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**VIA [www.regulations.gov](http://www.regulations.gov)**

Donald P. Burger  
Chief, General Approvals and Permits Branch  
Pipeline and Hazardous Material Safety Administration  
U.S. Department of Transportation, West Building  
1200 New Jersey Avenue, SE  
Washington, D.C. 20590

**RE: Comments Objecting to Special Permit to Authorize the Transportation of Ethane, Refrigerated Liquid by Rail, Docket No. PHMSA-2022-0081.**

Dear Chief Burger:

Earthjustice, on behalf of the Center for Biological Diversity, Clean Air Council, Delaware Riverkeeper Network, Environmental Confederation of Southwest Florida, and Mountain Watershed Association, submits these comments opposing the special permit requested by Gas Innovations from the Department of Transportation's Pipeline and Hazardous Materials Safety Administration's ("PHMSA") to authorize transportation of ethane, refrigerated liquid by rail in the DOT-113C120W and DOT-113C120W9 specification rail tank cars ("Special Permit"), Docket PHMSA-2022-0081. The Center for Biological Diversity, Clean Air Council, Delaware Riverkeeper Network, Environmental Confederation of Southwest Florida, and Mountain Watershed Association are nonprofit organizations that are dedicated to protecting the environment and devoted to the general purposes of conservation of natural resources. These organizations also have members who live near railroads along which ethane would be transported under the Special Permit, and who live near the ethane origination point in Marcus Hook, Pennsylvania. We submit the following comments and attachments to raise concerns about the violations of federal law contained in any proposed Special Permit, particularly with respect to public safety risks and significant environmental impacts.

The PHMSA Special Permit unlawfully abdicates mandates under federal law to protect safety and to fully consider the impacts of proposed federal actions on humans

and the environment. Any Special Permit is unlawful for the following reasons, as further explained throughout these comments and attachments: it violates PHMSA's statutory mandate under the Hazardous Materials Transportation Act to ensure "safe transportation," violates PHMSA's own rules governing the application and granting of special permits, and would violate NEPA if this represents the last opportunity to comment given PHMSA's complete failure to conduct and include any kind of environmental assessment to consider the consequences of this action, including, as highlighted in section III, a sorely needed environmental justice analysis, and, as highlighted in section IV, a need to consider the history of environmental violations taking place in Marcus Hook, Pennsylvania.

## BACKGROUND

The Hazardous Materials Transportation Act of 1975 was created to "protect against the risks to life, property, and the environment that are inherent in the transportation of hazardous material in intrastate, interstate, and foreign commerce." 49 U.S.C. § 5101. The Secretary of Transportation "shall prescribe regulations for the safe transportation, including security, of hazardous material." *Id.* § 5103(b) (emphasis added).

PHMSA is the agency in the United States Department of Transportation that regulates safety standards in transporting hazardous materials. *See* 49 C.F.R. Pts. 100-185. It is responsible for "[a]dministering a national program of safety, including security, in multi-modal hazardous materials transportation including identifying hazardous materials safety concerns, developing uniform safety standards, and promulgating and enforcing safety and security regulations." *Id.* § 1.96. The authority and standards for special permit authorizations is found in 49 C.F.R. § 107.105. Critically, the "application must demonstrate that a special permit achieves a level of safety at least equal to that required by regulation." 49 C.F.R. § 107.105(d).

Gas Innovations submitted an application for a special permit to transport cryogenic ethane by rail from Marcus Hook, Pennsylvania.<sup>1</sup> As part of the special permit application process, an applicant can either comply with section 107.105(d)(3)(i), Code of Federal Regulations, or section 107.105(d)(3)(ii), Code of Federal Regulations. 49 C.F.R. § 107.105(d)(3). Here, the applicant chose to comply with section 107.105(d)(3)(i) by indicating "Not Applicable" under 107.105(d)(3)(ii). Application at 4.

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<sup>1</sup> Gas Innovations Application to PHMSA [hereinafter "Application"], available at <https://www.regulations.gov/document/PHMSA-2022-0081-0002>.

Gas Innovations therefore chose to comply with section 107.105(d)(3)(i), Code of Federation Regulations, which requires the applicant to provide “Substantiation, with applicable analyses, data or test results (*e.g.*, failure mode and effect analysis), that the proposed alternative will achieve a level of safety that is at least equal to that required by the regulation from which the special permit is sought.” 49 C.F.R. § 107.105(d)(3)(i). The entirety of the applicant’s response to this data and analysis substantiation require is reproduced here: “The transportation via rail of UN1961 Ethane is as safe or safer than UN1038 Ethylene due to its nature as a non-VOC, its lower vapor pressure, and increased stability. Approval for the special permit would not require any changes to PHMSA ruling or tank specifications for cryogenic liquids.” Application at 4. This provides no analysis at all, and simply asserting it is safer than ethylene, without citation or support, based on a few selected properties does not make it so, and even if it did, does not show how transportation of ethane in possible unit trains is at least equal to the safety of current regulation, which prohibits the transport of ethane by rail.

Secondly, although the notice requesting comments does not state it, commenters assume that an Environmental Assessment, and a subsequent Environmental Impact Statement, will be conducted and open to comment before any granting of the requested Special Permit. Compliance with the National Environmental Policy Act (“NEPA”) process requirements is not optional and is not mentioned in the Federal Register notice of the special permit application, so commenters can only assume that it is coming. If it is not, and this is the final opportunity for comment, then PHMSA is violating NEPA, which clearly requires an Environmental Assessment to grant a permit such as this, as has been conducted for special permits with even smaller scope like the LNG special permit that contemplated two specific end points in adjoining states (Pennsylvania and New Jersey).<sup>2</sup> Unlike that special permit, this application for a special permit simply has an origin point in Pennsylvania, with possible end destinations in Canada, the Gulf Coast, or Mexico. Application at 1. In other words, the cryogenic ethane subject to a special permit may traverse anywhere with rail in North America. An approval of such a permit is clearly a major federal action requiring compliance with NEPA. 42 U.S.C. § 4332. “Major federal action” is defined as “an activity or decision subject to Federal control and responsibility” and includes “actions approved by permit.” 40 C.F.R. § 1508.1(q). Furthermore, agencies “should integrate the NEPA process with other planning and authorization processes at the earliest reasonable time to ensure that agencies consider environmental impacts in their planning and decisions, to avoid delays later in the process, and to head off potential

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<sup>2</sup> Hazardous Materials Safety: Notice of Availability of the Draft Environmental Assessment for a Special Permit Request for Liquefied Natural Gas by Rail, 84 Fed. Reg. 26,507 (June 6, 2019).

conflicts.” 40 C.F.R. § 1501.2(a). The purposes of NEPA requires the agency to “consider and disclose” the environmental effects of the actions it adopts. *Baltimore Gas & Elec. Co. v. Nat. Res. Def. Council, Inc.*, 462 U.S. 87, 96 (1983). NEPA’s “hard look” requires “discussion of the ‘significance’ of [an] indirect effect, *see* 40 C.F.R. § 1502.16(b) (2018), as well as ‘the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.’” *Sierra Club v. Fed. Energy Regulatory Comm’n*, 867 F.3d 1357, 1374 (D.C. Cir. 2017) (internal citation omitted). None of the required NEPA process has been conducted yet. Commenters look forward to the opportunity to comment on the NEPA process, when such opportunity opens up.

Additionally, before any special permit could be approved, PHMSA must consult with the expert wildlife agencies to ensure any special permit is not likely to jeopardize any species protected by the Endangered Species Act (“ESA”) or adversely affect any designated critical habitat. Section 7(a)(2) of the ESA requires federal agencies to consult with the with the National Marine Fisheries Service and the Fish and Wildlife Service (“Services”) whenever their discretionary actions “may affect” a listed species or designated critical habitat. 16 U.S.C. § 1536(a); *see also Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 692, 115 S. Ct. 2407, 132 L. Ed. 2d 597 (1995); *Karuk Tribe*, 681 F.3d at 1020. The “may affect” determination is a low threshold for triggering consultation. *Cal. ex rel. Lockyer v. U.S. Dep’t of Agric.*, 575 F.3d 999, 1018 (9th Cir. 2009). “Any possible effect, whether beneficial, benign, adverse or of an undetermined character,” triggers the requirement. *Id.* at 1018-19 (quoting 51 Fed. Reg. 19,926, 19,949 (June 3, 1986)) (emphasis in *Lockyer*). The ESA’s implementing regulations broadly construe “agency action” to include licensing and permitting programs, 50 C.F.R. § 402.02(c), as well as “actions directly or indirectly causing modifications to the land, water, or air.” *Id.* § 402.02(d). The regulations governing Section 7 compliance require federal agencies to review their actions at the “earliest possible time” to determine whether they “may affect” listed species or critical habitat. 50 C.F.R. § 402.14. If the determination is made, “formal consultation” is generally required. *Id.* Formal consultation allows agencies to draw on the expertise of “wildlife agencies to determine whether [an] action is likely to jeopardize a listed species” or its habitat, and “to identify reasonable and prudent alternatives” to avoid those harmful impacts. *Karuk Tribe*, 681 F.3d at 1020 (citing *Turtle Island Restoration Network v. Nat’l Marine Fisheries Serv.*, 340 F.3d 969, 974 (9th Cir. 2003)). The granting of the special permit at issue would constitute “agency action” within the meaning of Section 7. Under established case law, there is “agency action” whenever an agency makes an affirmative, discretionary decision about whether, or under what conditions, to allow private activity to proceed. Here PHMSA is considering a special permit to allow for the bulk transport of ethane in rail tank cars. PHMSA has discretion to influence or

change the proposed authorization for the benefit of a protected species—first of all, it is not in any way obligated or required to grant the special permit to allow the transportation of ethane (and, in fact, as argued below, is required to deny the requested special permit). And if it were to authorize the activity, it could put constraints on it for the benefit of protected species—for example, by prohibiting ethane-by-rail within particularly sensitive critical habitat, or placing safety requirements on the rail cars in order to ensure an accident could not endanger imperiled species. Here, the proposed activity would allow ethane in rail cars to pass through critical habitat of numerous species throughout the country, and an accident in any of those areas could have catastrophic consequences. PHMSA must consult with the expert wildlife agencies to ensure any special permit is not likely to jeopardize any listed species or adversely modify any designated critical habitat.

The special permit Application and Notice both cite the LNG by rail rule.<sup>3</sup> In addition to all of the deficiencies noted here, commenters incorporate by reference, and attach as Attachment 1, their comments on the authorization to transport LNG by rail, which has many similar serious safety deficiencies. PHMSA itself has now started to recognize the deficiencies in that rulemaking.<sup>4</sup> For reasons stated in section I.B., the new rail car design of the DOT-113C120W9 has not meaningfully improved safety.

#### I. Ethane by Rail Poses Similar Threats as LNG by Rail.

PHMSA has noted that the Special Permit sought here “raises issues similar to the transportation of Liquefied Natural Gas (LNG) by rail,”<sup>5</sup> and the applicant proposes to use the same fill guidelines and tank car specifications, and quotes heavily from the PHMSA Environmental Assessment conducted in Dkt. No. PHMSA-2018-0025

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<sup>3</sup> See 87 Fed. Reg. 74468 (Dec. 5, 2022) (Pipeline & Hazardous Materials Safety Admin., Hazardous Materials: Notice of Application for Special Permit, PHMSA Dkt. No. PHMSA-2022-00281) [hereinafter “Ethane Special Permit Notice”] (“PHMSA notes that the subject matter of the special permit—*i.e.*, transportation of cryogenic flammable liquids in rail tank cars—raises issues similar to the transportation of Liquefied Natural Gas (LNG) by rail, a matter for which multiple rulemakings are currently pending at the agency.”).

<sup>4</sup> See, *e.g.*, Hazardous Materials: Suspension of HMR Amendments Authorizing Transportation of Liquefied Natural Gas by Rail, 86 Fed. Reg. 61,731, 61,735 (Nov. 8, 2021) (“Uncertainty regarding the potential benefits and safety and environmental risks of rail transportation of LNG under the HMR has persisted longer than PHMSA anticipated when it issued the LNG by Rail final rule, and has in fact increased as a result of the release of the TRB Phase I Report on June 15, 2021.”).

<sup>5</sup> Ethane Special Permit Notice at 74468.

(Hazardous Materials: Liquefied Natural Gas by Rail (RRTF)) [hereinafter “LNG-by-Rail Rule”], Application at 2-4. This section explains why this Special Permit presents comparable dangers to the authorization of bulk transportation of LNG by Rail at issue in Dockets Nos. PHMSA-2018-0025 and PHMSA-2019-0100 (Hazardous Materials Safety: Notice of Availability of the Draft Environmental Assessment for a Special Permit Request for Liquefied Natural Gas by Rail) [hereinafter “LNG-by-Rail Special Permit”], and why these hazards have not been addressed by updated studies, including the National Academy of Sciences’ Phase II Report which details the continued failures of LNG-by-Rail safety.<sup>6</sup>

a. Ethane Rail Transport is Comparably Dangerous to LNG

In both gaseous and liquid states, ethane shares many similar properties and behaviors to methane. Both of these alkanes are highly flammable in air including at low concentrations, have boiling points far below ambient air temperatures, and expand by hundreds of times their liquid volume when regasified.<sup>7</sup> While the upper and lower flammability limits of these gases are similar, ethane will ignite at even lower concentrations—2.9% versus 5.0% for methane.<sup>8</sup> Evacuation of a one-mile radius is indicated for a fire involving a rail car carrying either cryogenic gas.<sup>9</sup> Because of the highly comparable qualities between cryogenic ethane and methane, commenters have attached their full remarks from the LNG-by-Rail rulemaking docket as Attachment 1, but highlight several key points below.

Bulk transportation of cryogenic ethane by rail would create highly similar risks to those of bulk LNG by rail shipments. The United States Department of Transportation has noted that cryogenic hazardous liquids are fundamentally different from other hazardous cargoes, as “only a limited period of time exists for which transport may take place before a potentially unsafe condition is automatically created.

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<sup>6</sup> National Academies of Sciences, Engineering, and Medicine, Preparing for LNG by Rail Tank Car: A Readiness Review (2022) [hereinafter “Phase II Report”], *available at* <https://www.nationalacademies.org/our-work/safe-transportation-of-liquefied-natural-gas-by-railroad-tank-car>.

<sup>7</sup> Compare NOAA, CAMEO Chemicals, *Ethane*, <https://cameochemicals.noaa.gov/chemical/8619> and *Ethane, Refrigerated Liquid*, <https://cameochemicals.noaa.gov/chemical/661>, with *Methane*, <https://cameochemicals.noaa.gov/chemical/8823> and *Liquefied Natural Gas (Cryogenic Liquid)*, <https://cameochemicals.noaa.gov/chemical/3757>.

<sup>8</sup> *Id.*

<sup>9</sup> *Id.*

A loaded cryogenic car, left to its own devices, is ‘a car with a guaranteed leak.’<sup>10</sup> Loss-of-containment in transportation involves serious risks of cold embrittlement of nearby structures and surfaces, fire radiation from high and unquenchable gas cloud fires, and offsite travel downwind flammable clouds which can ignite in catastrophic vapor cloud explosions (VCEs). *See* 84 Fed. Reg. at 56972-73. Even before a substantial loss of containment, cryogenic containment vessels are subject to overheating and consequent boiling liquid expanding vapor explosions (BLEVEs), particularly in the event of a derailment that subjects a tank to sustained fire, such as a pool fire created by the breach and ignition of another vessel containing a flammable cryogenic liquid.

Moreover, the Special Permit proposes transportation in two types of packaging: existing DOT-113C120W tank cars, identical to those in the LNG-by-Rail Special Permit, and the never-before-used DOT-113C120W9 tank cars, identical to those in the LNG-by-Rail Rule. Issues with the latter model are considered under section I.B.

As for the former, legacy model, its record with other cryogenic gas transport demonstrates authorizing DOT-113C120Ws for transportation of liquefied ethane is inconsistent with PHMSA’s statutory mandate under the Hazardous Materials Transportation Act to ensure “safe transportation” of such materials. The LNG-by-Rail Rule EA states that PHMSA analyzed instances of damage to DOT-113 tank cars, and found 14 instances of damage from 1980 to 2017. 84 Fed. Reg. at 56972. This does not inspire confidence in the safety of these cars when there were only 405 DOT-113 tank cars in the entire North American railcar fleet at the time.<sup>11</sup> This means that 3.4% of the entire DOT-113 tank car fleet has been damaged. The safety of the DOT-113C120W tank cars (a specific subset of the DOT-113 tank car fleet) is even more concerning. As of 2019, there were only 67 of these tank cars in the entirety of the North American fleet.<sup>12</sup> The EA for the LNG special permit noted that three of the DOT-113C120 tank cars derailed, and in that derailment, two of the three breached and lost their entire cargoes, while the third car ended up needing to be breached by emergency responders for safety reasons. 84 Fed. Reg. at 56972. Thus, of the three specific derailments of the DOT-113C120 tank car noted by the EA, all three ended up either breaching or needing

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<sup>10</sup> F.A. Vassalo et al., Calspan Corp. for Fed. R.R. Admin., Review of Proposed Specifications Relating to the Shipment of Ethylene in Tank Cars at Cryogenic Temperatures, Final Report, at 3-4 (1974).

<sup>11</sup> Nat’l Transp. Safety Bd., Comment Letter on Proposed Rule: Hazardous Materials: Liquefied Natural Gas by Rail, Docket No. PHMSA-2018-0025, at 3 (Dec. 5, 2019), <https://www.regulations.gov/document?D=PHMSA-2018-0025-0078> [hereinafter “NTSB Comments”], Attachment 2.

<sup>12</sup> *Id.*

to be breached and losing their entire cargoes. This represents 4.5% of the entire DOT-113C120 tank car fleet. If the accident rate and loss rate while carrying liquefied ethane comes anywhere close to this breach rate, and were it to happen in a populated area as would be allowed by the Special Permit, the damage could be enormous.

The Special Permit proposes the same lax operational controls as the LNG-by-Rail Rule. Ethane Special Permit Application at 3. These include adopting AAR Circular OT-55,<sup>13</sup> an industry-created set of “recommended practices” for the operation of “key trains.” 85 Fed. Reg. 45018. However, OT-55 will only apply to trains carrying 20 or more carloads of hazardous materials, including cryogenic ethane, and even where it applies, its most notable “safety” feature is a voluntary speed limit of 50 mph. That means, even a train carrying 19 tank cars of cryogenic ethane would not be subject to even this “recommended” speed limit. Moreover, 50 mph is demonstrably unsafe for the rail shipment of cryogenic hydrocarbons. In tests of the same legacy DOT-113C120W tankers for which Gas Innovations seeks this Special Permit, the Association of American Railroads’ own calculations show that the likelihood of a puncture increases dramatically at higher speeds (probability of puncture calculated to be more than 4 times greater at 50 mph versus 26 mph).<sup>14</sup> Although AAR used an LNG tender as a proxy to look at inner tank puncture risk, their own calculations show a substantial risk of inner tank puncture in a 30 mph impact and also show that safety is improved by having additional “outage,” i.e., empty space at the top of the tank car.<sup>15</sup> Their calculations also show, despite their limitations, that tanker outer tank heads and shells, and full-height head shields, lead to less likely tank punctures than with the existing thickness in legacy DOT-113 tank cars.<sup>16</sup>

b. The National Academy of Sciences Phase II Study and New Rail Car Design Do Not Resolve Safety Concerns With Cryogenic Hydrocarbon Transport

At the direction of Congress, in 2020 PHMSA commissioned the National Academies of Sciences, Engineering, and Medicine to conduct a two-phase study about the safety and risks of transporting LNG in rail tank cars. Phase I of the study was released in 2021, and the Phase II report was released this year. This work represents the most recent data available on bulk LNG by rail shipments and makes clear that for

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<sup>13</sup> Association of American Railroads, Circular No. OT-55 (Apr. 26, 2019), <https://public.railinc.com/sites/default/files/documents/OT-55.pdf>.

<sup>14</sup> RSI-AAR Railroad Tank Car Safety Research and Test Project, Report RA-19-04 at 2 (Nov. 24, 2019), <https://www.regulations.gov/document?D=PHMSA-2018-0025-0209>.

<sup>15</sup> *Id.* at 7.

<sup>16</sup> *Id.* at 2-3.



the new DOT-113 variant authorized by the LNG by Rail Rule, the DOT-113C120W9, much is still unknown about the survivability of this model, but that it cannot safely transport cryogenic flammable liquids under current operational controls. Key findings of the Phase II Report are discussed here as relevant to the highly similar properties of cryogenic ethane to LNG.

The Phase II Report centers around two principal recommendations. The first involves not putting LNG tankers into service until PHMSA and FRA complete a safety assurance plan, which includes: determining the routes and consist of rail shipments of LNG (including the number and configuration of tankers in a train); ensuring that emergency responders along LNG routes have sufficient guidance, training, and equipment to address accidents; ensuring that personnel conducting LNG transfer and transportation are qualified through proper training; creating protocols for train consist derived from modelling longitudinal train dynamics; ensuring appropriate, targeted track inspections for LNG routes; and completing risk assessments and management analyses as required by regulation or additional need. Phase II Report at 2.

The second recommendation directs PHMSA and FRA to further review the new DOT-113C120W9 to ensure it “adequately accounts for the cryogenic and thermal properties of LNG that could contribute to a tank release and cascading impacts,” in particular:

- The capacity of the pressure relief devices to vent sufficient LNG when the tank car is engulfed in an LNG fire, taking into account derailment conditions, such as a rollover, that could degrade this capacity;
- The effects of adding more and different types of insulation in the annular space to ensure sufficient performance of the multilayer insulation system when the tank car is exposed to heat flux and direct flame impingement from an LNG fire; and
- The potential for the outer tank to experience cryogenic brittle failure and loss of vacuum insulation when exposed to an LNG pool. The outcomes of this recommended review, should they raise concerns, could affect the design specifications for pressure relief devices, insulation, and the type of outer tank steel, as well as have further implications for other design features such as shell thickness and head protection.

Phase II Report at 3. This recommendation is based on the fact that the new specification DOT-113 still has not been subjected to real-world testing, including using

a full-size tanker loaded with LNG and with an 9/16" outer shell (instead of an empty surrogate or a later test with a full size tank filled with inert cryogenic nitrogen), subjecting a tanker to a larger, circular LNG pool fire (instead of a smaller, much cooler-burning LPG fire), and testing the effectiveness of pressure relief devices (PRDs) in an overturned orientation in the presence of fire (as would be likely in an actual derailment). *Id.* at 10-11, 47.

The latest FRA test of the new specification, conducted in May 2022, finally utilized a full size tanker, instead of a 1/3 scale surrogate, and found that the car was unable to withstand an impact of 22.1 mph.<sup>17</sup> Although the FRA reported that this test of the new specification DOT-113 with 9/16" outer jacket "indicate[s] substantial improvement in puncture resistance,"<sup>18</sup> the reality is that both the outer and inner shells of the tanker were punctured at a speed of less than half the recommended limit set by OT-55 for tankers traveling in an High Hazard Flammable Train (HHFT).

In addition to the inability of the new specification DOT-113 to withstand even relatively low-speed impacts, the Phase II Report found other areas of concern following the latest FRA test related to the cryogenic properties of LNG. The committee specifically notes that during the May 2022 FRA test, the outer tank of the tested car experienced numerous brittle failures both at and beyond the puncture site, including a "large circumferential crack" and "additional brittle fractures" occurring over the course of the nitrogen boil-off and escape from the punctured tank, all of which were caused by cryogenic damage. Phase II Report at 47. Although liquid nitrogen has a lower boiling point than LNG or liquefied ethane, the committee notes that nil-ductility transition (NDT) temperature—that at which steel loses ductility and becomes subject to brittle failure—of the specified TC-128B steel is -59.8°F, substantially higher than the transport temperature of LNG of -260°F. *Id.* at 47-48.

In addition to puncture survivability, the Phase II Report examined two other major failure points—pressure relief devices (PRDs) and insulation performance—the specifications of both of which were not changed between the legacy and new DOT-113 series. As for PRDs, the report noted that pressure relief devices on the new specification DOT-113 series have not been tested for a tank car engulfed in an LNG pool fire, consequently it remains unknown whether these PRDs are properly sized to

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<sup>17</sup> Fed. R.R. Admin., Full-Scale Shell Impact Test Of A Dot-113C120W9 Tank Car Filled With Liquid Nitrogen at 2 (July 2022), <https://railroads.dot.gov/sites/fra.dot.gov/files/2022-07/Impact%20Test%20DOT113%20Tank%20Car%20with%20LN2.pdf>.

<sup>18</sup> *Id.* at 4.

vent lading in the event of a fire impingement on a tank leading to evaporation of LNG. *Id.* at 48. The Phase II Report notes this is of particular importance given the high liquid-to-gas expansion of LNG (600 to 1), renders a tanker “susceptible to overpressurization if the pressure release valve is faulty or upon rapid heating,” *id.*, which could lead to a catastrophic failure and BLEVE.

As for insulation performance, the Phase II Report found that no full-scale thermal testing of the new specification DOT-113 shell has been conducted, only surrogate tests using propane torches on plate sections. It notes that those test temperatures are “significantly lower than temperatures expected during an LNG pool fire or natural gas torch fire.” *Id.* at 49. The committee also noted its familiarity with experiments performed on marine vessels in which an at-scale vessel cross-section was exposed to heat flux representative of an LNG fire. In those tests, the unexposed side of the test plate—which was nearly twice the thickness specified for the new DOT-113 series—reached temperatures at which the tensile strength of TC-128B steel becomes “significantly weaken[ed].” *Id.* at 50. Indeed, TC-128B steel tensile strength is reduced by a factor of six when it reaches a temperature of 1472°F, while the alternating layers of the inner tank insulation, made up of aluminum foil and a nonconductive spacer material like fiberglass will also fail at high temperatures (“Aluminum’s melting temperature is 1221°F . . . while fiberglass will begin to soften and degrade around 400°F”). Critically, the temperature of an LNG combustion in either a pool fire or torch fire scenario—2303.6-2912°F and up to 2732°F, respectively—is significantly hotter than the failure points of all of the above materials. *Id.*

In light of Gas Innovation’s petition to use the same specification DOT-113C120W9 tankers, the properties that cryogenic ethane shares with LNG make each of these above and as-yet unaddressed concerns relevant to ethane by rail shipment. Its boiling point of -127.5°F, while somewhat higher than that of LNG, is still well below the temperature leading to cryogenic embrittlement of the steel used in new specification DOT-113s. Its similar temperature of combustion<sup>19</sup> means the heat flux from a pool or torch fire would be equally likely to degrade or destroy tanker shells and

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<sup>19</sup> Engineering Toolbox, *Flame Temperature – Gases*, [https://www.engineeringtoolbox.com/flame-temperatures-gases-d\\_422.html](https://www.engineeringtoolbox.com/flame-temperatures-gases-d_422.html) (adiabatic flame temperature of ethane is 1955°C compared to 1950°C for methane and 1960°C for natural gas).

insulating materials. Its similar liquid-to-gas expansion factor<sup>20</sup> implicates the same concern that a tank could experience a BLEVE as ethane expands by hundreds of times its liquid volume upon boiling.

Finally, PHMSA has already admitted to safety defects in the LNG-by-Rail Rule, and has proposed to suspend that Rule while those defects are remedied, 86 Fed. Reg. 61735 (Nov. 8, 2021), which could include the full rescission of the Rule. PHMSA there elaborated about the uncertainty regarding the risks posed by bulk LNG by rail shipments:

Uncertainty also has increased because, while the [Transportation Research Board] committee generally commended PHMSA and FRA's efforts under the LNG Task Force, the TRB committee identified a number of information gaps in its and the LNG Task Force's work that PHMSA was not aware of when it issued the LNG by Rail final rule. The gaps concern testing and the evaluation of public safety and environmental risks (e.g., relating to full-scale impact testing, pool fire testing, worst-case analysis, and quantitative risk assessment)—including testing on which PHMSA had relied in the LNG by Rail final rule. . . . Further, the committee identified opportunities to improve the work of the LNG Task Force in understanding the risks to the public, workers, and the environment from rail tank car transportation of LNG, which potentially could further reduce uncertainties in the future and put PHMSA in a better position to evaluate risks as it moves forward with its companion rulemaking. The TRB committee also emphasized the need for a robust understanding of the potential risks to public and worker safety arising from releases during loading, unloading, and transloading of LNG tank cars, and improved emergency planning and response training and resources, further underscoring the importance of PHMSA taking additional time to ensure it fully understands and considers uncertainties. . . . PHMSA believes the increased uncertainty regarding the potential

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<sup>20</sup> Ethane has an expansion factor of 268:1 (expansion ratio is calculated by comparing density of liquid and density in gas phase at boiling temperature (Engineering Toolbox, *Ethane – Density and Specific Weight vs. Temperature and Pressure*, [https://www.engineeringtoolbox.com/ethane-C2H6-density-specific-weight-temperature-pressure-d\\_2088.html](https://www.engineeringtoolbox.com/ethane-C2H6-density-specific-weight-temperature-pressure-d_2088.html)), compared to LNG's factor of 235:1, (Engineering Toolbox, *Methane – Density and Specific Weight vs. Temperature and Pressure*, [https://www.engineeringtoolbox.com/methane-density-specific-weight-temperature-pressure-d\\_2020.html](https://www.engineeringtoolbox.com/methane-density-specific-weight-temperature-pressure-d_2020.html)). By the time methane reaches ambient temperatures, it has an expansion ratio of 600:1, while ethane also continues to expand as it equalizes to ambient temperatures.

benefits and safety and environmental consequences of rail transportation of LNG pursuant to the LNG by Rail final rule warrants temporary suspension while PHMSA evaluates (under RIN 2137-AF54) *whether and under what circumstances* the HMR should allow rail transportation of LNG.

*Id.* (emphasis added). There is no reason consistent with PHMSA's mandate to protect public safety, that PHMSA should seriously consider granting this Special Permit which leans so heavily on a rule for which rescission is being considered over the same kinds of hazards and unstudied risks as would be posed by bulk shipment of cryogenic ethane by rail.

## II. Distinguishing Ethane from LNG and Ethylene Does Not Abate Concerns.

### a. Differences with LNG Do Not Abate Safety Concerns, and Specific Gravity Properties Make Ethane More Dangerous

One of the principal differences between ethane and methane does not indicate that ethane is any safer to transport—quite the opposite. Methane, as is well known, has a specific gravity lower than air. In other words, as liquid methane turns to a gaseous form, and starts to warm, it will rise and disperse once it reaches ambient temperature. This is not true of ethane, which has a higher specific gravity than air.<sup>21</sup> In other words, ethane, as it warms up and matches air temperature, sticks close to the ground and could still ignite long after reaching ambient temperatures in an accidental release. Should it reach a geographic low point, such as a ditch or drain, as is frequent along rail lines, it could become confined and stop dispersing as it will not naturally rise. Ethane can thus pose a high hazard of ignition long after a rail accident occurs, and will not naturally disperse into the atmosphere and thus go below its ignition threshold and no longer pose a danger. This important difference with methane has not been accounted for anywhere in PHMSA's analysis or Gas Innovations' application, even though both frequently mention the link to the safety of the transport of liquified natural gas by rail rulemaking.

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<sup>21</sup> Engineering Toolbox, *Ethane – Thermophysical Properties*, [https://www.engineeringtoolbox.com/ethane-d\\_1417.html](https://www.engineeringtoolbox.com/ethane-d_1417.html).

b. Differences with Ethylene Do Not Justify the Total Void in Analysis

The entire premise of Gas Innovations' assertion that the cryogenic transport of ethane in unlimited quantities in DOT-113 tank cars is at least as safe as allowed by current regulations (which do not allow *any* transport of cryogenic ethane by rail) is the following sentence: "The transportation via rail of UN1961 Ethane is as safe or safer than UN1038 Ethylene due to its nature as a non-VOC, its lower vapor pressure, and increased stability." Application at 4. There are many issues with approving a special permit on such a spotty "analysis."

First, pointing out the transportation of something else that is allowed that is allegedly *more* dangerous does not mean that the transportation of another substance is *safer* than allowed by existing regulation. For example, suppose there are two substances, substance A and substance B. Substance A and B are both banned under regulations for being dangerous to transport, with, all things being equal (quantity, distance to transport, etc.), Substance A being slightly more dangerous than Substance B. Then, regulations are amended to allow the transport of Substance A, knowing that it will be done so in very limited quantities, usually one rail tank car at a time. Substance B remains banned due to its danger. A special permit to transport Substance B in unlimited quantities and unlimited distances could not be granted on the *sole* ground that it is slightly safer than Substance A and therefore the transportation of Substance B is at least as safe as existing regulations, which ban the transport of Substance B on safety grounds. Yet, that is the sole ground that Gas Innovations uses to justify the transport of ethane in this case. Such spotty, unsupported assertions, even if true, would provide no ground for granting the special permit. A more detailed analysis than a single sentence comparing VOC status, vapor pressure, and stability is needed to meet the requirement of "Substantiation, with applicable analyses, data or test results (*e.g.*, failure mode and effect analysis), that the proposed alternative will achieve a level of safety that is at least equal to that required by the regulation from which the special permit is sought," 49 C.F.R. § 107.105(d)(3)(ii), which, again, is a current ban on transport of cryogenic ethane by rail.

Second, as alluded to above, existing regulations ban the transport of cryogenic ethane based on safety reasons. Pointing to another substance, allegedly less safe, that is allowed to be transported, does not in any way satisfy the standard to show that the special permit will be at least as protective as existing regulations, when such existing regulations completely ban the transport of cryogenic ethane on safety grounds.

Third, the properties of ethane that Gas Innovations has pointed to in comparison to ethylene do not, in any way, demonstrate that ethane is safer to transport. In a cryogenic loss of lading situation, the most important characteristics to consider are flammability limits, boiling point, specific gravity, expansion ratio, ignition temperature, and heat of combustion. For all of these properties, except for specific gravity, ethylene and ethane are roughly comparable, although ethylene has a higher flammability limit.<sup>22</sup>

While these comparable properties may suggest that the dangers of transport of ethylene and ethane are similar, they are not. The most significant difference, one completely unanalyzed by Gas Innovations and PHMSA (to date), is the specific gravity as compared to air. Ethylene, like methane, is lighter than air, so as it warms to air temperature during an incident, it will rise and disperse until it is no longer at risk of ignition.<sup>23</sup> This is not true of ethane, which will not rise even as it comes to the same temperature as air, as it has a higher specific gravity.<sup>24</sup> Until it is dispersed on the ground, with sufficient air mixing, which, depending on atmospheric conditions (mostly wind), could take a substantial amount of time, the ethane will remain at risk of ignition. And should the ethane during an incident find a low spot in the ground, such

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<sup>22</sup> Flammability limit of ethane is 3.0%-12.4%, while ethylene is 2.75%-28.6%. Engineering Toolbox, *Gases – Explosion and Flammability Concentration Limits*, [https://www.engineeringtoolbox.com/explosive-concentration-limits-d\\_423.html](https://www.engineeringtoolbox.com/explosive-concentration-limits-d_423.html). Boiling point (-127 °F, -155 °F), expansion ratio (268, 280), autoignition temperature (882 °F, 842 °F), and heat of combustion (22,300 Btu/lb, 21,626 Btu/lb) are roughly comparable between ethane and ethylene, respectively. Engineering Toolbox, *Ethane – Thermophysical Properties*, [https://www.engineeringtoolbox.com/ethane-d\\_1417.html](https://www.engineeringtoolbox.com/ethane-d_1417.html) (for properties of ethane); Engineering Toolbox, *Ethylene – Thermophysical Properties*, [https://www.engineeringtoolbox.com/ethylene-ethene-C2H4-properties-d\\_2104.html](https://www.engineeringtoolbox.com/ethylene-ethene-C2H4-properties-d_2104.html) (for properties of ethylene); Expansion Ratio is calculated by comparing density of liquid and density in gas phase at boiling temperature (Engineering Toolbox, *Ethane – Density and Specific Weight vs. Temperature and Pressure*, [https://www.engineeringtoolbox.com/ethane-C2H6-density-specific-weight-temperature-pressure-d\\_2088.html](https://www.engineeringtoolbox.com/ethane-C2H6-density-specific-weight-temperature-pressure-d_2088.html) for ethane) (Engineering Toolbox, *Ethylene – Density and Specific Weight vs. Temperature and Pressure*, [https://www.engineeringtoolbox.com/ethylene-ethene-acetene-C2H4-density-specific-weight-temperature-pressure-d\\_2105.html](https://www.engineeringtoolbox.com/ethylene-ethene-acetene-C2H4-density-specific-weight-temperature-pressure-d_2105.html) for ethylene); World Health Organization, Internationally Peer Reviewed Chemical Safety Information, *Ethane*, <https://incem.org/documents/icsc/icsc/eics0266.htm> (for autoignition temperature of ethane).

<sup>23</sup> Engineering Toolbox, *Ethylene – Thermophysical Properties*, [https://www.engineeringtoolbox.com/ethylene-ethene-C2H4-properties-d\\_2104.html](https://www.engineeringtoolbox.com/ethylene-ethene-C2H4-properties-d_2104.html).

<sup>24</sup> Engineering Toolbox, *Ethane – Thermophysical Properties*, [https://www.engineeringtoolbox.com/ethane-d\\_1417.html](https://www.engineeringtoolbox.com/ethane-d_1417.html).

as a ditch or drain—which is common along rail lines to ensure proper drainage and that rail lines do not flood—the ethane, even as it heats to match ambient temperature, will not rise and will not move, and thus remain at risk of ignition long past the accident that led to its release. This significant increase in the risk presented from ethane is addressed nowhere in the special permit application or PHMSA’s request for comments. The application submitted, with a single sentence comparing select properties with ethylene, does not constitute “Substantiation, with applicable analyses, data or test results (*e.g.*, failure mode and effect analysis), that the proposed alternative will achieve a level of safety that is at least equal to that required by the regulation from which the special permit is sought.” 49 C.F.R. § 107.105(d)(3)(ii). No analyses, data, or test results were submitted. Comparing the application submitted here with the application submitted for a special permit for the transport of liquefied natural gas from Pennsylvania to New Jersey, which contained a comprehensive quantitative risk assessment analysis (which was still deficient in many ways), demonstrates the severe paucity of the application submitted by Gas Innovations.<sup>25</sup>

In any case, one of the most critical parts of the safety analysis that is missing is how ethylene is currently transported versus how ethane would be allowed to be transported in the proposed special permit. Ethylene is currently transported in DOT-113 rail cars. 49 C.F.R. § 173.319(d). As the NTSB noted in commenting on the LNG by rail rulemaking, there are only 405 Class DOT-113 tank cars in the entire North American railcar fleet, with only 67 of those tank cars being specification DOT-113C120W cars, where the only hazardous material presently required to be transported in specification DOT-113C120W tank cars is ethylene, which is not even in the list of the Top 125 hazardous materials transported by rail.<sup>26</sup> Furthermore, as has been noted by industry, cryogenic ethylene is most commonly transported in the DOT-113C120W fleet, in other words, the more limited subclass of DOT-113 tank cars, now numbering a total of approximately 67.<sup>27</sup> In other words, there has been no demonstrated safety record of the transport of ethylene in unit trains, across the entirety of the United States, as the

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<sup>25</sup> Application for Special Permit for Transportation of LNG by Rail *available at* <https://www.regulations.gov/document/PHMSA-2019-0100-0941>, and quantitative risk analysis submitted as part of application *available at* <https://www.regulations.gov/document/PHMSA-2019-0100-0940>.

<sup>26</sup> NTSB Comments at 3, Attachment 2.

<sup>27</sup> Handling and Transportation Guide for Ethylene, Refrigerated Liquid (Cryogenic Ethylene), Cryogenic Ethylene Transportation Safety Panel of the American Chemistry Council at 19 (April, 2004), *available at* [http://uchi-old.vscht.cz/uploads/pedagogika/bezpecnostni\\_inzenyrstvi/ethylene\\_cryo\\_guide.pdf](http://uchi-old.vscht.cz/uploads/pedagogika/bezpecnostni_inzenyrstvi/ethylene_cryo_guide.pdf), Attachment 3.



special permit requests permission for. Moving a couple of tank cars of ethylene as part of a large train poses significantly different safety considerations than a unit train of ethane. One of the incidents that reduced the DOT113C120W fleet to the 67 cars was in 2011 in Moran, Kansas where there was a derailment that only included three DOT-113 cars containing ethylene. Two of the cars breached in the derailment and caught fire, while the third was mechanically breached to allow the ethylene contents to burn. Application at 3. This is not a safe record, and could have had a completely different outcome if there were more than three cars of ethylene involved. If 120 cars full of ethylene had been involved, and there was a cascading failure, they all could have blown up to catastrophic consequences. Gas Innovations does not account, at all, for the dangers of a unit train of ethane as contemplated in the proposed special permit. Such danger must be accounted for, and analyzed, by the applicant *and* PHMSA before any special permit could be considered.

The request for comments from PHMSA requests comments regarding operational controls that could be implemented to enable the safe transport of ethane. But until the applicant meets its burden of submitting the required data and analysis of the safety of transporting ethane, it is not possible to submit detailed comments on possible operational controls. PHMSA, in this request for comments, is impermissibly seeking to transfer the burden from the applicant to commentators. It is the *applicant's* responsibility to demonstrate the safety of its proposed activity, not the *commentator's* responsibility to come up with a safety regime that would make applicant's proposed activity safe. Under PHMSA's regulations and underlying substantive law, it cannot shift the burden in this fashion, as PHMSA seeks to do here.

### III. Environmental Justice Concerns Weigh Against Granting a Special Permit for Ethane by Rail.

Presidential Executive Order 12898 obligates each covered federal agency, including the U.S. Department of Transportation ("DOT"), to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."<sup>28</sup>

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<sup>28</sup> Exec. Order No. 12,898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, 3 C.F.R. 859 (1994).

DOT updated its corresponding environmental justice procedures last year, describing environmental justice as “the fair treatment and meaningful involvement of all people, regardless of race, ethnicity, income, national origin, or educational level, with respect to” environmental laws and policies.<sup>29</sup> DOT’s Order further defined “fair treatment” as ensuring that “no population, due to policy or economic disenfranchisement, is forced to bear a disproportionate burden of the negative health and environmental impacts” of DOT’s “decisions, programs and policies.” DOT’s Order at 1.

The DOT Order also recognized that a critical step in effective implementation of its environmental justice policy is to *explicitly* consider the potential impacts on minority and low-income populations during early planning activities. *Id.* at 3. Moreover, DOT must act to ensure that such populations have access to information on proposed activities, including any potential health and environmental impacts. *Id.*

The Marcus Hook Industrial Complex (“MHIC”), from which the proposed ethane exports would originate, is located in an area which has been disproportionately adversely affected by industrial pollutants. In analyzing environmental justice data, each federal agency should avoid duplication of effort where possible by using “existing data systems and cooperative agreements among Federal agencies and with State, local, and tribal governments.” Exec. Order 12898 § 3-302(d). Accordingly, the data below showing that the Marcus Hook facility is in an area subject to higher environmental justice scrutiny is from the Environmental Protection Agency’s (EPA’s) EJScreen tool and from the Pennsylvania Department of Environmental Protection’s (DEP’s) Environmental Justice Area Viewer.

EPA’s EJScreen tool provides detailed environmental and demographic data by location, and compares that data to other locations within the state, EPA region, or nation. EA, *Purposes and Uses of EJScreen*, <https://www.epa.gov/ejscreen/purposes-and-uses-ejscreen> (last visited Jan. 3, 2023). Although EPA does not provide a definition for an environmental justice area, the EJScreen tool provides valuable data which indicates areas that may require “additional consideration, analysis or outreach.” EPA, *EJSCREEN Environmental Justice Mapping and Screening Tool Technical Documentation*, 6 (2019).

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<sup>29</sup> DOT’s Order 5610.2C, *Subject: U.S. Department of Transportation Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 1 (May 14, 2021) [hereinafter “DOT’s Order”].

The report generated by the tool includes information on multiple environmental indicators (called EJ indicators) and demographic information expressed in terms of a state or national percentile, as well as providing raw data where potentially useful. *Id.* at 24. A percentile allows the user to meaningfully compare the subject area to the rest of the state or nation. It shows the approximate percentage of the total population within the state or country who live in a block group with a value below the one found for the subject area. *Id.* at 26. For example, in the EJScreen report for a mile buffer around the Marcus Hook Industrial Complex, the Air Toxics Respiratory Hazard Index is 0.46, which is the 99th percentile in Pennsylvania and 90-95th percentile across the United States. That means that the air toxics hazard index is higher for the communities surrounding the Marcus Hook facility than it is for 99% of the general population of Pennsylvania or for 90–95% of the United States.<sup>30</sup>

The MHIC EJScreen Report shows that for the twelve environmental justice indexes, the communities around the Marcus Hook facility are more burdened than over 80% of communities in the United States for three and more burdened than over 80% of Pennsylvania for all but one. MHIC EJScreen Report at 1. The disproportionate health and environmental burdens for the local community is particularly clear. Compared nationally, they are at the 90th percentile or above for at least air toxics cancer risk, Superfund proximity, RMP facility proximity, and wastewater discharge. *Id.* at 3. The area is also above the 80th percentile nationally for diesel particulate matter, lead paint, and hazardous waste proximity. *Id.*

Already suffering from the cumulative effects of such pollution, it is perhaps unsurprising that the people around the Marcus Hook facility also are nationally in the 95–100th percentile for low life expectancy and for asthma prevalence among adults.<sup>31</sup> Thus, the disproportionate impact of environmental pollution on the population surrounding the Marcus Hook facility warrants higher environmental justice scrutiny.

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<sup>30</sup> EJScreen Report: 1 mile Ring around the Area ([https://ejscreen.epa.gov/mapper/ejscreen\\_SOE.aspx](https://ejscreen.epa.gov/mapper/ejscreen_SOE.aspx)) (Jan. 3, 2023) (This report was generated by drawing an area around the boundary of the Marcus Hook Industrial Complex and indicating a 1 mile buffer zone, which differs from the default report which measures a mile from the center of the project. The latter approach does not capture a true buffer zone because the project alone is approximately a mile long.) [hereinafter “MHIC EJScreen Report”], Attachment 4.

<sup>31</sup> EPA, EJScreen Map of Low Life Expectancy Percentile for MHIC, Attachment 5.

Moreover, areas around the facility are considered Environmental Justice Areas by the Commonwealth of Pennsylvania. The Pennsylvania Department of Environmental Protection (the “Department”) defines an EJ Area as “any census tract . . . or block group . . . where 20% or more individuals live in poverty, and/or 30% or more of the population identifies as minority.”<sup>32</sup> According to the Department’s Environmental Justice Area Viewer, the Marcus Hook facility is within such a tract.<sup>33</sup>

Thus, looking at both the EJ Index factors from EPA and Pennsylvania’s demographics-based qualification of the area around the Marcus Hook facility as an environmental justice area, the mandate from Executive Order 12898 and DOT Order 5610.2C is clear, PHMSA must carefully and explicitly consider the potential impacts of the proposed project to the surrounding environmental justice communities and take steps to avoid adding potential health and environmental impacts to already overburdened communities, up to and including denying the special permit.

#### IV. The Involvement of Energy Transfer and Sunoco Increases the Risk Involved with the Proposed Project Because They are Bad Actors with a History of Criminal Charges, Multiple Explosions, and Numerous Regulatory Violations, including at the Marcus Hook Facility.

Energy Transfer and its subsidiaries, Energy Transfer Marketing & Terminals (formerly Sunoco Partners Marketing & Terminals), the operator of the Marcus Hook Industrial Complex (also called the Marcus Hook Terminal), and Sunoco Pipeline, the builder and operator of the Mariner East pipeline system, are untrustworthy partners who have continuously violated federal and Pennsylvania laws. This is a problem because the predominant source of ethane in Marcus Hook arrives via the Mariner East pipelines which terminate at the MHIC, and so Energy Transfer’s operations would be inextricably linked with those of Gas Innovations, its hoped-for customer.

In August 2022, Energy Transfer accepted criminal responsibility for most of the 48 charges brought by the Pennsylvania Attorney General in relation to its Mariner East

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<sup>32</sup> PA DEP, *PA Environmental Justice Areas*, <https://www.dep.pa.gov/PublicParticipation/OfficeofEnvironmentalJustice/Pages/PA-Environmental-Justice-Areas.aspx> (last visited Jan. 3, 2023).

<sup>33</sup> PA DEP, Environmental Justice Areas Viewer, <https://padep-1.maps.arcgis.com/apps/webappviewer/index.html?id=f31a188de122467691cae93c3339469c> (last visited Jan. 3, 2023), Attachment 6.

pipeline system.<sup>34</sup> Energy Transfer’s illegal activities inflicted upon Pennsylvanians include numerous sinkholes, many drilling mud spills, and contaminated drinking water in at least 22 sites which spanned 11 counties.<sup>35</sup> Among numerous other criminal violations, the Grand Jury Presentment details the business’s dishonest and illegal choice to report to the Department fewer than 100 of 397 losses of drilling fluid circulation during the course of the project. Grand Jury Presentment of Oct. 5, 2021.

Energy Transfer also did not contest an additional nine criminal charges related to failed erosion control and construction practices which ultimately caused its Revolution Pipeline to explode after only one week in service.<sup>36</sup>

Further demonstrating incompetence and disregard for legalities, Energy Transfer and Sunoco violated the law at least 120 times over the course of five years, destroying private water supplies, contaminating valuable waterways, and spilling at least 21,000 gallons of drilling mud into Marsh Creek Lake, which shut down the popular boating and fishing site.<sup>37</sup>

In a likely continuation of their pattern of mismanagement, Energy Transfer’s Revolution cryogenic plant near Smith Township, Pennsylvania terrified local residents

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<sup>34</sup> Susan Phillips, *Energy Transfer Held Criminally Responsible for Damage from Mariner East Pipeline Construction*, StateImpact Pennsylvania, <https://stateimpact.npr.org/pennsylvania/2022/08/05/energy-transfer-pleads-no-contest-to-criminal-charges-related-to-mariner-east-pipeline-construction/> (Aug. 5, 2022).

<sup>35</sup> *Id.*; see also Grand Jury Presentment of Oct. 5, 2021, available at <https://s3.documentcloud.org/documents/21079232/2021-10-05-mariner-east-presentment.pdf> (detailing violations) [hereinafter “Grand Jury Presentment of Oct. 5, 2021”].

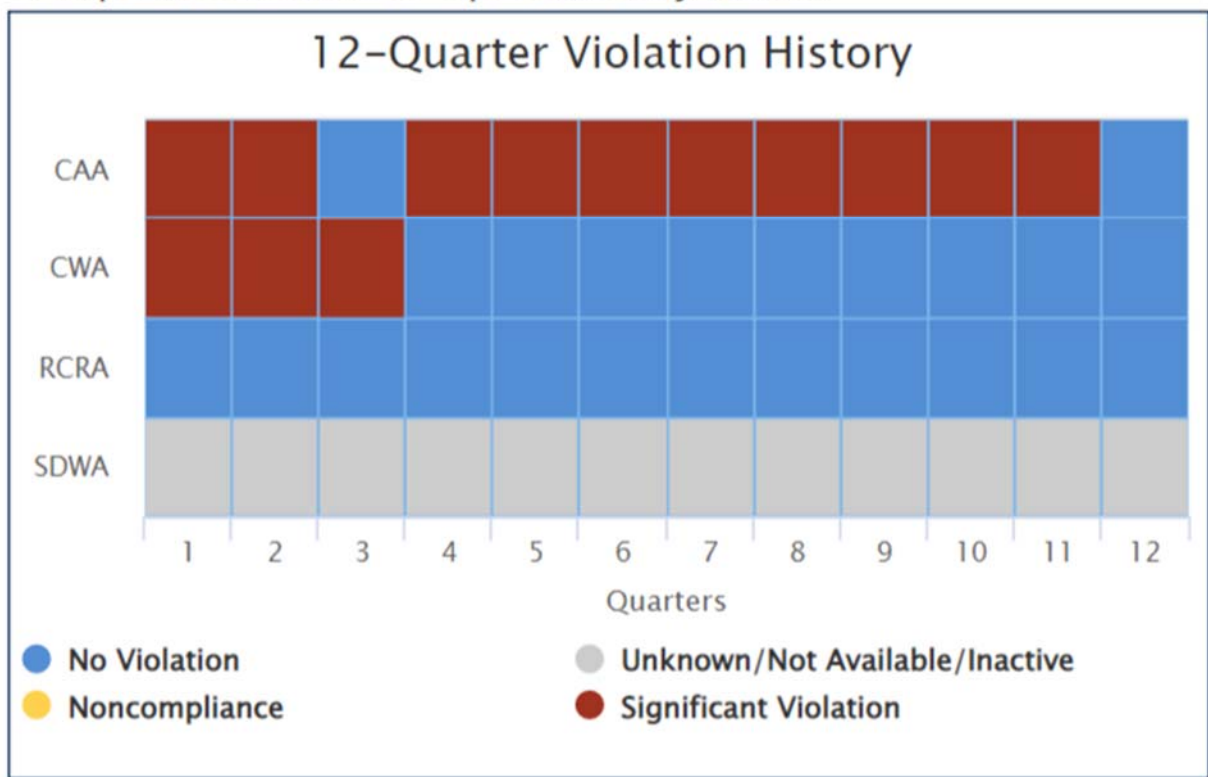
<sup>36</sup> Reid Frazier, *Energy Transfer Facing Nine Counts of Environmental Crimes for 2018 Pipeline Blast*, StateImpact Pennsylvania, <https://stateimpact.npr.org/pennsylvania/2022/02/03/energy-transfer-facing-nine-counts-of-environmental-crimes-for-2018-pipeline-blast/> (Feb. 3, 2022); see also, Grand Jury presentment of Feb. 22, 2022, available at <https://www.attorneygeneral.gov/wp-content/uploads/2022/02/2022-02-22-ETC-REV-Pipeline.pdf>; Energy Transfer, *Marcus Hook Industrial Complex, 2*, [https://energytransfer.com/wp-content/uploads/2020/04/Marcus\\_Hook\\_FactsSheet\\_Updated\\_2019.pdf](https://energytransfer.com/wp-content/uploads/2020/04/Marcus_Hook_FactsSheet_Updated_2019.pdf) (last visited Jan. 3, 2023); Susan Phillips, *Mariner East Pipeline Is Set to Be Completed in 2022, After Years of Environmental Damage and Delays*, WHYY, <https://whyy.org/articles/mariner-east-pipeline-is-set-to-be-completed-in-2022-after-years-of-environmental-damage-and-delays/> (Dec. 27, 2021).

<sup>37</sup> StateImpact Pennsylvania, *Mariner East: A Pipeline Project Plagued by Mishaps and Delays*, <https://stateimpact.npr.org/pennsylvania/tag/mariner-east-2/> (last visited Jan. 3, 2023).

last month with a Christmas morning explosion followed by a fire.<sup>38</sup> Time will tell whether the incident leads to further criminal or civil charges against the owner of the intended origination point for the proposed ethane-by-rail project.

Then there is Energy Transfer’s dismal compliance record at the Marcus Hook Industrial Complex itself. There, as shown in the chart below, during all but one of the last twelve quarters, Energy Transfer and Sunoco have seriously violated the Clean Air Act, the Clean Water Act, or both.

Compliance data below provided by ECHO.



Graphic from EPA, *TRI Facility Report: Sunoco LLC-Race Fuels (19061SNRFNGREEN)*, <https://enviro.epa.gov/facts/tri/ef-facilities/#/Facility/19061SNRFNGREEN> (last visited Jan. 3, 2023).

The data comes from EPA’s Enforcement and Compliance History Online (“ECHO”) database. ECHO’s Detailed Facility Report for Marcus Hook Industrial

<sup>38</sup> Mike Jones, *Explosion, Fire at Natural Gas Cryogenic Plant Rattles Smith Township*, OBSERVER-REPORTER, [https://observer-reporter.com/news/localnews/explosion-fire-at-natural-gas-cryogenic-plant-rattles-smith-township/article\\_b480e6a8-87a6-11ed-a1ca-43ce02191542.html](https://observer-reporter.com/news/localnews/explosion-fire-at-natural-gas-cryogenic-plant-rattles-smith-township/article_b480e6a8-87a6-11ed-a1ca-43ce02191542.html) (Dec. 30, 2022).

Complex reveals a disturbing track record, including 6 formal and 13 informal enforcement actions for violations of the Clean Air Act, leading to \$1,438,480 in penalties in a mere five years.<sup>39</sup>

PHMSA must not ignore the long shadow cast by the recidivist companies operating the Marcus Hook Industrial Complex and must be mindful of the potentially catastrophic impact of their involvement on impacted communities.

### CONCLUSION

For these reasons, any Special Permit to allow the transportation of cryogenic ethane by rail without a substantive analysis by the applicant and PHMSA may not be issued. We therefore respectfully request PHMSA deny the requested Special Permit. Please contact us with any questions.

Sincerely,

A handwritten signature in blue ink that reads "Bradley Marshall". The signature is fluid and cursive.

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<sup>39</sup> ECHO, *Detailed Facility Report: Sunoco Partners marketing & Terminals L.P.-Marcus Hook Industrial Complex*, <https://echo.epa.gov/detailed-facility-report?fid=110032885723> (last visited Jan. 3, 2023), Attachment 7.