

US EPA ARCHIVE DOCUMENT

**Pioneer Valley Energy Center  
Prevention of Significant Deterioration Permit  
Response to Comments on  
Draft Permit Number 052-042-MA15**

**Introduction**

On December 2, 2011, EPA New England published notices in the *Westfield News* and *The Republican* (Springfield) for public review and comment of a proposed Prevention of Significant Deterioration (PSD) air permit for the Pioneer Valley Energy Project in Westfield, Massachusetts. The comment period ran through January 24, 2012. In addition, EPA published translations of this notice in *El Pueblo*, a Spanish weekly newspaper, on December 8, 2011, and on a web site for the local Russian community. EPA also held a public meeting and public hearing at the North Middle School in Westfield, Massachusetts on Thursday, January 12, 2012. Comments were submitted by various parties during the public comment period. In some cases, a single person commented multiple times, e.g., submitted written comments and spoke at the public hearing.

After a review of the comments received, EPA has made a final decision to issue this PSD permit. As required by 40 CFR part 124 (Procedures for Decisionmaking), EPA has prepared this document known as the “response to comments” (RTC) that describes and addresses the significant issues raised during the comment period and describes the provisions of the draft permit that have been changed and the reasons for the changes. Since the Fact Sheet is a final document, no changes were made to it. Instead, comments on the Fact Sheet were noted, and responses to them are included in this document.

The Final Permit is substantially the same as the Draft Permit that was available for public comment. Although EPA’s decision-making process has benefitted from the various comments and additional information submitted, the information and arguments presented did not raise any substantial new questions concerning the permit. EPA did, however, improve certain analyses, make certain clarifications, and revise some permit conditions in response to comments. These improvements and changes are detailed in this document and reflected in the Final Permit. A summary of the changes made in the Final Permit are listed below. The analyses underlying these changes are explained in the responses to individual comments that follow.

The Final Permit and RTC are available on EPA’s web site at <http://www.epa.gov/region1/communities/nsemissions.html>. EPA is mailing the RTC and the Final Permit to everyone who commented on the draft permit (including at the public hearing) or who requested a copy. Copies of the Final Permit also may be obtained by writing or calling EPA between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays:

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EPA reviewed the significant comments received from commenters, and in some cases grouped together related comments. In some cases, EPA has provided a synthesized comment that distills the essence of several individual comments, and then provided a response to that comment. Comments expressing general opposition to the facility have been noted and deemed subsumed into more specific comments, to which EPA has responded below. Comments expressing general support for the facility have been noted, and no response is required. Several identical comment letters were submitted in Russian and in Spanish. While EPA is not obligated to consider comments submitted in foreign languages, EPA used a professional translation service to translate the Russian and Spanish letters and considered these as well.

In some cases, EPA has included original comments nearly verbatim for the reader's convenience. In others, EPA included a brief summary of each comment to remind the reader of the topics being discussed. The particular language used in the summary of each issue presented below may derive primarily from one set of comments, but this does not mean that EPA has not read each of the comments noted under that issue. Many of the details presented in the original comments were not repeated in the summary comments. EPA did not limit its analysis of the comments submitted to the summary presented below, and EPA has reviewed each comment in its entirety. This outline and its summary of the comments are simply designed to structure EPA's responses and make them more accessible to the interested public. No significance should be attached to the form in which EPA cited or summarized the original comment in this response document. The complete text of each comment as submitted, and a complete copy of the transcripts from the public hearing, is in the administrative record and available by request.

Abbreviations used throughout this RTC include:

**ACE:** Alternatives for Community & Environment  
**BACT:** Best Available Control Technology  
**CAA:** Clean Air Act  
**GHG:** Greenhouse gases  
**MassDEP:** Massachusetts Department of Environmental Protection  
**NAAQS:** National Ambient Air Quality Standards  
**NO<sub>2</sub>:** Nitrogen dioxide  
**PM:** Particulate Matter  
**PSD:** Prevention of Significant Deterioration  
**PVEC:** Pioneer Valley Energy Center  
**ULSD:** Ultra low sulfur diesel  
**WCC:** Westfield Concerned Citizens

## Changes to Permit

The following is the list of revisions that EPA made from the Draft Permit to the Final Permit based on comments received during the comment period. The list includes a brief description of the revision, and the location in the RTC document where EPA provides a more detailed description of the revision.

**Revision I:** Permit condition III.1 was amended to require PVEC to install and operate a continuous opacity monitoring system. A new permit condition inserted as no. III.5 was added requiring PVEC to install a continuous opacity monitoring system in accordance with 40 CFR part 60, appendix B. Further information on this change can be found in Response 12.

**Revision II:** Permit condition II.B.6 was added limiting opacity to 10% except when burning ULSD during startup and shutdown. Further information on this change can be found in Response 14.

**Revision III:** A new permit condition II.B.4 has been inserted further restricting the use of ULSD in the combined cycle turbine when the air quality index is over 100. Further information on this change can be found in Response 8.

**Other revisions:** EPA made several other changes to the final permit based on its own final review. These include:

- Added the acronym CCT to the definition of combined cycle turbine on page 3.
- Clarified the averaging times for the emission limits in Tables I and II in permit condition I.1 and the regulated pollutant was changed from nitrogen oxide to nitrogen oxides.
- Moved the timeframes for startup and shutdown contained in permit condition I.1 to the definition section.
- Removed the word “all” in permit condition I.2.

“To ensure the owner/operator has designed and installed an energy efficient CCT, the owner/operator shall conduct an initial emission test for CO<sub>2</sub> and use emission factors from 40 CFR part 98 for all other ~~all~~ components of greenhouse gases, within 180 days from initial startup.”

- Removed the averaging time for Table V in permit condition I.6 because continuous emission monitors for the auxiliary boiler are not required by the PSD permit.
- Clarified the PM<sub>10/2.5</sub> emission limit of 0.20 g/KW-hour in permit conditions I.4 and I.5 applies to both PM<sub>10</sub> and PM<sub>2.5</sub>.
- Inserted the word “the” in permit condition II.4

“The owner/operator shall install, maintain, and operate the emergency generator and fire pump in accordance with the manufacturer’s specification.

- Clarified the accuracy range for the CO and NO<sub>x</sub> continuous emission monitoring systems in permit conditions III.2.b.i and III.2.b.ii by changing +/0.5 ppm to +/-0.5 ppm
- Added the clause “and when each curtailment ended” at the end of condition V.2.o.

### **Comment 1**

Allowing the use of ULSD is not BACT.

### **Response 1**

Pages 9-14 of the Fact Sheet provide a detailed analysis of EPA’s determination that allowing ULSD in limited circumstances is consistent with BACT. The following responses address the more specific comments individually.

### **Comment 2**

Evidence exists that natural gas as the only fuel would provide a reliable supply of energy to the facility. Recent expansions in the capacity of interstate gas pipeline infrastructure and added liquefied natural gas receiving terminals serving New England render natural gas only as a reliable source of fuel. The Massachusetts Energy Facilities Siting Board recently found that elimination of ULSD fuel capability will reduce environmental impacts without a significant adverse reduction in reliability. (Brockton Power Company LLC Project Change Filing, EFSB 07-7A/D.P.U. 07-58/59, Final Decision (Sept. 28, 2011) at 11). EPA fails to consider current energy reliability information rendering the BACT findings incomplete. PVEC failed to document any sources that suggest a natural gas shortage is plausible.

### **Response 2**

While natural gas availability has expanded in recent years, it is still possible that a regional shortage may arise in the future, and it is administratively preferable to allow for that contingency in the permit (as part of the consideration of energy impacts under BACT) rather than address such a situation on an emergency basis. Moreover, a local pipeline may be disrupted even if the region as a whole is not experiencing a shortage.

Condition II.B.3 of the Permit provides that “[i]n addition to the ULSD combustion limitations imposed by Condition II.B.2, the owner/operator shall only burn ULSD in the combined cycle turbine during hours when one or more of the conditions in subparagraphs (a)-(f) below is true.” Condition II.B.3.a authorizes ULSD combustion when the interruptible natural gas supply is curtailed at the Tennessee No. 6 gas terminal hub, and Condition II.B.3.b authorizes ULSD combustion when a blockage or breakage in the gas line delivery system limits or prohibits the use of natural gas. If these conditions never arise, then the permittee will never have occasion to burn ULSD pursuant to these provisions.

### **Comment 3**

If ULSD is allowed, usage should be limited to 30 days in accordance with the facility’s local permit from the Westfield Planning Board.

### Response 3

Condition II.B.3 of the Permit lists the six separate operating scenarios when PVEC is allowed to operate on ULSD. Condition II.B.2 further limits ULSD combustion to 1440 hours (60 days). The final permit is more stringent than the draft permit in that three of the six scenarios (II.B.3.d-f) have been further restricted. See Response 8. This six-part restriction ensures that ULSD is burned only when necessary.

The facility is subject to a variety of state and local permits that may impose additional requirements on the facility not found in the PSD permit.<sup>1</sup> While EPA has endeavored to ensure that its PSD permit does not *conflict* with any other agencies' permits, there is no requirement under the Clean Air Act that EPA incorporate all state and local permit requirements into the PSD permit. If a state or local permit restricts ULSD combustion even further than EPA's PSD permit, then the facility will be required to comply with the state or local permit under state or local law, in addition to the PSD permit requirements. The restrictions imposed in the final PSD permit meet BACT and ensure that the NAAQS will not be exceeded, and it is not necessary to further limit ULSD combustion solely to match a restriction imposed under state or local law. The permittee must comply with all applicable permits, whether federal, state, or local, and the fact that the PSD permit authorizes up to 1440 hours of ULSD combustion (under the six specified conditions) does not authorize the permittee to violate any applicable state or local requirements imposing lower limits on ULSD combustion. See Permit Condition XI (requiring permittee to comply with other applicable regulations).

Finally, EPA notes that the six-part restriction of Condition II.B.3 likely limits the facility, as a practical matter, to burning ULSD for far less than 60 days. Four of the six scenarios under which ULSD is permitted are essentially maintenance and testing, which are unlikely to account for a large volume of ULSD combustion. Since the remaining two conditions involve gas supply curtailment and/or equipment failure, the most plausible scenarios in which ULSD is combusted for even close to 60 days would involve a serious long-term equipment or gas supply failure, with contemporaneous energy impacts.

### Comment 4

The BACT analysis improperly eliminates the option of only using natural gas on the basis of cost. EPA's five step "top-down" methodology does not allow a control technology to be removed due to high cost alone.<sup>2</sup>

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<sup>1</sup> For example, the Massachusetts Energy Facilities Siting Board (EFSB) imposed seasonal limits on PVEC's ULSD usage to ensure adequate supply in December. Under the EFSB's order, the facility may burn ULSD "no more than 46 days from January 1st to November 30th (and not during ozone season) and reserving at least 14 days for December 1st to December 31st; provided that this limitation on operation on ULSD oil will not apply when natural gas is unavailable to operate the proposed facility (either due to gas transportation disruptions, or supply disruptions or curtailment), the Company has used either its pre-December allotment of 46 days (equivalent) and/or its December allotment of 14 days (equivalent) for any reason, and ISO-NE calls on the facility to operate out of economic merit." *In re Pioneer Valley Energy Ctr., LLC*, EFSB 08-1, available at <http://www.env.state.ma.us/dpu/docs/siting/efsb08-1/101909dpuorder.pdf> (Oct. 19, 2009) [hereafter "EFSB Decision"], at 15.

<sup>2</sup> ACE/WCC's comment focused on the BACT analysis in the applicant's March 10, 2010 submission. EPA reviewed the applicant's submissions regarding BACT and set forth its own analysis in the Fact Sheet. For the purpose of addressing this comment, EPA has interpreted the comment as pertaining to EPA's BACT analysis, not the applicant's submission.



## Response 4

EPA disagrees with the statement that the high cost of a control measure cannot be the basis for removing a control measure during the BACT analysis. Section 169(3) of the Clean Air Act defines “best available control technology” as “an emission limitation based on the maximum degree of reduction of each pollutant ... which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and *economic impacts and other costs*, determines is achievable for such facility.”<sup>3</sup> In EPA’s most recent guidance on this subject, the agency explained that economics can be the reason to eliminate a control technology:

Under Step 4 of the top-down BACT analysis, permitting authorities must consider the economic, energy, and environmental impacts arising from each option remaining under consideration. Accordingly, after all available and technically feasible control options have been ranked in terms of control effectiveness (BACT Step 3), the permitting authority should consider any specific energy, environmental, and economic impacts identified with those technologies to either confirm that the top control alternative is appropriate or determine it to be inappropriate. The “top” control option should be established as BACT unless the applicant demonstrates, and the permitting authority agrees, that the energy, environmental, or economic impacts justify a conclusion that the most stringent technology is not “achievable” in that case. If the most stringent technology is eliminated in this fashion, then the next most stringent alternative is considered, and so on.

\* \* \*

*To justify elimination of an option on economic grounds*, the permit applicant should demonstrate that the costs of pollutant removal for that option are disproportionately high.<sup>4</sup>

As EPA explained in the Fact Sheet, if the facility were required to only burn natural gas, it would need to proceed via either a non-interruptible contract or an interruptible contract. The Fact Sheet explained how the cost of a non-interruptible contract is outside the range of controls or fuels to be considered cost-effective for BACT.<sup>5</sup> For this reason, the BACT standard does not require 100% natural gas usage. It is worth noting, however, EPA has tightly limited the facility’s ULSD combustion to reflect the actual scenarios when it is necessary.<sup>6</sup>

<sup>3</sup> 42 USC § 7479(3) (emphasis added); *see also* 40 CFR 52.21(b)(12) (same).

<sup>4</sup> Office of Air Quality Planning and Standards, “PSD and Title V Permitting Guidance for Greenhouse Gases,” EPA-457/B-11-001 (Mar. 2011) (“2011 PSD Guidance”), *available at* <http://www.epa.gov/nsr/ghgdocs/ghgpermittingguidance.pdf>, at 38-39 (emphasis added). This approach is consistent with longstanding EPA practice. *See* Draft New Source Review Workshop Manual (“1990 Workshop Manual”) (Oct. 1990), *available at* <http://www.epa.gov/ttn/nsr/gen/wkshpman.pdf>, at B.8-9 (“In the event that the top candidate is shown to be inappropriate, due to energy, environmental, or economic impacts, the rationale for this finding should be documented for the public record. Then the next most stringent alternative in the listing becomes the new control candidate and is similarly evaluated.”), B.32 (“[A]bsent overriding environmental impacts concerns or other considerations, an acceptable demonstration of an adverse economic impact can be adequate basis for eliminating the control alternative.”).

<sup>5</sup> *See* Fact Sheet at 10-11; *see also id.* at 12 (discussing similar issues for interruptible contracts).

<sup>6</sup> *See* Response 3.

**Comment 5**

PVEC would like to bid ULSD into the grid when ULSD is less expensive than natural gas, reasoning that PVEC rather than another plant would operate and generate revenues, even though it would use much more water and emit much more particulate matter when operating on ULSD.

**Response 5**

Condition II.B.3 of the Permit lists the six separate operating scenarios when PVEC is allowed to operate on ULSD. None of these six scenarios allow PVEC to burn ULSD just because it is less expensive than natural gas.

**Comment 6**

Step three of the BACT analysis requires the applicant to rank the remaining control technologies by control effectiveness, expected emission reduction, energy impacts, environmental impacts, and economic impacts. PVEC failed to complete the full analysis that incorporates other costs and benefits such as reduced fine particulate matter emissions.

**Response 6**

This comment appears to merge steps 3 and 4 of the top-down BACT analysis. Under step 3, the control technologies are ranked “in order of overall control effectiveness for the regulated NSR pollutant under review.”<sup>7</sup> Under step 4, “[t]he ‘top’ control option should be established as BACT unless the applicant demonstrates, and the permitting authority agrees, that the energy, environmental, or economic impacts justify a conclusion that the most stringent technology is not ‘achievable’ in that case. If the most stringent technology is eliminated in this fashion, then the next most stringent alternative is considered, and so on.”<sup>8</sup> Thus, the most effective control is the “default” choice unless it is eliminated in Step 4. The benefits of reduced emissions is not a separate factor to be calculated in Step 4; rather, consideration of these benefits is already built into the process by the presumption that the most effective control represents BACT unless it is eliminated on energy, collateral environmental, or economic grounds:

Since a BACT limitation must reflect the maximum degree of reduction achievable for each regulated pollutant, the environmental impacts analysis in Step 4 should concentrate on impacts other than direct impacts due to emissions of the regulated pollutant in question. EPA has previously recommended focusing the BACT environmental impacts analysis in this manner to avoid confusion with the separate air quality impact analysis required under the CAA and PSD regulations for primarily the pollutants that are covered by NAAQS. However, focusing Step 4 of the BACT analysis on increases in emissions of pollutants other than those the technology was designed to control is also justified because the essential purpose of a BACT requirement is to achieve the maximum degree of reduction of the particular pollutant under evaluation. In this context, it is generally unnecessary to explicitly consider or justify the environmental benefits of reducing the pollutant subject to the BACT analysis, since these benefits are presumed under the CAA’s mandate to reduce emissions of each regulated pollutant to the maximum degree achievable, considering energy, environmental, and economic impacts. Thus, in this context, it is reasonable to interpret the “environmental impact” component of the BACT requirement to focus on the indirect or collateral environmental impacts that may result

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<sup>7</sup> 2011 PSD Guidance at 37.

<sup>8</sup> *Id.* at 38.



from selection of control options that achieve the maximum degree of reduction for the pollutant under evaluation.<sup>9</sup>

In fact, EPA did consider the difference in PM<sub>10</sub> and PM<sub>2.5</sub> emissions in its Clean Fuels BACT analysis and noted that daily emissions when burning ULSD are 0.2 tons more than when burning natural gas.<sup>10</sup> Notwithstanding this small increase in daily emissions, the use of ULSD under restricted circumstances is justified by the energy and economic impacts of restricting the facility to 100% natural gas.

#### **Comment 7**

EPA's BACT analysis for greenhouse gases is incomplete. The BACT analysis does not consider how operating on natural gas fuel alone without dual fuel capacity will improve environmental, energy, or economic considerations.

#### **Response 7**

The Fact Sheet's analysis of BACT for greenhouse gases, at pp. 20-24, is based on assumptions derived from natural gas combustion. Conditions I.2-3 of the permit provides emission limits for greenhouse gases derived from this analysis. These GHG emissions limits apply regardless of which fuel the facility is burning. Thus, even though there is the potential for a slight increase in carbon dioxide emissions when burning ULSD as opposed to natural gas, the facility remains subject to the same emission limits. Since the permit's greenhouse gas emission rate is based on combustion of only the cleanest fuel (i.e., natural gas), regardless of what fuel the facility is actually burning, it is not necessary (for GHG BACT purposes) to compare the difference in greenhouse gas emissions between burning ULSD and natural gas.

EPA provided a detailed BACT analysis entitled "Clean Fuels" in the Fact Sheet because the permit allows the facility to emit other (non-GHG) regulated pollutants at a higher rate when burning ULSD versus natural gas.

The Fact Sheet did specifically discuss GHGs in the context of analyzing whether it would be appropriate to require the facility to combust 100% natural gas. EPA determined that, for GHGs as for other pollutants, requiring a non-interruptible contract would not be cost-effective.<sup>11</sup>

#### **Comment 8**

EPA should prohibit PVEC from burning ULSD on days when the Air Quality Index value for any regulated pollutant exceeds 100.

#### **Response 8**

In the draft permit, EPA proposed two permit conditions which implement common sense measures to protect potentially sensitive communities near the facility.<sup>12</sup> Condition II.A.2 limits the readiness testing of the emergency engine and fire pump to the hours of 12:00-3:00 PM. Condition II.A.3 requires PVEC to delay readiness testing of the emergency engine and fire

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<sup>9</sup> 2011 PSD Guidance at 39; *see also* 1990 Workshop Manual at B.46.

<sup>10</sup> *See* Fact Sheet at 10.

<sup>11</sup> *See* Fact Sheet at 11.

<sup>12</sup> *See* Fact Sheet at 45-46.

pump when the NO<sub>2</sub> levels reach 54 ppb at the nearest NO<sub>2</sub> monitor.<sup>13</sup> EPA has determined that further prohibiting the use of ULSD when the Air Quality Index (AQI) is above 100,<sup>14</sup> when the use of ULSD is not restricted by the availability of natural gas and once the plant is commissioned, will build upon these two permit conditions and enhance the permit's protectiveness without imposing unacceptable energy or other impacts.

EPA has inserted condition II.B.4 of the permit to further provide that, under subparagraphs II.B.3.d-f, the facility may not burn ULSD when the Air Quality Index for the area including Westfield is or is forecasted to be above 100.<sup>15</sup>

### Comment 9

PVEC's use of background levels of PM<sub>2.5</sub> emissions from ambient monitoring data gathered from the Chicopee site and two Springfield locations, fails to reflect mobile source PM<sub>2.5</sub> emissions from the Barnes Regional Airport, including air national guard activities, truck traffic between Exit 3 of the Massachusetts Turnpike and Westfield companies, as well as existing point source emissions in Westfield and proposed facilities that will emit significant amounts of PM<sub>2.5</sub> that are pending state approval. EPA should require preconstruction on-site monitoring to better characterize ambient PM<sub>2.5</sub> levels.

### Response 9

EPA disagrees that preconstruction monitoring is or was necessary here. The facility's modeled PM<sub>2.5</sub> impact (2.07 µg/m<sup>3</sup>, 24-hour average) is well below the significant monitoring concentration (4 µg/m<sup>3</sup>, 24-hour average).<sup>16</sup>

On-site preconstruction monitoring should be required when existing data and methods are unable to provide the background levels required for an ambient modeling analysis. In general, the ambient impacts from non-nearby (background) sources can be represented by air quality data.<sup>17</sup> Attachment 2 of the Fact Sheet identifies the sources of NO<sub>x</sub> emissions, which are the same sources of PM<sub>2.5</sub> emissions due to the fact Massachusetts's emission inventory requires sources subject to the reporting rule to report all emitted air pollutants with a NAAQS. Attachment 2 shows that these stationary sources are virtually all located east of the proposed facility, i.e., closer to the ambient monitors in Chicopee and Springfield. Moreover, as Attachment 2 shows, the sources are concentrated much more in the Chicopee-Springfield area (i.e., near the existing ambient monitors) than in Westfield. Consequently, EPA concludes that the impact from existing stationary sources' existing emissions is captured by the existing

<sup>13</sup> At this time, ambient NO<sub>2</sub> levels are not available on the MassDEP website. EPA understands the data should be available by January 1, 2013. Given the fact it usually takes two years to construct a facility like PVEC, the ambient NO<sub>2</sub> data should be available once PVEC commences operation.

<sup>14</sup> "An AQI value of 100 generally corresponds to the national air quality standard for the pollutant, which is the level EPA has set to protect public health. AQI values below 100 are generally thought of as satisfactory. When AQI values are above 100, air quality is considered to be unhealthy-at first for certain sensitive groups of people, then for everyone as AQI values get higher." "Air Quality Index (AQI) - A Guide to Air Quality and Your Health," <http://airnow.gov/index.cfm?action=aqibasics.aqi> (last visited Mar. 26, 2012). The AQI for the area including Westfield is available at [http://airnow.gov/index.cfm?action=airnow.local\\_city&cityid=74](http://airnow.gov/index.cfm?action=airnow.local_city&cityid=74).

<sup>15</sup> EPA has declined to extend this AQI-based limitation to subparagraphs II.B.3.a-b (because of unacceptable energy impacts) or II.B.3.c (because of practical issues, since commissioning of the turbine is just a one-time occurrence and its scheduling is usually tight and not amenable to last-minute changes).

<sup>16</sup> See Fact Sheet at 33; see also 40 CFR 52.21(i)(5)(i)(c).

<sup>17</sup> See 40 CFR part 51, Appendix W, Table 8-2, footnote 9.

ambient monitors. Indeed, the existing ambient monitors in Chicopee and Springfield most likely *overestimate* the impacts on background levels from stationary sources that would be measurable at the site of the proposed facility, since the existing stationary sources are clustered around the existing ambient monitors rather than near the proposed facility. Given the location of existing facilities, the use of data from these three ambient monitors adequately accounts for the contribution from stationary sources.<sup>18</sup>

A commenter also states the existing ambient monitors do not reflect the mobile source emissions from Barnes Airport and truck traffic between exit 3 and the Massachusetts Turnpike. While it is true that the ambient monitor EPA relied on is approximately 13 kilometers away from the proposed facility, the Liberty Street monitor is closer to another major highway (approximately 800 feet from I-291), with double the count of vehicles traveled each day (93,800 in 2007) than a monitor located at the fence line of PVEC (approximately 1 mile from I-90 with a vehicle count of 46,445).<sup>19</sup> Traffic count data was obtained from the Massachusetts Department of Transportation. The daily traffic on the local road near the Liberty Street monitor was 18,100 versus 18,900 recorded near the PVEC site. However, the PVEC site is further away from the local road (route 202) than the Liberty Street Monitor. It is also expected the traffic traveling on Liberty Street will have a higher impact than a monitor located at PVEC due to slower traffic speeds and increased traffic lights. Based on these facts, EPA has determined the contribution from vehicle traffic to the background levels of NO<sub>2</sub> and PM<sub>2.5</sub> in the vicinity of PVEC can be represented by using the ambient monitor located on Liberty Street in Springfield.

Regarding mobile source emissions from Barnes Airport, EPA reviewed the airport emission data, for 2002 (the most recent year data for specific airports is available) for both Barnes Airport and Westover AFB. This data includes emissions from Air National Guard activities. PM<sub>2.5</sub> emissions from Westover AFB and Barnes Airport were 54.3 tpy and 5.1 tpy respectively. The NO<sub>x</sub> emissions from Westover Air Force Base and Barnes Municipal Airport were 1139 tons/year and 49 tons/year, respectively. Westover AFB is approximately 5 miles northeast of the Liberty Street ambient NO<sub>2</sub> monitor and 9 miles east of PVEC. In EPA's judgment, the amount of PM<sub>2.5</sub> and NO<sub>x</sub> emissions from aircraft on an ambient monitor will be higher at the Liberty Street monitor than at a monitor placed near PVEC, because the significantly larger source (Westover Air Force Base) is closer to the Liberty Street monitor than PVEC. EPA did not receive any information which would call this judgment into question. Therefore, EPA has determined the impact from aircraft PM<sub>2.5</sub> and NO<sub>x</sub> emissions on the Liberty Street ambient monitor represents the impact that aircraft emissions would have on an ambient PM<sub>2.5</sub> and NO<sub>2</sub> monitor placed near PVEC, and in fact probably overestimates the emissions.

Therefore, EPA has determined the existing ambient monitors (particularly the Liberty Street monitor) adequately represent (or even overestimate) the impact of airport and mobile source emissions on the area around the PVEC project site, and provide adequate data for all air quality modeling purposes. On-site pre-construction monitoring would not be expected to provide data that would show higher background levels on Ampad Road in Westfield than at Liberty Street in Springfield. Consequently, use of on-site ambient data, as opposed to Liberty Street ambient

<sup>18</sup> Notwithstanding this conclusion, EPA has, in its discretion, agreed to require the applicant to conduct interactive modeling. See Response 15.

<sup>19</sup> The vehicle number represents the vehicles recorded between exits 3 and 4, which is higher than the number of vehicles recorded between exits 2 and 3 (27,875). See Massachusetts Department of Transportation, Route book 2009, page 6, available at <http://www.mhd.state.ma.us/default.asp?pgid=content/traffic01&sid=about>.

data, would not be expected to show that PVEC's emissions will cause or contribute to an exceedance of a NAAQS or PSD increment.

**Comment 10**

EPA should require postconstruction ambient monitoring.

**Response 10**

While EPA has discretion to require postconstruction ambient monitoring under CAA 165(a)(7) and 40 CFR 52.21(m)(2), this is not routine practice. According to EPA guidance from 1987 entitled "Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD)", postconstruction monitoring is required if EPA has valid reasons for needing the data, principally in two situations:

**2.1.2 Criteria Pollutants - Postconstruction Phase**

EPA has discretion in requiring postconstruction monitoring data under section 165(a)(7) of the Clean Air Act and in general will not require postconstruction monitoring data. However, to require air quality monitoring data implies that the permit granting authority will have valid reasons for the data and, in fact, will use the data after it is collected. Generally, this will be applied to large sources or sources whose impact will threaten the standards or PSD increments. Examples of when a permit granting authority may require postconstruction monitoring data may include:

a. NAAQS are threatened - The postconstruction air quality is projected to be so close to the NAAQS that monitoring is needed to certify attainment or to trigger appropriate SIP related actions if nonattainment results.

b. Source impact is uncertain or unknown - Factors such as complex terrain, fugitive emissions, and other uncertainties in source or emission characteristics result in significant uncertainties about the projected impact of the source or modification. Postconstruction data is justified as a permit condition on the basis that model refinement is necessary to assess the impact of future sources of a similar type and configuration.<sup>20</sup>

EPA has determined not to require postconstruction monitoring of any pollutant for the following reasons:

1. There are no significant uncertainties regarding PVEC's emissions. The emission profile from combined cycle turbines is well established.

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<sup>20</sup> Office of Air Quality Planning and Standards, "Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD)," EPA-450/4-87-007 (May 1987), at 4-5, available at <http://go.usa.gov/EGV>.

2. Based on the topography, complex terrain does not affect the modeling results.
3. The modeling analysis demonstrates that emissions of all PSD pollutants from PVEC, with the single exception of NO<sub>2</sub>, will result in ambient air concentrations that are well below the applicable NAAQS.<sup>21</sup>

Because the maximum modeled NO<sub>2</sub> impact does approach the NAAQS, EPA's decision not to require postconstruction ambient monitoring for NO<sub>2</sub> warrants further explanation. The purpose of any postconstruction monitoring is to gather data which would include both (1) background emission levels, and (2) PVEC's impact at a certain location. As discussed in Response 9 regarding preconstruction ambient monitoring, EPA is confident that the NO<sub>2</sub> data collected at the ambient monitor in Springfield certainly represents, and most likely even overestimates, the background levels at the PVEC project site.

Since the modeling analysis already utilizes an ambient background level for 1-hour NO<sub>2</sub> which EPA believes is conservative, whether to require postconstruction monitoring hinges on whether the impact from PVEC may cause an exceedance of the 1-hour NO<sub>2</sub> despite the fact that results from the modeling analysis state otherwise.

Results from modeling tend to be conservative on purpose. For example, the model will assume that the highest emissions occur under the worst meteorological conditions. The modeling analysis is based on using a 5 year period of hourly weather data, or 43,800 hourly data points.<sup>22</sup> Furthermore, the highest NO<sub>2</sub> impacts are caused when the combined cycle turbine, auxiliary boiler, and emergency equipment are all operating simultaneously.<sup>23</sup>

EPA's March 1, 2011 guidance on modeling for the 1-hour NO<sub>2</sub> standard states: "Given the implications of the probabilistic form of the 1-hour NO<sub>2</sub> NAAQS discussed above, we are concerned that assuming continuous operations for intermittent emissions would effectively impose an additional level of stringency beyond that intended by the level of the standard itself."<sup>24</sup> However, in the modeling analysis for NAAQS compliance, PVEC did assume continuous operations of its intermittent emergency fire pump and emergency generator.

Furthermore, although the operating hours are limited for both the auxiliary boiler and the emergency equipment—in particular, the emergency equipment is limited to 300 hours in any 12-month period—the applicant conservatively assumed these devices were operating 8760 hours per year for modeling purposes.

Finally, the NO<sub>2</sub> modeling demonstration assumes the facility's highest emissions occur during the single least-meteorologically-favorable hour of 43,800 possible hourly data points. This is very unlikely; even assuming that (1) over a five-year period the emergency equipment operated for the full 300 permitted hours, and (2) the combined-cycle turbine *and* auxiliary boiler were

<sup>21</sup> See Fact Sheet at 31-36.

<sup>22</sup>  $43,800 = 365 * 24 * 5$ . Actually, the weather data is collected every minute and is then averaged over an hour.

<sup>23</sup> See Fact Sheet at 36.

<sup>24</sup> Office of Air Quality Planning & Standards, "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard" (Mar. 1, 2011), at 9, *available at* [http://www.epa.gov/ttn/scram/Additional\\_Clarifications\\_AppendixW\\_Hourly-NO2-NAAQS\\_FINAL\\_03-01-2011.pdf](http://www.epa.gov/ttn/scram/Additional_Clarifications_AppendixW_Hourly-NO2-NAAQS_FINAL_03-01-2011.pdf).



operating for all 300 of these hours each year, the total number of operational hours would be 1500 over a five-year period, or just 3.4% of the total hours in that period. Of that subset, the chance the *very highest emitting hour* would occur on the *very meteorologically worst* hour is minuscule. Yet the applicant's modeling assumed exactly that, and found that the resulting combined impact would fall below the NAAQS.

Further analysis of the 43,800 data points representing hourly emissions was conducted to determine the number of hours where the impacts would equal or exceed  $72 \mu\text{g}/\text{m}^3$  (i.e., 75% of  $96 \mu\text{g}/\text{m}^3$ , which when added to background levels equals the NAAQS of  $188 \mu\text{g}/\text{m}^3$ ). Over a five-year period, less than 1% of the hours, (i.e., on average fewer than 28 hours per year), experienced impacts of even  $72 \mu\text{g}/\text{m}^3$ . Based on this data, the model is predicting emission impacts from PVEC which are well below levels that could cause a NAAQS violation.

Finally, it is important to emphasize EPA has concluded that, in general, high ambient levels of 1-hour  $\text{NO}_2$  are principally a near-road phenomenon caused by mobile sources. Recently, EPA designated the entire country as unclassifiable/attainment for the 1-hour  $\text{NO}_2$  NAAQS<sup>25</sup>. There is no area in the country where an existing ambient monitor is showing a violation of the 1-hour  $\text{NO}_2$  standard, despite the fact the existing monitoring network was developed to take into account large stationary sources of  $\text{NO}_2$  emissions. The reason that EPA did not designate the entire country as attainment is because the Agency has inadequate data on  $\text{NO}_2$  levels near roadways and has decided to install a near-road ambient monitoring network. As part of the implementation strategy for the 1-hour  $\text{NO}_2$  standard, EPA will be working with states to locate ambient 1-hour  $\text{NO}_2$  monitors near roadways. As stated in EPA's "Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring," a near-road monitor is one within 50 meters of the outside edge of the road.<sup>26</sup> The distance from the PVEC project site to I-90 is 30 times more than 50 meters. Although none of the ambient monitors used for background data would meet the requirements of a "near-road" monitor, the Liberty Street monitor is closer to a road with more traffic than a monitor located at PVEC would be.<sup>27</sup> Thus, to the extent that mobile sources contribute to high ambient  $\text{NO}_2$  levels, the modeling analysis adequately captures this effect by using background data from the Liberty Street monitor.

For these reasons, EPA has determined it is not necessary to install a postconstruction ambient monitor for  $\text{NO}_2$ .

#### **Comment 11**

EPA should require ambient monitoring during the project's construction phase.

#### **Response 11**

CAA 165(a)(7) authorizes EPA to require post-construction monitoring "to determine the effect which emissions *from any such facility* may have, or is having, on air quality in any area which

<sup>25</sup> Air Quality Designations for the 2010 Primary Nitrogen Dioxide ( $\text{NO}_2$ ) National Ambient Air Quality Standards, 77 Fed. Reg. 9,532 (Feb. 17, 2012).

<sup>26</sup> 40 CFR part 58, Appendix E, § 6.4(a) ("In siting near-road  $\text{NO}_2$  monitors as required in paragraph 4.3.2 of appendix D of this part, the monitor probe shall be as near as practicable to the outside nearest edge of the traffic lanes of the target road segment; but shall not be located at a distance greater than 50 meters, in the horizontal, from the outside nearest edge of the traffic lanes of the target road segment.")

<sup>27</sup> See Response 9.



may be affected by emissions *from such source*.<sup>28</sup> EPA's regulations provide that a permittee "shall, *after* construction of the stationary source or modification, conduct such ambient monitoring as the Administrator determines is necessary to determine the effect emissions *from the stationary source or modification* may have, or are having, on air quality in any area."<sup>29</sup> Even if the type of "during-construction" monitoring requested by the comment is within EPA's authority under the PSD program, it is not necessary here.

See Responses 9 and 10 for general information regarding existing background levels and the criteria for requiring post-construction ambient monitoring. The commenter did not provide any information regarding emissions during construction. PVEC's modeling analysis has demonstrated that, for the fully operational 431 MW power plant, the only criteria pollutants emitted above the SIL at the fence line are 24-hour PM<sub>2.5</sub> and 1-hour NO<sub>2</sub>. The NAAQS for these two pollutants are based on averaging over a three year period. For the 1-hour NO<sub>2</sub> and the 24-hr PM<sub>2.5</sub> standards, the eighth highest of each year is averaged over the three year period. The construction period is expected to last about two years.<sup>30</sup> During this period, EPA does not expect the emissions from construction vehicles to exceed the annual emissions modeled to be emitted by the eventual power plant itself. For example, a typical piece of construction equipment would emit up to 5 tons of NO<sub>x</sub> in a year, assuming a 500 hp engine operated for 2,000 hours at 60% load. The PSD permit allows PVEC to emit, at most, 117 tons of NO<sub>x</sub> per year.<sup>31</sup> It is very unlikely that the construction process will involve 20 pieces of 500 hp construction equipment, each operating at 2,000 hours for a year. There was no information provided to EPA during the comment period which claims otherwise.

Based on the above facts, EPA has decided not to require site specific ambient monitoring during construction.

<sup>28</sup> 42 USC 7475(a)(7) (emphases added).

<sup>29</sup> 40 CFR 52.21(m)(2) (emphases added).

<sup>30</sup> Construction period for a combined cycle gas plant ranges from 20-30 months. Rolf Kehlhofer, Bert Rukes, Frank Hannemann, & Franz Stirnimann, COMBINED-CYCLE GAS & STEAM TURBINE POWER PLANTS (3d ed. 2009), at 28 & Table 3-7, available in part at <http://books.google.com/books?id=OmnOG7vWfuQC&pg=PA28>.

<sup>31</sup> Based on the different the operating scenarios allowed by the permit. To calculate this number, EPA assumed the use of 60 days on ULSD (which, as noted in Response 3, is unlikely to occur except in the event of a serious failure of supply or equipment) and 25 cold startup/shutdowns and 130 warm startup/shutdowns in one year (from PVEC's 2008 application) which results in the highest annual NO<sub>x</sub> emissions. Note the state plan approval issued on December 31, 2010 limits annual NO<sub>x</sub> emissions to 111 tons/year.

**Comment 12**

EPA should require PVEC to install a continuous monitor to measure PM emissions at ground level at the property boundary using equipment that can monitor compliance with the NAAQS and make data publicly available in timely manner.

**Response 12**

It is not clear whether the comment is requesting a continuous *ambient air quality* monitor or a continuous *emissions* monitor. Regarding postconstruction ambient air quality monitoring, see Response 10. For purpose of this response, EPA assumes the comment is requesting a continuous particulate emissions monitor.

The final permit contains emission limits for PM<sub>10</sub> and PM<sub>2.5</sub>. EPA's continuous PM monitor system specification is for a system that measures total particulates.<sup>32</sup> The system does not have the ability to continuously measure PM<sub>10</sub> and PM<sub>2.5</sub>, which are components of total PM. EPA does not currently have a performance specification for a continuous monitor that measures either PM<sub>10</sub> or PM<sub>2.5</sub> emissions from a stationary source. Therefore, the continuous PM monitor for which the Agency does have a performance specification (i.e., the system that measures total particulates) may only be considered, at best, as an indicating monitor, using total PM as a rough indicator or proxy for the finer particulate fractions.

There are devices other than continuous particulate monitors that have been successfully used as indicators of PM emissions from fuel-burning devices. Continuous opacity monitors are one such device which have successfully been used as an indicating monitor over the last few decades. The costs to install a continuous PM monitor as an indicator of compliance is double the installation cost of an opacity monitor and triple the annual operating costs due to the difficulty in calibrating the PM monitor.<sup>33</sup>

To address the concern that there should be a continuous method to aid in indicating a possible violation of the PM<sub>2.5</sub> or PM<sub>10</sub> emission limits, EPA has revised the final permit requiring PVEC to install and operate a continuous opacity monitoring system (COMS). The final permit revises Condition III.1 with language requiring installation of a COMS, and a new permit condition III.5 has been inserted requiring the COMs to meet the performance specifications of 40 CFR Part 60, Appendix B, Performance Specification No. 1.

**Comment 13**

EPA failed to consider the impacts of air emissions to the Barnes Aquifer and other water bodies in violation of the Clean Air Act. As noted by the Barnes Aquifer Protection Advisory Committee, PVEC's operation may result in long-term cumulative effects of emission particulate deposition over the Barnes Aquifer. A Zone II of the aquifer is just north of the PVEC site, as are wetlands.

<sup>32</sup> See 40 CFR part 60, appendix B, specification 11.

<sup>33</sup> See Office of Air Quality Planning & Standards, Emissions Measurement Center, "Updates: PS-11 (PM CEMS), Multi-metals CEMS, Multi-metals Fence Line Monitoring, & CEMS Cost Model" (Sept. 2007), slide 7, *available at* <http://www.epa.gov/ttn/emc/meetnw/CEMSupd.ppt>.

### Response 13

The commenters expressed concerns with the impacts that particulate deposition may have on the Barnes Aquifer and other water bodies, but did not specifically identify the effects of concern. For purposes of this response, EPA assumes the comment is concerned that particulate deposition would adversely impact the aquifer so that it would be impaired as a drinking water source, and/or that the ecosystems served by the aquifer would be impaired.

In analyzing the impact from PVEC's regulated PM<sub>10</sub> and PM<sub>2.5</sub> emissions on the Barnes Aquifer and other water bodies, EPA considered the following facts:

1. The modeling analysis shows emissions of PM<sub>10</sub> are de minimis beyond the facility's fence line.
2. The significant impact area for PM<sub>2.5</sub> overlaps with only a very small fraction of the Barnes Aquifer's overall area.<sup>34</sup>
3. The allowable PM<sub>2.5</sub> emissions from PVEC represent only a 2% increase of the total PM<sub>2.5</sub> emissions in Hampden County according to the most recent state emission inventory.
4. The allowable PM<sub>10</sub> emissions from PVEC represent less than 0.5% of the total PM<sub>10</sub> emissions in Hampden County according to the most recent state emission inventory.
5. In developing the secondary NAAQS standard for PM, EPA considered the impact that PM emissions may have on ecosystems.<sup>35</sup> PVEC's emissions are modeled to comply with the secondary NAAQS standards for both PM fractions and both averaging times.
6. The comments do not provide any additional information suggesting how particulate matter emissions will impact the aquifer.

Based on these facts, EPA anticipates the air emissions from PVEC will not have an adverse effect on the Barnes Aquifer and other water bodies.

### Comment 14

PVEC's analysis, which concludes that particulate matter will not result in impairment to visibility, soils, or vegetation, is flawed.

<sup>34</sup> EPA examined two maps available at the Barnes Aquifer Protection Advisory Committee's website at [http://www.pvpc.org/bapac/maps\\_diag.html](http://www.pvpc.org/bapac/maps_diag.html): the "B. Newton's aquifer map," at [http://www.pvpc.org/bapac/diag\\_maps/newton\\_map.html](http://www.pvpc.org/bapac/diag_maps/newton_map.html), and the "PVPC Barnes aquifer map," at [http://www.pvpc.org/bapac/diag\\_maps/aquifer\\_map.html](http://www.pvpc.org/bapac/diag_maps/aquifer_map.html), as well as a map submitted by commenter Jean Carpenter.

<sup>35</sup> See National Ambient Air Quality Standards for Particulate Matter, 71 Fed. Reg. 61,144, 61,209 (Oct. 17, 2006) (discussing how secondary NAAQS development process considered, *inter alia*, "PM-related effects on ecosystems, specifically those resulting from the nutrient or acidifying characteristics of deposited PM on both terrestrial and aquatic ecosystems, which contribute to adverse impacts on essential ecological attributes such as species shifts, loss of diversity, impacts to threatened and endangered species and alteration of native fire cycles").

## Response 14

The comment alleges flaws in PVEC's additional impacts analysis. In the original comment letter, this sentence is part of a paragraph headed "EPA failed to consider the impacts of air emissions to the Barnes Aquifer in violation of the Clean Air Act," and is immediately followed by the comment regarding the Barnes Aquifer that EPA has designated Comment 13. Therefore, it appears that this comment was likely limited to the impacts on the Barnes Aquifer, since it alleges no other flaws in PVEC's additional impacts analysis, and therefore Response 13 suffices to respond to this comment (if it is indeed a separate comment). If the comment was intended to address other flaws in PVEC's additional impacts analysis, the comment is too vague to respond to, since it does not identify such other flaws, and consequently requires no response.

To the extent (if any) the comment requires a further response, EPA disagrees with the commenter the analysis conducted by PVEC in accordance with 40 CFR 52.21(o) is flawed. Section 52.21(o) requires the applicant to conduct an analysis of the air quality impact and impairment to visibility, soils, and vegetation that would occur as a result of the project and general commercial, residential, industrial and other growth associated with the project. To conduct this analysis, PVEC relied on EPA's 1980 guidance entitled "A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals."<sup>36</sup> As stated on page 37 of the Fact Sheet, EPA reviewed PVEC's analysis, which relied on the 1980 guidance, and determined the air emissions will not have impairment on the soils and vegetation.

The visibility analysis required by 40 CFR 52.21(o) focuses on the impact of the source's emissions. For this analysis, EPA investigated the effect PVEC's plume would have on the surrounding area. A plume refers to effects PVEC's emissions will have on impairing sunlight, since light can be scattered by particulate matter in the air. An example is one's ability to see dust particles suspended in the indoor air at home when light shines through a window. In its application, PVEC stated the plant's plume is limited in a construction permit issued by Massachusetts to an opacity level of 10%, which means 90% of the available light passes through. The measurement for this limit is taken by an opacity monitor located within the stack and is representative of the opacity level at the stack's exit. Emissions from combined cycle gas turbines are usually not visible and even when on infrequent basis emissions are visible they quickly dissipate after exiting the stack, causing opacity levels to fall to zero. In EPA's judgment, conducting a VISCREEN analysis, as suggested in EPA's guidance,<sup>37</sup> would provide no relevant data because there is no visible plume for the model to analyze.

As noted in Response 12, the final permit requires the installation of a continuous monitor to measure opacity. We are also requiring the combined cycle gas turbine to meet an opacity limit of 10% to ensure the assumptions relied on in the visibility analysis are met. A new Condition II.B.6 has been added to the permit to limit the facility's emissions to 10% opacity on a 6-minute average. The opacity limit will apply at all times except during startup and shutdown when combusting oil.<sup>38</sup> Although it is possible there may be a brief puff of visible smoke when the

<sup>36</sup> See generally Office of Air Quality Planning & Standards, "A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals," EPA 450/2-81-078 (Dec. 12, 1980), available at <http://go.usa.gov/E7G>.

<sup>37</sup> See generally Office of Air Quality Planning & Standards, "Workbook for Plume Visual Impact Screening and Analysis (Revised)," EPA-454/R-92-023 (Oct. 1992).

<sup>38</sup> Unlike opacity limits contained in many other air permits, the opacity limit in this permit is not being relied on as a surrogate for meeting any pollutant with a NAAQS. EPA is also not setting the limit as an indicator of compliance

combined cycle turbine is in startup or shutdown mode burning ULSD, any visible plume will be short term in nature and quickly dissipate. The visibility impact analysis required by 40 CFR 52.21(o) focuses attention on the impact several days of visible emissions would have on the local area. This accumulative effect is sometimes referred to as haze. The combination of limiting opacity to 10% or less, burning natural gas as the primary fuel, and only allowing a visible puff on an infrequent, short term basis, EPA has concluded PVEC has provided an adequate analysis of the project's impact on local visibility.

### Comment 15

EPA's rationale for concluding an analysis of cumulative air emissions was not necessary through use of interactive air modeling is that there are no nearby sources expected to cause a significant concentration gradient in the area of PVEC. EPA should provide its rationale for setting the benchmark at 100 tpy of PM<sub>2.5</sub> emissions within one mile of PVEC and 1,000 tpy sources within 10 miles. EPA should analyze cumulative source impacts for PM<sub>2.5</sub> and NO<sub>2</sub> emissions, including the proposed power plants in Russell, Springfield and Greenfield and new manufacturing and other entities that will create air pollution, to better understand the impacts emissions of these pollutants from PVEC will have in the area.

### Response 15

Section 8.2.3.a. of 40 CFR part 51 Appendix W (Guideline on Air Quality Models) recommends that, in multi-source areas, the air quality analysis should account for the contributions from "nearby sources" and "other sources." These terms are defined to allow for the exercise of professional judgment by the permitting agency. Appendix W defines "nearby sources" as:

All sources expected to cause a significant concentration gradient in the vicinity of the source or sources under consideration for emission limit(s) should be explicitly modeled. The number of such sources is expected to be small except in unusual situations. Owing to both the uniqueness of each modeling situation and the large number of variables involved in identifying nearby sources, no attempt is made here to comprehensively define this term. Rather, identification of nearby sources calls for the exercise of professional judgment by the appropriate reviewing authority (paragraph 3.0(b)).<sup>39</sup>

"Other sources" are defined even less specifically as "all other sources (e.g., natural sources, minor sources and distant major sources)."<sup>40</sup>

To decide which sources, if any, meet these criteria here, EPA performed an analysis of sources within and close to the significant impact area caused by the PM<sub>2.5</sub> or NO<sub>2</sub> emissions. In identifying the sources within Hampden County, EPA relied on the National Emission Inventory developed by Massachusetts for 2008. Massachusetts maintains a robust inventory with over 4,000 sources, providing emission information for every pollutant regardless of the amount. This is evident by the fact that some of the identified sources have NO<sub>x</sub> emissions less than 20 pounds per year.

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with the PM<sub>2.5</sub> or PM<sub>10</sub> emission limits. Rather, the opacity limit in this PSD permit is imposed solely to protect the assumptions underlying EPA's 40 CFR 52.21(o) visibility analysis.

<sup>39</sup> 40 CFR part 51 Appendix W, § 8.2.3.b.

<sup>40</sup> *Id.* § 8.2.3.f.



In deciding whether nearby or other sources should be specifically modeled as part of the cumulative impact analysis for PM<sub>2.5</sub>, EPA stated in the Fact Sheet:

The term “sources” in EPA’s modeling guidance refers to point sources of air emissions. Air emissions from mobile sources are addressed through the use of ambient air monitors. EPA reviewed the latest compilation (2008) of Massachusetts’ emission inventory for all point sources of PM<sub>2.5</sub> emissions in Hampden County. When determining whether a “nearby source” may cause a “significant concentration gradient” for PM<sub>2.5</sub>, EPA’s modeling reviewer determined it would be appropriate to look at 100 tpy sources within one mile of the proposed project and 1,000 tpy sources within 10 miles.

The largest source of PM<sub>2.5</sub> emissions in Hampden County is Mount Tom Generating Station in Holyoke. Mount Tom emitted 44 tons of PM<sub>2.5</sub> and 92 tons of PM<sub>10</sub> emissions and is approximately 9 miles away. There is also John S Lane and Son Company located approximately 5 miles away in Westfield which had 12 tons of PM<sub>2.5</sub> emissions and 18 tons of PM<sub>10</sub>. There are only 8 sources in Hampden County with PM<sub>2.5</sub> emissions above 10 tpy and 10 sources in Hampden County with PM<sub>10</sub> emissions above 10 tpy. Based on the emission inventory EPA has determined there are no nearby sources expected to cause a significant concentration gradient in the area of the proposed project. Therefore, interactive modeling using PM<sub>2.5</sub> emissions from other sources is not required for this project.<sup>41</sup>

EPA reaffirms its earlier conclusion that interactive source modeling is not necessary given the information quoted above. The rule-of-thumb that EPA cited in the Fact Sheet (100 tpy sources within one mile of the proposed project and 1,000 tpy sources within 10 miles) has been used by EPA and MassDEP in previous permitting actions in Massachusetts.<sup>42</sup> EPA continues to believe that the above-cited rule-of-thumb is an appropriate screening mechanism for determining when interactive modeling is necessary for PSD permits.

Notwithstanding the preceding, EPA has exercised its discretion to examine this issue further in this particular instance. As explained in more detail below, with respect to PM<sub>2.5</sub>, EPA reaffirms its earlier judgment that interactive source modeling is not necessary. With respect to NO<sub>2</sub>, EPA exercised its discretion to require the applicant to conduct interactive source modeling, and supplemented the record with additional material, as follows.

### PM<sub>2.5</sub>

EPA reanalyzed the existing stationary source database, focusing on the facility’s modeled significant impact area for 24-hour PM<sub>2.5</sub> as suggested by EPA PM<sub>2.5</sub> modeling guidance.<sup>43</sup>

<sup>41</sup> Fact Sheet at 34.

<sup>42</sup> See, e.g., Brian Hennessey, EPA Region 1 Modeling Contact, “Dispersion Modeling for Dominion Energy’s 9 January 2009 REVISED PSD Permit Application for a Major Modification of the Brayton Point Generating Station” (Jan. 22, 2009), at 6, available at

<http://www.epa.gov/region1/communities/pdf/braytonpoint/EPAAssessmentAirModeling.pdf>. This was the most recent PSD permit issued by EPA Region 1 before the PVEC permit.

<sup>43</sup> See Office of Air Quality Planning & Standards, “Modeling Procedures for Demonstrating Compliance with PM<sub>2.5</sub> NAAQS” (Mar. 23, 2010), at 9, available at <http://www.epa.gov/region07/air/nsr/nsrmemos/pm25memo.pdf>. This guidance suggests that the significant impact area of the facility can be used in determining the geographic



EPA has determined there are no sources in the Massachusetts emission inventory within the significant impact area for 24-hour PM<sub>2.5</sub>. In addition, the closest stationary sources to the significant impact area have actual emissions of 0.5 tons/year or less. Thus, this further analysis of the stationary source database confirms EPA's earlier conclusion (explained in the Fact Sheet) that interactive modeling for PM<sub>2.5</sub> is not necessary, and the comment does not supply any other information that would disturb this conclusion. Therefore, EPA still concludes interactive source modeling for 24-hr PM<sub>2.5</sub> is not necessary for demonstrating compliance with the NAAQS and increment. EPA has also determined PVEC's 24-hr PM<sub>2.5</sub> emissions will not contribute to an existing violation of the PM<sub>2.5</sub> NAAQS based on zero evidence of any area within 50 kilometers of PVEC violating the 24-hr PM<sub>2.5</sub> NAAQS.<sup>44</sup>

## NO<sub>2</sub>

In determining whether interactive modeling for the one-hour NO<sub>2</sub> standard should be conducted, EPA examined the sources within the facility's modeled NO<sub>2</sub> significant impact area.<sup>45</sup> Six sources were identified within the SIA:

| Source Name                  | 2008 NO <sub>x</sub> emissions<br>(tons/year) |
|------------------------------|---|
| #72 Heliport                 | 0.0162  |
| #80 Columbia Manufacturing   | 2.09  |
| #81 Digital                  | 0.0162  |
| #82 Jen-Coat Inc.            | 1.35  |
| #86 New England Pipe         | 0.0147  |
| #87 Barnes Municipal Airport | 2.159   |

In addition to these 6 sources within the significant impact area, there are two additional sources with actual emissions in 2008 greater than 1 ton per year that are near (but not in) the significant impact area.<sup>46</sup> These two sources are #45 Texon USA in Russell (19.107 tons/year) and #84 Massachusetts Air National Guard in Westfield (3.4552 tons/year). Finally, in determining if future sources should be included in the interactive source modeling, EPA analyzed the emission levels and locations of three biomass facilities in Western Massachusetts which have not begun construction, and determined that Russell Biomass was large enough and near enough to the significant impact area, to include this facility in the interactive modeling analysis.<sup>47</sup> EPA

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range of the background source emission inventory that would be appropriate should a cumulative impact assessment be necessary.

<sup>44</sup> 50 km is the maximum distance at which the model can reliably predict a source's impact.

<sup>45</sup> Page 40 of the Fact Sheet contains a map of existing sources within Hampden County in relation to PVEC.

<sup>46</sup> EPA chose this one ton per year cutoff because one ton per year is the emission increase level that requires a source to obtain a minor new source review permit under the Massachusetts State Implementation Plan.

<sup>47</sup> "The impact of growth on emissions should be considered in all modeling analyses covering existing sources. Increases in emissions due to planned expansion or planned fuel switches should be identified. Increases in emissions at individual sources that may be associated with a general industrial/commercial/residential expansion in multi-source urban areas should also be treated. For new sources the impact of growth on emissions should generally be considered for the period prior to the start-up date for the source. Such changes in emissions should treat increased area source emissions, changes in existing point source emissions which were not subject to

determined that it would not be necessary to include emissions of future biomass plants in Greenfield and Springfield in an interactive modeling analysis. Based on these facilities' allowable emission rates, if any, and their distance from PVEC's significant impact area, these two plants do not meet the criteria for "nearby" or "other" sources in Appendix W.<sup>48</sup>

EPA exercised its discretion to direct PVEC to conduct an interactive modeling analysis. This analysis was refined iteratively in several stages, which are summarized below.

Although EPA used *actual* emission data to identify sources, 40 CFR part 51 Appendix W recommends the input of *allowable* emissions of any nearby source. Obtaining accurate information on allowable emissions for the sources became a challenge since the NO<sub>x</sub> emissions from several of these sources are below the one-ton-per-year permit applicability threshold in Massachusetts. In lieu of having source-specific permit data, EPA and PVEC first relied on information provided on sources' emission inventory statements. The purpose of these statements is for sources to estimate emissions for a state to use in planning purposes. It is not uncommon to find some of the information on these statements does not reflect the current configuration of a source. This proved to be the situation when PVEC conducted its interactive modeling for 1-hr NO<sub>2</sub>.

On March 1, 2012, PVEC submitted its first iteration of interactive modeling results. Although PVEC was able to obtain allowable emissions for some of the sources, PVEC was not able to determine allowable emissions for all of the sources. In the place of allowable emissions, PVEC used the actual emissions data provided earlier in this response. In an e-mail on March 14, 2012, EPA provided PVEC the allowable emission rates for the other point sources. PVEC performed the modeling using EPA's provided source emission rate data and stack parameter and submitted its second iteration of results on March 21, 2012. These results showed several receptors experiencing impacts above the NAAQS when added to existing background levels. In its March 21 letter, PVEC suggested that the modeled exceedances were caused by the existing facility Jen-Coat. The interaction of PVEC's future emissions along with the other existing sources did not cause a violation of the NAAQS.

Upon further investigation, EPA concluded that some of the data from National Emission Inventory regarding types of emission units and stack parameters was incorrect. For example, the data that PVEC used in its initial modeling assumed unrealistically low stack flows, which caused the modeled emissions to stagnate around the facility. EPA contacted the Jen-Coat plant manager to discuss the types of NO<sub>x</sub> emitting devices located at Jen-Coat. As a result of this discussion, EPA was able to provide more accurate Jen-Coat emission unit data (two process dryers, one 1.5 MMBtu/hr and the other 3.05 MMBtu/hr) and stack parameter data (stack diameters 16 and 24 inch, velocity 450 and 250 ft/min) for the modeling analysis.

PVEC used the more accurate emission rate data for Jen-Coat and provided its revised modeling results to EPA on March 27, 2012 and April 3, 2012. This third and final iteration of interactive modeling showed no receptors in violation of the 1-hr NO<sub>2</sub> NAAQS. EPA has reviewed this

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preconstruction review, and emissions due to sources with permits to construct that have not yet started operation."

40 CFR part 51 Appendix W, § 8.1.2.k.

<sup>48</sup> Palmer Renewable in Springfield is limited to 37.9 tpy of NO<sub>x</sub> and is approximately 4 miles away from the significant impact area. EPA has been informed by MassDEP that the application for a biomass facility in Greenfield is dormant and a draft permit was never issued.

third and final modeling analysis and data provided by PVEC on March 27, 2012 and April 3, 2012, and agrees with PVEC's conclusion.<sup>49</sup> Furthermore, PVEC would not contribute to any known current violation of the 1-hr NO<sub>2</sub> standard, and in fact EPA has recently designated the entire country (including western Massachusetts) as unclassifiable/attainment for the 1-hr NO<sub>2</sub> standard.

Finally, EPA notes the above experience confirms EPA's earlier professional judgment, based on a rule of thumb, that interactive source modeling would not be necessary. In this case, EPA exercised its discretion to require interactive modeling, and—after substantial effort centered on an existing source emitting just over one ton per year—determined that there is no modeled violation. In other instances, it may be appropriate for the permitting authority, in exercise of its professional judgment, to rely on heuristics or rules of thumb (such as the one employed in the Fact Sheet) to decline to require interactive source modeling when the emissions inventory involves relatively small sources.

#### **Comment 16**

Several commenters expressed concern regarding accidental chemical releases, evacuation plans, and/or spills. One commenter specifically stated that there is no hydrological barrier between PVEC's facility and the Barnes Aquifer.

#### **Response 16**

At the federal level, these issues are addressed through three main regulatory programs.<sup>50</sup>

First, under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), and EPA's regulations at 40 CFR parts 350-372, PVEC may be required to submit an emergency response plan with the Westfield Emergency Management Agency. Anyone concerned with the PVEC's plans in case of an emergency may contact the Westfield Emergency Management Agency at 413-568-1222.

Second, Section 112(r) of the Clean Air Act, and EPA's Chemical Accident Prevention regulations at 40 CFR part 68, require facilities to prevent accidental releases and minimize the consequences of any such releases. Depending on the type and quantity of chemicals that PVEC stores on-site, it may be required to submit a Risk Management Plan. The quantity and list of chemicals that trigger this requirement can be found at 40 CFR 68.130.

Third, Section 311 of the Clean Water Act, and the Oil Pollution Act of 1990, along with EPA's Oil Pollution Prevention regulation at 40 CFR part 112, sets forth requirements for prevention of, preparedness for, and response to oil discharges at certain facilities. This includes development of a Spill Prevention, Control, and Countermeasure (SPCC) plan that must be prepared, reviewed

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<sup>49</sup> With respect to environmental justice, it is important to remember the interactive modeling analysis does not change the modeled impact of the primary facility (here, PVEC) at any location, and therefore, does not change the facility's significant impact area. Rather, it provides, in essence, a more refined background value at particular locations, to which PVEC's modeled impact may be added. Thus, the portions of the environmental justice discussion in the Fact Sheet that discuss PVEC's significant impact area, and PVEC's modeled impacts at particular locations, are not affected by the interactive modeling.

<sup>50</sup> State and local emergency and safety requirements may also apply. Many of these issues were addressed at the state level through the Massachusetts Environmental Policy Act review. See Final Env'tl. Impact Report for Pioneer Valley Energy Ctr. (Jan. 15, 2009) [hereafter "FEIR"], at 76-81.

and certified by a licensed professional engineer, and implemented before the facility begins operation.<sup>51</sup>

These regulatory requirements are not implemented through a PSD permit, which focuses on the facility's operational air emissions. The EPCRA and SPCC requirements are implemented through separate federal laws. The CAA 112(r) requirements will be incorporated into a separate Clean Air Act permit known as a Title V operating permit that MassDEP will issue to PVEC after its construction. MassDEP will issue this operating permit in accordance with its approved Clean Air Act Title V Operating Permit Program, found at 310 CMR, 7.00, Appendix C. The public will be provided a 30 day comment period and an opportunity for a public hearing prior to MassDEP issuing the operating permit. During that comment period, the public may comment on how the requirements under CAA 112(r) should apply to PVEC.

#### **Comment 17**

Nitrogen loading in the Westfield area is above critical loading according to the Ethnological Society of America.

#### **Response 17**

Any nitrogen loading to ecosystems that would be caused by emissions from PVEC would be due to the deposition of nitrogen laden particles. Although the plant will emit NO<sub>x</sub>, EPA is requiring PVEC to install best available control technology to limit its NO<sub>x</sub> emissions,<sup>52</sup> thus requiring the best pollution controls to minimize the precursors to the fraction of nitrogen caused from deposition.

Since nitrogen load can be impacted by relatively distant NO<sub>x</sub> emitting sources, EPA analyzed the allowable NO<sub>x</sub> emissions from PVEC and compared it to the NO<sub>x</sub> emission level caused from generating electricity in New England. In 2009, the average emission rate for a megawatt of generation in the local electrical pool was 0.48 lbs NO<sub>x</sub>/MWh.<sup>53</sup> PVEC's NO<sub>x</sub> emissions are 0.047 lbs NO<sub>x</sub>/MWh, which is 1/10<sup>th</sup> of the regional average.

Because PVEC will install the best available control technology to reduce NO<sub>x</sub> emissions, the company has modeled compliance with the both the primary and secondary NAAQS for the annual and one-hour NO<sub>2</sub> standard, and the facility will be competing with electric generation that emits on average 10 times higher NO<sub>x</sub> emissions, EPA believes that the permit adequately addresses PVEC's future contribution, if any, to the nitrogen loading in the Westfield area.

#### **Comment 18**

Due to natural occurring inversions, emissions from PVEC will be contained within the valley.

#### **Response 18**

The commenter is correct in stating that emission concentrations will increase in the area during an inversion. However, PVEC has demonstrated through air dispersion modeling that emissions

<sup>51</sup> See 40 CFR 112.3(a)(1).

<sup>52</sup> In fact, MassDEP determined that PVEC's emissions would meet the even more stringent standard of Lowest Achievable Emissions Rate.

<sup>53</sup> ISO New England, Inc., "2009 ISO New England Electric Generator Air Emissions Report" (Mar. 2011), at 4, available at [http://www.iso-ne.com/genrtion\\_resrcs/reports/emission/final\\_2009\\_emissions.pdf](http://www.iso-ne.com/genrtion_resrcs/reports/emission/final_2009_emissions.pdf). The number includes electric generation from nuclear, wind turbines, and hydro, which do not emit NO<sub>x</sub>.

from the facility will not cause a violation of the NAAQS or increment. The modeling analysis uses 5 years' worth of weather data collected at the Barnes Airport. This means that if an inversion occurred during the five year period (2006-2010), which is very likely, the model results would reflect emission concentrations due to the inversion. Since the modeling analysis assumes that the facility's highest emissions occur during the least-favorable meteorological conditions (see Response 10), it demonstrates that an inversion would not sufficiently concentrate the emissions to cause an exceedance of the NAAQS or PSD increment.

**Comment 19**

The air quality in Pioneer Valley is rated an F minus.

**Response 19**

EPA does not know where the commenter obtained this information, which entity provided this rating, or upon what criteria. EPA assumes that the rating cited by the commenter is based on the common scale of A through F, with A being the best and F meaning failure. EPA has promulgated air quality standards for six pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter (diameter sizes of 10 micron or less and a separate standard for diameter size of 2.5 microns or less), ozone, and lead. The area including Westfield has been designated as attaining all of these air quality standards except for ozone. However, preliminary review of the most recent 3 years of ambient concentration (2009-2011) shows that the Pioneer Valley is now meeting the ozone standard as well. Therefore, EPA disagrees with the assertion that the air quality in the Pioneer Valley area would rate an F minus.

**Comment 21**

The process of obtaining natural gas using fracking technology is harmful to the environment.

**Response 21**

This PSD permit is based on PVEC's application for a PSD permit for a combined cycle turbine firing natural gas with ultra low sulfur diesel as backup. The permit regulates PVEC's air emissions from combusting these fuels. The permitting program has two main requirements: the facility must (1) install best available control technology to minimize air pollutants, and (2) conduct an air quality analysis to prove the emissions from PVEC will not cause a violation of the NAAQS or PSD increment.

The permit does not regulate the extraction or transmission of natural gas, nor require PVEC to obtain gas from any particular source, and the record does not contain any information suggesting that the gas to be used by PVEC would necessarily come from hydraulic fracturing extraction as compared to any other source of gas. While the environmental impacts that may be associated with hydraulic fracturing are an area of ongoing study,<sup>54</sup> they are not germane to the PSD permit for PVEC.

**Comment 22**

PVEC has been granted this draft PSD permit based on the air quality analysis, which has found that the emissions increase would not cause or contribute to a violation of applicable National Ambient Air Quality Standards (NAAQS). However, we believe that the current NAAQS are

<sup>54</sup> See, e.g., Office of Research & Development, "Hydraulic Fracturing Research Study," EPA/600/F-10/002 (June 2010), available at <http://www.epa.gov/owindian/tribal/pdf/hydraulic-fracturing-fact-sheet.pdf>.



woefully inadequate. These standards are often out of date, and are not stringent enough based on what the current science is telling us, particularly for vulnerable populations like those living with lung disease. Studies show adverse health impacts at concentration levels below the NAAQS.

The commenters variously suggest the following NAAQS are inadequately stringent: PM<sub>2.5</sub>, PM<sub>10</sub>, nitrogen dioxide, sulfur dioxide, carbon monoxide, and ozone. Commenter ACE/WCC specifically notes that a 2009 court decision remanded the PM<sub>2.5</sub> NAAQS to EPA.

## Response 22

1. Under the structure that Congress provided in the Clean Air Act, the evaluation of health impacts, and selection of protective limits, for the air pollutants covered under the National Ambient Air Quality Standards (NAAQS), are performed at the national level. A rigorous process has been established to set health based criteria for permissible levels nationwide, based on the requirements of CAA § 109(b)(1), which requires that the NAAQS ensure an “adequate margin of safety ... to protect the public health.” EPA must review each NAAQS standard every 5 years to ensure that the latest scientific findings are taken into account so that the limits adequately protect the public health, including sensitive populations such as the elderly, children and asthmatics. The review process includes an Integrated Science Assessment that comprehensively reviews the most relevant scientific research published since the last review after a solicitation from the scientific community and the public. The risk and exposure scientific documents are prepared and then reviewed in a Policy Assessment to determine if the current air standard should be retained or revised. Taking into consideration the information in the ISA and PA and the advice of the Clean Air Scientific Advisory Committee, EPA develops and publishes a notice of proposed rulemaking that communicates the Administrator’s proposed decisions regarding the review of the NAAQS. A public comment period, during which public hearings are generally held, follows publication of the notice of proposed rulemaking. Taking into account comments received on the proposed rule, EPA issues a final rule.<sup>55</sup> A petition for review of action of the Administrator in promulgating any national primary or secondary ambient air quality standard may be filed in the United States Court of Appeals for the District of Columbia within sixty days after promulgation.<sup>56</sup> For a list of the current NAAQS, see <http://www.epa.gov/air/criteria.html> or 40 CFR part 50.

These NAAQS, once developed at the national level, are then applied as the basis for a variety of CAA programs, including PSD permitting. Under Section 165 of the CAA, a PSD permit must ensure that “emissions from construction or operation of [the] facility will not cause, or contribute to, air pollution in excess of any . . . national ambient air quality standard in any air quality control region.”<sup>57</sup> Neither the Clean Air Act nor EPA’s PSD regulations requires EPA to re-evaluate the protectiveness of the NAAQS as part an individual permitting action, and an individual permit process is not the appropriate forum to challenge the NAAQS.<sup>58</sup>

<sup>55</sup> See generally <http://www.epa.gov/ttn/naaqs/review.html>.

<sup>56</sup> See CAA 307(b)(1), 42 USC 7607(b)(1).

<sup>57</sup> 42 USC 7475(a)(3)(B); see also 40 CFR 52.21(d) (“No concentration of a pollutant shall exceed: (1) The concentration permitted under the national secondary ambient air quality standard, or (2) The concentration permitted under the national primary ambient air quality standard, whichever concentration is lowest for the pollutant for a period of exposure.”).

<sup>58</sup> See generally *In re Tondue Energy Co.*, 9 E.A.D. 710, 715-16 (EAB 2001).



2. The PSD permit does not address ozone because Massachusetts is designated nonattainment for ozone and has an approved Nonattainment New Source Review regulation for ozone. Emissions of ozone precursors were addressed in MassDEP's final state air permit (which includes NANSR requirements) on December 31, 2010. If the ozone NAAQS is subsequently revised to be more stringent, then Massachusetts might be required to revise its State Implementation Plan (SIP) under Section 110 of the Clean Air Act to ensure that the revised standard would be attained and/or maintained.

3. EPA revised both the annual and the 24-hour PM<sub>2.5</sub> standards in 2006. The annual standard, but not the 24-hour standard, was challenged in court. In 2009, the United States Court of Appeals for the District of Columbia Circuit found that "EPA failed adequately to explain why, in view of the risks posed by short-term exposures and the evidence of morbidity resulting from long-term exposures, its annual standard is sufficient 'to protect the public health [with] an adequate margin of safety.'"<sup>59</sup> Thus, the court remanded the annual PM<sub>2.5</sub> standard to EPA for reconsideration. That reconsideration process is underway.<sup>60</sup>

In the context of this permit, however, it bears emphasis the PM<sub>2.5</sub> issue requiring careful analysis was the *24-hour standard*, not the annual standard. PVEC's annual PM<sub>2.5</sub> impact was modeled to be 0.11 µg/m<sup>3</sup> at the fenceline, well below the Significant Impact Level of 0.3 µg/m<sup>3</sup>.<sup>61</sup> The extensive modeling analysis discussed in EPA's Fact Sheet relates to the 24-hour standard, which was not challenged in court and which reflects the Agency's considered, and undisturbed, current judgment regarding a protective level.<sup>62</sup>

4. Finally, it is worth noting that Commenter American Lung Association questions the protectiveness of the NAAQS for annual PM<sub>2.5</sub>, annual nitrogen dioxide, sulfur dioxide, and carbon monoxide. The applicant was not required to model sulfur dioxide at all because it does not emit sulfur dioxide in significant amounts,<sup>63</sup> and for annual PM<sub>2.5</sub>, annual nitrogen dioxide, and carbon monoxide (both 1-hour and 8-hour), modeling showed the impacts at the facility's fenceline would be below Significant Impact Levels.<sup>64</sup> For these pollutants, the most recent design values for the highest-recording monitor in Hampden County are well below even the lower values suggested as protective by the commenter:

| Pollutant               | Commenter's suggested protective level | Most recent design value (highest monitor in county) |
|-------------------------|--|--|
| Sulfur dioxide (1-hour) | 50 ppb                                 | 23 ppb   |

<sup>59</sup> *Am. Farm Bureau Fed. v. EPA*, 559 F.3d 512, 520 (D.C. Cir. 2009).

<sup>60</sup> See [http://www.epa.gov/ttn/naaqs/standards/pm/s\\_pm\\_index.html](http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_index.html) for documents from this review.

<sup>61</sup> See Fact Sheet at 33. It is also worth noting that the highest 2008-10 design value for annual PM<sub>2.5</sub> for any monitor in Hampden County is 9.8 µg/m<sup>3</sup>. Thus, even if the facility's modeled fenceline impact of 0.11 µg/m<sup>3</sup> is added to the background value for this monitor, the resulting ambient level would be 9.91 µg/m<sup>3</sup>.

<sup>62</sup> The fact that a NAAQS review is ongoing does not disturb this conclusion; indeed, a NAAQS review is virtually *always* ongoing because almost immediately after a revised NAAQS is promulgated, the review process begins again. In the meantime, "unlike the events leading up to the Board's remand order in *Shell 2010*, in this instance the Agency has not made a final determination or issued a final rule stating that the current . . . standard is inadequate." *In re Shell Offshore, Inc.*, OCS Appeal Nos. 11-05, 11-06 & 11-07, slip op. at 84 n.71 (EAB Mar. 30, 2012).

<sup>63</sup> See 40 CFR 52.21(m)(1)(i)(a).

<sup>64</sup> See Fact Sheet at 32-33.

|                            |                      |                       |
|----------------------------|----------------------|-----------------------|
| Carbon monoxide (1-hour)   | 5 ppm                | 2 ppm                 |
| Carbon monoxide (8-hour)   | 3 ppm                | 1.7 ppm               |
| Nitrogen dioxide (annual)  | 30 ppb               | 14 ppb                |
| PM <sub>2.5</sub> (annual) | 12 µg/m <sup>3</sup> | 9.8 µg/m <sup>3</sup> |

Since the existing ambient levels are well below even the lower-than-NAAQS values preferred by the commenter, and the facility's fence-line impacts are so low (below SILs), the predicted ambient levels of these pollutants are therefore expected to fall well below even the lower-than-NAAQS values preferred by the commenter.

### Comment 23

As the NAAQS are strengthened, we ask that this and other facilities not be grandfathered under prior standards and be required to update their control technologies to reduce their contribution to the region's air pollution.

### Response 23

The PSD permit focuses on the presently applicable NAAQS. If a NAAQS is subsequently revised to be more stringent, then Massachusetts might be required to revise its State Implementation Plan (SIP) under Section 110 of the Clean Air Act to ensure that the revised standard would be attained and/or maintained. Whether such a hypothetical SIP revision based on a hypothetical NAAQS revision would necessarily involve additional controls on PVEC is too remote to address here.

### Comment 24

The project site is adjacent to residences and schools with an enrollment comprised of persons that are predominantly lower income. The Massachusetts Office of Energy and Environmental Affairs (EEA) has identified a portion of Westfield as an environmental justice community. Because the project site is located close to schools with students from a state-recognized environmental justice community and to mobile home communities where a significant portion of the residents are low income, EPA has a heightened responsibility to examine the public health impacts to such students and residents. Additionally, Holyoke and West Springfield abut Westfield and are EEA-recognized environmental justice communities and EPA-designated potential environmental justice areas.

### Response 24

For EPA's analysis of the demographics of the area that may be impacted by the facility's emissions, see pp. 38-46 of the Fact Sheet. As explained there, EPA has, as part of developing this permit, endeavored to "identify[] and address[], as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations" in accordance with Executive Order 12,898. EPA's conclusion, as set forth in the Fact Sheet, is that the issuance of this permit is consistent with the Executive Order because emissions from the facility are not predicted to cause adverse human health or environmental effects on *any* populations, and furthermore, even those sub-adverse effects will not disproportionately affect minority or low-income populations.

Notwithstanding the preceding, to account for any remaining uncertainties in the analysis and for the potential sensitivity of vulnerable groups to cumulative impacts, EPA included additional protective permit conditions limiting the scheduled testing of emergency equipment on certain

days based on ambient nitrogen dioxide levels.<sup>65</sup> In the final permit, EPA has further limited the combustion of ULSD on days when the air quality index is high.<sup>66</sup> EPA's analysis in the Fact Sheet, enhanced public participation process, and additional protective permit conditions demonstrate EPA's careful consideration of environmental justice issues in this permitting process.

### **Comment 25**

To determine whether permitting PVEC will result in adverse human health impacts, EPA must require a health impact assessment.

There is no comprehensive study that considers the current health of the Westfield population or its neighboring municipalities, which also have EJ communities. More information is needed before EPA can conclude that PVEC's operation will not cause adverse health impacts. EPA should complete a health impact assessment (HIA) that looks at background levels of air quality and background levels of health indicators.

Westfield has higher than average asthma rates according to the Asthma Regional Council. The three-year average annual age-adjusted rate of emergency room visits due to asthma by the Community Health Network Area of Residence in 2003-2005 is significantly higher than the statewide rate. While residents are concerned about asthma outcomes, other health outcomes must also be analyzed. Significant epidemiologic evidence supports the association between exposure to fine particulate matter and poor health outcomes including cardiopulmonary diseases, respiratory illnesses, decreased life expectancy, diabetes, and asthma.

A health impact assessment would predict minor restricted activity days, hospital admissions for respiratory and cardiovascular disease, emergency room visits for asthma, development of chronic bronchitis, school loss days, work loss days, and other outcomes resulting from the plant's emissions during construction and operation. Because health effects associated with PM<sub>2.5</sub> are significant and small reductions in PM<sub>2.5</sub> levels are estimated to result in worthwhile public health benefits, additional study of project-specific health impacts are necessary to fully understand how plant emissions will add to the human health impacts that Westfield residents already experience. The residents of Westfield, West Springfield, and Holyoke, communities hosting or adjacent to the project have high asthma hospitalization rates. The three-year average annual age-adjusted rate of emergency department visits due to asthma in Westfield, Ludlow, and Holyoke was higher than the statewide rate in 2003-2005. After EPA understands the human health impacts of the power plant's emissions, it can determine how to address those impacts and whether allowing an increase in air pollution in Westfield is consistent with EPA environmental justice obligations.

### **Response 25**

1. As explained on pp. 39-40 of the Fact Sheet, for a PSD permit, compliance with the NAAQS is sufficient to demonstrate that emissions from a proposed facility will not have adverse human health or environmental effects on a minority or low-income population (or any other). "In the context of an environmental justice analysis, compliance with the NAAQS is emblematic of achieving a level of public health protection that, based on the level of protection afforded by a primary NAAQS, demonstrates that minority or low-income populations will not

<sup>65</sup> See Fact Sheet at 45-46.

<sup>66</sup> See Response 8.

experience disproportionately high and adverse human health or environmental effects due to exposure to relevant criteria pollutants.”<sup>67</sup>

2. A localized Health Impact Assessment (HIA) would not materially assist EPA in implementing its obligations under Executive Order 12898 on environmental justice in the context of this PSD permit.

A Health Impact Assessment is a relatively new tool that is being implemented by various government agencies across the nation to integrate health evaluation into planning or policy development processes that do not normally consider impacts on health. An HIA may provide qualitative or quantitative analysis and is dependent on what data is available to determine the distribution of health impacts on the population. Typically, the first step of an HIA is screening, an evaluation of whether an HIA would add additional value to the decision being made, and whether an HIA would provide new or additional information on unrecognized health issues that would be important to the decision.<sup>68</sup>

In this case, an HIA would not be likely to add additional value or health information that is legally relevant but has not been considered already. Under the structure that Congress provided in the Clean Air Act, the evaluation of health impacts, and selection of protective limits, for the air pollutants covered under the National Ambient Air Quality Standards (NAAQS), are performed at the national level.<sup>69</sup> A rigorous process has been established to set health based criteria for permissible levels nationwide, based on the requirements of CAA § 109(b)(1), which requires that the NAAQS ensure an “adequate margin of safety ... to protect the public health.” EPA must review each NAAQS standard every 5 years to ensure that the latest scientific findings are taken into account so that the limits adequately protect the public health, including sensitive populations such as the elderly, children and asthmatics. The review process includes an Integrated Science Assessment that comprehensively reviews the most relevant scientific research published since the last review after a solicitation from the scientific community and the public. The risk and exposure scientific documents are prepared and then reviewed in a Policy Assessment to determine if the current air standard should be retained or revised.<sup>70</sup> In essence, the NAAQS development process includes an evaluation that essentially performs the function of an HIA for the entire United States, albeit with far more data and scientific rigor than a localized HIA might involve. Furthermore, margins of safety have been built into both the NAAQS-setting process (because of the margin of safety required by the statute) and the individual permitting process (because air quality modeling is conducted using conservative assumptions). These margins of safety provide protection for sensitive populations.

Since the PSD permit analysis demonstrates the proposed project will not cause an exceedance of national health-protective air quality standards that were developed based on scientific evaluation of all relevant health effects, there is no need for a localized HIA. A localized HIA would not speed the process nor alter the criteria standards used as the health benchmarks.<sup>71</sup>

<sup>67</sup> *In re Shell Gulf of Mexico, Inc.*, OCS Appeal Nos. 10-01 through 10-04, slip op. at 74 (EAB Dec. 30, 2010).

<sup>68</sup> See <http://www.healthimpactproject.org/hia/process> for general information on the HIA process.

<sup>69</sup> See Response 22.

<sup>70</sup> See generally <http://www.epa.gov/ttn/naaqs/review.html>.

<sup>71</sup> See *In re Puerto Rico Elec. Power. Auth.*, 6 E.A.D. 253, 256 (EAB 1995) (rejecting argument that Executive Order 12898 requires EPA to conduct epidemiology study as part of PSD permit issuance).

Furthermore, any HIA would be limited by the available data. For example, ACE/WCC notes that the 2003-05 age-adjusted rate of emergency room visits due to asthma for the Community Health Network Area of Residence is higher than the statewide rate. The granularity of the information provided in the report cited by ACE/WCC's comment is the "Community Health Network of Chicopee-Holyoke-Ludlow-Westfield." As the name implies, this area includes Chicopee and Holyoke, two communities with substantially larger low-income populations, and substantially more emissions sources, than Westfield. For most health parameters, the MA Department of Public Health Environmental Health Tracking provides data at the county level.<sup>72</sup> Since Hampden County includes denser, lower-income areas such as Springfield, Chicopee, and Holyoke, which are more populous than Westfield, these county-level figures are likely skewed towards the more urban areas of the county.

3. It is worth noting that, while Westfield (or a region including it) does exceed the state average for certain health parameters, this is not uniformly true. For example, in the Asthma Regional Council report that ACE/WCC cites in its comment,<sup>73</sup> it is true, as ACE/WCC notes, the report cites a three-year average annual age-adjusted rate of emergency room visits due to asthma for the Community Health Network of Chicopee-Holyoke-Ludlow-Westfield in 2003-05 that is above the statewide rate.<sup>74</sup> On the other hand, the same report states that:

- The three-year average annual age-adjusted rates of hospitalization due to asthma for that same Community Health Network Area (CHNA) in 2004-06 were exactly equal to the statewide rate.<sup>75</sup>
- The five-year average annual age-adjusted death rates due to asthma in that CHNA from 2002-06 were well *below* the statewide rate, and indeed, among the lowest in the state.<sup>76</sup>
- For the prevalence of lifetime asthma among elementary and middle school children for the 2006-07 school year, which is reported by municipality, the report concludes that Westfield is "Not Statistically Significantly Different" from the statewide rate.<sup>77</sup>
- For the crude rate of hospitalization due to asthma (primary diagnosis) (2004-06), which is reported by municipality, Westfield's rate (5.66 per 10,000) is below that of several relatively affluent Massachusetts communities, such as Brookline (7.25 per 10,000), Lenox (9.06 per 10,000), Lexington (5.69 per 10,000), and Newton (6.83 per 10,000).

Moreover, for some health parameters, the Massachusetts Department of Public Health (MADPH) Environmental Health Tracking provides data at either the school or Census tract level, and shows that Westfield does not exceed the statewide average for many health parameters. With respect to asthma in particular, identified by ACE/WCC as a health effect of concern, each year the MADPH receives the school nurses' data on pediatric asthma rates in all schools in Massachusetts, and makes this data available both by school and by municipality. For 2007-08 (the most recent data available on the system), according to the MADPH:

<sup>72</sup> See generally [http://matracking.ehs.state.ma.us/Health\\_Data/index.html](http://matracking.ehs.state.ma.us/Health_Data/index.html).

<sup>73</sup> Asthma Regional Council, "Burden of Asthma in Massachusetts" (2009), *available at* [http://asthmaregionalcouncil.org/uploads/StateAsthma%20Programs/burden\\_in\\_mass.pdf](http://asthmaregionalcouncil.org/uploads/StateAsthma%20Programs/burden_in_mass.pdf).

<sup>74</sup> See *id.* at 85.

<sup>75</sup> See *id.* at 105.

<sup>76</sup> See *id.* at 120.

<sup>77</sup> See *id.* at 143.



- The overall pediatric asthma prevalence in Westfield is 9.2%, which the MADPH classifies as “Statistically Significantly Lower” than the statewide rate of 10.8%.
- Most of the schools in Westfield are classified as “Not Statistically Significantly Different” from the statewide rate. Of the two schools closest to the proposed project site, one (the Southampton Road Elementary School) is classified as “Not Statistically Significantly Different” and the other (North Middle School, where EPA held its public meeting/public hearing) is classified as “Statistically Significantly Lower” than the statewide rate. Only one school in Westfield (Munger Hill School) has a pediatric asthma rate that is statistically significantly higher than the state average, and that school is approximately 7 miles south of the proposed facility, on the opposite side of the Massachusetts Turnpike.

ACE/WCC’s comment also mentions the age-adjusted cardiovascular hospital admission rate. The age-adjusted heart attack hospitalization rates for Hampden County (which, again, includes areas besides Westfield) is classified by MADPH as “Not Statistically Significantly Different” than the state rate for men, women, or both combined.

The Massachusetts Energy Facilities Siting Board (EFSB)—a state agency charged by state law with reviewing power plant siting proposals—reviewed health conditions in Westfield, and potential impacts from construction of the PVEC project, in accordance with 164 M.G.L. § 69J¼.<sup>78</sup> As part of this analysis, EFSB considered, inter alia, air quality, water resources and wetlands impacts, solid waste, visual impacts, noise impacts, safety, traffic, electric and magnetic fields, land use, and cumulative health impacts.<sup>79</sup> To help reach its decision, the EFSB held a public comment hearing in Westfield, and then four days of evidentiary hearings.<sup>80</sup> The EFSB concluded:

The record shows that health indices in Westfield are lower for pediatric asthma, higher for adult asthma, higher for male lung cancer, and lower for total cancer than for the state as a whole. The record shows that impacts from air, water, hazardous materials, noise, and EMF would be minimized.

Consequently, the Siting Board finds that there is no evidence that the proposed facility would exacerbate existing health problems in the communities surrounding the proposed facility. Synergistic (i.e., more than additive) effects among these impacts were not identified. The Siting Board finds that cumulative health impacts would be minimized.<sup>81</sup>

The preceding information is not intended to diminish the importance of continued health monitoring in Westfield, nor of asthma and other health impacts that may potentially be exacerbated by air pollution in certain locales. Indeed, EPA is aware the Springfield area CHNA (and various other areas of Hampden County) is an asthma hotspot within the state of Massachusetts. EPA Region 1 has funded and partnered with the Pioneer Valley Asthma Coalition to reduce asthma triggers, both indoor and outdoor, and provide community awareness

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<sup>78</sup> See generally EFSB Decision.

<sup>79</sup> See *id.* at 11-44.

<sup>80</sup> See *id.* at 5. PVEC was the only party participating in the EFSB’s evidentiary hearings.

<sup>81</sup> See EFSB Decision at 43; see also materials submitted as attachments to PVEC’s comment (32), available in administrative record.



regarding asthma management. EPA will continue to support these community efforts and has recently funded the Holyoke Health Center to provide training for the community and school nurses on environmental asthma. EPA is monitoring the asthma prevalence and severity rate within the Greater Springfield area to determine if the rates are changing due to the implementation of these projects.

However, after considering the information presented by the commenters, other information in the Asthma Regional Council report, and information available from the MADPH, EPA does not believe that the information regarding health statistics in Westfield casts doubt on the Fact Sheet's environmental justice analysis or its conclusion that granting the PSD permit would not cause disproportionately high and adverse human health or environmental effects on minority or low-income populations.

#### **Comment 26**

EPA failed to consider cumulative sources of air emissions, rendering the environmental justice analysis incomplete. If additional sources of NO<sub>2</sub> from existing facilities and proposed facilities are added to PVEC's modeled impact, the data would demonstrate that PVEC's emissions would significantly exceed the NO<sub>2</sub> significant impact level in environmental justice communities. EPA must require interactive modeling to better understand impacts of NO<sub>2</sub> on environmental justice communities.

#### **Response 26**

EPA has required the applicant to conduct cumulative (interactive) air quality modeling. See Response 15. As set forth more fully in Response 15, this interactive modeling did not show a NAAQS exceedance at any location. Consequently, it does not disturb the Fact Sheet's environmental justice analysis or its conclusion that granting the PSD permit would not cause disproportionately high and adverse human health or environmental effects on minority or low-income populations.

#### **Comment 27**

The air modeling requires a discussion of uncertainty to be complete. No computer model is perfect, yet the Petition and rest of the record lack any substantive discussion of the uncertainties in the applicant's air modeling analysis. When the ambient air quality of a region already approaches a NAAQS, as the 24-hour PM<sub>2.5</sub> level in Westfield does, a detailed review of the uncertainty in modeling results is necessary for the EPA to determine whether it has an accurate understanding of the existing air quality and the predicted dispersion of the air emissions of a proposed power plant, when determining whether that plant minimizes environmental impacts, as required by the Clean Air Act.

#### **Response 27**

Forty CFR part 51, appendix W, section 9 discusses the accuracy and uncertainty with air dispersion modeling. The section addresses topics such as "Studies of Model Accuracy," "Use of Uncertainty in Decision-Making," and "Evaluation of Models."<sup>82</sup> The commenter correctly notes that Appendix W suggests that it is "desirable" and "encouraged" to quantify model uncertainty "where possible."<sup>83</sup> However, in the section headed "Recommendations," EPA

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<sup>82</sup> See 40 CFR part 51, appendix W, sections 9.1.2-9.1.4.

<sup>83</sup> See *id.* sections 9.1.3.a-b.

states: “No specific guidance on the quantification of model uncertainty for use in decision-making is being given at this time. As procedures for considering uncertainty develop and become implementable, this guidance will be changed and expanded.”<sup>84</sup> At this time, EPA has not developed procedures for quantifying uncertainty in the air dispersion modeling results for PSD permitting purposes. Instead, EPA relies on the inherent conservatism in the model inputs. In our professional judgment, if there is any error, the error would result in overly predicting the impact Pioneer Valley’s emissions will have in the local area. Although the analyses in Responses 9, 10, and 15 provide information on why the model results are conservative, the methods for conducting quantitative analysis to determine the amount of conservatism have not been developed at this time.

### **Comment 28**

EPA must review PVEC’s reasons for choosing the Westfield site and determine if environmental justice was appropriately considered and whether the choice of the Westfield site results in an environmental injustice.

Section 179(b)(5) of the Clean Air Act requires that a permit to construct and operate a facility may be issued only if five factors are met, including “an analysis of alternative site, sizes, [and] production processes . . . [which] demonstrates that benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location.” In PVEC’s PSD application, the applicant failed to discuss its consideration of alternative sites. The applicant has an obligation to consider suitable sites that are not in or adjacent to environmental justice communities and justify why it is necessary to site a power plant in a low-income municipality adjacent to environmental justice communities.

Before issuing a final decision on the PSD permit, EPA must weigh the benefits and environmental and social costs of the proposed plant at the Westfield site. If EPA finds that PVEC failed to conduct an adequate analysis of alternative sites, the agency must require PVEC to conduct a robust analysis of alternative sites that are not in or adjacent to environmental justice communities.

### **Response 28**

Section 173(a)(5) of the Clean Air Act, 42 U.S.C. 7503(a)(5),<sup>85</sup> requires an alternative siting analysis for nonattainment new source review (NANSR) permits. EPA is not proposing to issue a NANSR permit for PVEC, but rather a PSD permit, and the provisions of Section 173 are not applicable to PSD permits.<sup>86</sup>

The Commonwealth of Massachusetts has an authorized NANSR program at 310 C.M.R. 7.00 Appendix A and has been implementing NANSR in the Commonwealth since the 1970s. For

<sup>84</sup> *Id.* section 9.2.a.

<sup>85</sup> ACE/WCC’s comment cited “Section 179(b)(5)” in the body of its comment. Section 179 pertains to sanctions for states that fail to comply with requirements applicable to nonattainment areas, and moreover there is no section 179(b)(5). EPA assumes that ACE/WCC intended to refer to Section 173(a)(5).

<sup>86</sup> *See In re Prairie State Generating Co.*, 13 E.A.D. 1, 30 (EAB 2006) (“Because the CAA contains specific language for permits in nonattainment areas requiring the permit issuer to perform an analysis of alternative sites, sizes, and production processes, among other things, to determine whether the benefits of the proposed source outweigh its costs, and because similar specific language is not included for the issuance of a PSD permit . . . , the PSD permit issuer therefore is not required to perform an independent analysis of alternatives.”).

PVEC, MassDEP issued a final state air permit (which includes NANSR requirements) on December 31, 2010. Several parties, including WCC and/or several of its members, filed an administrative appeal of the state permit. It does not appear that the petitioners in the appeal of MassDEP's NANSR permit challenged the permit on the grounds of failing to provide an adequate alternative siting analysis under the state regulations implementing CAA § 173(a)(5). In any event, on July 28, 2011, the Commissioner of MassDEP adopted an administrative law judge's recommended final decision in favor of MassDEP and PVEC.<sup>87</sup> The parties to that proceeding did not appeal the Commissioner's decision to the Massachusetts Superior Court and the appeal period lapsed.

The comment does not identify any other potential basis for the assertion that a PSD permit analysis must approve the applicant's proposed siting. That said, it is worth noting that the Massachusetts EFSB reviewed PVEC's site selection process under 164 M.G.L. § 69J/4. As explained in the EFSB Decision, PVEC first "determined that the Springfield area would benefit from additional generation," then narrowed its search to the City of Westfield after determining that Westfield contained available properties with sufficient size for the proposed facilities and that Westfield government officials were receptive to the project.<sup>88</sup> PVEC considered three potential sites in Westfield, including the Ampad Road site, and ultimately determined that the Ampad Road site is the only site that "meets required infrastructure requirements, has adequate acreage, has immediate access to 115 kilovolt ... electric transmission lines, has reasonable access to high pressure gas via several potential routes, and is zoned for development of an electric generating facility ... and has fewer wetland impacts than the other industrial properties it considered."<sup>89</sup> As part of its review process, the EFSB asked PVEC for more information regarding its site selection process and why it had decided against the other two Westfield sites or three other sites outside Westfield, and PVEC stated why, in its view, "each assessed site, aside from the one selected for development, had a flaw precluding viable development of the proposed generating facility."<sup>90</sup>

The EFSB noted that PVEC's "site selection process was limited," but concluded that PVEC had accurately described its site selection process.<sup>91</sup> Overall, the EFSB concluded that "plans for construction of the generation facility and proposed pipeline are consistent with current health and environmental protection policies and resource use and development policies of the Commonwealth and with such energy policies of the Commonwealth as have been adopted for the specific purpose of guiding the decisions of the Siting Board," and furthermore that "the construction and operation of the proposed generating facility will provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost."<sup>92</sup>

<sup>87</sup> See MassDEP, *In re Pioneer Valley Energy Ctr.*, No. 2011-002 (July 28, 2011) (Final Decision).

<sup>88</sup> EFSB Decision at 6-7.

<sup>89</sup> *Id.* at 7-9.

<sup>90</sup> *Id.* at 7-8.

<sup>91</sup> *Id.* at 9.

<sup>92</sup> *Id.* at 64; see also generally FEIR; *Certificate of the Sec'y of Energy & Envtl. Affairs on the Final Envtl. Impact Report, Pioneer Valley Energy Ctr.* (Mar. 6, 2009) [hereafter "FEIR Certificate"]. While these documents, prepared under the Massachusetts Environmental Policy Act (MEPA), do not speak directly to the issue raised by the comment, they do contain a detailed review of the overall environmental impacts of the PVEC project. In the FEIR Certificate, the Massachusetts Secretary of Energy and Environmental Affairs concluded that the FEIR was adequate and "contained adequate information on project impacts and mitigation, and provided the state permitting agencies

The PVEC project's site selection process, benefits, and costs have been analyzed in detail by these state agencies. EPA, for its part, has focused on the impacts that the proposed facility, as sited, would have on air quality. To the extent (if any) that EPA is required to consider siting in the context of this PSD permit, EPA relies on the aforementioned state agency analyses.<sup>93</sup>

### Comment 29

The proposed site is too close to several schools, daycare centers, and elderly housing facilities. Children and the elderly are particularly susceptible to air pollution.

### Response 29

The project site is located in an industrial zone (the Servistar Industrial Way area) that does not contain any schools, daycare centers, or elderly housing facilities, and EPA is not aware of any such facilities within the facility's modeled 24-hour PM<sub>2.5</sub> significant impact area or within a 0.63-mile circle circumscribing that significant impact area.<sup>94</sup> Thus, any short-term PM<sub>2.5</sub> impacts on these facilities are expected to be below the significant impact level of 1.2 µg/m<sup>3</sup>, or, put another way, to increase background PM<sub>2.5</sub> levels (27 µg/m<sup>3</sup>) by less than about 4%, or by less than about 3% of the health-based NAAQS (35 µg/m<sup>3</sup>).<sup>95</sup> The comment does not identify any schools, daycare centers, or elderly housing facilities within the facility's modeled 1-hour NO<sub>2</sub> significant impact area during the normal operations scenario.<sup>96</sup>

It is true that there are a number of pre-schools, schools, and elder care facilities within the facility's modeled 1-hour NO<sub>2</sub> significant impact area for the weekly emergency equipment testing.<sup>97</sup> Some of these pre-schools and schools are in low-income areas.

EPA has addressed this issue in two ways. First, EPA has confirmed that, at *all* locations, the 1-hour NO<sub>2</sub> levels are modeled to fall below the NAAQS, EPA's health-based standard that is set, in part, to protect children and the elderly. Second, EPA has imposed operational restrictions on the facility's weekly emergency equipment testing to minimize its impact.<sup>98</sup>

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with sufficient information to understand the environmental consequences of their permitting decisions." FEIR Certificate at 13.

<sup>93</sup> See *In re Sutter Power Plant*, 8 E.A.D. 680, 689 (EAB 1999) ("[T]he land use planning process that yielded the site for the proposed plant had run its course prior to EPA's permitting decision. As the Region explained, it duly analyzed the impacts the proposed facility, as sited, would have on air quality, in keeping with the PSD regulations. . . . [W]e find no clear error . . . in the Region's decision to defer questions regarding the siting of the facility to the other agencies that evaluated the project in this regard."); *In re Ecoeléctrica, L.P.*, 7 E.A.D. 56, 71-74 & n.25 (EAB 1997) ("[U]nlike many PSD situations in which a single State government is responsible both for the PSD permitting process and for any related energy planning decisions, in this case those responsibilities are divided between two different governments: Responsibility for the PSD permitting process lies with an agency of the Federal government, whereas the responsibility to plan for the Commonwealth of Puerto Rico's current and future energy needs lies principally with the Commonwealth's own government. Given that division of responsibility, the Region concluded that . . . arguments concerning the need for this proposed facility would more appropriately be addressed by the Commonwealth of Puerto Rico itself, in the context of the Commonwealth's own deliberations regarding the facility.")

<sup>94</sup> See Fact Sheet at 50, 63.

<sup>95</sup> See *id.* at 35.

<sup>96</sup> See *id.* at 42, 48.

<sup>97</sup> See *id.* at 63.

<sup>98</sup> See *id.* at 40, 45-46; see also Response 8.

**Comment 30**

EPA's school siting guidelines advise against locating schools close to pollution sources, so EPA should not allow another pollution source to be added near schools.

**Response 30**

EPA's School Siting Guidelines are recommendations for evaluating the environmental and public health risks and benefits of potential school locations during the school siting process.<sup>99</sup> EPA's "Frequent Questions" regarding these guidelines states:

***Will EPA's School Siting Guidelines prevent pollution generating facilities from being built near existing schools?***

Land use decisions are generally made at the local level, subject to the local jurisdiction's zoning and other land use policies. While many types of industries, commercial operations and transportation infrastructure projects are subject to state, tribal and/or federal environmental or other regulations, the requirements vary. However, the recommendations in these guidelines can be used by planning and environmental agencies in land use and permitting issues to the extent applicable.

EPA recommends that states, tribes and communities evaluate siting and permitting processes that influence where potential sources of environmental pollution . . . may be allowed to locate with respect to schools. While these land use decisions are highly complex and beyond the scope of these guidelines, states, tribes and communities should seek to avoid situations in which new nearby sources of potentially harmful pollutants are sited in such close proximity to schools that they may pose a potential hazard to the school occupants.<sup>100</sup>

As these guidelines explain, state and local land use agencies are encouraged to consider these factors as part of their siting and permitting processes. However, the PSD permitting regulations do not require EPA to deny a PSD permit on the grounds that there are schools within the general area. As noted above in Response 15, the modeled air quality impact in the area of the schools is below the health-based NAAQS for all pollutants, and furthermore the permit includes additional operational restrictions that will further reduce impacts, including on schools.

**Comment 31**

In concluding that the 0.63 mile radius and one mile radius around PVEC did not include the state's recognized EJ community, EPA concluded there was no need for additional fine particulate matter analysis. The buffer radii in EJ studies often extend to three miles from the source and takes into account cumulative impact.

**Response 31**

EPA provided demographic analyses for circles of 3.5, 6, and 8 miles around the facility in the context of analyzing the 1-hour NO<sub>2</sub> significant impact area.<sup>101</sup> While it is true that the 3.5 mile circle contains two low-income areas (Areas 1 and 2) that are more than a mile away from the

<sup>99</sup> See generally <http://www.epa.gov/schools/siting>.

<sup>100</sup> [http://www.epa.gov/schools/siting/fqs.html#FAQ\\_Will\\_the\\_EPA\\_school\\_siting\\_guideline](http://www.epa.gov/schools/siting/fqs.html#FAQ_Will_the_EPA_school_siting_guideline)

<sup>101</sup> See Fact Sheet at 43-44, 58-74.



facility, all PM<sub>2.5</sub> impacts beyond 0.63 miles from the facility are modeled to be below the significant impact level of 1.2 µg/m<sup>3</sup>. Furthermore, EPA specifically examined the facility's maximum modeled contribution to ambient PM<sub>2.5</sub> levels in an area with a substantial low-income population (Area 2) and found it to be only 0.298 µg/m<sup>3</sup>.<sup>102</sup> Regarding cumulative impact, see Response 15.

### Comment 32

There has been extensive research into relevant studies on the potential human health effects of the proposed facility. Attached, please find a series of responses to health-related Information Requests submitted to the Massachusetts Energy Facilities Siting Board (EFSB). These responses were prepared on behalf of PVEC by Dr. Peter A. Valberg, Ph.D. Dr. Valberg references a report done by the Massachusetts Department of Public Health on pediatric asthma rates in the Merrimack Valley. Specifically, Dr. Valberg found that "The main finding was that the prevalence of [pediatric] asthma was not associated with air pollution levels from stationary sources." Through the extensive four-year permitting process for this project, significant effort has been devoted to examining and mitigating health, safety, and environmental issues associated with this project, particularly through the EFSB, Massachusetts Department of Environmental Protection and Westfield Planning Board. All of these agencies have issued permits to the project. Accordingly, additional health studies are not required or warranted.

### Response 32

EPA agrees that additional health studies are not required for issuance of this final PSD permit. No further response is required.

### Comment 33

I want to comment first about the deference of the EPA, which is the lead agency, to the MassDEP. I think that it represents a failure of ethics of leadership. I would like a discussion in the permit of why the EPA did not stand up for its standards. MassDEP needs the EPA to direct it and not the other way around.

### Response 33

EPA assumes the comment is referring to the fact that NO<sub>x</sub>, an ozone precursor, is being regulated as a nonattainment pollutant through MassDEP's 2010 nonattainment new source review permit.<sup>103</sup>

The Clean Air Act relies in large part on a system of "cooperative federalism" under which states develop State Implementation Plans (SIPs) to fulfill federal requirements, and then implement those SIPs. MassDEP has a nonattainment new source review program, implemented through 310 CMR 7.02 and 310 CMR 7.00: Appendix A, as part of its SIP.<sup>104</sup> MassDEP's Comprehensive Plan Approval for this facility was issued pursuant to its federally approved SIP. EPA is issuing the PSD permit for this facility.

### Comment 34

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<sup>102</sup> See *id.* at 41.

<sup>103</sup> See generally Fact Sheet at 4.

<sup>104</sup> See generally [http://www.epa.gov/region1/topics/air/sips/sips\\_ma.html](http://www.epa.gov/region1/topics/air/sips/sips_ma.html).

This hearing was not mentioned or publicized in the media in Northampton, Amherst and Greenfield. Nobody knows about this hearing up there where I live. Most don't even know about this proposed facility, much less the effects it will have on the air.

### Response 34

EPA's legal notice of the public hearings was published in a daily newspaper of general circulation in the area affected by the issuance of the draft permit, thereby satisfying the requirements of 40 C.F.R. § 124.10(c)(2)(i), which governs public notice of permit actions and the corresponding public comment period. That regulation requires "publication of a notice in a daily or weekly newspaper within the area affected by the facility or activity" for all "major permits." The legal notice for the public hearing was published in the *The Republican* (Springfield) and *Westfield News* on December 2nd, 2011, as well as in *El Pueblo*, a Spanish weekly newspaper on December 8th, 2011, and a web site for the local Russian community in December.

The "area affected by the facility or activity" is principally Westfield itself, and to a lesser extent immediately adjacent communities. The facility's significant impact area, even the more expansive and irregularly-shaped significant impact area for 1-hour NO<sub>2</sub>, is largely confined to an approximately 8-mile radius and does not extend as far as Northampton (approximately 15 miles away), Amherst (approximately 22 miles away), or Greenfield (approximately 34 miles away).<sup>105</sup>

The *Westfield News* is the newspaper best calculated to reach the "area affected by the facility," i.e., Westfield and immediately surrounding towns. EPA also published the public notice in *The Republican* (Springfield), a newspaper of broad general circulation in Hampden County. *The Republican* is readily available in Northampton, Amherst and Greenfield; indeed, it provides local coverage of each of those towns.<sup>106</sup> EPA more than fulfilled its obligations by providing legal notice in these two papers.

### Comment 35

There is no need for extra energy that would justify the construction of this facility.

### Response 35

New England has a largely deregulated energy market. The Massachusetts legislature has provided that the Energy Facilities Siting Board "shall review only the environmental impacts of generating facilities, consistent with the commonwealth's policy of allowing market forces to determine the need for and cost of such facilities."<sup>107</sup> EPA is relying on the "state legislature's decision to deregulate the electric power generation industry and allow individual firms to make a market-based business decision regarding likely future demand for electricity."<sup>108</sup> EPA also

<sup>105</sup> See Fact Sheet at 49.

<sup>106</sup> See <http://www.masslive.com/republican/> (last visited Mar. 21, 2012).

<sup>107</sup> 164 M.G.L. § 69H.

<sup>108</sup> *In re Prairie State Gen. Co.*, 13 E.A.D. 1, 34 (EAB 2006). See also *Ecoeléctrica*, 7 E.A.D. at 74; *In re SEI Birchwood, Inc.*, 5 E.A.D. 25, 27n.1 (EAB 1994); *In re Kentucky Utils. Co.*, PSD Appeal No. 82-5, 1982 EPA App. LEXIS 17 at 2 (Adm'r 1982).

notes that the demand for electricity in New England generally increases by approximately 1% per year.<sup>109</sup>

**Comment 36**

EPA points out that data from continuous emissions monitor in Springfield as compared with a nearby EPA reference monitor shows that the continuous emissions monitoring reading is 20-30% higher. The continuous emission monitor readings demonstrate that PVEC's emissions, when added to the background concentration, could easily exceed the NAAQS.

**Response 36**

As noted in the Fact Sheet, the monitor in question is not approved by EPA for determining compliance with the NAAQS.<sup>110</sup> Under EPA regulations, the air quality modeling analysis must use air quality monitoring data "gathered for purposes of determining whether emissions of that pollutant would cause or contribute to a violation of the standard or any maximum allowable increase."<sup>111</sup> Consequently, the modeling analysis appropriately relied on the approved Springfield and Chicopee monitors discussed in the Fact Sheet.

**Comment 37**

What is the actual total cumulative amount of each of the following pollutants, released for a whole month, on the north side of Westfield? Ozone, PM<sub>2.5</sub>, PM<sub>10</sub>, sulfur dioxide, nitrogen oxide, carbon monoxide, formaldehyde, ammonia.

**Response 37**

The air quality analysis conducted to demonstrate compliance with Clean Air Act requirements is detailed in the Fact Sheet and this Response to Comments. The information requested by the commenter is not required to be analyzed in this form as part of a PSD permit analysis. Emissions from stationary sources, and modeled emissions from mobile sources, are tracked according to emissions inventories made available by MassDEP.<sup>112</sup> Background ambient concentrations of criteria pollutants have been characterized through the use of ambient air quality monitors and, in the case of nitrogen dioxide, interactive modeling.<sup>113</sup>

**Comment 38**

Please also state the accumulated individual emissions anticipated to be released from PVEC for a whole month and add to the total.

<sup>109</sup> See EPA New England, "Energy & Climate Change in New England," EPA-901-F-10-028 (Dec. 2010), available at [http://www.epa.gov/region1/eco/energy/pdfs/ENCC\\_FS\\_EN.pdf](http://www.epa.gov/region1/eco/energy/pdfs/ENCC_FS_EN.pdf).

<sup>110</sup> See Fact Sheet at 34 n.30.

<sup>111</sup> 40 CFR 52.21(m)(1)(iii).

<sup>112</sup> See <http://www.mass.gov/dep/air/priorities/aqdata.htm>.

<sup>113</sup> See Responses 9, 15.

**Response 38**

Based on information PVEC provided in its 2008 application and the emission limits contained in the final permit, EPA calculated the maximum monthly emissions anticipated from PVEC.

| <b>Pollutants (regulated by PSD permit)</b>   | <b>Approximate monthly emissions</b> |
|---|--------------------------------------|
| Nitrogen Oxides   | 9.7 tons                             |
| Particulate Matter (2.5 microns or less in size)  | 4.5 tons                             |
| Particulate Matter (10 microns or less in size)   | 4.5 tons                             |
| Carbon Monoxide   | 48.1 tons                            |
| Sulfuric Acid Mist  | 1.6 tons                             |
| Greenhouse Gases  | 136,613 tons                         |
| <b>Pollutants emitted and regulated by other CAA programs but not regulated by PSD permit</b> |                                      |
| Sulfur Dioxide  | 1.6 tons                             |
| Ammonia   | 2.6 tons                             |
| Volatile Organic Compounds  | 2.2 tons                             |
| Lead  | 0                                    |
| Formaldehyde  | 0.2 tons                             |
| Total Hazardous Air Pollutants (defined by CAA §112)  | 0.4 tons                             |