Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Compressor Station Air Permit

1 message

Leech, Irene <ileech@vt.edu>
To: "airdivision1@deq.virginia.gov" <airdivision1@deq.virginia.gov>

Fri, Sep 21, 2018 at 10:24 PM

Buckingham Compressor Station for the

Atlantic Coast Pipeline

Air Quality Permit

Submission from Irene E. Leech; 4220 North Fork Rd; Elliston, VA 24087. ileech@vt.edu

A number of changes are needed to the proposed air permit.

- It is not sufficient to only make air data available to citizens via FOIA of DEQ. A quick, transparent, and affordable means needs to be provided to the community to monitor what occurs using dependable and defensible data.

- There remains a need for baseline health and environmental studies with results that will stand up to challenges and in sufficient detail to actually address critical issues.

- Further, impact on animals, both wild and domestic, must be documented.

The air permit does not address all pollutants and technical comments submitted identified some of the gaps as well as problems with methodology that will make it difficult to document especially strong but short lived issues.

- It did not apply the best available control technology ("BACT") requirement correctly because neither ACP nor DEQ ensured that the nitrogen oxide emission limit set in the draft permit achieved the maximum reduction feasible. The currently proposed reduction in nitrogen oxide emissions is 58%, but more significant emissions reductions are achievable and cost effective.

- Limiting nitrogen oxide pollution is essential for human health. According to the EPA, breathing air with a high concentration of nitrogen oxides can cause irritation in the human respiratory system. Nitrogen dioxide—along with other nitrogen oxides—react with chemicals in the air to form particulate matter and ozone. Both of these are also harmful to the human respiratory system.

- Longer-term exposures to elevated concentrations of nitrogen oxides may contribute to the development of asthma and can increase a person's susceptibility to respiratory

254

infections. People with asthma, as well as children and the elderly, are generally at greater risk for these health effects.

- DEQ should require ACP to continuously monitor nitrogen oxide emissions from the compressor turbines. This is necessary to ensure ACP is complying with the nitrogen oxide emissions limits at all operating periods. The currently proposed stack testing is not sufficient to ensure compliance with the draft permit conditions.
- DEQ did not ensure compliance with 9VAC 5-80-1180 because it relied on flawed ambient air quality modeling. The flaws in the modeling include a failure to use the highest allowable emissions rates, failure to account for emissions in very cold conditions when nitrogen oxide rates are expected to increase significantly, and understating emissions during startup and shutdown. Therefore, DEQ did not ensure the compressor station could operate without preventing or interfering with the attainment or maintenance of any applicable ambient air quality standard and without causing or exacerbating a violation of any applicable ambient air quality standard.
- It is important for DEQ to set appropriate, enforceable one-hour limits in the permit. Short-term exposure to high concentrations of nitrogen oxides are especially harmful to people with chronic respiratory conditions. Such exposures over short periods tend to aggravate respiratory diseases, particularly asthma, leading to often severe respiratory symptoms.
- ACP has not shown that the amount of toxic pollution emissions from the compressor will not cause or contribute to the endangerment of human health because ACP's modeling for formaldehyde and hexane emissions is flawed. Therefore, DEQ cannot, based on the information ACP provided, ensure that the compressor station will not cause, or contribute to, the endangerment of human health. According to the EPA, "formaldehyde can cause irritation of the skin, eyes, nose, and throat. High levels of exposure may cause some types of cancers."
- DEQ should impose an ammonia limit in the permit for the compressor turbines. Currently, no such limit exists.

Buckingham CS air permit 18.docx
15K

Buckingham Compressor Station for the

Atlantic Coast Pipeline

Air Quality Permit

Submission from Irene E. Leech; 4220 North Fork Rd; Elliston, VA 24087. ileech@vt.edu

A number of changes are needed to the proposed air permit.

- It is not sufficient to only make air data available to citizens via FOIA of DEQ. A quick, transparent, and affordable means needs to be provided to the community to monitor what occurs using dependable and defensible data.

- There remains a need for baseline health and environmental studies with results that will stand up to challenges and in sufficient detail to actually address critical issues.

- Further, impact on animals, both wild and domestic, must be documented.

The air permit does not address all pollutants and technical comments submitted identified some of the gaps as well as problems with methodology that will make it difficult to document especially strong but short lived issues.

- It did not apply the best available control technology ("BACT") requirement correctly because neither ACP nor DEQ ensured that the nitrogen oxide emission limit set in the draft permit achieved the maximum reduction feasible. The currently proposed reduction in nitrogen oxide emissions is 58%, but more significant emissions reductions are achievable and cost effective.

- Limiting nitrogen oxide pollution is essential for human health. According to the EPA, breathing air with a high concentration of nitrogen oxides can cause irritation in the human respiratory system. Nitrogen dioxide—along with other nitrogen oxides—react with chemicals in the air to form particulate matter and ozone. Both of these are also harmful to the human respiratory system.

- Longer-term exposures to elevated concentrations of nitrogen oxides may contribute to the development of asthma and can increase a person's susceptibility to respiratory

infections. People with asthma, as well as children and the elderly, are generally at greater risk for these health effects.

- DEQ should require ACP to continuously monitor nitrogen oxide emissions from the compressor turbines. This is necessary to ensure ACP is complying with the nitrogen oxide emissions limits at all operating periods. The currently proposed stack testing is not sufficient to ensure compliance with the draft permit conditions.
- DEQ did not ensure compliance with 9VAC 5-80-1180 because it relied on flawed ambient air quality modeling. The flaws in the modeling include a failure to use the highest allowable emissions rates, failure to account for emissions in very cold conditions when nitrogen oxide rates are expected to increase significantly, and understating emissions during startup and shutdown. Therefore, DEQ did not ensure the compressor station could operate without preventing or interfering with the attainment or maintenance of any applicable ambient air quality standard and without causing or exacerbating a violation of any applicable ambient air quality standard.
- It is important for DEQ to set appropriate, enforceable one-hour limits in the permit. Short-term exposure to high concentrations of nitrogen oxides are especially harmful to people with chronic respiratory conditions. Such exposures over short periods tend to aggravate respiratory diseases, particularly asthma, leading to often severe respiratory symptoms.
- ACP has not shown that the amount of toxic pollution emissions from the compressor will not cause or contribute to the endangerment of human health because ACP's modeling for formaldehyde and hexane emissions is flawed. Therefore, DEQ cannot, based on the information ACP provided, ensure that the compressor station will not cause, or contribute to, the endangerment of human health. According to the EPA, "formaldehyde can cause irritation of the skin, eyes, nose, and throat. High levels of exposure may cause some types of cancers."
- DEQ should impose an ammonia limit in the permit for the compressor turbines. Currently, no such limit exists.

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Compressor Station Air Permit Comment

1 message

Shane Lovelace <lovelacesn@gmail.com> Thu, Sep 20, 2018 at 10:20 PM
To: airdivision1@deq.virginia.gov, michael.dowd@deq.virginia.gov, patrick.corbett@deq.virginia.gov

I am a process engineer that has been working in the field for over 10 years. I have a good understanding of typical engineering practices as it pertains to engineering calculations and process review. I, along with my partner who is also a chemical engineer, have completed multiple in-depth reviews of the ACP Buckingham Compressor Station Air Modeling report, and engineering review as well as the permit calculation spreadsheet. Our thorough review produced many concerns, including the following:

My largest concern involving this compressor station is how inconsistent and ineffective the emission controls will be. Specifically, not only will the emission controls not work below 0 degrees Fahrenheit (F) per the turbine manufacturers themselves, but the emission levels will increase above normal uncontrolled emission rates to ensure stable combustion at these low temperatures. The Northampton engineering review even states, "At low loads and temperatures below 0 degrees F, uncontrolled emissions are much higher: NOx would be 13x higher, CO would be 6x higher, and VOC would be 2x higher." The Buckingham permit only accounts for 5 hours of subzero temperature operation per year- how much higher do they state the emissions will be? The permit assumes this will be a rare occurrence by only looking at data from 2012-2016, in which only 5 hours of subzero temperatures were recorded in 2015. What they fail to mention is the fact that there were also instances of subzero temperatures in both 2017 and 2018. This information provides a clear indication that we should expect these subzero events to become more frequent and probably more intense. They also failed to investigate if wind speeds and wind chill factors will add to cause increased emissions during colder periods by destabilizing combustion as seen with the sub-zero temperatures. Additionally, the permit does not account for the Bermuda High that affects Virginia each summer, causing extended periods of heat and humidity that leave the air stagnant and make the dilution of emissions much slower. The permit models should address the seasonally extended residence times of pollutants in the community's air.

There is no mention of a standard maintenance plan or equipment review process to make sure the emission control equipment is functioning correctly and consistently. If these emission controls fail for any reason, emission levels will increase. NOx will potentially increase by 58%, CO will potentially increase by 92% and VOCs will potentially increase by 50%. There should also be continuous emission monitors to ensure the emission controls are working efficiently and the station is complying with all emission limits at all times. The testing mentioned in the permit is inadequate to protect the community from short-term exposures because it masks shot-term events. More importantly, the regional air standards are not adequate to protect a community from close-range, dangerously high emission events. The permit does not address the necessity of short-term limits.

DEQ currently proposed reduction in Nitrogen Oxide emissions is 58%, reduction in Carbon Monoxide is 92% and reduction in VOCs is 50%. Can DEQ provide proof they are controlling emissions at these efficiencies? Permits for the West Virginia and North Carolina compressor stations state lower levels of emission controls for the same type of turbines.

The permit only presents annual emission values and does not look in-depth at possible 1 hour emissions or whether the compressor station could potentially surpass these limits.

The compressor station will also be equipped with a backup power generator which is powered using gas from the pipeline. The model only considers generator emissions for 500 hours a year. Considering the rural location of this compressor station and the increasing storm intensities we've been experiencing, it is likely this generator will have to run more often than has been considered. The annual estimated emission of CO produced by the generator is 2.4 tons/yr (for only 500 hours) while CT-04 is estimated to produce 2.37 tons/yr of CO (for 8,722 hours). What happens if there is an extended power outage in sub-zero temperatures, which is not an uncommon situation during snow or ice

events? The generator will produce high levels of CO in addition to CT-01 thru CT-04 with no emission controls active. These emissions will potentially surpass the NAAQS limits of 10,000 ug/m^3 for the 8 hour average or the 40,000 ug/m^3 for the 1 hour average.

All of the turbine manufacturers emission estimates were assumed to be at sea level, 4"/4" inlet/outlet losses and nominal performance. The 590ft above sea-level elevation of the compressor station site was not taken into account when modeling for the air permit.

Further, the human population value that Dominion used in the air permit is also grossly underestimated. They used an average across the county rather than the much denser population in Union Hill, which is the actual location of the compressor station. This is something that has been mentioned already to the DEQ before, and yet still goes unaddressed.

This air permit is woefully inadequate for protecting air quality from the monstrous compressor station slated for Union Hill, and it is obvious that the DEQ and the State Air Board must deny the permit. Additionally, under the Title VI of the Civil Rights Act, the DEQ is required to prevent discrimination in the placing of polluting infrastructure. It is now well-documented that racial and economic targeting were used in the placement of the Atlantic Coast pipeline and it's compressor station slated to devastate the Union Hill community. The community also was not given enough time to comment on the air permit, and a 30-day extension should be granted immediately. The original extension was far too short. The DEQ should immediately complete a Quantified Risk Assessment (QRA) for the compressor station prior to permitting and to work with other state agencies to conduct a Health Risk Assessment (HRA) and a Health Impact Assessment (HRI) – this will surely prove it cannot be constructed without detrimental consequences to the health of the surrounding community. And, again, the compressor station's permit should be ultimately denied – anything less defies science and justice. There are no benefits to the Atlantic Coast pipeline, and it will do nothing but destroy and harm the communities it passes through.

Shane Lovelace

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Compressor Station Air Permit Comment

1 message

Stacy Lovelace <johnsonsc3@gmail.com> Thu, Sep 20, 2018 at 10:19 PM
To: airdivision1@deq.virginia.gov, michael.dowd@deq.virginia.gov, patrick.corbett@deq.virginia.gov

I am a chemical engineer that has been working in the field for over 10 years. I have a good understanding of typical engineering practices as it pertains to engineering calculations and review. I, along with my partner who is also a process engineer, have completed multiple in-depth reviews of the ACP Buckingham Compressor Station Air Modeling report, and engineering review as well as the permit calculation spreadsheet. Our thorough review produced many concerns, including the following:

A major concern involving this compressor station is how inconsistent and ineffective the emission controls will be. Specifically, not only will the emission controls not work below 0 degrees Fahrenheit (F) per the turbine manufacturers themselves, but the emission levels will increase above normal uncontrolled emission rates to ensure stable combustion at these low temperatures. The Northampton engineering review even states, "At low loads and temperatures below 0 degrees F, uncontrolled emissions are much higher: NOx would be 13x higher, CO would be 6x higher, and VOC would be 2x higher." The Buckingham permit only accounts for 5 hours of subzero temperature operation per year- how much higher do they state the emissions will be? The permit assumes this will be a rare occurrence by only looking at data from 2012-2016, in which only 5 hours of subzero temperatures were recorded in 2015. What they fail to mention is the fact that there were also instances of subzero temperatures in both 2017 and 2018. This information provides a clear indication that we should expect these subzero events to become more frequent and probably more intense. They also failed to investigate if wind speeds and wind chill factors will add to cause increased emissions during colder periods by destabilizing combustion as seen with the sub-zero temperatures. Additionally, the permit does not account for the Bermuda High that affects Virginia each summer, causing extended periods of heat and humidity that leave the air stagnant and make the dilution of emissions much slower. The permit models should address the seasonally extended residence times of pollutants in the community's air.

There is no mention of a standard maintenance plan or equipment review process to make sure the emission control equipment is functioning correctly and consistently. If these emission controls fail for any reason, emission levels will increase. NOx will potentially increase by 58%, CO will potentially increase by 92% and VOCs will potentially increase by 50%. There should also be continuous emission monitors to ensure the emission controls are working efficiently and the station is complying with all emission limits at all times. The testing mentioned in the permit is inadequate to protect the community from short-term exposures because it masks shot-term events. More importantly, the regional air standards are not adequate to protect a community from close-range, dangerously high emission events. The permit does not address the necessity of short-term limits.

DEQ currently proposed reduction in Nitrogen Oxide emissions is 58%, reduction in Carbon Monoxide is 92% and reduction in VOCs is 50%. Can DEQ provide proof they are controlling emissions at these efficiencies? Permits for the West Virginia and North Carolina compressor stations state lower levels of emission controls for the same type of turbines.

The permit only presents annual emission values and does not look in-depth at possible 1 hour emissions or whether the compressor station could potentially surpass these limits.

The compressor station will also be equipped with a backup power generator which is powered using gas from the pipeline. The model only considers generator emissions for 500 hours a year. Considering the rural location of this compressor station and the increasing storm intensities we've been experiencing, it is likely this generator will have to run more often than has been considered. The annual estimated emission of CO produced by the generator is 2.4 tons/yr (for only 500 hours) while CT-04 is estimated to produce 2.37 tons/yr of CO (for 8,722 hours). What happens if there is an extended power outage in sub-zero temperatures, which is not an uncommon situation during snow or ice events? The generator will produce high levels of CO in addition to CT-01 thru CT-04 with no emission controls active. These emissions will potentially surpass the NAAQS limits of 10,000 ug/m^3 for the 8 hour average or the 40,000 ug/m^3 for the 1 hour average.

260

All of the turbine manufacturers emission estimates were assumed to be at sea level, 4"/4" inlet/outlet losses and nominal performance. The 590ft above sea-level elevation of the compressor station site was not taken into account when modeling for the air permit.

Further, the human population value that Dominion used in the air permit is also grossly underestimated. They used an average across the county rather than the much denser population in Union Hill, which is the actual location of the compressor station. This is something that has been mentioned already to the DEQ before, and yet still goes unaddressed.

This air permit is woefully inadequate for protecting air quality from the monstrous compressor station slated for Union Hill, and it is obvious that the DEQ and the State Air Board must deny the permit. Additionally, under the Title VI of the Civil Rights Act, the DEQ is required to prevent discrimination in the placing of polluting infrastructure. It is now well-documented that racial and economic targeting were used in the placement of the Atlantic Coast pipeline and it's compressor station slated to devastate the Union Hill community. The community also was not given enough time to comment on the air permit, and a 30-day extension should be granted immediately. The original extension was far too short. The DEQ should immediately complete a Quantified Risk Assessment (QRA) for the compressor station prior to permitting and to work with other state agencies to conduct a Health Risk Assessment (HRA) and a Health Impact Assessment (HRI) – this will surely prove it cannot be constructed without detrimental consequences to the health of the surrounding community. And, again, the compressor station's permit should be ultimately denied – anything less defies science and justice. There are no benefits to the Atlantic Coast pipeline, and it will do nothing but destroy and harm the communities it passes through.

Stacy Lovelace

261

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Compressor Station

1 message

Grace McClain <mcclainge@gmail.com> Mon, Aug 20, 2018 at 9:26 AM
To: airdivision1@deq.virginia.gov

Greetings,

Please see my attached letter to the Air Pollution Control Board regarding the proposed Buckingham Compressor Station. Confirmation of the board's receipt would be much appreciated.

Thank you,
Grace

Grace McClain, MPH, REHS
mcclainge@gmail.com
703.431.4854

ProposedBuckinghamCompressor.pdf
87K

262

Virginia Department of Environmental Quality
Piedmont Regional Office
4949-A Cox Rd
Glen Allen, VA 23060

August 20, 2018

Dear Members of the State Air Pollution Control Board:

In response to the air quality analysis performed on July 13, 2018, I ask you to withhold a permit for the proposed Buckingham County compressor station and consider an alternative location for this project. I am a Registered Environmental Health Specialist, a graduate of the Johns Hopkins Bloomberg School of Public Health, and a long-time Virginia resident. Based on these qualifications, I hope that you will give appropriate weight to my public comment on this proposed infrastructure project.

Locating a compressor station at the proposed site will directly cause unacceptable levels of pollution within the surrounding community. This opinion is founded in the science of environmental health risk assessment, which requires not only the consideration of pollutants released into the environment, but also the individuals at risk for encountering these pollutants. This is known as exposure assessment and is not captured by the published air quality analysis. While I do not claim to perform a full exposure assessment in this letter, considering the demographic information of the surrounding community illuminates important information about the potential health impacts of the proposed compressor station.

As stated in your public hearing record by multiple residents, the majority-Black Union Hill Community is exceptionally vulnerable to environmental pollution due to this nation's history of systemic racism and socioeconomic disinvestment. African Americans bear an inordinately large burden of disease when compared to every other ethnic group, excepting indigenous peoples. The cumulative physical and psychological stressors of sound and air pollution that this compressor station will produce will be felt by a population that already bears health inequities and injustices daily.

Particularly concerning are the high levels of PM2.5 that this station will release. Rigorous science has linked PM2.5 to "premature death in people with heart or lung disease; nonfatal heart attacks; irregular heartbeat; decreased lung function; increased respiratory systems; and aggravated asthma."[1] Black children are more than twice as likely as white children to have asthma.[2] Older African Americans, who are more likely to have some form of cardiovascular disease, are also at risk for negative health outcomes. For this reason alone, locating the compressor station in this community is unconscionable. A recent study has also indicated that exposure to PM2.5 damages children's mental functions, with more

[1] Centers for Disease Control and Prevention. *Most Recent Asthma Data,* Retrieved August 16, 2018 from https://www.cdc.gov/asthma/most_recent_data.htm

[2] Environmental Protection Agency. *Environmental and Health Effects of Particulate Matter (PM).* Retrieved August 16, 2018 from https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm

delinquent behavior reported in teens exposed to high levels of air pollution, suggesting the full impacts of these contaminants—not to mention nitrous and sulfuric oxides—are not yet fully understood.[3]

I also possess a certificate in Public Health Economics. I urge you to consider the costs of sending children and elders to the emergency room for respiratory problems due to this compressor station. By cutting short-term costs through the proposed location of this station, Buckingham County takes on long-term financial damage through lost productivity when adults miss work to care for children or elderly parents. In addition, a child's own missed day of school is an economic hit to the region.

For both ethical and practical reasons, it would benefit Buckingham County to forego locating the proposed compressor station near the Union Hill community. I urge you to take a protective stance on this project given the vulnerable health status of residents in the area.

Sincerely,

Grace McClain, MPH, REHS

---

[3] Younan et al. (2018). *Longitudinal Analysis of Particulate Air Pollutants and Adolescent Delinquent Behavior in Southern California.* Retrieved August 16, 2018 from https://link.springer.com/article/10.1007/s10802-017-0367-5

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

The ACP is safe and necessary

1 message

James Moore <James.Moore.126624982@p2a.co>
Reply-To: amooresr66@gmail.com
To: Ann Regn <airdivision1@deq.virginia.gov>

Fri, Sep 7, 2018 at 11:15 AM

Dear Director Ann Regn,

Doing the right thing for our communities, our economy, and our environment is a balancing act. That's why a project as important as the Atlantic Coast Pipeline isn't built overnight. Rather, this project has gone through more than three years of careful planning and thorough scrutiny from agencies and organizations at every level.

Because of that exhaustive planning, the ACP is the safest way for us to get affordable, cleaner natural gas to those in our region who desperately need it.

The Buckingham Compressor Station is an integral part of the ACP project. The compressor station's "best in class" engineering design, and advanced emissions control equipment will ensure the facility will fully protect Virginia's air quality. In fact, modeling has demonstrated that the station's emissions, even when the facility is operating at its maximum, will not adversely impact Virginia's air quality. The modeling was conducted using methods approved by DEQ and has proven reliable thus far.

I believe that the stringency of the air quality permit that the ACP project has already passed will keep our community safe—while still allowing us to move forward with producing cleaner and more affordable American energy.

Accordingly, in the case of the recent discussions by the State Water Control Board regarding the state's use of the Army Corps of Engineers Nationwide Permit 12, I believe revisiting the existing process would be a mistake.

Our state's environment and our business climate have prospered from a consistent, predictable regulatory climate and from federal and state partnerships to allow scarce regulatory resources to be put to optimal use. There is no need to change the current approach.

Sincerely,
James Moore
20 Bridge Rd
Buckingham, VA 23921
+14349442912

265

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Comments on proposed air permit for the Atlantic Coast Pipeline Buckingham Compressor Station No. 21599

1 message

Jon Mueller ext. 2162 <jmueller@cbf.org> Fri, Sep 21, 2018 at 7:10 PM
To: "airdivision1@deq.virginia.gov" <airdivision1@deq.virginia.gov>
Cc: Amanda Van Houten <AVanHouten@cbf.org>, Rebecca Tomazin <RTomazin@cbf.org>, Peggy Sanner <PSanner@cbf.org>, Ariel Solaski <ASolaski@cbf.org>, Kenny Fletcher <KFletcher@cbf.org>

To the Virginia State Air Pollution Control Board and DEQ:

Attached are the comments of the Chesapeake Bay Foundation with respect to the proposed air permit for the Buckingham Compressor Station.

Please advise receipt of these comments and Exhibits A – G.

Sincerely,

Jon A. Mueller

Vice President for Litigation

Chesapeake Bay Foundation, Inc.

6 Herndon Ave.

Annapolis, MD 21401

Jmueller@cbf.org

(443) 482-2162

www.cbf.org

CHESAPEAKE BAY FOUNDATION

Saving a National Treasure

266

8 attachments

Exhibit A - Sahu Comments on the Atlantic Coast Pipeline Buckingham Compressor Station (Sept 21 2018).pdf
548K

Exhibit B - Homes.pdf
1962K

Exhibit C - Natural Gas Pipelines in VA.pdf
2505K

Exhibit D -Andy Gray's Total Annual Nitrogen Deposition.pdf
232K

Exhibit E - Thurston Buckingham Declaration 9-11-18.pdf
855K

Exhibit F - Location-Map.pdf
1976K

Exhibit G - Station-Drone.pdf
2742K

Comment Letter to Air Board Buckingham - Final.pdf
496K

Exhibits A-G available
on DEQ website

267

CHESAPEAKE BAY FOUNDATION
Saving a National Treasure

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

September 21, 2018

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

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.

PHILIP MERRILL ENVIRONMENTAL CENTER
6 HERNDON AVENUE | ANNAPOLIS, MD 21403 | 410-268-8816 | CBF.ORG
268

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.[1]

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

[1] 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.[2]

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)[3] 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.[4] 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."[5] 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

---

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

[3] Exhibit C, Virginia Places, Natural Gas Pipelines in Virginia maps of existing pipelines.

[4] *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.

[5] 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 NOx 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. Solar typically does not warranty emission rates for VOCs, SO2, 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 NOx controls. The four turbines use SCR to control NOx 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 NOx 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 through 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. [6] 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.

---

[6] *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.[7] 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

---

[7] 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.[8] In fact, the Governor has directed DEQ, and consequently this Board, to develop carbon trading regulations which DEQ has done.[9] 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.[10] 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 <u>already</u> 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.[11] 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.

---

[8] https://www.governor.virginia.gov/newsroom/all-releases/2018/september/headline-829610-en.html

[9] http://www.townhall.virginia.gov/L/ViewStage.cfm?stageid=8130

[10] https://www.rggi.org/program-overview-and-design/elements

[11] 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. NO_x, SO_2, 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)

	NOX	**CO**	**VOC**	**PM**	**SO2**	**CO2e**
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, NOx 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 (PM2.5) 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, CO2, NOx, 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_2 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_2 NAAQS at the Buckingham compressor statios.

According to the Air Quality Model Results for the Project (using the AERMOD screening mode), the 1-hour NO_2 values at the Buckingham location (modeled source impact plus assumed background) is greater than 150 ug/m3; the 1-hour NO_2 NAAQS standard is 188 ug/m3. Because these modeled concentration is close to the 1-hour NO_2

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_2 concentration impacts and to demonstrate attainment with the 1-hour NO_2 NAAQS.

IV. Operation of the Compressor Station Will Harm Human Health

Dr. George Thurston has evaluated the PM and ozone (O_3) 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 PM2.5 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 PM2.5 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 PM2.5 at these locations will rise by at least 21%, while the adverse human health effects of short-term (24-hr) exposures to PM2.5 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.[12] 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.[13] According to the latest census data, the median household income is $43,514 with 17.6% of the population living in poverty.[14] 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.[15] 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

---

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

[13] http://virginialmi.com/report_center/community_profiles/5104000029.pdf at page 23.

[14] https://www.census.gov/quickfacts/fact/table/buckinghamcountyvirginia/PST045217

[15] *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.[16]

During the September 12 public hearing, the comments of Ruthie and John Laury, (Part 1 at 31:21- 37:33) whose retirement home would by 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 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.[17]

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.[18] The agency recognizes that it is important that no segment of

---

[16] 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.

[17] https://www.deq.virginia.gov/Resources/Glossary/GlossaryE.aspx

[18] 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.[19] The Environmental Protection Agency's Chesapeake Bay Program identified atmospheric deposition of nitrogen as the highest nitrogen input load to the Chesapeake Bay watershed.[20] 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[21] 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.[22] 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

---

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

[20] 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

[21] https://www3.epa.gov/ttn/scram/7thconf/calpuff/Previous_SCRAM_CALPUFF_Posting_Reference.pdf

[22] *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 .

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,

Rebecca Tomazin
Virginia Executive Director
Chesapeake Bay Foundation

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Air pollution permit in Union Hill neighborhood

1 message

Ann Murray <meadowspringsfarm@gmail.com> Tue, Sep 18, 2018 at 11:18 AM
To: airdivision1@deq.virginia.gov

To whom it may concern: The state of Virginia has the authority to deny this permit and must exercise it. Dominion has applied for a permit for increasing air pollution in this neighborhood and beyond. DEQ has failed to consider the placement, according to environmental justice standards. The community is mostly African-American, with high percentages of elderly and children, who would be most susceptible to asthma and other respiratory diseases. Lower limits need to be set on nitrous oxide, which contributes to respiratory disease. Currently DEQ did not set the limit as low as possible. More can be achieved. This gas needs continuous monitoring, with one hour limits needed. In addition, the formaldehyde and hexane emissions model is flawed.

High levels of these may cause cancer, and at lower levels cause irritation to the skin and respiratory system. A limit is also needed on ammonia.

The ACP is not needed and the emissions will contribute to global warming. Virginia will not benefit. Thank you for listening to your citizens! Ann Murray

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

additional comments

1 message

Charlene Oba <chado108@icloud.com> Fri, Sep 21, 2018 at 11:18 PM
To: airdivision1@deq.virginia.gov

Please find attached my additional comments.

Thank you,
Chad Oba
c 434 806 6332

Air permit comments 9:21:2018.pdf
98K

284

Public Comment on Buckingham Compressor Station September 21,2018

From: Toru and Chad Oba
571 Woods Rd
Buckingham, Va 23921
434 806 6332

Please find an additional comment to add to my previous one submitted on September 9,2018.

It has been brought to my attention that site suitability must be considered before approving an air permit. To this matter please consider the following:

A categorical exclusion cannot be used if one or more "extraordinary circumstance" applies, including actions that: - Affect human health or safety (including minority or low-income communities) - Affect areas with unique environmental characteristics, species or habitats protected by the ESA, the MMPA, the MSA, NMSA, or the Migratory Bird Treaty Act, significant properties/historic resources; - Involve hazardous or toxic substances; - Introduce/expand invasive species; - Violate laws or cannot be resolved through regulatory processes; - Effects are highly controversial or precedent-setting; - Effects that are uncertain, unique, or unknown; or - Cause significant cumulative impacts when the proposed action is combined with other past, present and reasonably foreseeable future actions, even though the impacts of the proposed action may not be significant by themselves.
https://www.deq.virginia.gov/Portals/0/DEQ/CoastalZoneManagement/GranteeGuidanceInformation/NEPA_EC_Procedures_Presentation_2018.pdf?ver=2018-02-27-120535-613

It would seem being that the site for the proposed compressor station is located in a low income majority African American neighborhood that is additionally populated by many elderly people and children who already have existing medical conditions that will be further worsened by being exposed on a regular basis to the emissions from the compressor station that this must be considered. This includes my husband and myself. In particular I have great concern for my husband who works outside for up to 10 hours daily and will be breathing the emissions for many years if we are forced to remain here because of lowered property values and the inability to financially afford to relocate. I do not believe that the standards in use despite your best efforts to lower them will not harm him and many others in our neighborhood.

Public Comment on Buckingham Compressor Station September 21,2018

From: Toru and Chad Oba
571 Woods Rd
Buckingham, Va 23921
434 806 6332

Additionally I offer the following from Physicians for Social Responsibilty and attest to the accuracy of the actual populations as i participated as a community participant in a door to door demographic study that was headed up by Dr Lakshmi Fjord who is certified to do such a study.

It is incumbent on the Air Pollution Control Board to consider site suitability. There are multiple bases on which to conclude that Union Hill is an unsuitable place to situate the only Virginia compressor station for the Atlantic Coast Pipeline. These include:

a. Environmental Justice concerns. The U.S. Environmental Protection Agency defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." It seeks to address environmental discrimination, which can manifest as the placement of environmentally hazardous sites, including energy production facilities, in minority communities. The following characteristics of the Union Hill community, and the selection of that community for the location of the only Virginia compressor station on the Atlantic Coast Pipeline, indicate a likely environmental justice issue, with its attendant implications for health.

   i. The population of Union Hill is predominantly minority: 83 percent self-identify as African American, Native American/African American, Native American/ White, Hispanic, or Asian.

   ii. Many Union Hill residents belong to sub-populations, including infants and youth (32 percent) and elderly (25 percent), whose health is particularly vulnerable to the air pollutants emitted by compressor stations.

   iii. The presence of preexisting medical conditions among the population of Union Hill calls for an environmental justice study of minority health effects. Known preexisting diagnoses identified in Union Hill include diabetes, asthma and other lung conditions, COPD, chronic bronchitis and pneumonia, heart conditions, breast and other cancers, lupus, kidney disease, epilepsy, multiple sclerosis, brain tumor, and migraines.

From: Toru and Chad Oba
571 Woods Rd
Buckingham, Va 23921
434 806 6332

iv. The community faces disproportionate impact from the proposed compressor station. A decision was made to place the compressor stations for the Atlantic Coast Pipeline at greater distances from one another than is the industry standard. This requires that the compressor stations be unusually large and high-horsepower, thus concentrating an even higher amount of dangerous pollution in the communities where these facilities would be sited. The result is to inflict disproportionate environmental impact – and corresponding risks to health – on the minority communities of Union Hill and nearby Woods Corner.

b. Population density. The population density in the immediate vicinity of the site proposed for the compressor station is far denser than is claimed by Dominion, which has stated "the site is sparsely populated" and has "29.6 people per square mile." According to a site study that was independently conducted, there are in fact dense clusters of households on all sides of the proposed compressor station, with a population over six times greater than that applied for by Dominion. Not incidentally, Dominion stands to gain financially in making its claim, as the presence of only 29.6 people per square mile would allow Dominion to install pipes that are significantly thinner and to place shutoff valves up to 500% farther apart. Such decisions could endanger the relatively dense local populace in case of an accident or fire at the compressor station.

c. Special historic significance. Preservation Virginia listed Union Hill/Woods Corner Rural Historic District on its list of "Most Endangered Historic Places" in May 2016. According to the National Trust for Historic Preservation, the Union Hill/Woods Corner Rural Historic District is a rural community that was established by African-Americans after Emancipation on former plantation land. PSR notes that the disregard being paid to the special historic value of this community, and the further deterioration of the historic community as a result of locating a hazardous site nearby, can contribute a stressor to the mental health of residents, increasing the stress likely to result from the location of the compression station in their neighborhood.

Thank you very much for your consideration of this as your decision to approve this air permit or not will have significant impacts on our future lives here in the Union Hill neighborhood of Buckingham County.

Public Comment on Buckingham Compressor Station September 21,2018

From: Toru and Chad Oba
571 Woods Rd
Buckingham, Va 23921
434 806 6332

Toru and Chad Oba

288

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Public comment

1 message

Charlene Oba <chado108@icloud.com> Sun, Sep 9, 2018 at 7:55 PM
To: airdivision1@deq.virginia.gov
Cc: Michael Dowd <michael.dowd@deq.virginia.gov>, Patrick Corbett <patrick.corbett@deq.virginia.gov>, Ann.Regn@deq.virginia.gov

Please find attached my public comment for the Buckingham Compressor Station air permit.

Chad Oba
571 Woods Rd
Buckingham, Va 23921
c 434 806 6332

DEQ CS final 9:9:2018.pdf
105K

289

Public Comment on Buckingham Compressor Station September 9, 2018

From: Toru and Chad Oba
571 Woods Rd
Buckingham, Va 23921
434 806 6332

To: Department of Environmental Quality
Air Permit Division
Attention: Michael Dowd, Patrick Corbett

Please find here 41 critical questions that as impacted residents of the Woods Corner Union Hill neighborhood, we feel we need to have answered. Our health and economic survival due to our close proximity to this large compressor station and the resulting fall in real estate values, will have severe impacts on our future well being. My husband and I are elderly and already have some health conditions that we feel will be worsened by this constant exposure.

My husband works out side as a stone sculptor in an outside studio for up to 10 hours daily so he will have extreme exposure to all of the HAPS emitted on a daily basis for the rest of his life. Although you are only mandated to regulate according to standards already set there is much new evidence that indicates these standards do NOT in fact protect human health. Additionally the cumulative effect of all the emissions has not been factored. Would you expose your children or elderly parents to this? And yet we here in our rural neighbor hood are being asked to accept this.

We fully expect that this very important trust that the public has in you will be upheld with the utmost scrutiny. Our very lives depend on it.

here are <u>106 unanswered questions</u>

PART 1: Technical Questions for the Air Permit and Permitting Process

Emissions

1. How high are the peak hourly emissions for Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs) at Buckingham Compressor Station (BCS)? Minor source is based on annual emissions which are an average but peak emissions can really impact health!
2. Emissions during blowdowns occur in large concentrated plumes of methane and co-pollutants. How much of the emissions from the compressor station will remain in the Union Hill and Woods Corner neighborhoods, and how much will travel beyond? With schools are within 10 miles of the compressor station, how will our children be protected?
3. How far away will pollution from BCS extend and in which direction is it most likely to be carried based on wind and other patterns?
4. According to project description on the Virginia Department of Environmental Quality (DEQ) website, the estimated effect on air quality near the facility from the proposed project is that all emissions will comply with all applicable ambient air quality standards. Please share with us the

From: Toru and Chad Oba
571 Woods Rd
Buckingham, Va 23921
434 806 6332

data documenting the current ambient air quality. What is the difference between the ambient air quality now in the air around the proposed project and what is allowable?

5. Sulfur Oxides (SOx) and Hazardous Air Pollutants (HAPs) emissions seem to be higher in the 2018 permit application when compared to 2017 estimates. How can it be best available technology (BACT) if equipment replacement increases these dangerous emissions?
6. Since the recommended distance between compressor stations is usually less than 100 miles, why is the distance between ACP/Dominion Energy compressors so great, particularly since it concentrates dangerous pollution in the Union Hill and Woods Corner neighborhoods?
7. Why does BCS in Virginia have higher emissions than the ACP compressor stations in West Virginia or in North Carolina? Could the spacing of the stations be regularized to not place the greatest risk at Union Hill?
8. Given that industry standard is to have compressor stations at shorter intervals, distributing risks and hazards more evenly over transmission distances. How does ACP/Dominion Energy explain that they have only one compressor station per state, and therefore these are very large and impactful as needed to provide the pressure to cover 200+ miles between stations?
9. Given the fact that ACP/Dominion Energy has not accurately recorded the actual population living next to the BCS site, how will DEQ address the fact that the low population number used (29.4 people per square mile) allows ACP to use up to 75% less heavy pipes and 500% longer shut off valve distances? For air emissions at BCS alone, that means far greater blowdown contents between shut off values or 15.6 miles apart.
10. Since greater emissions reductions have occurred at other compressor stations, how can the proposed plan for Union Hill be argued to be BACT?
11. Dominion Energy has expanded other compressor stations after permitting and construction. Can we anticipate that this compressor station will be expanded in the future?
12. Unless the company can be prohibited from expanding in the future, why is this facility not considered a major source of pollution now so stronger standards are applied?
13. Known pre-existing diagnoses at Union Hill, include diabetes, asthma and other lung conditions, chronic bronchitis and pneumonia, heart conditions, breast and other cancers, COPD, lupus, kidney disease, epilepsy, multiple sclerosis, brain tumor, migraines and more. Where are the studies to assure that the passage of the Transco pipeline through this portion of Buckingham is not contributing to these medical conditions? Does analysis of BACT take into consideration at-risk populations?
13. Given that particulate matter (PM) causes respiratory damage and there are technologies available to scrub PM from air emissions, how can ACP/Dominion Energy claim BACT if not scrubbing PM?
14. The air permit application and draft air permit do not discuss exact levels of 30+ Hazardous Air Pollutants (HAPS) but do show they will be emitted from BCS. How can we be confident in DEQ protecting our public health if benzene, toluene, etc. and other HAPs known to cause harm to humans are not limited and are tons of HAPs are allowed to be emitted each year?
15. Residents living proximate to compressor stations often report headaches, dizziness, nosebleeds, skin rashes and other concerning symptoms. The DEQ report states that anticipated pollution will not be not harmful to human health because it is within limits, which is also true for other dangerous compressor stations where people are sick. How can you assure us we will not suffer negative health impacts?
16. Could ACP/Dominion Energy increase the amount of gas compressed in the BCS in the future without additional air permitting?

From: Toru and Chad Oba
571 Woods Rd
Buckingham, Va 23921
434 806 6332

17. While baseline emission data from Roanoke, Hopewell, and other parts of the state might provide the best available baselines for air modeling, how can we be assured of the accuracy of pollution estimates, when the characteristics of these places are clearly different from Buckingham and DEQ is basing the majority of these pollution estimates on unverified-in-real-life modeling outputs and laboratory testing?
18. DEQ air modeling for the BCS is based on many assumptions about temperature, altitude, and other factors that are not accurate for Buckingham. Why was field data not collected? How can you assure test results and thus pollution estimates are accurate?
19. How do you adjust for seasonal variability when assessing impacts of toxic pollutants on human health? For example, how do you take into account the higher exposure level of emissions that occur during the colder months when they stay closer to the ground?
20. The "emergency" gas turbine, which raises the combined horsepower closer to 57,000 is intended for winter months. How is this accounted for in the air permit? Can we be assured that use of "emergency" is not being used to "hide" higher levels of emissions in winter?
21. Please provide an analysis of the long-term effects of the interaction on the human body of all the emissions that will be released constantly and more so during the blowdowns? Many residents are not able to change residences and will be constantly exposed over many years for 24 hours a day every day of our lives.
22. The state measures National Air Ambient Quality Standards (NAAQS) in annual levels, but the blowdown events ACP/Dominion Energy has in their 2018 air permit application release acute emissions over shorter periods. How can nearby residents be assured their health is being protected when state measurements and regulations are not targeted at the specifics of the actual health risk?
23. How many total blowdowns per year, including all compressors, will there be? We never hear the same number twice for the expected number of blowdowns and discussions with other communities with existing compressor stations revealed that blowdowns occur far more frequently than it appears this permit anticipates.
24. What will be the procedure for providing warnings for scheduled blowdowns? Will nearby residents who have health issues be given sufficient time to leave the area until the pollutants are reduced? How long will they have to plan to be away from the area to protect their health? What conditions might affect that time?
25. From the discussion of the BACT analysis in the permit application, it appears that DEQ has relied on the top-down analysis conducted for other (smaller) sites. Shouldn't DEQ have required the applicant to conduct a fresh top-down BACT analysis since BCS is a larger source than the other compressor stations evaluated for BACT?
26. The SOLAR manufacturer for the compressor turbines does not warranty or guaranty emission reductions in real life will approach levels found in modeling tests. SOLAR suggests any estimates must be treated as a range contingent on local variables. Given this careful language and the direct precaution in the SOLAR's sales materials warning against using their estimates in permitting decisions, why has there not been additional independent verification to assure estimates are accurate for Buckingham's local conditions?
27. Since the new technology ACP/Dominion Energy bases their predicted emissions on has never been tested in the field and is taken from manufacturers' laboratory results under generic conditions, is it not the best practice to hold the air permit application until the new technology has been tested in similar situations? For example, some of the proposed emissions controls have only been used with small turbines dissimilar to those proposed for BCS, isn't additional testing and use required before we can trust the manufacturer's claims?

From: Toru and Chad Oba
571 Woods Rd
Buckingham, Va 23921
434 806 6332

28. At least one of the SOLAR turbines has demonstrated successful use of catalytic combustion technology. This technology has the potential community benefit of reducing the risks associated with the ammonia injection. Did the BACT analysis consider the use of catalytic combustion technology?
29. Why is it considered appropriate to use Occupational Safety and Health Administration (OSHA) work standards to apply to people exposed in homes? Since most people spend more than 8 hours in their homes each day, how can this be considered a relevant metric to assess home exposure?
30. ACP/Dominion Energy's BACT claim seems to involve selective capturing of methane, so how could DEQ assure these levels are lower to protect our health and reduce threats from climate change? Methane is 86% more damaging to protective ozone than carbon dioxide. How does DEQ plan to require ACP/Dominion Energy to accurately measure as well as to eliminate the release of methane into our community?
31. In the face of a climate change crisis, how can DEQ permit the BCS to release nearly 80 tons of methane per year?
32. Is there the possibility of methane leaking from the BCS or surrounding infrastructure that is unaccounted for in the permit application?

Timing and Format of Permitting Process

33. Why do you not provide more time for public comment since impacted communities to not regularly have internet access when large permit documents are stored as web files? Can you not provide summary tables or other education materials to make content more accessible to impacted communities?
34. Will you extend the comment period for another 30 days beyond September 11 so we have additional time to review documents and prepare comments?
35. Why is the public hearing for this permit being held on the last day of the comment period? This prevents anyone who attends and learns more from making a comment. It also prevents citizens who need time to consider new information from responding after they have time to do this.
36. What is timeline for the public comments to be provided to the Air Pollution Control Board (APCB)? When will the APCB public comments be made available?

Monitoring and Compliance

37. Why do impacted community members have to carry the burden of baseline testing? Will the state compensate residents for the time and money we are investing in baseline testing, since DEQ has not done this necessary work?
38. How can we access data/record-keeping on an ongoing basis to ensure the records that are being kept and so that we can be aware of the accurate quantities of emissions we are being exposed to daily, monthly and yearly?
39. How will we know all of the relevant information is being shared with the public in a timely manner? Polluting companies and state agencies have a checkered history in terms of transparency.
40. Does DEQ plan to establish fenceline monitoring systems to notify local residents when air pollutions levels from BCS are unsafe?
41. How monitoring and compliance systems involve impacted community members and use local knowledge to make our system more robust? How can we be assured ACP/Dominion Energy will not be allowed to create a sub-par evacuation process or one that does not fit our rural challenges?

Public Comment on Buckingham Compressor Station September 9, 2018

From: Toru and Chad Oba
571 Woods Rd
Buckingham, Va 23921
434 806 6332

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Compressor Station Air Permit

1 message

Melissa Rich (melissabrich@gmail.com) Sent You a Personal Message <automail@knowwho.com> Mon, Sep 10, 2018 at 8:17 AM
To: airdivision1@deq.virginia.gov

Dear Ann Regn,

I am writing to request that you deny the Stationary Source Permit to Construct and Operate Dominion Energy's proposed Buckingham fracked-gas compressor station as it is inadequate to protect the air quality and public health of Virginians. The permit is particularly inadequate to protect the Virginians in the Union Hill and overall Buckingham County communities that will be most directly impacted by the compressor station's operation.

A compressor station of this scale is unprecedented in Virginia. The proposed compressor station would be the largest in Virginia's history. Despite this, the draft permit does not contain sufficient analysis of impacts on the community and how impacts will be mitigated. The draft permit does not sufficiently explain how the compressor station will impact the community or why the standards and methodologies it relies on to analyze impacts are enough to protect human health.

- In the analysis of the draft permit, the Virginia Department of Environmental Quality states, based on a 2017 evaluation, that the proposed site for the compressor station is "sparsely populated". However, research done by community groups indicates that this is absolutely not true and that there are hundreds of Virginians living close to the site.

- Some residents live as close as half a mile from the proposed compressor station site. Evidence shows people living near compressor stations have suffered from symptoms ranging from rashes to gastrointestinal, respiratory, neurological and psychological problems. The draft permit does not explain how the air quality and health of these especially vulnerable residents will be protected over time from harmful air emissions.

- The draft permit will require mostly self-monitoring by Dominion of air quality and emissions. It does not explain why installing further community monitoring technology is unnecessary to protect air quality and human health.

- A Quantitative Risk Assessment and Comprehensive Health Impact Assessment should be conducted to address the complex and multifaceted ways that the health of residents could be impacted by emissions from the compressor station.

- No mention of how air quality emergencies will impact the community or be mitigated is included in the draft permit.

- While greenhouse gas emissions are briefly mentioned, there is no analysis of how measures established in the draft permit will ensure that air quality and human health will be protected from climate change impacts.

Virginians rely on the expertise of public officials like those on the Air Board to ensure their health and environment is protected. It is imperative that the deficiencies noted above are addressed so that the comprehensive impacts on air quality and the health of Virginians can be adequately considered and addressed before a permit is issued.

For these reasons, I respectfully request that the Air Board deny Dominion's permit for the Buckingham Compressor Station.

Sincerely,

Melissa Rich
2417 Bidgood Dr Portsmouth VA 23703 United States
Portsmouth, VA 23703
melissabrich@gmail.com
(757) 646-7408

This message was sent by KnowWho, as a service provider only, on behalf of the individual noted in the sender information.

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Fwd: Message from "RNP0026737F7192"

1 message

Queen Shabazz <qshabazz@vaejc.org> Fri, Sep 21, 2018 at 12:52 PM
To: airdivision1@deq.virginia.gov, harris.reggie@epa.gov, constituent.services@governor.virginia.gov, suzanne.buchanan@usdoj.gov, ann.regn@deq.virginia.gov, michael.dowd@deq.virginia.gov, bcarter@buckinghamcounty.virginia, thomas.jordan.miles@gmail.com, Karen Campblin <ktc1426@gmail.com>, jeddins@achp.gov, marcwagner@drh.virginia.gov

Re: BUCKINGHAM COMPRESSOR STATION
Permit Name: Minor Source Construction Permit issued under the authority of the Air Pollution Control Board
Applicant Name and Registration Number: Atlantic Coast Pipeline, LLC; 21599
Facility Name and Address: ACP - Dominion Energy Buckingham Compressor Station; 5297 S. James River Highway, Wingina, VA 24599

On behalf of the Virginia Environmental Justice Collaborative (VEJC), I am submitting the attached letter dated 10 September 2018 along with signatories, to express our shared concerns of Environmental Justice or the lack thereof in the state of Virginia.

Please do not hesitate to contact me, Queen Zakia Shabazz, Coordinator, with any responses or items needing clarity.

Queen Zakia Shabazz, Coordinator
Virginia Environmental Justice Collaborative
804.308.1518

---------- Forwarded message ---------
From: **Queen** <qshabazz@vaejc.org>
Date: Fri, Sep 21, 2018 at 11:33 AM
Subject: Message from "RNP0026737F7192"
To: Queen <qshabazz@vaejc.org>

This E-mail was sent from "RNP0026737F7192" (MP C4503).

Scan Date: 09.21.2018 11:34:03 (-0400)

20180921113403196.pdf
2460K

296

VIRGINIA ENVIRONMENTAL JUSTICE COLLABORATIVE
220 Hull Street, Richmond, VA 23224
www.vaejc.com
804.370.1143

September 10, 2018

Dear Governor Northam, Senators Warner and Kaine, Virginia State Legislators
cc: Federal Energy Regulatory Commissioners, Dominion Resources, Meryem Karad, Trieste Longwood (DEQ)

We are alarmed civil rights, community-based, environmental, and faith-based organizations who make up the Virginia Environmental Justice Collaborative (VEJC), along with institutional partners, civil rights advocates, consumers, impacted residents, and frontline marginalized communities throughout the Commonwealth. Environmental justice is falling through the cracks because each federal or state agency limits its permitting and regulatory authority to fragmented fields of expertise (air *or* water; air *not* safety or noise pollution).

This approach excludes comprehensive study of the cumulative risks and hazards faced by impacted residents, and supports denial of responsibility for environmental justice implementation. Thus, EJ communities remain targets for new burdens of toxic infrastructure in Virginia. Travesties in two of these communities have prompted this letter and our strong recommendations for immediate actions by you.

The Environmental Protection Agency (EPA) defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws,

regulations, and policies. NEPA guidelines detail how to implement environmental justice reviews, including:[1]

- Identification and assessment of environmental justice communities using multiple methods, including inclusive local sources to ensure accuracy;
- Early, meaningful, inclusive, participatory engagement of impacted communities;
- Identification and protection of African American, Native American, and other cultural and historical resources;
- Comprehensive analysis of the cumulative impacts of air, soil, and water exposures and their combined risks to human health over time, with particular emphasis on vulnerable populations -- elderly, pediatric, minority, and low-income residents;
- Assessment of pre-existing medical conditions of fenceline neighborhoods;
- Equitable access to alternative energy and green infrastructure to reduce toxic burdens.

Virginia Energy Policy (Code of Virginia § 67-101) energy objectives include "[developing energy resources and facilities in a manner that does not impose a disproportionate adverse impact on economically disadvantaged or minority communities."[2] In 2017, Governor Terry McAuliffe created the Governor's Advisory Council on Environmental Justice (ACEJ) under Executive Order #73, to provide "a consistent, action-oriented approach to incorporating environmental justice into decision-making." Governor Northam's Executive Order #6 includes: "Engaging the regulated community, local governments, and other interested stakeholders in the development of new protocols"; and, "assessing gaps in DEQ resources or authorities necessary to address challenges identified under this review."

These commitments by Virginia to resolve the environmental and social injustices identified below demand that energy generation choices give highest priority to the health and safety of the public through equitable access to community-oriented renewable energy.

Buckingham Environmental Justice Review

Union Hill is <u>not</u> suitable for a gas compressor station because of geometric comprehensive and cumulative impacts to air, soil, and 100% of drinking water sources with:

- ACP Intersection with existing 4-pipeline William's Transcontinental (Transco) at the Union Hill Compressor Station in a large wetlands close to water wells, homes, churches;
- A proposed 54,000+ horsepower compressor station is sited for a majority African American community over 500% more populated than reported by Atlantic Coast Pipeline (ACP) and the Federal Energy Regulatory Commission (FERC),

[1] https://www.epa.gov/sites/production/files/2016-08/documents/nepa_promising_practices_document_2016.pdf
[2] https://law.lis.virginia.gov/vacode/title67/chapter1/section67-101/

- ➢ ACP's horizontal directional drilling at a seasonal flooding, seismic faultline site under the James River risks entire watershed drinking water;
- ❖ The African American Freedman community of Union Hill lacks historical preservation of historic black schools, churches, slave burials, and gathering places;
- ❖ According to state data and household studies, pre-existing health conditions in proximate households include asthma, chronic bronchitis and other lung disorders, heart disease, diabetes, cancers, and autoimmune conditions;
- ❖ Residents of Union Hill are disproportionately elderly and very young; in all public comment processes impacted residents give strong dissent with specific data for why not to allow a large compressor station in a minority, Freedmen community;
- ❖ Emergency first response infrastructure in Buckingham is inadequate for industrial scale leaks, fires or explosions.[3]

We request a 30-day extension of the 30-day comment period for the draft air permit for Union Hill Compressor Station because:

- ❖ Community members received access to large documents only weeks before the comment period is set to end; unlike ACP's developer, they did not receive DEQ expert technical support to frame the technological and emissions issues DEQ staff said are the only issues they will read and summarize in public comments;
- ❖ Yet, the lack of organization, lack of tables, and overall impenetrable language in hundreds of pages of the air permit and air modeling require the same level of support Dominion received from DEQ to comprehend;
- ❖ The lack of access to computers and internet by the Union Hill community, coupled with lack of access to rural wifi or broadband infrastructure, compounds inequity.

Chesapeake Environmental Justice Review

Likewise, the Chesapeake and Norfolk lateral pipeline route and process are not appropriate:

- ❖ The siting of a new lateral gas pipeline route in Chesapeake and Norfolk demonstrates targeted impact to majority African American neighborhoods. Many residents purchased homes in these neighborhoods in the late 1960's - early 1970's when other neighborhoods were redlined and they were prohibited from buying elsewhere. Now, those same residents are seniors and unable to move without losing their lifelong investment while others who are able are selling their homes which could still reduce home values;
- ❖ A coalition of Chesapeake subdivisions commissioned a professional environmental study at their own expense. The report determined that should there be an explosion, there are hundreds of homes within potential blast zone.

---

[3] Based on household surveys, Union Hill has a suburban population density. It is cited incorrectly in project documents as rural.

4. Undertake and make public baseline analyses of present drinking water, ambient air, transportation and existing health in these communities; and make that data available to the public without incurring delays and costs of FOIA;
5. Immediately notify parents of public school students at schools located in the blast radius of the Chesapeake lateral connection and Union Hill compressor station, and address concerns they raise; and
6. Require developer-funded bonds for both projects to be held in escrow for Impacted Families to apply for direct assistance who experience any adverse health, mortality, economic, educational impacts or true market relocation costs.

For all infrastructure projects, we recommend :

1. Meaningful participation by impacted populations in permitting and monitoring including effective responses to citizen concerns as per Exec. Order #6;
2. Evaluation of climate and environmental justice impacts in all state policies, programs, and permits;
3. Reduction of state disparity in exposure by which black and brown communities disproportionately experience harm from toxic air, unsafe water, and public safety risks;
4. Development of equitable access to renewable energy sources (Appendix 2)
5. Creation of an interagency Task Force with involvement of impacted residents to look at and take actions to reduce or avoid the comprehensive impacts of the lateral and ACP pipelines and the Virginia ACP compressor station, since no existing agency has authority to address cumulative air, water, and land releases and exposures;

Signatories

Groups

Virginia Environmental Justice Collaborative (by consensus)
Friends of Buckingham
Virginia Interfaith Power & Light
Center for Sustainable Communities
Appalachian Voices
United Parents Against Lead & Other Environmental Hazards
Virginia Organizing
First Alliance Consulting Group LLC.
Sierra Club Virginia Chapter
Buckingham: We The People
Chesapeake Climate Action Network
Water is life. Protect it.

Allegheny-Blue Ridge Alliance
Highlanders for Responsible Development
Interfaith Alliance for Climate Justice
Friends of Nelson
Yogaville Environmental Solutions
Augusta County Alliance
RVA Interfaith Climate Justice League
Mothers Out Front, Hampton Roads
Virginia Pipeline Resisters
Voices from Bath
350 Loudon
RAPTORS VA
Protect Our Water Heritage and Rights (POWHR) Coalition
Preserve Giles
Harrisonburg-Rockingham County NAACP
Sacred Ground Historical Reclamation Project
Virginia Defenders for Freedom, Justice & Equality

Individuals

Swami Dayananda, LOTUS Center for all Faiths, Yogaville, Buckingham
Rev. Dr. Lakshmi Fjord, Friends of Buckingham; Chair: People's Tribunal on Human Rights and Environmental Justice Impacts of ACP and MVP
Queen Zakia Shabazz, Coordinator, Virginia Environmental Justice Collaborative
BeKura W. Shabazz, Founder, First Alliance Consulting LLC
Dr. Mary Finley-Brook, University of Richmond, Richmond
Dr. Irene Leech, Buckingham
Chad Oba, Heidi Dhivya Berthoud, Friends of Buckingham, Buckingham
Alexis Szepesy, Sierra Club Virginia Chapter
Suzanne Keller, retired epidemiologist
Hanuman, Heidi Dhivya Berthoud, Buckingham: We the People
Robert Dilday and Weston Mathews, Co-Directors Interfaith Alliance for Climate Justice
Ben Cunningham, Blue Ridge GeoGraphics, LLC
Kimberly Williams, Norfolk, VA
Steven Baggarly, Norfolk VA
Stacy Lovelace and Jessica Sims, Co-Directors Virginia Pipeline Resisters
Natalie Pien, Unitarian Universalist Church of Loudoun, Green Team Chair
Jonathan Sokolow, Attorney, Reston, VA
Russell Chisholm, Executive Committee Member of POWHR Coalition, Newport, VA

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Compressor Station, Draft Air Permit Comments

1 message

david@wildvirginia.org <david@wildvirginia.org> Fri, Sep 21, 2018 at 1:54 PM
Reply-To: "david@wildvirginia.org" <david@wildvirginia.org>
To: "airdivision1@deq.virginia.gov" <airdivision1@deq.virginia.gov>

Please accept the attached letter with my comments. Please let me know if there are problems with the attachment. Thank you.

David Sligh

<<<<<<<<<<<<>>>>>>>>>>>>>

Never be afraid to raise your voice for honesty and truth and compassion, against injustice and lying and greed.
--William Faulkner

David Sligh
david@wildvirginia.org
davidwsligh@yahoo.com
434-964-7455

Comments on Buckingham Compressor Station Air Permit.pdf
115K

302

David Sligh
1433 Wickham Pond Drive
Charlottesville, Virginia 22901
davidwsligh@yahoo.com
434-964-7455

Virginia Department of Environmental Quality
Piedmont Regional Office, Air Division
4949-A Cox Rd.
Glen Allen, VA 23060
airdivision1@deq.virginia.gov

Submitted Via Email

Re: Buckingham Compressor Station, Draft Air Permit Comments

Dear Sir or Madame:

I urge the State Air Pollution Control Board (Board) to deny the permit for the subject facility. The analysis offered by DEQ to support the draft permit is incomplete, failing to include discussion of factors that the State of Virginia is required to address under Virginia law. Further, certain pollution limits and monitoring requirements in the draft permit fail to provide the levels of protection required under state and federal law.

Failure to Conduct and Document Required Analyses
DEQ officials have stated that the Department and the Board lack authority to consider issues related to the need for the project and proper siting of the station. State law explicitly contradicts this position. The State of Virginia not only has that authority, it has a solemn obligation to exercise it.

The Air Board, in approving permits, "shall consider facts and circumstances relevant to the reasonableness of the activity involved," 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;
3. The suitability of the activity to the area in which it is located; and
4. The scientific and economic practicality of reducing or eliminating the discharge resulting from such activity.

Code of Virginia § 10.1-1307.E.

<u>No Need for the Pipeline and Compressor Station</u>
A mountain of evidence proves that Dominion's claims about the need for gas to be supplied by ACP are untrue. Importantly for this permit review, DEQ has refused to acknowledge this information or to incorporate it into its analysis of Dominion's application for the air permit.

This deficiency is directly pertinent to the "reasonableness of the activity involved" and the "social and economic value of the activity involved," which the Air Board must consider. Code of Virginia § 10.1-1307.E. Weighing against the lack of need for the project are the social and economic costs that will be imposed on the communities directly affected by the compressor station.

To find information on the lack of need for the pipeline and compressor station, go to:

- *Are the Atlantic Coast Pipeline and the Mountain Valley Pipeline Necessary?*, Synapse Energy Economics, Inc., September 12, 2016. ("The region's anticipated natural gas supply on existing and upgraded infrastructure is sufficient to meet maximum natural gas demand from 2017 through 2030. Additional interstate natural gas pipelines, like the Atlantic Coast Pipeline and the Mountain Valley Pipeline, are not needed to keep the lights on.")
- *IEEFA Update: Atlantic Coast Pipeline Risk Is Being Borne Not by Dominion and Duke, but by Their Customers*, Institute for Energy Economics and Environmental Analysis, September 8, 2017. ("For both Dominion and Duke, Actual Electricity Consumption Has Been Essentially Flat for the Past Few Years, leading the utilities recently to be less optimistic about growth.")
- *Natural Gas Industry Admits New Pipelines Aren't Needed*, Natural Resources Defense Council, February 5, 2018. ("a spokesman for Williams, owner of the Transco pipeline, a would-be competitor of ACP, indicated 'the infrastructure is in place right now to meet the current demand.'")

Unfair Targeting of Communities of Color and Impacts to Vulnerable Populations

The disproportionate impacts the compressor station would have on the African American community in and around Union Hill are clearly shown. The Federal Energy Regulatory Commission (FERC) relied on incorrect and incomplete information about the local community to dismiss environmental justice and siting concerns. The Air Board must demand that DEQ provide and analyze correct data on these issues and must reject this permit unless and until the Department does so.

The Air Board is required to consider these facts in an analysis of 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" and the "suitability of the activity to the area in which it is located." Code of Virginia § 10.1-1307.E. The Board must reject the draft permit prepared by DEQ and require that all pertinent siting considerations be investigated and analyzed before it considers the proposal further.

FERC relied on incorrect data from Dominion to conclude in its final environmental impact statement on the ACP that, on average, there are 29.6 people per square mile in the area surrounding the pipeline's path in Buckingham—that number was provided by the U.S. Census Bureau. However, a survey of the community by Friends of Buckingham showed that FERC's number was off by about 500 percent.

Even worse, FERC failed to acknowledge the certain impacts to the Union Hill community. As reported in a news article at Cville.com, Compressor anxiety: Historic African American community alleges environmental racism:

Members of the anti-pipeline group Friends of Buckingham went door-to-door to survey the Union Hill area. They spoke with 64 percent of the people living in the 99 households within that square mile, and of those 158 residents, 85 percent are African American.

The FERC report didn't mention Union Hill, where a third of the residents are descendants of the freedmen community that was once enslaved there, and where there are freedmen cemeteries and unmarked slave burials on the site where Dominion wants to build its compressor station, according to Yogaville resident and cultural anthropologist Lakshmi Fjord.

DEQ has also failed to account for the fact that these areas have unusually large percentages of elderly people and children, both of which are especially sensitive to the kinds of air pollutants the compressor station would emit.

Recently, Governor Northam's Advisory Council on Environmental Justice (ACEJ) found evidence that ACP would have "disproportionate impacts for people of color and for low-income populations due to gas infrastructure expansion." Based on that and other findings, the ACEJ recommended the "Governor direct DEQ to suspend the permitting decision for the air permit for the Buckingham compressor station pending further review of the station's impacts on the health and the quality of life of those living in close proximity." See ACEJ letter, dated August 16, 2018, at Environmental Justice Review of Virginia's Gas Infrastructure. The ACEJ also recommended Governor Northam convene an Emergency Task Force on Environmental Justice in Gas Infrastructure. See article about the ACEJ's action at Governor's Advisory Council Call for Moratorium on Atlantic Coast and Mountain Valley Pipelines, Global Justice Ecology Project, August 29, 2018.

Emission Limits and Monitoring Inadequate to Protect the Public

Limits in the draft permit include limits on nitrogen oxides (NOx) on a time scale that ensures full and adequate protection of the public and compliance with ambient standards. Including only long-term limits, for which average emissions over time are predicted to provide protections is not sufficient. The levels of air pollutants emitted from the compressor station may vary greatly through time, due to changing conditions. Therefore, even if the air quality effects meet protective standards on-average over extended times, harmful levels may exist in the atmosphere for shorter periods. NOx pollution can cause or contribute to detrimental health effects in the short-term (including respiratory problems, especially in people with existing health problems and those with special sensitivities. Only daily limits on emissions can ensure that these kinds of impacts will not result.

Likewise, short-term fluctuations in emissions and levels of impact will not be detected unless monitoring is conducted on a time scale that can detect these changes through time. The permit must include requirements for continuous monitoring to adequately represent levels of emissions.

Conclusion

The draft permit under consideration by the Board cannot adequately protect the public and must be rejected. Unless the required analyses are completed and documented in the supporting information, the permit cannot meet statutory requirements. Also, the limitations and monitoring requirements fail to ensure compliance with standards or adequately protect the public.

Thank you for considering these comments.

Sincerely,
David Sligh

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Air Pollution Permit Comments for Buckingham Compressor Station

1 message

Chris Sonne <1civilengr@gmail.com> Thu, Sep 20, 2018 at 2:22 PM
To: airdivision1@deq.virginia.gov
Cc: michael.dowd@deq.virginia.gov, patrick.corbett@deq.virginia.gov, priscillasonne@gmail.com

I have attached my comments regarding the above referenced permit application.

I look forward to your response.

Thank You,

Christopher Sonne, P.E.

DEQ Air Permits.pdf
28K

307

Christopher & Priscilla Sonne
191 Satinwood Lane
Nellysford, VA 22958

September 20, 2018

Virginia Department of Environmental Quality
Piedmont Regional Office
4949-A Cox Rd.
Glen Alen, VA 23060
via email

RE: Comments for Virginia Air Pollution Control Board regarding the Air Permit for proposed Buckingham County Compressor Station

To Whom It May Concern:

1. I am requesting a 30 day extension of the comment period due to inadequate public comment period.
2. DEQ should immediately complete a Quantified Risk Assessment (QRA) prior to permitting.
3. DEQ and other state agencies should conduct a Health Risk Assessment (HRA) and a Comprehensive Health Impact Assessment (CHIA).
4. Information provided by individuals possessing technical expertise and credentials who are NOT employed by the DEQ or the developer has not been accepted as expert evidence and adequately considered as part of the technical review. Please address this shortcomming.
5. The air permit treatment of particulate matter (PM) has not been adequately addressed. The potential effects of this pollutant on public health should be considered.
6. Dominion claims to be using the Best Available Control Technology (BACT) but there are available technologies to scrub PM from air emissions. Why are these technologies not being incorporated at this site?

Please address these comments as you consider this controversial air pollution control permit.

Sincerely,

Christopher Sonne, P.E.
Priscilla Sonne

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

compressor station

1 message

Nancy Sorrells <lotswife@comcast.net> Thu, Sep 20, 2018 at 9:19 PM
To: airdivision1@deq.virginia.gov

Sept. 20, 2018
From:
Nancy Sorrells
Co-chair, Augusta County Alliance
3419 Cold Springs Rd.
Greenville, VA 24440
lotswife@comcast.net
540-292-4170

Comments in regard to the Buckingham Compressor station air quality permit.
This draft permit should be withdrawn as it does not meet the standards set out by state law. DEQ should not only withdraw the permit but should then do its due diligence and complete a community assessment to thoroughly understand the environmental justice issues and health issues that surround this air quality permit.

It is impossible to separate the air pollution issues from the environmental justice and health issues of this historic, predominantly African-American community. There is a reason that this compressor station is being proposed where it is -- because historically speaking communities such as this do not have the financial means to fight this injustice. If this was located in an elite neighborhood, the permitting process never would have gotten this far because of the amount of money that would have been directed toward litigation.

However, it is a documented fact that this compressor station would be a MAJOR source of greenhouse gas emissions. Further, the BACT analysis does not adequately consider the nitrogen oxide emissions and does not monitor a number of other things including fugitive emissions. In addition, the NAAQS modeling is flawed. Nearby communities will suffer health consequences because of exposure to methane. These are but a few of the well-documented flaws and issues associated with the draft air quality permit. The problems have been outlined in excruciating detail by other individuals and groups.

Thus the bottom line is this: The draft permit is too flawed to move forward. There are too many risks to the health of communities and our environment. DEQ should withdraw the permit draft and go back to Dominion for more detailed information regarding nearby human health, environmental justice, and environmental concerns.

thanks so much.
Sincerely,
Nancy Sorrells

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Compressor Station [SELC comments]

1 message

Charmayne Staloff <cstaloff@selcva.org> Fri, Sep 21, 2018 at 7:35 PM
To: "airdivision1@deq.virginia.gov" <airdivision1@deq.virginia.gov>

Dear Mr. Dowd, Chairman Langford, and Members of the Air Pollution Control Board,

The Southern Environmental Law Center submits the attached comments on the draft air permit for the proposed Buckingham County compressor station to the Department of Environmental Quality. SELC submits these comments on behalf of the organizations listed in the comments.

Thank you for the opportunity to comment on the draft permit.

Sincerely,

Charmayne G. Staloff

Associate Attorney

Southern Environmental Law Center

201 West Main St., Ste.14

Charlottesville, VA 22902-5065

Phone: (434) 977-4090

Fax: (434) 977-1483

www.SouthernEnvironment.org

This e-mail may contain confidential or privileged information. If you are not the intended recipient, please delete this email and all attachments without reading or forwarding to others, and notify the sender immediately by return e-mail.

2 attachments

Buckingham Compressor Station Air Permit Comments SELC Attachments 1-4.pdf
3172K

Buckingham Compressor Station Air Permit Comments SELC.pdf
898K

310

SOUTHERN ENVIRONMENTAL LAW CENTER

Telephone 434-977-4090 | 201 WEST MAIN STREET, SUITE 14 CHARLOTTESVILLE, VA 22902-5065 | Facsimile 434-977-1483

September 21, 2018

***Submitted via email*:**

Mr. Michael Dowd
Department of Environmental Quality
Piedmont Regional Office
4949-A Cox Road
Glen Allen, Virginia 23060
airdivision1@deq.virginia.gov

Chairman Richard D. Langford and Members of the Air Pollution Control Board
c/o Office of Regulatory Affairs
Department of Environmental Quality
P.O. Box 1105
Richmond, Virginia 23218

RE: Buckingham Compressor Station, Registration No. 21599

To Mr. Dowd, Chairman Langford, and Members of the Air Pollution Control Board:

The Southern Environmental Law Center offers the following comments on the draft air permit for the Atlantic Coast Pipeline, LLC's ("Atlantic") proposed Buckingham Compressor Station, Registration Number 21599 ("Draft Permit"). These comments are submitted on behalf of the Southern Environmental Law Center, Friends of Buckingham, Natural Resources Defense Council, Sierra Club, Shenandoah Riverkeeper, Potomac Riverkeeper, Shenandoah Valley Battlefields Foundation, Virginia Wilderness Committee, Augusta County Alliance, Shenandoah Valley Network, Highlanders for Responsible Development, the Chesapeake Climate Action Network, Wild Virginia, the Allegheny-Blue Ridge Alliance, and Defenders of Wildlife.

The proposed Buckingham Compressor Station is one of three that would provide compression of natural gas along the proposed 600-mile Atlantic Coast Pipeline ("ACP"), a project primarily owned by Dominion Energy and Duke Energy. The facility would be the only compressor station in Virginia and would be sited in a predominantly African-American community. The compressor station threatens to harm public health in that community and to violate the Clean Air Act. Because of significant errors in the Draft Permit, unanswered

questions about risks to human health, greenhouse gas pollution that threatens to undermine Virginia's proposed new carbon regulations, and unaddressed environmental justice concerns, these public-interest organizations respectfully request that the Virginia Department of Environmental Quality ("VDEQ") withdraw this Draft Permit, complete a thorough environmental justice and health assessment of the community that would be subject to the air pollution from this facility, and conduct additional analysis as described in more detail below. In the event that the Draft Permit is submitted to the Air Pollution Control Board, we ask that the Board reject approval of the Draft Permit.

This comment letter is in two parts and will address the following issues:

The Buckingham Compressor Station Would be a Major New Source of Greenhouse Gas Pollution and is Unsuitably Sited in an Environmental Justice Community:

- As a major source of greenhouse gas emissions, the Buckingham Compressor Station should be subject to greater scrutiny from VDEQ; and
- Pollution from the Buckingham Compressor Station threatens the health of the historic, predominantly African-American community of Union Hill and requires additional study, consistent with the recommendations of the Virginia Advisory Committee on Environmental Justice.

Technical Comments on Deficiencies in the Draft Permit:

- The best available control technology ("BACT") analysis relied on by VDEQ is inadequate because it failed to consider the "maximum degree" of Nitrogen Oxide emissions reduction;
- VDEQ did not consider electric motor compressor turbines in its BACT analysis;
- VDEQ should require continuous emission monitoring systems for Nitrogen Oxide emissions from the four compressor turbines;
- VDEQ should require BACT for fugitive emissions;
- The National Ambient Air Quality Standard (NAAQS) Modeling Analyses for the Buckingham Compressor Station contains significant flaws; and
- Atlantic has not adequately demonstrated that the Buckingham Compressor Station will not cause or contribute to any concentration that may exceed a significant ambient air concentration for air toxics

312

I. The Buckingham Compressor Station Would be a Major New Source of Greenhouse Gas Pollution and is Unsuitably Sited in an Environmental Justice Community.

A. ACP and Buckingham Compressor Station Would Be a Major New Source of Greenhouse Gas Emissions.

Before addressing particular technical concerns with the draft air pollution permit for the proposed Buckingham Compressor Station, the public-interest groups lodge their objections to the climate impacts that would be brought by the ACP and its compressor station in Virginia.

According to the Atlantic permit application[1], the facility-wide potential greenhouse gas ("GHG") emissions include 291,812 tons per year of carbon dioxide ("CO2"), 70.9 tons per year of methane (which is roughly 30 times more potent as a greenhouse gas than CO2[2]), and 7.05 tons per year of nitrous oxide (which is roughly 300 times more potent as a greenhouse gas than CO2[3]). Atlantic identifies the facility-wide potential CO2 equivalent emissions of the Buckingham Compress Station as 295,686 tons per year.[4] In comparison, a new major stationary source with a potential to emit greenhouse gas emissions in excess of 75,000 tons per year would be subject to major source permitting requirements under the prevention of significant deterioration ("PSD") permitting program if such source was also a major source for a regulated new source review pollutant that is not a greenhouse gas pollutant.[5]

Atlantic has indicated the Buckingham Compressor Station will have a potential to emit greenhouse gases of almost four times the PSD emissions threshold for subjecting a source to PSD requirements. Nevertheless, the projected greenhouse gas emissions from the Buckingham Compressor Station are not subject to *any* air permitting requirements because the facility is being permitted as a minor source for all non-greenhouse gas regulated new source review ("NSR") pollutants.[6] If the Buckingham Compressor Station was subject to relevant PSD requirements, these would include the application of best available control technology

---

[1] *See* May 25, 2018 New Source Permit Application for Buckingham Compressor Station at 17 (Table 3.9).

[2] *See* https://www.epa.gov/ghgemissions/understanding-global-warming-potentials.

[3] *Id.*

[4] Considering the downstream carbon-equivalent emissions of the ACP as a whole puts this issue in even starker relief. The Federal Energy Regulatory Commission estimated that the downstream carbon emissions from combusting the gas that will flow through the ACP to equal 29,028,450 tons per year of CO2-equivalent emissions.

[5] *See, e.g.*, 40 C.F.R. §52.21(b)(49)(iv)(a).

[6] *See* VDEQ Buckingham Compressor Station Draft Analysis Registration Number 21599 at 1, note 1, and at Section IV.B.

("BACT"). VDEQ needs to address this regulatory loophole that allows such new significant unregulated GHG pollution.

Given that the Commonwealth of Virginia has become a member of the Under2 Coalition, committing to support the Paris Climate Agreement's goal of keeping global warming below two degrees Celsius,[7] it is imperative that Virginia address how allowing the construction and operation of the Buckingham Compressor Station and its potential 295,686 tons of CO2 equivalent emissions per year is consistent with the Commonwealth's climate change commitments. Indeed, allowing an additional 295,686 tons per year of CO2 equivalent emissions with the Buckingham Compressor Station will frustrate the Commonwealth's proposed plans to reduce CO2 emissions from the electric sector. Specifically, Virginia recently released a draft regulation to impose statewide CO2 emission caps on the electric sector to reduce carbon emissions by 30% between 2020 and 2030.[8] While the Commonwealth has proposed a couple of different options, the draft plan would be to reduce CO2 emissions from the electric sector statewide by approximately one million tons per year.[9] Yet, concurrently, VDEQ is proposing to allow the construction and operation of the Buckingham Compressor Station, which would negate a little less than one-third (i.e., about 296,000 tons of CO2 emissions) of those planned CO2 emissions reductions per year. While we strongly support the Commonwealth's membership in the Under2 Coalition and its commitment to do its part to reduce climate-changing emissions from the electric sector, Virginia also needs to address other sources of climate changing emissions, especially a source like the Buckingham Compressor Station that will frustrate the state's attempt to reduce statewide CO2 emissions.

As part of its review of the Draft Permit, the Air Pollution Control Board shall consider "facts and circumstances relevant to the reasonableness of the activity involved…including…(2) [t]he social and economic value of the activity involved."[10] This statutory mandate includes not only a consideration of the GHG emissions from the Buckingham Compressor Station, but also the lack of demonstrated need for the ACP as a whole. This massive, $6.5 billion project is

---

[7] As discussed at https://www.climateweeknyc.org/virginia-becomes-latest-us-state-commit-action-climate-change.

[8] *Id.*

[9] As indicated in the declining base emission budgets of draft rule 9VAC5-140-6190, in the January 8, 2018 Virginia Register of Regulations available at http://register.dls.virginia.gov/details.aspx?id=6770.

[10] Va. Code Ann. § 10.1-1307(E).

owned by a conglomeration of energy companies, including Dominion Energy.[11] Affiliates of those same companies have contracts to purchase nearly all of the gas from the ACP, which, according to Atlantic's FERC filings, will be used to generate electricity for monopolized markets in Virginia and North Carolina.[12] At the end of the day, Dominion will seek to recover its costs, along with a 14% return on equity,[13] from its captive ratepayers in the Commonwealth.[14] Our Virginia members will be stuck with the bill even if this proves to be a stranded asset. Demand for electricity has been flat or declining for the last decade.[15] The need for more natural gas for power generation in this region is not expected to increase through 2030. The capacity of existing pipeline and storage infrastructure is more than sufficient to meet demand for natural gas through that time.[16] In the last several months, Dominion has announced that it does not plan to build any new gas-fired power plants.[17] At the same time, non-polluting efficiency measures and renewable energy technologies are increasingly proving capable to meeting our energy needs for less money than fossil-fuel resources.[18]

Our overarching concern regarding the lack of need for this project is relevant to the Draft Permit for the Buckingham Compressor Station and the decision of the Air Pollution Control Board. As noted above, the ACP and Buckingham compressor station will be a major

---

[11] Robert Walton, *Atlantic Coast Pipeline Price Tag Could Teach $6.5B, Says Duke CEO*, Utility Dive (Aug. 22, 2018), https://www.utilitydive.com/news/atlantic-coast-pipeline-pricetag-could-reach-65b-says-duke-ceo/517661/.

[12] According to Atlantic's application, 79% of the pipeline's capacity will supply power plants. ACP Application for CPCN at 6-8, 12 (Sept. 18, 2015) (FERC eLibrary No. 20150918-5212).

[13] Atlantic Coast Pipeline, LLC, 161 FERC ¶ 61,042 at P 102-104 (Oct. 13, 2017).

[14] *Id.* at P 60. FERC authorizes Atlantic to recover a certain rate of return—the "recourse rate." Atlantic will then pass on the costs of that recourse rate to its shippers, who in turn pass on the cost to the end users. Because the end user is a regulated utility, the public utility's ratepayers bear the increases in gas prices attributable to the recourse rate. When, as here, the regulated utility's parent company also owns the pipeline, the utility has a vested interest in buying gas shipped on its pipeline, even if adequate, lower-cost gas is available from a pre-existing, and lower-cost, source. Thus, captive ratepayers are at risk of inflated prices from this massive project.

[15] *See* James F. Wilson, Wilson Energy Economics, *Evaluating Market Need for the Atlantic Coast Pipeline* (2017).

[16] *See* Rachel Wilson et al., Synapse Energy Economics, *Are the Atlantic Coast Pipeline and the Mountain Valley Pipeline Necessary? An Examination of the Need for Additional Pipeline Capacity into Virginia and the Carolinas* (2016), https://www.southernenvironment.org/uploads/words_docs/2016_09_12_Synapse_Report_-_Are_the_ACP_and_MVP_Necessary__FINAL.PDF.

[17] Alwyn Scott, *General Electric's power unit fights for growth as wind, solar gain* Reuters (May 24, 2018), https://www.reuters.com/article/us-ge-renewables/general-electrics-power-unit-fights-for-growth-as-wind-solar-gain-idUSKCN1IP0LE.

[18] *See* Matt Cox, Ph.D., Greenlink, *Clean Energy Has Arrived: Tapping Regional Resources to Avoid Locking In Higher Cost Natural Gas Alternatives in the Southeast* (April 2017).

new source of methane emissions—an extremely potent greenhouse gas—as well as on-site and downstream carbon emissions. These new sources of greenhouse gas pollution threaten to undermine Virginia's proposed new carbon regulations, which are designed to reduce Virginia's role in exacerbating climate change. Permitting this major new source of greenhouse gas emissions also runs counter to the Governor's commitment to the Paris Climate Accords. Given the concerns that the primary purpose of the ACP and its attendant Buckingham compressor station is to enrich shareholders of utility holding companies and that the project is not necessary for meeting the energy needs of the Commonwealth, the Board can conclude that there is little social or economic value in the proposed activity.

B. Pollution from the Buckingham Compressor Station Threatens the Health of the Predominantly African-American Surrounding Community and Requires Additional Scrutiny Regarding Site Suitability.

Atlantic has decided to place the sole Virginia compressor station—a 68-acre industrial facility—in the populated Union Hill community in Buckingham County. As set forth in more detail below, an exhaustive, rigorous, door-to-door study conducted by Friends of Buckingham of those who live within a 1.1-mile radius from the proposed gas-fired compressor station reveal that the harmful effects of the compressor station will be most felt in a predominantly African-American community. This community-based qualitative research study of 99 households encompassed the culturally cohesive community of Union Hill. The study design and methods included using National Institutes of Health (NIH) protocols for confidentiality.[19]

As required by law, VDEQ's engineering analysis included a section on "site suitability." This analysis is supposed to include an evaluation of the "suitability of the activity to the area in which it is located."[20] But VDEQ did not comply with the requirements of Virginia law to consider the suitability of placing this industrial source of pollution in the Union Hill

[19] The study was designed by a Lakshmi Fjord, Ph.D. The study included open-ended interview questions about: existing, diagnosed health conditions and numbers of household residents on weekdays or otherwise; the study also included questions about: race; age ranges (to protect anonymity of heath data); present uses of land, including whether it is used to grow food, raise domestic animals, or grow timber or other agricultural uses; family history in this place based on family burials in nearby cemeteries; and, slave and freedmen history based on location of unmarked slave burials; existing Freedmen-era home-places or foundation sites, if no longer standing. Study data as of September 4, 2018 includes 75 households that were reached over two years in three one-month long intensive periods. 67 of the respondents were able to cover the full list of questions.

[20] *Id.*

community. The disproportionate risk of harm faced by the predominantly African-American community that lives within a mile of the proposed compressor station has not been considered.

The survey conducted by Friends of Buckingham identified nearly 100 households in the 1.1-mile radius of the proposed compressor stations.[21] The 75 households surveyed to date are made up of 199 residents (with additional residents on weekends and for family gatherings, including reunions). Racial and ethnic minorities make up 83 percent of those residents, a far higher percentage than in the Commonwealth as a whole.[22] A significant number of respondents provided information about their health. Many elderly residents reported suffering from chronic respiratory ailments such as asthma, chronic obstructive pulmonary disease, bronchitis, allergies, and other unspecified heart and lung ailments. In addition, many of these residents report high blood pressure, heart disease, diabetes, and other ailments that would make them particularly susceptible to pollution and fugitive emissions from the compressor station. A number of children were reported to suffer from asthma and other chronic lung diseases as well.

Multiple studies have found that African Americans are more than twice as likely as white Americans to live near sources of harmful air pollution and have suffered disproportionate respiratory sickness as a result.[23] Putting the compressor station in this predominately African American community will further this legacy of concentrating environmental harms in poorer communities and communities of color.

A key step of Environmental Justice review includes identifying vulnerable populations who are at risk of disproportionate and cumulative harm from polluting facilities.[24] The high

---

[21] Union Hill Community Household Study Results, Friends of Buckingham, Lakshmi Fjord, Ph.D., **included as Attachment 1.**

[22] United States Census, Virginia Quick Facts (nearly 70% of Virginians identify as white, in contrast to the 16.6% of survey respondents who identified as white), https://www.census.gov/quickfacts/va.

[23] Gamble, J.L., et al, *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. Ch. 9: Populations of Concern, U.S. Global Change Research Program, Washington, DC (2016). http://dx.doi.org/10.7930/J0Q81B0T (citing Frumkin, *Urban sprawl and public health*. Public Health Reports, pp. 117, 201-217 (2002)); Robert Bullard, *et al*, *Toxic Wastes and Race at Twenty: Why Race Still Matters After all of These Years*, 38 Environmental Law 371, 379 (2007) (citing David Pace, *More Blacks Live with Pollution*, Associated Press (2005) (noting that most pollution inequities result from historical land use decisions that were based on racial segregation and the prevalence of regulators focusing on one plant or one pollutant without regard to the potential cumulative impact of multiple sources of pollutants).

[24] *See, e.g., Promising Practices for EJ Methodologies in NEPA Reviews: Report of the Federal Interagency Working Group on Environmental Justice & NEPA Committee*, Identifying Minority Populations, at 21 (Mar. 2016), https://www.epa.gov/sites/production/files/2016-08/documents/nepa_promising_practices_document_2016.pdf.

levels of diagnosed respiratory ailments and related health issues will make many in the Union Hill community especially susceptible to harm from increased air pollution and is one of the reasons why community members have specifically requested a health assessment before moving forward with the permitting process.

Pollution from the Buckingham facility could lead to adverse health effects to the surrounding population even under the limits set by the Draft Permit. In its Environmental Impact Statement for the ACP, the Federal Energy Regulatory Commission ("FERC") recognized the health risks from pollution from the ACP's compressor stations, which:

> include carbon monoxide (CO), carbon dioxide (CO_2), methane, and nitrous oxide (NO_x); volatile organic compounds (VOCs); and particulate matter with an aerodynamic diameter less than or equal to 2.5 microns (PM2.5). These air pollutants are known to increase the effects of asthma and may increase the risk of lung cancer....

When considering the health impacts associated with compressor station emissions, increased rates of lung cancer were identified associated with the compounds emitted by compressor station operations. Studies have shown that several different cancer-related compounds and chemicals are present in the air in proximity to construction and operation of compressor stations, and that some of these have documented health effects on the general and vulnerable populations.[25]

The studies cited by FERC found elevated concentrations of dangerous pollutants from samples collected near compressor stations. These include volatile organic compounds ("VOCs"), fine particulate matter, and gaseous radon. Some VOCs, such as benzene and formaldehyde, are carcinogens.

According to a recent report from Physicians for Social Responsibility, a "growing body of scientific evidence documents leaks of methane, toxic volatile organic compounds and particulate matter throughout [our country's natural gas] infrastructure. These substances affect [human] health." [26] People living near compressor stations suffer from a "range of symptoms

---

[25] Atlantic Coast Pipeline, Final Environmental Impact Statement, at 4-513 to 514.

[26] *Too Dirty Too Dangerous: Why Health Professionals Reject Natural Gas, Physicians for Social Responsibility* (Feb. 2017), http://www.psr.org/assets/pdfs/too-dirty-too-dangerous.pdf ["Too Dirty Too Dangerous"]. This report compiled new scientific studies that indicate additional potential pollution from natural gas infrastructure, including compressor stations.

ranging from skin rashes to gastrointestinal, respiratory, neurological and psychological problems."[27] Air samples collected around compressor stations have revealed elevated concentrations of many of the dangerous substances associated with gas extracted from hydraulic fracturing operations. These dangerous substances include "volatile organic compounds, particulate matter, and gaseous radon."[28] The federal Agency for Toxic Substances and Disease Registry examined air quality near a natural gas compressor station in Pennsylvania and discovered PM2.5 at dangerous levels.[29] Just last year, the NAACP, in cooperation with the Clean Air Task Force, released a report about the threats to the health of communities of color from oil and gas infrastructure, including the proposed Atlantic Coast Pipeline and compressor stations.[30]

The company's reported "annual potential to emit" in terms of tons of pollutants per year does not reflect the variability of emissions and thus, the potential for local residents to be exposed to elevated concentrations of dangerous pollutants. Emissions over short time periods can vary significantly day to day. Operating compressor stations have been observed to have such highly variable emissions, including large spikes of harmful VOC emissions.[31] One compressor station in Pennsylvania emitted dangerous amounts of ethylbenzene, butane, and benzene on some days and hardly detectable amounts on other days, resulting in averages that did not appropriately indicate the compressor station's threats to human health.[32]

---

[27] *Id.* (citing Brown, Weinberger, & Weinberger, *Human exposure to unconventional natural gas development: A public health demonstration of periodic high exposure to chemical mixtures in ambient air*, Journal of Environmental Science and Health, Part A, 50:5, 460-472 (2015), https://www.ncbi.nlm.nih.gov/pubmed/25734822).

[28] New York State Department of Health (2014). A public health review of high volume hydraulic fracturing for shale gas development. http://www.health.ny.gov/press/reports/docs/high_volume_hydraulic_fracturing.pdf.

[29] *Id.* (citing Agency for Toxic Substances and Disease Registry, *Health Consultation: Exposure Investigation, Natural Gas Ambient Air Quality Monitoring Initiative Brigich Compressor Station, Chartiers Township, Washington County, Pennsylvania* (Jan. 29, 2016); Agency for Toxic Substances and Disease Registry, *Health Consultation: Brooklyn Township PM2.5, Brooklyn Township, Susquehanna County, Pennsylvania. U.S.* Department of Health and Human Services, Atlanta, GA. (April 22, 2016).

[30] Lesley Fleischman (Clean Air Task Force) & Marcus Franklin (NAACP), *Fumes Across the Fence-Line: The Health Impacts of Air Pollution from Oil & Gas Facilities on African American Communities*, p. 7 (Nov. 2017), http://www.naacp.org/wp-content/uploads/2017/11/Fumes-Across-the-Fence-Line_NAACP_CATF.pdf.

[31] Southeast Pennsylvania Health Project, *Summary on Compressor Stations and Health Impacts* (Feb. 24, 2015), http://www.environmentalhealthproject.org/files/Summary%20Compressor-station-emissions-and-health-impacts-02.24.2015.pdf.

[32] *Id.* at 2.

Communities that are nearby or downwind from compressor stations likely suffer from elevated exposure to methane and related pollutants. This was the conclusion of a recently published analysis of methane emissions from compressor stations in New York and Pennsylvania, which found highly elevated levels of methane coming from those facilities.[33] In one example, the study authors found:

> This data indicates that the areas downwind of compressor stations ...will be exposed to methane plumes, and any other co-emitted pollutants released by compressor stations. Residents and properties downwind under prevailing wind conditions will likely be subjected to a disproportionate burden of contaminants from compressor stations, especially those closer to the station under light prevailing wind conditions.[34]

The Air Board should also consider that, even if the new emissions of pollutants such as fine particulate matter (PM2.5) and other ozone-producing pollutants, such as Nitrogen Dioxide, are within NAAQS guidelines, there is no scientifically accepted safe level of exposure for this pollution. In addition, the increases over the background levels are significant. For example, the permitted annual increase in PM2.5 pollution from the Buckingham Compressor Station over the background level is 44 percent.[35] The resulting increased pollution approaches the World Health Organization's threshold of 25 μg/m3 in a twenty-four hour period.[36] At these levels, long-term exposure can cause an increase in mortality and increased serious health problems, such as respiratory ailments and cardiovascular disease.[37] Even short-term exposure can cause health problems, particularly in sensitive populations like those with respiratory problems or heart disease—like many of those who live near the proposed compressor station.[38]

---

[33] Bryce Payne, Jr., et al, *Characterization of methane plumes downwind of natural gas compressor stations in Pennsylvania and New York*, Science of the Total Environment, Vol. 580, pp. 1214–1221 (Feb. 2017).

[34] *Id.*

[35] *see* VDEQ Buckingham Compressor Station Draft Analysis Registration Number 21599, at 12.

[36] World Health Organization, Fact sheet: Ambient (outdoor) air quality and health (Sept. 2016), http://www.who.int/mediacentre/factsheets/fs313/en/ ("WHO Fact Sheet") ("There is a close, quantitative relationship between exposure to high concentrations of small particulates (PM_{10} and $PM_{2.5}$) and increased mortality or morbidity, both daily and over time").

[37] Frank J. Kelly and Julia C. Fussell, *Air Pollution and Public Health: Emerging Hazards and Improved Understanding of Risk*, Environ Geochem Health, Vol. 37(4) 631–649 (2015), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4516868/.

[38] *Id.*

Fine particles also cause health problems such as heart attacks, aggravated asthma, decreased lung function, and irregular heartbeats.[39] Exposure to fine particle concentrations as low as ten micrograms per cubic meter ($\mu g/m^3$)—which is lower than the current federal standard—is associated with a two percent increase in premature deaths for exposures as brief as two days, and a seven to nine percent increase in the long term.[40] Decreases in fine particle concentrations add months, if not years, onto people's lives.[41]

There is no evidence of a safe level of exposure for either ozone or fine particulate matter, and both have health effects even below the current National Ambient Air Quality Standards (NAAQS).[42] In response to evidence of health problems caused by these pollutants at lower and lower levels, EPA has repeatedly strengthened both the fine-particle and ozone NAAQS in recent years.[43]

As the Air Board considers the site suitability and environmental justice issues set forth in more detail below, it should consider the significant overall increases to local air pollution from this facility.

1. Virginia Advisory Committee on Environmental Justice Calls for Suspending Permit.

In 2017, the Governor of Virginia issued Executive Order Number 73, establishing an Advisory Committee on Environmental Justice.[44] This order sought to ensure that "no segment

---

[39] *See generally* EPA, *Particulate Matter (PM) Health*, https://www3.epa.gov/pm/health.html.

[40] Liuhua Shi et al., *Low-Concentration $PM_{2.5}$ and Mortality: Estimating Acute and Chronic Effects in a Population-Based Study*, Envtl. Health Persp. (Jan. 2016), http://ehp.niehs.nih.gov/1409111/.

[41] *See* C. Arden Pope III et al., *Fine-Particulate Air Pollution and Life Expectancy in the United States*, 360(4) New Eng. J. Med. 2009 376, 382–84 (Jan. 22, 2009), http://www.nejm.org/doi/pdf/10.1056/NEJMsa0805646.

[42] *See Am. Trucking Ass'ns., Inc. v. EPA*, 283 F.3d 355, 360 (D.C. Cir. 2002) (internal quotation marks and alterations omitted) (recognizing the "lack of a threshold concentration below which [particulate matter and ozone] are known to be harmless."); EPA, *NAAQS for Particulate Matter*, 78 Fed. Reg. 3086, 3098 (Jan. 15, 2013) (explaining that there is "no population threshold, below which it can be concluded with confidence that $PM_{2.5}$ related effects do not occur").

[43] *See* National Ambient Air Quality Standards for Particulate Matter, 78 Fed. Reg. 3086, 3088 (Jan. 15, 2013); National Ambient Air Quality Standards for Ozone, 80 Fed. Reg. 65,291, 65,292 (Oct. 26, 2015) https://www.gpo.gov/fdsys/pkg/FR-2015-10-26/pdf/2015-26594.pdf; Environmental Protection Agency, *NAAQS Table*, https://www.epa.gov/criteria-air-pollutants/naaqs-table#3.

[44] Commonwealth of Virginia, Office of the Governor, Executive Order 73, Establishment of an Advisory Council on Environmental Justice (Oct. 31, 2017), https://www.naturalresources.virginia.gov/media/governorvirginiagov/secretary-of-natural-resources/pdf/eo-73-establishment-of-an-advisory-council-on-environmental-justice.pdf.

of the population, especially individuals most impacted and vulnerable," would "bear disproportionately high or adverse effects from pollution." To that end, the Governor sought the help of the Advisory Council to incorporate environmental justice into Executive Branch agency decision-making. The Governor noted that "some state agencies incorporate environmental justice into their review process," but that there is no consistency in how these issues are considered. It appears that DEQ has not yet instituted a consistent method for incorporating environmental justice issues in its permitting process.

The Advisory Committee on Environmental Justice has itself, however, examined the concerns surrounding the ACP and proposed compressor station in the Union Hill community.[45] Following its review, the Advisory Committee called on the Governor to request that DEQ "suspend the permitting decision for the air permit for the Buckingham compressor station pending further review of the station's impacts on the heath and the lives of those living in close proximity."[46] The Advisory Committee considered many independent and mutually reinforcing concerns with siting the compressor station in the Union Hill community, for example concerns with: (1) the use and abuse of eminent domain to take private property for a project that is not in the public interest along with the threats to property values of surrounding properties; (2) the significant levels of harmful pollution that will be emitted by the compressor station and the disproportionate impact of that pollution on a predominantly (roughly 85%) African-American community; (3) disturbing cultural and archeological sites of importance to Native-American tribes and African-American communities; (4) the inadequate 401 Clean Water Act certification for the many stream and wetland crossings; and (5) the significant climate impacts from the compressor station and the ACP generally, particularly in light of the failure by ACP-Dominion to demonstrate market need for the project.

The Advisory Committee noted that "decisions for infrastructure with significant social and ecological risks, like compressor stations, should not be made hastily, particularly in places

[45] *See Environmental Justice Review of Virginia's Gas Infrastructure*, Memo to Governor Northam (Aug. 16, 2018), **included as Attachment 2.**

[46] *Id.* at 2.

like Union Hill where the everyday experiences of residents are shaped by historical experience of racial injustice for a population whose ancestry is rooted in slavery."[47]

The Advisory Committee's recommendations are consistent with the public policy of Virginia. Virginia law requires that the Commonwealth develop "energy resources and facilities in a manner that does not impose a disproportionate adverse impact on economically disadvantaged or minority communities."[48] No Virginia agency has, to our knowledge, yet applied this standard to the ACP's proposed, new energy infrastructure.

VDEQ and the Air Pollution Control Board should consider the Advisory Committee's recommendations in light of the obligation to consider site suitability.

2. Unlawful Zoning Determination by Buckingham Board of Supervisors

As an additional part of its site suitability analysis, VDEQ noted that the Buckingham County Board of Supervisors approved a Special Use Permit for the compressor station and concluded that the "ACP must operate in compliance with the County's approval as well as any other ordinances or regulations related to land use."[49] VDEQ failed to note, however, that the Board of Supervisors' zoning decision is the subject of ongoing litigation.[50] The land where Atlantic plans to build the Buckingham Compressor Station is zoned A-1 Agricultural. Many in the community continue to use their land for agricultural purposes, such as farming, orchards, and livestock. Pollution from the compressor station is not compatible with those activities and is not suitable to the area where it would be located.[51] Union Hill's unbroken history as an agricultural district is threatened by the proposed compressor station.

A-1 Agricultural Zones were established "for the purpose of preserving and promoting rural land uses."[52] The A-1 district of the Buckingham County Zoning Ordinance is an inclusive zoning district, which means that the Ordinance only permits land uses that are "specifically

---

[47] *Id.* at 5.

[48] Va. Code Ann. § 67-101(12).

[49] *See* VDEQ Buckingham Compressor Station Draft Analysis Registration Number 21599, at 13.

[50] *See, e.g.*, Arostegui v. Buckingham County Board of Supervisors, CL17000015-00 (Feb. 2, 2017); a companion case challenging the zoning determination was filed in the Supreme Court of Virginia in the summer of 2018. *Blue Ridge Environmental Defense League et al v. Buckingham County Board of Supervisors*, Supreme Court of Virginia SCV No. 180933 (2018).

[51] Va. Code Ann. § 10.1-1307(E).

[52] Buckingham County Zoning Ordinance at 9.

named."[53] Land uses that are not listed are not permitted even with a special use permit. The Buckingham Board of Supervisors established the M-2 Heavy Industrial District for industrial uses, including gas distribution facilities (which require a special use permit).[54] Under the A-1 Agricultural designation, industrial facilities like the compressor station are completely prohibited. As challenged by many local residents, the Board of Supervisors erred when they used a "public utility" exception for the compressor station, which is not a utility as defined by applicable law.[55] Atlantic itself indicated that the Compressor Station is a non-utility facility.[56]

VDEQ therefore erred when it concluded that the compressor station can be located at its proposed location in compliance with existing local ordinances related to land use. The Air Board should, at a minimum, postpone any action until litigation is complete for purposes of determining site suitability in relation to local zoning requirements.

3. Union Hill is More Densely Populated than the County Average.

As part of its site suitability analysis, VDEQ determined that the area around the proposed Buckingham Compressor Station is "sparsely populated" and primarily surrounded by forests.[57] This conclusion is not consistent with the denser than average Union Hill community that inhabits the area within a one-mile radius of the site. To reach this flawed conclusion, it appears that VDEQ relied on Atlantic's use of countywide population density data of 29.6 people per square mile.[58] But this county-level population density data does not reflect the actual characteristics of the neighboring community. As noted above, Friends of Buckingham has identified nearly 100 households in the 1.1 mile radius of the proposed compressor stations. The 75 households surveyed to date are made up of 199 residents.

As seen in Figure 1 below, there are significant clusters of households in the area surrounding the proposed compressor station:

---

[53] *See Board of Supervisors of Madison County v. Gajjhey,* 244 Va. 545, 550, 422 S.E. 2d 760, 763 (1992).

[54] Buckingham County Zoning Ordinance at 35.

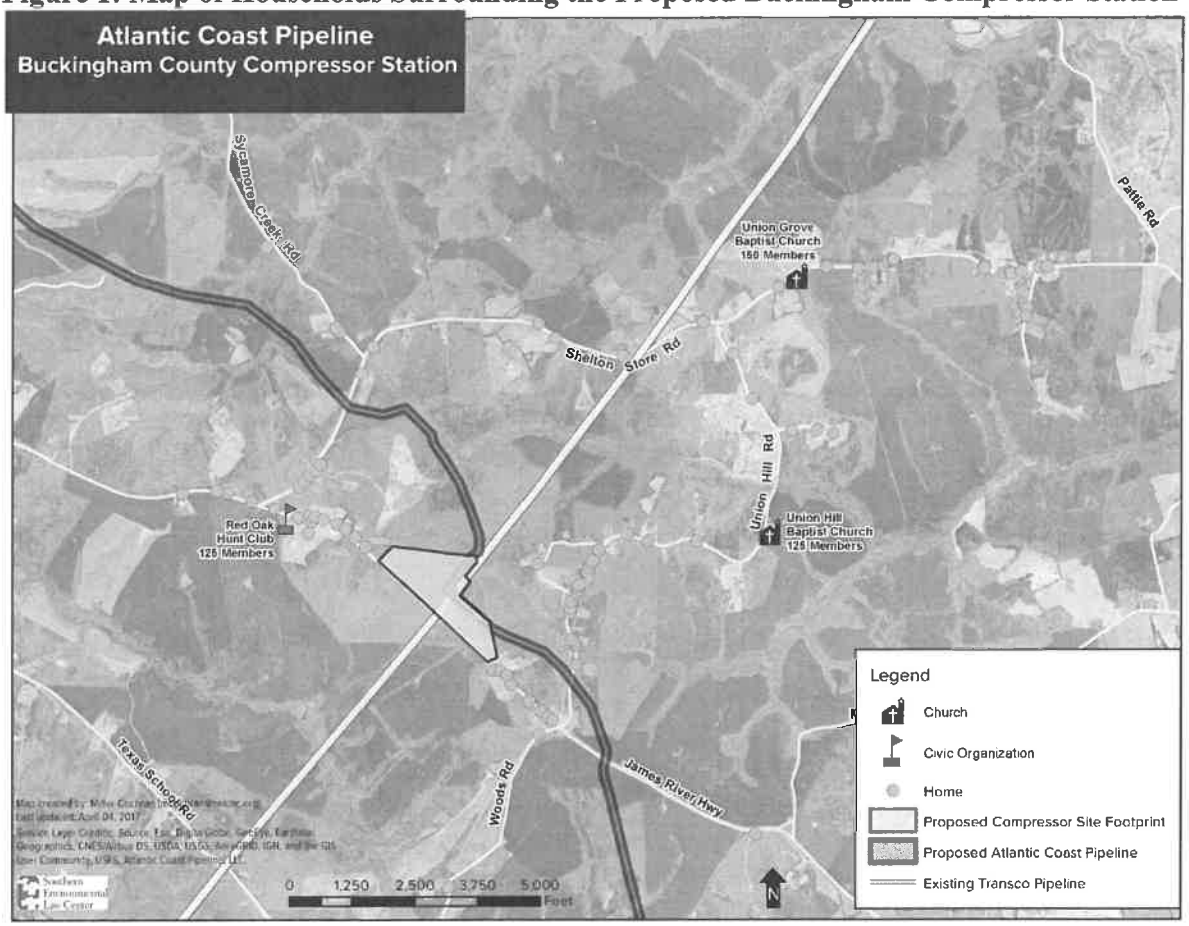
[55] VA Code § 56-265.1

[56] Updated Permit Application at p. 23 (May 25, 2018).

[57] *see* VDEQ Buckingham Compressor Station Draft Analysis Registration Number 21599, at 13

[58] Final Environmental Impact Statement for the Atlantic Coast Pipeline and Supply Header Project under FERC Docket No. CP-15-554 et al. (July 21, 2017) (eLibrary No. 20170721-4000) at p. 4-485.

Figure 1: Map of Households Surrounding the Proposed Buckingham Compressor Station



This disparity is significant, and the large number of households that in fact lie close to the proposed compressor station contradict VDEQ's site suitability conclusion that the area around the Buckingham compressor station is primarily surrounded by forests and sparsely populated. The Air Board must independently consider the unsuitability of this proposed location for a new source of industrial air pollution.

4. Endangered Historic Place

Preservation Virginia listed the Union Hill community as a "Most Endangered Historic Place" in May 2016.[59] Many of the African American members of this community trace their heritage back to the Freedmen who settled this area following emancipation after the Civil War. Preservation Virginia noted the importance of "[p]ost-Emancipation African American

[59] Preservation Virginia, *2016 Virginia's Most Endangered Historic Places* (May 2016), https://preservationvirginia.org/press_release/2016-virginias-most-endangered-historic-places/.

settlements and burial sites, like those at Union Hill in Buckingham County," which "reveal the successes and struggles of generations of African Americans in Virginia."[60] Many of the landowners in closest proximity to the proposed compressor station are descendants of people enslaved here, where once the number of slaves was twice that of whites. The compressor station itself is slated to be built on the property of a former plantation called Variety Shade.[61]

The communities built by freed slaves before and after Emancipation and during Reconstruction, post-Reconstruction, and the era of Jim Crow segregation that followed contain important cultural resources. Racial segregation and discrimination have resulted in the undervaluing of these historic communities throughout the south. Loss of buildings on the ground by fire, discriminatory historic recording practices, and loss of burial sites and cemeteries by development all contribute to the need to protect and preserve what remains of communities that were founded by Freedmen following the Civil War. In the case of Union Hill, its unbroken history as an agricultural district is particularly threatened by Atlantic's proposed compressor station.

Historic structures established following Emancipation by African-Americans in the Union Hill area include Union Hill Church, Union Grove Church, Shelton's Store, numerous houses, and many mapped and unmapped cemeteries. All of these are located on previous plantation lands. Three African American churches are located within the proposed historic district: Saint Joy Baptist Church, Union Hill Baptist Church, and Union Grove Baptist Church. Union Hill and Union Grove have congregations that date to 19th century. Mulberry Grove Baptist Church, a white church organized in 1786, served African-American members and is the second-oldest surviving church in Buckingham County. Union Hill Baptist was established in 1868 after Freedmen separated from Mulberry Grove. At least twenty-one slave, or African-

---

[60] *Id.*

[61] Union Hill/Wood's Corner Rural Historic District: Most Endangered Historic Place in Virginia Application (filed Feb. 16, 2016), prepared by Lakshmi Fjord, Ph.D. Previous historic research of this community for the application to Preservation Virginia for Most Endangered Historic Place in Virginia" listing in 2016 included locating existing family deeds post-1869 after the Buckingham Courthouse was burned, destroying records of enslavement; plantation family blogs; newspaper articles of the time; plantation family documents in the University of Virginia Special Collections; and self-published histories by Charles White, Sr., *The Hidden and Forgotten: Contributions of Buckingham Blacks to American History* (1985) and *The Courthouse Burned*, Vol I, Margaret Pennington and Lorna S. Schott, McClung Publishers (1977).

American, cemeteries are located within the proposed district boundaries.[62] Community members have voiced concerns that additional unmarked grave sites may be in the path of the ACP or the compressor station in Buckingham County. Caesar Perkins, a formerly enslaved man who became a member of Virginia's General Assembly, lived in the district boundaries, and some of his descendants remain in the Union Hill area.[63]

VDEQ and the Air Pollution Control Board should not follow the mistakes made by the Federal Energy Regulatory Commission ("FERC") when it ignored the historical and cultural significance of the cohesive Union Hill community. When FERC completed its draft environmental impact statement ("draft EIS") for the ACP, it ignored the Union Hill community. FERC's failure to see Union Hill was in stark contrast to the consideration given to the Norwood-Wingina Rural Historic District—a predominantly white area in neighboring Nelson County. Following concerns raised by that community, Atlantic planned alternative pipeline routes to steer away from that historic district. The draft EIS notes that, following comments, Atlantic "incorporated a route modification that would avoid the Norwood-Wingina Rural Historic District" so that there would be no effects on cultural resources in the district.[64] The Commission considered other alternatives to avoid any additional impact on the district.[65] The census tract (Nelson County, CT 9501) where the Norwood-Wingina Rural Historic District is located is less racially diverse than the Commonwealth as a whole.[66]

In contrast, when summarizing comments received about impacts on historic districts and related cultural resources, the draft EIS makes no mention of the Union Hill community.[67] When considering an alternative location for the compressor station, one that would have been about 2 miles away from the center of the Union Hill community, FERC only considered how the alternative site would affect the other neighboring historic districts, making no mention of the

---

[62] *Id.*

[63] *Id.*

[64] Draft Environmental Impact Statement for the Atlantic Coast Pipeline Project and Supply Header Project under FERC Docket No. CP15-554 et al. (Dec. 30, 2016) (eLibrary No. 20161230-4000) at 4-425 ("DEIS")

[65] Final Environmental Impact Statement for the Atlantic Coast Pipeline and Supply Header Project under FERC Docket No. CP-15-554 et al. (July 21, 2017) (eLibrary No. 20170721-4000) at 3-26 ("Final EIS").

[66] This census tract is approximately 80 percent white, and only about 18.5 percent African American. U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates, Data Set S1701, https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

[67] DEIS at 5-21, 4-425.

Union Hill community.[68] The Commission's conclusion that the Buckingham "compressor station is located near previously developed residential and commercial areas and is consistent with the existing visual conditions in the area" is not accurate.[69] Nor is the summary dismissal of the concerns from the Union Hill community in the final environmental impact statement adequate to cover the site suitability concerns raised here.[70]

This industrial facility is proposed for a largely residential, predominantly African American, historic, and agricultural community that is ill-suited to a polluting compressor station. The Air Board should consider these relevant factors when making its independent site suitability assessment and deny the permit.

II. Technical Comments on Deficiencies in the Draft Permit

The following technical comments were prepared by Vicki Stamper[71] and pertain to the Virginia Department of Environmental Quality's (VDEQ's) proposed permit for Atlantic's proposed Buckingham Compressor Station, Registration Number 21599.

The Buckingham Compressor Station is proposed to consist of four gas-fired Solar compressor turbines (emission unit IDs CT-01, CT-02, CT-03, and CT-04), a Hurts S45 Boiler (WH-01), four ETI WB line heaters (LH-01, LH-02, LH-03, and LH-04), one Caterpillar emergency generator (EG-01), one accumulator tank (TK-1), one pipeline fluids tank (TK-2), one aqueous ammonia storage tank (TK-3), and various operational natural releases associated with station components (FUG-01) and piping fugitive emissions (FUG-01).[72] VDEQ describes the operation of the compressor station as follows:

> Compressor turbines work by converting the energy in the fuel gas to mechanical energy that then powers the pipeline gas compressors. The compressors increase the pressure of the pipeline gas to enable it to move from one location to another, as the gas will flow from higher pressure to lower pressure in the pipeline. The compressor turbines will generate mechanical energy from the combustion of natural gas fuel. Fresh atmospheric air flows through an air compressor, bringing it to higher pressure. Energy is then added by spraying fuel (pipeline natural gas)

---

[68] Final EIS at 3-58.

[69] DEIS at 4-341.

[70] Final EIS at 4-538.

[71] Resume of Vicki Stamper, **included as Attachment 3.**

[72] *Id.* at 5.

> into the compressed air and igniting it so the combustion generates a high-temperature flow. This high-temperature, high-pressure gas enters a turbine, where it expands, turning a shaft that powers both the turbine's air compressor and other large centrifugal compressors that pressure the pipeline gas.[73]

Pursuant to Virginia's regulations for new and modified stationary sources, new stationary sources must apply best available control technology (BACT) for each regulated pollutant for which uncontrolled emissions would equal or exceed the emission thresholds listed in 9VAC5-80-1105 C.[74] The proposed Buckingham Compressor Station is subject to a determination of BACT for nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOCs), and particulate matter (both PM10 and PM2.5).[75]

In addition, Virginia regulations for toxic pollutants from new and modified sources provide that, if a stationary source is not exempt under 9VAC5-60-300 C, D, or E, then it is subject to Virginia's air toxic new source review requirements in 9VAC5-60-320. Those requirements include a provision that no owner of a new source shall cause or contribute to any significant ambient air concentration that may cause or contribute to the endangerment of human health and that the new source shall employ BACT for the control of toxic pollutants.[76] VDEQ has found that the Buckingham Compressor Station will emit formaldehyde and hexane at levels in excess of the exemption thresholds in 9VAC5-60-300.[77]

Below, we provide comments on the VDEQ's proposed BACT determinations for certain pollutants to be emitted by the Solar combustion turbines and on the air modeling analyses.

A. The NO_x Limits for the Solar Compressor Turbines at the Proposed Buckingham Compressor Station Are Not Reflective of BACT.

The Draft Permit is inadequate because neither DEQ nor Atlantic have evaluated, as required by BACT, the "maximum degree" of NO_x emission reduction from the turbines that can be achieved with the proposed NO_x BACT controls. Atlantic has proposed to equip each of the four Solar compressor turbines with a dry low-NO_x combustion system (SoLoNO_x) and selective

---

[73] VDEQ Buckingham Compressor Station Draft Analysis Registration Number 21599, at 4.

[74] *See* 9VAC5-50-260 B.

[75] *See* VDEQ Buckingham Compressor Station Draft Analysis Registration Number 21599, at 9.

[76] 9VAC5-60-320 1. and 2.

[77] *See* VDEQ Buckingham Compressor Station Draft Analysis Registration Number 21599, at 6.

catalytic reduction (SCR) to control NO_x.[78] Although the company initially proposed a NO_x BACT limit of 5.0 parts per million ("ppm"), VDEQ has proposed a limit of 3.75 ppm based on a Draft Permit for a compressor station in Baltimore County, Maryland.[79] VDEQ proposed a NO_x emission limit of 3.75 ppm at 15 percent oxygen ("@15%O_2") applicable on a three-hour average basis, but not applicable during periods of startup, shutdown, or when ambient temperatures are below zero degrees Fahrenheit.[80]

The proposed emission limit and associated permit conditions do not satisfy BACT for the compressor turbines to be installed at the Buckingham Compressor Station. BACT is defined in Virginia regulations to require an emissions limitation "based on the *maximum degree* of emission reduction for any pollutant which would be emitted from a new stationary source ...which the board, on a case-by-case basis, taking into account energy, environmental and economic impacts and other costs, determines is achievable...through the application of production processes or available methods, systems and techniques...for control of such pollutant."[81] The BACT standard cannot allow emissions of any pollutant that would exceed limits otherwise imposed by law.[82] In conducting a BACT analysis, "consideration shall be given to the nature and amount of the emissions, emission control efficiencies achieved in the industry for the source type, total cost effectiveness, and where appropriate, the cost effectiveness of the incremental emissions reduction achieved between control alternatives."[83]

Neither Atlantic nor VDEQ have evaluated the "maximum degree" of NO_x emission reduction from the Solar turbines that can be achieved with the proposed NO_x BACT controls of $SoLoNO_x$ and SCR. As acknowledged by the company, the proposed NO_x BACT limit of 3.75

---

[78] *Id.*

[79] *See* VDEQ Buckingham Compressor Station Draft Analysis Registration Number 21599, at 9.

[80] Draft Permit for Buckingham Compressor Station, Conditions 20, 21, 22 and 23.

[81] *See* 9VAC5-50-250 A (emphasis supplied).

[82] *Id.* (citing to Article 5 (9VAC5-50-400 et seq.) of this part or Article 1 (9VAC5-60-60 et seq.) or Article 2 (9VAC5-60-90 et seq.) of Part II of 9VAC5-60 (Hazardous Air Pollutant Sources).

[83] *Id.*

parts per million by volume, dry[84] ("ppmvd") @15%O_2 reflects only a 58 percent reduction of NO_x from the 9 ppmvd @15% O2 pre-control NO_x emission rate of the combustion turbines.[85]

Atlantic appropriately determined that SCR systems were technically feasible for its compressor turbines given that SCR systems have been installed on other simple-cycle combustion turbines.[86] Though Atlantic did not conclude that an SCR system would be a cost-effective way of meeting BACT requirements, the company nonetheless proposed to install SCR along with $SoLoNO_x$ at the compressor turbines.[87] VDEQ found that SCR has been proposed at two other compressor stations, and therefore, VDEQ proposed to require SCR along with $SoLoNO_x$ at the four gas-fired compressor engines to meet BACT.[88]

$SoLoNO_x$ along with SCR are justified to meet BACT for NO_x, but neither Atlantic nor VDEQ evaluated the "maximum degree" of NO_x emission reduction that could be achieved with SCR at the Buckingham compressor turbines. SCR can achieve very high levels of NO_x reduction, generally much higher than the 58 percent NOx control assumed by VDEQ and Atlantic. There are numerous examples of SCR being required as BACT or as a way to meet lowest achievable emission rate ("LAER") at simple-cycle turbines to achieve a NO_x emission limit in the range of 2.0 to 2.5 ppm, which for the Buckingham compressor turbines would reflect about 72-78 percent NOx control across the SCR systems.

BASF makes several SCR catalysts that it claims can achieve up to 97 percent NO_x reduction.[89] The NO_xCat ETZ catalyst is specifically designed for simple-cycle power generating turbines and other high temperature turbine applications.[90] The NO_xCat VNX and ZNX catalysts can achieve up to 99 percent NO_x reduction and are most effective at a

---

[84] It is assumed that the limits proposed by the VDEQ would apply on a parts per million by volume, dry basis (ppmvd), and if so, VDEQ should so indicate.

[85] May 25, 2018 Minor New Source Review Permit Application for Buckingham Compressor Station at 8.

[86] *Id.* at 38.

[87] *Id.* at 39-40.

[88] *See* VDEQ Buckingham Compressor Station Draft Analysis Registration Number 21599, at 9.

[89] *See* BASF, SCR Catalysts for Power Generation, at http://www.basf-qtech.com/p02/USWeb-Internet/catalysts/en/content/microsites/catalysts/prods-inds/stationary-emissions/scr-cat-pow-gen.

[90] *See* BASF, NO_xCat ETZ, available at http://www.basf-qtech.com/p02/USWeb-Internet/catalysts/en/content/microsites/catalysts/prods-inds/stationary-emissions/nOx-Cat-_ETZ.

temperature range of 550 to 800 degrees Fahrenheit.[91] A related catalyst called NO_xCat VNX-HT is designed for use in aero derivative simple-cycle turbines that can achieve 99 percent NO_x removal and can reach optimal performance at 800 to 850 degrees Fahrenheit.[92] Based on the stack parameter data provided by Atlantic for the Buckingham compressor turbines, it appears that the units will operate at a lower temperature range, with stack exit temperatures ranging from 700 to 760 degrees Fahrenheit.[93] This is still well within the operating range of the NO_xCat VNX and ZNX catalysts.

SCR systems have been required to be installed to meet BACT and LAER at several gas-fired simple-cycle turbines. For example, in a permit analysis for the Mariposa Energy Project to be located in Alameda County, California, the Bay Area Air Quality Management District (BAAQMD) provided numerous examples of simple-cycle gas turbines permitted in the District with one-hour average NO_x limits of 2.5 ppmvd @15%O_2 and required the new simple-cycle gas turbines to meet a NO_x BACT limit of 2.5 ppmvd.[94] These BACT determinations can also be found in the California Air Resources Board (CARB) BACT Clearinghouse.[95] Those example simple-cycle turbine NO_x limits with SCR are given in Table 1 below.

---

[91] *See* BASF, NO_xCat VNX & ZNX for Power Generation, available at http://www.basf-qtech.com/p02/USWeb-Internet/catalysts/en/content/microsites/catalysts/prods-inds/stationary-emissions/nox-cat-VNX-ZNX-pow-gen.

[92] *Id.*

[93] *See* July 10, 2018 Air Quality Modeling Report, Appendix D, Table D-2.

[94] *See* Bay Area Air Quality Management District, Preliminary Determination of Compliance, Mariposa Energy Project, August 2010, at 38-39, http://www.energy.ca.gov/sitingcases/mariposa/documents/others/2010-08-18_Preliminary_Determination_of_Compliance.pdf, **included as Attachment 4.**

[95] https://www.arb.ca.gov/bact/bactnew/rptpara.htm.

Table 1. Examples of Simple-Cycle Turbines in California with NO_x Limits with SCR of 2.5 ppmvd@15%O2[96]

Facility	NO_x Limit Averaging Time
Panoche Energy Center	1-hour avg
Walnut Creek Energy Park	1-hour avg
Sun Valley Energy Project	1-hour avg
CPV Sentinal Energy Project	1-hour avg
Lambie Energy Center	1-hour avg
Riverview Energy Center	1-hour avg
Wolfskill Energy Center	1-hour avg
Goosehaven Energy Center	1-hour avg

Further, a review of the EPA's RACT (Reasonably Available Control Technology)/BACT/LAER Clearinghouse shows numerous other simple-cycle combustion turbines with NO_x BACT limits of 2.5 ppmvd, as shown in the table below.

[96] *Id.* at 38.

Table 2. Examples of Simple-Cycle Turbines in EPA's RACT/BACT/LAER Clearinghouse with NO_x Limits with SCR of 2.5 ppmvd @15%O_2

Facility	RBLC ID Number[97]	NO_x Limit Averaging Time
Bayonne Energy Center LLC	NJ-0086	three-hour avg
Troutdale Energy Center	OR-0050	three-hour avg
Vineland Municipal Electric Utility	NJ-0077	three-hour avg
Bayonne Energy Center LLC	NJ-0075	Not given
PSEG Fossil LLC Kearny Generating Station	NJ-0076	three-hour rolling avg
El Cajon Energy LLC	CA-1174	one-hour avg
Orange Grove Project	CA-1176	one-hour avg
Escondido Energy Center LLC	CA-1175	one-hour avg

A 2.5 ppmvd @15%O_2 NO_x BACT limit for the Buckingham compressor engines reflects 72.2% NO_x control from the 9 ppmvd NOx rate that will be achieved with the SoLoNO_x controls, and 72.2 percent NO_x control should be readily achievable with the SCR systems to be installed at the Buckingham compressor turbines.

The fact that NO_x limits of 2.5 ppmvd to be achieved with SCR have been required on numerous simple-cycle turbines means that numerous permitting agencies have considered SCR systems achieving that level of control to be cost effective to require as BACT for simple-cycle turbines. Given that the Solar turbines to be installed at the Buckingham Compressor Station are simple-cycle turbines that will likely be operated similar to or even more frequently than simple-cycle power turbines (which typically operate as peaking generators), it is very reasonable to consider the Solar turbines to be installed at the Buckingham Compressor Station to be a similar source category to the simple-cycle power turbines listed in Tables 1 and 2 above. Further, as noted by VDEQ, SCR has been required in air permits for two other compressor stations associated with ACP. Based on the numerous permitted simple-cycle turbines subject to NO_x

[97] The specific information on these RBLC entries can be found by searching on the RBLC ID number at https://cfpub.epa.gov/rblc/index.cfm?action=Search.SearchByRBLCIdentifier.

limits with SCR of 2.5 ppmvd, the Solar turbines to be installed at Buckingham Compressor Station should be able to meet the same level of NO_x control as has been required as BACT for these other simple-cycle turbines.

For all of the reasons discussed above, NO_x BACT for the four compressor turbines at the Buckingham Compressor Station should be a lower NO_x limit of 2.5 ppmvd @15%O2, based on $SoLoNO_x$ and SCR controls. Further, VDEQ must consider adoption of a one-hour averaging time, rather than a three-hour averaging time, for the NO_x BACT emission limit, given the numerous BACT decisions for simple cycle turbines listed in Tables 1 and 2 above of 2.5 ppmvd @15%O_2 that apply on a one-hour averaging time. A one-hour averaging time is more stringent than a three-hour averaging time and such an averaging time will ensure protection of the short term Nitrogen Dioxide NO_2 NAAQS which applies on a one-hour average basis.

VDEQ has not established any limits on ammonia slip with the SCRs to be installed at the 4 Buckingham compressor turbines. An SCR system injects ammonia into the gas stream, which reacts with NO_x in the presence of the SCR catalyst to remove NO_x from the exhaust gases. However, some the added ammonia will not react with the NO_x and will "slip" out with the gas stream. Ammonia slip can then react with nitric acid to form fine particulate matter. A 5.0 ppmvd @15%O_2 ammonia limit has been required as an appropriate ammonia slip level for SCR systems at simple cycle gas turbines, and should be required in the permit for the Buckingham compressor turbines to ensure ammonia slip and secondary fine particulate matter is minimized.[98]

Because the NO_x BACT for the four compressor turbines at the Buckingham Compressor Station should be a lower NO_x limit of 2.5 ppmvd @15%O2, rather than the 3.75 ppmvd proposed in the Draft Permit, the Board should remand the proposed permit to DEQ for reconsideration of NO_x BACT emission limits.

[98] *See, e.g.*, Bay Area Air Quality Management District, Preliminary Determination of Compliance, Mariposa Energy Project, *supra* n.94, at 88.

B. VDEQ Should Evaluate Electric Compressor Turbines as BACT for All Air Pollutants.

VDEQ's BACT analysis is incomplete because it did not consider the non-emissions alternative of using electric-motor driven compressors instead of gas-fired turbines. Electric motors as prime movers for compressor stations have been recognized as a more efficient and cleaner—with zero emissions at the point of use—alternative to gas turbines.[99] Electric motors have been found to be a feasible alternative, given that they are "more reliable and more efficient as stand-alone pieces of equipment than either gas engines or gas turbines....[and] are able to ramp up more rapidly than gas-driven prime movers."[100] Though gas turbines have typically been used, "environmental (mainly air quality) concerns are causing electric motors to become more prevalent."[101] Though a final analysis depends on the energy mix of the electric grid, "the system efficiency of electric motors can be higher than that of gas-based technology, and even if efficiency is lower, electric motors may sometimes reduce GHG emissions."[102]

EPA guidelines do not prohibit a state permitting agency from considering inherently less polluting alternatives. An-oft cited EPA manual states that "there may be instances where, in the permit authority's judgment, the consideration of alternative production processes is warranted and appropriate for consideration in the BACT analysis."[103] VDEQ has not pointed to any state law or regulation that would prohibit the consideration of electric motors for a compressor station as part of BACT.

In this instance, consideration of electric motors is entirely consistent with the permit applicant's defined purpose for the facility. "[T]he permit applicant initially defines the proposed facility's end, object, aim, or purpose — that is the facility's basic design, although the applicant's definition must be for reasons independent of air permitting."[104] The purpose of the Buckingham

---

[99] Jeffery B. Greenblatt, *Opportunities for Efficiency Improvements in the U.S. Natural Gas Transmission, Storage and Distribution System*, Lawrence Berkeley National Laboratory, LBNL-6990E (May 2015), at 12.

[100] *Id.*

[101] *Id.* at 13 (citing Compressed Air & Gas Institute, *Compressed Air and Gas Handbook* (2012) at pp. 433–434).

[102] *Id.* at 46.

[103] Environmental Protection Agency, New Source Review Workshop Manual (Oct. 1990), at B-13.

[104] *In re: Desert Rock Energy Co., LLC*, PSD Appeal No. 08-03 et al., Slip. Op. at 64 (EAB Sept. 24, 2009).

facility is to maintain sufficient pressure in the ACP to keep gas moving through the pipeline.[105] This purpose can be equally achieved with electric motors as with gas-fired turbines. Nothing in this record suggests that the use of electric motors in place of gas-fired turbines would disrupt the applicant's basic business purpose for the proposed facility.

The BACT standard under Virginia law is clear. VDEQ and the Air Board are required to consider "the *maximum degree* of emission reduction for any pollutant" ...which the board, "on a case-by-case basis, taking into account energy, environmental and economic impacts and other costs, determines is achievable...through the application of production processes or available methods, systems and techniques...for control of such pollutant."[106] Electric motors in place of gas-fired turbines are an available method or technique that would remove the pollutant at the source altogether and should have been considered as part of the BACT review.

C. VDEQ Should Require Continuous Emission Monitoring Systems for NO_x Emissions from the Four Compressor Turbines.

The Draft Permit is inadequate because it does not require sufficiently frequent monitoring to ensure that the compressor station turbines are complying with the BACT emission limits established by the permit. Specifically, the Draft Permit for the Buckingham Compressor Station only requires stack testing once every two years to determine compliance with the BACT emission limits in Conditions 20 through 23 of the Draft Permit, including the NO_x BACT limit.[107] That is not a sufficient stack testing frequency to ensure compliance with the NO_x BACT limits on a continuous basis. While this is an issue with all of the BACT emission limits, our comment focuses on NO_x because there are no other conditions in the permit that will ensure continuous compliance with the NO_x BACT limit. SCR systems can be operated to varying levels of NO_x removal efficiency. While Condition 1 of the Draft Permit requires the SCR system to be in operation at all times the compressor turbine is operating, except during startup and shutdown, there is no requirement in the permit that would ensure that the SCR is being operated in a manner to achieve the necessary NO_x reduction to meet the NO_x BACT limits. Installation of continuous emission monitoring systems (CEMS) for NO_x should thus be

[105] Atlantic Coast Pipeline, LLC Permit Application at p. 1 (May 25, 2018) (setting forth that the purpose of the Buckingham Compressor Station is "to provide compression to support the transmission of natural gas.").

[106] *See* 9VAC5-50-250 A (emphasis added).

[107] Conditions 29 and 31 of Draft Permit for Buckingham Compressor Station.

required to ensure continuous compliance with the NO_x BACT limits. With the installation of NO_x CEMs, Atlantic will be readily able to adjust the ammonia injection rate and other SCR parameters to optimize NO_x removal efficiency across the SCR and ensure continuous compliance with BACT emission limits.

Not only would NO_x CEMs ensure continuous compliance with the NO_x BACT limits applicable to the compressor turbines, but NO_x CEMs are the only method that can be used to ensure continuous compliance with the pound per hour (three-hour average) and ton per year NO_x limits of the Draft Permit. The pound per hour NO_x limits apply during normal operation (i.e., not including startup and shutdown) and when temperatures are below zero degrees Fahrenheit during which NO_x emissions from the compressor turbines are expected to rise significantly.[108] The ton per year limits apply to all operations, including startup, shutdown, and periods when temperatures are below zero degrees Fahrenheit.[109] There are no provisions in the permit that would ensure continuous compliance with these NO_x limits during times when temperatures fall below zero degrees Fahrenheit, because the stack testing required by the permit would not be conducted during all these varying periods of operation. Typically, stack testing is done when the unit is operating at maximum capacity (or close to it). While Condition 35.e. of the permit requires the company to maintain on-site records of monthly emissions of NO_x and other pollutants to demonstrate compliance with the ton per year emission limits, the permit provides absolutely no indication as to how those calculations of compliance with the annual ton per year limits are to be determined, nor are any of those calculations required to be submitted to VDEQ.

Further, the VDEQ Permit Analysis indicates that this permit is a "synthetic minor after permit action" permit.[110] With respect to the compressor turbines, it appears that the ton per year limits on NO_x, which apply to all periods of operation, are intended to be synthetic minor limits. Otherwise, if annual allowable emissions were calculated based on the pound per hour limits in the Draft Permit, the Buckingham Compressor Station would be considered a major source

[108] The pound per hour NOx limits in Conditions 20-23 of the Draft Permit are marked with a double asterisk, which states the limit does not apply during periods of startup and shutdown, whereas the 3.75 ppm @15%O_2 NO_x limits do not apply during startup, shutdown, or when ambient temperatures are below zero degrees Fahrenheit.

[109] No exemptions for startup, shutdown, or ambient temperature are listed for the ton per year NO_x emission limits in Conditions 20-23 of the Draft Permit.

[110] VDEQ Buckingham Compressor Station Draft Analysis Registration Number 21599, at 1.

subject to Title V operating permit requirements. Specifically, the potential to emit NO_x from the four compressor engines, based on the pound per hour emission limits in Conditions 20-23 of the Draft Permit, would be 131.36 tons per year.[111] This figure exceeds the 100 ton per year major source emission threshold for Title V permitting.[112] However, the permit also limits annual NO_x emissions from the four compressor engines to 28.51 tons per year via the annual ton per year NO_x limits in Conditions 20-23 of the Draft Permit. Therefore, the ton per year NO_x limits in Conditions 20-23 of the Draft Permit are intended to be synthetic minor limits intended to keep the Buckingham Compressor Station out of Title V operating permit requirements. Yet the Draft Permit fails to require sufficient monitoring to ensure compliance with the ton per year limits. Because stack testing will not be done during all periods of operation that are subject to the ton per year limit, NO_x CEMs that will continuously monitor NO_x emissions every hour of every day are the only monitoring method that will ensure that annual emissions of NO_x will remain below the ton per year NO_x emission limits as necessary to keep the Buckingham Compressor Station a synthetic minor source.

For all of these reasons, the Draft Permit requirements are inadequate. VDEQ must reject and remand the Draft Permit and direct VDEQ to require CEMs for NO_x to continuously monitor the NO_x emissions from the compressor turbines. Not only is such monitoring necessary to create practically enforceable annual NO_x emission limits sufficient to exempt the Buckingham Compressor Station from Title V permitting, but also the continuous NO_x emission measurements will enable Atlantic to better implement its SCR system to maximum NO_x emission reductions as well as to minimize NO_x emissions during startup and shutdown.

D. BACT for Fugitive Emissions at the Buckingham Compressor Station.

In the Draft Permit, VDEQ has not specifically identified BACT requirements for fugitive emissions for this facility that would bind Atlantic outside of federal regulations. Given the possibility that those regulations could change or be weakened, VDEQ should add a provision that the conditions relating to fugitive emissions apply independently of the relevant federal regulation. According to Atlantic's Permit Application, the proposed compressor station

[111] This was calculated for the 4 compressor turbines based on the pound per hour NO_x limits in Conditions 20-23 of the Draft Permit, assuming maximum hours of operation per year (i.e., 8760 hours).

[112] 9VAC5-80-50.

will include fugitive components including valves, flanges, pumps, etc.[113] Atlantic states "[t]his facility will comply with New Source Performance Standard ("NSPS") Subpart OOOOa (subject to subsequent modification) which incorporates fugitive emissions monitoring program."[114] VDEQ states in its permit analysis that, while the fugitive leak requirements in the permit may be similar to or identical with the requirements in Subpart OOOOa, the Commonwealth's regulatory authority for these requirements is the Commonwealth's BACT requirements.[115] As such, VDEQ should specifically identify in the permit all requirements that it is imposing as BACT for fugitive emissions, rather than refer to the NSPS regulations. Specifically, rather than citing to the definition of "fugitive emissions component" in 40 CFR 60.5430a, Permit Condition 7.a should specifically state the definition of "fugitive emissions component" in the permit. This will ensure permanence of the permit requirements applicable to fugitive emissions components in the event that the federal NSPS Subpart OOOOa is revised (something that Atlantic alludes to as a possibility in its permit application). Further, this permit acknowledges that 40 CFR Part 60, Subpart OOOOa applies and that the owner/operator is "responsible for complying with the monitoring, notification, reporting, and recordkeeping requirements of these regulations."[116] To ensure the permanence and integrity of its BACT determination for fugitive emissions to the public in the event the federal NSPS standard in Subpart OOOOa is revised, VDEQ should add a provision clearly stating that the requirements of this permit apply independently from and in addition to the applicable requirements of the NSPS Subpart OOOOa.

The Draft Permit requires the development and implementation of a fugitive emissions component monitoring and repair plan.[117] While the Draft Permit has specific information regarding timing of leak detection surveys and deadlines for repair of fugitive emission leaks, the Draft Permit does not require records of such surveys, repair of fugitive emission leaks, and reasons for delay in repair of fugitive emissions leaks to be submitted to VDEQ. Instead the

---

[113] May 25, 2018 Permit Application for Buckingham Compressor Station at 14.

[114] *Id.*

[115] *See* VDEQ Buckingham Compressor Station Draft Analysis Registration Number 21599, at 10. *See also* 9VAC5-80-1105 C and 9VAC5-60-320.2.

[116] Draft Permit at 2 (top paragraph).

[117] Draft Permit, Condition 7a.

Draft Permit requires records to be kept on site.[118] VDEQ must require that Atlantic submit quarterly and annual reports to VDEQ on its fugitive emissions detection and repair work, so that VDEQ can ensure that this BACT requirement is complied with. Submission of regular reports would also help to ensure that fugitive emission leaks are repaired promptly and would thus be minimized to the maximum degree possible. Further, with such information submitted to VDEQ, the general public could have access to such data to assure that fugitive emissions are being reduced to the maximum degree possible.

E. The NAAQS Modeling Analyses for the Buckingham Compressor Station Are Flawed.

The Draft Permit is inadequate because the NAAQS modeling analyses supporting the permit are flawed. The Board should remand the Draft Permit to DEQ to remedy the shortcomings in Atlantic's modeling. 9VAC5-80-1180 of Virginia's air permitting rule provides that "[n]o minor NSR permit will be granted unless it is shown to the satisfaction of the Board that the source will comply with the following standards...3. The source shall be designed, built and equipped to operate without preventing or interfering with the attainment or maintenance of any applicable ambient air quality standard and without causing or exacerbating a violation of any applicable ambient air quality standard. . . ." Accordingly, VDEQ required modeling analyses to demonstrate that the Buckingham Compressor Station would comply with the NAAQS.[119] However, Atlantic's NAAQS air modeling analyses are flawed for several pollutants due to failure to model the highest allowable emission rates and the failure to adequately account for emissions during startup and shutdown. These issues are discussed in detail further below.

1. Neither Atlantic Nor VDEQ Modeled the Maximum Short Term Allowable NO_x Emission Rates.

First, Atlantic's air modeling analysis failed to model the maximum allowable emission rates allowed under the terms of the Draft Permit for the one-hour average NO_2 NAAQS. Specifically, Conditions 20-23 of the Draft Permit identify pound per hour emission rates for NO_x applicable on a three-hour average basis for all periods of operation excluding startup and

[118] Draft Air Permit, Condition 7.b.

[119] *See* VDEQ Buckingham Compressor Station Draft Analysis Registration Number 21599, Section VII.

shutdown, but the NO_x emissions modeled by Atlantic are much lower than the pound per hour limits of the permit. This is shown in Table 3 below.

Table 3. Allowable NO_x Pound per Hour Emission Rates and Maximum Hourly NO_x Emission Rates Modeled by ACP

Unit	NO_x limit, lb/hr (3-hr avg)[120]	Highest NOx Rate Modeled by ACP, lb/hr[121]
CT-01	9.09	1.95
CT-02	6.01	1.29
CT-03	11.03	2.36
CT-04	3.86	0.83

While both ppm and pound per hour NO_x limits apply under Conditions 20-23 of the permit, the ppm limit does not give a clear indication of what the comparable allowable pound per hour NO_x rate would be. Specifically, the ppm limit is given in terms of parts per million (presumably this is by dry volume basis, but the permit is unclear on this point) corrected to 15 percent oxygen. However the fuel in the compressor turbines will not necessarily be operated @15%O_2. Further, there very well could be moisture in the fuel in excess of the level assumed in the limits that presumably apply on a dry volume basis. Thus, it is difficult to correlate the ppm @15% oxygen limits to a maximum allowable pound per hour NO_x emission rate to be used in the air modeling. Consequently, one cannot find with certainty that the ppm NO_x limits are more restrictive than the pound per hour NO_x limits, and therefore VDEQ must ensure that the pound per hour NO_x emission limits are protective of the one-hour average NO_2 NAAQS.

To the extent VDEQ may claim that the pound per hour NO_x limits only apply to periods of operation below zero degrees Fahrenheit (for which periods Atlantic claims it should not have to show compliance with the one-hour NO_2 NAAQS due to such periods being intermittent[122]), then VDEQ should label those pound per hour limits as applicable during periods of operation below zero degrees Fahrenheit, and VDEQ should impose pound per hour NO_x limits that apply during all other periods of normal operation that are modeled for compliance with the one-hour

[120] Draft Air Permit, Conditions 20-23.

[121] July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report, Appendix D, Table D-3.

[122] *Id.* at 11.

average NO_2 NAAQS. As the modeling currently stands, the modeling for the one-hour average NO_2 NAAQS fails to ensure that the maximum allowable hourly NO_x emissions will not cause or contribute to a violation of the one-hour NO_2 NAAQS.

2. The one-hour Average NO_2 Modeling Fails to Reflect Emissions When Ambient Temperatures Are Lower than Zero Degrees Fahrenheit.

Second, Atlantic's air modeling is incomplete because it fails to present modeling of compliance with the one-hour average NO_2 NAAQS for emissions when temperatures are below zero degrees Fahrenheit. However, Atlantic claims to have modeled allowable emissions during such weather conditions for all other NAAQS averaging periods including the annual average NO_2 NAAQS.[123] To justify not presenting the modeling analyses for the one-hour average NO_2 NAAQS under such cold conditions, Atlantic cites to an EPA memorandum which states in part as follows:

> ...we are concerned that assuming continuous operations for intermittent emissions would effectively impose an additional level of stringency beyond that intended by the levels of the [one-hour average NO_2] standard itself. As a result, we feel it would be inappropriate to implement the one-hour NO_2 standard in such a manner and recommend that compliance demonstrations for the one-hour NO_2 NAAQS be based on emissions 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 one-hour concentrations.[124]

Notwithstanding EPA's March 1, 2011 memorandum, it is reasonable to consider that, for at least an hour per year on average,[125] the compressor turbines will operate at much higher NO_x emissions due to temperatures being below zero degrees Fahrenheit. When temperatures fall below zero degrees Fahrenheit, NO_x as well as carbon monoxide emissions and unburnt hydrocarbons increase because the turbine engines increase pilot fuel to improve flame stability and the $SoLoNO_x$ combustion controls will not work effectively.[126] Indeed the permit does not definitively require operation of the $SoLoNO_x$ controls during periods of temperatures below

---

[123] *Id.*

[124] July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report at 11 (citing EPA Memorandum with Subject "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard," March 1, 2011).

[125] *Id.* at 11 (Atlantic indicates that over five meteorological years examined, there were only five hours with temperatures below zero degrees Fahrenheit, which is one hour per year on average).

[126] As discussed in Solar Turbines Product Information Letter 167, $SoLoNO_x$ Products: Emissions in Non-SoLoNOx Models, which was attached to ACP's May 25, 2018 Permit Application for the Buckingham Compressor Station.

zero degrees.[127] It also is not clear how the significantly increased NO_x emissions will affect NO_x removal efficiency of the SCR system during such low temperature periods. Given that the SCR will be designed to have a much lower input NO_x emission rate, it seems likely that the SCR would not remove NO_x to the same control efficiency as it will during temperatures above zero degrees Fahrenheit. Thus, emissions of NO_x during these cold temperature timeframes, even if very infrequent, will be much higher than the worst case emissions during other periods. In fact, Atlantic's Modeling Protocol indicted that NO_x emissions during temperatures below zero degrees Fahrenheit could be as follows[128]:

CT-01: 26.4 lb/hr
CT-02: 42.4 lb/hr
CT-03: 62.4 lb/hr
CT-04: 76.0 lb/hr

These rates are much higher than the maximum pound per hour NO_x limits in Conditions 20-23 of the Draft Permit and presumably do not reflect any control by the $SoLoNO_x$ combustion controls or the SCR. In its subsequently submitted modeling report, Atlantic assumed maximum hourly NO_x rates for operations below 0 degrees Fahrenheit at the same pound per hour limits in Conditions 20-23 of the Draft Permit.[129] The exact basis for those emission limits has not been explained, and we ask VDEQ and Atlantic to provide the assumptions that went into those pound per hour NO_x emission limits including the assumed uncontrolled NO_x rate and the level of NO_x removal presumed to occur across the SCR when temperatures are below zero degrees Fahrenheit.

It appears that Atlantic has performed modeling for one-hour NO_2 concentrations at the higher NO_x emission rates allowed in the pound per hour limits of Conditions 20-23 of the Draft Permit, but those modeling results are not presented in its July 10, 2018 Air Modeling Report. According to Atlantic's Modeling Protocol, the company planned to evaluate ambient air impacts for a range of operating conditions, including conditions below zero degrees Fahrenheit.[130] While Atlantic may be relying on EPA's March 1, 2011 Memorandum as a reason

---

[127] Draft Permit, Condition 1.

[128] April 6, 2018 Revised Air Quality Modeling Protocol for Buckingham County Compressor Station, Appendix C, Table C-4.

[129] July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report, Appendix D, Table D-2.

[130] April 6, 2018 Revised Air Quality Modeling Protocol for Buckingham County Compressor Station at 6.

for ignoring that modeling, that is not what EPA's March 2011 guidance provides for. Instead, EPA's guidance states that EPA did not find it appropriate to assume in the modeling that intermittent emissions occur every hour of the year. There are other ways VDEQ could account for emissions during cold temperatures in the one-hour NO_2 NAAQS analysis. Atlantic said that it found over five meteorological years, that there were 5 hours of below 0 degree Fahrenheit temperatures and that they all occurred in one year.[131] The most obvious way to account for this scenario in the one-hour NO_2 NAAQS analysis would be to assume that that the maximum hourly NO_2 concentration modeled in a year would be due to operations when temperatures are below zero degrees Fahrenheit (i.e., assuming that on average, one hour per year the temperatures are below zero degrees Fahrenheit [132]), and then to determine the expected NO_2 concentration based on the average of the 7th highest (rather than the 8th highest) modeled NO_2 concentration per year to predict the three-year average 98th percentile NO_2 concentration expected as a result of the Buckingham Compressor Station.[133] Another method would be to take the 3rd highest NO_2 concentration predicted for 2015 from the modeling of maximum normal source operations (taking the 3rd highest predicted NO_2 concentration, rather than the 8th highest, to reflect the fact that there were five hours in 2015 of ambient temperatures below zero degrees Fahrenheit, when the maximum NO_2 emissions and thus maximum NO_2 concentrations would occur) and average that value with the 8th highest modeled NO_2 concentration for the other two years modeled in predicting the expected three-year average 98th percentile NO_2 concentration for comparison to the one-hour average NO_2 NAAQS. Either one of these options would be consistent with EPA's 2011 memo and not consider the worst case below zero emissions as occurring every hour of the year, but would still realistically account for the fact that actual emissions from the compressor engines may be much higher and cause much higher hourly NO_2 concentrations for 1 to 5 hours per year.

The public deserves to know the maximum predicted ambient air impacts that could occur due to the Buckingham Compressor Station, and VDEQ has an obligation to ensure that the NAAQS will not be violated as a result of allowing the Buckingham Compressor Station to

[131] July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report at 11.

[132] Based on the actual finding that over five years of weather data at the Lynchburg Regional Airport, there were five hours (all in 2015) that were below zero degrees Fahrenheit.

[133] As described in ACP's modeling report, the form of the one-hour NO_2 NAAQS is based on the three-year average of the 98th percentile (i.e., 8th highest) hourly NO_2 concentration. July 10, 2018 Modeling Report at 11.

be constructed. Thus, VDEQ should not ignore the much higher NO_x emissions that could occur, even if infrequently, during times when temperatures fall below zero degrees Fahrenheit.

3. Atlantic Did Not Adequately Account for Emissions in Its Modeling of Startup and Shutdown Emissions.

Third, Atlantic's modeling is insufficient because it vastly underestimates the level of emissions that would occur during startup and shutdown operations. According to Atlantic, to account for ambient air impacts of the compressor turbines during startup and shutdown, which are projected to last about ten minutes each, it developed a blended-emission rate to be modeled for the startup and shutdown scenarios.[134] Specifically, Atlantic determined a blended-emission rate to model based on the emission rates expected during startup and shutdown provided by the turbine manufacturer and the emissions during normal operations that produce the highest pollutant concentration.[135] However, a comparison of the emissions assumed in terms of pound per event to the emissions data provided by the turbine manufacturer[136] shows that Atlantic greatly understated the emissions expected per startup and shutdown event in its modeling. This is demonstrated in Tables 4 and 5 below.

---

[134] July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report at 8, 23, and Table D-4 in Appendix D.

[135] *Id.* at 8 and Table D-4 of Appendix D.

[136] Solar Turbines Product Information Letter 170, Emissions Estimates at Start-up, Shutdown, and Commissioning for $SoLoNO_x$ Combustion Productions, which was attached to ACP's May 2018 Permit Application.

Table 4. Startup Emission Rates per Event for the Four Buckingham Compressor Engines from the Turbine Vendor[137] Compared to the Startup Emission Rates per Event Assumed by Atlantic in its Air Modeling Analyses[138].

Unit ID #	Model	NO_x per startup (lb/event)	CO per startup (lb/event)	UHC[139] per startup (lb/10 min)	NO_x Startup (lb/event) assumed by ACP	CO Startup (lb/event) assumed by ACP	PM10 & PM2.5 Startup (lb/event) assumed by ACP
CT-01	Solar Mars 100	1.4	123.5	7.1	1	46	0.06
CT-02	Solar Taurus 70	0.8	73.1	4.2	1	88	0.06
CT-03	Solar Titan 130	1.9	176.9	10.1	1	55	0.11
CT-04	Solar Centaur 50L	0.8	69.1	4.0	0.3	21	0.03

[137] *Id.* at Table 3 "Estimation of Start-up and Shutdown Emissions (lbs/event) for SoLoNOx CS/MD [Compressor Set/Mechanical Drive] Applications."

[138] July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report, Table D-4 of Appendix D.

[139] UHC refers to unburned hydrocarbons, and it is assumed such unburned hydrocarbons are in the PM2.5 particulate size range.

Table 5. Shutdown Emission Rates per Event for the Four Buckingham Compressor Engines from the Turbine Vendor[140] Compared to the Shutdown Emission Rates per Event Assumed by ACP in its Air Modeling Analyses.[141]

Unit ID #	Model	NO_x per shutdown (lb/event)	CO per shutdown (lb/event)	UHC[142] per shutdown (lb/event)	NO_x Shutdown (lb/event) assumed by ACP	CO Shutdown (lb/event) assumed by ACP	PM10 & PM2.5 Shutdown (lb/event) assumed by ACP
CT-01	Solar Mars 100	1.7	149.2	8.5	1	6.56	0.1
CT-02	Solar Taurus 70	1.1	93.4	5.3	1	4.96	0.07
CT-03	Solar Titan 130	2.4	207.6	11.9	2	7.28	0.15
CT-04	Solar Centaur 50L	0.4	35.4	2.0	1	2.96	0.05

It must be noted that these startup and shutdown emission rates provided by the turbine vendor are not warranted "under any circumstances,"[143] which means that the vendor is not guaranteeing that emissions during startup and shutdown events will be able to remain below these emissions levels. Thus, emissions during startups and shutdowns could be higher than stated in the vendor information. Further, the emission rates are based on ambient temperature of 59 degrees Fahrenheit and other standard conditions.[144] As shown in Atlantic's evaluation of emissions scenarios at various ambient temperatures, emission rates of NO_x, CO, and

[140] Solar Turbines Product Information Letter 170, Emissions Estimates at Start-up, Shutdown, and Commissioning for SoLoNOx Combustion Productions, at Table 3 "Estimation of Start-up and Shutdown Emissions (lbs/event) for SoLoNOx CS/MD [Compressor Set/Mechanical Drive] Applications." This document was attached to ACP's May 2018 Permit Application.

[141] July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report, Table D-4 of Appendix D.

[142] UHC refers to unburned hydrocarbons, and it is assumed such unburned hydrocarbons are in the PM2.5 particulate size range.

[143] [143] Solar Turbines Product Information Letter 170, Emissions Estimates at Start-up, Shutdown, and Commissioning for SoLoNOx Combustion Productions, at Table 3 "Estimation of Start-up and Shutdown Emissions (lbs/event) for SoLoNOx CS/MD [Compressor Set/Mechanical Drive] Applications."

[144] *Id.*

PM2.5/PM10 are highest in the lowest temperature scenarios.[145] Thus, the vendor's emission rates for startup and shutdown events would likely be higher during periods of temperatures below 59 degrees Fahrenheit.

Atlantic stated that it blended the vendor provided emissions per startup or shutdown event with the worst-case emissions scenarios for normal source operation in modeling startup and shutdown emissions. However, because Atlantic greatly understated the amount of emissions per startup and shutdown event, the company's blended emission rate for its startup/shutdown modeling were significantly understated. We calculated proper blended hourly emission rates, using the pound per event emission rates provided by the turbine vendor (reflected in the 3rd, 4th, and 5th columns from Tables 4 and 5 above) and using Atlantic's worst-case emissions scenario for each pollutant from Table D-4 of Appendix D of its July 10, 2018 modeling report. We calculated the blended hourly emission rate assuming the startup or shutdown emissions occurred over 10 minutes and the worst case normal operations emissions scenario occurred over 50 minutes. The results of our calculations are provided in Tables 6 and 7 below and are compared to the emission rates modeled by Atlantic in its startup and shutdown modeling.

[145] July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report, Table D-2 of Appendix D.

Table 6. Calculated Hourly Blended Emission Rates for the Buckingham Compressor Engines Based on Vendor Emission Rates for Startup[146] and Worst Case Hourly Normal Operation Emission Rates[147], Compared to the Startup Blended Emission Rates Modeled by ACP[148]

Unit ID #	Model	NO_x Blended Emission Rate for Startups (lb/hr)	CO Blended Emission Rate for Startups, one-hour Avg CO Modeling, (lb/hr)	PM10/2.5 Blended Emission Rate for Startups (lb/hr)	ACP's NO_x Emission Rate Modeled for Startups (lb/hr)	ACP's CO Emission Rate Modeled for Startups, one-hour Avg CO Modeling, (lb/hr)	ACP's PM10/2.5 Emission Rate Modeled for Startups (lb/hr)
CT-01	Solar Mars 100	2.85	125.38	9.48	2.45	47.88	2.83
CT-02	Solar Taurus 70	1.74	74.33	5.77	1.94	89.22	1.87
CT-03	Solar Titan 130	3.63	179.13	12.98	2.72	57.23	3.44
CT-04	Solar Centaur 50L	1.40	69.88	5.01	0.90	21.77	1.20

[146] *See* Table 4 above and Solar Turbines Product Information Letter 170, Emissions Estimates at Start-up, Shutdown, and Commissioning for SoLoNOx Combustion Productions, at Table 3.

[147] July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report, Table D-4 of Appendix D.

[148] *Id.* at Table D-5.

Table 7. Calculated Hourly Blended Emission Rates for the Buckingham Compressor Engines Based on Vendor Emission Rates for Shutdown[149] and Worst Case Hourly Normal Operation Rates[150], Compared to the Shutdown Blended Emission Rates Modeled by ACP[151]

Unit ID #	Model	NO_x Blended Emission Rate for Shutdowns (lb/hr)	CO Blended Emission Rate for Shutdowns,1-hour Avg CO Modeling, (lb/hr)	PM10/2.5 Blended Emission Rate for Shutdowns (lb/hr)	ACP's NO_x Emission Rate Modeled for Shutdowns (lb/hr)	ACP's CO Emission Rate Modeled for Shutdown, 1-hour Avg CO Modeling, (lb/hr)	ACP's PM10/2.5 Emission Rate Modeled for Shutdowns (lb/hr)
CT-01	Solar Mars 100	3.15	151.08	10.88	2.45	8.44	2.84
CT-02	Solar Taurus 70	2.04	94.63	6.87	1.94	6.18	1.87
CT-03	Solar Titan 130	4.13	209.83	14.78	3.72	9.51	3.44
CT-04	Solar Centaur 50L	1.00	36.18	3.01	1.60	3.73	1.20

As Tables 6 and 7 show, Atlantic's blended-emission rates for the startup and shutdown modeling are understated, significantly so for carbon monoxide and PM10/PM2.5 With respect to the PM10/PM2.5 emission rates assumed by Atlantic for the 24-hour average PM10 and PM2.5 NAAQS analyses, another reason for the large discrepancy is because the company calculated a blended-hourly-emission rate for the modeling that reflects 10 minutes of operation in startup or shutdown mode and 23 hours and 50 minutes of operation in normal source

[149] *See* Table 5 above and Solar Turbines Product Information Letter 170, Emissions Estimates at Start-up, Shutdown, and Commissioning for SoLoNOx Combustion Productions, at Table 3.

[150] July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report, Table D-4 of Appendix D.

[151] *Id.* at Table D-5.

operation mode.[152] However, this is not reflective of the maximum allowable emission rate during startup and shutdown under the terms of the permit. While there are limits on total hours of time spent per year in startup and in shutdown,[153] there are no limits on how many startups or shutdowns can occur in a 24-hour period, nor are there any numerical emission limits that apply during startup and shutdown.[154] Under the terms of the permit, each compressor engine would not be subject to any emissions limit for up to 16.7 hours per year for startups and up to 16.7 hours per year for shutdowns.[155] Yet, Atlantic assumed only one startup or one shutdown would occur in a 24-hour period for its PM2.5 evaluation. In actuality, several startup and shutdowns would be allowed to occur in a 24-hour period. While that may not be likely, the evaluation of compliance with the NAAQS is supposed to be based on the worst-case allowable emission rates. EPA's Guideline on Air Quality Models requires that the emissions modeled for a new source for the short term NAAQS (i.e., NAAQS with 24-hour or shorter averaging time) be based on the maximum-allowable-hourly-emission rate and assuming continuous operation at that emission rate.[156] The approach that Atlantic assumed for hourly PM2.5 emission rates (i.e., assuming one startup or one shutdown per 24 hours) does not comport with EPA's modeling guidelines and it is not consistent with the scenario the company modeled for the one-hour average NAAQS. It is also inconsistent with what Atlantic claimed to have modeled in its modeling report. Specifically, Atlantic claimed "...the combustion turbine startup and shutdown scenarios and normal operation scenario have been modeled for all hours of the day."[157] It was also VDEQ's understanding that the blended startup and shutdown emission rates were modeled for all hours of the year.[158] This issue also applies to the 8-hour average CO NAAQS modeling, for which Atlantic developed a blended emission rate assuming startup emissions for 10 minutes and assuming normal source operation emission rates for 7 hours and 50 minutes.

---

[152] *Id.*, note c.

[153] Condition 4.g. of Draft Permit.

[154] *Id.*

[155] *Id.*

[156] 40 C.F.R. Part 51, Appendix W, Table 8-2.

[157] July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report at 10.

[158] Email to David Neal, Southern Environmental Law Center, Aug. 30, 2018.

VDEQ must require Atlantic to revise its startup and shutdown modeling analyses to properly assess worst-case ambient-air impacts due to the startup and shutdown emissions allowed under the terms of the permit. Such revised modeling must be grounded in the emission rates provided by the turbine vendor that occur during startup and shutdown from the various turbines, and must ensure that the maximum allowable short term average emission rates will comply with all NAAQS as required by EPA's Guidelines on Air Quality Models. Until new modeling is performed and made available for public review, VDEQ cannot definitively find that the Buckingham Compressor Station will not interfere with attainment or maintenance of the NAAQS.

4. Atlantic Did Not Adequately Model All Contributing Emissions in its Cumulative NAAQS Compliance Analysis.

Fourth and finally, Atlantic's NAAQS compliance analysis is inadequate because Atlantic failed to model actual short-term emission rates for contributing sources for the short-term average NAAQS modeling, and failed to include all nearby sources that could produce a significant concentration gradient near the compressor station. According to Atlantic's July 2018 modeling report, the company included nearby source emissions as listed in Appendix G of its modeling report to determine the total modeled concentrations of relative pollutants.[159] A review of the sources and emission rates listed in Appendix G reveal the following deficiencies in Atlantic's cumulative modeling analysis:

a. Atlantic Did Not Model Maximum Actual Short Term Average Emission Rates for Contributing Sources for the Short Term Average NAAQS Modeling.

A review of the pound per hour emission rates modeled for the contributing sources shows that Atlantic determined hourly emission rates based on the annual emission rates assuming the sources operated 8,760 hours per year. For every source and emission unit listed in Appendix G of ACP's July 2018 modeling report, the pound per hour emission rate reflects the annual emission rate modeled, assuming those emissions are spread evenly across all 8,760 hours in a year.[160] This very likely understates hourly emission rates and thus calls into question the

[159] July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report at 23.

[160] For example, for Greif Packaging, BLR05, the annual NOx is listed as 260.4 tpy and the hourly NOx rate is listed as 59.45 lb/hr, which reflects 260.4 tpy x (2000 lb/ton)x (1 yr/8760 hours). This is the same for every source listed in Appendix G of APC's July 10, 2018 modeling report and for every pollutant.

cumulative modeling for the short term average (24-hour or shorter averaging time) NAAQS. Furthermore, it is not consistent with the EPA's Guideline on Air Quality Models, which requires nearby sources be modeled using temporarily representative operating levels when the emissions unit is actually operating, reflective of the most recent two years of operation. Thus, the cumulative analysis of compliance with the short term average NAAQS conducted for the Buckingham Compressor Station fails to adequately reflect cumulative impacts with the allowable emissions from the Buckingham Compressor Station and other nearby sources.

b. Atlantic Did Not Include All Nearby Sources that Could Produce a Significant Concentration Gradient in the Vicinity of the Buckingham Compressor Station.

It is not clear how VDEQ decided those sources that should be included in the cumulative modeling assessment of the Buckingham Compressor Station. There is at least one other source in the vicinity of the proposed Buckingham Compressor Station that was not included in the cumulative NAAQS modeling—the Dominion–Bear Garden Generating Station.

The Dominion–Bear Garden Generating Station is a 590 megawatt gas-fired power plant in Buckingham County. It appears to be roughly eight or nine miles from the proposed Buckingham Compressor Station. Atlantic failed to include emissions from this large power plant (owned by an affiliated company of Dominion Energy) in its cumulative emissions analysis. VDEQ should have required including all nearby sources, meaning those that could cause a significant pollutant concentration gradient in the area impacted by the Buckingham Compressor Station.

F. Atlantic Has Not Adequately Demonstrated that the Buckingham Compressor Station Will Not Cause or Contribute to Any Concentration Exceeding or Which May Exceed a Significant Ambient Air Concentration for Air Toxics.

The Draft Permit violates Virginia law by failing to demonstrate that the proposed compressor station will not cause or contribute to any concentration exceeding, or that may exceed, significant ambient air concentration for two air toxics: formaldehyde and hexane. Virginia's regulation for toxic pollutants from new and modified sources provides that if a stationary source is not exempt under 9VAC5-60-300 C, D, or E, then it is subject to Virginia's air toxic new source review requirements in 9VAC5-60-320. Those requirements include a provision that no owner of a new source shall cause or contribute to any significant ambient air concentration that may cause or contribute to the endangerment of human health and that the

new source shall employ BACT for the control of toxic pollutants.[161] VDEQ has found that the Buckingham Compressor Station will emit formaldehyde and hexane at levels in excess of the exemption thresholds in 9VAC5-60-300.[162] As such, the Buckingham Compressor Station is subject to the following Virginia standard for formaldehyde and hexane:

> Regardless of any provision of any other regulation of the board, no owner or other person shall cause or permit to be discharged into the atmosphere from any affected facility any emissions of toxic pollutants in such quantities as to cause, or contribute to, any significant ambient air concentration that may cause, or contribute to, the endangerment of human health.[163]

Consequently, Atlantic conducted air dispersion modeling for the formaldehyde and hexane emissions.

Virginia's regulations require that "[a]mbient air concentrations shall be determined using air quality analysis techniques (modeling) based on emission rates equal to the facility's potential to emit for the applicable averaging time or any other method acceptable to the board" and that "[a]mbient air concentrations shall include all emissions from the stationary source, including those from sources exempted under 9 VAC 5-60-300 C."[164]

"Potential to emit" is defined in Virginia's air toxics regulation as "an emission rate based on the maximum capacity of a stationary source to emit a toxic pollutant under its physical or operational design. Any physical or operational limitation on the capacity of the source to emit a toxic pollutant, including air pollution control equipment, and restrictions on the hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design only if the limitation or its effect on emissions is state or federally enforceable. Fugitive emissions shall be included in determining a stationary source's potential to emit."[165]

1. Comments on Modeling of Formaldehyde

In its air modeling report, Atlantic identifies the pound per hour formaldehyde rates that it assumed for the 50 percent, 75 percent, and 100percent operating emissions scenarios during normal source operations. But the formaldehyde hourly emission rates identified by Atlantic are

---

[161] 9VAC5-60-320 1. and 2.

[162] *See* VDEQ Buckingham Compressor Station Draft Analysis Registration Number 21599, at 6.

[163] 9 VAC5-60-320.1.

[164] 9VAC5-60-350 B. and C.

[165] 9VAC5-60-310 C.

the same for all three levels of operation.[166] Based on the formaldehyde emission factor identified in the permit application of 2.88 x 10^{-3} pounds formaldehyde per million British Thermal Unit heat input (lb/MMBtu)[167], it is clear that Atlantic modeled emissions at the 50 percent operating capacity for all three operating scenarios of 50 percent, 75 percent, and 100 percent operating capacity.[168] This does not make sense. The pound per hour formaldehyde emission rates at 100 percent operating factor should be twice that of the pound per hour emission rate at 50 percent operating factor. Thus, Atlantic's normal source operation modeling is significantly flawed and understates worst case impacts because it failed to model the hourly potential to emit of the compressor turbines. The maximum emissions scenario for normal operations should have been as follows, with the rate modeled by Atlantic in parenthesis[169]:

CT-01: 129.64 MMBtu/hr * 2.88 x 10^{-3} lb/MMBtu = 0.37 lb/hr (0.19 lb/hr)
CT-02: 85.62 MMBtu/hr * 2.88 x 10^{-3} lb/MMBtu = 0.25 lb/hr (0.12 lb/hr)
CT-03: 157.2 MMBtu/hr * 2.88 x 10^{-3} lb/MMBtu = 0.45 lb/hr (0.23 lb/hr)
CT-04: 54.98 MMBtu/hr * 2.88 x 10^{-3} lb/MMBtu = 0.16 lb/hr (0.08 lb/hr)

With respect to the startup and shutdown formaldehyde emission rates, it appears that Atlantic blended the startup and shutdown formaldehyde emission rates per startup and shutdown event with the maximum capacity normal operations emission rate calculated above.[170] However, it appears unlikely that Atlantic included other sources of formaldehyde emissions at the Buckingham Compressor Station in the modeling of startup and shutdown emissions of the compressor turbines. Specifically, as shown in Table D-5, the formaldehyde emission rates of

---

[166] July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report, Appendix D, Table D-3.

[167] May 25, 2018 Minor New Source Review Permit Application for Buckingham Compressor Station, Appendix C, Table C-11. *See also* Solar Turbines Product Information Letter 168, Volatile Organic Compound, Sulfur Dioxide, and Formaldehyde Emission Estimates, Table 1, in May 25, 2018 Permit Application for Buckingham Compressor Station. This Solar Turbines document identifies the formaldehyde emission rate of 2.88 x 10^{-3} pounds per million British Thermal Unit heat input as the 95% upper confidence of data emission rate for all engine loads.

[168] For example, the heat input capacity of CT-01 is 129.64 MMBtu/hr. Multiplying that by the formaldehyde emission factors of 2.88 x 10^{-3} lb/MMBtu and a 50 percent capacity factor equates to a formaldehyde emission rate of 0.19 lb/hr, which is the emission rate ACP listed for CT-01 for all three load scenarios in Table D-3 of its July 2018 modeling report.

[169] Based on the maximum heat input identified for each compressor turbine and the formaldehyde emission rate listed in ACP's May 25, 2018 Minor New Source Review Permit Application for Buckingham Compressor Station, Appendix C, Table C-11.

[170] We calculated the blended emission rates using the 100% operational factors and the formaldehyde emissions per startup and shutdown event, and were able to verify that the pound per hour rates listed in Table D-5 (Modeled Startup/Shutdown Emissions) represent a blending of startup or shutdown emissions with the 100% operational emission rate calculated above, despite Table D-4 of ACP's Modeling Report showing a lower normal operational formaldehyde emission factor being blended with the startup and shutdown emissions per event.

the startup scenario are significantly higher than the formaldehyde emission rates modeled for normal source operations by Atlantic, and yet there was not a significant increase in the modeled formaldehyde concentration. This is demonstrated in the table below.

Table 8. Comparison of Atlantic's Modeled Formaldehyde Compressor Engine Emission Rates and Predicted Formaldehyde Concentration for Normal Operations and for Startups Blended with Normal Operations.

	ACP Modeled Formaldehyde Emission Rate Normal Operation[171]	**ACP Modeled Formaldehyde Emission Rate Startup Blended with Normal Operation**[172]
CT-01	0.19 lb/hr	2.56 lb/hr
CT-02	0.12 lb/hr	4.70 lb/hr
CT-03	0.23 lb/hr	3.09 lb/hr
CT-04	0.08 lb/hr	1.17 lb/hr
Total	**0.62 lb/hr**	**11.52 lb/hr**
Max Hourly Formaldehyde Concentration for Modeled Scenario[173]	38.9 ug/m3	40.5 ug/m3

It is difficult to understand how the modeling of normal operations emissions would equate to a maximum formaldehyde concentration of 38.9 ug/m3, but the modeling of startup emissions that are about 18 times higher than the normal operations emission rates would only increase the maximum formaldehyde concentration by 4.1 percent. Given that it does not appear that any nearby sources of formaldehyde emissions were included in the modeling[174] and it does not appear that any background formaldehyde concentration was included in the modeled results[175],

[171] Table D-3 of July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report, Appendix D.

[172] Table D-5 of July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report, Appendix D.

[173] *See* Table 4-3 of July 10, 2018 ACP Buckingham Compressor Station Air Quality Modeling Report.

[174] The emissions inventory of nearby sources provided in Appendix __ of ACP's July 10, 2018 modeling report does not list any formaldehyde emission rates. Further, Section 3.9 of ACP's April 6, 2018 modeling protocol only indicated that offsite sources of NO_2, PM2.5, PM10, and CO may be included in cumulative modeling analyses.

[175] ACP's July 10, 2018 Modeling Report does not provide any background concentrations for formaldehyde.

it is logical to assume that the modeled formaldehyde concentration for normal operations of 38.9 ug/m3 reflects solely Buckingham Compressor Station sources. Thus, given the significant increase in emission rates modeled for the startup scenario, the only explanation for the startup modeling result being only 4.1 percent higher than the normal operation modeling result is that the startup modeling did not include any other Buckingham Compressor Station sources other than the compressor turbines. Yet, Virginia's air toxics permitting rule requires air modeling to be "based on emission rates equal to the facility's potential to emit for the applicable averaging time" and that "[a]mbient air concentrations shall include all emissions from the stationary source, including those from sources exempted under 9 VAC 5-60-300 C."[176] Thus, to comply with Virginia's air toxics permitting rule, VDEQ must ensure that Atlantic has modeled all sources of formaldehyde emissions at the Buckingham Compressor Station to assess maximum hourly formaldehyde concentrations. This must include the emergency generator which appears to be the primary other emission unit with comparable formaldehyde emissions as the compressor engines, with a formaldehyde emission rate of 2.49 pounds per hour.[177] It also must be noted that it is a very likely scenario that a startup of the compressor engines would occur concurrently with the operation of the emergency generator. If the Buckingham Compressor Station lost power, then the compressor engines would shut down and need to be started up again once the emergency generator was started up and running. Thus, assuming that the startup and shutdown modeling does not include the emergency generator and other sources of formaldehyde emissions, VDEQ must require new modeling of all of the sources of formaldehyde at the Buckingham Compressor Station to properly determine increase in formaldehyde concentration due to the potential to emit of the compressor station.

VDEQ also must require a cumulative modeling analysis of the Buckingham Compressor Station with other sources of formaldehyde in the area. Virginia's air toxics permitting rule requires that Atlantic ensure that the Buckingham Compressor Station will not "cause, *or contribute to*, any significant ambient air concentration that may cause, or contribute to, the endangerment of human health."[178] As stated above, it does not appear that Atlantic conducted any cumulative assessment of whether formaldehyde concentrations in the area will exceed the

[176] 9VAC5-60-350 B. and C.

[177] Table C-10 of July 10, 2018 Modeling Report.

[178] 9 VAC5-60-320.1 (emphasis added).

ambient air concentrations that VDEQ has determined to be significant ambient air concentrations (determined as provided in 9VAC5-60-330).

2. Comments on Modeling of Hexane

In estimating emissions and modeling these events, Atlantic understated hexane emissions and/or took into account conditions that the permit would not allow. (Hexane emissions primarily are due to the venting of gas, such as during blowdown events and pigging events.) Therefore the Draft Permit rests on inadequate hexane analysis that must be corrected in a revised permit.

First, in its determination of uncontrolled emissions from blowdowns, Atlantic states that it did not take credit for the use of a planned vent gas reduction system to reduce system pressure prior to venting, meaning that its uncontrolled emissions reflect a blowdown from maximum station operating pressure (1400 pounds per square inch-gauge ("PSIG")) versus 30 PSIG.[179] However, the Draft Permit states as a permit condition that a compressor turbine may not vent gas unless the compressor turbine case pressure is less than or equal to 44.7 pounds per square inch-absolute ("PSIA").[180] Atlantic estimated a much higher volume of gas and thus a higher amount of hexane emissions by assuming a blowdown from maximum station operation pressure rather than assuming a 44.7 PSIA gas pressure limit. However, by assuming a much higher gas pressure than allowed in the permit, Atlantic presumably also assumed a comparatively higher gas discharge velocity than is allowed by the permit in its modeling, which would then essentially assume a higher level of discharge in the air and allow for more dispersion of the gas and hexane emissions in the air. Modeling hexane at a higher gas discharge velocity would result in the model predicting lower hexane concentrations than may actually occur with a blowdown event at the Buckingham Compressor Station. Given the permit limit of not discharging gas at a pressure of any higher than 44.7 PSIA for blowdown events, VDEQ must ensure that the modeling of hexane for blowdown events is based on gas flow assumptions that are consistent with the terms of the permit.

Second, as with the formaldehyde modeling, it does not appear that Atlantic has conducted any cumulative analysis of hexane concentrations expected with the Buckingham

---

[179] May 25, 2018 Permit Application for Buckingham Compressor Station at 15, 28.

[180] Condition 6.a. of Draft Permit.

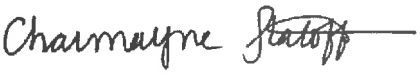
Compressor Engine and any other sources of hexane in the area. VDEQ must require a cumulative modeling analysis of the Buckingham Compressor Station with other sources of hexane in the area. Virginia's air toxics permitting rule requires that Atlantic ensure that the Buckingham Compressor Station will not "cause, *or contribute to*, any significant ambient air concentration that may cause, or contribute to, the endangerment of human health."[181]

CONCLUSION

Because of the errors in the Draft Permit, as well as the unanswered questions about risks to human health, greenhouse gas pollution, and environmental justice, the Virginia DEQ should withdraw the Draft Permit and require supplemental information from Atlantic. In the event VDEQ nevertheless submits the Draft Permit to the Air Pollution Control Board, we respectfully ask that the Board deny the permit.

Sincerely,

David Neal



Charmayne Staloff

SOUTHERN ENVIRONMENTAL LAW CENTER
201 West Main Street, Suite 14
Charlottesville, VA 22902
(434) 977-4090
dneal@selcnc.org
cstaloff@selcva.org

[181] 9 VAC5-60-320.1 (emphasis added).

ATTACHMENT 1

Union Hill Community Household Study Results
Friends of Buckingham, Lakshmi Fjord, Ph.D.
Sept. 4, 2018

document available on
DEQ website

ATTACHMENT 2

Environmental Justice Review of Virginia's Gas Infrastructure,
Memorandum to Governor Northam
Aug. 16, 2018

Available on DEQ website

ATTACHMENT 3

Resume of Vicki Stamper

Available on DEQ website

ATTACHMENT 4

Bay Area Air Quality Management District
Preliminary Determination of Compliance
Mariposa Energy Project
August 2010

Available on DEQ
website

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

PSR Comments on Buckingham

1 message

Berndt, Cindy <cindy.berndt@deq.virginia.gov> Tue, Sep 18, 2018 at 10:30 AM
To: rr Air Division 1 <airdivision1@deq.virginia.gov>

For the public comment file.

Cindy M. Berndt
Director, Regulatory Affairs
Department of Environmental Quality
1111 East Main Street, Suite 1400
P.O. Box 1105
Richmond, Virginia 23218
804.698.4378 Call: 804.698.4378

---------- Forwarded message ---------
From: **Richard Langford** <Richard@langfordmail.net>
Date: Wed, Sep 12, 2018 at 2:39 PM
Subject: PSR Comments on Buckingham
To: Cindy M. Berndt <cindy.berndt@deq.virginia.gov>

Cindy,

I received the attached comment letter from Physicians for Social Responsibility regarding the Buckingham Compressor Station permit. There is no indication that it was sent to anyone else, so I wanted to get it to you for inclusion in public comments in case DEQ had not received it separately..

Richard

Richard Langford

Blacksburg VA

PSR Comments on Buckingham_639.pdf
796K

PHYSICIANS FOR SOCIAL RESPONSIBILITY
1111 Fourteenth Street Northwest Suite 700 Washington DC 20005

PSR

1985 NOBEL PEACE PRIZE

telephone (202) 667-4260
facsimile (202) 667-4201
email: psrnatl@psr.org

September 10, 2018

Mr. Richard D Langford, Chair
Virginia Air Pollution Control Board
1106 Horseshoe Lane
Blacksburg, VA 24060

Dear Mr. Langford,

I write on behalf of Physicians for Social Responsibility to share our serious concerns about the proposed air quality permit proposed for a compressor station to be built in Buckingham County, Virginia in association with the Atlantic Coast Pipeline.

Physicians for Social Responsibility (PSR) is a nationwide nonprofit organization founded in 1961. With nearly 40,000 members and supporters around the country, including more than 360 in Virginia, PSR works to protect human life from the greatest threats to health and survival.

We present here three critical concerns in regard to the proposed air permit:

1. The proposed methodology for measuring and assessing air pollution-based risks to health fails to take into account multiple relevant factors.

The application proposes to follow the standard regulatory agency approach to determining potential health effects from air pollutants. This approach estimates total short-term and long-term air emissions, then compares them with existing federal or state standards for legally acceptable levels. If ambient levels are estimated to fall below the established thresholds, the project is assessed as having a non-significant health impact. This approach is inadequate in the case of compressor stations in that it does not accurately estimate impacts on human health, as it fails to take into account a number of factors:

a. Inadequate benchmarks. Department of Environmental Quality air modeling for the proposed Buckingham compressor station draws on emissions data from Roanoke, Hopewell, and other parts of the state. Given the differences between those locations and Buckingham County, that data may not provide an accurate baseline for air modeling in this instance.

Neither do the National Ambient Air Quality Standards (NAAQS) provide an adequate basis for establishing a benchmark for air quality. The NAAQS reflect what is deemed to be safe over a region and over time. They were not created to assess, and do not adequately assess, air quality and safety in a small geographic area. People residing in close proximity to the proposed Buckingham compressor station will be subject to the effects of much higher levels of pollutants than people residing in more distant parts of the county (or the state) and may be expected to face more severe health impacts. Thus,

PRINTED WITH ECOINK – LOW VOLATILITY VEGETABLE OIL BASED INK ON 100% POST CONSUMER RECYCLED, PROCESS CHLORINE FREE PAPER PRODUCED USING 100% WIND POWER IN A CARBON NEUTRAL PROCESS

reliance on the NAAQS as a benchmark will likely result in an underestimate of the negative health effects of the proposed compressor station.

Finally, although ambient air quality in Buckingham County is generally high, local atmospheric effects as well as existing emissions sources may intensify the impact of compressor station emissions. So too might new emissions sources that may be developed due to greater industrialization in the county if the Atlantic Coast pipeline is constructed. These factors need to be taken into account in making a permitting decision.

b. Cumulative and synergistic effects. Most emissions standards refer to levels of a single chemical. However, in real life, compressor stations emit a mix of chemicals which may interact with one another cumulatively and/or synergistically, with potentially significant health implications. Estimates of yearly totals of a few contaminants released by a compressor station, measured individually, do not allow for an accurate assessment of the physiological impact of those emissions on individuals. To take one well-known and well-understood example, particulate matter (PM) combines with volatile organic compounds (VOCs) in the presence of sunlight and heat to form ground-level ozone, a pollutant that aggravates chronic lung diseases and pre-existing heart problems and contributes to asthma episodes. That is only one example. Mixtures of pollutants are a critically important factor in assessing the public health implications of the proposed Buckingham compressor station, yet the current air permit application fails to take them into account.

c. Emission spikes. The proposed emissions measurements are averages of short- or long-term intervals. These averages fail to reflect the very high levels of peak emissions, such as those that would be created by a blowdown, scheduled or unscheduled, at the proposed Buckingham compressor station. The health consequences of these more intensive exposures may be different from and more severe than exposure to the average level. In fact, average measures can underestimate actual exposures by an order of magnitude. These dangers should be assessed in making any decision as to permitting the proposed Buckingham compressor station.

2. A wider array of the air contaminants associated with compressor stations is harmful to human health and should be analyzed.

In projecting the effects of compressor stations on human health, there are multiple pollutants of concern. More of these should be measured and their potential health effects taken into account in order to assess accurately the potential effects of the compressor station on health:

a. Particulate matter. Among air pollutants from compressor stations, particulate matter (PM) is a chief pollutant by volume and constitutes a major health concern. These tiny, even microscopic particles can lodge deep in the lungs, and the smallest can cross into the bloodstream and be carried throughout the body. Particulates contribute to asthma development and asthma exacerbations; chronic obstructive pulmonary disease (COPD), stunted lung development and lung cancer; congestive heart failure and heart attack; ischemic stroke, and infant mortality. PM's potential impact on Buckingham residents, especially people with preexisting conditions, should – definitively and urgently be weighed in any permitting decision.

b. Other dangerous air pollutants emitted by compressor stations. Multiple additional air pollutants are also emitted by compressor stations, some of which are known to be severely hazardous to human health, including but not limited to hydrogen sulfide, which causes respiratory and nervous system effects, carbon monoxide, a toxicant, and aldehydes (formaldehyde is a known human carcinogen). An October 2017 study conducted at University of Albany's Institute for Health and the Environment found that natural gas compressor stations in New York State released 70 different contaminants and were the seventh-largest point source of air pollution in the state. Projections of health effects, and the subsequent permitting decisions, should take at least the most common of these into account.

c. Radioactive materials. The air permit does not address the radioactive materials that may accompany the methane into the compressor station. These radioactive materials arise from radon, a naturally occurring radioactive substance that is abundant in the Marcellus Shale. Radon is a potent cause of lung cancer. Fortunately, as radon travels with the gas through the pipelines, it decays (radon's half-life is only 3.8 days); unfortunately, it breaks down into other radioactive substances: radioactive isotopes of polonium and lead, with half-lives of 22.6 years and 138 days, respectively. Both of these have been found to accumulate along the interior of natural gas infrastructure, creating a cancer risk both for those who work on the compressor station and potentially for residents. The air permit modeling does not address the potential health risks of radon or radon decay progeny. It should do so.

d. Methane. Finally, the air permit for the compressor station should consider methane emissions. Methane poses an indirect but extremely grave threat to health, as it is one of the more potent accelerators of climate change, 86 times more potent than carbon dioxide as a heat-trapper over its first 20 years in the atmosphere, and 33 times more potent over its first 100 years in the atmosphere. Methane emissions contribute significantly to climate-related conditions that endanger health, including potentially lethal heat waves, extreme storms, rising sea levels, drought, floods, worsening air quality, worsening water quality, crop damage, loss of nutritional value of certain food crops, and spread of pest- and waterborne diseases. Children, the poor, the elderly, and those with a weak or impaired immune system are especially vulnerable. As is discussed in the following section, many of the people living in proximity to the location proposed for the Buckingham compressor station fall into those vulnerable categories. For their sake and for the sake of all people in Virginia and around the world, the permitting process should take methane emissions and climate change into account.

3. The site proposed for the compressor station is unsuitable.

It is incumbent on the Air Pollution Control Board to consider site suitability. There are multiple bases on which to conclude that Union Hill is an unsuitable place to situate the only Virginia compressor station for the Atlantic Coast Pipeline. These include:

a. Environmental Justice concerns. The U.S. Environmental Protection Agency defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." It seeks to address environmental discrimination, which can manifest as the placement of environmentally hazardous sites, including energy production facilities, in minority communities. The following characteristics of the Union Hill community, and the selection of that community for the location of the only Virginia compressor station on the Atlantic Coast

Pipeline, indicate a likely environmental justice issue, with its attendant implications for health:

i. The population of Union Hill is predominantly minority: 83 percent self-identify as African American, Native American/African American, Native American/ White, Hispanic, or Asian.

ii. Many Union Hill residents belong to sub-populations, including infants and youth (32 percent) and elderly (25 percent), whose health is particularly vulnerable to the air pollutants emitted by compressor stations.

iii. The presence of preexisting medical conditions among the population of Union Hill calls for an environmental justice study of minority health effects. Known preexisting diagnoses identified in Union Hill include diabetes, asthma and other lung conditions, COPD, chronic bronchitis and pneumonia, heart conditions, breast and other cancers, lupus, kidney disease, epilepsy, multiple sclerosis, brain tumor, and migraines.

iv. The community faces disproportionate impact from the proposed compressor station. A decision was made to place the compressor stations for the Atlantic Coast Pipeline at greater distances from one another than is the industry standard. This requires that the compressor stations be unusually large and high-horsepower, thus concentrating an even higher amount of dangerous pollution in the communities where these facilities would be sited. The result is to inflict disproportionate environmental impact – and corresponding risks to health – on the minority communities of Union Hill and nearby Woods Corner.

b. Population density. The population density in the immediate vicinity of the site proposed for the compressor station is far denser than is claimed by Dominion, which has stated "the site is sparsely populated" and has "29.6 people per square mile." According to a site study that was independently conducted, there are in fact dense clusters of households on all sides of the proposed compressor station, with a population over six times greater than that applied for by Dominion. Not incidentally, Dominion stands to gain financially in making its claim, as the presence of only 29.6 people per square mile would allow Dominion to install pipes that are significantly thinner and to place shutoff valves up to 500% farther apart. Such decisions could endanger the relatively dense local populace in case of an accident or fire at the compressor station.

c. Special historic significance. Preservation Virginia listed Union Hill/Woods Corner Rural Historic District on its list of "Most Endangered Historic Places" in May 2016. According to the National Trust for Historic Preservation, the Union Hill/Woods Corner Rural Historic District is a rural community that was established by African-Americans after Emancipation on former plantation land. PSR notes that the disregard being paid to the special historic value of this community, and the further deterioration of the historic community as a result of locating a hazardous site nearby, can contribute a stressor to the mental health of residents, increasing the stress likely to result from the location of the compression station in their neighborhood.

Recommendations

Based on the above findings of inadequate assessment of air pollutant threats to health, the need to examine a wider array of air pollutants associated with compressor stations, and the special

consideration due to Union Hill as a potential site for a compressor station, Physicians for Social Responsibility makes three recommendations in regard to the proposed air permit:

1. We call on the Virginia Air Pollution Control Board to give full consideration to the information presented here and to incorporate these important factors into your assessment of the potential health impacts of the proposed Buckingham compressor station.

2. We call for an immediate extension of the 30-day public comment period. The public comment period should be extended by at least 30 days to allow for the collection of additional evidence from health professionals and professionals in environmental health and science concerning the health effects of granting the air permit. Such an extension would also facilitate the collection of additional community-based comments, which is to be strongly encouraged, especially given the low degree of internet penetration in the Union Hill community and the resulting difficulty for residents of submitting comments.

3. We call for a Comprehensive Health Impact Assessment (CHIA) to be carried out prior to any decision concerning the air permit. A CHIA is an in-depth, systematic approach to health impact assessment, conducted prospectively to predict the potential effects on human health of a development proposal and its alternatives. Its goal is to predict how development causes unintended changes in health determinants and, consequently, changes in health outcomes. CHIAs use multiple data sources and consider input from multiple stakeholders. Such a study would have the effect in the current case of allowing full consideration of the health effects of the proposed compressor station, including in its social and environmental justice dimensions, and would provide for assessment of the cumulative and synchronistic effects of air pollution, water pollution, and public safety.

On behalf of Physicians for Social Responsibility, I thank you for this opportunity to share our concerns as to the potential health effects of the proposed compressor station.

Sincerely,

Barbara Gottlieb
Director for Environment & Health

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Public Comment on ACP Compressor Station approval at Union Hill

1 message

Ali Symons <gaew.symons@gmail.com> Tue, Sep 11, 2018 at 1:25 PM
To: airdivision1@deq.virginia.gov

Dear Air Control Board Members,

I'm writing as a Virginia resident in regards to the permitting of the the natural gas compressor station on the ACP pipeline in Union Hill, Buckingham Co.

I have 3 requests:

1. Please extend the public comment period, as residents have had mere weeks to analyze a landslide of technical information about this massive project.

2. The VA Department of Environmental Quality need to complete a Quantified Risk Assessment (QRA) for the Buckingham Compressor Station prior to permitting and to work with other state agencies to conduct a Health Risk Assessment (HRA) and a Health Impact Assessment (HRI).

3. In terms of the methodology for impact assessment, why is it considered appropriate to use Occupational Safety and Health Administration (OSHA) work standards to apply to people exposed in homes? Since most people spend more than 8 hours in their homes each day, how can this be considered a relevant metric to assess home exposure?

The parameters and criteria for how you conduct impact assessments of projects also influence the outcome. Please ensure that the methodology of the assessment is sound and impartial. The residents of Union Hill deserves just and fair treatment.

Thank you!

Alison Symons
Falls Church, VA

370

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Compressor Station - VMA Comments

1 message

Brett Vassey <bvassey@vamanufacturers.com> Fri, Sep 21, 2018 at 2:58 PM
To: "airdivision1@deq.virginia.gov" <airdivision1@deq.virginia.gov>

Please see attached.

Best Wishes,

Brett

Brett A. Vassey

President & CEO

Virginia Manufacturers Association

Virginia Craft Brewers Guild

804.643.7489, ext. 125

2108 W Laburnum Ave

Suite 230
Richmond, VA 23227
804.528.4482
vamanufacturers.com |

Industry's Advocate Since 1922

Mark your calendar for VMA's two signature events coming up this fall!

Virginia Environmental Health and Safety Conference (VEHS)
September 26-27, 2018
Hilton Hotel & Spa

Virginia Competitiveness Forum
&
Workforce Symposium
November 13-14, 2018

Richmond, VA

Kingsmill Resort
Williamsburg, VA

Association Private Communication: The information contained in this message may be privileged and confidential and protected from disclosure. If the reader of this message is not the intended recipient, or an employee or agent responsible for delivering this message to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by replying to the message and deleting it from your computer.

2 attachments

image002.png
4K

BuckinghamCompressorStationVMACOmments.pdf
120K

VMA 2108 W. Laburnum Ave., Suite 230, Richmond, VA 23227

September 21, 2018

Virginia Department of Environmental Quality
Piedmont Regional Office
4949-A Cox Road
Glen Allen, VA 23060
airdivision1@deq.virginia.gov

RE: Buckingham Compressor Station

Dear Virginia Department of Environmental Quality (DEQ):

On behalf of the Virginia Manufacturers Association (VMA), thank you for the opportunity to submit comments on the draft air quality permit for the Buckingham Compressor Station. This station is an integral part of the Atlantic Coast Pipeline (ACP). We think the Commonwealth's economic competitiveness and growth depends upon a secure, reliable and affordable supply of energy. The ACP is essential to achieving that goal.

The VMA is also committed to responsible environmental management. It is clear that DEQ has thoroughly reviewed the ACP's environmental impacts and is working to minimize them. The strict emissions limits included in this draft air quality permit speak to this point.

Although the station is classified under federal and state regulations as a "minor" source of emissions, we are told that the limits included in the draft permit are typical of those imposed on larger facilities with higher emissions levels. We also understand that the limits in the draft Buckingham permit are significantly more restrictive than other permits (for regulated emissions ranging from nitrogen oxides to volatile organic compounds to carbon monoxide) recently issued for compressor stations in VA. Additionally, we understand that the control technology required by the draft permit is more typical of those mandated for much larger facilities with higher levels of emissions. The systems included in the draft permit cover an impressive range from selective catalytic reduction to a vent gas recovery system designed to minimize the release of natural gas into the atmosphere. It is our expectation that the developers will carry out the permit's strong requirements for air quality protection.

The DEQ's work assures that future generations of Virginians will have clean water and air. Thank you for continuing that work through the terms and conditions in the draft Buckingham air permit.

Sincerely,

Brett A. Vassey

Brett A. Vassey
President & CEO

373

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Fwd: Buckingham county compressor air permit comments

1 message

fhwebb@aol.com <fhwebb@aol.com> Tue, Sep 11, 2018 at 3:33 PM
To: airdivision1@deq.virginia.gov

Sent from AOL Mobile Mail
Get the new AOL app: mail.mobile.aol.com

On Tuesday, September 11, 2018, fhwebb <fhwebb@aol.com> wrote:

C. Flint Webb, PE

Buckingham Permit Comments letter.docx
341K

374

C. Flint Webb, PE
8308 Westchester Drive
Vienna, VA 22182

11 September 2018

Comments on the Atlantic Coast Pipeline Buckingham Compressor Station
Air Construction Permit #21599

I implore DEQ to deny the Atlantic Coast Pipeline Buckingham Compressor Station Construction Permit #21599 because the National Environmental Policy Act (NEPA) process was flawed:

1. The Federal Energy Regulatory Commission (FERC) allowed the proponent to self-certify the need for additional natural gas capacity siting new natural gas power plant projects that have subsequently been canceled, and
2. FERC did not adequately evaluate the environmental justice impacts of the proposed project.

Specific comments on the draft permit follow:

1. Pigging Events:
   a. Only the use of pigging to remove liquids from the gas line was identified as the purpose of pigging in the introduction to the draft permit. Isn't there also a requirement for the pipeline operator to use pigs to check for corrosion in the pipeline as well? How often will the pipeline be checked for corrosion? Will these pigging events be in addition to the pigging for the removal of liquids?
   b. There appears to be a disconnect between what application and the modeling. In the June 29, Dominion responses to questions question 10 the applicant states "When pigging operations are conducted, the procedure to inspect the line typically involves four (4) pigging devises and is conducted over a four days [sic] period", however in the last ¶ of section 2.2.4 of the air dispersion modeling report it states "As a planned event, the pigging operations will only be conducted during daylight hours". Which is correct the modeling or the application? Will pigging events take four days or will they only occur during daylight hours as modeled? I recognize that there will be less dispersion of pollutants from sources like this at night than during the day so it is important that the pigging event modeling is done properly.
2. There are several above-ground storage tanks for petroleum and hazardous materials. Has the applicant prepared a Spill Prevention, Contingency and Countermeasure Plan for the facility? Have regulators reviewed the plans to make sure they have properly considered rainfall and other reasonably foreseeable hazards when designing the containment? I think it is important that containment be designed to be able to contain at least a 25-year, 24-hour storm as long as the containment is checked every 24-hours. If the facility is operated remotely the containment should be sufficient to ensure that a spill into the containment be able to contain the contents of the tank with adequate free-board to capture rainwater that could occur over the period between visits to the site, if that is once a month then the containment should be adequate to contain the contents plus a 25-year, 30-day storm.
3. Ammonia: In the draft permit you mention that ammonia is not a regulated air pollutant. I understand that in some instances ammonia is considered a $PM_{2.5}$ precursor and as such could be considered a criteria pollutant precursor like NO_x and therefore would be a regulated air pollutant:
   a. Does the Virginia DEQ not recognize ammonia as a $PM_{2.5}$ precursor?

b. In any event ammonia would be covered under the Clean Air Act Risk Management Plan (RMP) program. Has the applicant performed a hazard assessment and offsite consequents analysis required under the RMP program?
c. Has there been coordination with the local emergency response agencies and are the local emergency response agencies equipped and trained to respond to an ammonia spill?
d. Has ACP mitigated the risk of an accidental release of ammonia due to reasonably foreseeable events such as forest fire or vehicle accident?
e. I understand that ACP does not plan on having any operators on site. Is that correct? If so who would be the first responder to a spill of the ammonia system and how long would it take for a Company representative to be on site? If the site is not manned 24-7 then the local fire department would most likely be the first responders. Has the applicant provided necessary training and access keys to be able to shut off the ammonia injection system if necessary in an emergency?

4. In the discussion about PSD the draft permit states that Buckingham County "is in compliance with [all] National Ambient Air Quality Standards (NAAQS)". However, is it not true that:
   a. Buckingham County is upwind of nonattainment and/or maintenance areas for many pollutants and therefore could be contributing to the bad air quality in a nonattainment area?
   b. There are no ambient monitors in Buckingham County and that for most pollutants the closest monitor is about 100 miles from the site – some of them upwind of the facility. Why has DEQ not required that the facility gather ambient air quality data to verify that there aren't the area is in attainment of all the NAAQS?
5. Governor McAuliffe announced that Virginia would join the U.S. Climate Alliance and will strive to achieve the goals of the Paris accords despite the actions taken at the Federal level. Taking into consideration the estimated methane leakage of the pipeline, will the approval of this permit impair the ability of the State to attain the Paris goals?
6. There are a number of Federal requirements that Virginia has not accepted delegation for including:
   a. Synthetic minor emission limiting controls for CO, NO_x, PM and VOC,
   b. NSPS OOOOa covering fugitive emissions from natural gas operations, and
   c. NSPS JJJJ and MACT ZZZZ covering spark ignition engines.

   Questions:
   a. Has the applicant contacted EPA Region 3 with regards to this site?
   b. Has DEQ coordinated the permit review with EPA Region 3?
7. Best Available Control Technology Review:
   a. From the discussion of the BACT analysis it appears that DEQ has relied on the top-down analysis conducted for other (smaller) sites. Since the other BACT sources involved smaller compressors the DEQ should require the applicant to conduct a fresh top-down BACT analysis.
   b. At least one of the Solar Turbines has demonstrated successful use of catalytic combustion technology. This technology has the potential community benefit of reducing the risks associated with the ammonia injection. Did the BACT analysis consider the use of catalytic combustion technology?
   c. It is our understanding that the facility will not be manned. How will they conduct periodic LDAR inspections if the facility is not manned?
   d. My understanding is that the raw natural gas in the pipeline does not include an odorant. If there is no odorant then audio, visual and olfactory (AVO) inspections will not be very effective. Will the natural gas going through the pipeline include the odorant? If not then imaging technology should be required to detect for leaks.

e. In the discussion of Natural Gas Venting under BACT the draft permit states "ACP proposed a vent gas reduction system". What does this involve? How much will this system reduce the natural gas emissions during maintenance activities vs venting or venting with a flare?

8. Federally enforceable permit conditions: The permit lists a number of parameters that the facility needs to keep records for:
   a. Since these parameters all deal with the operation of the emission controls and a failure of the controls could trigger a violation of the synthetic minor condition, are these conditions federally enforceable?
   b. Will the stack testing results be available to the public after the report is submitted to DEQ?
9. Leak Detection:
   a. This is mentioned in the discussion of the BACT analysis but it bears repeating. Our understanding is that the odorant is added to the gas downstream of the compressor station so AVO inspections are not very effective. So there needs to be daily LDAR surveys.
   b. There also should to be hourly testing during all pigging events if the natural gas does not contain the odorant.

Again I implore you to deny the Buckingham Compressor Station air construction and operating permit.

Sincerely,

C. Flint Webb, PE
FHWebb@aol.com

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Compressor Station (ACP-2) Atlantic Coast Pipeline, LLC; Registration No. 21599

1 message

bredl@skybest.com <bredl@skybest.com> Tue, Sep 18, 2018 at 11:44 AM
To: Michael.Dowd@deq.virginia.gov
Cc: airdivision1@deq.virginia.gov, Sharon Ponton <ponton913@msn.com>, klmosley57@gmail.com

Michael Dowd, Director of Air Division

Virginia Department of Environmental Quality

1111 East Main St., Suite 1400

Richmond, VA 23219

Michael.Dowd@deq.virginia.gov

RE: Buckingham Compressor Station (ACP-2)

Atlantic Coast Pipeline, LLC; Registration No. 21599

On behalf of the Blue Ridge Environmental Defense League, our chapter Concern for the New Generation in Buckingham County and all our members in Virginia, I write to provide comments against the granting of an air permit application for the proposed Buckingham Compressor Station. Comments are attached.

Louis A. Zeller, Executive Director

Blue Ridge Environmental Defense League, Inc.

Main Office: PO Box 88 Glendale Springs, NC 28629

Phone: 1-336-982-2691

Mobile: 1-336-977-0852

Email: BREDL@skybest.com

Website: www.BREDL.org

180911_BREDL comments on Buckingham Compressor Air Permit.pdf
165K

Blue Ridge Environmental Defense League

www.BREDL.org PO Box 88 Glendale Springs, North Carolina 28629 BREDL@skybest.com (336) 982-2691

September 11, 2018

Michael Dowd, Director of Air Division
Virginia Department of Environmental Quality
1111 East Main St., Suite 1400
Richmond, VA 23219
Michael.Dowd@deq.virginia.gov

RE: Buckingham Compressor Station (ACP-2)
Atlantic Coast Pipeline, LLC; Registration No. 21599

On behalf of the Blue Ridge Environmental Defense League, our chapter Concern for the New Generation in Buckingham County and all our members in Virginia, I write to provide comments against the granting of an air permit application for the proposed Buckingham Compressor Station.

Background

On September 16, 2015, Atlantic Coast Pipeline, LLC ("ACP") submitted the first in a series of applications to the Virginia Department of Environmental Quality ("DEQ") to construct and operate a compressor station to be located on the route of the proposed Atlantic Coast Pipeline in Buckingham County, Virginia. On May 25, 2018 a major update was submitted. The DEQ deemed the application complete on July 13, 2018. The permit applicant seeks permission to build and operate the Dominion Energy Buckingham Compressor Station at 5297 S. James River Hwy., Wingina, VA 24599.

The ACP permit application states that the facility is classified under SIC Code 4922, "Establishments engaged in the transmission and/or storage of natural gas for sale," and NAICS Code 486210, Pipeline Transportation of Natural Gas."[1] The purpose of the plant would be "to provide compression to support the transmission of natural gas."[2]

Comments

Virginia DEQ Improperly Designates Facility a Minor Source

In its application, ACP seeks to have the facility permitted as a minor source of air pollution pursuant to state administrative code at 9 VAC Chapter 80 Article VI, subject to new source review (NSR). However, the natural gas compressor station proposed for Buckingham would emit large amounts of pollution and does not meet the requirements to be considered a minor source of air pollution.

Under federal law, the emission threshold for major sources of air pollution is 100 tons

[1] Air Permits Form 7 Application, May 25, 2016, page 9
[2] Air Permits Form 7 Application, May 25, 2016, page 8

per year. The Clean Air Act[3] definition states:

> Except as otherwise expressly provided, the terms "major stationary source" and "major emitting facility" mean any stationary facility or source of air pollutants which directly emits, or has the potential to emit, one hundred tons per year or more of any air pollutant (including any major emitting facility or source of fugitive emissions of any such pollutant, as determined by rule by the Administrator).

See 42 U.S. Code § 7602(j).

Further, a small source, or minor source, is defined as follows:

> The term "small source" means a source that emits less than 100 tons of regulated pollutants per year, or any class of persons that the Administrator determines, through regulation, generally lack technical ability or knowledge regarding control of air pollution.

See 42 U.S. Code § 7602(x).

Virginia law also sets the benchmark for criteria pollutants and hazardous air pollutants:

> Minor NSR permits are for facilities that emit less than 100 tons per year of any criteria pollutant (PM, PM-10, PM 2.5, CO, NO_X, SO_2, and VOC) and for facilities that emit toxic pollutants more than state toxic exemption levels but less than 10 tons per year of one toxic pollutant or 25 tons per year of a combination of toxics pollutants.[4]

However, the potential to emit air pollutants at the proposed Buckingham Compressor Station exceeds the benchmarks to a considerable degree. Our analysis indicates the potentials to emit are significantly above major source thresholds.

Table 1 and Table 2 contain the results of our pollutant emission analysis based on heat input rates provided by the permit application and US EPA air pollution emission factors for natural gas-powered turbines operating at high loads. To achieve maximum thermal efficiency, natural gas-powered turbines are typically operated at or above 80% of their rated capacity.

---

[3] U.S. Code, Title 42, Chapter 85, Subchapter III, § 7601

[4] Website: Virginia Dept. of Environmental Quality, *Minor New Source Review (NSR) Permits*, at http://www.deq.virginia.gov/Programs/Air/PermittingCompliance/Permitting/TypesofAirPermits/MinorNewSourceReviewNSRPermits.aspx

Table 1. Buckingham C2 Station Turbine Power Ratings

Turbine Type Manufacturer: Solar	Emission Unit	Heat input[5] mmBTU/hour
Mars 100-16000S	CT 01	129.64
Taurus 70-10802S	CT 02	85.62
Titan 130-20502S	CT 03	157.2
Centaur 50L-6200LS	CT 04	54.98
	Total =	427.44

The hourly heat input rate measured in millions of BTUs per hour, times the pollution emission factor in pounds per million BTUs, times 8760 hours per year, divided by 2000 pounds per ton yields the annual air emissions in tons per year, results in Table 2.

Table 2: Buckingham C2 Station Annual Emissions

Pollutant	Heat Input mmBTU/hour	EPA Emission Factor[6] lb/mmBTU	Air Emissions Tons/year
Nitrogen Oxides	427.44	3.2 e-01	599
Carbon Monoxide	427.44	8.2 e-02	153

These air pollution levels are projections. They could be higher. The actual emissions can be affected by many things, including weather conditions, operator ability, control devices, regulations and load factors. ACP admits this in their application:

> At very low load and cold temperature extremes, the turbine system must be controlled differently in order to assure stable operation. The required adjustments to the turbine controls at these conditions cause emissions of NOx, CO and VOC to increase (emission rates of other pollutants are unchanged).[7]

The state cannot allow the fiction that the compressor is a minor source. We hereby request that the DEQ take immediate steps to correct this mistake.

Permitting Should Be Suspended until the Supreme Court of Virginia Rules on the Appeal of the Special Use Permit

The Buckingham County Planning Commission and the Board of Supervisors did not fulfill their statutory obligations to consider the disproportionate impacts of the compressor station on minority communities. Based on this failure, in 2017 the Blue Ridge Environmental Defense League, its chapter Concern for the New Generation and fourteen local residents filed a petition in circuit court which is now working its way through the legal system. A Petition for Appeal to the Supreme Court of Virginia was filed on July 17, 2018 and oral arguments are expected late this year.

[5] Buckingham Compressor station air permit application, May 25, 2018, Table C-11
[6] AP-42 Table 3.1-1, "Emission Factors for Nitrogen Oxides (NOx) and Carbon Monoxide (CO) from Stationary Gas Turbines," 4/00, lb/MMBTU, Natural Gas-Fired
[7] Buckingham Compressor station air permit application 9/17/15, page 6-7

Virginia statutes governing energy development articulate support for environmental justice. One of the stated objectives is "developing energy resources and facilities in a manner that does not impose a disproportionate adverse impact on economically disadvantaged or minority communities."[8]

The Virginia statutes direct various state agencies to work together to create a comprehensive 10-year energy plan that reinforces the EJ and other objectives.[9] The state's 10-Year Plan, among other things, must include the following information: an analysis of siting of energy facilities to identify any disproportionate adverse impact of such activities on economically disadvantaged or minority communities. In considering which parcels of land are suitable for energy facility development, the agencies must consider, in addition to technical matters, "potential impacts to natural and historic resources and to economically disadvantaged or minority communities and compatibility with the local land use plan."[10]

The Buckingham County Planning Commission heard evidence of environmental injustice from local residents and regional organizations during the public hearings on the special use permit for the Buckingham Compressor Station. Although information to correct the oversight has been put before the County, it improperly approved the granting of a Special Use Permit.

The "Local Governing Body Certification Form" is a necessary basis for an air permit. Under the present circumstances, a permit cannot be granted by Virginia DEQ. Virginia zoning statutes and regulations allow the Air Pollution Control Board to revisit the matter:

> No provision of this part or any permit issued thereunder shall relieve any owner from the responsibility to comply in all respects with any existing zoning ordinances and regulations in the locality in which the source is located or proposes to be located; provided, however, that <u>such compliance does not relieve the board of its duty</u> under 9VAC5-170-170 and § 10.1-1307 E of the Virginia Air Pollution Control Law <u>to independently consider relevant facts and circumstances</u>.[11] [emphasis added]

See 9VAC5-80-1230. The Atlantic Coast Pipeline LLC requested a Special Use Permit under the Public Utility Exception in the A-1 Zone ordinance. To qualify for this exception, a facility must be a public utility. However, the compressor station proposed by Atlantic Coast Pipeline, LLC is not a public utility. The company's air permit

---

[8] VA. CODE ANN. § 67-101 (2009); *see also Id.* at § 67-102, stating that to achieve the objectives of § 67-101, it shall be the policy of the Commonwealth to "ensure that development of new, or expansion of existing, energy resources or facilities does not have a disproportionate adverse impact on economically disadvantaged or minority communities."
[9] *Id.* at § 67-201
[10] *Id.* at § 67-201(d)
[11] 9VAC5-80-1230 "Compliance with local zoning requirements" accessed at http://www.deq.virginia.gov/Portals/0/DEQ/Air/Regulations/806.pdf

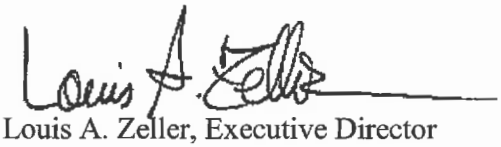
application states that the Buckingham Compressor Station will not be subject to federal Clean Air Act acid rain regulations because it will not sell electricity and therefore "is a non-utility facility."[12]

On the utility status issue, ACP's air permit application to Virginia DEQ states one thing; the company's request for a Buckingham County Special Use Permit states another. The Local Governing Body Certification Form provides the legal basis for permit review by the state. The state cannot issue the permit until this issue is resolved.

Conclusion

If permitted, the Buckingham Compressor Station would be a major source of air pollution. The Virginia Department of Environmental Quality has incorrectly determined that it would be a minor source. We recommend immediate steps be taken to correct this error. Further, unless and until the Virginia Supreme Court rules, and local governing bodies in Buckingham County to do a proper assessment of the disproportionate impacts on economically disadvantaged or minority communities in and around Union Hill, any air permit issued by Virginia DEQ would lack the necessary legal basis.

Respectfully,



Louis A. Zeller, Executive Director
Blue Ridge Environmental Defense League

CC: Ann Regn
Piedmont Regional Office
4949-A Cox Rd
Glen Allen, VA 23060
airdivision1@deq.virginia.gov

[12] Buckingham Compressor application 9/17/15, Section 4.7, page 19

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Comment for the Air Permit for the Compressor station (CS) in Buckingham

1 message

Mindy Zlotnick <mindyzlotnick@gmail.com> Sat, Sep 8, 2018 at 9:40 PM
To: airdivision1@deq.virginia.gov, michael.dowd@deq.virginia.gov, patrick.corbett@deq.virginia.gov

To whom it may concern;
First and foremost I would like to request an extension of the comment period for another 30 days. With this short time to review very technical complicated material it is hard to understand and comment in such a short time. Any mistakes in evaluation here in this letter is probably because of the short time I had to understand. Thank you for your consideration.

I live about 5 miles as the crow flies (or as the air blows) from the proposed CS. I am concerned fr the air quality of my neighbors and of my own.

I was at the 8/16 Q&A at which time we were told that DEQ is requiring a walk though daily. I would like to make sure that this is written into the permit and there is a walk through daily at the very least.

I am concerned that the clean air we have now in Buckingham will be affected by the material being released into the air by the CS. I understand that the material will be a level allowed by law, but would like to know the difference between what we have and what will be. No baseline testing in this area has been done, at least from what I understood on 8/16. Measurements were taken from other places and do not reflect what we have here in terms of quality. '

Some residents live as close as half a mile from the proposed BCS site, where the impact of "blow downs" is particularly acute. A 2017 report conducted by Physicians for Social Responsibility found that people living near compressor stations have suffered from a variety of symptoms "ranging from skin rashes to gastrointestinal, respiratory, neurological and psychological problems". The draft permit does not explain how the air quality and health of these especially vulnerable residents, many of whom already suffer from chronic health problems, will be protected over time from harmful air emissions. While expected emissions may be lower compared to some other compressor stations or a standard deemed adequate by law, there is risk that without further analysis, these Virginians' air quality is at serious, unacceptable risk.

More specifically:
• DEQ did not apply the best available control technology ("BACT") requirement correctly because neither ACP nor DEQ ensured that the nitrogen oxide emission limit set in the draft permit achieved the maximum reduction feasible. The currently proposed reduction in nitrogen oxide emissions is 58%, but more significant emissions reductions are achievable and cost effective.

• Limiting nitrogen oxide pollution is essential for human health. According to the EPA, breathing air with a high concentration of nitrogen oxides can cause irritation in the human respiratory system. Nitrogen dioxide—along with other nitrogen oxides—react with chemicals in the air to form particulate matter and ozone. Both of these are also harmful to the human respiratory system.

• Longer-term exposures to elevated concentrations of nitrogen oxides may contribute to the development of asthma and can increase a person's susceptibility to respiratory infections. People with asthma, as well as children and the elderly, are generally at greater risk for these health effects.

• DEQ should require ACP to continuously monitor nitrogen oxide emissions from the compressor turbines. This is necessary to ensure ACP is complying with the nitrogen oxide emissions limits at all operating periods. The currently proposed stack testing is not sufficient to ensure compliance with the draft permit conditions.

• DEQ did not ensure compliance with 9VAC 5-80-1180 because it relied on flawed ambient air quality modeling. The flaws in the modeling include a failure to use the highest allowable emissions rates, failure to account for emissions in very cold conditions when nitrogen oxide rates are expected to increase significantly, and understating emissions during startup and shutdown. Therefore, DEQ did not ensure the compressor station could operate without preventing or interfering with the attainment or maintenance of any applicable ambient air quality standard and without causing or exacerbating a violation of any applicable ambient air quality standard.

• It is important for DEQ to set appropriate, enforceable one-hour limits in the permit. Short-term exposure to high concentrations of nitrogen oxides are especially harmful to people with chronic respiratory conditions. Such exposures

over short periods tend to aggravate respiratory diseases, particularly asthma, leading to often severe respiratory symptoms.

• ACP has not shown that the amount of toxic pollution emissions from the compressor will not cause or contribute to the endangerment of human health because ACP's modeling for formaldehyde and hexane emissions is flawed. Therefore, DEQ cannot, based on the information ACP provided, ensure that the compressor station will not cause, or contribute to, the endangerment of human health. According to the EPA, "formaldehyde can cause irritation of the skin, eyes, nose, and throat. High levels of exposure may cause some types of cancers."

• DEQ should impose an ammonia limit in the permit for the compressor turbines. Currently, no such limit exists.

I understnad that you can not change the law. But you can change your mind.This is a moral decision that will affect the lives of many people throughout Buckingham County and beyond.

Thank you for not giving a permit to ACP for this Compressor Station
Mindy Zlotnick

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Deny the Buckingham Compressor Station Air Permit

1 message

M Adler <centaur511@gmail.com>
Reply-To: centaur511@gmail.com
To: airdivision1@deq.virginia.gov

Mon, Sep 3, 2018 at 1:51 PM

I urge the VA State Air Pollution Control Board and the Department of Environmental Quality (DEQ) to deny the air pollution permit for the Atlantic Coast Pipeline (ACP) compressor station being proposed in Buckingham County This 54,000 horsepower compressor station is one of the largest ever proposed by Dominion Energy and it threatens the health of this majority-black community that has loudly resisted the project since it was first announced. I also urge state regulators to immediately complete a thorough risk assessment prior to any permitting and work with other state agencies to conduct health risk and comprehensive health impact assessments at the beginning of future permitting processes.

In Section X of DEQ's Intra-Agency Memorandum analyzing the draft permit, it states that a 10/31/2017 site evaluation led the agency to conclude the area surrounding the site was "sparsely populated." However, research done by community groups indicates that numerous residents live close to the site who would be in danger in the event of an emergency.

This compressor station represents a direct threat to our climate, but more importantly, it serves as a direct attack on the livelihoods of the residents of Buckingham County's historic Union Hill, an 85% African American community. This community has been the home of some of America's first freedmen and remains the home of may of their descendants: placing a compressor station that is capable of spewing toxic levels of methane, nitrous oxides, particulate matter and other volatile organic compounds just miles from their homes and schools is nothing short of environmental racism. This large community is also at risk of extreme imminent danger stemming from any emergencies at the the compressor station. To avoid another situation like this, I also urge the State Air pollution Control Board and DEQ to consider environmental justice in all future permitting decisions.

The DEQ and Air Pollution Control Board have a unique and critical responsibility to protect our most vulnerable citizens from the dangers of fossil fuel pollution. In order to fulfil your duty as our state regulators, you must deny the air permits for these projects and protect this vibrant community.

Mr. M Adler
174 Round Hill School Rd
Fort defiance. Va
FORT DEFIANCE, VA 24437
5406494507

386

Commonwealth of Virginia

Air Division 1, rr <airdivision1@deq.virginia.gov>

Public Comment: I Oppose the Buckingham Compressor Station Air Permit

1 message

Thomas Horsch <mailagent@thesoftedge.com> Wed, Sep 12, 2018 at 8:25 PM
Reply-To: thorsch@ymail.com
To: airdivision1@deq.virginia.gov

Dear Ms:

I'm writing today to urge the Air Pollution Control Board to reject the proposed permit for Dominion Energy's Buckingham Compressor Station.

This facility is a threat to our climate, public health and public safety, and the Board has an obligation to protect Virginians' clean air at all costs.

A vote to allow operation of this facility is a vote to expose residents of Union Hill to nearly 140 tons per year of harmful chemical emissions; it is a vote to increase climate disrupting greenhouse gas emissions at a time when Virginia is moving to decrease climate impacts from the power sector; and it is a vote to put Buckingham County in a blast zone.

Virginia doesn't need the Atlantic Coast Pipeline and we don't need this compressor station. I urge the Board to deny this and any future permits that come before you.

Sincerely,

Thomas Horsch
6738 Willow Hill Rd
Spring Grove, VA 23881

My community is called to care for Creation by protecting the blessings of clean air. As a person of faith, **I express my solidarity with the community of Buckingham.** The construction and operation of the Atlantic Coast Pipeline compressor station would expose residents to harmful pollutants and presents a number of safety concerns.

I urge you to **deny the air pollution permit** for this fracked-gas compressor station, to immediately **complete a thorough risk assessment** prior to any future permitting, and to work with other state agencies to **conduct health risk and comprehensive health impact assessments.**

I further urge you to **consider the principles of environmental justice** as the compressor station is proposed to be sited in Buckingham County's historic Union Hill, an 85% African American community. It is unacceptable that our society continues to disproportionately burden the poor and people of color with increased levels of dangerous air pollution.

Name Rev. David MacPherson

Email _____ Phone 798-7661

Street Address 103 Randeph Circle

City, State ZIP Ashland, VA 23005

Congregation (optional) Richmond, VA

TO:

Ann Regn

Dept of Environmental Quality
Commonwealth of Virginia
Piedmont Regional Office

RE: Buckingham Compressor Station

4949-A Cox Rd
Glen Allen, VA 23060

388

Please approve the Buckingham Compressor Station Permit!

I support the Atlantic Coast Pipeline and urge you to continue your support of the project, including the Buckingham Compressor station.

The compressor station's best-in-class engineering design, operational measures, and advanced emissions control equipment will ensure the facility will fully protect Virginia's air quality. The Atlantic Coast Pipeline has modified the compressor station site to address concerns from Buckingham residents, Buckingham Planning Commission, Buckingham Board of Supervisors and other stakeholders.

Sincerely,

Name: John D Dyson

Address: 1908 Belgrave Rd
Henrico, VA 23229

Phone: 804-217-8636

RECEIVED PRO
AUG 18 2016

389