

January 4, 2019

Piedmont Regional Office
Re: Buckingham Compressor Station
4949-A Cox Road
Glen Allen, VA 23060

Dear Members of the Air Board:

I write today to address the site suitability and the health and safety of the residents of Union Hill and others who live from within a mile to five miles from the proposed compressor station. The Air Board must independently assess the record and critically look at DEQ's recommendation to approve the permit. The overwhelming defense DEQ and Dominion mounted against the charges of environmental racism and inadequate protection of health and safety should be a red flag. The applicant has no *right* to a permit, they should be held to a high standard and when they do not meet the standard or they don't follow the rules, the permit should be denied.

As they bury you in already refuted demographic data, what Mark Twain called, lies, damned lies and statistics, you must not forget that the residents of Union Hill will suffer from health impacts, they will lose the beautiful landscape of their agriculture zoned neighborhood, they will lose the value of their property. You will decide if they will be the sacrifice zone for this infrastructure.

DEQ rests its permit on the SUP from Buckingham County and the assumption, based on modeling, that regional NAAQS will not be violated and human health will therefore be protected. These are weak and slim legs to hang your hat on.

First, the AIR Board has no duty or obligation to accept the judgment of the Buckingham county Board of Supervisors. The land acquired by Dominion for the CS was zoned agricultural; they approved an industrial polluting facility. You have a duty to consider site suitability and to reject the permit based on all of the evidence that has been presented.

Second, if you would refer back to Dr. Thurston's submission (CBF, Exhibit E) you must reject this permit because of the harm to human health from exposure to PM2.5 that will be emitted from the CS. He describes in ample detail the short and long-term impacts of exposure to PM2.5. Let me recapitulate some of his major points here:

NAAQS may not prevent harmful health impacts

- EPA recognizes that meeting the NAAQS does not prevent adverse health effects in an exposed population: "evidence- and risk-based approaches using information from epidemiological studies to inform decisions on PM2.5 standards are complicated by the recognition that *no population threshold*,

below which it can be concluded with confidence that PM2.5-related effects do not occur, can be discerned from the available evidence.” (Emphasis added). (U.S. EPA, 2013). P. 13

Populations at risk

- Living near a fossil fuel burning facility is more impactful because **freshly combusted fossil fuel particles are more damaging to human health** than more aged particles downwind. P.17
- Groups at risk from PM air pollution are: the very young, the poor, the very old, and persons with pre-existing health conditions, such as heart disease and asthma. (See, e.g., U.S. EPA, 1996). P. 18
- Children can be expected to **be among those most strongly affected** by any increases in PM2.5 concentrations in the vicinity of the facility. P.19

Unique Toxic Characteristics of Gas Combustion Particulate Matter increase risk of Harm

- Natural gas particles from combustion turbines that use ammonia as part of an SCR system, also include ammonium bisulfate, which is strongly acidic. Unoxidized and acidic compounds would be more reactive, and therefore, be more likely to irritate and interact with the lining of the lung. P.17
- Because gas-fired sources can emit a much greater percentage of the particles as ultra-fine particles....the impacts of the proposed facility in terms **of PM2.5 mass concentration are an inadequate indication** of the health risks associated with the proposed BCS.... P.18
- Natural gas combustion particles have characteristics that make them likely to have high health effects on a per pound bases compared to other PM2.5: first, they have higher percentage of ultrafine particles compared to other fossil fuels and second there are acidic sulfates associated with these emissions. **Both factors increase the “bio-availability” of the toxins and therefore increase the toxicity of gas combustion particles.** P.19
- The composition of gas combustion particles also makes them likely to be **more toxic than usual PM2.5....due to high percentage of metals including barium, cadmium, chromium, molybdenum and zinc.** P.20
- The PM2.5 emissions from the new facility cannot be dismissed because their high ultrafine fraction, their composition, and the likely co-presence of acidic vapors, they potentially could be more toxic than other forms of particulate matter. P. 21

Ozone and Nitrous Oxides Human Health Impacts

- Ozone is a highly irritating gas that is formed in the atmosphere in the presence of sunlight from other "precursor" air pollutants, including NO_x and hydrocarbons that are emitted by combustion sources such as fossil fuel burning facilities. P. 22
- Ozone irritates the human respiratory system and can reduce the lung's ability to inhale and exhale. P.23
- Airway inflammation caused by ozone can increase asthma attacks among adults and children and in the elderly can lead to pneumonia and death. P.25
- Exposures to nitrogen oxides themselves have also been associated with adverse human health effects, in addition to leading to the formation of PM_{2.5} and ozone. P. 30

Conclusions

- Additional emissions from the proposed facility will add to the existing levels of PM_{2.5} and nitrogen oxides in the vicinity of the facility, and, because no threshold of air pollution effects has yet been found, any incremental air pollution exposures add an incremental adverse health risk to residents near a source of fossil fuel combustion air pollution. P.30
- Additional levels of PM_{2.5}, it 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*. Emphasis added. P. 31
- Although the state's air quality modeling report concludes that " the results of the air quality modeling analysis demonstrate that the proposed Buckingham Compressor Station Project does not cause or contribute to any exceedance of the NAAQS for NO₂, PM_{2.5}, PM₁₀ and CO", **this does not mean there are no health impacts. P. 31**
- The report results indicate to me that the adverse human health effects of **long-term (annual) exposures to PM_{2.5} at these locations will rise by at least 21%, while the adverse human health effects of short-term (24-hr) exposures to PM_{2.5} will rise by at least 44%.**

I trust you will act to protect the health and safety of the Union Hill community. You have the power and the authority to deny this permit based on the evidence. In the past when the Air Board has acted independently their decisions have stood up in court.

Sincerely,

Suzanne J. Keller
Retired epidemiologist, Virginia Department Health