



September 27, 2023

Re: Plan Approval, Ethane Chilling Expansion Project, Energy Transfer Marketing & Terminals, L.P. (ETMT) - 23-0119K: Energy Transfer Marketing & Terminals

Delaware Riverkeeper Network (DRN) submits this comment in opposition to the approval of the proposed air quality plan for the Ethane Chilling Expansion Project on behalf of DRN's more than 26,000 members, many of whom live and/or work in the region.

Environmental Justice

First and of the highest priority, Marcus Hook and the areas adjacent are already overburdened with pollution from this Terminal and other facilities. There is simply no way to justify any additional air pollution. And there's another problem - DEP states it is following its Environmental Justice Enhanced Public Participation Policy¹ ("the Policy") here.² But there are public involvement actions in this policy that must be done before any permitting or public hearings. Section V of the policy release writes that "The Enhanced Public Participation described in this policy should be provided for reviews associated with public participation Trigger or Opt-In Project. The public participation provisions of the policy are targeted at minimum to the area located within the Area of Concern and to the census block group identified in PennEnviroScreen as having increased environmental burden that is affected by the project".³

Not only is the Marcus Hook community an area of concern, according to the PennEnviroScreen, but this is a "Trigger or Opt-In Project" as well, adding more requirements⁴. Most of these requirements have obviously not been met. The Policy names a variety of actions that representatives of the project should take under the Enhanced Public Participation guidelines, including pre-project community outreach. The Policy states "As early as possible in the development of a project, DEP strongly encourages project representatives to meet with community stakeholders prior to developing and submitting applications to DEP."⁵ But saliently, the policy writes that "If the project is proposed for an EJ Area, the applicant should also indicate

¹ <https://www.dep.pa.gov/PublicParticipation/OfficeofEnvironmentalJustice/Pages/DEP-Enhanced-Public-Participation-Policy.aspx>

² <https://www.ahs.dep.pa.gov/NewsRoomPublic/articleviewer.aspx?id=22341&typeid=1>

³ <https://www.dep.pa.gov/PublicParticipation/OfficeofEnvironmentalJustice/Pages/DEP-Enhanced-Public-Participation-Policy.aspx>, page 6.

⁴ *Ibid*, page 25.

⁵ *Ibid*, page 7.

the project's Area of Concern. The applicant should also provide a short description of the anticipated direct and indirect environmental impacts from the project".⁶ But DEP has not produced any environmental footprint reports to even begin considering "indirect and direct environmental impacts from the project."

PADEP has duties after this phase of the EJ review process. The Policy states "once DEP has determined a Trigger or designated Opt-In Project permit application is complete, a public participation strategy should be developed by DEP's OEJ and appropriate regional or district office programs, Regional Communications Managers, and Local Government Liaisons".⁷ However, there is no public participation strategy developed regarding this Air Quality Plan or if there is, the public doesn't know about it. Furthermore, the Policy makes several suggestions for outreach and writes "At a minimum, in addition to regulatory requirements, the public participation strategy for Trigger and designated Opt-In Projects should evaluate additional outreach methods to engage the public."⁸ DRN is unaware of any of these efforts being carried out for this permit.

DRN notes that in our opinion the Public Meeting that occurred between 6pm and 7pm on 9.19.2023, just prior to the Public Hearing from 7pm to 8pm, cannot be considered to be an Enhanced Public Participation Policy event because important actions outlined in the Policy must have been carried out before such an informational meeting to engage the public as part of a cooperatively developed strategic public participation plan.

PADEP stated in its newsroom release regarding the air permit plan⁹ and a PADEP representative stated at the Public Meeting on 9.19.2023 that the Environmental Justice Enhanced Public Participation Policy was being implemented for this project. But obviously it is not. The question this raises is if not implemented fully, how will impacts to this environmental justice community be considered? How will the impacted communities achieve environmental justice? This is an oversight that cannot be passed over. It should stop the permitting process for this Air Quality Plan so PADEP and the applicant can back up and start the EJ Enhanced Public Participation Policy process.

The announced intention of PADEP to approve the proposed Air Quality Plan is premature and if PADEP moves ahead on this premise, this project will be in violation of its EJ Enhanced Public Participation Policy.

Pollution for the proposed expansion

Dangerous air pollutants from this expansion¹⁰ such as nitrogen dioxide (NO₂), volatile organic compounds (VOC), and Particulate Matter 2.5 (PM_{2.5}) will harm the health of residents. No amount is too small to have adverse impacts. Even low levels of exposure to many hazardous air pollutants can have health effects. Furthermore, when emissions are being added to other sources of local air pollution in Marcus Hook and environs, every additional amount matters for the local and regional community. A line must be drawn that prohibits more emissions if there is already too much of a pollutant in the air people must breathe.

⁶ *Ibid*, Page 8.

⁷ *Ibid*, page 8.

⁸ *Ibid*, Page 8.

⁹ <https://www.ahs.dep.pa.gov/NewsRoomPublic/articleviewer.aspx?id=22341&typeid=1>

¹⁰ see: [PA Bulletin, page 4456](#)

PM_{2.5} stands for tiny particulate matter (particle pollution) per the United States Environmental Protection Agency (EPA)¹¹. PM_{2.5} air pollution has been linked to a variety of health issues. In a study published in the National Library of Medicine, “nine causes of death were associated with PM_{2.5} air pollution: cardiovascular disease, cerebrovascular disease, chronic kidney disease, chronic obstructive pulmonary disease, dementia, type 2 diabetes, hypertension, lung cancer, and pneumonia. The attributable burden of death associated with PM_{2.5} was disproportionately borne by black individuals and socioeconomically disadvantaged communities; 99% of the burden was associated with PM_{2.5} levels below standards set by the US Environmental Protection Agency.”¹²

A study published in Environmental Research found that 10.2 million premature deaths worldwide result from small particulates released when fossil fuels are burned and that the U.S. had the highest estimated rate of deaths among children under the age of five from lower respiratory infections. The study demonstrates PM_{2.5} from fossil fuel combustion “contributes a large mortality burden”.¹³

Breathing air with substantial levels of **NO₂** can lead to respiratory issues such as asthma, as per the federal Agency for Toxic Substances and Disease Registry (ATSDR).¹⁴ Even “low levels of nitrogen oxides in the air can irritate your eyes, nose, throat, and lungs, possibly causing you to cough and experience shortness of breath, tiredness, and nausea. Exposure to low levels can also result in fluid build-up in the lungs 1 or 2 days after exposure. Breathing high levels of nitrogen oxides can cause rapid burning, spasms, and swelling of tissues in the throat and upper respiratory tract, reduced oxygenation of body tissues, a build-up of fluid in your lungs, and death.”¹⁵

NO₂/NO_x are harmful gases emitted from burning fuel in cars, power plants, and other fossil fuel facilities per the EPA and will negatively impact peoples’ lungs and heart, will impair neurological development¹⁶, and will increase smog and ozone, further discussed below.

Volatile organic compounds (VOCs) are a group of chemicals that can turn from a liquid to a vapor in the air. “Breathing VOCs can irritate the eyes, nose and throat, can cause difficulty breathing and nausea, and can damage the central nervous system and other organs. Some VOCs can cause cancer. Outdoors, VOCs can cause similar health effects, but also can react with [nitrogen oxides](#) to produce [ozone pollution](#), the nation's most widespread outdoor air pollutant.”¹⁷

Adding to the load of VOCs and nitrogen oxides will increase smog and ozone in the Marcus Hook/Chester region. This region currently doesn’t meet federal air quality standards for ground-level ozone.¹⁸ This leads to air quality alert days here in the Delaware River Valley that endanger human health and can exacerbate respiratory conditions such as asthma. “The main components

¹¹ <https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm>

¹² <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6902821/>

¹³ Vohra, K., Vodonos, A., Schwartz, J., Marais, E.A., Sulprizio, M.P., Mickley, L.J., Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem, Environmental Research, <https://doi.org/10.1016/j.envres.2021.110754>. Published 2021.

¹⁴ ToxFAQs for Nitrogen Oxides at <https://www.cdc.gov/TSP/ToxFAQs/ToxFAQsDetails.aspx?faqid=396&toxid=69>

¹⁵ *Id.*

¹⁶ Morgan, Z.E.M., Bailey, M.J., Trifonova, D.I. *et al.* Prenatal exposure to ambient air pollution is associated with neurodevelopmental outcomes at 2 years of age. *Environ Health* **22**, 11 (2023). Published January 24, 2023.

<https://doi.org/10.1186/s12940-022-00951-y>

¹⁷ <https://www.lung.org/clean-air/at-home/indoor-air-pollutants/volatile-organic-compounds>

¹⁸ <https://www.dvrpc.org/airquality/>

of photochemical smog, the hazy air pollution that can blanket Los Angeles and other urban areas, are ground-level ozone and particulate matter.”¹⁹ “Ground-level ozone...is a pollutant and a primary ingredient of smog. It forms when volatile organic compounds, or VOCs, and nitrogen oxides participate in chemical reactions in the presence of sunlight.”²⁰ “Ground-level ozone and particulate matter are particularly harmful to [respiratory health](#). Breathing ozone-polluted air can cause coughing and shortness of breath, damage and inflame airways, and aggravate asthma. Airborne particles, meanwhile, are easily inhalable and can become embedded in the lungs or transferred into the bloodstream, causing serious health problems.”²¹

As far as water quality, “Delaware County, along with most of Southeastern Pennsylvania, have the most polluted, or “impaired” streams in Pennsylvania, according to a new report by the state’s Department of Environmental Protection, writes Frank Kummer for *The Philadelphia Inquirer*...Delaware County ranked second in the region among the counties with the highest percentage of streams impaired for aquatic life, recreation, fish consumption, or drinking...From the 380 miles assessed, 363, or 94 percent, were found to be impaired.”²² This is another significant measure of the high levels of pollution that the communities in Delaware County and in southeastern PA experience. Air pollutants can deposit back on to water bodies, vegetation, and soil and can be a large contributor to degraded water quality.²³ The communities here are already experiencing degraded water quality in their streams, an unjust burden that will be worsened by more air pollution from the addition of the ethane chillers at Marcus Hook.

Lack of environmental assessment of the proposal’s full impacts

DRN is also opposed to this approval because there is no disclosure of the full footprint of this ethane chiller expansion. A comprehensive understanding of all of the pieces of this project is essential to assess its potential effects on the communities and the environment. There is no information about the source of the ethane that will be produced from fracked wells. This is important to accurately assess the full impact of the environmental and health impacts from the gas extraction that is needed to produce the ethane. What the impacts are of the ethane production/processing, presumably at a plant such as the Mark West facility, need to be considered as part of the footprint of the chillers and this air quality plan here in Marcus Hook.

The supply chain impacts of the “feedstock” also includes the transportation of the ethane. Energy Transfer representatives stated at the Public Meeting on 9.19.2023 that it will be transported by pipeline to Marcus Hook but did not explain the footprint of the pipeline. Will this require an expansion of existing pipelines? Will it require any new pipeline infrastructure such as a compressor station or connector? Is it certain that it will all be transported by pipeline?

It is known, for instance, that there is a Special Permit request currently before US Department of Transportation (USDOT) by Gas Innovations LNG Refrigerants Inc. to transport ethane by railcar into Marcus Hook. They propose to get approval to also transport it out of the region by rail. Ethane by rail is currently banned by the federal government to protect public safety. Delaware

¹⁹ <https://scienceexchange.caltech.edu/topics/sustainability/what-causes-smog>

²⁰ *Id.*

²¹ *Id.*

²² <https://delco.today/2022/01/delaware-county-polluted-streams/>

²³ http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/airdeposition_index.cfm

Riverkeeper Network submitted comment to the USDOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) opposing the rail transport proposal of ethane. If the permit is granted by USDOT/PHMSA, might rail be used to bring the ethane here? Transporting ethane in rail cars would expand the grave danger of ethane handling and transport, threatening Delaware County and other Pennsylvania communities depending on where the ethane is produced, impacting even more regions.

It is also not disclosed how the additional 10,000 barrels per day of cryogenic ethane will be used. The total production of cryogenic ethane at Marcus Hook will be approximately 85,000 barrels per day. How will it be used or marketed? Will shipping exports or infrastructure expand? Will a pipeline or rail be used to deliver it to market? What are the environmental and human health impacts of the increased ethane marketing?

We also know that ethane is a refrigerant used to freeze natural gas into liquid methane or LNG. Is this really what it's for? Energy Transfer stated at the public meeting that they have no plans to use the ethane to refrigerate LNG and that they have no plans to develop an LNG facility at Marcus Hook. The company representatives emphatically stated their business is natural gas liquids (NGLs) and not LNG. But the public has no way of knowing what will actually occur, especially over time. They also stated that the market dictates what and where they will sell the ethane and other NGLs, leading one to ask if the market demands LNG, will Energy Transfer respond by producing it. DEP must inform the public of the full implications of this expansion so that the public can develop informed input to DEP on this proposed permit. DEP should affirmatively state that the ethane is not going to be used and cannot be used for LNG processing. The public needs the facts to meaningfully participate in DEP's permitting decisions that so directly impact all of us and the environment of Pennsylvania and the Delaware River.

Ethane is hazardous, flammable and potentially explosive – an unacceptable safety hazard

Finally, DRN is also opposed to increasing the amount of ethane that is handled at the Marcus Hook facility. Ethane is extremely flammable and potentially explosive. Cryogenic ethane can explode in a very dangerous type of explosion called Deflagration to Detonation (DDT). This is inherently more dangerous than other types of explosions from other flammable substances.

The most recent and harrowing example of such a DDT explosion would be those that destroyed the Port of Beirut in 2020, when a warehouse full of burning ammonia nitrate suddenly exploded killing hundreds, and leveling an entire section of the city.²⁴ Ethane has already been proven to cause these types of explosions. In a study simulating a DDT explosion at a plant either producing or using large quantities of ethane, it was found that under correct conditions an ethane fire or accident could lead to a DDT.²⁵ This study was initially done to understand more about how DDTs occur, due to the relative lack in understanding of them, and determined that ethane could pose a massive risk of causing a DDT.²⁶

The magnitude of a DDT or any type of explosion is magnified by drastic changes in pressure and temperature. In order to be stable, cryogenic ethane must be kept at very low temperature and

²⁴ <https://link.springer.com/article/10.1007/s00193-021-01031-9>

²⁵ <https://www.sciencedirect.com/science/article/abs/pii/S0950423015001060>

²⁶ *Id.*

under very high pressure, two factors which would make the transition in a DDT that much more violent and destructive. The greater the change, the greater the reaction.

But a DDT is not the only type of explosion that ethane can cause. Just a few weeks ago a fire at a cryogenic ethane plant in Washington County, Pennsylvania occurred sending shock waves that shook the houses of nearby residents; the fire was unable to be put out for 11 hours.²⁷ A shelter-in-place order for the surrounding community was sent out, and all of this was from a relatively small fire and detonation, not a DDT.²⁸

Ethane is a hazardous natural gas liquid which requires chilling to -194 F under great pressure. "The more the temperature of the gas has to be lowered to reach its liquid state, the greater the number of technical challenges that arise to cool and transport it, making ethane one of the more technically difficult gasses to ship."²⁹ The cold vapor if released to the air can cause severe freeze burns when first released and it may displace oxygen and cause death by suffocation.³⁰ The vapor cloud hugs the ground if released, doesn't readily dissipate to the air, and can travel far distances; and it can explode if heated, such as in a pool fire.³¹

Its flammability and explosive potential are dangerous properties of ethane and it makes its handling, transportation, and storage a challenge, carrying with it a threat of catastrophic incident should a release of ethane occur at Marcus Hook or in transport. The risk posed by ethane and its proposed expansion at Marcus Hook is too dangerous to accept. There are no public benefits, only burdensome costs and threats to the public and the environment and that is completely unacceptable.

In conclusion, DRN advocates that this proposed permit be denied.

Respectfully submitted,



Maya van Rossum
the Delaware Riverkeeper

Tracy Carluccio
Deputy Director

²⁷ <http://www.paenvironmentdigest.com/newsletter/default.asp?NewsletterArticleID=57148&SubjectID=2>

²⁸ *Id.*

²⁹ *Id.*

³⁰ See Safety Data Sheets: Linde, Ethane Safety Data Sheet P-4592, Rev. Feb. 7, 2022, <https://www.lindeus.com/-/media/corporate/praxairus/documents/sds/ethane-c2h6-safety-data-sheet-sds-p4592.pdf?la=en> (last visited Jan. 4, 2023); DCP Midstream, Safety Data Sheet: Ethane, rev. Oct. 19, 2006, <https://www.dcpmidstream.com/getattachment/Safety-Sustainability/Operating-Safely-and-Reliably/Ethane.pdf.aspx> (last visited Jan. 4, 2023).

³¹ *Id.*