

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION I  
1 Congress Street, Suite 1100  
BOSTON, MA 02114-2023**

**Memorandum**

**Date:** 22 January 2009

**Subject:** Dispersion Modeling for Dominion Energy's 9 January 2009 REVISED PSD Permit Application for a Major Modification of the Brayton Point Generating Station

**From:** Brian Hennessey, Region 1 Modeling Contact, Air Permits Program  
*1/22/2009*  
*Brian Hennessey*

**To:** Brendan McCahill

This details my comments on the adequacy and regulatory implications of dispersion modeling prepared for a major modification of the Brayton Point Generating Station (Somerset, Massachusetts). The modeling appears in the document entitled "REVISED 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" prepared by Epsilon Associates for Dominion Energy Brayton Point, LLC whose Vice President Pamela F. Faggert submitted it to Region 1 U.S. EPA on 9 January 2009.

In the document submitted to Region 1, Dominion quantifies 'significant' (over 15 tpy) PM10 emission increases from the construction and operation of two natural draft cooling towers at the power plant together with installation of a dry scrubber/fabric filter (DS/FF) for SO2 emission control on Unit #3. No other emission changes were calculated so it only can be concluded from the January document that dispersion modeling of PM10 and PM2.5 ('significant' if over 10 tpy, filterable) would be required for PSD permitting.

All emissions in tpy	Base Actual	Potential	Increase
2 new natural draft cooling towers			
Total PM10	0	389	389
Filterable PM2.5	0	389	389
DS/FF retrofit on Unit #3			
Total PM10	670	464	-206
Filterable PM2.5	134	186	52
Net Proposed Increases			
Total PM10			183
Filterable PM2.5			441

Note that Dominion has likely overestimated PM emission increases from the cooling towers because after a discussion with EPA's John Bosch, Region 1 was unable to accept Dominion's initial proposal which would discount drift PM with a physical diameter greater than  $10\mu$ . Therefore, Dominion instead estimated PM emissions using AP-42 which is generally considered to provide a ceiling on actual emissions from cooling towers.

EPA regulations require dispersion modeling of over significant PM<sub>2.5</sub> and PM<sub>10</sub> increases in PSD permitting as follows:

40 CFR 52.21(b)(15)(i) defines the pollutant-specific baseline area to include the section 107 area where a major new source or modification would build or any intrastate section 107 area where it would have an annual impact greater than  $1\ \mu\text{g}/\text{m}^3$  of the pollutant.

*Dominion's submittal does not identify any area where minor baseline area would be set because the permitted modifications would have annual PM<sub>10</sub> impacts greater than  $1\ \mu\text{g}/\text{m}^3$ . However, in the permit application Dominion requests a finding from EPA on the matter.*

*Stephen Dennis of Massachusetts DEP e-mailed a spreadsheet "PSD permits and PSD SIP Revisions in Massachusetts Consuming PSD Increment as of 11/1/2008" to Region 1 on 11-4-2008 with a request to update for sources permitted after DEP returned the PSD program to EPA. The spreadsheet lists no PSD subject major source activity within the Town of Somerset section 107 area to set the minor source baseline for any pollutant.*

*In an e-mail of 1-20-2009 Stephen Dennis indicates the closest towns to Somerset where minor source PM baseline area was set are New Bedford (on 7-11-1994 by the New Bedford Cogeneration Facility's permit application) and Rochester (on 8-4-1980 by SEMASS RR's permit application). Because the New Bedford cogenerator was never built, and since SEMASS was modeled with under  $1\ \mu\text{g}/\text{m}^3$  annual impacts, neither has set PM baseline on Somerset or any other nearby section 107 area. From this it can be concluded that minor source baseline has not been set in Somerset, that all emissions interacting with Brayton Point's are baselined - consume no increment -and that the application for the DS/FF and cooling tower PSD permit will initiate the Somerset PM<sub>10</sub> baseline area.*

*Although Massachusetts uses towns for section 107 areas for PM<sub>10</sub>, 40 CFR 81.322 designates all of Bristol County attainment or unclassifiable for PM<sub>2.5</sub>, making the county, not the town, the section 107 unit to use for PM<sub>2.5</sub>. Therefore, Dominion's PSD permit application will make all of Bristol County a baseline area for PM<sub>2.5</sub>.*

40 CFR 52.21(k) 'Source impact analysis' requires dispersion modeling to show that over significant emission increases from the modification:

Will not contribute to a violation of ambient air quality standards (See 40 CFR 50.6 [PM<sub>10</sub>] and 50.13 [PM<sub>2.5</sub>]), and

Will not contribute to 'maximum allowable increase over the baseline concentration' (See 40 CFR 52.21(c)) For brevity these allowable increases are often called 'increment'.

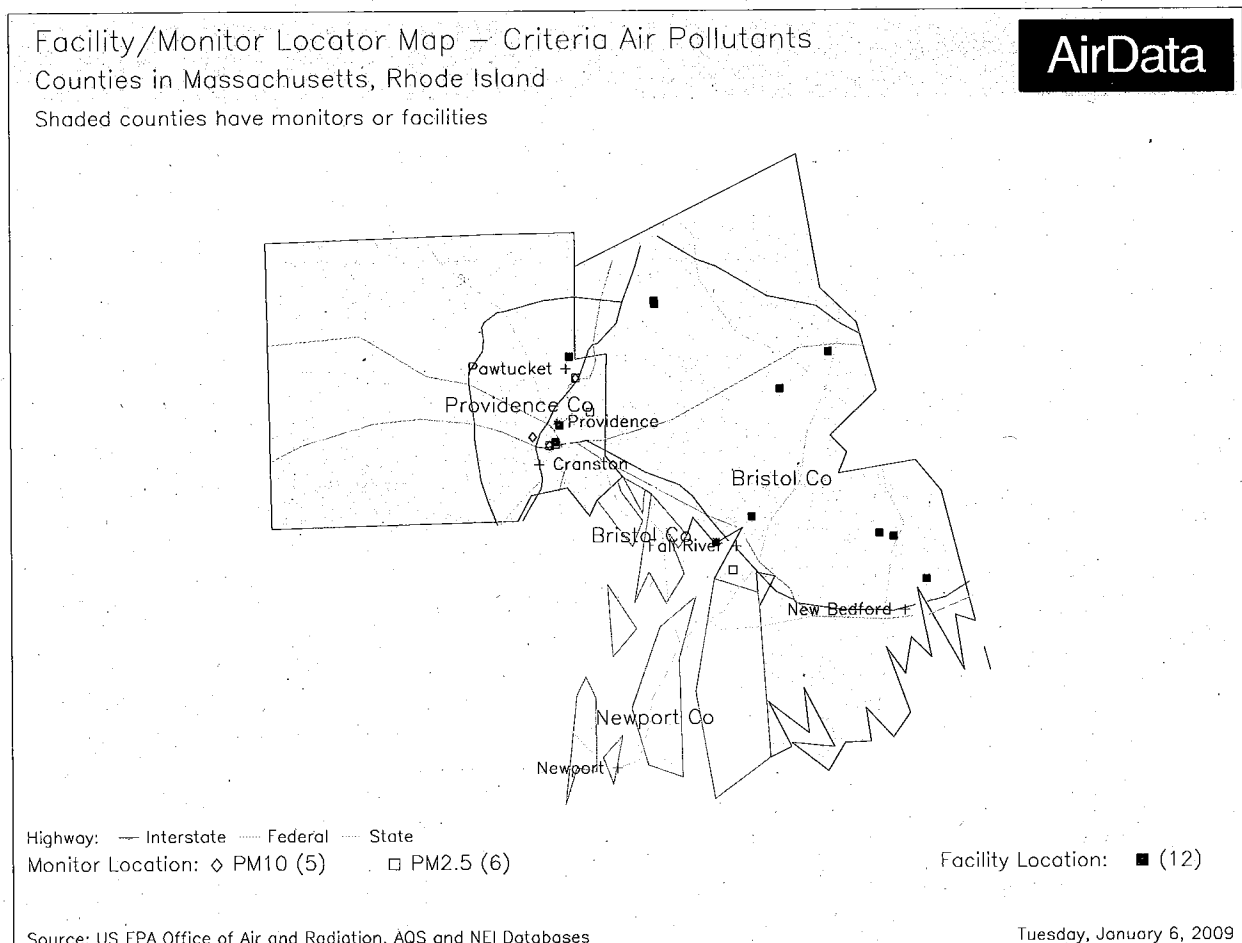
See the paragraphs following the ending table.

40 CFR 52.21(l) 'Air quality models' requires that the dispersion models in 40 CFR 51 Appendix W be used to estimate all ambient pollutant concentrations.

*Dominion modeled Brayton Point's stacks and natural draft cooling tower using EPA guideline (Appendix W) AERMOD dispersion model, guideline preprocessors, and 5 years (2002, and 2004-7 T.F.Green surface meteorological data with contemporary upper air data from Morris Island in Chatham). While use of a continuous record of 5 years of meteorological data is preferred, T.F.Green's data capture for 2003 was substandard.*

40 CFR 52.21(m) 'Air quality analysis' requires an analysis of at least one year of generally continuous air quality data representative of the area that over significant emission increases would affect.

*The following figure identifies locations of monitoring sites collecting PM2.5 and PM10 data representative of the areas Brayton Point's PM emission increases would affect. Dominion selected data from these sites and combined it with modeling data to assess whether the plant modification would comply with PM2.5 and PM10 standards.*



40 CFR 52.21(o) 'Additional impacts analysis' requires an assessment of the impacts on visibility, soils, and vegetation of emissions from the modification and associated growth.

*Region 1 did not require Dominion to assess the visual impact of the cooling towers' steam plumes because water vapor and water droplets/aerosols are not pollutants regulated by the Clean Air Act. Dominion modeled salt deposition from cooling tower drift using the nonguideline SACTI (Seasonal-Annual Cooling Tower Impact) Model. Appendix W is mandatory for concentration calculations, not deposition estimates.*

40 CFR 52.21(o) 'Sources impacting Federal Class I areas...' requires EPA to give written notice to the Federal Land Manager of any Class 1 area which the increase in emissions from a major new or modified source may affect.

*Dominion assessed the impact of the increase in PM emissions at Brayton Point on visibility in the nearest Class I area (Lye Brook Wilderness, Vermont) with the VISCREEN Model. The model's Level 1 screen showed no potential for visibility impairment in the Class 1 area 213 km. away.*

40 CFR 52.21(k) 'Source impact analysis' .... Discussion continued

Tabulated below are the concentration levels relevant to permitting any major new or modified source of PM emissions.

All concentrations in $\mu\text{g}/\text{m}^3$ : Action level	PM2.5		PM10	
	Annual	24-Hour	Annual	24-Hour
SILs	Regulations		1	5
Monitoring exclusion	on these		N.A.	10
Increment	pending.		17	30
NAAQS	15 <sup>†</sup>	35 <sup>‡</sup>	None	150*
Modeled and monitored				
Brayton Point	1.4	9.7	1.7	21.9
Background	9.1	24	19	46
Total	10.5	33.7	20.7	67.9

- Notes
- † PM2.5 annual air quality standard is met when the average of the arithmetic annual average over three consecutive years falls below 15  $\mu\text{g}/\text{m}^3$ .
  - ‡ The PM2.5 24-hour will be met when the 98%-tile highest monitored PM2.5 concentration averaged over three consecutive years is under 35  $\mu\text{g}/\text{m}^3$ .
  - \* The PM10 24-hour standard is met when the expected number of exceedances of 150  $\mu\text{g}/\text{m}^3$  is less than or equal to one.

Brayton Point's modeled PM<sub>2.5</sub> and PM<sub>10</sub> impacts above represent maximum annual and 24-hour impacts from the entire plant, not merely the increases from the two new cooling towers and DS/FF control system on Unit #3. Consequently, the next three paragraphs which could have considered PM emission increases alone, make highly conservative comparisons against 'action levels'

SILs, or 'significant impact levels': Emission increases from new and modified facilities can be permitted in designated attainment areas in the presence of air quality standards violations provided the increase in ambient impacts from the facility fall below these levels. 40 CFR Part 51 Appendix S III tabulates the 'significance levels.' Because Brayton Point's 24-hour PM<sub>10</sub> impact  $21.9 \mu\text{g}/\text{m}^3$  exceeds the  $5 \mu\text{g}/\text{m}^3$  PM<sub>10</sub> SIL, compliance with increments and air quality standards must be more directly addressed.

Monitoring exclusion: Because Brayton Point's 24-hour  $21.9 \mu\text{g}/\text{m}^3$  PM<sub>10</sub> impact exceeds the  $10 \mu\text{g}/\text{m}^3$  PM<sub>10</sub> exclusion level, the preconstruction monitoring exemption at 40 CFR 52.21(i)(5) does not appear a possibility. In any event several recent years of PM<sub>10</sub> and PM<sub>2.5</sub> representative of the area were available and used in the 'air quality analysis' required in 40 CFR 52.21(m) as described above. Dominion sought no preconstruction monitoring exemption.

Increment: An increment is the maximum amount by which existing ambient air pollutant concentrations can be allowed to increase thereby approaching an air quality standard. 40 CFR 51.166(c) lists the Class II ambient air increments that apply in Somerset, Massachusetts. Because Brayton Point's 24-hour  $21.9 \mu\text{g}/\text{m}^3$  PM<sub>10</sub> impact falls below the  $30 \mu\text{g}/\text{m}^3$  PM<sub>10</sub> increment and its  $1.7 \mu\text{g}/\text{m}^3$  annual impact below  $17 \mu\text{g}/\text{m}^3$ , the increase in PM<sub>10</sub> emission will not exceed Class II increments. Note, again, that most of the emissions Dominion modeled would not result from the modification and do not consume increment.

NAAQS : The 'National Ambient Air Quality Standards' represent the air pollutant concentrations or levels below which there will be no adverse effects on health or welfare. Compliance with the PM NAAQS is shown by comparing the last line of the table, which sums Brayton Point's modeled impacts with background PM measurements, against the NAAQS appearing in the same column. In all cases 'Total' PM concentration falls below the level of, and comply with, the NAAQS .

The bottom half of the table presents extracts from Dominion's modeling of PM<sub>2.5</sub> and PM<sub>10</sub> emissions from Brayton Point. Note the following, all important:

- Limiting, or highest, whole source impacts occur at intermediate loads (and PM emission rates) - Unit #s 1, 2, 3, and 4 operating at 1408/2250, 1408/2250, 3500/5655, and 2439/4800, all in units of modeled heat input to maximum heat input.
- Initially, modeling compliance against the PM<sub>2.5</sub> and PM<sub>10</sub> 24-hour NAAQS seemed problematic: In 2002 Somerset Generating Station (northwest of Brayton Point in the figure above) emitted 199 tpy PM<sub>2.5</sub> and 229 tpy PM<sub>10</sub>. Brayton Point's PM impacts approach the two standards, and because the increase in Brayton Point's PM emissions (from Unit #3 especially) may cause PM concentration increases over the  $5 \mu\text{g}/\text{m}^3$  SIL ('Significant Impact Level'), Dominion should have performed interactive, or cumulative, PM modeling to include Somerset Generating Station. On 14 January A.J. Jablonowski

of Epsilon (Dominion's engineering-consultant) e-mailed Region 1 more current data for Somerset Station showing monotonically decreasing PM emission decreases from 70 tpy PM10 and 31 tpy PM2.5 in 2005 to 50 tpy and 23 tpy respectively in 2007. The omission of Somerset from the modeling is in accord with the modeling protocol and acceptable.

- In an e-mail on 1-15-2009 Stephen Dennis noted that in permit modelling Massachusetts DEP often requires interactive or cumulative modeling of sources with actual emissions over 100 tpy and within 10 km of the permit applicant. Somerset Station's PM emissions are lower. Note, too, that Dominion's modeling of Brayton Point has conservatively modeled 'highest 8<sup>th</sup> high' and 'highest 2<sup>nd</sup> high' model PM2.5 and PM10 emissions against the respective PM 24-hour NAAQS where average highest 8<sup>th</sup> high and highest 6<sup>th</sup> high model estimates could have been used.. The NAAQS analyses also very conservatively assume that monitors record highest PM under conditions corresponding to highest modelled PM impacts.

# Facility/Monitor Locator Map - Criteria Air Pollutants - View Data | AirData | US EPA

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## Facility/Monitor Locator Map - Criteria Air Pollutants - View Data

**Geographic Area:** Bristol Co, Massachusetts; Bristol Co, Newport Co, Providence Co, Rhode Island  
**Emissions Pollutant:** Particulate (size < 2.5 micrometers) or Particulate (size < 10 micrometers) emissions above 10 tons  
**Emissions Year:** 2002

**Total Emissions from selected facilities:**  
 PM2.5: 1,823 tons in 2002 (0.2% of US total)  
 PM10: 2,128 tons in 2002 (0.2% of US total)

12 Rows of Facility Data  
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Row #	EPA Region	State	County Code	County	Facility ID	Facility Name	Facility Mailing Address	SIC Code	Latitude (degrees)	Longitude (degrees)	Emissions Year	CO Emissions (Tons)	NOx Emissions (Tons)	VOC Emissions (Tons)	SO2 Emissions (Tons)	PM2.5 Emissions (Tons)
1	01	MA	25005	Bristol Co	25005-1200002	TEXAS INSTRUMENTS INC	34 FOREST STREET, ATTLEBORO, MA 02703-0964	3822	41.9478	-71.2729	2002	27	66	13	392	
2	01	MA	25005	Bristol Co	25005-1200060	SOMERSET OPERATIONS INC (NRG ENERGY)	1606 RIVERSIDE AVENUE, SOMERSET, MA 02726-0000	4911	41.7364	-71.1437	2002	76	1,450	10	4,400	
3	01	MA	25005	Bristol Co	25005-1200061	USGEN NEW ENGLAND INCORPORATED	BRAYTON POINT STATION, SOMERSET, MA 02726-0000	4911	41.7112	-71.1918	2002	1,759	12,673	96	39,593	
4	01	MA	25005	Bristol Co	25005-1200067	TAUNTON MUNICIPAL LIGHT - CLEARY FLOOD	1314 SOMERSET AVENUE, TAUNTON, MA 02780-0000	4911	41.8634	-71.1045	2002	53	244	4,2105	118	
5	01	MA	25005	Bristol Co	25005-1200149	POLAROID HOLDING CORPORTION	100 DUCHAINE BOULEVARD, NEW BEDFORD, MA 02745-0000		41.7159	-70.9521	2002	15	71	21	127	6.277691
6	01	MA	25005	Bristol Co	25005-1200182	PJ KEATING CO	72 SOUTH MAIN STREET, ACUSHNET, MA 02743-0000	2951	41.6735	-70.9076	2002	1	15	5	21	6.77764
7	01	MA	25005	Bristol Co	25005-1200199	FORTIFIBER CORP	55 STARKEY AVENUE, ATTLEBORO, MA 02703-0000		41.9514	-71.2742	2002		2			5.25330
					25005-	ACUSHNET	256 SAMUEL BARNETT BLVD,									

8 01	MA	25005	Bristol Co	1200254	COMPANY PLANT #2	3949	41.7192	-70.9715	2002	2.5995	16	64	40	10	12	0.26	135
					DARTMOUTH, MA 02714- 0000												
9 01	MA	25005	Bristol Co	25005- 1200392	OLSONS GREENHOUSES		41.9000	-71.0385	2002		4		12	43	45		61
					590 SOUTH STREET, RAYNHAM, MA 02767- 1079												
10 01	RI	44007	Providence Co	44007- AIR1283	RHODE ISLAND HOSPITAL	8062	41.8115	-71.4072	2002	26	243	16	521	9.1041554633	25		830
					593 EDDY ST, PROVIDENCE, RI 02902												
11 01	RI	44007	Providence Co	44007- AIR187	BROWN UNIVERSITY	8221	41.8281	-71.4017	2002	9.966	77	4.098	211	4.1407024824	11		314
					164 ANGELL ST, PROVIDENCE, RI 02912												
12 01	RI	44007	Providence Co	44007- AIR572	OSRAM SYLVANIA PRODUCTS INC	3229	41.8962	-71.3887	2002	17	252	16	124	21	24		433
					1193 BROAD ST, CENTRAL FALLS, RI 02863												

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**Disclaimer:** Emissions information for this map comes from an extract of EPA's National Emission Inventory (NEI) database. Data were extracted in August 2008 (2002 emissions) and August 2005 (pre-2002 emissions). NEI is an emissions database developed by EPA. It is based partially on emission data obtained from State and local agencies, but it is not a database of official State emissions data. Please contact the appropriate State agency to obtain information on a State's official emission inventory. Please contact EPA to report errors.

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**Facility/Monitor Locator Map - Criteria Air Pollutants - View Data**

**Geographic Area:** Bristol Co, Massachusetts; Bristol Co, Newport Co, Providence Co, Rhode Island  
**Monitor Pollutant:** Particulate (size < 2.5 micrometers) or Particulate (size < 10 micrometers)  
**Monitor Status:** Reported data in 2005, 2006, 2007, or 2008

11 Rows of Monitor Data  
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Row #	State	Monitor ID	Pollutant	Monitor Address	City	City Population	City Center	Land Use	Location Type	Measurement Scale	Dominant Source Type	Monitor Type	Monitoring Objective	County	Urbanized Area	MSA	CMSA	AQCR	Longitude	Latitude
1	MA	25-005-1004-88101-1	PM2.5	659 Globe St	Fall River	91,938	2 mi. SW	Commercial	Suburban	Neighborhood	Area	SLAMS	Population Exposure (Fall River, MA-RI), Highest Concentration (Fall River, MA-RI)	Bristol Co	Fall River, MA-RI	Providence-Fall River-Warwick, RI-MA	Metropolitan Providence	71.169171	41.683279	
2	RI	44-007-0022-81102-1	PM10	212 Prairie Ave, Providence RI	Providence	173,618		Residential	Urban And Center City	Neighborhood		SLAMS	Unknown, Population Exposure (Providence-Fall River-Warwick RI-MA MSA), Highest Concentration (Providence-Fall River-Warwick, RI-MA MSA)	Providence Co	Providence-Pawtucket, RI-MA	Providence-Fall River-Warwick, RI-MA	Metropolitan Providence	71.415000	41.807949	
3	RI	44-007-0022-81102-2	PM10	212 Prairie Ave, Providence RI	Providence	173,618		Residential	Urban And Center City	Neighborhood		Other	Population Exposure (Providence-Fall River-Warwick RI-MA MSA), Highest Concentration (Providence-Fall River-Warwick, RI-MA MSA)	Providence Co	Providence-Pawtucket, RI-MA	Providence-Fall River-Warwick, RI-MA	Metropolitan Providence	71.415000	41.807949	
4	RI	44-007-0022-88101-1	PM2.5	212 Prairie Ave, Providence RI	Providence	173,618		Residential	Urban And Center City	Neighborhood		SLAMS	Population Exposure (Providence-Fall River-Warwick, RI-MA MSA), Highest Concentration (Providence-Fall River-Warwick, RI-MA MSA)	Providence Co	Providence-Pawtucket, RI-MA	Providence-Fall River-Warwick, RI-MA	Metropolitan Providence	71.415000	41.807949	
5	RI	44-007-0022-88101-2	PM2.5	212 Prairie Ave, Providence	Providence	173,618		Residential	Urban And Center	Neighborhood		Other	Unknown, Population Exposure (Providence-Fall River-Warwick, RI-MA MSA), Highest Concentration (Providence-Fall River-Warwick, RI-MA MSA)	Providence Co	Providence-Pawtucket, RI-MA	Providence-Fall River-Warwick, RI-MA	Metropolitan Providence	71.415000	41.807949	

6 RI	44-007-0026-81102-1	PM10	Vernon Street Trailer	Pawtucket	72,958	1 mi.	Residential	Urban And Center City	Middle Scale	Mobile	SLAMS	Concentration (Providence-Fall River-Warwick,RI-MA MSA)	Providence Co	Providence-Fall River-Warwick,RI-MA	Providence-Fall River-Warwick,RI-MA	MA	Metropolitan Providence	71.379944	41.874655
7 RI	44-007-0026-88101-1	PM2.5	Vernon Street Trailer	Pawtucket	72,958	1 mi.	Residential	Urban And Center City	Middle Scale		SLAMS	Population Exposure (Providence-Fall River-Warwick,RI-MA MSA), Highest Concentration (Providence-Fall River-Warwick,RI-MA MSA)	Providence Co	Providence-Fall River-Warwick,RI-MA	Providence-Fall River-Warwick,RI-MA	MA	Metropolitan Providence	71.379944	41.874655
8 RI	44-007-0027-88102-1	PM10	111 Dorrance Street, Providence, RI 0290	Providence	173,618		Commercial	Urban And Center City			SLAMS	Upwind Background (New London-Norwich,CT-RI MSA)	Providence Co	Providence-Fall River-Warwick,RI-MA	Providence-Fall River-Warwick,RI-MA	MA	Metropolitan Providence	71.415000	41.807949
9 RI	44-007-0028-88101-1	PM2.5	695 Eddy Street	Providence	173,618		Commercial	Urban And Center City	Urban Scale		SLAMS	Population Exposure (Providence-Fall River-Warwick,RI-MA MSA), Highest Concentration (Providence-Fall River-Warwick,RI-MA MSA)	Providence Co	Providence-Fall River-Warwick,RI-MA	Providence-Fall River-Warwick,RI-MA	MA	Metropolitan Providence	71.407430	41.809330
10 RI	44-007-0029-81102-1	PM10	1655 Westminster Street	Providence	173,618		Residential	Urban And Center City		Other		Population Exposure (Providence-Fall River-Warwick,RI-MA MSA)	Providence Co	Providence-Fall River-Warwick,RI-MA	Providence-Fall River-Warwick,RI-MA	MA	Metropolitan Providence	71.437899	41.816435
11 RI	44-007-1010-88101-1	PM2.5	Francis School, 64 Bourne Ave	East Providence	48,688	NE	Residential	Suburban	Urban Scale		SLAMS	Population Exposure (Providence-Fall River-Warwick,RI-MA MSA), Highest Concentration (Providence-Fall River-Warwick,RI-MA MSA)	Providence Co	Providence-Fall River-Warwick,RI-MA	Providence-Fall River-Warwick,RI-MA	MA	Metropolitan Providence	71.360940	41.840920

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Disclaimer: Monitor information in this map comes from a monthly extract of EPA's Air Quality System (AQS) database. Data for this map were extracted on November 29, 2008. They represent the best information available to EPA from state agencies on that date. However, some values may be absent due to incomplete reporting, and some values subsequently may be changed due to quality assurance activities. The AQS database is updated daily by state and local organizations who own and submit the data. Please contact the pertinent state agency to report errors.

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**Monitor Values Report - Criteria Air Pollutants**

**Geographic Area:** Bristol Co, MA; Bristol Co, Newport Co, Providence Co, RI  
**Pollutant:** Particles < 2.5 micrometers diameter, Particles < 10 micrometers diameter  
**Year:** 2005, 2006, 2007, 2008

**EPA Air Quality Standards:**  
Particles < 2.5 micrometers diameter: 35  $\mu\text{g}/\text{m}^3$  (24-Hour Average), 15.0  $\mu\text{g}/\text{m}^3$  (annual mean)  
Particles < 10 micrometers diameter: 150  $\mu\text{g}/\text{m}^3$  (24-hour average), 50  $\mu\text{g}/\text{m}^3$  (annual mean)

$\mu\text{g}/\text{m}^3$  = micrograms per cubic meter

29 Rows  
See Disclaimer

Row #	SCRI	PM2.5 ( $\mu\text{g}/\text{m}^3$ )															PM10 ( $\mu\text{g}/\text{m}^3$ )										Site Address	City	County	State	Latitude (Degrees)	Longitude (Degrees)
		24-Hour Values					Annual					24-Hour Values					Annual															
		# Obs	1st Max	2nd Max	3rd Max	4th Max	# Exceed	Mean	# Exceed	# Exceed	Mean	# Exceed	# Exceed	4th Max	3rd Max	2nd Max	1st Max	# Obs	# Exceed	Actual	# Exceed	Mean	# Exceed									
1	108	30.3	25.7	21.9	21.9	21.9	0	10.05	0	10.05	0	1												659 Globe St	Fall River	Bristol Co	MA	41.683279	-71.169171			
2	114	36.9	27.9	24.5	24.5	24.5	0	8.11	0	8.11	0	1												659 Globe St	Fall River	Bristol Co	MA	41.683279	-71.169171			
3	119	29.8	29.4	26.0	25.7	26.0	0	9.17	0	9.17	0	1												659 Globe St	Fall River	Bristol Co	MA	41.683279	-71.169171			
4	92	34.3	23.7	23.7	21.4	23.7	0	9.65	0	9.65	0	1												212 Prairie Ave, Providence RI	Providence	Providence Co	RI	41.807949	-71.415000			
5	328	42.4	40.0	35.7	34.7	31.1	0	10.61	0	10.61	0	1	61	48	46	39	36	0	0.0	18	0				212 Prairie Ave, Providence RI	Providence	Providence Co	RI	41.807949	-71.415000		
6	61	38.7	32.8	31.2	25.5	32.8	0	12.05	0	12.05	0	2	48	46	39	35		0	0.0	19	0				212 Prairie Ave, Providence RI	Providence	Providence Co	RI	41.807949	-71.415000		
7	346	43.3	33.3	32.6	32.0	30.2	0	10.10	0	10.10	0	1	61	54	47	33	31	0	0.0	18	0				212 Prairie Ave, Providence RI	Providence	Providence Co	RI	41.807949	-71.415000		
8	57	44.7	31.0	25.3	22.8	31.0	0	11.39	0	11.39	0	2	55	48	48	33	31	0	0.0	18	0				212 Prairie Ave, Providence RI	Providence	Providence Co	RI	41.807949	-71.415000		
9	347	43.2	31.2	29.8	29.7	27.1	0	9.52	0	9.52	0	1	60	30	27	27	26	0	0.0	15	0				212 Prairie Ave, Providence RI	Providence	Providence Co	RI	41.807949	-71.415000		
10	55	24.0	20.3	19.7	18.4	20.3	0	9.72	0	9.72	0	2	56	30	27	26	26	0	0.0	15	0				212 Prairie Ave, Providence RI	Providence	Providence Co	RI	41.807949	-71.415000		
11	169	33.3	31.5	30.1	26.3	26.3	0	9.66	0	9.66	0	1	31	41	34	26	25	0	0.0	18	0				212 Prairie Ave, Providence RI	Providence	Providence Co	RI	41.807949	-71.415000		

12	30	32.3	27.2	16.3	15.7	32.3	0	10.22	0	2	14	42	34	24	23	0	0.0	20	0	2	2008	440070022	Providence RI	Providence Co	RI	41.807949	-71.415000
13	105	35.1	34.9	29.3	27.5	29.3	0	12.37	0	1	57	55	54	46	46	0	0.0	24	0	1	2005	440070026	Vernon Street Trailer	Providence Co	RI	41.874655	-71.379944
14	102	35.0	32.0	30.2	26.1	30.2	0	11.85	0	1	57	46	44	37	35	0	0.0	21	0	1	2006	440070026	Vernon Street Trailer	Providence Co	RI	41.874655	-71.379944
15	114	34.8	32.1	31.0	29.5	31.0	0	11.68	0	1	55	54	52	35	32	0	0.0	19	0	1	2007	440070026	Vernon Street Trailer	Providence Co	RI	41.874655	-71.379944
16	58	27.9	27.5	23.8	19.3	27.5	0	11.12	0	1	30	42	40	39	38	0	0.0	23	0	1	2008	440070026	Vernon Street Trailer	Providence Co	RI	41.874655	-71.379944
17											55	49	42	36	35	0	0.0	20	0	1	2005	440070027	111 Dorrance Street, Providence, RI 0290	Providence Co	RI	41.807949	-71.415000
18											55	55	50	43	37	0	0.0	21	0	1	2006	440070027	111 Dorrance Street, Providence, RI 0290	Providence Co	RI	41.807949	-71.415000
19											58	31	29	27	27	0	0.0	16	0	1	2007	440070027	111 Dorrance Street, Providence, RI 0290	Providence Co	RI	41.807949	-71.415000
20											28	42	40	39	28	0	0.0	20	0	1	2008	440070027	111 Dorrance Street, Providence, RI 0290	Providence Co	RI	41.807949	-71.415000
21	81	37.5	32.2	28.2	26.0	32.2	0	11.30	0	1										2005	440070028	695 Eddy Street	Providence Co	RI	41.809330	-71.407430	
22	115	34.8	32.1	24.8	22.9	24.8	0	9.84	0	1										2006	440070028	695 Eddy Street	Providence Co	RI	41.809330	-71.407430	
23	117	30.4	30.1	28.3	28.0	28.3	0	10.47	0	1										2007	440070028	695 Eddy Street	Providence Co	RI	41.809330	-71.407430	
24	58	29.3	29.2	19.8	17.7	29.2	0	10.40	0	1										2008	440070028	695 Eddy Street	Providence Co	RI	41.809330	-71.407430	
25											14	31	26	24	22	0	0.0	19	0	1	2005	440070029	1655 Westminster Street	Providence Co	RI	41.816435	-71.437899
Grand Total							0		0							0	0.0	0	0	2005							
							0		0							0	0.0	0	0	2007							
							0		0							0	0.0	0	0	2006							
							0		0							0	0.0	0	0	2008							

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"Dennis, Stephen (DEP)" To Brian Hennessey/R1/USEPA/US@EPA, "Dennis, Stephen  
<Stephen.Dennis@state.ma.us>  
us> (DEP)" <Stephen.Dennis@state.ma.us>  
cc "Hendrick, Elizabeth" <ehendrick@epsilonassociates.com>,  
"Winkler, John (DEP)" <John.Winkler@state.ma.us>  
01/20/2009 02:11 PM bcc

Subject RE: Brayton Point

Brian, I think we are in agreement.

1. The Taunton Energy PSD application did not trigger minor source baseline for PM10 because a PSD review for PM10 was not required.
2. The New Bedford Cogen PSD applications triggered minor source baseline for PM10 in New Bedford. The New Bedford Cogen application didn't trigger minor source baseline anywhere else because its 1 ug/m3 PM10 annual isopleth did not extend outside New Bedford.
3. The SEMASS PSD applications triggered minor source baseline for PM10 in Rochester. SEMASS PM10 impacts are below all PM10 SILs.
4. PM10 minor source baseline has not yet been triggered in Somerset. Dominion will trigger PM10 minor source baseline in Somerset and any other municipalities located within its 1 ug/m3 annual average PM10 isopleth.
5. Dominion will consume PM10 increment in Somerset if Dominion PM10 impacts are above PM10 SILs in Somerset. Dominion will also consume PM10 increment in other municipalities where PM10 baseline has been triggered (such as New Bedford), if Dominion PM10 impacts are above PM10 SILs in such municipalities.

By the way, neither Taunton Energy nor New Bedford Cogen were built and therefore would not consume PSD increment. Any ideas on how to untrigger PM10 minor source baseline in Taunton and New Bedford, assuming it's possible?

-----Original Message-----  
From: hennessey.brian@epamail.epa.gov  
[mailto:hennessey.brian@epamail.epa.gov]

some states have been able to 'untrigger' baseline.

My review of the Brayton Point case only looked at the Taunton Energy Center- reportedly closest to Somerset - but the plant hardly matters because your 11-1-2008 spreadsheet indicates it is below significant for PM. I'm a bit concerned, however about the SEMASS (Rochester) and the New Bedford cogen because while they be a bit more distant both were emissions-significant for PM. With impacts below the SILs, SEMASS could not set PM baseline area anywhere but in Rochester. That leaves the New Bedford cogen as a possible trigger for Somerset PM baseline.

My review of Dominion's permit modeling concluded that the Somerset baseline area had not been set yet for PM, and therefore that only PM emission increases linked to the DS/FF control and 2 cooling towers needed to be modeled for increment consumption within Somerset.

The cogen's not more a concern as a trigger for prior increment consumption by sources within Somerset than as an increment consumer itself.

And thanks for your words on selecting nearby sources for interactive modeling.

Brian.

"Dennis,  
Stephen (DEP)"  
<Stephen.Dennis  
@state.ma.us>

01/15/2009  
12:54 PM

To  
"Hendrick, Elizabeth"  
<ehendrick@epsilonassociates.com>,  
"Winkler, John (DEP)"  
<John.Winkler@state.ma.us>

cc  
Brian Hennessey/R1/USEPA/US@EPA  
Subject  
RE: Brayton Point

The closest existing PSD source in Massachusetts is SEMASS in Rochester, about 10 miles distant. Its impacts are below SILs so it would not have to be included in a PSD increment consumption analysis (do you agree, Brian?).

In the early 90's there was a PSD application in New Bedford and a PSD application in Taunton - but they were never constructed and therefore wouldn't consume PSD increments (do you agree, Brian?)

A MassDEP search for nearby sources that could significantly interact with Brayton point - typically defined by MassDEP as 100 ton sources within 10 km (actual emissions) and 1000 ton sources within 20 km (actual emissions) indicated that there were no such sources for PM10 and PM2.5.

From: Hendrick, Elizabeth [mailto:ehendrick@epsilonassociates.com]  
Sent: Friday, January 09, 2009 11:28 AM  
To: Dennis, Stephen (DEP)  
Cc: Jablonowski, AJ  
Subject: Brayton Point

Steve,

When we talked about the PSD status of the area for Brayton Point, you thought that there may have been permits submitted triggering PSD baseline, but that these projects have never been built. You said you would check with Brian Hennessey at EPA about any other cumulative sources and PSD increment consuming sources in the area of Brayton Pt. Have you had a chance to do that? We are trying to wrap this up and have assumed so far that there are no interactive sources, but confirmation would be helpful.

Thanks,

Liz

ELizabeth M. Hendrick, CCM \* Senior Consultant \* Epsilon Associates, Inc.

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"Jablonowski, AJ"  
<ajablonowski@epsilonassociates.com>

01/14/2009 09:31 AM

To "Jablonowski, AJ" <ajablonowski@epsilonassociates.com>, Brian Hennessey/R1/USEPA/US@EPA, Brendan Mccahill/R1/USEPA/US@EPA

cc <Scott.Lawton@dom.com>, "Hendrick, Elizabeth" <ehendrick@Epsilonassociates.com>

bcc

Subject RE: Somerset Station

Brian,

Following up here is additional information that actual particulate emissions are less than 100 tons at Somerset Station. The attached pages from their emission statements show the following annual emissions:

2005: 69.71 tons PM10, 30.77 tons PM2.5

2006: 61.56 tons PM10, 28.27 tons PM2.5

2007: 50.07 tons PM10, 22.97 tons PM2.5

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<<Dominion Req\_2006-2007 TES (12Jan09).pdf>>

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**From:** Jablonowski, AJ  
**Sent:** Tuesday, January 13, 2009 2:12 PM  
**To:** 'hennessey.brian@epa.gov'  
**Cc:** 'Scott.Lawton@dom.com'; Hendrick, Elizabeth  
**Subject:** Somerset Station

Brian,

At the request of Scott Lawton of Dominion I am forwarding to you the attached spreadsheet, which is a summary of Massachusetts DEP source inventory data for emissions for calendar year 2005. Somerset Station is on row 656 and shows actual emissions of 69.7083 tons PM10 and 30.7701 tons PM2.5.

Based on Scott's recollection a reduction in emissions between 2002 and 2005 would be consistent with operational changes that took place at Somerset Station.

I found the data you discussed yesterday on the EPA AIRS database. I noted that the EPA AIRS

database defines "Pollutant Emissions" as follows:

An emissions estimate is based on the normal operating schedule of a source, and includes the effects of installed pollution control equipment and regulatory restrictions on operating conditions. This is called *estimated emissions with rule effectiveness* .

Based on that description, the data in the EPA AIRS database could be potential emissions rather than actual emissions.

The information we have available to us indicates that actual emissions for Somerset Station are below 100 tons per year PM10 and PM2.5. Per our air quality modeling protocol, we did not include Somerset Station in any interactive modeling.

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<< File: MA DEP 2005 Inventory.xls >> Dominion Req\_2006-2007 TES (12Jan09).pdf



"Dennis, Stephen (DEP)"  
<Stephen.Dennis@state.ma.us>

11/04/2008 12:49 PM

To Brian Hennessey/R1/USEPA/US@EPA

cc "Braczyk, Edward (DEP)" <Edward.Braczyk@state.ma.us>

bcc

Subject PSD permit update for MA

Brian, could you please list all EPA PSD permits with complete application date (or PSD permit date) since 2003 at the end of the attached table using the same format. Thanks.

Call if you have any questions, particularly for column D.

<<Permits as of 11-01-08.xls>>



Permits as of 11-01-08.xls



**PSD PERMITS AND PSD SIP REVISIONS IN MASSACHUSETTS CONSUMING PSD INCREMENT AS OF 11/1/008**

City/Town	Sources Name	PSD Increment Consumed	Minor Source Baseline Area(s) T by PSD Permit Application
Agawam	Vicon R.R. Facility PSD Permit Issued by DEP	SO2 PM	Agawam, Springfield, West Spring Agawam
Agawam	Berkshire Power PSD Permit issued by DEP	NO2	Agawam
Bellingham	Bellingham Cogeneration Facility PSD Permit Issued by DEP	SO2 PM NO2	Bellingham (below SILs) Bellingham (below SILs) Bellingham (below SILs)
Bellingham	Bellingham ANP Facility PSD Permit Issued by DEP	NO2 PM10	(below SILs) Bellingham (below SILs)
Blackstone	Blackstone Facility PSD Permit Issued by DEP	SO2 PM10 NO2	Blackstone (below SILs) Blackstone (below SILs) Blackstone (below SILs)
Boston	MATEP Facility Exempt from PSD Permit But Consumes PSD Increment	SO2 PM	
Cambridge	South Energy Kendall LLC PSD Permit Issued by DEP	SO2 PM10	Cambridge (below SILs) Cambridge (below SILs)
Charleton	Millennium Power PSD Permit Issued by DEP	NO2	Charleton (below SILs)
Everett	Sithe Mystic Development PSD Permit Issued by DEP	PM10	Everett (below SILs)
Groton	Hollingsworth & Vose Boiler PSD Permit Issued by EPA	SO2	Groton

Haverhill	Haverhill Paperboard Facility SIP Revision Issued by EPA	SO2	NA	07/14/81**
Haverhill	Haverhill RR Facility PSD Permit Issued by DEP	SO2	Consumes increment in baseline areas triggered before 03/27/89	03/27/89*
Holyoke	Riverside Power Plant PSD Permit Issued by DEP (Never Constructed)	SO2 PM	Holyoke Holyoke	03/25/88
Holyoke	Holyoke Gas & Electric Company SIP Revision Issued by EPA	SO2	Consumes increment in baseline areas triggered before 10/13/81	10/13/81**
Lawrence	Ogden Martin RR Facility PSD Permit Issued by EPA (Closed in 6/98)	SO2	Lawrence	12/21/79
Lawrence	Ogden Martin RR Facility PSD Permit Issued by DEP (Closed in 6/98)	SO2 NO2	Lawrence	12/12/89*
Lowell	Lowell Cogeneration Facility PSD Permit Issued by DEP	SO2 PM	Lowell only? Lowell only?	05/18/87
Ludlow	MMWEC Power Plant PSD Permit Issued by EPA	SO2 PM	Ludlow, Belchertown, Granby, Palmer South Hadley, Wilbraham Ludlow	08/04/78
Lynn	GE Jet Engine Test Cells PSD Permit Issued by DEP	NO2	Lynn	02/19/93
Medway	Medway Facility PSD Permit Issued by DEP (Never Constructed)	NO2 PM10	Medway (below SILs) Medway (below SILs)	01/08/03
Millbury	Millbury RR Facility PSD Permit Issued by DEP	SO2 PM	Millbury Millbury	11/08/85
Natick	Natick Paperboard PSD Permit Issued by EPA	SO2	Natick, Wellestley	2/5/1980
New Bedford	New Bedford Cogeneration Facility	SO2	New Bedford	07/11/94*

North Andover	NESWC RR Facility PSD Permit Issued by EPA	SO2 PM	(SO2) Methuen, N. Andover, Lawrence (PM) North Andover	02/25/82
Rochester	SEMASS RR Facility PSD Permit Issued by EPA	SO2 PM	Middleborough, Rochester Rochester	08/04/80
Rochester	SEMASS RR Facility Permit Modification for Unit 1and Unit 2 PSD Permit Issued by DEP	SO2 PM		08/08/85
Rochester	SEMASS RR Facility for Unit 3 PSD Permittissued by DEP	SO2 PM NO2	Middleborough, Rochester	06/21/90*
Shirley	Montachusett Regional Recycling PSD Permit issued by DEP (Never Constructed)	NO2	Shirley, Leoninster, Ayer Lunenburg, Lancaster, Harvard	09/01/93
South Hadley	Texon Incorporated SIP Revision Issued by EPA (Ceased operation in 1989)	SO2	Consumes increment in baseline areas triggered before 3/02/79	03/02/79**
Springfield	Masspower Cogen Facility PSD Permit Issued by DEP	SO2 NO2	Springfield Springfield	09/05/90*
Taunton	Taunton Energy Center PSD Application Complete (PSD Permit Never Issued)	SO2 NO2	Taunton Taunton, Berkley	06/01/92***
Ware	Ware Cogen Facility PSD Permit Issued by DEP (Never Constructed)	SO2 PM NO2	Ware Ware Ware	12/02/91*
Weymouth	Sithe Fore River PSD Permit Issued by DEP	SO2 PM10 NO2	Weymouth (below SILs) Weymouth (below SILs) Weymouth (below SILs)	05/05/02*

\* PSD Permit Approval Date (permit completeness date not documented)

\*\* SIP Approval Date

\*\*\* Memo approving modeling analysis from Richard Fields