**TENTATIVE AGENDA**
**STATE AIR POLLUTION CONTROL BOARD MEETING**
**TUESDAY, JUNE 29, 2004**

**HOUSE ROOM C, GENERAL ASSEMBLY BUILDING**
**9TH & BROAD STREETS**
**RICHMOND, VIRGINIA**

**Convene - 9:30 A.M.**

| | | | |
|---|---|---|---|
| **I.** | **Other Business** | | |
| | Minutes - March 29, 2004 | | A |
| | Report on Air Quality Program Activities | Daniel | B |
| | High Priority Violators Report | Dowd | C |
| | 2004 Legislative Summary | Frahm | D |
| | Advisory Board Appointments | Daniel | E |
| **II.** | **Regulations** | | |
| | Ambient Air Quality Standards (Rev. A04) | Sabasteanski | F |
| | Nonattainment Areas (Rev. B04) | Sabasteanski | G |
| | Federal Documents Incorporated by Reference (Rev. H04) | Sabasteanski | H |
| | Permit Application Fees (Rev. C04) | Graham | I |
| **III.** | **Public Forum** | | |
| **IV.** | **Permits** | | |
| | New Source Review Permit for CPV Warren, LLC<br>Electric Generating Facilities (Warren County) | Foley | J |

**Adjourn**

**NOTE:** The Board reserves the right to revise this agenda without notice unless prohibited by law. Revisions to the agenda include, but are not limited to, scheduling changes, additions or deletions. Questions arising as to the latest status of the agenda should be directed to Cindy M. Berndt at (804) 698-4378.

**PUBLIC COMMENTS AT STATE AIR POLLUTION CONTROL BOARD MEETINGS**: The Board encourages public participation in the performance of its duties and responsibilities. To this end, the Board has adopted public participation procedures for regulatory action and for case decisions. These procedures establish the times for the public to provide appropriate comment to the Board for their consideration.

For **REGULATORY ACTIONS (adoption, amendment or repeal of regulations)**, public participation is governed by the Administrative Process Act and the Board's Public Participation Guidelines. Public comment is accepted during the Notice of Intended Regulatory Action phase (minimum 30-day comment period and one public meeting) and during the Notice of Public Comment Period on Proposed Regulatory Action (minimum 60-day comment period and one public hearing). Notice of these comment periods is announced in the Virginia Register and by mail to those on the Regulatory Development Mailing List. The comments received during the announced public comment

periods are summarized for the Board and considered by the Board when making a decision on the regulatory action.

For **CASE DECISIONS (issuance and amendment of permits and consent special orders)**, the Board adopts public participation procedures in the individual regulations which establish the permit programs. As a general rule, public comment is accepted on a draft permit for a period of 30 days. If a public hearing is held, there is a 45-day comment period and one public hearing.

In light of these established procedures, the Board accepts public comment on regulatory actions, as well as general comments, at Board meetings in accordance with the following:

> **REGULATORY ACTIONS:** Comments on regulatory actions are allowed only when the staff initially presents a regulatory action to the Board for **final** adoption. At that time, those persons who participated in the prior proceeding on the proposal (i.e., those who attended the public hearing or commented during the public comment period) are allowed up to 3 minutes to respond to the summary of the prior proceeding presented to the Board. Adoption of an emergency regulation is a final adoption for the purposes of this policy. Persons are allowed up to 3 minutes to address the Board on the emergency regulation under consideration.
>
> **CASE DECISIONS**: Comments on pending case decisions at Board meetings are accepted only when the staff initially presents the pending case decision to the Board for final action. At that time the Board will allow up to 5 minutes for the applicant/owner to make his complete presentation on the pending decision, unless the applicant/owner objects to specific conditions of this permit. In that case, the applicant/owner will be allowed up to 15 minutes to make his complete presentation. The Board will then, in accordance with § 2.2-4021, allow others who participated in the prior proceeding (i.e., those who attended the public hearing or commented during the public comment period) up to 3 minutes to exercise their right to respond to the summary of the prior proceeding presented to the Board. Those persons who participated in the prior proceeding and attend the Board meeting may pool their minutes to allow for a single presentation to the Board that does not exceed the time limitation of 3 minutes times the number of persons pooling minutes or 15 minutes, whichever is less. New information will not be accepted at the Board meeting. No public comment is allowed on case decisions when a FORMAL HEARING is being held.

**NEW INFORMATION** will not be accepted at the meeting. The Board expects comments and information on a regulatory action or pending case decision to be submitted during the established public comment periods. However, the Board recognizes that in **rare** instances new information may become available after the close of the public comment period. To provide for consideration of and ensure the appropriate review of this new information, persons who participated during the prior public comment period **shall** submit the new information to the Department of Environmental Quality (Department) staff contact listed below at least 10 days prior to the Board meeting. The Board's decision will be based on the Department-developed official file and discussions at the Board meeting. For a regulatory action should the Board or Department decide that the new information was not reasonably available during the prior public comment period, is significant to the Board's decision and should be included in the official file, an additional public comment period may be announced by theDepartment in order for all interested persons to have an opportunity to participate.

**PUBLIC FORUM:** The Board schedules a public forum at each regular meeting to provide an opportunity for citizens to address the Board on matters other than pending regulatory actions or pending case decisions. Anyone wishing to speak to the Board during this time should indicate their

desire on the sign-in cards/sheet and limit their presentation to not exceed 3 minutes.

**The Board reserves the right to alter the time limitations set forth in this policy without notice and to ensure comments presented at the meeting conform to this policy.**

Department of Environmental Quality Staff Contact: Cindy M. Berndt, Director, Regulatory Affairs, Department of Environmental Quality, P.O. Box 10009, Richmond, Virginia 23240, phone (804) 698-4378; fax (804) 698-4346; e-mail: cmberndt@deq.state.va.us.

---

**Minutes:** March 29, 2004 minutes

**Report on Air Quality Program Activities**: A report on air program activities will be given.

**Report on High Priority Violators (HPVS) for the First Quarter, 2004**:

| ACTIVE CASES — Table A * | | | |
|---|---|---|---|
| **DEQ Region** | **Facility Name and location** | **Brief Description** | **Status** |
| NRO | Covanta Alexandria Arlington, Inc., Arlington (MSW incinerator) | Alleged emission exceedances and failure to keep certain records in violation of PSD permit | NOV issued 4/18/02; Consent Order dated 3/20/03 imposed a civil fine of $14,695 (in bankruptcy – fine not paid) |
| NRO | Potomac River Generating Station/Mirant, Alexandria | Alleged exceedance of ozone season NOx emission limit of 1,019 tons contained in state operating permit by over 1,000 tons | NOV issued 9/10/01; NOV issued by EPA 1/22/04; pending |
| PRO | Carry-On Trailer Corporation, Northumberland County (manufacturer) | Alleged construction and operation of a major source of HAP emissions w/o obtaining a permit; failure to submit Title V permit application w/in 12 months of start-up | NOV issued 6/18/02; Consent Order dated 3/26/04 imposed a civil fine of $35,000 and SEP requiring the installation and operation of a regenerative thermal oxidizer to reduce VOC emissions |
| PRO | Chaparral Steel Co., Dinwiddie County (specialty steel manufacturer) | Alleged by-passing of pollution control device (after-burner) with resulting exceedances of NOx and CO emissions limits; exceedance of mercury emission limit | NOV issued 3/24/03; Consent order dated 1/13/04 imposed a civil fine of $137,500 and continuous emissions monitors for CO and NOx |
| SCRO | Goodyear Tire and Rubber Co., Danville | Alleged failure to conduct stack test on banbury mixer w/in 180 days of issuance of Title V permit | NOV issued 7/17/03; pending |
| SCRO | Goodyear Tire and Rubber Co., Danville | Alleged exceedance of particulate emissions limit from banbury mixer in Title V permit | NOV issued 12/8/03; pending |
| SCRO | Huber Engineered | Alleged exceedance of CO and formaldehyde emissions limits | NOV issued 12/31/03; pending |

| | | | |
|---|---|---|---|
| | Woods, LLC (f/k/a JM Huber Corp.), Halifax County (strandboard manufacturer) | contained in Title V permit discovered by stack test (CO limit 8.93 lb./hr. - stack test result 22.6 lb./hr. / formaldehyde limit .14 lb./hr.- stack test result .95 lb./hr.); pervasive exceedances of permit's 59,600 sq. ft. hourly strandboard production limit | |
| TRO | Commonwealth Chesapeake Co. LLC, Accomack County (electric generating station) | Alleged violation of Title V permit by submitting semi-annual monitoring report for the period covering 5/2/03 through 6/30/03 180 days late | NOV issued 3/10/04; pending |
| TRO | US Navy Little Creek Amphibious Base, Virginia Beach (portion of base related to vehicle and equipment fueling) | Alleged exceedances of Title V Permit annual throughput limit of 5,584,000 gal. (calculated monthly as the sum of each consecutive 12 mo. period) for gasoline, diesel, and kerosene by approx. 4,700 gal. Per mo. for the mos. of March, April, May, July, and August 2003 | NOV issued 2/23/04; pending |
| VRO | Merck & Co., Inc., Rockingham County (pharmaceutical manufacturer) | Alleged exceedance of emission limit for methyl chloride in synthetic minor HAP permit by over 4.5 tons; failure to adequately measure wastewater influent for HAPs as required by permit | NOV issued 12/11/03; pending |
| VRO | Valley Proteins, Inc., Winchester (rendering facility) | Alleged installation of new cooker resulting in a net significant increase in facility's potential-to-emit in violation of PSD requirements | NOV issued 2/4/03; Consent Order dated 4/4/03 imposed a civil fine of $30,136 and requirement to obtain synthetic minor permit (the permit was issued 4/3/03; Valley Proteins has appealed the permit on grounds unrelated to the allegations settled in the consent order) |
| WCRO | Magnox Pulaski Inc., Pulaski, Pulaski County (magnetic tape manufacturer) | Numerous alleged violations of Title V permit recordkeeping, monitoring, and operational requirements | NOV issued 5/8/03; pending |
| WCRO | Southern Finishing Co., Martinsville, Henry County (furniture manufacturer) | Alleged operation of unpermitted spray booths, improperly maintained air pollution control equipment, and numerous MACT and Title V permit violations | NOV issued 5/27/03; Consent Order dated 10/17/03 imposed a civil fine of $44,738.67 and SEP requiring installation of spray booth filters; Consent Order violated by failure to pay substantial portion of the civil fine |

| | | | |
|---|---|---|---|
| | | | by the due date of 11/17/03 |
| WCRO | Southern Finishing Co., Martinsville, Henry County (furniture manufacturer) | Alleged failure to comply with 10/17/03 Consent Order by failing to pay $41,072 of the $44,738,67 civil fine required by the Consent Order by the due date of 11/17/03 | NOV issued 1/5/04; pending |
| WCRO | Wolverine Gasket Division – Cedar Run Plant, Blacksburg, Montgomery County (automotive parts manufacturer) | Alleged by-passing of pollution control equipment and failure to properly maintain pollution control system | NOV issued 3/19/03; Consent Order dated 12/16/03 imposed a civil fine of $10,500 and required a pollution prevention SEP that reduces wastewater discharges by 70% |

*** Table A includes the following categories of HPV cases:**

**1) Those initiated by a Notice of Violation (NOV) issued prior to or during the first quarter of 2004 that have not been settled by Consent Order, and;**

**2) Those settled by Consent Order prior to or during the first quarter of 2004 where the alleged violator has not complied with substantially all of the terms of the Consent Order.**

| **RESOLVED CASES — Table B **** | | | |
|---|---|---|---|
| **DEQ Region** | **Facility Name and location** | **Brief Description** | **Status** |
| NRO | Washington Gas Light Company, Fairfax County (compressor station) | Alleged exceedance of NOx emissions limit | NOV issued 3/27/03; Consent Order dated 1/4/04 imposed civil fine of $15,960 and required study of NOx formation rates from combustion of combinations of natural gas enriched w/propane |
| SWRO | Consolidation Coal Company, Buchanan County (coal mine) | Alleged exceedance by .06 lb./mmBtu of VOC emissions limit contained in PSD and Title V permits for thermal dryer located at mine #1 | NOV issued 8/22/03; Consent Order dated 3/10/04 imposed civil fine of $5,300 |

**** Table B includes HPV cases resolved by Consent Order during the first quarter of 2004 where the alleged violator has complied with substantially all of the terms of the Consent Order.**

**2004 Legislative Summary**: A report on the 2004 General Assembly Session.

**Ambient Air Quality Standards (9 VAC 5 Chapter 30), Revision A04**: On July 18, 1997, EPA issued a regulation replacing the 1-hour 0.12 parts per million (ppm) ozone national ambient air quality standard (NAAQS) with an 8-hour standard at a level of 0.08 ppm. At the same time, EPA issued a regulation revising the particulate matter standard by adding a new standard for fine particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers

($PM_{2.5}$), set at 15 micrograms per cubic meter (:g/$m^3$). These primary standards became effective on September 16, 1997, and are located in 40 CFR Part 50. On April 30, 2004, EPA promulgated a final rule to implement Phase I of the 8-hour ozone standard, including the transition from the 1-hour to the 8-hour standard. 40 CFR 50.9 has been revised to indicate that the 1-hour standard is no longer effective one year after the effective date of the rule, June 15, 2005. Chapter 30 of the Regulations for the Control and Abatement of Air Pollution contains the specific criteria pollutant standards set out in 40 CFR Part 50. Incorporation of the NAAQS into the state regulations is necessary to provide a legally enforceable means by which the state prepares attainment and maintenance plans, and determines whether a new source will affect the NAAQS.

Below is a brief summary of the substantive amendments made to the regulation.
1. The text has been revised to make it consistent with 40 CFR Part 50, and minor revisions for internal consistency have been made. [9 VAC 5-30-30, 9 VAC 5-30-40, 9 VAC 5-30-60, 9 VAC 5-30-70]
2. Paragraph D has been added to indicate that the 1-hour ozone standard will no longer apply after June 15, 2005. [9 VAC 5-30-50]
3. A new section for the 8-hour ozone standard has been added. [9 VAC 5-30-55]
4. New standards for $PM_{10}$ and $PM_{2.5}$ are included in this section. [9 VAC 5-30-65]

**Nonattainment Areas (9 VAC 5 Chapter 20), Revision B04**: On April 30, 2004, EPA amended 40 CFR Part 81 by adding a list of areas that are nonattainment for the 8-hour ozone standard. The new ozone nonattainment areas become effective on June 15, 2004. 40 CFR 51.903(a) contains the Phase I provisions for the implementation of the 8-hour ozone NAAQS, including requirements for area classifications, along with associated planning requirements. In addition to providing the basis for broad-based non-regulatory plans for attainment and maintenance of the standards, the nonattainment area designations and classifications are also part of the legally enforceable means by which the state implements the new source review program for nonattainment areas. On April 30, 2004, EPA promulgated a final rule to implement Phase I of the 8-hour ozone standard, including the transition from the 1-hour to the 8-hour standard. 40 CFR 50.9 has been revised to indicate that the 1-hour standard is no longer effective one year after the effective date of the rule, June 15, 2005.

Below is a brief summary of the substantive amendments to the regulation.
1. Subdivision A 2 is essentially a list of the new 8-hour ozone nonattainment areas. The reference to carbon monoxide in the first paragraph has been removed because there are no carbon monoxide nonattainment areas remaining in the state. The 1-hour section has been retained in subdivision A 1 as it will be in effect until June 15, 2005. [9 VAC 5-20-204 A]
2. Because the 1-hour standard will cease to exist as of June 15, 2005, this section has been added. [9 VAC 5-20-204 B]
3 The list of Prevention of Significant Deterioration areas has been revised slightly to minimize changes needed to the regulation in the future due to redesignations or other changes to the federal designation list. Mercury, beryllium, asbestos, and vinyl chloride have been deleted from the list in subsection B because they were removed from the definition of "significant" in 40 CFR 51.166(b). [9 VAC 5-20-205]

**Federal Documents Incorporated by Reference (9 VAC 5 Chapter 20, Rev. H04)**: The purpose of the proposed action is to amend the regulations to incorporate a newly promulgated provision to the national emission standards for hazardous air pollutants for source categories (Maximum Achievable Control Technology, or MACT), Rule 6-2 of the agency's regulations. A new section containing requirements for the Performance Track Program has been added, 9

VAC 5-60-91 (National Performance Track Program). This section incorporates EPA's National Performance Track Program as promulgated in 40 CFR 63.2, 63.10, and 63.16 as amended by the word or phrase substitutions given in 9 VAC 5-60-110. The specific version of the provisions adopted by reference is that promulgated on April 22, 2004 (69 FR 21737). The Performance Track Program recognizes and encourages top environmental performers by providing them with a number of incentives. MACT sources participating in the program may lengthen the interval between certain types of reporting, and have a number of certification options in lieu of an annual report.

**Permit Application Fees (Rev. C04)**: During the 2004 session, the General Assembly passed Chapters 249 and 324 of the 2004 Acts of Assembly. Those chapters provide that the Board may adopt regulations to collect permit application fee amounts not to exceed $30,000 from applicants for a permit for a new major stationary source. They also provide that the permit application fee amount paid shall be credited towards the amount of annual fees owed pursuant to this section during the first two years of the source's operation. Chapters 249 and 324 of the 2004 Acts of Assembly exempt amendments to regulations required to implement provisions included in these Acts from Article 2 (§2.2-4006 et seq.) of Chapter 40 of Title 2.2 of the Code of Virginia.

No public participation was required by state or federal regulations. However, the Department solicited public comment during the expedited process to determine if further clarification would be beneficial before the regulation becomes effective. Accordingly, the Department issued a notice that provided for receiving comment during a comment period. A summary of the amendments follows:

New stationary sources that are classified as "major" in one of the new source review programs are subject to permit application fees. Since that classification is unique to each program, the definitions of "major stationary source" and "major source" from each applicable program are used to determine applicability.

The amount of the fee for each permit application is based upon the new source review program that is applicable. Applications subject only to PSD new source review requirements are also subject to a permit application fee of $30,000. Applications subject only to Nonattainment Area new source review requirements are also subject to a permit application fee of $20,000. Applications subject only to HAP new source review requirements are also subject to a permit application fee of $15,000. Applications for a "state major" source subject only to minor source new source review requirements are also subject to a permit application fee of $5,300. Applications for a general permit for a new major stationary source are subject to a permit application fee of $300. The total permit application fee will depend on how many of these new source review programs are applicable to the new source, but the maximum permit application fee for any one application is $30,000.

The permit application fee is non-refundable and due when the application is submitted to the Department. If the permit application fee payment is not complete, then the permit application is not complete. Departmental review of the application may not proceed beyond the initial applicability determination until a permit application fee for the proper amount is received.

The owner of the source may apply the paid amount of the permit application fee as credit towards the annual permit program fees owed for the first two years of the source's operation.

**New Source Review Permit for the CPV Warren, LLC electric generating facility located in**

**Warren County**

## Introduction

Competitive Power Ventures, L.P. (CPV) and CPV Warren LLC (CPV-WA), its wholly owned subsidiary, has proposed to construct and operate a nominal 580 megawatt (MW) combined-cycle electric power generating facility in Warren County. The combustion turbines would be fueled by natural gas. Prevention of Significant Deterioration (PSD) permitting is triggered because, as a fossil fuel-fired steam electric plant of more than 250 million British thermal units (Btus) heat input capacity, the proposed facility is a major source under 9 VAC 5 Chapter 80, Part II, Article 8. The proposed site is less than five miles from the northern border of Shenandoah National Park (SNP), a Class I area.

CPV-WA submitted its air permit application January 16, 2002. The application was deemed complete September 12, 2003, following Valley Regional Office's (VRO's) receipt of CPV-WA's Class I area air dispersion analyses results.

The applicant held an informational briefing, as required by 9 VAC 5-80-1870 D, on April 18, 2002, at the Warren County Government Center in Front Royal. DEQ's public briefing for the proposed permit was held January 15, 2004, and the public hearing was held February 24, 2004, both at the Warren County Government Center. Of the hearing attendees, sixteen offered oral testimony and four of the speakers submitted written documents. The public comment period ended March 10, 2004. During the public comment period, 164 written comments were received, of which 146 were identical electronic mail letters from throughout Virginia and across the country. The comments primarily concerned the proposed facility's proximity to SNP and to Northern Virginia nonattainment areas. Three commenters requested that the State Air Pollution Control Board, rather than DEQ, make the final permit determination.

Staff analysis has shown that CPV-WA has met the requirements of the PSD permitting regulations at 9 VAC 5 Chapter 80, Part II, Article 8, and that the proposed facility, operating in accordance with the conditions of the proposed permit, will not

cause an exceedence of ambient air quality standards, consumption of allowable increment, or an adverse impact on SNP or neighboring nonattainment areas.

## Summary Of PSD NSR Program And Process

One of the primary goals of the Clean Air Act is the attainment and maintenance of the National Ambient Air Quality Standards (NAAQS) and the prevention of significant deterioration (PSD) of air quality in areas cleaner than the NAAQS. These standards, which establish the maximum levels of air pollution allowed in the air for the protection of human health and welfare, apply to six pollutants: sulfur dioxide, particulate matter, carbon monoxide, ozone, nitrogen dioxide, and lead.

The PSD program is a federally mandated program that requires that a permit be obtained by a company prior to the construction of new major industrial facilities or expansions to existing ones. Certain data are required as part of the application: (i) an assessment of the existing air quality; (ii) a description of the technology to be used to control emissions from the facility, in which case the technology must be the best available; and (iii) an assessment of the impact of the emissions from the facility on the existing air quality using complicated

mathematical models. Development by the company and review and analysis by the department of this information is an extensive process.

To assess existing air quality one year of measurement data is needed or DEQ and the Federal Land Managers (FLMs) may approve use of existing monitoring data when it is deemed to be representative of conditions at the proposed site (as in CPV-WA's case). The facility must use the best available control technology to control emissions. Very complicated mathematical models are used to assess the impact upon the air quality. Although every attempt is made to keep the analysis objective from a technical standpoint, subjective decisions and negotiations are necessary. Some times there are disagreements between the company, the Department and EPA. This is further compounded in cases such as CPV-WA where the facility is to be located near a Class I area, in which case the FLM is involved in the review process. Also in such cases, additional data with respect to impact on the Class I area is required. The permit application and the Department analysis must be subject to a public hearing prior to issuing the permit. Any disagreements with the FLM must be addressed prior to releasing the application and analysis to public comment.

## Permit Application Review

CPV-WA has applied for a permit to construct and operate a nominal 580-MW combined-cycle electric generating facility. The proposed facility is comprised of two combustion turbine (CT) generators, each having a heat recovery steam generator (HRSG) driving a steam turbine for additional electricity generation. Each HRSG has a duct burner (DB) for supplemental firing. The CT-HRSG arrangement is commonly called combined cycle. The combined-cycle units would use natural gas as fuel. The proposed facility also includes an emergency firewater pump and an emergency generator, both of which would use distillate oil and would be limited to 500 hours of operation per year each.

The primary pollutant of concern from the combined-cycle units is nitrogen oxides (NOx). NOx from the units would be controlled using dry low-NOx combustion and selective catalytic reduction (SCR). An oxidation catalyst would control emissions of carbon monoxide (CO), volatile organic compounds (VOC), and formaldehyde.

The total emissions from the proposed project are shown in Table 1.

*Table 1. Total emissions from proposed CPV Warren project (tons/yr)*

| Pollutant | Emissions |
|---|---|
| $NO_x$ | 152.8 |
| CO | 101.0 |
| $SO_2$ | 24.6 |
| VOC | 23.4 |
| PM-10 | 134.6 |
| Sulfuric acid mist | 7.4 |
| Formaldehyde | 5.7 |
| Acrolein | 0.101 |

Note: Emissions of regulated toxic pollutants other than formaldehyde and acrolein are below permitting exemption thresholds and were therefore not included in Table 2.

The proposed site for CPV-WA is a 38.6-acre parcel in the Warren and Kelley Industrial Parks, approximately one mile north of Interstate Route 66 near its intersection with State Routes 340/522. The site is located in a developed area of the parcel consisting of approximately 22.7 acres. The UTM coordinates of the proposed site are 744.61 Easting and

4317.04 Northing and the elevation is 580 feet above mean sea level. The terrain is gently rolling and the nearest point to exceed stack height is approximately 5.64 km southeast of the proposed facility. Other air pollution sources within one mile of the facility are DuPont Automotive and Toray Plastics.

There are two Class I areas within 100 km of the proposed facility: SNP (7.1 km from proposed site) and the Dolly Sods Wilderness Area (100 km from proposed site). The proposed site is approximately 25 km (15.5 miles) from Loudoun County, which is currently nonattainment for ozone, and is about 10 km (6.2 miles) from Frederick County, which was recently deemed nonattainment with the new 8-hr ozone standard and on December 30, 2003, entered an Early Action Compact with EPA to defer certain nonattainment obligations.

Throughout the application review process, CPV-WA collaborated with DEQ and the Federal Land Managers (National Park Service and U.S. Forest Service) to ensure that Class I air quality analyses would be conducted according to the guidelines established for such analyses by the Federal Land Managers (FLMs) and in response to concerns specific to SNP. The guidelines were published in December 2000 as the FLAG (Federal Land Managers' Air Quality Related Values Workgroup) document. Because of the proposed project's proximity to SNP (7.2 km) relative to its distance from Dolly Sods Wilderness Area (100 km), the U.S. Forest Service (the FLM overseeing Dolly Sods) deferred to SNP for the FLM review and impact determination.

CPV-WA submitted its air permit application January 16, 2002. The application included a certification, dated January 14, 2002, from the Administrator of Warren County stating that the proposed location and operation of the facility is fully consistent with applicable local ordinances. On February 19, 2003, CPV-WA submitted air dispersion modeling protocols for Class I and Class II areas. CPV-WA submitted preliminary modeling results February 21, 2003. On April 7, 2003, a protocol for a multi-source inventory of PM-10 sources was submitted. On June 9, 2003, CPV-WA submitted results of its air dispersion analyses for Class II areas. The application was deemed complete September 12, 2003, when VRO received CPV-WA's Class I area air dispersion analyses results. Copies of each of the referenced submittals were provided to EPA Region III, National Park Service (NPS), and the U.S. Forest Service (USFS).

## Permit Emission Limitations

The proposed permit contains the following emission limits, which reflect the Department's Best Available Control Technology (BACT) determination.

**Table 2. Short-term limits for each combined-cycle unit**

| Pollutant | Short-term emission limit |
|---|---|
| PM-10 (includes condensable PM) | 0.013 lb/MMBtu |
| Sulfur dioxide | 0.0016 lb/MMBtu |
| Oxides of nitrogen (as $NO_2$) | 17.9 lbs/hr<br>2.0 ppmvd |
| Carbon monoxide | ▪ 1.3 ppmvd without power augmentation<br>▪ 7.2 lbs/hr and 1.8 ppmvd with power augmentation and without duct burner firing<br>▪ 12.8 lbs/hr and 2.5 ppmvd with power augmentation and duct burner firing |

| | |
|---|---|
| Volatile organic compounds | ▪ 0.7 ppmvd without duct burner firing<br>▪ 1.0 ppmvd with duct burner firing<br>▪ 1.4 ppmvd with duct burner firing and power augmentation |
| Sulfuric acid mist ($H_2SO_4$) | 0.0005 lb/MMBtu |

NOx emissions are to be calculated as a one-hour average; all other pollutant emissions are to be calculated as a three-hour average.

The short-term NOx limit in Table 2 (2.0 ppm at all loads, as a one-hour average) reflects changes resulting from public comment. The original draft permit limited NOx to 2.0 ppm at 80% load and above and 2.5 ppm at below 80% load, both as a three-hour average.

*Table 3. Annual limits for both combined-cycle units (total)*

| Pollutant | Limits (tons/yr) |
|---|---|
| PM-10 (includes condensable PM) | 134.0 |
| Sulfur Dioxide | 24.4 |
| Oxides of Nitrogen (as $NO_2$) | 141.8 |
| Carbon Monoxide | 97.2 |
| Volatile Organic Compounds | 22.9 |
| Sulfuric Acid Mist ($H_2SO_4$) | 7.4 |

*Table 4. Emission limits for emergency units*

| Unit | Oxides of nitrogen (as $NO_2$) | | Carbon Monoxide | |
|---|---|---|---|---|
| | lbs/hr | tons/yr | lbs/hr | tons/yr |
| Firewater pump | 10.2 | 2.6 | 2.2 | 0.6 |
| Generator | 34.0 | 8.5 | 12.8 | 3.2 |

Testing

The permit requires initial compliance testing for $NO_x$, $SO_2$, CO, PM-10, and VOC. The need for periodic performance testing will be evaluated during processing of the Title V permit for the facility based on the results of the initial testing and operating data. A condition allowing DEQ to require additional testing has been included in the permit.

The permit also requires testing of fuel to determine the sulfur and nitrogen contents of the natural gas. A visible emissions evaluation (VEE), to be conducted concurrently with the initial CT stack test, is required by the permit. CPV-WA is also required by the permit to conduct performance evaluations of the continuous emissions monitoring devices.

Monitoring

The permit requires that the CT stacks be equipped with continuous emissions monitoring systems (CEMS) meeting the requirements of 40 CFR Part 75 (Acid Rain program) for continuous measurement and recording of $NO_x$ and $SO_2$ emissions (unless an alternative

method of determining $SO_2$ emissions has been approved for that purpose). Additionally, periodic CT stack visible emission inspections, which trigger a VEE according to EPA Method 9 if visible emissions are observed, have been included in the permit.

In addition to the CEMS, the draft permit requires CPV-WA to conduct extensive, continuous monitoring of key operational parameters on the control devices to assure proper operation and performance. Examples of SCR operating parameters monitored include the ammonia feed rate, gas stream flow rate, and catalyst bed inlet temperature. The catalyst bed inlet and outlet temperatures on the oxidation catalyst are required to be monitored.

The permit also requires periodic monitoring of the sulfur and nitrogen contents in the natural gas used in the CTs and the sulfur content in the distillate oil fired in the emergency units.

Recordkeeping

The permit requires CPV-WA to keep records of all CEMS results and control device parametric monitoring results. CPV-WA is further required by the permit to keep records of all fuel certifications and testing results and of operating hours for both CTs and the emergency units.

Reporting

CPV-WA must provide quarterly reports to DEQ of CEMS results, including whether or not excess emissions have occurred. CPV-WA is also required by the permit to notify DEQ of commencement of construction, facility start-up, and to provide 30-day prior notice for each performance test conducted.

**Department Analysis**

Criteria Pollutants

Applicability of PSD review is evaluated on a pollutant-specific basis. Regulated pollutants having net emissions increases in excess of significance levels prescribed in 9 VAC 5-80-1710 are subject to PSD review. Criteria pollutants exceeding PSD significance levels for the proposed CPV-WA project are NOx, CO, particulate matter (PM/PM-10) and sulfuric acid mist. VOC and sulfur dioxide (SO2) emissions are below PSD significance levels, but are subject to minor New Source Review under 9 VAC 5 Chapter 80, Part II, Article 6.

Emissions of pollutants subject to PSD review are required to undergo a top-down BACT analysis and air quality analyses, which are discussed below.

Toxic Pollutants (Hazardous Air Pollutants (HAPs))

Although the proposed CPV-WA facility is a major source of criteria pollutants, it is an area source of HAPs, meaning that its potential to emit HAPs is below major-source levels. There is a federal rule that mandates control of HAPs from combustion turbines (National Emission Standards for HAPs from Combustion Turbines (40 CFR Part 63 Subpart YYYY)), but it applies only to major HAP sources. EPA has concluded that HAP emissions from area source combustion turbines do not warrant regulation in order to achieve Clean Air Act goals for HAP reductions (see preamble to 40 CFR Part 63 Subpart YYYY). Accordingly, area source combustion turbines meet an exemption criterion in Virginia's Toxics Rule (9 VAC 5-

60-300 C 5).

When CPV-WA initially submitted its application, the Toxics Rule did not include the exemption (it was amended May 1, 2002). Accordingly, CPV-WA's application included an evaluation of HAP emissions. Emissions of all HAPs except formaldehyde and acrolein were below exemption levels. Formaldehyde and acrolein emissions were modeled and shown to not cause an exceedence of the Significant Ambient Air Concentrations (SAACs) for each pollutant (maximum predicted impact was less than two percent of the SAAC).

BACT

Pollutants subject to a PSD review from a proposed facility must undergo a rigorous "top-down" BACT analysis. The "top-down" method provides that all available control technologies be ranked in descending order of control effectiveness. The applicant first examines the most stringent or "top" alternative. The top alternative is established as BACT unless the applicant demonstrates that technical considerations or energy, environmental, or economic impacts justify that the most stringent technology is not feasible. For the proposed CPV-WA facility, the pollutants subject to BACT are $NO_x$, CO, PM, PM-10, and sulfuric acid mist.

The BACT analysis has resulted in the following control methods and emission limits as conditions in the proposed permit. The original draft permit limited NOx to 2.0 ppm at loads of 80% and above and to 2.5 ppm at loads below 80%, both as a three-hour average. In response to public comment, BACT for NOx from the combustion turbines was reevaluated and the short-term limit was made more stringent.

**Combustion turbines**

*NOx:* Dry low-NOx combustion
Selective Catalytic Reduction (SCR)
2.0 ppm (17.9 lbs/hr) as a one-hour average

*CO:* Oxidation catalyst
1.3 ppmvd without power augmentation
7.2 lbs/hr and 1.8 ppmvd with power augmentation and without duct burner firing
12.8 lbs/hr and 2.5 ppmvd with power augmentation and duct burner firing

*PM/PM-10:* Natural gas only
Maximum gas sulfur content: 0.002% by weight

*Sulfuric acid mist:* Natural gas only
Maximum gas sulfur content: 0.002% by weight

**Emergency units (generator and firewater pump)**

Annual operating hours of each unit limited to 500 *(NOx, CO, PM/PM-10, sulfuric acid mist)*

Use of low-sulfur oil (max. sulfur content: 0.05% by weight) *(PM/PM-10, sulfuric acid*

*mist)*

Transition to ultra-low sulfur oil (maximum sulfur content 0.0015% by weight) upon implementation of federal on-road diesel standards *(PM/PM-10, sulfuric acid mist)*

Although VOC emissions from the proposed facility are not subject to a PSD BACT review, VOC will be controlled to 50% reduction in the oxidation catalyst. Formaldehyde, a VOC and HAP, will likewise be controlled by the oxidation catalyst.

The NOx limit of 2.0 ppmvd is the most stringent limit to date in a permit for an electric generating facility in Virginia, 20% lower than the limits included in recently issued permits for such facilities. The limit is as low as that for any electric generating unit in the nation of which we are aware. After CPV-WA's application was deemed complete in September 2003, DEQ's Air Quality Division issued a agency-wide policy memo indicating that all new or modified electric generating facilities will need to meet 2.0 ppmvd NOx, unless the facility demonstrates that it is not technically or economically feasible.

Air Quality Analyses

In addition to the BACT review, an applicant for a proposed facility subject to PSD review must perform air quality analyses to demonstrate the likely impact of the proposed emissions. The analyses must evaluate, for each pollutant, whether a proposed facility will cause an exceedence of a National Ambient Air Quality Standard (NAAQS) or of the allowable Class I or Class II increment. Increment is the maximum allowable increase in concentration of a pollutant above a baseline. Class I increments are much more stringent than increments for Class II areas.

Analyses were conducted to evaluate impacts on both Class I and Class II areas. Prior to conducting the analyses, CPV-WA submitted protocols outlining the intended methodology and input data for both areas. DEQ staff reviewed and approved both the Class I and Class II protocols. The Class I protocol was also reviewed and approved by the FLM (NPS).

CPV-WA submitted the results of its Class II analyses on June 9, 2003. Modeling results show that the maximum predicted impact for each pollutant is well below the NAAQS and allowable Class II increments and below the much more stringent Modeling Significant Impact Levels (MSILs), which are thresholds that, if exceeded, trigger more refined, multi-source analyses. Modeling methodology, inputs, and results were reviewed and verified by DEQ staff. Results of Class II modeling are shown in Table 5.

*Table 5. Class II modeling results vs applicable thresholds ($\mu g/m^3$)*

| | Averaging period | Maximum modeled concentration | Modeling significant impact level (SIL) | NAAQS | VAAQS | PSD Increment |
|---|---|---|---|---|---|---|
| $NO_2$[5] | Annual | 0.4 | 1 | 100[2] | 100[2] | 25[2] |
| CO | 1-hour | 9.5 | 2000 | 40,000[1] | 40,000[1] | N/A |
| | 8-hour | 3.4 | 500 | 10,000[1] | 10,000[1] | N/A |
| $SO_2$ | 3-hour | 1.1 | 25 | 1300[1] | 1300[1] | 512[1] |
| | 24-hour | 0.6 | 5 | 365[1] | 365[1] | 91[1] |
| | Annual | 0.05 | 1 | 80.0[2] | 80.0[2] | 20[2] |
| PM-10 | 24-hour | 3.8 | 5 | 150[3] | 150[3] | 30[1] |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Annual | 0.3 | 1 | 50.0[4] | 50.0[4] | 17[2] |

[1] Not to be exceeded more than once per year.
[2] Not to be exceeded.
[3] Fourth highest concentration over a 3-year period.
[4] Average of three annual average concentrations
[5] Total NOx conservatively reported, unadjusted for conversion to NO2

Results of CPV-WA's Class I analyses were received by DEQ on September 11, 2003. CPV-WA's Class I analyses included evaluation of the proposed emissions' effects on the Class I allowable increment and on air quality related values (AQRVs) within SNP. Results of CPV-WA's Class I analyses were reviewed and verified by the FLM (NPS), EPA Region III, and DEQ. The analyses demonstrated that the maximum predicted impacts from the proposed facility's emissions would not cause an exceedence of the Class I increment for any pollutant, as shown below.

Preliminary modeling for Class I increment consumption is shown in Table 6. Results for all pollutants except PM-10 (24-hour standard) are below the MSILs.

*Table 6. Class I preliminary modeling results vs MSILs*

| Pollutant | Averaging period | Predicted maximum concentration ($\mu g/m^3$) | Modeling Significant Impact Level ($\mu g/m^3$) |
|---|---|---|---|
| $NO_2$ | Annual | 0.04 | 0.1 |
| **PM-10** | **24-hour** | **0.7** | **0.3** |
| | Annual | 0.04 | 0.2 |
| $SO_2$ | 3-hour | 0.7 | 1.0 |
| | 24-hour | 0.1 | 0.2 |
| | Annual | 0.007 | 0.1 |

Because PM-10 (24-hour) results exceed the MSIL, more refined modeling was required that included PM-10 sources within a 62-km radius of the proposed facility. The refined analysis used site-specific topographic and actual meteorological data for a five-year period. The most recent five-year period for which meteorological data is available is 1988-1992. Results of the refined multi-source analysis are shown in Table 7.

*Table 7. Multi-source modeling results vs allowable Class I increment*

| Year | PM-10 concentration ($\mu g/m^3$) | | |
|---|---|---|---|
| | 1st highest 24-hour | 2nd highest 24-hour | Allowable increment |
| 1988 | 0.8 | 0.7 | 8.0 |
| 1989 | 0.8 | 0.7 | 8.0 |
| 1990 | 0.6 | 0.4 | 8.0 |
| 1991 | 0.5 | 0.4 | 8.0 |
| 1992 | 0.4 | 0.4 | 8.0 |

For the AQRV analyses for SNP, the NPS asked CPV-WA to evaluate visibility (to include plume impairment and regional haze) and deposition (of nitrogen and sulfur). NPS approved in advance the emissions input values and the meteorological data to be used in

the modeling. NPS selected or approved the specific viewpoints within SNP from which visibility effects were to be studied. Results of the individual AQRV analyses are shown below.

For the plume impairment analyses, the PLUVUE II model was used using worst-case emissions scenarios and five years (43,848 hours) of meteorological data. The analyses were run for each of the five viewpoints. The maximum number of hours at any viewpoint during which there is predicted to be a visible plume above the "Level of Concern" (LOC) is 34 hours at Dickey Ridge. Detailed results are shown in Table 8.

*Table 8. Predicted number of hours of visibility impairment above LOC in 5 years (43,848 hours)*

| Wind from (degrees)⇒ | 0 | 10 | 20 | 30 | Total | Frequency (%) |
|---|---|---|---|---|---|---|
| Shenandoah Valley Overlook | 0 | * | * | | 0 | 0.000 |
| Dickey Ridge | 17 | * | * | 17 | 34 | 0.078 |
| Signal Knob Overlook | | * | * | 11 | 11 | 0.025 |
| Compton Gap Road | * | 11 | 0 | | 11 | 0.025 |
| Lands Run Road Gate | * | * | 15 | 0 | 15 | 0.034 |
| Duplicate Hours** | 0 | 0 | 0 | 11 | 11 | |

* Indicates that results for the given wind direction and viewpoint were not taken into account, because the viewpoint is within 10 degrees of the downwind axis from the source. According to Dr. Willard Richards, who worked on the PLUVUE II model for EPA, the PLUVUE II model over-predicts visibility impairment for plumes passing over the view point, because it does not take plume meander into account.

** Number of situations where same hour has values above LOC at two different viewpoints.

Regional haze effects of the proposed facility were evaluated using CALMET/CALPUFF models, for portions of SNP that are further than 50 km from the proposed CPV-WA site and for the Dolly Sods, Otter Creek, and James River Face Wilderness Areas. For the analyses, modeled concentrations of $SO_4$, $NO_3$, fine particles, and organic carbon, along with background aerosol concentrations and relative humidity data, were used to determine the change in light extinction from background conditions for each day of the five-year meteorological period. No significant haze impacts are predicted at any of the nearby Class I areas. Results are shown in Table 9.

*Table 9. Regional haze analyses results*

| Class I area → | Shenandoah National Park | James River Face Wilderness Area | Otter Creek Wilderness Area | Dolly Sods Wilderness Area | Threshold value |
|---|---|---|---|---|---|
| Largest extinction change | 2.93% | 0.87% | 0.59% | 0.85% | 5.00% |

Results of the acid deposition analyses are shown in Table 10. While the maximum predicted result for SNP is equal to the threshold for nitrogen, no result exceeds the threshold.

*Table 10. Acid deposition modeling results*

| Species | Predicted total deposition (kg/ha/yr) | | | | |
|---|---|---|---|---|---|
| | Shenandoah | James River | Otter Creek | Dolly Sods | Threshold |

| | National Park | Face Wilderness Area | Wilderness Area | Wilderness Area | value (DAT) |
|---|---|---|---|---|---|
| Nitrogen | 0.01 | 0.00009 | 0.0001 | 0.0002 | 0.01 |
| Sulfur | 0.003 | 0.00003 | 0.00006 | 0.0001 | 0.01 |

The FLM has reviewed the Class I results for increment and visibility and deposition analyses. On December 14, 2003, and again in a letter dated March 10, 2004 from Douglas Morris, Superintendent of SNP, the FLM informed DEQ that it has determined that the proposed project will not cause an adverse impact on SNP or any other Class I area.

*The following issues are addressed in response to concerns raised during CPV-WA's public comment period. Please refer to DEQ's Summary of and Response to Public Comments (Attachment 2) for full responses to these and other issues included in comments received.*

Site suitability

Many of the comments received during the public comment period included the assertion that, regardless of steps taken to mitigate environmental impacts, there are certain places where a power plant should not be sited, and less than five miles from a national park suffering from air quality problems is one such place.

As noted in its response to comment document, this application is subject to the Prevention of Significant Deterioration (PSD) Rule (9 VAC 5 Chapter 80, Part II, Article 8), which does not include provisions to deny the application solely due to the facility's location relative to the National Park. The CPV project is subject to preconstruction review under the State's PSD permit program, which is approved by EPA under 40 CFR 51.166 to implement 40 CFR 51.21 (the federal PSD regulation). It is important to clarify that the PSD permit program does not strictly prohibit growth. Rather, one of the basic goals of the PSD program is to ensure economic growth occurs while still preserving existing air quality. This goal is achieved by the application of both a rigorous air quality demonstration and control technology review prior to the construction of the new source in order to minimize the project's emissions. The PSD regulation clearly contemplates that such growth will occur in proximity to Class I areas by establishing more stringent Class I air quality requirements and by codifying the affirmative role of the Federal Land Manager to protect air quality related values in the Class I areas.

The Class I area increments are much smaller than the Class II increments (with Class I increments ranging from one-fourth to as small as $1/20^{th}$ of the Class II values). The air quality analyses performed by CPV-WA in support of its application show that the proposed facility would not cause an exceedence of the more stringent Class I allowable increment for any pollutant.

PSD regulations also require an analysis of a proposed project's effects on AQRVs within a Class I area. An AQRV may include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource identified by the Federal Land Manager for a particular area. The concentration at which a pollutant adversely impacts an AQRV can vary between Class I areas because the sensitivity of the same AQRV often varies between areas. The specific AQRVs reviewed for the CPV-WA project were chosen by NPS based on air quality conditions at SNP. After reviewing the analyses, the FLM has determined that the proposed facility would not have an adverse impact on air quality related values within SNP.

CPV-WA has fulfilled the control technology review and air quality demonstration requirements of the PSD regulations and has shown that allowable increment is not consumed and that the FLM has determined that the proposed project will not cause an adverse impact on SNP.

Appropriateness of SAPCB's 1987 Site Suitability Policy in CPV Warren case

During CPV-WA's public comment period, one commenter asserted that the 1987 Site Suitability Policy is not appropriate for the CPV-WA project because of its potential impact on SNP and neighboring nonattainment areas. The commenter maintains that Warren County, the local governing authority for CPV Warren, is not in a position to consider the broader effects of the proposed facility on SNP and nonattainment areas.

In evaluating CPV Warren's application and developing the proposed permit, DEQ considered the suitability of the proposed site within the context of the Board's 1987 suitability policy and 1999 interim agency guidance, the most recent directives available. The 1999 guidance directed DEQ staff to document its consideration of each of the criteria in Code 10.1-1307.E for each application it evaluates. For the CPV Warren application, DEQ's review of the factors in 10.1-1307.E is documented in its engineering evaluation (pages 5 through 7) and is summarized in the "Special Considerations" section below.

Impact on ozone formation in SNP

Several commenters assert that CPV-WA has failed to demonstrate the impact of its emissions on levels of ground-level ozone in SNP. While acknowledging that there is not an accepted model available to evaluate ozone impacts from a single source, the commenters maintain that the project should be evaluated against what is known about ozone formation in SNP.

As acknowledged by the commenters, there is no accepted model for analyzing the effects of NOx from a single facility on ozone formation. In the aforementioned FLAG document, the FLMs agree with EPA's contention that single source receptor modeling for ozone is not feasible at this time. Accordingly, neither DEQ nor the FLM required CPV-WA to conduct ozone modeling in support of its application.

There are modeling tools available that predict regional ozone concentration increases resulting from multiple sources. In response to the commenters' concerns, DEQ conducted cumulative modeling of NOx emissions from fifteen recently permitted and proposed power plants, including CPV Warren, to determine the potential impact on regional ozone concentrations. Results of DEQ's cumulative analysis indicate that the maximum predicted ozone concentration increase in SNP from the fifteen facilities is 0.0005 parts per million (8-hour average). The 8-hour standard for ozone is 0.08 ppm. (Attachment 8)

SNP's relatively high elevation level makes it more susceptible to high-level ozone and ozone precursor pollutant transport. Both monitoring and limited aerial research of the values recorded at the Big Meadows monitor suggest that this high level transport is the primary cause of elevated ozone levels in the SNP. Specifically, SNP is relatively free from local source influences. The Big Meadows site exhibits minimal diurnal variation of ozone concentrations compared to locations near sea level. It is largely free from nocturnal ozone destruction caused by NOx scavenging and dry deposition that is characteristic of most lower

elevation sites.

This is confirmed by the fact that many times when ozone exceedances are recorded at the Big Meadow monitor, these high levels will persist during all hours of the day and night for several days. These elevated ozone levels, even during the night when local ozone formation cannot occur, supports the conclusion that a higher atmospheric ozone transport layer is responsible for much of the ozone problem in the SNP. Under these conditions, local sources of ozone have little or no impact on the SNP. For this reason, the DEQ recommended and the EPA agreed that only a small portion of the SNP should be designated nonattainment and that this area is mainly impacted by the long-range transport of ozone.

It is also important to note that there is much analytical evidence that the regional and national programs to be implemented to reduce the transport of ozone will significantly improve ozone air quality in all areas of Virginia. These programs are specifically aimed at reducing the transport component of ozone formation that should significantly benefit air quality in the SNP. Examples of national and regional control measures include the $NO_X$ Budget Trading Program, new car and SUV emission standards (2004), truck engine emission standards (2007), nonroad engine standards, and reformulated paints and coatings. Local control measures also include truck idling restrictions and truck stop electrification. DEQ has also modeled these reduction programs to determine the effect on ozone concentrations in Virginia. The modeling analyses include growth factors accounting for projected increases in industrial emissions. Specifically, the control case scenarios being implemented regionally and locally are expected to bring the SNP into attainment with the 8-hour ozone NAAQS by 2007 (see Attachment B of Summary of and Response to Public Comments document (Attachment 2 to memo)).

Need for cumulative impacts analysis

Many comments received requested that DEQ conduct an analysis of the cumulative effects on ozone formation of NOx emissions from recently-constructed and permitted (but not yet constructed) power plants, including the proposed CPV-WA facility. Concern was focused primarily on potential impacts in SNP, particularly on the 8-hour ozone standard (for which parts of SNP are nonattainment).

DEQ had conducted a cumulative ozone modeling analysis in 2002 for sixteen proposed power plants (including CPV-WA) for comparison to the one-hour standard and determined that impacts would be insignificant. In response to the commenters' request, DEQ performed another cumulative analysis to determine predicted one-hour and eight-hour impacts of the recently permitted and proposed facilities ("Photochemical Modeling of Potential Ground Level Ozone Concentration Impact from Fifteen Proposed Power Generation Stations", DEQ, May 3, 2004 – Attachment 8). The Comprehensive Air quality Model with extensions version 4.02 (CAMx) model was selected as the photochemical air quality model. The analysis was conducted using conditions that were present during the August 8-18, 1999 ozone episode. The modeling study indicated that the combined permitted NOx emissions from the fifteen facilities resulted in negligible 1-hour and 8-hour ozone concentration increases. Specifically, the following maximum impacts were determined:

- Up to 0.00075 parts per million (ppm) (0.75 parts per billion (ppb)) of 1-hour ozone concentration increases in SNP
- Up to 0.001 ppm (1 ppb) of 1-hour ozone concentration increase in the Richmond area

- Up to 0.0005 ppm (0.5 ppb) of 8-hour ozone concentration increase in SNP.
- Up to 0.001 ppm (1 ppb) of 8-hour ozone concentration increase in central Virginia.
- 8-hour ozone concentration increases in Northern Virginia and Tidewater areas are negligible.

Cumulative analysis demonstrates that the maximum combined impact of the recently permitted and proposed power plants in SNP is 0.0005 ppm for the 8-hour standard, compared to the standard of 0.08 ppm. EPA has not established a "significance" level for evaluation of ozone increases. The absence of an established significance threshold does not preclude Virginia from determining whether a given ozone concentration increase should be considered significant (see ConAgra appeal decision – PSD Appeal Nos. 98-27 and 98-28, Order Denying Review, September 8, 1999). DEQ's analysis showed the predicted cumulative 8-hour impact on SNP to be insignificant.

It should be noted that NOx emissions from the proposed CPV-WA facility constitute three percent of the total power plant emissions modeled for the cumulative study. CPV-WA's emission level is the lowest of all the facilities included in the cumulative power plant modeling.

Impact on Northern Virginia nonattainment area

Several comments were received concerning the potential impact of emissions from the proposed project on nonattainment areas to the northeast of the site, specifically on exceedences of the 8-hour ozone standard in Northern Virginia and Frederick County. Some commenters asserted that, given its potential impact on the nonattainment areas, CPV-WA should be asked by DEQ to consider alternative sites for its project.

As referenced above, there is not an approved modeling method for determining the impact on ozone concentration resulting from a single source such as the proposed CPV-WA facility. Data that are available, however, indicate that the proposed project would have an insignificant impact on Northern Virginia ozone concentrations. DEQ's May 2004 cumulative modeling indicates that the resulting increase in ozone concentration in the Northern Virginia area would be negligible (less than 0.00025 ppm). The maximum predicted impact in neighboring Frederick County, which was recently deemed nonattainment with the new 8-hour ozone standard and has entered an Early Action Compact with EPA to defer certain nonattainment obligations, is 0.0005 ppm. The 8-hour standard for ozone is 0.08 ppm.

Warren County is insignificant in terms of regional ozone precursor emissions (2% of Northern Virginia Metropolitan Statistical Area) and other related criteria, even after the inclusion of the proposed facility's emissions. Therefore, under EPA's established method for evaluating the contribution of areas to local ozone levels, Warren County does not significantly contribute to or impact nearby nonattainment areas.

To place NOx emissions from CPV- WA and their possible effects in the Northern Virginia area into context, it is instructive to consider what is known about daily NOx emissions loading in the area. DEQ data for the Virginia portion of the Northern Virginia ozone nonattainment area show that the average daily NOx emissions in 2002 were 238.6 tons. Of this amount, the majority (53%) of NOx emissions are from mobile (vehicular) sources. Point (industrial) sources amounted to 17% of the daily NOx loading. The proposed CPV-WA facility's maximum potential daily emissions (0.42 tons) would represent less than 2/10ths of one percent (0.18%) of the area's total daily NOx loading. Stated another way, the

daily NOx emissions from vehicles in the Northern Virginia area are over 300 times greater than the maximum daily NOx emissions from CPV-WA.

DEQ finds that available data indicate that the potential impact of emissions from the proposed facility in Northern Virginia nonattainment areas is insignificant.

In response to the suggestion that DEQ require CPV-WA to consider alternative locations for its facility, DEQ notes that the proposed site for CPV-WA, Warren County, is attainment for all air quality standards. Major sources proposing to locate in attainment areas are subject to PSD regulations. PSD regulations do not require that an applicant consider alternative locations.

NOx offsets

CPV-WA's Conditional Use Permit (CUP) from Warren County includes the requirement that CPV-WA obtain offsets for its NOx emissions. The offsets provision was voluntarily proposed by CPV-WA during its CUP application process. Several comments received during the PSD public comment period concern the enforceability of the CUP offsets requirement. Some commenters requested that DEQ include the NOx offsets requirement in the PSD permit.

In response, DEQ acknowledges the concern expressed by many about the ability of Warren County to enforce the offsets provisions in its CUP. An offset ratio is not specified in the CUP. The offset condition in the CUP reads as follows:

> "To the extent permitted by and consistent with the rules and regulations of the Virginia Department of Environmental Quality, CPV shall agree to obtain allowances and/or offsets for NOx emissions modeled to benefit Warren County that are as close to the plant as practical. Documentation providing evidence of available allowances/offsets and those purchased /traded shall be provided to the County Administrator and the Board of Supervisors. These offsets have been voluntarily proffered by CPV to reduce NOx emissions within the region within which Warren County is located."

Neither DEQ nor EPA was a party to this arrangement, which codifies an agreement between CPV-WA and Warren County. The requirement was not based on a specific predicted impact of the proposed facility and in fact was imposed prior to CPV Warren's air permit application submittal.

The extensive air quality analyses conducted by CPV-WA in support of its application did not consider the effects of NOx offsets. Nonetheless, CPV-WA demonstrated that the maximum potential emissions from the proposed facility would not cause an exceedance of any NAAQS or allowable PSD increment, the criteria specified by PSD regulations as determinative of a proposed facility's impact in an attainment area. The modeling results also showed that the proposed facility would not result in an adverse impact in SNP on AQRVs, which is likewise specified by PSD regulations as the means of assessing a proposed facility's impact in a Class I area. After reviewing the air quality analyses and results, the FLM determined that the proposed CPV-WA facility would not cause an adverse impact on AQRVs within SNP. Each of these findings was reached based on analyses that did not consider the benefit of offsets.

In the Longview Power example, which was cited by NPS and other commenters as an example of requiring offsets from a source in an attainment area, the sulfur dioxide offsets that ultimately were included in the West Virginia PSD permit were only added after the FLM made a preliminary determination that the project's 4,016 tons/year SO2 emissions would have an adverse impact on acid deposition and visibility in four Class I areas including Shenandoah. It is also important to note that CPV-WA actually preempted the need for similar mitigation by significantly changing the project scope in January 2003. These changes included eliminating oil-firing capability and adding additional NOx controls. The net emission reductions from these project changes made during the application process totaled 91 tons/year NOx, 57 tons/year PM-10 and 11.1 tons/year SO2. We also note that Longview Power was not required to obtain offsets for the 2,141 tons/year of NOx emissions that are proposed from this facility. Contrasted with the 152 tons/year NOx emissions and 24.7 tons/year SO2 from the CPV-WA project, it is very important to make the distinction that these two projects bare very little similarity.

In the absence of an increment violation or an adverse impact on AQRVs, neither the Clean Air Act (CAA) nor its implementing regulations requires a proposed source to obtain offsets. What commenters have requested in this case is that DEQ establish language in its PSD permit that would serve to make federally enforceable the agreement between CPV-WA and the County as stated in the CUP. DEQ acknowledges the citations, offered by one commenter, from the Virginia Code under the authority of which the CUP condition might be incorporated into the PSD permit.

As referenced in the Site Suitability discussion above, PSD regulations clearly contemplate that growth will occur in proximity to Class I areas and accordingly adopt AQRV requirements and more stringent air quality standards for such areas. A facility that has shown, in the absence of offsets, that it would not violate those more rigorous standards has fully met its obligations under the CAA and Virginia's air quality regulations.

CPV will be subject to an established NOx allowance trading program designed to address the ozone issues at the heart of the commenters' concerns. As one commenter has noted, the CUP offset condition, without the benefit of the County's interpretation, is quite broad and could conceivably apply to the NOx allowances required under the NOx Budget Trading Program, since this program would be the only NOx trading program that would be permitted by, and consistent with, DEQ regulations.

The NOx Budget Trading Program, 9 VAC 5 Chapter 140 is designed to mitigate the transport of ozone and nitrogen oxides and applies to all electrical generating units (EGUs) providing electricity for sale. Under the provisions of this rule, CPV-WA will be required to hold $NO_x$ allowances in an account administered by EPA in an amount not less than the total $NO_x$ emissions that may occur each year during ozone season, May 1 through September 30.

The amount of NOx allowances that are available for purchase has been capped to result in an overall emission reduction of approximately 66% of the actual NOx emission from the 1995-1999 baseline period. Both new and existing EGUs must obtain allowances to operate during the control period from the same cap insuring that regardless of the number of new power plants operating, the amount of NOx emissions will be maintained at or below the cap. Compliance is assessed through continuous emissions monitors and failure to maintain sufficient NOx allowances in the compliance account is a violation of both State and Federal law subject to enforcement action.

Current DEQ practice is to not include the NOx Budget Trading requirements in the PSD preconstruction review permit. Nevertheless, the rule does require that these requirements are made enforceable through the issuance of a state and federally enforceable permit program prior to operation of the facility during the first control period. In order to more clearly communicate the applicability of the NOx Budget Trading program to the CPV-WA facility, additional language has been added to the PSD permit to make enforceable the requirement that the source apply for and obtain
NOx allowances under this program. This additional language should help address the concern that the requirement to obtain NOx allowances should be federally enforceable.

The NOx Budget Trading program is a significant air quality program. Beginning in May 2004, Virginia will cap NOx emissions from EGU sources at 17,091 tons per control period, a reduction of approximately 33,000 tons of NOx per ozone season. Similar dramatic reductions in neighboring states cannot help but have an immediate impact on regional air quality and address the ozone transport problem currently experienced by the Shenandoah National Park. DEQ modeling indicates that successful implementation of this program in the region will greatly improve air quality and result in attainment with the 8-hour ozone standard throughout much of the state including the Shenandoah National Park (See Attachment B of Summary of and Response to Public Comments document (Attachment 2 to memo)). Assurance that CPV-WA will be required to participate in the program should also help address the concern for additional air quality deterioration resulting from CPV-WA within the SNP.

**Public Participation Activities**

Public Briefing

A public briefing announcement was published in the Warren Sentinel and the Northern Virginia Daily newspapers on December 4, 2003. The briefing was held January 15, 2004, at the Warren County Government Center in Front Royal. The proposed permit and engineering analysis were available for public review at the Samuels Public Library in Front Royal and at the Valley Regional Office in Harrisonburg from December 4, 2003 through March 10, 2004. The proposed permit and engineering analysis were also accessible on DEQ's website from November 26, 2003 through March 10, 2004. A link highlighting the CPV Warren public notice and proposed documents was added to DEQ's Air Quality homepage from November 26, 2003 through March 10, 2004.

Public Hearing

In accordance with 9 VAC 5-80-1870(F)(6), a public hearing announcement was published in the Warren Sentinel and the Northern Virginia Daily newspapers on January 22, 2004. The hearing was held February 24, 2004, at the Warren County Government Center in Front Royal. Twenty-one persons signed the attendance sheet at the hearing. Sixteen of the attendees offered testimony, and four sets of written comments were received and entered into the record by the Department. Of the sixteen oral comments provided at the hearing, eleven were opposed to the project and five were in support. Additionally, two of the four written statements submitted at the
hearing were opposed to the plant while two were in support. A copy of the hearing transcript is appended.

Those speaking in opposition to the project primarily questioned the suitability of the

proposed site, given its proximity to SNP and Northern Virginia nonattainment areas. Other issues raised include the need for a cumulative ozone analysis to assess impacts of multiple power plants and concern about the enforceability of the NOx offsets requirement in CPV-WA's Conditional Use Permit from Warren County.

Those in support of the project cited the projected tax revenues for the county, the cleanliness of the plant relative to similar facilities, and CPV-WA's proactive pursuit of an environmental management system for the proposed facility.

Public comment period

DEQ received written comments on the proposed project from January 22, 2004 through March 10, 2004. During the public comment period, 164 written comments were received. The written comments included letters from EPA Region III, U. S. Department of the Interior, County of Warren, five from environmental advocacy groups, and 156 from citizens throughout Virginia and across the country. Three commenters requested that the State Air Pollution Control Board make the final permit determination rather than DEQ. Copies of all letters received during the public comment period are appended, as is a copy of DEQ's summary of and response to the comments (see Public Participation Report).

Changes to the draft permit

The following changes were made to the draft permit in response to comments received.

- A condition limiting natural gas throughput to the combined-cycle units has been added (Condition 11).

- Short-term limits on NOx from each combined-cycle unit have been changed to 2.0 ppmvd at all loads, calculated as a one-hour average (Condition 13). The original draft permit limit was 2.0 ppmvd at loads of 80% or above and 2.5 ppmvd at loads below 80%, both calculated as a three-hour average.

- The definition of shutdown (Condition 15) has been revised to include periods when the turbine operates below 50% load, as opposed to 60% load as in original draft permit. The short-term NOx limit now applies during operation at 50% load and above.

- A condition has been added to clarify CPV-WA's obligations to obtain and operate according to a NOx Budget Trading permit, according to 9 VAC 5 Chapter 140 (Condition 22).

**Special Considerations**

According to current Site Suitability policy and 1999 interim agency guidance, DEQ's evaluation of the CPV Warren application included consideration of the following factors.

1. The character and degree of injury to, or interference with, safety, health, or the reasonable use of property which is caused or threatened to be caused:

   The activities regulated in this permit have been evaluated consistent with 9 VAC 5-50-260 (Best Available Control Technology) and 9 VAC 5-60-320

(Toxics Rule) and have been determined to meet these standards where applicable. The emissions regulated in this permit have been evaluated for air quality impacts consistent with existing
DEQ policy and have been found to have negligible impact on air quality.

As a fossil fuel-fired steam electric generating plant having heat input greater than 250 million British thermal units per hour, the proposed facility is a major stationary source according to 9 VAC 5-80-1710. In accordance with PSD regulations, a screening model was run to predict the maximum ambient impact of all criteria pollutants emitted by the proposed source. Predicted impacts from emissions of all pollutants except PM-10 were below applicable modeling significance levels and well below applicable primary and secondary air quality standards.

Because screening modeling results exceeded the modeling significance threshold for PM-10 (24-hour standard), refined modeling was conducted for PM-10 emissions. The refined modeling included an analysis of not only PM-10 emissions from the proposed source, but also PM-10 emissions from all increment-consuming sources within a 62-kilometer radius of the source. Refined modeling analyses indicated that the predicted PM-10 concentrations are well below the allowable increment level and that predicted maximum PM-10 concentrations at SNP and all Class I areas of concern are below the modeling significance level and well below the NAAQS.

CPV-WA's project is proposed to be sited within 7.1 kilometers of SNP, a protected Class I area. As a result, CPV-WA must demonstrate that emissions from its proposed project will not cause an adverse impact on air quality and air quality related values (AQRVs) within SNP, in addition to any modeling that may be warranted in other areas surrounding the proposed site (in this case, no impacts were predicted elsewhere). Accordingly, CPV-WA, in consultation with DEQ and NPS staff, conducted extensive modeling to evaluate air quality effects within SNP and other Class I areas.

Although emissions of toxic pollutants from electric generating units such as those proposed by CPV-WA are not subject to the standards in 9 VAC 5-60-300 *et seq*., CPV-WA modeled emissions of toxic pollutants for which proposed emissions exceed the thresholds in 9 VAC 5-60-320 (acrolein and formaldehyde). Modeling demonstrated that proposed emissions both acrolein and formaldehyde are well below (less than 2%) the associated Significant Ambient Air Concentration (SAAC).
Results of modeling conducted for emissions from the proposed facility show compliance with the health-based NAAQS for all pollutants. Furthermore, single source and cumulative modeling analyses indicate that the proposed project will not result in an exceedance of any PSD increment. Accordingly, approval of the proposed permit is not expected to cause injury to or interference with safety, health, or reasonable use of property.

2. The social and economic value of the activity involved:

The social and economic value of the facility submitting the application has been evaluated relative to local zoning requirements. The local official has deemed this activity not inconsistent with local ordinances. The signed Local Government Form, dated January 14, 2002, was included in CPV-WA's permit application received January 16, 2002.

The proposed CPV-WA facility will generate electricity using only clean-burning natural gas. The availability of clean fuel electric generation facilities is necessary if operation of dirtier coal-fired power plants is to be reduced or replaced. Although it is not guaranteed that regional coal-powered generation will be reduced if clean-burning plants such as the CPV-WA project are built, if they are not built, it is certain that electricity demand will continue to be met through use of the older, dirtier facilities. Construction of clean-burning, efficient generation plants such as the proposed CPV-WA facility creates the potential for regional SO2 and NOx reductions resulting from displacement of older, more polluting forms of electricity generation.

3. The suitability of the activity to the area in which it is located:

DEQ has reviewed the following site suitability factors, in accordance with the Board's Suitability Policy dated September 11, 1987.

(a) *Air Quality characteristics and performance requirements defined by SAPCB regulations:*

This permit is written consistent with existing applicable regulations. The source is a source of toxics emissions and has been modeled and shows no impact on the SAAC. The emissions for criteria pollutants associated with this permit have likewise been modeled and have been shown through screening and refined modeling to
not cause a violation of the ambient air quality standards or allowable increment within or outside of Class I areas. Because of the proximity of the proposed site to SNP, PSD regulations require that CPV-WA conduct extensive modeling analyses to determine potential impacts of the proposed facility on certain Air Quality Related Values (AQRVs), as designated by the Federal Land Managers (National Park Service). The FLM has determined that the proposed facility will not cause an adverse impact in SNP.

(b) *The health impact of air quality deterioration which might reasonably be expected to occur during the grace period allowed by the Regulations or the permit conditions to fix malfunctioning air pollution control equipment:*

Condition 47 of the permit requires the facility to notify the Regional Office within 4 business hours of discovery of any malfunction of pollution control equipment.

(c) *Anticipated impact of odor on surrounding communities or violation of the SAPCB Odor Rule:*

No violation of Odor Requirements is anticipated as a result of the proposed project.

4. The scientific and economic practicality of reducing or eliminating the discharge resulting from such activity:

The state NSR program as well as the PSD and Non-Attainment programs require consideration of levels of control technology that are written into regulation to define the level of scientific and economic practicality for reducing or eliminating emissions. By properly implementing the Regulations through the issuance of the proposed permit, the staff has addressed the scientific and economic practicality of reducing or eliminating emissions associated with this project.

The permit requires numerous pollution control strategies that will result in reduction of emissions. These include pollution prevention techniques such as use of clean fuels and clean burning "low $NO_x$" lean premix burners as well as add-on control (SCR for $NO_x$ removal and an Oxidation Catalyst for CO, VOC, and VOC toxic pollutant control) (see draft permit Conditions 3-5 and 10). The permit includes short-term NOx limits for the combined-cycle units that are lower than any for similar facilities in Virginia and as low as any for such facilities in the nation (Condition 13). Pollution prevention measures have been included in the draft permit, such as a requirement to use ultra-low sulfur (no more than 0.0015% by weight) oil in emergency equipment (Condition 24), a limit on ammonia emissions (not currently a regulated pollutant) (Condition 17), and a requirement to investigate all feasible means of NOx control before replacing the SCR (Condition 18). Feasibility of obtaining further emission reductions was reviewed through the rigorous "top-down" Best Available Control Technology (BACT) requirements of PSD review. During DEQ's review, no additional controls were found to be technically and economically feasible.

## Alternatives

1. The Board may direct DEQ to make the final determination on the permit.

2. The project having met at least one of the three criteria listed in 9 VAC 5-170-180 C, the Board may exercise its authority for direct consideration of the permit.