



CHESAPEAKE BAY FOUNDATION  
*Saving a National Treasure*

September 21, 2018

**OFFICERS**

Harry T. Lester  
CHAIR

Jane P. Batten  
VICE CHAIR

Carolyn Groobey  
VICE CHAIR

William C. Baker  
PRESIDENT

Alan R. Griffith  
TREASURER

William A. Agee  
SECRETARY

**TRUSTEES**

R. Bruce Bradley

George L. Bunting Jr.

W. Russell G. Byers Jr.

D. Keith Campbell

Michael J. Chiaramonte

Thomas M. Davis III

Robert S. Evans

Harry S. Gruner

Ann Fritz Hackett

Michael J. Hanley

Christian Hodges

Jeanne Trimble Hoffman

Mark J. Hourigan

Otis S. Jones

Robert A. Kinsley II

Burks B. Lapham

Katie Z. Leavy

Pamela B. Murphy

Devan B. Ogburn

Elizabeth Oliver-Farrow

Mark S. Ordan

Arnold I. Richman

J. Sedwick Sollers III

Sandra E. Taylor

Susan P. Wilmerding

Peter L. Woicke

**HONORARY  
TRUSTEES**

Donald F. Boesch, Ph.D.

Louisa C. Duemling

Richard L. Franyo

Alan R. Griffith

C. A. Porter Hopkins

Robert A. Kinsley

T. Gaylon Layfield III

Byron F. Marchant

M. Lee Marston

Wayne A. Mills

Marie W. Ridder

James E. Rogers

Truman T. Semans

Simon Sidamon-Eristoff

Jennifer Stanley

Thomas H. Stoner

Bishop Eugene Taylor Sutton

Alan L. Wurtzel

Robert Langford, Chair  
Members of the Virginia State Air Board

David C. Paylor, Director  
Virginia Department of Environmental Quality  
1111 East Main Street  
Richmond, VA 23219

Virginia Department of Environmental Quality  
Piedmont Regional Office  
4949-A Cox Rd  
Glen Allen, VA 23060  
Emailed to: [airdivision1@deq.virginia.gov](mailto:airdivision1@deq.virginia.gov)

**Re: Proposed New Source Permit for Atlantic Coast Pipeline, LLC to Construct and Operate a Natural Gas Compressor Station (Registration Number: 21599) located at 5297 S James River Hwy, Wingina, Buckingham County, VA 24599**

Dear Chairman Langford, Members of the Board, and Director Paylor:

On behalf of Chesapeake Bay Foundation (CBF), please accept the following comments on the proposed permit. CBF opposes issuance of the permit because:

- Approval of the proposed air permit will harm air quality and public health in violation of the state constitution and the duties of the Board;
- There is no need for a compressor station of the proposed size;
- The terms of the proposed permit are insufficient to protect human health, the environment, and public safety;
- Issuance of the permit would violate the state's obligation to protect its citizens from discrimination;
- The proposed facility will deposit a new, unmitigated load of nitrogen to the Chesapeake Bay in violation of the Bay Total Maximum Daily Load and the State's Watershed Implementation Plan; and
- The permit will allow a new source to emit greenhouse gas pollution into the atmosphere and further contribute to climate change and sea level rise.

The facts and the law supporting our opposition to the proposed permit are discussed below. Appended to these comments are the findings of Ranajit Sahu, Andrew Gray, and Dr. George Thurston. These men are experts in their respective fields of engineering, air pollution modeling and air pollution related health impacts. All three have appeared as expert witnesses on behalf of the United States in litigation against the owners of coal fired electric generating units that violated the federal Clean Air Act such as Dominion, Duke Energy, and subsidiaries of the Southern Company, the owners of the Atlantic Coast Pipeline.<sup>1</sup>

In addition to these comments, we adopt the comments submitted by the Southern Environmental Law Center in this matter.

I. The Board is Legally Obligated to Protect the Resources of the Commonwealth and Human Health

In addition to upholding the provisions of the state's clean air laws and regulations, the Board must uphold the terms of Article XI, Section 1 of the Constitution of Virginia which states:

To the end that the people have clean air, pure water, and the use and enjoyment for recreation of adequate public lands, waters, and other natural resources, it shall be the policy of the Commonwealth to **conserve**, develop, and utilize its natural resources, its public lands, and its historical sites and buildings. Further, it shall be the Commonwealth's policy to **protect its atmosphere**, lands, and waters from pollution, impairment, or destruction, for the benefit, enjoyment, and **general welfare of the people of the Commonwealth**.

(emphasis added.).

Governor Northam in his Executive Order Six (2018), acknowledged this constitutional responsibility and stressed the critical role DEQ, and hence this Board, play in protecting Virginia's air, water, and public health. He specifically noted that "many Virginians, particularly those in ... rural low income or minority communities, do not enjoy clean air and water for outdoor recreation and daily activities." Governor Northam acknowledged that "many Virginian's suffer from asthma attacks and other respiratory ailments that are directly attributable to poor air quality." He noted further that "[s]cience also shows that carbon pollution and climate change are exacerbating these problems." The Governor recognized the need for "[r]obust monitoring and verification coupled with strong, consistent, and uniform enforcement of our air ... statutes ...." and directed DEQ to undertake a review of its programs to ensure "that DEQ's permitting

---

<sup>1</sup> <https://www.nytimes.com/2003/04/19/us/utility-to-spend-1.2-billion-to-cut-emissions.html>; <https://www.epa.gov/enforcement/dominion-energy-inc>; <https://www.epa.gov/enforcement/duke-energy-corporation-clean-air-act-caa-settlement>; <https://www.epa.gov/enforcement/alabama-power-company-clean-air-act-settlement>.

programs are as protective of public health and the environment as authorized under state and/or federal law....” DEQ was also directed to assess “the enforceability of permitting activity and determining if changes are needed in the methods DEQ uses in crafting such permits.” As appointees of the Governor, the members of this Board are duty bound to consider the Governor’s findings and directives when acting on behalf of the Commonwealth.

Moreover, the Board is legally obligated when approving permits to consider facts and circumstances relevant to the reasonableness of the activity involved and the regulations proposed to control it, including:

1. The character and degree of injury to, or interference with, safety, health, or the reasonable use of property which is caused or threatened to be caused;
2. The social and economic value of the activity involved; and
3. The suitability of the activity to the area in which it is located....

Code of VA, Section 10.1-1307(E). Thus, if the air regulations governing the proposed compressor station do not adequately control its emissions, the Board must deny the permit.

As explained below, approval of the proposed compressor station permit will not conserve the natural resources of the Commonwealth nor protect its atmosphere or lands from pollution, impairment and destruction. Moreover, the station will injure public health, risk the safety of neighboring landowners, and interfere with the reasonable use of property owned by neighboring citizens. The social and economic value of the compressor station is offset by the harm it will cause to human health, reasonable property use, and the environment. Further, the location of the proposed compressor station is not suitable to the rural, agricultural nature of Buckingham County. Thus, the Board has the authority to deny the air permit regardless of whether emissions from the station will comply with National Ambient Air Quality Standards.

## II. The Proposed Permit Lacks Factual Support and Suffers from Technical Deficiencies

Ranajit Sahu has reviewed the terms of the proposed permit and has found them deficient in several respects. His complete findings are discussed in his report, Exhibit A. A summary of his findings follows:

1. The permit application has not explained why a compressor station of this size is needed. No contracts for gas pumped from Buckingham are identified. There is no need for a new natural gas supply in Virginia. Dominion has said it will not construct any new natural gas fired electric generating plants in Virginia and it has not identified any new demand for natural gas in Chesapeake, Virginia, where the eastern lateral pipeline will run after leaving the compressor station. To ensure that this compressor station is needed in the size permitted, the Air Board should require Dominion to identify the specific industries it intends to supply with gas to, the volume of gas it will distribute

each year, and affirmatively state that it does not intend to export gas as it is doing at its Cove Point, facility in Maryland.<sup>2</sup>

2. In addition, Dominion has given conflicting reports as to how much pressure is needed to move gas through the pipe. The Final Environmental Impact Statement (FEIS) for the pipeline states that the line pressure will be 1440 psig or approximately 1454.7 psia. Yet the emissions calculations supporting the air permit use both 1400 and 1200 psig. Both the FEIS and the permit calculations cannot be correct. If, in fact, the permit calculations, which use the 1200 psig value, are correct, that means that the “Final” EIS is wrong. The line pressure dictates the size of the compressor stations, including the Buckingham station as well as the two others supporting the pipeline. The conflicting line pressure values given in the EIS and the permit application do not provide confidence in the design of the compressor station or justify the size of the compressor station as proposed.

3. The need for placing the proposed station along the existing Transco gas pipeline (Buckingham is already bisected by a natural gas line owned by Transco)<sup>3</sup> is not fully explained. Given the air, land and noise impacts the facility will have, the application should explain why the facility must be placed in close proximity to existing homes like the Laury’s.<sup>4</sup> Exhibit B.

4. The air pollution models used by Dominion and DEQ consider the size of the compressor turbines to determine the amount of pollutants they will emit and where those pollutants will travel. To accurately run the model, one needs to know the exact size of the turbines to estimate the amount of combustion byproducts emitted by each turbine. However, while the draft permit identifies the size of the turbines, that is not an enforceable term of the proposed permit. The draft permit states: “Specifications included in the above tables [on page 5 of the Draft permit] are for informational purposes only and do not form enforceable terms or conditions of the permit.”<sup>5</sup> Thus, Dominion is free to alter the size of the turbines at any time and thereby alter the amount of pollution it emits making modelling results inaccurate.

5. The permit contains unenforceable terms. The terms “good air pollution control practices for minimizing emissions,” “maximum extent possible,” “manufacturer’s written protocol,” and “best engineering practices for minimizing emissions” are not defined in the permit. Process Requirement 4, Emission Controls. While some of these terms may be found in the manufacturer’s promotional materials, those documents are not part of the proposed permit and are not enforceable. Application of these terms is left to the discretion of Dominion, not DEQ or citizens who may seek to enforce the terms of the permit in the future. Given their importance to insuring that

---

<sup>2</sup> <https://www.reuters.com/article/us-dominion-cove-point-lng/dominion-maryland-cove-point-lng-facility-exports-first-cargo-idUSKCN1GE1SM>

<sup>3</sup> Exhibit C, Virginia Places, Natural Gas Pipelines in Virginia maps of existing pipelines.

<sup>4</sup> See public comments of Ruthie and John Laury, September 12, 2018 public hearing video <https://www.youtube.com/watch?v=jc-pNspQsI> at 31:21- 37:33.

<sup>5</sup> Draft Permit, p. 6.

pollution emission levels remain low, they must be defined terms within the permit subject to easy comprehension and, if necessary, enforcement.

6. The definition of startup and shut down is too broad and should be narrowed. The permit excuses the operator from running NO<sub>x</sub> controls during start-up and shutdown, and the CO/VOC (oxidation catalyst) during start-up. The permit defines start-up as the period beginning with the first fuel fed to the compressor turbine and ending when the turbine reaches 50% load. *Id.* at 4a and b. Similarly, shut down is defined as the period when the turbine drops below 50% load and ends when the fuel feeding stops. Because of the load capabilities of the four turbines, this definition of startup and shutdown means that the compressor station can operate at half of its maximum power output without critical pollution controls in place. DEQ did not provide any support for why 50% is the appropriate upper bound for the end start-up or the beginning of shut down. Consequently, the permit creates a large start-up and shutdown loophole that can simply eviscerate the permit requirements.

The Board should require that permit be revised to require a much smaller load as the end of start-up or beginning or shutdown based upon each turbine's operating characteristics as well as the characteristics of the respective controls and the earliest point they can be engaged.

7. The draft permit impermissibly relies on manufacturer's emissions data to support the permit modeling. In the dispersion modeling, a critical analysis underpinning the entire air permit, Dominion relies on the emissions estimates provided by the turbine manufacturer Solar. But Solar typically does not warranty emission rates for VOCs, SO<sub>2</sub>, or formaldehyde, and expressly does not warrant emissions estimates related to start-up, shutdown, and the commissioning of combustion turbines. But Dominion adopted these emissions estimates whole cloth and made no adjustments to the emissions calculations in its dispersion modeling. The conclusions of that modeling are therefore fatally deficient and will under-predict impacts from the proposed facility.

8. The permit fails to explain why the minimum operating temperature for the catalyst necessary for CO and VOC reduction is 490° F. Process Requirement 4c. The record and permit should adequately support and identify the lowest possible minimum operating temperature of the oxidation catalyst. The record should include the operating characteristics from various vendors of different oxidation catalysts and the permit should require that the oxidation catalyst with the lowest minimum operating temperature be used.

9. The draft permit does not provide sufficient support for the most efficacious operation of the proposed NO<sub>x</sub> controls. The four turbines use SCR to control NO<sub>x</sub> emissions. However, the control efficiency for this emission reduction technology is stated at 58% by the SCR vendor. Neither the proposed permit nor the vendor indicate why this value was chosen, or why a higher value resulting in lower NO<sub>x</sub> emissions could not be attained. Higher reduction rates can be economically achieved. This

assumption is therefore not adequately supported in the draft permit and should be fully evaluated and amended.

10. Process Requirement 6e of the draft permit refers to “sufficient differential pressure”; however, that term is not defined. The permit should provide a numerical value for what is “sufficient differential pressure” for each seal/turbine. Without a numerical value, the Board, VDEQ, and the public can have no assurance that the station will be operated in a manner most protective of air quality and human health.

11. The draft permit allows a repair time for leaking equipment of no later than 5 days after discovery, a leak report does not have to be made to DEQ until 15 days after the leak is discovered, and repairs can last for up to 3 days before shutdown maybe required. Process Requirement 7b. Allowing up to 5 days for a first attempt at repairing a component means large quantities of highly flammable natural gas and other VOCs, to escape into the surrounding atmosphere. In addition to the safety hazard such a release would present to personnel and surrounding residents, it would also allow large amounts of ozone producing and greenhouse gases to be emitted further harming human health and air quality. There is no justification for why the first attempt at repair cannot be made within 24 hours of detection. Further, the maximum time allowed for repair should be no longer than 3 days.

The public should be made aware of all leaks that present a safety or health risk. *See* Condition 36 which requires only annual reporting of compliance. In this digital age where documents, messages and photographs can be transmitted hundreds of miles in seconds, such a relaxed reporting requirement is woefully inadequate. Thorough routine inspections and prompt public notice is essential as the gas is not odorized and leak detection will require close monitoring of all piping. Because of these glaring deficiencies, the Board should require DEQ to revise the permit to require more thorough leak detection monitoring, prompt repair efforts and at least weekly reporting to both DEQ and the public.

12. The draft permit refers to continuous monitoring in several paragraphs (8 - 12) but never identifies continuous monitoring for pollutants emitted from the station. Continuous Emissions Monitors (CEMs) should be required by the permit, not stack testing, Conditions 29 and 31, to verify compliance with all emission limits, Conditions 20 – 23, which only provide a three-hour average of emissions. Exhibit A, pages 8-9. This is especially true as the federal government intends to remove the requirement for such monitors at combustion facilities other than coal fired electric generating units.<sup>6</sup> To insure the safety of the local population and those downwind, CEMs should be a required monitoring device.

13. The proposed permit provides lax monitoring and reporting requirements for fuel sulfur content, emergency engine operation, and for reporting to the public.

---

<sup>6</sup> *See* “Oil industry gets its wish on emissions rule,” Energy Wire, 9-12-18, <https://www.eenews.net/energywire/stories/1060096587>.

Operating Limitations 15 and 16. These requirements should provide clear and emphatic compliance terms with the earliest reporting times.

14. The permit does not contain limits for many air toxic compounds like benzene, naphthalene, and PAHs that will be emitted and thus, implicitly underestimates the potential health risks posed by the facility. Exhibit A, page 9. EPA has identified emissions factors for 10 hazardous air pollutants (HAPs) emitted by natural gas fired stationary gas turbines.<sup>7</sup> The draft permit only provides permit limits for one, formaldehyde. State Only Enforceable Limit 47. The other HAP identified in the draft permit is hexane.

Remarkably, the permit does not require specific monitoring to determine compliance with the limits for hazardous air pollutants. The draft permit merely states that compliance with the emissions limits “may be determined” in accordance with one of eight different conditions. Thus, compliance with the only HAP limitations in the permit is not assured. Accordingly, the draft permit does not insure public health or safety.

The Board should deny the permit and require DEQ to:

- (i) properly estimate the quantities of all air toxic compounds that will be emitted from the facility including from the four turbines as well as the fugitive non-combustion sources;
- (ii) require testing and verification of the emissions estimated in (i) above on a periodic basis; and
- (iii) conduct a health risk assessment, using conservative assumptions, to quantify the health impacts of such emissions on the population near the proposed station and confirm that the incremental health risks are not unacceptable.

15. The facility will emit the toxic gases formaldehyde and hexane. Given the generating capacity of the station, the impacts due to hexane and formaldehyde emissions are likely to be significant; however, the draft permit does not adequately address these impacts. The modeling underestimates the level of hexane and formaldehyde emissions released from the compressor station. For hexane, in particular, the line pressure is an important assumption for determining emissions, and the FEIS and application provide inconsistent values for line pressure. The application likely under-predicts the actual emissions and impacts of these harmful toxic air contaminants. The Board should require DEQ to further evaluate and model the expected impacts of formaldehyde and hexane on station employees and residents and propose revised permit terms for public notice and comment.

16. The draft permit does not include estimates of greenhouse gases that will be emitted from the facility. That neither the permit application, DEQ’s analysis nor the proposed permit consider the significant quantity of greenhouse gases that will be emitted by the station each year is astounding. This is especially true when the Governor has

---

<sup>7</sup> Available at <https://www3.epa.gov/ttn/chief/ap42/ch03/index.html> Stationary Gas Turbines, Vol. 1, table 3.1-3. One HAP, 1,3-butadiene, was not detected.

specifically acknowledged the threat all Virginians face from climate change and sea level rise.<sup>8</sup> In fact, the Governor has directed DEQ, and consequently this Board, to develop carbon trading regulations which DEQ has done.<sup>9</sup> Promulgation of those regulations will allow Virginia to join the Regional Greenhouse Gas Initiative whose focus is to cap and reduce power sector CO2 emissions.<sup>10</sup> Hence, to ignore the impact this facility will have on our atmosphere due to the emission of thousands of pounds of greenhouse gases annually is to ignore the directives of the Governor and this Board's legal obligations, Const. of VA Article XI, Section 1; Code of Virginia Section 10.1-1307(E).

17. The draft permit does not estimate emissions from accidental threats and thus does not estimate potential human health and environmental impacts associated with such events. In recent months, several pipelines and compressor stations have exploded harming and killing residents. Neither the application nor DEQ's analysis evaluates the potential for such accidents, the threat they pose to surrounding residents and workers, or the amount of air pollution such an event might generate. The Board should require DEQ to undertake such an analysis and report to the public and the Board before the Board considers approval of the permit.

18. The application and draft permit do not contain any analysis of the downwind ozone impacts to human health due to emissions of NOx (and VOCs) from the facility. Thurston, Exhibit E, discussed below. NOx and VOCs in the presence of sunlight generate ground level ozone, a human health threat. This facility will generate thousands of pounds of these compounds annually. No analysis has been undertaken to determine what impact these emissions will have on downwind areas that are already in nonattainment for ozone. In Virginia, the following areas are in violation of both the 2008 and 2015 eight-hour ozone standard: Alexandria City, Arlington County, Fairfax County, Fairfax City, Loudoun County, Manassas Park City, Manassas City, and Prince William County.<sup>11</sup> Thus, the Board has no information upon which to determine whether and by how much this new source of NOx and VOCs will contribute to ozone nonattainment in these downwind areas of Virginia, not to mention those areas in neighboring jurisdictions. Before considering the draft permit, the Board should require Dominion or DEQ to provide that information.

19. The application and draft permit do not contain any analysis of the amount of nitrogen that will be deposited in the Chesapeake Bay due to NOx emissions from the station in violation of the Chesapeake Bay TMDL. *See*, below. Such an analysis should be undertaken before the Board considers approval of the draft permit.

---

<sup>8</sup> <https://www.governor.virginia.gov/newsroom/all-releases/2018/september/headline-829610-en.html>

<sup>9</sup> <http://www.townhall.virginia.gov/L/ViewStage.cfm?stageid=8130>

<sup>10</sup> <https://www.rggi.org/program-overview-and-design/elements>

<sup>11</sup> <https://www3.epa.gov/airquality/greenbook/hnca.html> (2008); <https://www3.epa.gov/airquality/greenbook/jnca.html> (2015).

20. The draft permit does not contain any analysis of the secondary PM2.5 impacts due to emissions of NOx (and SO2) from the facility. See Thurston, below. Such an analysis should be undertaken before the Board considers approval of the draft permit.

21. The analysis of ozone and secondary PM 2.5 using the Modeled Emissions Rates of Precursors (MERP) approach is deficient. The MERP approach models hypothetical industrial sources with other similar source characteristics and emissions rates from different sources located in similar atmospheric environments. Dominion modelled the Buckingham compressor station using model results from EPA Source 9 located in Dinwiddie County, VA. NOx, SO2, and VOC emissions from this hypothetical source have been assumed to be 500 tons/year each (as compared to the estimated 34.2 tons/year of NOx, 8.3 tons/year of SO2 and 9.77 tons/year of VOC emissions for the compressor station). Given the disparate sizes of the modeled source and the compressor station, the different release profiles, the dissimilar air sheds into which the precursor emissions are emitted, the MERP approach used in support the proposed permit to discount the formation of ozone and secondary PM2.5 from the compressor station is unreliable. DEQ should require direct modeling of these impacts prior to approving a proposed permit.

By law, the Board and DEQ may only approve permits that contain clear and enforceable terms. 42 U.S.C. § 7661c. Because the draft permit is not sufficiently supported by the record and contains undefined terms and conditions, it is facially deficient. Thus, the proposed permit should be rejected, significantly modified, and resubmitted for public notice and comment.

III. The Proposed Facility, as Permitted, Will Emit Massive Amounts of Harmful Air Pollutants

Andrew Gray has reviewed the emissions and air modelling data submitted by Dominion in support of its permit application and DEQ’s analysis of that data. He has conducted his own modeling analysis which is attached as Exhibit D.

Dominion admits in its applications that this facility will emit into the atmosphere each year thousands of pounds nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOCs), particulate matter (PM), sulfur dioxide (SO2), and carbon dioxide (CO2) in addition to pounds of toxic gases.

**Project Emissions Annual Emissions (tons per year)**

	<b>NOX</b>	<b>CO</b>	<b>VOC</b>	<b>PM</b>	<b>SO2</b>	<b>CO2e</b>
Application Update (2017)	46.1	86.4	32.1	43.3	7.26	317,637
Proposed Update (2018)	34.3	51.6	7.69	43.2	8.30	295,686

Revised application table1.1 Dominion Application update May 25, 2018.

As Mr. Sahu states in his report, the CO, CO2, and NOx will contribute to climate change and sea level rise in the Commonwealth.

Further, according to Mr. Gray's analysis, NO<sub>x</sub> emitted from the Buckingham Compressor station will deposit more than 2,500 kilograms of nitrogen to the Chesapeake Bay Watershed with the bulk of that nitrogen falling in Virginia. Exhibit D. Over 27 kilograms will fall each year directly into the Chesapeake Bay. More nitrogen will be deposited to tributaries to the Chesapeake Bay like the Pamunkey River and Dragon Run. *Id.* That nitrogen will be a new, unmitigated load that will contribute to excess nitrogen in the Chesapeake Bay. As discussed below, this nitrogen impact was not addressed by Dominion in its application materials or by DEQ.

In addition, the proposed plant will emit 43 tons of particulate matter (PM) each year. *See* chart above. As explained below and in greater detail in Dr. Thurston's report, Exhibit E, fine particulate matter (PM<sub>2.5</sub>) generated by fossil fuel combustion will have an adverse impact on human health in the Union Hill community, Buckingham County, Virginia, and the region. Because the state, regional, and global environmental and human health impacts of CO, CO<sub>2</sub>, NO<sub>x</sub>, PM, VOCs and toxic gases generated by the plant were not fully evaluated by Dominion in its applications or by DEQ, the permit should be denied.

As noted above, in its air modeling Dominion used AERMOD in a screening mode (the MAKEMET meteorological dataset), in which the source and receptors are defined completely but the meteorological data are not actual/observed data, but rather represent a "worst-case" scenario. The screening mode only provides estimates of hourly impacts. The thinking behind this approach is that if the Project does not violate the NAAQS using the screening approach, then the Applicant would not need to gather five years of actual meteorological data to demonstrate compliance. The screening approach is adequate if the results are definitive and a project's emissions are without question below the NAAQS. However, if the screening results are close to the NAAQS limits (as was the case with three of the six modeled compressor stations for the 1-hour NO<sub>2</sub> NAAQS), *and* if any of the assumptions regarding the source data are significantly in error *or* the assumed background level is chosen inappropriately, then the results of the screening approach may not accurately reflect the NAAQS attainment status for the modeled sources.

Background levels are supposed to represent the contributions from all other emissions sources and the regional background for the NAAQS limit. The assumed background level can have a significant effect on the modeled results (*e.g.*, attainment vs. non-attainment), especially if the background levels are not far below the NAAQS (*i.e.*, even a relatively modest-sized additional source would trigger a violation). Examination of the assumptions regarding the selection of background levels for each of the NAAQS standards reveals that there is at least some uncertainty regarding the value for the 1-hour NO<sub>2</sub> NAAQS at the Buckingham compressor stations.

According to the Air Quality Model Results for the Project (using the AERMOD screening mode), the 1-hour NO<sub>2</sub> values at the Buckingham location (modeled source impact plus assumed background) is greater than 150 ug/m<sup>3</sup>; the 1-hour NO<sub>2</sub> NAAQS standard is 188 ug/m<sup>3</sup>. Because these modeled concentration is close to the 1-hour NO<sub>2</sub>

NAAQS standard, the Board should require DEQ to conduct a careful examination of (a) the appropriateness and/or representativeness of the assumed background levels and (b) the assumptions regarding the data used for the MAKEMET "worst-case" screening data. In addition, the AERMOD modeling of the Project should be conducted using actual meteorological data (instead of screening mode) to determine local NO<sub>2</sub> concentration impacts and to demonstrate attainment with the 1-hour NO<sub>2</sub> NAAQS.

#### IV. Operation of the Compressor Station Will Harm Human Health

Dr. George Thurston has evaluated the PM and ozone (O<sub>3</sub>) emissions projected to be generated by operation of the proposed compressor station. Exhibit E. Dr. Thurston is Director of the Program in Exposure Assessment and Human Health Effects at the New York University School of Medicine. He published the first research establishing an association between exposure to PM<sub>2.5</sub> and mortality. Among other things, Dr. Thurston has served as a member of the EPA's Clean Air Science Advisory Council and is the Chair of the Environmental Health Policy Committee of the American Thoracic Society. *Id.* at 1-2.

Dr. Thurston's report summarizes the research establishing that PM<sub>2.5</sub> harms human health. Those health effects include, decreased lung function, more frequent asthma symptoms, increased asthma and heart attacks, more frequent hospital visits, increased deaths, and shortening of life expectancy. *Id.* at 3-12. Dr. Thurston opines that any increase in air pollution will increase the risk of adverse effects, even when the NAAQS are not violated. *Id.* at 13-17. Dr. Thurston also notes that neither Dominion nor DEQ have evaluated the increased risk of harm associated with fine particles in conjunction with acidic gases like those that will be emitted by the station. *Id.* at 18-21. Thus, Dr. Thurston disagrees with the Supplemental Report's conclusion that "emissions from the proposed BCS will result from combustion of clean burning natural gas; in no case, will the emissions cause air quality to exceed regulatory standards, which are protective of human health and the environment." *Id.* at 21.-22

Dr. Thurston also discusses the adverse health effects of ozone, a pollutant that irritates the human lung in the same manner as it eats way rubber. *Id.* at 22-23. Thus, ozone has a significant adverse impact on those with asthma and may aggravate chronic lung diseases like emphysema and bronchitis. *Id.* at 23-25. Ozone also causes increased morbidity due to these harmful lung impacts. *Id.* at 26-29.

Based upon his research, and that of others, as well as his evaluation of the application and DEQ's analysis, Dr. Thurston concludes that, with respect to PM, adverse human health effects of long-term (annual) exposures to PM<sub>2.5</sub> at these locations will rise by at least 21%, while the adverse human health effects of short-term (24-hr) exposures to PM<sub>2.5</sub> will rise by at least 44%. *Id.* at. 31.

Further, emissions from the proposed plant will cause an increase in the risk of adverse health effects among those who breathe that pollution, and especially for the socio-economically disadvantaged populations living within the most affected areas immediately surrounding the facility. In addition, the proposed facility's emissions of

NOx will also contribute to the increases in health risks from added local air pollution, as well as to the downwind formation of, and exposures to, ozone air pollution, and to associated downwind increases in adverse human health effects caused by those incremental ozone exposures. Thus, this proposed facility will have both local and downwind adverse human health consequences and should not be permitted as proposed.

V. Construction and Operation of the Compressor Station Will Violate Concepts of Environmental Justice

The proposed location of the compressor station is adjacent to State Route 56, South James River Road, near Woods Corner in Buckingham County, Virginia. Exhibit F, maps and aerial photos. The compressor station will occupy 21 acres of forest land that will be destroyed during construction.<sup>12</sup> Dominion seeks to place the station there, so it can tie the ACP and Transco pipelines together. The area around the proposed compressor station is a minority community comprised of modest homes, forest, and open fields. The area of Union Hill is already bisected by the Transco natural gas line that runs through the county northeast to northwest. Exhibit G.

Buckingham County is the geographic center of the Commonwealth. Its economy is based on agriculture and extraction businesses like logging. It has no major industrial facilities except four slate and three timber companies.<sup>13</sup> According to the latest census data, the median household income is \$43,514 with 17.6% of the population living in poverty.<sup>14</sup> The county is over 33% African American; however, the area surrounding the compressor station is predominately African American. *See* house to house survey of Friends of Buckingham cited in SELC comment letter.

Numerous residents surrounding the proposed compressor station site are descendants of freed slaves, many of whom worked on and may have been buried on a plantation known as Variety Shade – a portion of which is the site of the compressor station.<sup>15</sup> No one has determined whether slaves were buried on the compressor station site. Given the nature of these claims, regardless of whether the Board approves the proposed air permit, such an assessment should be made before construction begins.

The citizens of Buckingham have repeatedly provided oral and written comments in opposition to the pipeline and the compressor station yet DEQ has failed to consider their legitimate concerns or evaluate those concerns in the context of Article XI, Section 1 of the Constitution of Virginia or Code of VA § 10.1-1307(E). The recordings of

---

<sup>12</sup> *See* video of station site and surrounding community, Transco pipeline.  
<https://vimeo.com/272548843>

<sup>13</sup> [http://virginiarmi.com/report\\_center/community\\_profiles/5104000029.pdf](http://virginiarmi.com/report_center/community_profiles/5104000029.pdf) at page 23.

<sup>14</sup> <https://www.census.gov/quickfacts/fact/table/buckinghamcountyvirginia/PST045217>

<sup>15</sup> *See* White, Charles W., *The Hidden and the Forgotten: Contributions of Buckingham Blacks to American History*, Lamp-Post Publicity 2017, p. 321.

DEQ's pre-hearing meeting with local leaders as well as the public hearing on September 12, 2018 identify the serious concerns of numerous residents.<sup>16</sup>

During the September 12 public hearing, the comments of Ruthie and John Laury, (Part 1 at 31:21- 37:33) whose retirement home would be mere yards away from the proposed station, highlighted the fear many other residents voiced. *Id.* Ms. Laury spoke to the rural nature of the county and their land. She noted that the industrial nature of the compressor station is not representative of the area they moved to live out their years. Mr. Laury expressed concern for his health and that of his wife. He noted that there is no information about the long-term health effects associated with operation of the station. However, based upon Dr. Thurston's report, Mr. Laury was exactly right when he said that any pollution above what they are exposed to right now, will be harmful to their health.

Former Governor of Virginia McAuliffe created an environmental justice advisory council. Executive Order 73 (2017). The EO states that Const. of VA, Article XI, Section 1 recognizes that it is the Commonwealth's policy to "protect its atmosphere, lands, and waters from pollution, impairment, or destruction, for the benefit, enjoyment, and general welfare of the people of the Commonwealth." The EO further recognizes that the protection of our natural resources should apply equally to all individuals; however, some environmental impacts are compounded or concentrated as the result of demographic factors. The consideration of those factors in siting and permitting polluting facilities is known as environmental justice.

DEQ defines Environmental Justice as:

Equal protection from environmental hazards for individuals, groups, or communities regardless of race, ethnicity, or economic status. This applies to the development, implementation, and enforcement of environmental laws, regulations, and policies, and implies that no population of people should be forced to shoulder a disproportionate share of negative environmental impacts of pollution or environmental hazard due to a lack of political or economic strength levels.<sup>17</sup>

Environmental justice is defined by EPA as the fair treatment and meaningful involvement of all people regardless of race, color, faith, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.<sup>18</sup> The agency recognizes that it is important that no segment of

---

<sup>16</sup> September 12, 2018 public hearing video, part 1

<https://www.youtube.com/watch?v=jc-pNspQsI>; part 2

<https://www.youtube.com/watch?v=6bLYE49cQxg&feature=share>; part 3

<https://www.youtube.com/watch?v=DpiQnuHS1qI>.

<sup>17</sup> <https://www.deq.virginia.gov/Resources/Glossary/GlossaryE.aspx>

<sup>18</sup> <https://www.epa.gov/environmentaljustice/learn-about-environmental-justice>

the population, especially individuals most impacted and vulnerable, bear disproportionately high or adverse effects from pollution.

As the proposed facility will emit pollutants that will adversely affect the health of local residents who are predominately minorities, the Board should comply with EO 73, DEQ's Environmental Justice policies as well as those of US EPA and deny the proposed permit.

### The NOx Emissions from the Compressor Station Will Represent an Illegal New Load of Nitrogen to the Chesapeake Bay

The proposed compressor station is located within the Chesapeake Bay airshed.<sup>19</sup> The Environmental Protection Agency's Chesapeake Bay Program identified atmospheric deposition of nitrogen as the highest nitrogen input load to the Chesapeake Bay watershed.<sup>20</sup> Atmospheric nitrogen comes from nitrogen oxides (NOx) and ammonia (NH3). The principle sources of NOx are air emissions from industrial-sized boilers and internal combustion engines, such as the compressor station's four engines.

Using compressor station information provided in the air permit application and the CALPUFF<sup>21</sup> air modeling system, CBF estimates that the station would contribute an additional 13,297 pounds of nitrogen deposition per year to the land and water within the Chesapeake Bay watershed. Exhibit D. Of this total, the James River watershed will receive an estimated 4,213 pounds of nitrogen deposition per year. The James River watershed—like all sub-watersheds within the Bay watershed—is subject to specific nitrogen allocations in the Bay TMDL.<sup>22</sup> The Bay watershed jurisdictions are responsible for meeting these nitrogen allocations and this additional load of nitrogen pollution must be accounted for and managed by each jurisdiction.

The Chesapeake Bay TMDL accounted for all existing sources of nitrogen in the watershed and established pollution caps that are maintained through implementation of each state's Watershed Implementation Plan (WIP); offsets are required for new sources. Neither Dominion nor DEQ have considered the nitrogen impacts to state waters associated with NOx emissions from the proposed facility. No direct, indirect, or

---

<sup>19</sup> Emma Andrews, *Map: Chesapeake Bay Airshed*, CHESAPEAKE BAY PROGRAM (Feb. 7, 2008), [http://www.chesapeakebay.net/maps/map/chesapeake\\_bay\\_airshed](http://www.chesapeakebay.net/maps/map/chesapeake_bay_airshed)

<sup>20</sup> Chesapeake Bay TMDL, App'x L: Setting the Chesapeake Bay Atmospheric Nitrogen Deposition Allocations, L-1 (2010), [https://www.epa.gov/sites/production/files/2015-02/documents/appendix\\_l\\_atmos\\_n\\_deposition\\_allocations\\_final.pdf](https://www.epa.gov/sites/production/files/2015-02/documents/appendix_l_atmos_n_deposition_allocations_final.pdf)

<sup>21</sup>

[https://www3.epa.gov/ttn/scram/7thconf/calpuff/Previous\\_SCRAM\\_CALPUFF\\_Posting\\_Reference.pdf](https://www3.epa.gov/ttn/scram/7thconf/calpuff/Previous_SCRAM_CALPUFF_Posting_Reference.pdf)

<sup>22</sup> See Chesapeake Bay TMDL, Section 9. Chesapeake Bay TMDLs, "Table 9-1. Chesapeake Bay TMDL total nitrogen (TN) annual allocations (pounds per year) by Chesapeake Bay segment to attain Chesapeake Bay WQS," at 9-4 (2010), available at [https://www.epa.gov/sites/production/files/2014-12/documents/cbay\\_final\\_tmdl\\_section\\_9\\_final\\_0.pdf](https://www.epa.gov/sites/production/files/2014-12/documents/cbay_final_tmdl_section_9_final_0.pdf).

cumulative impacts analysis has been performed for the Chesapeake Bay watershed or any subwatershed. Because Virginia is a signatory to the 2014 Chesapeake Bay Agreement which states that the federal and state governments will attain the goals of the Chesapeake Bay TMDL, is it obligated to undertake these analyses before issuing a permit for a new source of nitrogen to the Chesapeake Bay. As that has not occurred, the Board must deny the proposed permit.

### Conclusion

The proposed air permit is deficient in numerous ways; from its failure to require clearly defined and enforceable terms and its failure to fully evaluate human health impacts to its failure to consider the impacts of emissions from the plant on the minority community and the Chesapeake Bay. Thus, in adherence to the Constitution of Virginia and Virginia law, the Board should deny the permit or, at the least, require that it be severely modified to consider the deficiencies discussed above and re-noticed for public comment.

Sincerely,

A handwritten signature in cursive script, appearing to read "Rebecca Tomazin".

Rebecca Tomazin  
Virginia Executive Director  
Chesapeake Bay Foundation