

Balico, LLC/Chickahominy Power
Registration Number 52610
Prevention of Significant Deterioration Application
Summary of and Response to Public Comments

Public Notice Procedure

Before a Prevention of Significant Deterioration (PSD) permit can be issued, the draft permit must undergo 30 days of public comment, followed by a public hearing, followed by 15 more days of public comment. The Public Notice for the start of the public comment period for the draft PSD permit Chickahominy Power Station (CPS) appeared in the Charles City/New Kent Chronicle on January 31, 2019. The draft permit and engineering analysis were posted to the DEQ public notice website for review. The public comment period ran from January 31, 2019 through March 20, 2019. The public hearing was conducted on March 5, 2019.

Public Hearing

The public hearing was held at the Charles City County (Charles City County) Administration Building Auditorium, 10900 Courthouse Road, Charles City, VA. The hearing was attended by five DEQ representatives, one representative from Balico, LLC, one representative from AECOM (applicant consultant), two representatives from Charles City County government (one Board of Supervisors member, one representative from economic development), one faculty member of the University of Richmond, and 5-10 private citizens (not all of the people that attended signed the hearing attendance log). An open question and answer session preceded the formal public hearing.

Comments Received

A total of 104 comments were received, including a letter from the United States Environmental Protection Agency (EPA) and three oral comments presented at the public hearing. The remainder of the comments were either emails or email attachments. In the instance of a respondent submitting more than one comment during the public comment period, their comments were aggregated. DEQ has reviewed and considered all of the comments received. DEQ has grouped and summarized the comments and is providing this document to respond to the comments.

Revised Draft Permit

After consideration of each public comment and following consultation with and the concurrence of the applicant, DEQ has developed a revised draft permit that incorporates the following changes:

1. Remove the General Electric turbine option and associated conditions
2. Remove the conditions providing for on-line (turbines in operation) water washing events
3. Add a condition (Condition #23) establishing a 96 hour per year operating limitation for turbine tuning events
4. Further clarify that the annual emission limits (Condition #36) encompass all periods of operation including startups, shutdowns and tuning events
5. Clarify the excess emission reporting requirements for startups, shutdowns and tuning events and add advance notification provisions for tuning events (Conditions #9, #10 and #51).
6. Lower the British thermal unit per kilowatt-hour (Btu/KWh) heat rate limits (Condition #8) and the pound of CO₂e per megawatt-hour (lb/MWh) greenhouse gas emission limits (Condition #35).

These revisions are discussed in more detail further in the following sections. In the remainder of this document, the draft PSD permit proposed for comment during the public comment period and public

hearing will be referred to as the “draft permit” while the draft PSD permit incorporating DEQ’s revisions in response to public comments and proposed for consideration by the State Air Pollution Control Board (Air Board) will be referred to as the “revised draft permit”. Except for the changes noted above and the correction of minor typographical errors, the revised draft permit is substantively equivalent to the draft permit.

GENERAL COMMENTS AND ENVIRONMENTAL IMPACTS

1. General Environmental and Non-Environmental Project Impacts

Comment Summary

The majority of the comments were in opposition to the draft permit and the CPS. Where these comments were related to air quality, the majority were general in nature and did not suggest any specific improvements or short-comings in the draft permit, nor did the comments address any of the analyses contained in DEQ’s engineering analysis document. These comments indicate that the CPS emissions are too high, the impact is too great, and/or no increases should be approved. The comments also indicate general opposition to the CPS and a request for denial and/or Air Board consideration of the draft permit. Some comments pertained to issues regarding station size, noise, traffic, water quality, historic resources, the greenhouse gas (GHG) impact of the natural gas industry, the financial impact on ratepayers, the necessity of or demand for the CPS and the need for renewable energy sources instead.

Response

Noise, traffic, water quality, wildlife, station necessity, impacts on historic resources and impacts on ratepayers are topics beyond the purview of the Regulations for the Control and Abatement of Air Pollution that is the authority for the draft permit.

Even though the impact on ratepayers is not a subject within DEQ’s authority, it should be noted that the State Corporation Commission (SCC) does have purview over such matters, and SCC approval of the project was granted on May 8, 2018. Also, CPS is not a ratepayer financed facility; i.e. it is a merchant plant financed by private investment.

The Regulations for the Control and Abatement of Air Pollution prescribe the requirements that a source must comply with to obtain a PSD permit. In reviewing the application for this permit, DEQ performed a comprehensive regulatory review with respect to Virginia and federal air quality regulations. This includes the health-based standards promulgated by the U.S. Environmental Protection Agency (EPA) as National Ambient Air Quality Standards (NAAQS), EPA-promulgated Prevention of Significant Deterioration (PSD) increments, and Virginia’s own health-based standards for toxic pollutants. DEQ’s review of the initial application and subsequent updates demonstrates that the proposed CPS will apply the Best Available Control Technology (BACT) for each applicable pollutant.

Air quality analyses were conducted in accordance with Virginia and federal permitting regulations and guidance in order to assess compliance of projected emissions from the proposed facility with all applicable NAAQS, PSD increments, and Significant Ambient Air Concentrations (SAAC). Detailed responses to comments regarding modeling and the air quality analysis are provided elsewhere in this

document.

The primary NAAQS have been established in order to define air quality levels for sulfur dioxide, nitrogen dioxide, particulate matter, ozone, carbon monoxide, and lead that are protective of public health and welfare, with an adequate margin of safety. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The air quality analyses demonstrated that projected air emissions from the proposed facility would neither cause nor significantly contribute to a violation of any applicable primary or secondary NAAQS.

In addition to the NAAQS, PSD increments (allowable increases in ambient concentration above a baseline level) have been established for select regulated criteria pollutants for both Class I and Class II areas. PSD increments prevent the air quality in clean areas from deteriorating to the level set by the NAAQS. The Class I area increments are much smaller than the Class II increments and are applicable in large national parks and wilderness areas. The air quality analyses demonstrated that the projected air emissions from the proposed facility would not cause or contribute to a violation of any applicable Class I or Class II area PSD increment.

In addition to the NAAQS and PSD increment modeling, an evaluation of the proposed project's effects on air quality related values (AQRVs) within neighboring Class I areas was completed. An AQRV may include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource identified by the Federal Land Manager (FLM) for a particular area. The FLMs have an affirmative responsibility to protect the AQRVs (including visibility) of such lands, and to consider whether a proposed major emitting facility will have an adverse impact on such values. The FLMs for the applicable Class I areas located within 300 kilometers of the proposed facility indicated the proposed facility is not expected to show any significant additional impacts to AQRVs.

Additional impact analyses for the local area within Charles City County were performed to assess the impacts from the proposed facility on visibility, vegetation and soils, and the potential for and impact of secondary growth. Visibility in the immediate vicinity of the proposed facility will be protected by air pollution control requirements and stringent visible emission limits included in the air permit. An analysis of the impacts from the proposed facility on soils and vegetation did not identify any adverse impacts. Furthermore, no new significant emissions from secondary growth during the construction and operation phases of the proposed facility are anticipated.

Acrolein, beryllium, cadmium, chromium, formaldehyde, lead, mercury, and nickel emissions were demonstrated to be in compliance with the SAAC guidelines in Virginia's air toxic pollutant regulation, 9 VAC 5 Chapter 60, Article 5 (Emission Standards for Toxic Pollutants from New and Modified Sources) of Virginia's Regulations for the Control and Abatement of Air Pollution. These standards are designed to be protective of human health and the environment.

Many comments suggested that the air quality analyses performed are only for "regional" standards and are not indicative of the impacts that will be experienced by local residents. This perception is not accurate. Modeling was conducted for the area surrounding the plant in Charles City County using the peak emission rates to demonstrate compliance with the standards.

In summary, the draft permit requirements are designed to ensure protection of public health and the environment in accordance with the state and federal ambient air quality standards and regulations. More detail regarding the subject matter of many of these comments is addressed later in this document in responses to comments that were specific to the draft permit.

2. General Environmental Justice Concerns

Comment Summary

Many of the comments described above raised environmental justice (EJ) as an issue of concern. They stated that Charles City County has a significant population of minorities (African American and Native American) and low income families. Many comments feared that the emissions from the proposed facility would have a disproportionate effect on the minority community. However, the majority of such comments were not specific about the nature of any alleged adverse or disproportionate impacts or the identification of specific impacted communities (other than general references to Charles City County as a whole (i.e. high % population of Native Americans and references to the county as “minority majority”). In general, the comments also did not address the EJ analysis included in DEQ’s engineering analysis document. Examples of such comments include such statements as “Issues around environmental justice...need to be addressed” and “I’m concerned because the county is a minority majority county...”.

Response

The federal Clean Air Act, the National Ambient Air Quality Standards, the State Air Pollution Control Law and the State Air Pollution Control regulations were established and designed to protect the health and environment for all people; i.e. the NAAQS apply equally to all stationary sources regardless of any site-specific demographic factors. The draft permit for the CPS will ensure compliance with these air quality laws, standards and regulations to protect the health and environment for all residents of Charles City County and throughout the Commonwealth.

Some comments relied on or referenced EPA definitions, data and/or policies on EJ. For example, Environmental Justice is defined by the EPA as the fair treatment and meaningful involvement of all people regardless of race, color, faith, national origin, or income, in the development, implementation, and enforcement of environmental laws, regulations, and policies. Executive Order 29 (issued by Governor Northam on January 22, 2019) uses the same definition and established the Virginia Council on Environmental Justice (VCEJ). EPA further considers that fair treatment means no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies.

Regarding “...disproportionate...negative...consequences”, EPA’s Environmental Appeals Board has previously determined (*see Energy Answers Arecibo, LLC 2014*) that:

“The Board generally “relies on and defers to the Agency’s cumulative expertise” where the permit issuer’s environmental justice determinations are based on a proposed facility’s compliance with the relevant NAAQS. *See Shell 2010* 15 E.A.D. at 156 (explaining that, “[i]n 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 experience disproportionately high and adverse human health or environmental effects due to exposure to relevant criteria pollutants”); *see also In re MHA Nation Clean Fuels Refinery*, 15 E.A.D. 648, 669 n.59 (EAB 2012). NAAQS are designed to protect public health with an adequate margin of safety, including sensitive populations such as children, the elderly, and asthmatics. *See In re AES Puerto Rico, LP*, 8 E.A.D. 324, 351 (EAB 1999), *aff’d sub nom. Sur Contra La Contaminación v. EPA*, 202 F.3d 443 (1st Cir. 2000); *see also Shell 2010*, 15 E.A.D. at 149 n.72.”

As indicated in DEQ’s engineering analysis and the responses to other comments in this document, DEQ has performed an extensive review of this project in accordance with Virginia’s air quality laws and regulations. DEQ found that if the facility is constructed and operated in accordance with the conditions of the draft permit, it will comply with all applicable air quality regulations. The air quality analysis is conservative and demonstrates emissions from the facility will not approach any of the applicable ambient air quality standards as permitted. Therefore, the air permit process used by DEQ and the requirements contained in the resulting draft permit ensure no disproportionately high or adverse air quality impact on any resident of Virginia. None of the comments submitted provided information to the contrary.

Efforts to meaningfully involve Charles City County residents started with the applicant advertising and hosting a public information session in Charles City, Virginia on May 17, 2017. These efforts further included the public notice of the draft permit, the public comment period and the public hearing (held on March 5, 2019) as published in the Charles City/New Kent Chronicle on January 31, 2019. This publication is widely distributed throughout the area. Additionally, DEQ posted the public notice, the draft permit, and the draft engineering analysis on its website. On January 31, 2019, specific notices were also sent to the Pamunkey, Mattaponi, Chickahominy and Eastern Chickahominy Indian Tribes via email and/or the U.S. Postal Service. Furthermore, senior DEQ staff contacted the same Tribes and organized and participated in a face to face meeting with interested parties (including Chief Adkins of the Chickahominy Indian Tribe) at the Chickahominy Tribal Council Building in Charles City County on February 28, 2019. On March 14, 2019, Chief Stephen Adkins sent an email to DEQ Director, David Paylor. The Chief’s email states that the Chickahominy Indian Tribe does not oppose the name for the CPS and that the Chickahominy Indian Tribe objects to being used as a reason to designate the CPS permit for review by the Air Board. DEQ did not receive any indication from any other Indian Tribe indicating opposition to the CPS.

With respect to applicant actions regarding community engagement, as described in the March 14, 2019 email from Chickahominy Indian Tribe Chief Ralph Adkins to DEQ Director Dave Paylor:

- Mr. Irfan Ali (Managing Partner Chickahominy Power) contacted Chief Adkins at the outset of the project’s development and asked if the Chickahominy Indian Tribe had any concerns regarding the proposed name of the power plant. The Chickahominy Indian Tribe did not oppose the name for the power plant.
- On March 1, 2019, The Chickahominy Indian Tribe held a public meeting to discuss the CPS with around 40 people in attendance. Mr. Ali answered public questions for approximately 1.5 hours. After the public meeting, Mr. Ali fully answered further questions during a private meeting with the Chickahominy Indian Tribe Tribal Council.

Also, as described in the March 12, 2019 letter from Balico, LLC to DEQ:

- Mr. Ali attended a summer 2016 Shirley Plantation event to raise awareness of and answer questions regarding the CPS.
- Mr. Ali attended an August 2016 executive meeting of the Charles City County Board of Supervisors to answer questions and provide an update regarding the CPS.
- Beginning in late 2016, Mr. Ali attended a series of meetings with Mr. Bruce Howard (Charles City County resident and adjacent (to CPS) business owner) and other Charles City County business owners.

As indicated in the draft engineering analysis, DEQ also used EJSCREEN to evaluate the area of Charles City County surrounding the proposed CPS. EJSCREEN is an on-line EPA-maintained screening tool used to estimate the demographics of a particular radius around a site, using recent census data, and cross-reference the demographics with current ambient air quality. As a tool, it does not evaluate any air quality impact of the proposed facility on the population. The air quality analysis discussed elsewhere in this document is used to determine the air quality impact around the plant.

DEQ generated EJSCREEN reports for 1-mile, 2-mile and 5-mile rings around the CPS location. These areas represent the greatest expected air quality impacts from the facility. The demographic data from these reports is summarized below:

CPS EJSCREEN Report Summary

Report Area	1-Mile	2-Mile	5-Mile	Virginia Average
Minority Population	42%	45%	34%	37%
Minority Population % over Virginia Average	14%	22%	N/A (negative value)	N/A
Low Income Population	23%	25%	20%	27%
Overall Demographic Index	33%	35%	27%	32%

All low income population values are below the average for the Commonwealth of Virginia, and all of the minority population values are below the average (52.8%) for Charles City County as a whole¹.

To the extent that Charles City County as a whole is considered as an EJ community, as suggested by some comments, Charles City County representatives did provide DEQ with a certification that the

¹ <https://www.census.gov/quickfacts/charlescitycountyvirginia>

proposed CPS would comply with all applicable local ordinance and zoning requirements. Charles City County’s Board of Supervisors (representing the majority minority population as a whole) also unanimously approved a special use permit (and subsequent revisions) for the CPS on at least four occasions: May 28, 2015, September 27, 2016, October 25, 2016 and November 22, 2016.

3. General Climate/GHG Comments

Comment Summary

Many of the comments raised climate change and greenhouse gas emission concerns. The majority of the comments were general in nature and did not suggest any specific improvements or short-comings in the draft permit, nor did the comments address the GHG BACT analysis contained in DEQ’s engineering analysis document. Some of the comments also stated that DEQ’s proposed carbon trading rule, Governor Terence McAuliffe’s Executive Directive 11 (2017) and/or Virginia’s participation in the United States Climate Alliance prohibits the permitting of the CPS or that the construction of the CPS would be contrary to these same rules/programs. These comments state that the CPS GHG emissions are too high, should be replaced by renewable energy and/or no fossil fuel fired power facilities should be approved. Some comments also stated that the Air Board must consider climate impacts in an evaluation of site suitability.

Response

In accordance with the U.S. Supreme Court’s 2014 decision in *UARG v. EPA*, DEQ’s authority to regulate GHG emissions from any facility under the PSD permitting program is limited by law and regulation to determining and applying BACT. In determining BACT, including for GHG, for a PSD permit, DEQ analyzes the engineering design of the facility as proposed. This is because DEQ/EPA have long recognized as a central tenant of the air pollution permitting program that permitting authorities do not have the ability to redesign the basic business purpose of a facility. Therefore, as a general matter and in this specific case, DEQ does not require the substitution of renewable energy generation for fossil-fuel energy generation. It is noted that the facility, as permitted, is designed to operate continuously (8760 hours/year) whereas power from renewable energy sources (such as solar) are generally not continuously available. DEQ’s evaluation is also limited to the emissions from the proposed facility as opposed to the emissions from part or all of the natural gas supply chain, natural gas pipelines, the natural gas industry as a whole, fracked natural gas or any other source of emissions outside the facility boundary. It should be noted that this position was confirmed by a recent court² decision regarding a similar determination for the Greenville Power Station. However, DEQ is taking steps to address GHG emissions from the natural gas industry (pipelines, compressor stations, etc.) via other regulatory mechanisms. This includes the recently established methane workgroup to develop recommendations for addressing emissions from natural gas infrastructure as well as other programs described in Appendix A of this document.

In particular, the Virginia Carbon Trading Rule (VCTR; a potential link to the multi-state Regional Greenhouse Gas Initiative) establishes a carbon emission cap and trade program for the fossil fuel fired electric generating unit source category. The State Air Pollution Control Board voted 5-2 to approve the final regulation on April 19, 2019³. Although the GHG emissions from the CPS would be

² Circuit Court for the City of Richmond: *The Virginia Chapter of the Sierra Club v. The Virginia State Air Pollution Control Board* (2017)

³ From the 2019 Acts of Assembly: Item 4-5.11 LIMITATIONS ON USE OF STATE FUNDING

subject to this rule and the associated GHG emission cap, nothing in the proposed rule prohibits the permitting or construction of new fossil-fuel fired electric generating units in general or the CPS in particular. The same is true for Executive Order 11 and Virginia's participation in U.S. Climate Alliance. In fact, the final carbon trading rule specifically includes provisions addressing the inclusion of new GHG-emitting electric generating units without increasing the GHG emission cap. In general, when new, more efficient EGU facilities are constructed (such as natural gas fired combined cycle plants), these more efficient units displace the operation of older, less efficient and more costly units.⁴ The adoption of VCTR should only reinforce this natural market-based tendency.

Specific comments on DEQ's GHG BACT are addressed later in this document (Comment #18).

4. General Health-Related Comments

Comment Summary

Several comments expressed general concern about the overall adverse impacts of pollution on human health. A few comments stated that the Virginia Department of Health indicates that, relative to other areas of Virginia, Charles City County and the surrounding region show a higher incidence than normal of asthma and chronic obstructive pulmonary disease (COPD). A few comments also referenced the proximity of the proposed facility to their residence and their concern that the plant's emissions would adversely affect health.

Response

The Federal Clean Air Act requires that EPA establish and update National Ambient Air Quality Standards (NAAQS) designed to protect human health and welfare. DEQ developed the draft permit for the CPS to ensure compliance with these health-based standards. Therefore, within the context of air quality laws and regulations, risk was evaluated by requiring the applicant to demonstrate compliance with both acute (short-term) and chronic (annual) air quality standards. For example, the NAAQS are based on air quality criteria, which are established to accurately reflect the latest scientific knowledge useful in indicating the nature and extent of identifiable effects on public health or welfare that may be expected from the presence of the pollutant in ambient air. The EPA Administrator promulgates and periodically reviews, at five-year intervals, primary (health-based) and secondary (welfare-based) NAAQS for such pollutants. Based on periodic reviews of the air quality criteria and standards, the Administrator can make revisions in the criteria and standards and promulgate any new standards as may be appropriate. The Clean Air Act also requires that an independent scientific review committee advise the EPA Administrator as part of this NAAQS review process, a function performed by the Clean Air Scientific Advisory Committee (CASAC).

Key components of the NAAQS review are the Integrated Science Assessment (ISA) and the

“Notwithstanding any other provision of the Code of Virginia, no expenditures from the general, special, or other nongeneral fund sources from any appropriation by the General Assembly shall be used to support membership or participation in the Regional Greenhouse Gas Initiative (RGGI) until such time as the General Assembly has approved such membership as evidenced by language authorizing such action in the Appropriation Act, with the exception of any expenditures required pursuant to any contract signed prior to the passage of this act by the General Assembly, nor shall any RGGI auction proceeds be used to supplement any appropriation in this act without express General Assembly approval.”

⁴ <https://www.eia.gov/todayinenergy/detail.php?id=25652>

Risk/Exposure Assessment (REA). The ISA is a comprehensive review, synthesis, and evaluation of the most policy-relevant science, including key science judgments that are important to inform the development of the risk and exposure assessments, as well as other aspects of the NAAQS review. The REA draws upon information and conclusions presented in the ISA to develop quantitative characterizations of exposures and associated risks to human health or the environment associated with recent air quality conditions and with air quality estimated to just meet the current or alternative standard(s) under consideration. This assessment includes a characterization of the uncertainties associated with such estimates.

Toxic pollutants were also evaluated as part of this permitting process. Emissions estimates of federal hazardous air pollutants (HAPs) known to result from the power station operations were provided as part of the permit application. Several of these HAPs, acrolein, beryllium, cadmium, chromium, formaldehyde, lead, mercury, and nickel, exceeded the exemption rates contained in 9VAC5-60-300, requiring BACT and an air quality analysis under Virginia's toxics rule. The Virginia air toxic pollutant regulation establishes a health-based ambient air standard for each pollutant and is intended to protect the health of the most susceptible person on both an hourly (acute) and annual (chronic) basis. The air quality analysis for the CPS demonstrates compliance with the applicable Significant Ambient Air Concentrations (SAACs).

As indicated above and in response to other comments, modeling conducted for this proposed facility predicted maximum concentrations of pollutants to which an individual might be exposed. When the predicted concentrations were compared to the individual pollutant standards, compliance was shown in each case.

See also DEQ's response to comments concerning the CPS's potential contribution to ambient ozone concentrations (Comment #5).

5. General Ozone Comments

Comment Summary

A few comments stated concerns about the impact on regional air quality and, in particular, ozone. Comments referenced the American Lung Association grading system and the fact that it gave Charles City County a "C" grade for ground-level ozone. Comments expressed concern about the combined ozone impacts of the proposed Chickahominy facility and the C4GT facility. Comments questioned the reliance on the Shirley Plantation ozone monitoring station. Specifically, comments questioned whether ozone levels in directly impacted communities closer to the proposed Chickahominy and C4GT facilities would comply with the 8-hour ozone NAAQS if both facilities were in operation.

Response

DEQ evaluated ozone impacts in accordance with EPA's Guideline on Air Quality Models (40 CFR Part 51, Appendix W). The Guideline outlines a multi-tiered approach for single source permit assessments. The tiered approach is primarily designed for major sources of air pollution subject to Prevention of Significant Deterioration (PSD) permitting.

Consistent with the January 2017 EPA document “Guidance on the Use of Models for Assessing the Impacts of Emissions from Single Sources on the Secondarily Formed Pollutants: Ozone and PM_{2.5}”, the ozone impacts were calculated using the following information:

- (1) existing ozone modeling data,
- (2) the relationship of the modeled precursor emissions and resultant ozone concentrations of that model, and
- (3) the proposed project’s precursor emissions.

Ozone concentrations were estimated for both turbine options. The draft permit contained limits for both the General Electric (GE) and Mitsubishi (MI) turbines. However, the revised draft permit removes the conditions related to the GE turbine since the applicant has selected the MI turbine option. The calculation of ozone impacts also accounted for the C4GT project, which has not been constructed and is not reflected in the existing ambient monitoring data at the Shirley Plantation. These results are presented in the table below.

Contributions to Ozone from Individual Precursor Emissions

Facility and Turbine Option	Averaging Period	NO_x Contribution (ppb)	VOC Contribution (ppb)	Total Ozone Modeled Concentration (ppb)
Chickahominy - GE	8-hour	1.48	0.01	1.49
Chickahominy - MI	8-hour	1.64	0.03	1.67
C4GT	8-hour	1.19	0.02	1.21
Total GE Option with C4GT				2.69
Total MI Option with C4GT				2.87

The current monitored ozone design value for the area is 63 parts per billion (ppb) (2016-2018). The addition of the CPS’s worst-case daily impact, combined with C4GT’s impact, will remain below the 8-hour ozone NAAQS of 70 ppb (worst case is 65.87 ppb). Furthermore, using this calculation methodology is conservative on the basis that it sums a daily maximum 8-hour ozone modeled concentration to a design value. The proposed facility’s actual impact on the design value (fourth highest ozone concentration averaged over 3 years) will be less than this calculation based on DEQ’s ozone modeling experience.

In addition, recent modeling conducted by the Ozone Transport Commission (OTC) projects continued improvements in ozone concentrations for Charles City County. The modeling results below do not include the specific impacts from the Chickahominy and C4GT projects but do include generic growth and control estimates for all source sectors, including the power sector. Power sector model inputs are obtained from the Eastern Regional Technical Advisory Committee (ERTAC) forecasting tool.⁵

Future Projected Ozone Design Values for Charles City County

2020	2023	2028
61.2 ppb	59.7 ppb	58.8 ppb

⁵ <https://www.marama.org/2013-ertac-egu-forecasting-tool-documentation>

Comments referenced the American Lung Association (ALA) grade “C” for Charles City County. As an initial matter, the most recent ALA grades for Charles City County are an “A” for “particle pollution” and a “B” for ozone⁶. The ALA’s grading system differs significantly from the methodology EPA uses to determine violations of the ozone NAAQS. DEQ and EPA determine whether a jurisdiction violates the standard based on the fourth maximum daily 8-hour ozone reading each year averaged over three years. By contrast, the ALA system is based on a weighted average for each jurisdiction. Specifically, this system assigns weighting factors for each category of the Air Quality Index (AQI) and evaluates the number of days in each category over the entire 3-year period.

Both DEQ and EPA implement the regulatory form of the ozone NAAQS which has undergone public comment and is endorsed by the Clean Air Science Advisory Committee (CASAC). EPA describes its rationale for the standard, including the form of the standard (i.e. fourth highest averaged over 3 years), in its “Integrated Review Plan for the Review of the Ozone National Ambient Air Quality Standards External Review” (EPA-452/P-18-001, October 2018).

Finally, it is important to note that both the Chickahominy and C4GT power stations would be subject to the Cross State Air Pollution Rule (CSAPR) (40 CFR 97), if constructed. The EPA promulgated the CSAPR to replace the Clean Air Interstate Rule (CAIR) and is designed to significantly improve air quality by reducing power plant emissions contributing to ozone and/or fine particle pollution. The CSAPR requires fossil fuel-fired electric generating units at coal-, gas-, and oil-fired facilities in 27 states to reduce emissions to help downwind areas attain fine particle and/or ozone NAAQS. Application of the CSAPR ensures that Virginia will continue to meet all requirements of § 110(a)(2)(D)(I)(i).

EPA sets a pollution limit (emission budget) for each of the states covered by the CSAPR. Authorizations to emit pollution, known as allowances, are allocated to affected sources based on these state emissions budgets. The rule provides flexibility to affected sources, allowing sources in each state to determine their own compliance path. This includes adding or operating control technologies, upgrading or improving controls, switching fuels, and using allowances. Sources can buy and sell allowances and bank (save) allowances for future use as long as each source holds enough allowances to account for its emissions by the end of the compliance period.

New units such as those proposed at Chickahominy and C4GT are subject to the CSAPR but did not receive allowance allocations as existing units. However, these units are eligible for a new unit set aside (NUSA) allowance allocation. NUSA allowance allocations are a batch of emissions allowances that are reserved for new units that are regulated by the CSAPR, but were not included in the final rule allocations. The NUSA allowance allocations are removed from the original pool of regional allowances and divided up amongst the new units, so as not to exceed the emissions cap set in the CSAPR.

Aside from the NUSA, these facilities must comply with the permitting, monitoring, recordkeeping, and reporting requirements set forth by the CSAPR, including the installation and certification of a continuous emission monitors.

⁶ <https://www.lung.org/our-initiatives/healthy-air/sota/city-rankings/states/virginia/charles-city.html>

6. General Shirley Plantation/Background Ambient Monitoring Data Comments

Comment Summary

Comments expressed concerns about the lack of site-specific monitoring data and the use of the Shirley Plantation monitor. One comment stated that the Shirley Plantation site is located in the opposite direction from prevailing winds relative to the Chickahominy Power Station.

Response

Cumulative NAAQS modeling requires the use of background concentrations from ambient monitoring data. These data are combined with the modeled impact from the proposed facility and other nearby sources to determine the total air quality impact. Background air quality represents contributions from natural sources, other unidentified sources near the project that are not explicitly modeled, and regional transport contributions from more distant sources (domestic and international).

A conservative aspect of this particular modeling analysis is that it incorporates nearby monitoring data collected at Shirley Plantation (approximately 8.5 miles southwest of the proposed facility and within Charles City County) to represent background air quality. These data are added to the total impact, in addition to explicitly modeling nearby sources that affect this monitoring site. As a result, the air quality impacts are often overestimated or “double-counted” as it is commonly called.

The monitor is located upwind of the facility rather than downwind of the facility as stated by one comment. The prevailing wind direction for Charles City County is from the south-southwest, which is an ideal direction for the monitor to capture transported pollution from the nearby industrialized urban area of Hopewell City.

DEQ uses its existing statewide monitoring network to develop background ambient air concentrations for modeling. These data conform to the same quality assurance and other requirements as those networks established for Prevention of Significant Deterioration (PSD) permitting purposes. Accordingly, the air quality monitoring data has sufficient completeness and undergoes appropriate data validation procedures.

Finally, the PSD regulations require that a PSD permit application contain an analysis of existing air quality for all regulated pollutants that the source has the potential to emit in significant amounts. The definition of existing air quality can be satisfied by air measurements from either a state-operated or private network, or by a pre-construction monitoring program that is specifically designed to collect data in the vicinity of the proposed source. To fulfill the pre-construction monitoring requirement for PSD without conducting on-site monitoring, a source may justify that data collected from existing monitoring sites are conservatively representative of the air quality near the proposed Project site. DEQ considers the background air quality used in this analysis to be both appropriate and conservatively representative of existing air quality in the area surrounding the proposed facility. Monitoring sites, in part, are selected based on the review of EPA-recommended criteria such as emissions data and population density. The Shirley Plantation monitor is immediately downwind of Hopewell City and is greatly influenced by its emissions. As a result, concentrations at this monitor, for establishing existing background air quality, are greater than the actual project site.

EPA COMMENTS AND RESPONSES

7. AERSURFACE Analysis- Meteorological site land use characteristics

Comment Summary

EPA requested a comparison of site characteristics between the Richmond Airport and the site of the proposed facility to ensure similarity between the two sites. EPA asked if snow cover was evaluated to ensure that continuous (monthly) snow cover was not present during the five (5) year simulation period (2012-16). EPA also questioned if land use/land cover remained relatively unchanged in the area of the proposed facility since 1992, the date of the land use files used in EPA’s modeling tool.

Response

To verify representativeness of the airport land use, AERSURFACE was applied for a single 1 kilometer (km) sector around the Richmond Airport and proposed Chickahominy Combined-Cycle Power Plant using average moisture conditions and seasonal classifications as follows:

- Jan, Feb, Dec = Late autumn after frost and harvest, or winter with no snow
- Mar, Apr = Transitional spring (partial green coverage, short annuals)
- May, Jun, Jul, Aug, Sep = Midsummer with lush vegetation
- Oct, Nov = Autumn with unharvested cropland

Results of the two AERSURFACE runs are presented in the table below. The results show that the albedo and Bowen ratio are very similar between the airport and Project site. The surface roughness is different however. Use of a lower surface roughness tends to give high modeled concentrations as the modeled plume is subject to less turbulence. Based on this analysis, the Richmond Airport can be considered representative of the Project site with respect to land use.

The analysis did consider snow cover and found that there were no months in the five years modeled (2012-2016) that had continuous snow cover on the ground for more than half the month. All months/years were considered to have no snow cover.

The land use surrounding the Richmond Airport (especially within 1 km of the anemometer) and Project site has not changed dramatically in 25 years. This would make the 1992 NLCD data used to run AERMET still reasonably representative of the area(s).

AERSURFACE Land use Comparison

Site	Annual Average Land Use		
	Albedo	Bowen	Z ₀
Richmond Airport	0.16	0.71	0.069
Chickahominy	0.15	0.49	0.190

8. Background Air Quality and Pre-Construction Monitoring

Comment Summary

EPA asked DEQ to provide the most recent PM-2.5 and ozone design values to ensure there have been no significant changes in those concentrations that could change the outcome of the NAAQS modeling analysis.

EPA also asked if the monitor values used in the analysis were “deemed complete” when the data were collected.

Response

Updated ambient air quality data was reviewed for the most recent time period available in DEQ’s annual air monitoring summary reports for 2015-2017. Table 6-15 from the PSD application was updated below to include the more recent ambient monitoring data. Comparison of the 2014-2016 data with the 2015-2017 data shows that the more recent data is equal to or lower than that used in the air quality modeling analysis for PM-2.5 and ozone. There are no issues with data capture/quality for the stations utilized below.

Monitored Background Concentrations

Pollutant	Averaging Period	Concentration		Units	Location (AQS ID)	State
		2014-2016 ⁷	2015-2017 ⁸			
PM-10	24-hour	23	23	µg/m ₃	Woodson Middle School (51-670-0010)	VA
PM-2.5	24-hour	16	14.7	µg/m ₃	Shirley Plantation (51-036-0002)	VA
PM-2.5	Annual	7.3	7.0	µg/m ₃	Shirley Plantation (51-036-0002)	VA
NO ₂	1-hour	42	38	ppb	Shirley Plantation (51-036-0002)	VA
NO ₂	Annual	5	4	ppb	Shirley Plantation (51-036-0002)	VA
CO	1-hour	1.5	1.5	ppm	Math & Science Center (51-087-0014)	VA
CO	8-hour	1.2	1.2	ppm	Math & Science Center (51-087-0014)	VA
SO ₂	1-hour	27	24	ppb	Shirley Plantation (51-036-0002)	VA
SO ₂	3-hour	33.6	33.6	ppb	Shirley Plantation (51-036-0002)	VA

⁷ http://www.deq.virginia.gov/Portals/0/DEQ/Air/AirMonitoring/Annual_Report_2016.pdf

⁸ https://www.deq.virginia.gov/Portals/0/DEQ/Air/AirMonitoring/2017_Virginia_Ambient_Air_Monitoring_Report_ADA_Compliant.docx

Pollutant	Averaging Period	Concentration		Units	Location (AQS ID)	State
SO ₂	24-hour	6.2	6.2	ppb	Shirley Plantation (51-036-0002)	VA
SO ₂	Annual	0.5	0.5	ppb	Shirley Plantation (51-036-0002)	VA
Ozone	8-hour	63 (2014-2016)	63 (2016-2018)	ppb	Shirley Plantation (51-036-0002)	VA

9. Secondary PM_{2.5} and Ozone - Approach

Comment Summary

EPA commented that the proposed facility's projected secondary PM-2.5 concentrations would represent concentrations in the immediate area of the CPS.

Response

DEQ concurs with EPA. The approach used to estimate secondary PM-2.5 from the project is based on the use of EPA photochemical grid modeling and their guidance on how to perform a Tier 1 screening analysis for secondary formation. This Tier 1 approach is designed to be conservative on multiple levels.

10. Modeling Approach

Comment Summary

EPA questioned whether the background source emissions included in the cumulative analyses represent maximum allowable/permitted hourly emission rates or if they represent actual hourly emission rates. EPA further commented that Section 8.2.2 (c) of EPA's Appendix W Guideline on Air Quality Models allows the applicant to use emission rates for nearby sources included in any cumulative analysis that reflect actual operations instead of a permitted and/or maximum allowable emission rate.

Response

The emission rates for nearby background sources included in the cumulative NAAQS and PSD increment analyses represent each facility's actual operating level as opposed to permitted and/or maximum allowable emission rates. The development of the inventory is consistent with current Appendix W modeling guidance.

11. Summary of NAAQS Analysis

Comment Summary

EPA commented that it concurred with DEQ regarding the 1-hr NO₂ simulations and the fact that emissions from the emergency generator or the emergency fire pump are not included.

EPA also commented on the peak modeled 1-hour NO₂ concentrations for the GE units and that they are almost 96% of the NAAQS during simulated cold start periods. EPA suggested that the applicant

refrain from testing its emergency generator during cold startups because it could potentially contribute to exceedances of the 1-hour NO₂ NAAQS.

Response

It is extremely unlikely that all three (3) combustion turbines will be cold started at the same time (which is how they were modeled) along with testing of the emergency generator under the meteorological conditions that were associated with the peak modeled NO₂ concentrations from the model. It is even more unlikely that this would happen more than the 7 times per year for three consecutive years as that is what it would take to cause a potential NAAQS violation. Therefore, DEQ does not agree that an additional permit condition is necessary to address this scenario.

It is important to note that the draft permit contained limits for both the GE and MI turbines. However, the revised draft permit removes the conditions related to the GE turbine since the applicant has selected the MI turbine option. The margin of compliance with the 1-hour NO₂ NAAQS for the MI turbine option is larger (28% instead of 4%) which further supports the position that a permit condition is not needed to address this unlikely scenario.

12. Summary of PSD Increment Consumption Analysis

Comment Summary

EPA questioned whether the modeling analysis included off-site source shutdown emissions, which would expand PM-10 and annual NO₂ increment consumption and (conservatively) bias the final model results.

EPA also requested clarification on whether this application triggered the PSD baseline PM-2.5 dates for Charles City County or any other surrounding counties in Virginia.

Response

The PSD increment analysis did not consider any increment expansion making the analysis conservative. DEQ appreciates EPA acknowledging the conservative aspects of the modeling analysis. This application did not trigger the PM-2.5 minor source baseline date for Charles City County or any other surrounding counties in Virginia. The PM-2.5 baseline date was previously triggered in Charles City County by another recently permitted PSD source, C4GT.

13. Ozone NAAQS Analysis Results

Comment Summary

EPA commented that the analysis used to estimate the proposed plant's (worst-case) impacts on ozone reflects local impacts since the underlying photochemical model used an approximately 12-km grid cell spacing.

Response

DEQ concurs with EPA. The approach used to estimate ozone from the project is based on use of EPA photochemical grid modeling and their guidance on how to perform a Tier 1 screening analysis for ozone. This Tier 1 approach is designed to be conservative on multiple levels and is further discussed under the Ozone Impacts section of this document.

14. Class I Area Analysis

Comment Summary

EPA acknowledged that the secondary PM-2.5 impacts used for the distant Class I areas are conservative (i.e. overestimated) because they are generally representative of values closer to the proposed source.

EPA also observed that the Class I area analysis did not account for the substantial increment expansion created by (NOX and SO2) control installations and shut downs at regional coal-fired power plants and that this could have been included if a cumulative analysis was triggered.

Response

DEQ agrees that the modeling approach most assuredly overestimates secondary PM-2.5 formation at the Class I area, adding to the conservatism of the analysis.

DEQ also concurs with EPA that the modeling did not trigger a cumulative PM-2.5 PSD increment analysis and, therefore, increment expansion that has occurred related to SO₂ and NO_x reductions was not considered. DEQ agrees that there has been significant PSD increment expansion, which is largely the result of the conversion from coal to natural gas in recent years. DEQ encourages EPA to determine an appropriate methodology to account for increment expansion. DEQ also recommends that increment expansion be evaluated using existing monitoring data as opposed to modeling shutdown facilities with negative emission rates. The modeling approach using negative emission rates for shutdown sources has a multitude of issues and should be avoided.

15. Alternate Operating Scenario Emission Accounting

Comment Summary

EPA suggests a revision to draft permit Condition #36 to explicitly state that emissions from alternate operating scenarios are included in the annual totals for the turbines.

Response

The emission limits in Condition #36 of the draft permit do include emissions from alternative operating scenarios. The revised draft permit version of this condition has been revised to further clarify this intent.

SIERRA CLUB COMMENTS AND RESPONSES

16. Tuning and Water Wash BACT

Comment Summary

Alternative emission limits for maintenance activities (tuning and on-line water washing) are not justified as BACT. If such limits are justified, DEQ should limit their duration and frequency. Similar sources do not have such limits in their permit. The source did not request alternative limits for PM, yet DEQ gave them such in the draft permit. The applicant described three different types of tuning, yet those are not included in the draft permit. The draft permit fails to require advance notification of tuning and water-washing, and the recordkeeping and reporting requirements are inadequate.

Response

Recently-issued permits in Virginia, including the Green Energy Partners/Stonewall plant, the Dominion Greensville Power Station and the C4GT Power Station have alternative numeric emission limits or work practice requirements, distinct from the “normal” operations emission limits, for maintenance activities. Since BACT limits must be achievable at all times including worst-case conditions, alternative emission limits have been justified during certain maintenance activities because these activities alter the normal operating conditions of the turbines sufficiently to impact their emission profile. The requirements in these permits are meant to restrict and minimize the duration of these activities and otherwise implement BACT for such events.

Section 5.3.4.4 of the permit application from Chickahominy Power requested limitations on the duration of each event to restrict PM emissions from maintenance activities.

The events themselves are limited in duration, which limits the short-term emissions from those events. The emissions from these activities represent the worst-case total from such an event over the averaging time allowed by the permit. Therefore, the limitation would be for the worst-case tuning event since other tuning events would not last as long and would have less emissions. On an annual basis, DEQ determined that the emissions from these activities would not differ from normal operation, i.e. a limit of 214 lb/turbine/day x 365 days is the same as 8.9 lb/hr x 8760 hr/year. However, after considering the comment, DEQ has added an annual limit of 96 hours of tuning per turbine per year to ensure that the exemption from normal short-term emission limits from tuning events will be limited on an annual basis. Also, DEQ has also removed the on-line water washing exemption from the normal short-term emission limits.

DEQ agrees that an advance notification for each tuning event would add value to the existing compliance mechanisms of the draft permit and has therefore amended Condition #10 of the revised draft permit to include such a provision. DEQ believes that the advance notice provision, in conjunction with requiring the facility to keep records of each tuning event, the duration of each event, and the emissions from each event for NO_x and CO (via the use of continuous emission monitoring systems), represents a comprehensive compliance mechanism for tuning events. These records are subject to on-going inspection by DEQ to ensure compliance with the requirements of the permit.

17. Startup and Shutdown (SU/SD) Events

Comment Summary

Emissions from startup and shutdown (SU/SD) were based on vendor data, however that vendor data was not included in the permit application. The draft permit does not contain annual limitations for the number of annual SU/SD events. The draft permit does not include reporting of SU/SD.

Response

DEQ disagrees that the permit record is insufficient to justify the proposed permit’s treatment of SU/SD events. The applicant has certified the SU/SD emission data contained in the application, and this data is consistent with data from other combined cycle power plants.

The short-term emission limits for SU/SD, along with minimizing event duration and maximizing control equipment operation to the extent possible, represent BACT for the worst-case operating

conditions expected during such events. The proposed annual emission limits for the turbines are based on a worst-case estimate of the frequency of such events in the course of a year and function as limits on the occurrence of such events. Given that the proposed facility is configured as a combined-cycle plant, the expected SU/SD frequency would be much less as the facility is highly incentivized to maximize normal operations. Since the annual emissions represent the worst-case emissions from all the possible operation of the turbines, then annual restrictions on the number of SU/SD events is not necessary.

DEQ disagrees that reporting is valuable for SU/SD events. DEQ believes that requiring the facility to keep records of each SU/SD event, the duration of each event, and the emissions from each event for NO_x and CO (via continuous emission monitoring systems) is a sufficient compliance mechanism. These records are subject to on-going inspection by DEQ to ensure compliance with the requirements of the permit. DEQ has revised the text of the conditions addressing SU/SD and tuning events (Conditions #9, #10 and #51 of the revised draft permit) in order to provide increased consistency and clarity to the excess emission reporting requirements.

18. Greenhouse Gas (GHG) BACT

Comment Summary

The lb/MWh net and Btu/kWh limits on the turbines is the same for each turbine vendor. BACT for greenhouse gasses should be the “absence of duct burning.” The draft permit should also have a lb CO_{2e}/MWh gross limit that reflects total amount of emissions due to operation of the power plant, not just operation of power to the grid. An appropriately stringent limit on pounds of CO_{2-e} per gross MWh would encourage Chickahominy Power to limit the parasitic load and would promote overall improvements in efficiency. The Dominion Greensville plant had a lower heat rate limit so Chickahominy’s heat rate limit should be at least that stringent. Dominion had a lower lb/MWh CO_{2e} limit so the CPS limit should be at least that stringent. The CPV-Towantic plant permit also includes a more stringent GHG limit (809 lb/MWh) than the draft CPS permit. Annual CO_{2e} limit reflects worst-case emissions from the plant rather than BACT.

Response

Since the applicant has now selected the MI turbine option, the GE turbine option has been removed from the revised draft permit. Thus, the “turbine vendor” part of the comment no longer applies.

DEQ disagrees that a permit condition stating BACT as “absence of duct burning” is necessary. The draft permit does not provide for the installation of duct burners, and any future proposal to install them would require a full PSD permit applicability evaluation.

A lb/MWh “gross” emission limit would not encourage efficiency; a facility’s emissions on a “gross” basis would not be impacted by its internal efficiency, whereas a “net” basis emission limit is impacted by and thus encourages such internal efficiency. Additionally, the draft permit’s “net” emission limit includes and accounts for all CO_{2e} emissions from the turbines. For these reasons, DEQ disagrees that a “gross” GHG emission limit is necessary or appropriate to establish BACT for the turbines.

With the elimination of the GE turbine option, DEQ has also lowered the heat rate and lb/MWh limits in the revised draft permit. The revised heat rate and lb/MWh limits are equal to or more stringent

than the limits in the Dominion Greensville permit as seen below.

GHG Emission Limits (lb/MWh)

Period (Years)	Dominion Greensville	Draft CPS Permit	Revised Draft CPS Permit
1-6	812	824	812
7-12	828	836	824
13-18	843	848	836
19-24	859	860	847
25-30	875	872	859
31+	890	884	871

The comment also referenced the CPV-Towantic permit and its GHG limit of 809 lb/MWh, however this limit is not comparable to the revised draft permit’s GHG limits since the CPV-Towantic emission limit is a one-time only initial-startup standard as opposed to the revised draft permit’s rolling 12-month emission limit. The proper comparison to the referenced CPV-Towantic limit in the revised draft permit is the initial heat rate limit of 6,452 Btu/kWh net output for the initial test (Condition #8 of the revised draft permit). Using standard conversions (119.12 pounds per CO_{2e} per MMBtu), this equates to 769 pounds of CO_{2e} per megawatt-hour which is more stringent than the CPV-Towantic permit.

The heat rate and lb/MWh limits, not the annual CO_{2e} mass emission limit, of the revised draft permit represent BACT for GHG emissions from the turbines.

19. Tuning and Water Wash Modeling Analysis

Comment Summary

Modeling analysis failed to account for worst-case emissions allowed for tuning and water washes.

Response

DEQ disagrees with the comment. Although these scenarios are not directly modeled, the analysis did consider the impacts related to tuning and water wash events. This is because the modeled emissions scenarios, particularly the cold start scenarios, have much higher emissions and would result in higher modeled concentrations compared to those that would occur during tuning and water washes. The draft permit contained limits for both the GE and MI turbines and the responses below address both turbine models. However, the revised draft permit removes the conditions related to the GE turbine since the applicant has selected the MI turbine option. In addition, the revised draft permit removes on-line water washing for the MI unit (the MI turbines only conduct water washes when they are shutdown). The revised draft permit limits for NO_x and CO will remain the same but remove references to online water washing.

The draft permit included a condition for the GE turbine that limits NO_x and CO emissions to 636 lbs NO_x/turbine/calendar day and 194 lbs CO/turbine/calendar day during maintenance activities, including tuning and water washing. The draft permit also included a condition for the GE turbine that limits NO_x and CO emissions to 312 lbs NO_x/turbine/event and 924 lbs CO/turbine/event during a

cold start. The GE cold start events last 66 minutes per turbine.

Both the draft permit and revised draft permit include a condition for the MI turbine that limits NO_x and CO emissions to 703 lbs NO_x/turbine/calendar day and 214 lbs CO/turbine/calendar day during maintenance activities, including tuning. Both the draft permit and revised draft permit also include a condition for the MI turbine that limits NO_x and CO emissions to 60 lbs NO_x/turbine/event and 444 lbs CO/turbine/event during a cold start. The MI turbine cold start events last 48 minutes per turbine.

The table below provides a comparison of daily-modeled emission rates associated with startup and shutdown to the emission limits associated with the daily limits for tuning and water washing. The modeling performed for startup and shutdown conditions for 1-hour NO₂ and 1-hour CO assumed that all three turbines were starting at the same time all 24 hours per day. Therefore, the total daily emissions modeled would be 24 times the cold start emission limits as shown in the table. For 8-hour CO, the modeling assumed one cold start per 8-hour period or three cold starts per day. Therefore, the total daily emissions modeled would be three times the cold start emission limits as shown in the table. The emissions comparison provided in the table below shows that the modeling already conservatively addresses the daily maintenance limits contained in the draft permit.

Comparison of Maintenance Limits vs. Cold Start Emissions

Turbine	Maintenance Limit (lbs/turbine/day)		Cold Start Hourly Limit (lbs/turbine/event)		Cold Start Daily (lbs/turbine/day)		
	NO _x	CO	NO _x	CO	NO _x ⁽¹⁾	CO ⁽¹⁾	CO 8hr ⁽²⁾
GE	636	194	312	924	7,488	22,176	2,772
MI	703	214	60	444	1,440	10,656	1,332

- (1) Modeling for 1-hour NO₂ and 1-hour CO assumed the turbine was cold starting 24 hours per day.
- (2) Modeling for 8-hour CO assumed the turbine was cold starting once in an 8-hour block or 3 times per day.

EPA modeling guidance states that “the most appropriate data to use for compliance demonstrations for the 1-hour NO₂ NAAQS are those based on emissions scenarios that are continuous enough or frequent enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations.” (U.S. Environmental Protection Agency. “Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO₂ National Ambient Air Quality Standard”, EPA Office of Air Quality Planning and Standards, Research Triangle Park, NC. March 1, 2011) Given the duration and frequency of the tuning events allowed by the revised draft permit, these events qualify as EPA described intermittent source/activities and it would thus be inappropriate to consider these events as part of a 1-hour NO₂ NAAQS demonstration.

20. Cold Start Modeling Analysis

Comment Summary

Modeling analysis failed to evaluate worst-case hourly NO_x or CO emissions allowed under the draft permit for cold starts of the GE 7HA.02 combustion turbine generators.

Response

The draft permit contained limits for both the GE and MI turbines. However, the revised draft permit removes the conditions related to the GE turbine since the applicant has selected the MI turbine option.

The startup modeling for 1-hour NO₂ and 1-hour CO uses the data provided in the application for each turbine option. For the GE turbine, the application states a cold start time of 66 minutes. During the 66-minute startup event, the total emissions of NO_x and CO are 312 and 924 lbs per turbine, respectively. To properly model the 1-hour averaging period for NO₂ and CO, the total lbs/event emission rate is scaled by the fraction of 60/66 to estimate the hourly emission rate. As an example, 312 lbs of NO_x/66 minutes would equate to 4.73 lbs/minute. At 60 minutes, this would equate to 283.64 lbs/hr (which is equivalent to the modeled emission rate in Table 6-7 of the air permit application). Finally, it is important to understand the 1-hour modeling assumes a startup for every hour of the year, which is a highly conservative assumption.

The modeling for 8-hour CO uses a similar methodology. The total 924 lbs/event/turbine of CO are modeled for the 8-hour averaging period. The 8-hour emission rate is also based on the start time of 66 minutes over the 480-minute 8-hour averaging period. This would equate to an emission rate of 924 lbs per turbine multiplied by the ratio of 66 minutes/480 minutes, or 127.05 lbs/hr/turbine. The remaining 414 minutes of the 8-hour averaging period is modeled using the turbine 100% normal operating load emission rate pro-rated based on 414 minutes/480 minutes of operation in the 8-hour averaging period. The 8-hour CO modeling assumes three startups per 24-hour period for each day in the year, which is a highly conservative assumption.

In order to further address the comment’s concerns, DEQ evaluated the impact of assuming all startup emissions for the GE turbines might occur in 60 minutes rather than 66 minutes as stated in the application. Specifically, the model was run using a NO_x emission rate of 312 lbs/hr for each of the three Chickahominy GE turbines. This assumption would increase the total concentration by 2.23 µg/m³ from the original modeling result and would remain in compliance with the 1-hour NO₂ NAAQS as illustrated in the table below. Again, the GE turbine option is not included in the revised draft permit.

60-Minute Startup Scenario Modeling Results – GE Units

Cold Start Modeling Scenario	Total Concentration (µg/m ³)	NAAQS (µg/m ³)
GE	182.46	188

DEQ, therefore, disagrees with the comment’s assertion that the startup modeling for the draft permit did not address worst-case hourly NO_x or CO emissions for the GE units. However, the GE turbine option has been removed from the revised draft permit, which should ultimately alleviate the comment’s concerns.

21. Background NO₂ concentrations

Comment Summary

The background 1-hr NO₂ concentrations used in the 1-hr NO₂ NAAQS modeling have not been justified. The use of a proper background 1-hour NO₂ concentration is extremely important given how close the modeling of the Chickahominy plant when equipped with GE 7HA.02 turbines is to the 1-hour NO₂ NAAQS.

Response

The approach used by DEQ to pair the modeled concentrations with the monitored concentrations is consistent with EPA guidance. Specifically, the ambient background utilized for the 1-hour NO₂ NAAQS modeling is developed using EPA prescribed methodology as described in the EPA March 1, 2011 guidance “Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO₂, National Ambient Air Quality Standard.” The 1-hour NO₂ NAAQS modeling utilized the season and hour of day varying background concentration option in AERMOD to combine the modeled and monitored concentrations. In the March 1, 2011 guidance, EPA indicates the appropriateness of this approach and provides specific guidance in developing this data set on page 19 (last paragraph). EPA’s approach outlines a procedure on how to calculate a design concentration based on the form of the 1-hour NO₂ NAAQS for each season and hour of day combination based on the available data. This matrix of design concentrations is then input to AERMOD and used to calculate the total concentration (model plus ambient background) for then comparing to the NAAQS.

The Shirley Plantation monitor ((75-B) Charles City Co.) was selected for this analysis based on its proximity to the proposed project and the overall positive bias relative to existing air quality at the project site. Specifically, the Shirley Plantation monitor is conservatively representative because the monitor is located closer to an industrialized area with higher emissions when compared to the project site and captures those impacts.

Both Chapter 4 of the modeling protocol (November 2018) and Section 6.8 of the air permit application (January 2019 (Revision 3)), provide the basis for monitor selection and are already part of the record. The underlying monitoring data and the calculation methodology are also contained in the modeling archive and are included in the project record.

Lastly, it is important to note that the GE turbine option has been removed from the revised draft permit, and this issue therefore becomes ultimately irrelevant. The MI turbine option demonstrates compliance with both the season and hour of day varying background concentration and the use of the 1-hr NO₂ design value (38 ppb or 71.44 µg/m³) for each hour of the year as suggested by the comment. The table below illustrates this fact. DEQ supports the use of season and hour of day varying background, as was implemented in the original modeling. The assumption of a design value for each hour of the year is needlessly conservative in this case.

1-Hour NO₂ NAAQS Modeling - MI Turbines

Background Calculation Method	Total Modeled Concentration (µg/m ³)	Ambient Background Concentration (µg/m ³)	Total Concentration (µg/m ³)	NAAQS (µg/m ³)
Season, Hour of Day	98.13	36.44	134.57	188
Design Value	98.13	71.44	169.57	188

22. Cumulative NO₂ Modeling

Comment Summary

The cumulative NO₂ modeling is flawed because Chickahominy Power failed to model allowable NO_x emissions from the proposed Charles City Combined Cycle (C4GT) Power Plant

Response

The recently permitted C4GT power plant was included in the nearby source inventory that was input to the air quality model. The modeling performed to assess compliance with the 1-hour NO₂ NAAQS for the proposed project did evaluate the proposed C4GT plant at its proper 100% full load emission rate. Specifically, the emissions modeled are 3.67786 g/s (29.19 lbs./hr). This rate is contained in the C4GT application and in the underlying DEQ engineering analysis for this project. The NO_x emission rate for both turbine options is identical.

The comment’s calculation of the NO_x emission rate used in the modeling of 24.13998 lbs./hr seems to be erroneous. The comment also calculated NO_x emission rates of 29.24223 and 30.35075 lbs/hr/turbine, respectively for the GE and Siemens turbines proposed at C4GT. These are close, but not identical to, the rates used in the modeling and calculated by DEQ in its engineering analysis. The differences, however, are insignificant with respect to NAAQS compliance.

The comment contends that 1-hour NO₂ NAAQS modeling should have been performed assuming that both Chickahominy and C4GT are undergoing cold start operations at the same time. This is a highly unlikely event and most certainly is considered an intermittent activity not subject to modeling. EPA specifically addresses how these intermittent operating scenarios should be addressed in its March 1, 2011 guidance “Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO₂, National Ambient Air Quality Standard.”

Specifically, the EPA guidance states the following:

... “Given the implications of the probabilistic form of the 1-hour NO₂ 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. As a result, we feel that it would be inappropriate to implement the 1-hour NO₂ standard in such a manner and recommend that compliance demonstrations for the 1-hour NO₂ NAAQS be based on emission scenarios that can logically be assumed to be relatively continuous or which occur frequently enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations. EPA believes that existing modeling guidelines provide sufficient discretion for reviewing authorities to exclude certain types of intermittent emissions from compliance demonstrations for the 1-hour NO₂

standard under these circumstances.

EPA’s Guideline on Air Quality Models provides recommendations regarding air quality modeling techniques that should be applied in preparation or review of PSD permit applications and serves as a “common measure of acceptable technical analysis when supported by sound scientific judgment.” 40 C.F.R. Part 51, Appendix W, section 1.0.a. While the guidance establishes principles that may be controlling in certain circumstances, the guideline is not “a strict modeling ‘cookbook’” so that, as the guideline notes, “case-by-case analysis and judgment are frequently required.” Section 1.0.c. In particular, with respect to emissions input data, section 8.0.a. of Appendix W establishes the general principle that “the most appropriate data available should always be selected for use in modeling analyses,” and emphasizes the importance of “the exercise of professional judgement by the appropriate reviewing authority” in determining which nearby sources should be included in the model emission inventory. Section 8.2.3.b.

For the reasons discussed above, EPA believes the most appropriate data to use for compliance demonstrations for the 1-hour NO₂ NAAQS are those based on emissions scenarios that are continuous enough or frequent enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations. Section 8.1.1.b of the guideline also provides that “[t]he appropriate reviewing authority should be consulted to determine appropriate source definitions and for guidance concerning the determination of emissions from and techniques for modeling various source types.” When EPA is the reviewing authority for a permit, for the reasons described above, we will consider it acceptable to limit the emission scenarios included in the modeling compliance demonstration for the 1-hour NO₂ NAAQS to those emissions that are continuous enough or frequent enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations. Consistent with this rationale, the language in Section 8.2.3.d of Appendix W states that “[i]t is appropriate to model nearby sources only during those times when they, by their nature, operate at the same time as the primary source(s) being modeled.” While we recognize that these intermittent emission sources could operate at the same time as the primary source(s), the discussion above highlights the additional level of conservatism in the modeled impacts inherent in an assumption that they do in fact operate simultaneously and continuously with the primary source(s).

The rationale regarding treatment of intermittent emissions applies for both project emissions and any nearby or other background sources included in the modeling analysis.” ...

EPA’s 2011 guidance contends that if it were the reviewing authority, the modeling for 1-hour NO₂ NAAQS compliance would be limited to those emissions that are continuous enough or frequent enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations. Given the high unlikelihood of both C4GT and Chickahominy undergoing a simultaneous cold start, DEQ concurs that this event is not required to be modeled as part of the 1-hour NO₂ NAAQS assessment.

The assertion regarding the modeling of water washing and tuning is addressed, in part, under the response “Modeling of Water Washing and Tuning.” (Comment #19) Modeling of the cold start scenario 24 hours per day for the entire year clearly results in greater emissions and subsequent air quality impacts when compared to the daily water washing and tuning limits included in either the Chickahominy or C4GT permits.

DEQ is providing additional technical information to address the comment’s concerns. Specifically, AERMOD was run using an assumption that both of the C4GT turbines were in cold start mode simultaneously with the Chickahominy units. The results of this analysis continue to illustrate that, even under these very conservative and unlikely conditions, the proposed facility remains in compliance with the 1-hour NO₂ NAAQS as summarized in the table below. In fact, there was no change in the maximum impact for either turbine option because the stack plumes from the two facilities do not interact at the maximum impact receptor.

Simultaneous Cold Start Modeling Results

Cold Start Modeling Scenario	Total Concentration (µg/m ³)	NAAQS (µg/m ³)
GE	180.23	188
MI	134.57	188

In summary, the original analyses performed in support of the draft permit is appropriate, consistent with EPA guidance, and protective of air quality.

OTHER SPECIFIC COMMENTS

23. Low Load Operations

Comment Summary

One comment states that regarding natural gas-fired combined cycle power plants are only 60% efficient, at most. At low loads, CO and PM10 emissions may be higher. DEQ must assess the impacts of operating factors. BACT for criteria pollutants and MACT for hazardous air pollutants are the standards required for the Chickahominy Power plant

Response

DEQ did consider low load operation of the combustion turbines in its evaluation (see engineering analysis) of BACT for the proposed facility under worst-case conditions. Other than startup, shutdown and tuning, the BACT control equipment requirements and emission limits apply at all times (including low load operations). There are no MACT standards for an area source of hazardous air pollutants from a natural-gas power plant. Toxic pollutant emission limits in the draft permit are based on Virginia’s toxic pollutant regulations (9VAC5 Chapter 60 Article 5).

24. Study Area Radius

Comment Summary

One comment raised concerns regarding the size of the modeling area and requested that the study area extend 5-7 miles in order to determine impacts on their subdivision

Response

The air quality analyses were conducted in accordance with Virginia and federal permitting

regulations and guidance in order to assess compliance of projected emissions from the proposed facility with all applicable NAAQS, PSD increments, and SAAC. The modeling analyses used a dense receptor grid extended to 20 kilometers (12.4 miles) from the proposed facility. The results of the modeling analyses indicate all modeled concentrations outside of the facility boundary will be below the applicable NAAQS, PSD increments, and SAAC. The highest modeled concentrations are located on or near the facility's property line (i.e., generally within approximately 1 kilometer or less). Pollutants disperse downwind beyond this immediate area and will not cause or contribute to any violations of air quality standards. In addition, all surrounding counties are currently in attainment with applicable air quality standards.

In addition, local and regional air quality impacts for ozone were evaluated and are addressed elsewhere in this document (Comment #5).

25. Particulate Matter Continuous Emission Monitoring System (CEMS)

Comment Summary

One comment stated that DEQ should require a particulate matter CEMS

Response

The draft permit requires CEMS for carbon monoxide (CO) and Nitrogen Oxides (NO_x) from the combustion turbines to determine compliance with the draft permit's CO and NO_x emission limits. Compliance with the CO and NO_x emission limits will also provide assurance that the combustion turbines are being operated consistent with good operating practices and therefore provide an indirect indication of particulate matter emissions (natural gas-fired combustion equipment operating with good operating practices have low particulate matter emissions; see DEQ's engineering analysis). Additionally, the draft permit requires the permittee to monitor the quantity of fuel combusted and the fuel sulfur content, to periodically conduct performance tests for PM and VOC and to maintain records of all emission data. The permittee must report all emission data to DEQ each year and is subject to inspection by DEQ for all aspects of compliance with their permit. In any case, a significant fraction of the particulate matter (PM-10 and PM-2.5) emitted from the combustion turbines will be condensable PM which is not measured by existing PM CEMS technology. The draft permit's existing monitoring requirements will ensure compliance with the draft permit's PM emission limits and DEQ disagrees that a PM CEMS should be required.

26. "Good Neighbor" Concerns

Comment Summary

One comment stated that Virginia should be a "good neighbor" regardless of EPA's current posture and also referenced the air pollution control requirements imposed on Dominion in 2003. Fracked gas powered plant releases methane, a powerful GHG. Renewables are more cost-effective. Power demand is flat.

Response

See Comments/Responses #1 and #3 as well as the 2003 Clean Air Act Settlement and Good Neighbor Requirements discussions below. The Good Neighbor requirements are not directly applicable to PSD permits, but the discussions may address the comment's concerns.

Dominion Virginia Energy/VEPCO 2003 Clean Air Act Settlement

In 2003, EPA and the Department of Justice published a settlement with VEPCO, now called Dominion Virginia Energy (Dominion), that required Dominion to reduce air emissions from several facilities through the use of control equipment, fuel switching, and unit closures. The Commonwealth of Virginia was a party to the settlement. The settlement stemmed from allegations that Dominion circumvented Prevention of Significant Deterioration New Source Review permitting requirements. This settlement continues today to provide federally enforceable limitations on facilities such as Chesterfield Power Station in Virginia. Violations noted on the EPA website concerning the settlement make no mention of a good neighbor air policy.⁹ Therefore, the context of the comment's statement regarding the proposed Chickahominy facility is unclear, and DEQ disagrees that the Dominion Virginia Energy/VEPCO settlement in any way affects the issuance of the draft permit.

Good Neighbor Requirements under the Clean Air Act

The Clean Air Act (CAA), under § 110(a)(2)(D)(i)(I) requires each state to submit to EPA new or revised state implementation plans (SIPs) that "contains adequate provisions ... prohibiting, consistent with the provisions of this subchapter, any source or other type of emissions activity within the state from emitting any air pollutant in amounts which will ... contribute significantly to nonattainment in, or interfere with maintenance by, another state with respect to any such national primary or secondary ambient air quality standard." EPA often refers to this section as the good neighbor provisions and to SIP revisions addressing this requirement as good neighbor SIPs.

Under this section of the CAA, EPA has developed and Virginia has participated in several important control programs. The NO_x Budget Trading Program (NBTP) regulated nitrogen oxides (NO_x) emissions from fossil fuel fired power plants and large industrial fossil fuel fired boilers to address good neighbor provisions for the 1990 ozone NAAQS, set at 0.12 parts per million (ppm) ozone over a one-hour average. The Clean Air Interstate Rule (CAIR) regulated NO_x and sulfur dioxide (SO₂) emissions from fossil fuel fired power plants to address the 1997 ozone NAAQS, set at 0.08 ppm over an eight-hour average, and the 1997 fine particulate (PM-2.5) NAAQS, set at 35 µg/m³ on a 24-hour average and 15.0 µg/m³ on an annual average. The Cross State Air Pollution Rule (CSAPR) further regulated NO_x and SO₂ emissions to address the 2006 PM-2.5 NAAQS, set at 35 µg/m³ on a 24-hour average and 12.0 µg/m³ on an annual average. The Cross State Air Pollution Rule Update (CSAPR Update) reduced NO_x emissions from fossil fuel fired power plants to address the 2008 ozone NAAQS, set at 0.075 ppm over an eight-hour average. The CSAPR Update noted that at the time of promulgation EPA considered the rule only a partial remedy addressing emissions from the power sector.

On August 21, 2012, in the EME Homer City decision, the U.S. Court of Appeals for the D.C. Circuit found that a state was not required to submit a SIP pursuant to § 110(a)(2)(D)(i)(I) until EPA defined a state's contribution to nonattainment or interference with maintenance in another state. However, on April 29, 2014, the Supreme Court of the United States reversed the EME Homer City decision and found that the CAA does not require EPA to quantify a state's obligation under that section before states are required to submit such SIPs. On July 13, 2015, EPA published Findings of Failure to Submit a Section 110 State Implementation Plan for Interstate Transport for the 2008 National Ambient Air Quality Standards for Ozone (80 FR 39961). This document determined that 24 states,

⁹ <https://www.epa.gov/enforcement/virginia-electric-and-power-company-vepco-clean-air-act-caa-settlement#violations>

including Virginia, failed to submit SIPs satisfying the requirements §110(a)(2)(D)(i)(I). These findings of failure to submit established a 24-month deadline for EPA to promulgate a federal implementation plan (FIP) to address the interstate transport SIP requirements pertaining to significant contribution to nonattainment and interference with maintenance, unless, prior to EPA promulgating a FIP, the state submits, and EPA approves, a SIP that meets these requirements. The Commonwealth of Virginia submitted a final SIP revision addressing the other emissions sectors on August 27, 2018. Virginia has, therefore, fully met all CAA requirements regarding the 2008 ozone NAAQS and the good neighbor provisions.

Virginia is currently examining the existing modeling and guidance documents regarding the 2015 ozone NAAQS good neighbor provisions and will be developing a SIP revision to address these requirements.

Important to note is that Virginia's emissions of ozone precursors are decreasing. EPA's NEI data¹⁰ show that between 2008 and 2014, anthropogenic emissions of volatile organic compounds (VOCs) have decreased from 341,000 tons per year (tpy) to 273,381 tpy and anthropogenic emissions of NO_x have decreased from 376,293 tpy to 283,750 tpy. EPA has not yet released preliminary NEI data for 2017. However, the decreasing trend is expected to continue due to the application of significant federal and state control programs as well as technological advances and other changes.

One emissions sector where the emissions decreases are especially prominent is the electrical generating sector. Large, fossil fuel fired electrical generating units (EGUs) must report emissions quarterly to EPA's Clean Air Markets Division (CAMD).¹¹ Between 2003 and 2017, NO_x emissions reported to CAMD from Virginia facilities dropped from 77,912 tpy to 16,545 tpy. During that same period, SO₂ emissions reported to CAMD from Virginia facilities dropped from 215,740 tpy to 5,791 tpy. These reductions occurred even though measured gross load in megawatt-hours increased during that period by approximately 24%. These NO_x and SO₂ emissions decreases are due to a number of control programs including those mentioned above (NBTP, CAIR, CSAPR, and CSAPR Update) as well as the construction and operation of new, low-emitting units that replaced older, inefficient units in the EGU fleet. Plants such as the proposed Chickahominy facility are not only cleaner than older EGUs, they are more efficient and economical to run and may supplant energy created by older, less efficient units, further reducing emissions from this sector.

DEQ, therefore, disagrees with the assertion that the draft permit will impede Virginia from meeting its good neighbor requirements under § 110(a)(2)(D)(i)(I) of the CAA.

27. General Electric (GE) Turbines should be BACT

Comment Summary

One comment stated that, with the understanding that the facility has chosen to construct the MI turbines, the MI turbines emit more pollutants than the GE turbines on an annual basis so the MI turbines are not BACT.

¹⁰ <https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei>

¹¹ <https://www.epa.gov/airmarkets>

Response

The selection of one turbine model over another would historically be considered “re-defining” the proposed source in the context of the PSD permitting program and would therefore not be a consideration in a PSD BACT analysis. Also, annual emission limits are not typically used to establish BACT in PSD permits. Instead, as is the case for the draft permit, short-term emission limits are used to implement BACT in PSD permits. It should be noted that the short-term emission limits (representing BACT) are identical for the two turbine options for most pollutants (including VOC) during normal operations. One notable exception is that the short-term emission limits for PM, PM10 and PM2.5 are lower (0.0052 pound per million BTU vs. 0.0069 pounds per million BTU) for the MI turbine option than for the GE turbine option. For SU/SD events, the proposed permit also establishes short-term (pound per event) emission limits, as well as limiting the duration of such events and requiring the operation of the “normal operations” control mechanisms as technologically feasible to minimize emissions. While the short-term VOC SU/SD emissions for the MI turbine option are greater than the GE turbine option (resulting in the greater annual emissions limit noted by the comment), the short-term NOx and CO SU/SD emissions for the MI turbine option are lower than the GE turbine option. The lower SU/SD NOx emissions associated with the MI turbine result in a significantly lower cumulative NO₂ ambient concentration for the project (see Comments #22 and #28). With the elimination of GE turbine option, DEQ also imposed a more stringent GHG BACT (lb/MWh) limit (See Comment #18). For these reasons, DEQ does not agree that the proposed emission limits for the MI turbine option do not reflect BACT.

28. Post-Construction Ambient Monitoring

Comment Summary

One comment stated that DEQ should require additional post-construction ambient monitoring since the existing ambient monitoring network is not sited downwind of the proposed CPS (and the previously permitted C4GT project).

Response

DEQ has removed the GE turbine option from the draft permit, and none of the modelled impacts from the CPS are within 28% of an applicable NAAQS (see DEQ’s engineering analysis and modeling report and as excerpted below). Given the conservative nature of the air quality analysis, DEQ as therefore determined that post-construction ambient monitoring is not necessary.

**NAAQS Modeling - Cumulative Impact Results
 MI Turbines**

Pollutant	Averaging Period	Total Modeled Concentration (µg/m ³)	Ambient Background Concentration (µg/m ³)	Total Concentration (µg/m ³)	NAAQS (µg/m ³)
NO ₂	1-hour	134.57	-- ⁽¹⁾	134.57	188
NO ₂	Annual	3.63	9.4	13.03	100
PM-10	24-hour	5.30	23	28.30	150

Pollutant	Averaging Period	Total Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Ambient Background Concentration ($\mu\text{g}/\text{m}^3$)	Total Concentration ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)
PM-2.5	24-hour	3.60	16	19.60	35
PM-2.5	Annual	0.65	7.3	7.95	12

⁽¹⁾ Season and hour of day varying

29. Cumulative Modeling – Existing Landfill

Comment Summary

Some comments raised the issue of the nearby BFI Waste Systems - Charles City Road Landfill (CCRL) and the cumulative impacts of the CPS with the landfill.

Response

The emissions from the existing CCRL were included in the cumulative air quality analyses described in the response to Comment #22 above. In addition to NO_2 , this was also the case for the cumulative analyses for the other NAAQS pollutants. As previously discussed, there are no modelled impacts that exceed an applicable air quality standard.

APPENDIX A

VIRGINIA GREENHOUSE GAS MITIGATION ACTIONS

Carbon Trading Rule – Starting with Governor McAuliffe and continuing with Governor Northam, the Commonwealth has developed a proposed power sector carbon trading rule that would allow Virginia to link to other existing regional trading programs such as the Regional Greenhouse Gas Initiative (RGGI). The Virginia State Air Pollution Control Board voted 5-2 on April 19, 2019 to approve a revised version of the rule¹². The revised rule establishes a lower initial year emissions budget in 2020 of 28 million tons.

Clean Power Legislation – As part of the comprehensive Grid Transformation and Security Act of 2018 (GTSA), legislation from the 2018 General Assembly session that Governor Northam supported and signed, a significant commitment and investment in clean renewable energy generation and energy efficiency has established to be implemented over the next ten years. First there is a commitment to up to 5,000 megawatts of renewable energy to be implemented by the state’s publically regulated utilities. In addition, these utilities will invest about \$1 billion dollars in energy efficiency projects. These commitments have now been included in the updated 2018 Virginia Energy Plan.

Electric Vehicle Charging Infrastructure – Virginia has been certified as formal beneficiary under the Volkswagen mitigation settlement under which the Commonwealth will receive \$93 million dollars to distribute to various mitigation projects. As part of the overall mitigation plan, Virginia has completed a request for proposal (RFP) for installing a statewide electric vehicle charging infrastructure for \$14 million dollars and awarded a contract to EVGo to develop the charging network.

Electric Transit buses – Also under the Volkswagen mitigation settlement trust, Governor Northam recently announced that the Commonwealth will invest another \$14 million dollars to fund the deployment of all-electric transit buses in Virginia. This program will provide funding through a new Clean Transportation Voucher Program to replace heavy and medium-duty polluting vehicles with cleaner vehicles.

Renewable Permitting – DEQ has developed regulations for the construction and operation of renewable energy projects of 150 MW or less, and has, as of May 1, 2019, issued at least 34 permits for more than 1,114 MW of solar and wind power.

¹² From the 2019 Acts of Assembly: Item 4-5.11 LIMITATIONS ON USE OF STATE FUNDING

“Notwithstanding any other provision of the Code of Virginia, no expenditures from the general, special, or other nongeneral fund sources from any appropriation by the General Assembly shall be used to support membership or participation in the Regional Greenhouse Gas Initiative (RGGI) until such time as the General Assembly has approved such membership as evidenced by language authorizing such action in the Appropriation Act, with the exception of any expenditures required pursuant to any contract signed prior to the passage of this act by the General Assembly, nor shall any RGGI auction proceeds be used to supplement any appropriation in this act without express General Assembly approval.”

TCI – Virginia has officially joined the Transportation and Climate Initiative to work collaboratively with Northeast and Mid-Atlantic states on reducing carbon pollution from the transportation sector. The transportation sector is the largest emitter of greenhouse gases in Virginia.

Workgroup for Methane Leakage from Natural Gas Infrastructure – At the direction of the Governor, DEQ has established an ad hoc work group to advise and assist DEQ in the development of a framework for limiting methane leakage from natural gas infrastructure. The group will support DEQ in its collection and evaluation of data to inform any future regulation development process.

Workgroup for Methane Leakage from Landfills – At the direction of the Governor, DEQ will be establishing an ad hoc work group to develop a framework for limiting methane leakage from landfills.