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March 27, 2012

Mr. Donald Dahl
Air Permits, Toxic and Indoor Air Program Unit
U.S. EPA Region 1 – New England
5 Post Office Square
Mail Code: OEP05-2
Boston, Massachusetts 02109-3912

**Re: *Pioneer Valley Energy Center, Westfield, Massachusetts
Draft Prevention of Significant Deterioration Permit
Supplemental Information – Revised 1- hour NO₂ Cumulative Impact Assessment
ESS Project Number E402-007.01***

Dear Mr. Dahl:

On behalf of Pioneer Valley Energy Center, LLC (PVEC), ESS Group Inc. (ESS) is providing the following supplemental information to the U.S. Environmental Protection Agency (EPA) regarding the above referenced draft permit in response to your recent information request.

On March 21, 2012, PVEC submitted to the EPA the results of a revised cumulative impact assessment for the predicted 1-hour NO₂ impacts from the PVEC facility, the proposed Russell Biomass facility, and the other eight facilities located within or near the PVEC 1-hour NO₂ Significant Impact Area (SIA) identified by the EPA. This cumulative impact assessment demonstrated that PVEC will not make a significant contribution to any exceedance of the 1-hour NO₂ National Ambient Air Quality Standard (NAAQS).

The results of this analysis determined that there were 21 receptors within the 50-km receptor grid with total impact concentrations, including background, which were predicted to potentially exceed the 1-hour NO₂ NAAQS concentration. These receptors were all located near the Jen-Coat facility, approximately 3 km south of PVEC. The results of the modeling demonstrated that PVEC will not make a significant contribution to any of these potential 1-hour NO₂ NAAQS exceedances.

The source input information used for the Jen-Coat facility in the PVEC cumulative impact assessment was provided by the EPA from its National Emissions Inventory (NEI) database. However, the Jen-Coat facility does not currently operate under any state or federal air approvals, so the information on its emission sources and exhaust stacks contained in the NEI database could not be readily confirmed by the EPA or the MassDEP. On March 23, 2012, the EPA contacted Jen-Coat to confirm the actual emission sources and exhaust stacks currently in use at the facility. The EPA then requested that PVEC revise its 1-hour NO₂ cumulative impact assessment using the source input parameters, NO_x emission rates, and stack parameters provided by Jen-Coat for the actual emission sources operated at the facility.

ESS has revised the PVEC 1-hour NO₂ cumulative impact assessment using the source input parameters, NO_x emission rates, and stack parameters provided by the EPA for the Jen-Coat facility. The attached Table 1 summarizes the emission source input data used for the revised PVEC 1-hour NO₂ cumulative impact assessment, including the hourly NO_x emission rate assumed for each point source and fugitive



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source included in the analysis. The attached Figure 1 shows the locations of the sources included in the assessment in relation to the proposed PVEC facility.

Modeling was conducted using the EPA approved AERMOD refined model to predict whether the combined 1-hour NO_2 ambient air impact concentrations resulting from the operation of PVEC, Russell Biomass, and the other eight existing sources within or near the SIA could result in an exceedance of the 1-hour NO_2 NAAQS. This analysis was conducted for the period from 2006-2010 using hourly meteorological data from Barnes Municipal Airport, which was one of the modeled sources. Modeling was conducted at receptors spaced radially around the PVEC facility out to 50 kilometers.

Two different PVEC operating scenarios were modeled: the combustion turbine firing ultra-low sulfur diesel (ULSD) fuel during emergency generator testing and during fire pump testing. These were the worst-case operating scenarios identified during the 1-hour NO_2 modeling analysis previously conducted for PVEC. Operation of the PVEC combustion turbine while firing ULSD will be limited to 1,440 hours per year and only during specified conditions, such as natural gas curtailments. Operation of the PVEC emergency generator and fire pump will each be limited to 300 hours per year. Testing of the PVEC emergency generator and fire pump will also be limited to the hours between 12 PM and 3 PM and will not occur at the same time, per the Draft PSD Permit. Thus, this cumulative impact assessment is conservative, in that the PVEC operating scenarios modeled will occur infrequently, if at all, on an annual basis.

The AERMOD results were compiled and the 98th percentile (highest eighth high or H8H) 1-hour value was determined for each receptor and for each year of hourly meteorological data (not necessarily the daily maximum 1-hour value). The five yearly H8H NO_x impact values for each receptor were then averaged and the default Ambient Ratio Method (ARM) of 0.80 was applied to convert the 5-year average H8H NO_x values to NO_2 . A background concentration of 49 ppb ($92.5 \mu\text{g}/\text{m}^3$), which was previously determined by the EPA to be the highest monitor design value in the project area, was then added to the 5-year average H8H NO_2 value predicted for each receptor for comparison with the 1-hour NO_2 NAAQS concentration. The modeling results determined that there were no receptors at which a potential exceedance of the 1-hour NO_2 NAAQS is predicted to occur as a result of the cumulative impacts from PVEC, Russell Biomass, and the other existing sources included in the assessment.

This revised cumulative impact assessment has demonstrated that PVEC will not cause or contribute to any exceedance of the 1-hour NO_2 NAAQS. The results of this assessment are conservative, as it was conducted using conservative estimates of the hourly NO_x emission rates from the existing sources, and because the 1-hour NO_2 ambient impacts from the existing sources are already accounted for in the existing background concentration, and are therefore essentially double counted in the analysis. It is also conservative in that it was conducted assuming worst-case PVEC operating scenarios which can only occur during the very limited time periods specified in the Draft PSD Permit, and are therefore unlikely to occur, if at all, on an annual basis.



We trust that the above information is a complete response to your request for additional information. The modeling files associated with the analyses described in this submittal have been provided electronically on the enclosed CD-ROM. Please feel free to contact me by phone at (781) 419-7749 or via e-mail at mfeinblatt@essgroup.com if you have any questions.

Sincerely,

ESS GROUP, INC.

A handwritten signature in blue ink, appearing to read "M. Feinblatt".

Michael E. Feinblatt
Practice Leader
Energy & Industrial Services

Attachments

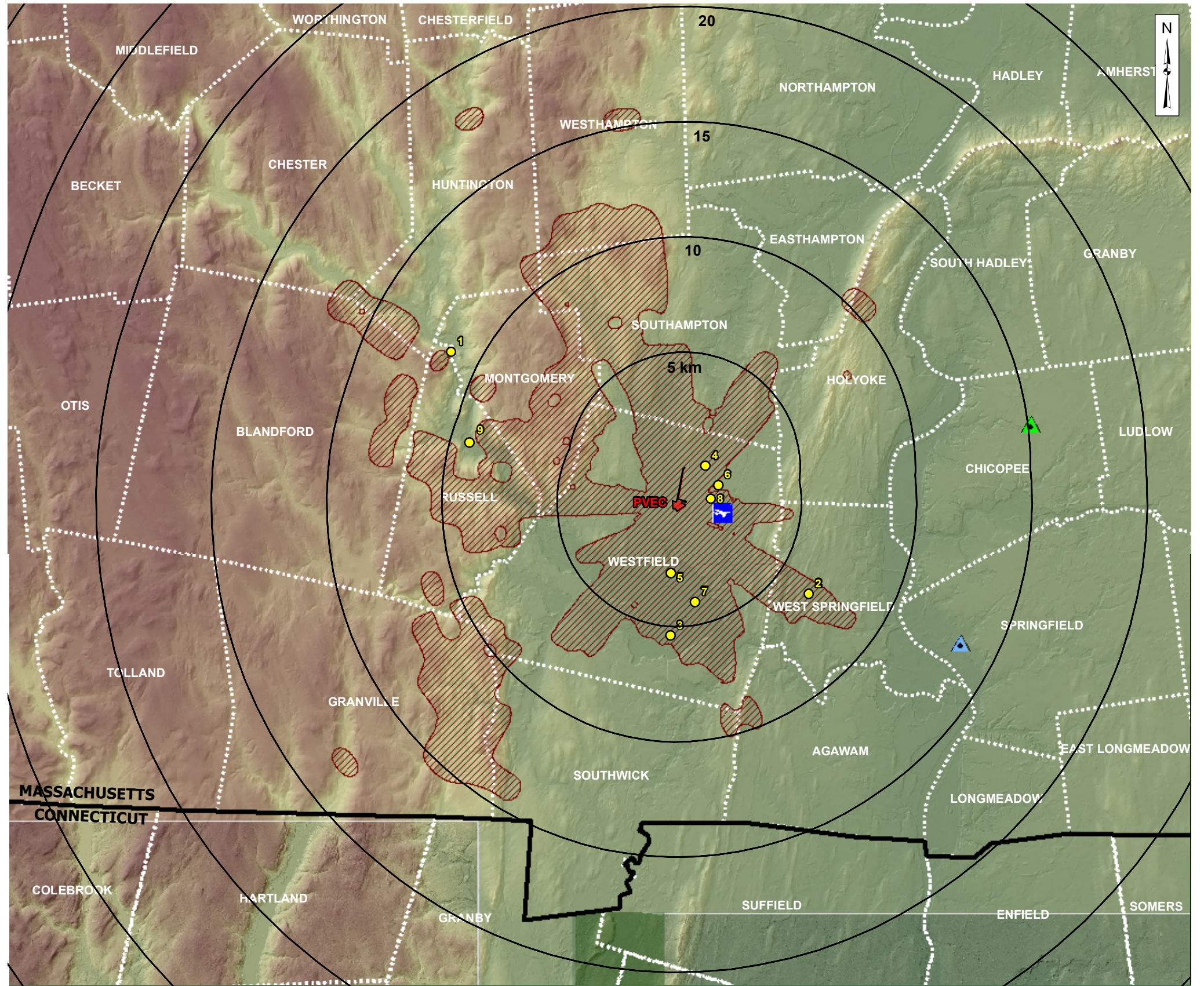
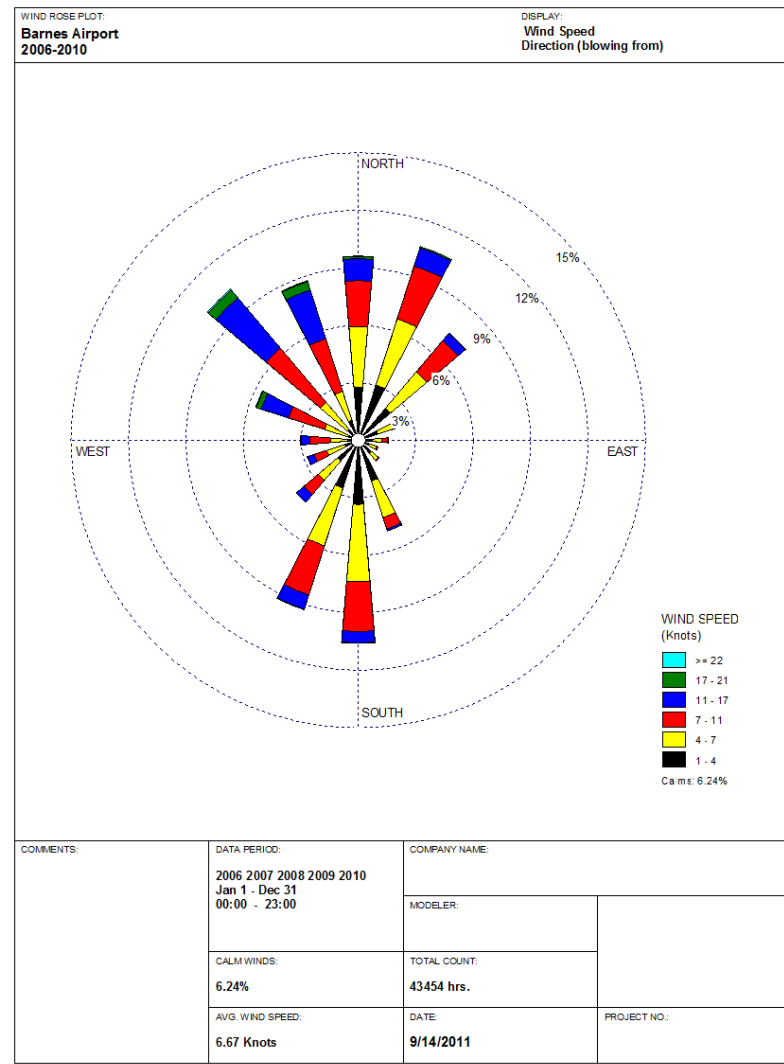
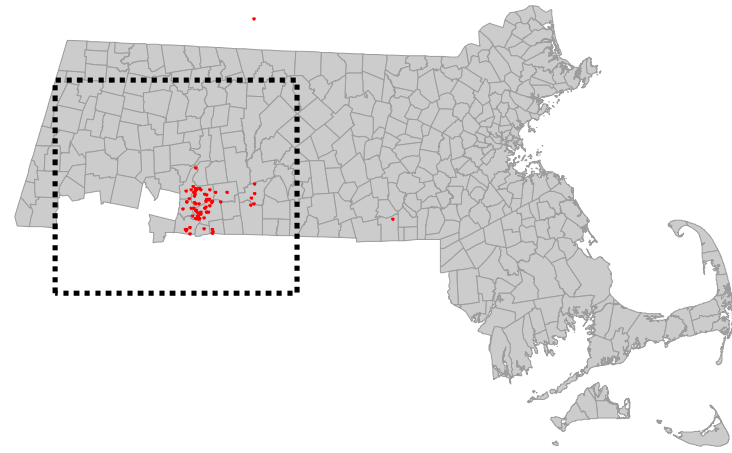
C: Matthew Palmer, PVEC



Table 1
Emission Source Input Data
Revised 1-Hour NO₂ Cumulative Impact Assessment
Pioneer Valley Energy Center
Westfield, Massachusetts

Point (Stack) Sources										
Source ID	Source Name	Site Address	UTM (Meters)		Base Elev. (meters)	Stack Height (meters)	Stack Temp (deg K)	Stack Velocity (m/sec)	Stack Diameter (meters)	NOx Rate (g/sec)
			X	Y						
1	Texon USA 1	1190 Huntington Road, Russell	676683.5	4676497.0	103.0	24.38	505.37	5.24	1.25	1.774
1	Texon USA 2	1190 Huntington Road, Russell	676683.5	4676497.0	103.0	9.14	491.48	6.10	0.64	0.651
3	Columbia Manufacturing	1 Cycle Street, Westfield	686780.2	4664603.2	41.1	12.19	422.04	4.57	0.61	0.507
5	Jen-Coat, Inc. 1	132 North Elm Street, Westfield	686546.4	4667058.6	42.4	9.14	330.37	2.29	0.41	0.019
5	Jen-Coat, Inc. 2	132 North Elm Street, Westfield	686546.4	4667058.6	42.4	9.14	330.37	1.27	0.61	0.038
6	MA Air National Guard 1	175 Falcon Street, Westfield	688441.7	4670973.7	80.5	12.19	422.04	6.10	0.70	0.127
6	MA Air National Guard 2-4	175 Falcon Street, Westfield	688441.7	4670973.7	80.5	7.32	338.71	22.86	0.15	0.142
7	Rinker Materials/NE Pipe	69 Neck Road, Westfield	687700.0	4665900.0	39.0	6.10	477.59	4.57	0.30	0.033
9	Russell Biomass	Station Road, Russell	677635.5	4672410.5	81.1	91.44	452.59	11.89	3.96	7.000

Area (Fugitive) Sources										
Source ID	Source Name	Site Address	UTM (Meters)		Base Elev. (meters)	Release Hgt (meters)	X-Dim (meters)	Y-Dim (meters)	Area (m ²)	NOx Rate (g/sec/m ²)
			X	Y						
2	Bear Hole	West Springfield	692629.1	4666450.1	70.7	3.05	22.86	22.86	523	2.68E-06
3	Columbia Manufacturing	1 Cycle Street, Westfield	686768.0	4664358.1	41.1	3.05	145.00	210.00	30,450	2.69E-06
4	Digital	Westfield	687851.5	4671887.8	80.5	3.05	225.00	375.00	84,375	1.66E-08
6	MA Air National Guard 1	175 Falcon Street, Westfield	688443.5	4668379.5	80.5	3.05	75.00	720.00	54,000	3.54E-07
6	MA Air National Guard 2	175 Falcon Street, Westfield	688563.5	4669089.5	80.5	3.05	75.00	720.00	54,000	3.54E-07
6	MA Air National Guard 3	175 Falcon Street, Westfield	688683.5	4669799.5	80.5	3.05	75.00	720.00	54,000	3.54E-07
6	MA Air National Guard 4	175 Falcon Street, Westfield	688803.5	4670509.5	80.5	3.05	75.00	720.00	54,000	3.54E-07
6	MA Air National Guard 5	175 Falcon Street, Westfield	688801.2	4670170.1	80.5	3.05	755.00	1065.00	804,075	3.54E-07
6	MA Air National Guard 6	175 Falcon Street, Westfield	687964.2	4670213.7	80.5	3.05	760.00	1190.00	904,400	3.54E-07
7	Rinker Materials/NE Pipe	69 Neck Road, Westfield	687569.6	4669254.8	39.0	3.05	40.00	115.00	4,600	2.29E-07
8	Barnes Airport 1	Westfield	688129.3	4668496.9	78.9	3.05	340.00	1570.00	533,800	3.36E-07
8	Barnes Airport 2	Westfield	689079.2	4669254.8	78.9	3.05	185.00	1535.00	283,975	2.32E-08



PIONEER VALLEY ENERGY CENTER
Westfield, Massachusetts

Scale: 1" = 3 Miles
0 3 Miles

Source: 1) MassGIS, DEM Data, 2001 2) ESS, PVEC Air Model Data, 2011
3) MassGIS, Town Boundaries, 2002 4) MassGIS, EJ Areas, 2003
5) EPA, NO2 Ambient Monitor Locations, 2011

Legend

- PVEC Site Boundary
- 1-Hour Multisource Modeling Emission Source
- ▲ Chicopee Ambient NO₂ Monitor
- ▲ Springfield Ambient NO₂ Monitor
- Barnes Airport Meteorological Data Monitoring Station
- PVEC Modeled 1 hour NO₂ Impact >7.5 ug/m³ (1-hour NO₂ SIL)
- 5km Buffer Interval from PVEC Site Boundary

PVEC 1-hour NO₂
Multi-Source Modeling
Emission Sources

Figure 1