENDMENTS ARE NOT ADDRESSED UNDER PSD REGULATIONS, THIS ACTION MOST CLOSELY MEETS THE DEFINITION OF A MINOR PERMIT AMENDMENT UNDER 9VAC 5-80- 1280 AND THUS DOES NOT REQUIRE PUBLIC PARTICIPATION UNDER 5-80 1170. HOWEVER, PUBLIC PARTICIPATION WILL BE REQUIRED DURING CONCURRENT PROCESSING OF THE TITLE 5 PERMIT WHICH ALSO CONTAINS THE ASH LIMITS.	OPERATION OF BOILER 11	COAL	146.7	mmbtu	ONE COAL FIRED MASS FEED STOKER BOILER RESTRICED TO COAL MINIMUM HEAT CONTENT OF 13,250 BTU/LB, MAXIMUM SULFUR CONTENT 1.4% PER SHIPMENT BY WEIGHT, AND MAXIMUM 42,000 TONS PER YEAR.	Total Suspended Particulates	BAGHOUSE WITH CEM	0.02	LB/MMBTU		2.9	LB/H		0.02	LB/MMBTU		TSP LIMITS ARE 11.1 TONS PER YEAR
27	VA-0296	VIRGINIA TECH	9/15/2005		VPI'S COAL SUPPLIERS ARE UNABLE TO CONSISTENTLY PROVIDE COAL WHICH MEETS THE ASH CONTENT LIMITS IN CONDITION 11 OF THE PERMIT. SINCE PARTICULAT EMISSIONS FOR A STOKER BOILER AR NOT RELATED TO ASH CONTENT, THIS AMENDMENT REMOVES ASSOCIATED CONDITIONS FORM THE PSD PERMIT. WHILE AMENDMENTS ARE NOT ADDRESSED UNDER PSD REGULATIONS, THIS ACTION MOST CLOSELY MEETS THE DEFINITION OF A MINOR PERMIT AMENDMENT UNDER 9VAC 5-80- 1280 AND THUS DOES NOT REQUIRE PUBLIC PARTICIPATION UNDER 5-80 1170. HOWEVER, PUBLIC PARTICIPATION WILL BE REQUIRED DURING CONCURRENT PROCESSING OF THE TITLE 5 PERMIT WHICH ALSO CONTAINS THE ASH LIMITS.	OPERATION OF BOILER 11	COAL	146.7	mmbtu	ONE COAL FIRED MASS FEED STOKER BOILER RESTRICED TO COAL MINIMUM HEAT CONTENT OF 13,250 BTU/LB, MAXIMUM SULFUR CONTENT 1.4% PER SHIPMENT BY WEIGHT, AND MAXIMUM 42,000 TONS PER YEAR.	Particulate Matter < 10 µ (PM10)	BAG HOUSE EQUIPED WITH CEM	0.018	LB/MMBTU		2.6	LB/H		0.018	LB/MMBTU		PM 10 EMISSION LIMIT IS 10 TONS PER YEAR
28	PA-0248	GREENE ENERGY RESOURCE RECOVERY PROJECT	7/8/2005	THIS PA IS FOR THE CONSTRUCTION OF A NEW 525 NET MW (580 GROSS) ELECTRIC GENERATING FACILITY. THE FACILITY CONSISTS OF 2 WASTE COAL FIRED CFB BOILERS, EACH RATED AT 2756 MMBTU/HR, CFB'S WILL DRIVE A SINGLE TURBINE/GENERATOR.	FACILITY IS PSD FOR NO2,PM-10,SO2,CO,HF,HCL,H2SO4 (MIST),PB AND NA-NSR FOR VOC, NO2. FACILITY IS ALSO SUBJECT, TITLE IV, TO 40 CFR, PART 60, SUBPARTS, DA, DB, Y AND OOO. ALSO SUBJECT TO STATE BAT AND CHAPTER 123 REQUIREMENTS.	2 CFB BOILERS	WASTE COAL	358	T/H (each)		Particulate Matter < 10 µ (PM10)	BAGHOUSE, 289.7 TPY WAS DETERMINED BY EPA METHODS 201,201A,202. PROVISION TO INCREASE IF CAN'T MEET LIMIT BECAUSE OF CONDENSIBLES PER METHOD 202	0.012	LB/MMBTU		289.7	T/YR	12 MONTH ROLLING AVERAGE				
29	CO-0057	COMANCHE STATION	7/5/2005	COMANCHE STATION CONSISTS OF TWO EXISTING COAL FIRED UTILITY BOILERS. AS PART OF THIS PRO	THIS PERMIT PROJECT WAS THE ADDITION OF A NEW PC BOILER (750 MW) - UNIT 3. AS PART OF THE PROJECT CONTROLS WERE ADDED TO 2 EXISTING PC BOILERS TO REDUCE NOX AND SO2 EMISSIONS AND NET OUT OF PSD REVIEW FOR THOSE POLLUTANTS. ADDITIONAL EQUIPMENT IN ASSOCIATED FOR THE PROJECT INCLUDED A COOLING TOWER, COAL AND ASH HANDLING EQUIPMENT FOR THE NEW BOILER, AND VARIOUS REAGENT SILOS AND MIXERS FOR ADD-ON CONTROLS. WITH CONTROLS ON THE EXISTING UNITS, REDUCTIONS IN SOX ARE 9,556 TPY AND NOX 137.6 TPY, BASED ON ACTUAL 2002/2003 EMISSIONS FOR EXISTING UNITS 1 AND 2. OTHER PERMITS ISSUED WITH THIS PROJECT WERE 04PB1016 (COOLING TOWER), 04PB1017 (COAL STORAGE AND HANDLING), 04PB1018 (RECYCLE ASH HANDLING), 04PB1019 (LIME HANDLING), 04PB1020 (SORBENT HANDLING), 04PB1021 (FLY ASH/FGD WASTE HANDLING AND STORAGE) AND 04PB1022 (HAUL ROADS).	PC BOILER - UNIT 3	SUB-BITUMINOUS COAL	7421	MMBTU/H	PROPOSED NEW UNIT 3, PC BOILER, 750 MW. PRB COAL.	Particulate Matter (PM)	BAGHOUSE	0.013	LB/MMBTU	FILTERABLE, AVG OF 3 TEST RUNS	0.022	LB/MMBTU	TOTAL (FILT + COND), AVG OF 3 TEST RUNS	0.013	LB/MMBTU		PROVISIONS TO LOWER TOTAL (FILTERABLE AND CONDENSABLE) PM LIMIT IN PERMIT BASED ON INITIAL TESTING.

EPA RACT/BACT/LAER CLEARINGHOUSE DATA:
COAL FIRED BOILERS WITH LB/MMBTU PARTICULATE LIMITS IN THE LAST FIVE YEARS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	RBLCID	FACILITYNAME	PERMIT DATE	FACILITYDESCRIPTION	OTHERPERMITTINGINFORMATION	PROCESSNAME	FUEL	THRUPUT	THRUPUTUNIT	PROCESSNOTES	POLLUTANT	CTRLDESC	EMIS LIMIT1	EMIS LIMIT1 UNIT	EMIS LIMIT1 AVGTIME CONDITION	EMISLIMIT2	EMISLIMIT2UNIT	EMISLIMIT2AVGTIMECONDITION	STDEMISLIMIT	STDUNITLIMIT	STDLIMITAVGTIMECONDITION	POLLUTANT COMPLIANCE NOTES
30	CO-0057	COMANCHE STATION	7/5/2005	COMANCHE STATION CONSISTS OF TWO EXISTING COAL FIRED UTILITY BOILERS. AS PART OF THIS PRO	THIS PERMIT PROJECT WAS THE ADDITION OF A NEW PC BOILER (750 MW) - UNIT 3. AS PART OF THE PROJECT CONTROLS WERE ADDED TO 2 EXISTING PC BOILERS TO REDUCE NOX AND SO2 EMISSIONS AND NET OUT OF PSD REVIEW FOR THOSE POLLUTANTS. ADDITIONAL EQUIPMENT IN ASSOCIATED FOR THE PROJECT INCLUDED A COOLING TOWER, COAL AND ASH HANDLING EQUIPMENT FOR THE NEW BOILER, AND VARIOUS REAGENT SILOS AND MIXERS FOR ADD-ON CONTROLS. WITH CONTROLS ON THE EXISTING UNITS, REDUCTIONS IN SOX ARE 9,556 TPY AND NOX 137.6 TPY, BASED ON ACTUAL 2002/2003 EMISSIONS FOR EXISTING UNITS 1 AND 2. OTHER PERMITS ISSUED WITH THIS PROJECT WERE 04PB1016 (COOLING TOWER), 04PB1017 (COAL STORAGE AND HANDLING), 04PB1018 (RECYCLE ASH HANDLING), 04PB1019 (LIME HANDLING), 04PB1020 (SORBENT HANDLING), 04PB1021 (FLY ASH/FGD WASTE HANDLING AND STORAGE) AND 04PB1022 (HAUL ROADS).	PC BOILER - UNIT 3	SUB-BITUMINOUS COAL	7421	MMBTU/H	PROPOSED NEW UNIT 3, PC BOILER, 750 MW. PRB COAL.	Particulate Matter < 10 µ (PM10)	BAGHOUSE	0.012	LB/MMBTU	FILTERABLE, AVG OF 3 TEST RUNS	0.02	LB/MMBTU	TOTAL (FILT + COND), AVG OF 3 TEST RUNS	0.012	LB/MMBTU		PERMIT INDICATES TOTAL (FILTERABLE AND CONDENSABLE) PM10 MAY BE LOWERED (TO AS LOW AS 0.0180 LB/MMBTU) BASED ON RESULTS OF INITIAL TEST.
31	ND-0021	GASCOYNE GENERATING STATION	6/3/2005	LIGNITE FIRED POWER PLANT RATED AT A NOMINAL 175 MW (NET) AND A MAXIMUM OF 220 MW (GROSS). BOILER IS RATED AT 2116 MMBTU/H.		BOILER, COAL-FIRED	LIGNITE	2116	MMBTU/H	ATMOSPHERIC CIRCULATING FLUIDIZED BED BOILER.	Particulate Matter (PM)	BAGHOUSE	0.0167	LB/MMBTU	3-H				0.0167	LB/MMBTU		THE LIMIT IS FOR FILTERABLE PM ONLY.
32	ND-0021	GASCOYNE GENERATING STATION	6/3/2005	LIGNITE FIRED POWER PLANT RATED AT A NOMINAL 175 MW (NET) AND A MAXIMUM OF 220 MW (GROSS). BOILER IS RATED AT 2116 MMBTU/H.		BOILER, COAL-FIRED	LIGNITE	2116	MMBTU/H	ATMOSPHERIC CIRCULATING FLUIDIZED BED BOILER.	Particulate Matter < 10 µ (PM10)	BAGHOUSE	0.013	LB/MMBTU	3-H				0.013	LB/MMBTU		LIMIT IS FOR FILTERABLE PM10. FOR FILTERABLE AND CONDENSIBLE PM10, THE LIMIT IS 0.0275 LB/MMBTU.
33	NV-0036	TS POWER PLANT	5/5/2005	200 MW PC COAL FIRED ELECTRICAL GENERATION UNIT	APPEALED TO EAB; EAB DENIED REVIEW ON DECEMBER 21, 2005. PERMIT BECAME EFFECTIVE ON DECEMBER 21, 2005.	200 MW PC COAL BOILER	POWDER RIVER BASIN COAL	2030	MMBTU/H		Particulate Matter < 10 µ (PM10)	FABRIC FILTER DUST COLLECTION	0.012	LB/MMBTU	24-HOUR ROLLING - FILTERABLE ONLY				0.012	LB/MMBTU	24-HOUR ROLLING - FILTERABLE ONLY	FILTERABLE FRACTION ONLY
34	PA-0247	BEECH HOLLOW POWER PROJECT	4/1/2005	PA FOR INSTALLATION OF 272 (NET) MEGAWATT WASTE COAL FIRED CFB AND ASSOCIATED AIR SOURCES CONTROLLED BY A LIMESTONE INJECTION ,SNCR AND BAGHOUSE.	PA IS SUBJECT TO 40 CFR 60, SUBPARTS DA, Y,OOO. ALSO SUBJECT TO NON-ATTAINMENT NEW SOURCE REVIEW WHICH INCLUDES PREVENTION OF SIGNIFICANT DETERIORATION REGULATIONS, TITLE IV AND COMPLIANCE WITH NAAQS. FINALLY SOME POLLUTANTS UNDER NESHAPS. OTHER MINOR EMISSION SOURCES INCLUDE MATERIAL HANDLING, DRYER, EMERGENCY GENERATOR AND FIRE PUMP.	COAL FIRED CFB	WASTE COAL			THE OUTPUT OF THE CFB IS ESTIMATED AT 272 MW FROM A MAX. HEAT INPUT OF 2800 MMBTU/HR.	Particulate Matter < 10 µ (PM10)	BAGHOUSE	0.012	LB/MMBTU		147.2	T/YR		0.012	LB/MMBTU		
35	NE-0031	OPPD - NEBRASKA CITY STATION	3/9/2005	EXISTING ELECTRICAL GENERATING PLANT, CONSTRUCTING A NEW 660 (NET) MW UNIT.		UNIT 2 BOILER	SUBBITUMINOUS COAL				Particulate Matter (PM)	FABRIC FILTER BAGHOUSES	0.018	LB/MMBTU	TEST METHOD AVERAGE				0.018	LB/MMBTU		
36	MO-0060	CITY UTILITIES OF SPRINGFIELD - SOUTHWEST POWER STATION	12/15/2004	CITY UTILITIES OF SPRINGFIELD HAS APPLIED FOR THE AUTHORITY TO INSTALL A 275 MW (2,724 MMBTU/H) PULVERIZED COAL BOILER AND ASSOCIATED MATERIAL HANDLING EQUIPMENT AT THEIR EXISTING SOUTHWEST POWER STATION. THE EXISTING INSTALLATION HAS ONE 1,810 MMBTU/H BOILER AND TWO TWIN-PAC TURBINE GENERATORS. THE BOILER WAS INSTALL IN 1976. H2S04 MIST NOT AVAILABLE		PULVERIZED COAL FIRED BOILER	COAL	2724	MMBTU/H		Particulate Matter < 10 µ (PM10)	BAGHOUSE	0.018	LB/MMBTU						LB/MMBTU	NOT AVAILABLE - *SEE NOTES	* LOOK FOR CONTROL METHOD DESCRIPTION FOR PM

EPA RACT/BACT/LAER CLEARINGHOUSE DATA:
COAL FIRED BOILERS WITH LB/MMBTU PARTICULATE LIMITS IN THE LAST FIVE YEARS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	RBLCID	FACILITYNAME	PERMIT DATE	FACILITYDESCRIPTION	OTHERPERMITTINGINFORMATION	PROCESSNAME	FUEL	THRUPUT	THRUPUTUNIT	PROCESSNOTES	POLLUTANT	CTRLDESC	EMIS LIMIT1	EMIS LIMIT1 UNIT	EMIS LIMIT1 AVGTIME CONDITION	EMISLIMIT2	EMISLIMIT2UNIT	EMISLIMIT2AVGTIMECONDITION	STDEMISLIMIT	STDUNITLIMIT	STDLIMITAVGTIMECONDITION	POLLUTANT COMPLIANCE NOTES
37	WI-0228	WPS - WESTON PLANT	10/19/2004	ELECTRICAL UTILITY	SUPER CRITICAL PULVERIZED COAL (SCPC) FIRED ELECTRIC STEAM BOILER AND ASSOCIATED OPERATIONS 500 MW BASELOAD	SUPER CRITICAL PULVERIZED COAL ELECTRIC STEAM BOILER (S04, P04)	PRB COAL	5173.1	MMBTU/H	500 MW CAPACITY, BASE LOAD OPERATION (30% TO 100% CAPACITY) BACKUP / STARTUP FUEL, NATURAL GAS (5.07 CF6) PRB COAL (~0.5 WT. % S MAX., 5.5 WT % ASH); ~ 8100 BTU / LB; 319.3 TPH	Particulate Matter (PM)	FABRIC FILTER BAGHOUSE (WHEN FIRING COAL). NATURAL GAS USE (W/O BAGHOUSE) IS LIMITED TO 500 MMBTU/HR.	0.02	LB/MMBTU	3 HR. AVG	103.52	LB/H	3 HR. AVG.			NOT AVAILABLE	POLLUTANT MEASUREMENT INCLUDES BACKHALF (METHOD 5 OR 5B + METHOD 202)
38	WI-0228	WPS - WESTON PLANT	10/19/2004	ELECTRICAL UTILITY	SUPER CRITICAL PULVERIZED COAL (SCPC) FIRED ELECTRIC STEAM BOILER AND ASSOCIATED OPERATIONS 500 MW BASELOAD	SUPER CRITICAL PULVERIZED COAL ELECTRIC STEAM BOILER (S04, P04)	PRB COAL	5173.1	MMBTU/H	500 MW CAPACITY, BASE LOAD OPERATION (30% TO 100% CAPACITY) BACKUP / STARTUP FUEL, NATURAL GAS (5.07 CF6) PRB COAL (~0.5 WT. % S MAX., 5.5 WT % ASH); ~ 8100 BTU / LB; 319.3 TPH	Particulate Matter < 10 µ (PM10)	FABRIC FILTER BAGHOUSE (WHEN FIRING COAL) NATURAL GAS USE (W/O BAGHOUSE) LIMITED TO 500 MMBTU/HR	0.018	LB/MMBTU	3 HOUR AVG.						NOT AVAILABLE	INCLUDES BACKHALF
39	UT-0065	INTERMOUNTAIN POWER GENERATING STATION - UNIT #3	10/15/2004	NEW PULVERIZED COAL FIRED ELECTRIC GENERATING UNIT #3, DESIGNED AT 950-GROSS MW (900-NETMW) WITH A DRY BOTTOM, TANGENTIALLY FIRED OR WALL-FIRED BOILER. UNIT #3 BOILER WILL BE EQUIPPED WITH WET FLUE GAS DESULPHURIZATION, LNB, OVER FIRE AIR, SELECTIVE CATALYTIC REDUCTION AND BAGHOUSES FOR CONTROL OF VARIOUS EMISSIONS. THE EXISTING PLANT HAS TWO DRUM-TYPE, PULVERIZED COAL FIRED BOILERS, DESIGNATED AS UNIT 1 AND UNIT 2, EACH WITH 950-GROSS MW		PULVERIZED COAL FIRED ELECTRIC GENERATING UNIT	BITUMINOUS OR BLEND	950	MW-gross		Particulate Matter (PM), Filterable	BAGHOUSE/FABRIC FILTER	0.013	LB/MMBTU	3-TEST RUN AVERAGE ANNUALLY				0.013	LB/MMBTU		
40	UT-0065	INTERMOUNTAIN POWER GENERATING STATION - UNIT #3	10/15/2004	NEW PULVERIZED COAL FIRED ELECTRIC GENERATING UNIT #3, DESIGNED AT 950-GROSS MW (900-NETMW) WITH A DRY BOTTOM, TANGENTIALLY FIRED OR WALL-FIRED BOILER. UNIT #3 BOILER WILL BE EQUIPPED WITH WET FLUE GAS DESULPHURIZATION, LNB, OVER FIRE AIR, SELECTIVE CATALYTIC REDUCTION AND BAGHOUSES FOR CONTROL OF VARIOUS EMISSIONS. THE EXISTING PLANT HAS TWO DRUM-TYPE, PULVERIZED COAL FIRED BOILERS, DESIGNATED AS UNIT 1 AND UNIT 2, EACH WITH 950-GROSS MW		PULVERIZED COAL FIRED ELECTRIC GENERATING UNIT	BITUMINOUS OR BLEND	950	MW-gross		Particulate Matter < 10 µ (PM10)	BAGHOUSE/FABRIC FILTER	0.012	LB/MMBTU	3-TEST RUN AVERAGE ANNUALLY	221	LB/H	24-BLOCK AVERAGE	0.012	LB/MMBTU		
41	GA-0114	INLAND PAPERBOARD AND PACKAGING, INC. - ROME LINERBOARD MILL	10/13/2004	THIS FACILITY MANUFACTURES UNBLEACHED KRAFT LINERBOARD.		BOILER, COAL FIRED	COAL	565	MMBTU/H	MODIFICATION TO A 1962 BOILER	Particulate Matter < 10 µ (PM10)	ESP	0.05	LB/MMBTU					0.05	LB/MMBTU		
42	GA-0114	INLAND PAPERBOARD AND PACKAGING, INC. - ROME LINERBOARD MILL	10/13/2004	THIS FACILITY MANUFACTURES UNBLEACHED KRAFT LINERBOARD.		BOILER, OIL-FIRED	NO. 2 FUEL OIL	192	MMBTU/H	NATURAL GAS BACKUP	Particulate Matter < 10 µ (PM10)		0.05	LB/MMBTU					0.5	LB/MMBTU		

EPA RACT/BACT/LAER CLEARINGHOUSE DATA:
COAL FIRED BOILERS WITH LB/MMBTU PARTICULATE LIMITS IN THE LAST FIVE YEARS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	RBLCID	FACILITYNAME	PERMIT DATE	FACILITYDESCRIPTION	OTHERPERMITTINGINFORMATION	PROCESSNAME	FUEL	THRUPUT	THRUPUTUNIT	PROCESSNOTES	POLLUTANT	CTRLDESC	EMIS LIMIT1	EMIS LIMIT1 UNIT	EMIS LIMIT1 AVGTIME CONDITION	EMISLIMIT2	EMISLIMIT2UNIT	EMISLIMIT2AVGTIMECONDITION	STDEMISSLIMIT	STDUNITLIMIT	STDLIMITAVGTIMECONDITION	POLLUTANT COMPLIANCE NOTES
43	GA-0114	INLAND PAPERBOARD AND PACKAGING, INC. - ROME LINERBOARD MILL	10/13/2004	THIS FACILITY MANUFACTURES UNBLEACHED KRAFT LINERBOARD.		BOILER, SOLID FUEL	BARK	856	MMBTU/H	BARK, WASTEWATER SLUDGE, TDF, FUEL OIL; MAY BE USED TO INCIENRATE NCG GASES; NEW BOILER	Particulate Matter < 10 µ (PM10)	ESP	0.025	LB/MMBTU					0.025	LB/MMBTU		
44	SC-0104	SANTEE COOPER CROSS GENERATING STATION	2/5/2004	ELECTRIC UTILITY	THE FACILITY HAS TWO COAL FIRED BOILERS, EACH RATED AT 5,200 MILLION BTU/HR. THIS PROJECT ADDS TWO ADDITIONAL BOILERS, EACH RATED AT 5,700 MILLION BTU/HR. START UP OF NEW BOILERS AND ASSOCIATED MODIFICATIONS IS SCHEDULED FOR 2007.	BOILER, NO. 3 AND NO. 4	BITUMINOUS COAL	5700	MMBTU/H	THE EXISTING FACILITY HAS TWO COAL FIRED BOILERS, EACH RATED AT 5200 MMBTU/HR. THIS PROJECT ADDS TWO ADDITIONAL COAL FIRED BOILERS, EACH RATED AT 5700 MMBTU/HR. NETTED OUT OF PSD REVIEW FOR SO2, NOX, AND H2SO4 BY REDUCING EMISSIONS ON EXISTING SOURCES. THIS IS A PSD, NSPS, CASE BY CASE MACT, AND SYNTHETIC MINOR PROJECT. BOILERS PERMITTED TO BURN BITUMINOUS COAL (PULVERIZED), SYNFUEL, AND UP TO 30% PETCOKE.	Particulate Matter < 10 µ (PM10)	ESP	0.018	LB/MMBTU					0.018	LB/MMBTU		
45	SC-0104	SANTEE COOPER CROSS GENERATING STATION	2/5/2004	ELECTRIC UTILITY	THE FACILITY HAS TWO COAL FIRED BOILERS, EACH RATED AT 5,200 MILLION BTU/HR. THIS PROJECT ADDS TWO ADDITIONAL BOILERS, EACH RATED AT 5,700 MILLION BTU/HR. START UP OF NEW BOILERS AND ASSOCIATED MODIFICATIONS IS SCHEDULED FOR 2007.	BOILER, NO. 3 AND NO. 4	BITUMINOUS COAL	5700	MMBTU/H	THE EXISTING FACILITY HAS TWO COAL FIRED BOILERS, EACH RATED AT 5200 MMBTU/HR. THIS PROJECT ADDS TWO ADDITIONAL COAL FIRED BOILERS, EACH RATED AT 5700 MMBTU/HR. NETTED OUT OF PSD REVIEW FOR SO2, NOX, AND H2SO4 BY REDUCING EMISSIONS ON EXISTING SOURCES. THIS IS A PSD, NSPS, CASE BY CASE MACT, AND SYNTHETIC MINOR PROJECT. BOILERS PERMITTED TO BURN BITUMINOUS COAL (PULVERIZED), SYNFUEL, AND UP TO 30% PETCOKE.	Particulate Matter (PM)	ESP	0.015	LB/MMBTU					0.015	LB/MMBTU		NSPS LIMIT IS 0.03 LB/MMBTU

EPA RACT/BACT/LAER CLEARINGHOUSE DATA:
COAL FIRED BOILERS WITH LB/MMBTU PARTICULATE LIMITS IN THE LAST FIVE YEARS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	RBLCID	FACILITYNAME	PERMIT DATE	FACILITYDESCRIPTION	OTHERPERMITTINGINFORMATION	PROCESSNAME	FUEL	THRUPUT	THRUPUTUNIT	PROCESSNOTES	POLLUTANT	CTRLDESC	EMIS LIMIT1	EMIS LIMIT1 UNIT	EMIS LIMIT1 AVGTIME CONDITION	EMISLIMIT2	EMISLIMIT2UNIT	EMISLIMIT2AVGTIMECONDITION	STDEMISLIMIT	STDUNITLIMIT	STDLIMITAVGTIMECONDITION	POLLUTANT COMPLIANCE NOTES
46	WI-0225	MANITOWOC PUBLIC UTILITIES	12/3/2003	PUBLIC ELECTRIC UTILITY	CIRCULATING FLUIDIZED BED (CFB) BOILER W/LIME INJ. SNCR NETTED OUT OF PSD FOR MOST POLLUTANTS BY ELIMINATING COAL USAGE FROM BOILER #5. SUBJECT TO NSPS. SUBJECT TO BACT FOR CO. BOILER #5 WILL BE 100 MMBTU/HR NATURAL GAS ONLY (ORIGINALLY 221 MMBTU/HR COAL) CFB 650 MMBTU/HR COAL / PET COKE / PAPER PELLETS (NATURAL GAS STARTUP) 64 MW(E)	CIRCULATING FLUIDIZED BED BOILER (ELECTRIC GENERATION)	COAL / PET COKE	650	MMBTU/H	CIRCULATING FLUIDIZED BED (CFB) BOILER WITH LIME INJECTION 650 MMBTU/HR COAL / PET COKE / PAPER PELLETS (NATURAL GAS STARTUP)	Particulate Matter < 10 µ (PM10)	BAGHOUSE (PULSE JET) CFB DESIGN	0.03	LB/MMBTU								650 MMBTU/HR COAL / PET COKE / PAPER PELLETS (NATURAL GAS STARTUP) NETTED OUT OF PSD BACT BY ELIMINATING COAL FROM BOILER #5 BOTH PM / PM10
47	PA-0182	RELIANT ENERGY SEWARD POWER	8/26/2003	ELECTRIC GENERATING FACILITY	CONSTRUCTION OF 2 CFB BOILERS WITH 2,532 MMBTU/HR HEAT INPUT AND FUELED BY REFUSE COAL AND NO. 2 FUEL OIL. REPOWERING PROJECT.	BOILER, CIRCULATING FLUIDIZED BED, (2)	COAL	2532	MMBTU/H		Particulate Matter < 10 µ (PM10)	FABRIC FILTER BAGHOUSE	0.01	LB/MMBTU					0.01	LB/MMBTU		
48	AR-0074	PLUM POINT ENERGY	8/20/2003		THE FACILITY IS A SINGLE PULVERIZED COAL FIRED BOILER. BETWEEN 550 AND 800 MW.	BOILER , UNIT 1 - SN-01	SUB-BITUMINOUS COAL	800	MW	THE BOILER IS A 550-800 MW PULVERIZED COAL FIRED BOILER.	Particulate Matter < 10 µ (PM10)	BAGHOUSE	0.018	LB/MMBTU					0.018	LB/MMBTU		
49	AR-0079	PLUM POINT ENERGY	8/20/2003	PLUM POINT ENERGY ASSOCIATES, LLC (PERMITTEE) PROPOSES TO CONSTRUCT AND OPERATE A NOMINAL 550-800 MW COAL FIRED GENERATING STATION	THE FACILITY IS A SINGLE PULVERIZED COAL FIRED BOILER. BETWEEN 550 AND 800 MW.	BOILER - SN-01	SUB-BITUMINOUS COAL	800	MW	THE BOILER IS A 550-800 MW PULVERIZED COAL FIRED BOILER.	Particulate Matter < 10 µ (PM10)	BAGHOUSE	0.018	LB/MMBTU					0.018	LB/MMBTU		
50	OH-0231	TOLEDO EDISON CO. - BAYSHORE PLANT	7/31/2003	CIRCULATING FLUIDIZED BED BOILER FIRED WITH COKE AND COAL, INCLUDES: COKE, COAL, LIMESTONE, AND FLY ASH STORAGE, LOAD IN AND OUT, CONVEYING AND TRANSFERRING, DUMPING, SOLID FUEL AND LIMESTONE CRUSHING, STORAGE PILES, ROADWAYS, AND A LIMESTONE DRYER.	THIS PERMIT HAS BEEN MODIFIED 03/27/1998, 7/28/99, 10/24/02, AND NOW 7/31/03. IT WAS FIRST ISSUED AROUND 6/20/97. THE FACILITYWIDE POLLUTANTS INCREASES AND DECREASES ARE FROM THE MODIFICATION ISSUED 7/28/99, WHICH WAS PSD FOR CO. THIS MODIFICATION, 7/31/03, WAS TO CORRECT ERRORS IN PERMIT MODIFICATION OF 10/24/02.	BOILER, CFB, COKE/COAL-FIRED	PETROLEUM COKE	1764	MMBTU/H	CIRCULATING FLUIDIZED BED BOILER, MFG. BY FOSTER WHEELER. 1736 MMBTU/H ON PETROLEUM COKE, PRIMARY FUEL; AND 1764 MMBTU/H ON COAL. 136 MW THE MAXIMUM AMOUNT OF COKE LOADED-IN TO THIS FACILITY, FOR USE IN THIS BOILER, SHALL NOT EXCEED 730,000 TONS PER ROLLING 12-MONTHS.	Particulate Matter (PM)	BAGHOUSE	0.03	LB/MMBTU		232	T/YR		0.03	LB/MMBTU		
51	OH-0231	TOLEDO EDISON CO. - BAYSHORE PLANT	7/31/2003	CIRCULATING FLUIDIZED BED BOILER FIRED WITH COKE AND COAL, INCLUDES: COKE, COAL, LIMESTONE, AND FLY ASH STORAGE, LOAD IN AND OUT, CONVEYING AND TRANSFERRING, DUMPING, SOLID FUEL AND LIMESTONE CRUSHING, STORAGE PILES, ROADWAYS, AND A LIMESTONE DRYER.	THIS PERMIT HAS BEEN MODIFIED 03/27/1998, 7/28/99, 10/24/02, AND NOW 7/31/03. IT WAS FIRST ISSUED AROUND 6/20/97. THE FACILITYWIDE POLLUTANTS INCREASES AND DECREASES ARE FROM THE MODIFICATION ISSUED 7/28/99, WHICH WAS PSD FOR CO. THIS MODIFICATION, 7/31/03, WAS TO CORRECT ERRORS IN PERMIT MODIFICATION OF 10/24/02.	BOILER, CFB, COKE/COAL-FIRED	PETROLEUM COKE	1764	MMBTU/H	CIRCULATING FLUIDIZED BED BOILER, MFG. BY FOSTER WHEELER. 1736 MMBTU/H ON PETROLEUM COKE, PRIMARY FUEL; AND 1764 MMBTU/H ON COAL. 136 MW THE MAXIMUM AMOUNT OF COKE LOADED-IN TO THIS FACILITY, FOR USE IN THIS BOILER, SHALL NOT EXCEED 730,000 TONS PER ROLLING 12-MONTHS.	Particulate Matter < 10 µ (PM10)	BAGHOUSE	0.025	LB/MMBTU		193	T/YR		0.025	LB/MMBTU		

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	RBLCID	FACILITYNAME	PERMIT DATE	FACILITYDESCRIPTION	OTHERPERMITTINGINFORMATION	PROCESSNAME	FUEL	THRUPUT	THRUPUTUNIT	PROCESSNOTES	POLLUTANT	CTRLDESC	EMIS LIMIT1	EMIS LIMIT1 UNIT	EMIS LIMIT1 AVGTIME CONDITION	EMISLIMIT2	EMISLIMIT2UNIT	EMISLIMIT2AVGTIMECONDITION	STDEMISLIMIT	STDUNITLIMIT	STDLIMITAVGTIMECONDITION	POLLUTANT COMPLIANCE NOTES
52	*IA-0067	MIDAMERICAN ENERGY COMPANY	6/17/2003		THE PERMITS ASSOCIATED WITH THIS PROJECT HAVE BEEN AMENDED WITH THE FOLLOWING PROJECTS: 04-751: CHANGE IN CONTROL ON TRANSFER HOUSE 04-759: REPLACED 112G LIMITS WITH SUBPART DDDDD LIMITS ON AUX BOILER 06-541: AMENDED EXISTING PERMITS FOR UNPERMITTED CHANGES AND OBTAINED PERMITS FOR UNPERMITTED EMISSION UNITS INSTALLED DURING CONSTRUCTION. A NOTICE OF VIOLATION (NOV) WAS SENT FOR THE UNPERMITTED CHANGES.	CBEC 4 BOILER	PRB COAL	7675	MMBTU/H		Particulate Matter (PM), Filterable	BAGHOUSE	0.18	LB/MMBTU					0.18	LB/MMBTU		Standard was set through the 112g process.
53	*IA-0067	MIDAMERICAN ENERGY COMPANY	6/17/2003		THE PERMITS ASSOCIATED WITH THIS PROJECT HAVE BEEN AMENDED WITH THE FOLLOWING PROJECTS: 04-751: CHANGE IN CONTROL ON TRANSFER HOUSE 04-759: REPLACED 112G LIMITS WITH SUBPART DDDDD LIMITS ON AUX BOILER 06-541: AMENDED EXISTING PERMITS FOR UNPERMITTED CHANGES AND OBTAINED PERMITS FOR UNPERMITTED EMISSION UNITS INSTALLED DURING CONSTRUCTION. A NOTICE OF VIOLATION (NOV) WAS SENT FOR THE UNPERMITTED CHANGES.	CBEC 4 BOILER	PRB COAL	7675	MMBTU/H		Particulate Matter (PM)	BAGHOUSE	0.027	LB/MMBTU					0.027	LB/MMBTU		The BACT limit includes condensibles.
54	*IA-0067	MIDAMERICAN ENERGY COMPANY	6/17/2003		THE PERMITS ASSOCIATED WITH THIS PROJECT HAVE BEEN AMENDED WITH THE FOLLOWING PROJECTS: 04-751: CHANGE IN CONTROL ON TRANSFER HOUSE 04-759: REPLACED 112G LIMITS WITH SUBPART DDDDD LIMITS ON AUX BOILER 06-541: AMENDED EXISTING PERMITS FOR UNPERMITTED CHANGES AND OBTAINED PERMITS FOR UNPERMITTED EMISSION UNITS INSTALLED DURING CONSTRUCTION. A NOTICE OF VIOLATION (NOV) WAS SENT FOR THE UNPERMITTED CHANGES.	CBEC 4 BOILER	PRB COAL	7675	MMBTU/H		Particulate Matter < 10 μ (PM10)	BAGHOUSE	0.025	LB/MMBTU					0.025	LB/MMBTU		BACT limit includes condensibles