

THE ATTORNEYS GENERAL OF MARYLAND, NEW YORK, DELAWARE, ILLINOIS,
MASSACHUSETTS, MICHIGAN, MINNESOTA, NEW JERSEY, OREGON,
PENNSYLVANIA, RHODE ISLAND, VERMONT, WASHINGTON, AND THE DISTRICT
OF COLUMBIA

February 21, 2023

Via Electronic Submission on Regulations.gov

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

RE: Comments of State Attorneys General Concerning Gas Innovations LNG
Refrigerants, Inc.'s Application for a New Special Permit (21283-N) to Transport
Cryogenic Ethane in Rail Tank Cars [Docket No. PHMSA-2022-0081]

Dear Chief Burger,

The Attorneys General of Maryland, New York, Delaware, Illinois, Massachusetts, Michigan, Minnesota, New Jersey, Oregon, Pennsylvania, Rhode Island, Vermont, Washington, and the District of Columbia (the "Attorneys General") submit these comments to express their opposition to Gas Innovations LNG Refrigerants Inc.'s (Gas Innovations) request for a special permit to ship cryogenic liquefied ethane in DOT113C120W and DOT113C120W9 rail tank cars from a facility in Marcus Hook, Pennsylvania to undisclosed locations in Canada, Mexico, and the Gulf Coast of the United States. The Pipeline and Hazardous Materials Safety Administration (PHMSA) should reject the application as it fails to comply with PHMSA's regulations governing such decisions and no analysis has been conducted to determine its likely impact on the environment as required by the National Environmental Policy Act (NEPA).

As described in more detail below, Gas Innovations has failed to show that shipping ethane under the terms of the special permit application will be safe and consistent with the public interest. The company cannot satisfy that burden by referencing PHMSA's LNG by Rail Rule as both PHMSA and the National Academies of Sciences (NAS) have identified significant flaws in that rulemaking and PHMSA itself has issued a proposed rule to suspend it. Finally, we note that PHMSA cannot grant the special permit before evaluating its potential impact on the human environment, including impacts on communities with environmental justice concerns, as

required by NEPA. For the reasons described below, and in the interest of public safety, we ask that PHMSA deny Gas Innovations' request for a special permit.¹

- I. PHMSA's authority to allow the shipment of hazardous cargos is contingent on an assurance of adequate safety.

The Hazardous Materials Transportation Act (HMTA), 49 U.S.C. §5101, et. seq., was enacted to “protect against the risks to life, property, and the environment that are inherent in the transportation of hazardous material.” 49 U.S.C. § 5101. To accomplish these goals Congress instructed the Secretary of Transportation, who has since delegated his authority under the HMTA to PHMSA, to “prescribe regulations for the safe transportation, including security, of hazardous material.” 49 U.S.C. § 5103; *see also* 49 C.F.R. § 1.96-1.97 (delegating authority to PHMSA).

Hazardous cargos can be shipped in commerce only in the manner authorized by regulation. *See* 49 U.S.C. § 5103 (Directing DOT to designate hazardous materials and promulgate regulations governing their transportation in commerce); 49 C.F.R. § 174.3 (“No person may accept for transportation or transport by rail any shipment of hazardous material that is not in conformance with the requirements of this subchapter.”). Cryogenic ethane is currently authorized for shipment in MC331 or MC338 cryogenic truck trailers, 49 C.F.R. § 173.315, and in UNT75 portable tanks, 49 C.F.R. § 172.101, but is not authorized to be shipped in rail tank cars.

Deviation from those regulatory requirements is allowed via special permit only if an applicant has demonstrated that shipment under the special permit will be: “(A) at least equal to the safety level required under this chapter; or (B) consistent with the public interest and this chapter, if a required safety level does not exist.” 49 U.S.C. § 5117. In all instances, the burden of demonstrating an adequate level of safety, consistent with the public interest, rests upon the permit applicant. *See* 49 U.S.C. § 5117(b) (“When applying for a special permit... the person must provide a safety analysis prescribed by the Secretary that justifies the special permit.”).

PHMSA has adopted regulations that specify how an applicant can comply with the HMTA's special permit provisions. 49 C.F.R. § 107.105. An applicant must provide, among other things, “a detailed description of the proposed special permit,” *id.* § 107.105(c)(3), which specifically includes “a description of all operational controls required,” *id.* § 107.105(c)(2), and a “specification of the proposed duration or schedule of events for which the special permit is sought,” *id.* § 107.105(c)(4).

Additionally, “the application must demonstrate that a special permit achieves a level of safety at least equal to that required by regulation, or if a required safety level does not exist, is consistent with the public interest.” 49 C.F.R. § 107.105(d). At a minimum, this standard

¹ The Attorneys General note that the recent derailment of a Norfolk Southern train carrying hazardous cargo in East Palestine, Ohio illustrates the inherent danger of transporting hazardous materials by rail. *See, e.g.*, U.S. EPA, East Palestine Train Derailment, https://response.epa.gov/site/site_profile.aspx?site_id=15933 (last visited Feb. 21, 2023). We urge PHMSA to consider all relevant facts that emerge from the investigation into that derailment as they become available.

requires identifying: (1) “relevant shipping and incident experience of which the applicant is aware that relates to the application;” (2) “any increased risk to safety or property that may result if the special permit is granted and a description of the measures to be taken to address that risk;” and (3) either “substantiation, with applicable analysis, data or test results... 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,” or “if the regulations do not establish a level of safety, an analysis that identifies each hazard, potential failure mode and the probability of its occurrence, and how the risks associated with each hazard and failure mode are controlled for the duration of an activity or life-cycle of a packaging.” 49 C.F.R. § 107.105(d)(1)-(3).

Regulations also establish the standard that PHMSA will use to review a special permit application. 49 C.F.R. § 107.113. PHMSA may grant a special permit only if: the application demonstrates that the permit will achieve a requisite level of safety, “meets the qualifications required by applicable regulations,” “states all material facts, and contains no materially false or materially misleading statement,” and shows that “the applicant is fit to conduct the activity authorized by the special permit... based on information in the application, prior compliance history of the applicant, and other information available.” *Id.* § 107.113(f).

II. Gas Innovations’ application requests a special permit to ship ethane in rail tank cars from Marcus Hook, PA to points unknown.

Gas Innovations has applied for a special permit to transport cryogenic ethane from Marcus Hook, Pennsylvania to “petrochemical, or LNG liquefaction facilities,” in Mexico, Canada, and along the Gulf Coast of the United States. *See* New Special Permit Application for Approval to Transport Cryogenic Ethane via Rail Car at 1 (hereinafter “the application” or “Application”).² The application includes no further detail concerning the final destination of its shipments nor does it describe any operational controls that would govern these shipments. Gas Innovations estimates that there will be 25 shipments per year in DOT113C120W9 and DOT113C20W model tank cars and that it will have to manufacture 5-10 tank cars to meet its needs. *Id.*

Gas Innovations further asserts that the special permit conforms with the level of safety required by regulation and is consistent with the public interest by comparing its proposed shipments to PHMSA’s LNG by Rail Rule³ and comparing ethane’s properties to those of methane and ethylene. *See* Application at 3. The application offers no new safety studies or incident analysis but instead quotes the 2020 LNG by Rail Rule’s analysis of incident reports for DOT 113 rail cars. *Id.*

On December 5, 2022, PHMSA published a notice in the Federal Register alerting the public to Gas Innovations’ application and soliciting comment because “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

² The Special Permit Application is available at <https://www.regulations.gov/document/PHMSA-2022-0081-0002>.

³ Pipeline and Hazardous Materials Safety Administration, Final Rule, Hazardous Materials: Liquefied Natural Gas by Rail, 85 Fed. Reg. 44994 (July 24, 2020) (“LNG by Rail Rule”).

multiple rulemakings are currently pending at the agency.” 87 Fed. Reg. 74,468, 74,468 (Dec. 5, 2022). A number of parties, including the Attorneys General of New York and Maryland⁴ requested that PHMSA extend the initial comment period which PHMSA granted via Federal Register notice on January 25, 2023. 88 Fed. Reg. 4,881 (Jan. 25, 2023).

- III. The application fails to meet the standard for granting a special permit and has not shown that transporting ethane in the requested manner is either as safe as existing standards or consistent with the public interest.

PHMSA must deny the application because it fails to comply with the requirements of 49 C.F.R. § 107.105, relies on a conclusory analogy between ethane, ethylene, and liquefied natural gas (LNG), and attempts to bootstrap its analysis to the deeply flawed LNG by Rail Rule. Gas Innovations has therefore failed to demonstrate that the special permit would provide a level of safety equivalent to that currently provided by regulation or that the special permit is otherwise consistent with the public interest. PHMSA should therefore deny the application.

- a. The application fails to identify material information concerning operational controls and train destinations as required by regulation.

The application suffers from two straightforward facial defects under 49 C.F.R. § 107.105 that require its denial. First, it fails to identify any operational controls that will apply to its shipments where required by regulation. Second, it fails to specify the destinations of special permit shipments, which may impede PHMSA’s ability to determine whether the application is in the public interest.

In responding to 49 C.F.R. § 107.105(c)(2), which requires that an application provide information concerning “the proposed mode or modes of transportation, including a description of all operational controls required,” the application merely states that: “product will be loaded into rail cars in Marcus Hook, PA and transported to final destination at desired rail spur. Product would be transfilled from rail car into MC338 cryogenic transport hauled by tractor rig and carried to end user.” Application at 2. The absence of any affirmative description of operational controls implies that no operational controls will be placed on trains operating under the special permit. Later, however, Gas Innovations states that the special permit would provide the level of safety required by regulation because “[e]thane would meet all criteria for rail transportation as laid out in PHMSA-2018-0025-0480,” i.e., the LNG by Rail Rule.⁵ Application at 3. This creates an inconsistency with the applicant’s response to 49 C.F.R. § 107.105(c)(2) because the LNG by Rail Rule included operational controls related to train braking, remote pressure monitoring, and rail routing. 85 Fed. Reg. 44994, 45007 (July 24, 2020). Those operational controls were found necessary to “decrease the likelihood and severity of derailments,” decrease the likelihood that a tank car would be “lost in transport” or “experience[] unsafe conditions during transportation,” and “reduce the severity of the consequences in a derailment scenario by

⁴ Attorneys General of New York and Maryland, Request for Extension of Time to File Comments, Docket No. PHMSA-2022-0081, available at <https://www.regulations.gov/document/PHMSA-2022-0081-0004>.

⁵ PHMSA-2018-0025-0480 refers to the regulatory docket for the LNG by Rail Rule and is available at <https://www.regulations.gov/docket/PHMSA-2018-0025>.

requiring that railroads transport LNG on the safest route available.” *Id.* at 45008. In short, they were needed to protect public safety.

This internal inconsistency dooms the application. If no operational controls will be required, as indicated by the applicant’s response to 49 C.F.R. § 107.105(c)(2), then the statement that “ethane would meet all criteria for rail transportation as laid out in” the LNG by Rail Rule is materially misleading and the application must be denied. 49 C.F.R. 107.113(f)(3). If, in the alternative, the application is read to incorporate the operational controls of the LNG by Rail Rule then the application has failed to comply with the clear instructions of 49 C.F.R. § 107.105(c)(2) to include “a description of all operational controls” and should, for that reason, also be denied. *See also* 49 C.F.R. § 107.105(c) (“The application *must* include the following information”) (emphasis added).⁶

Similarly, Gas Innovations has failed to identify the specific destinations for its shipments as required by 49 C.F.R. § 107.105(a)(2). That provision requires an applicant to provide PHMSA with “the name, mailing address, physical address(es) of all known locations where the special permit would be used,” but Gas Innovations has only provided its own address and not those of its shipments’ destinations. Application at 1. While Gas Innovations may claim that it does not know the locations where the permit would be used, such an assertion is undermined by statements that “end users are requesting cryogenic ethane currently” and “major projects are ramping up in 2022 and 2023 that will require rail car cryogenic ethane.” *Id.* These statements indicate that Gas Innovations has more information concerning the destinations for its shipments than it has provided in the application. Nonetheless, Gas Innovations offers only a vague description of the destinations for its shipments as “locations along Gulf Coast, Mexico, and Canada.” Application at 1. Simply put, that falls short of the level of information required by regulation.

Failure to specify the destinations of special permit shipments could impair PHMSA’s ability to determine whether the application is in the public interest. For example, if shipments are destined for petrochemical facilities located in communities with environmental justice concerns it may significantly impact the agency’s calculus. The application’s general vagueness also may limit the abilities of impacted communities to participate in the permit approval process. Indeed, without additional specificity, the communities that would ultimately be affected by the special permit may have little awareness of this proceeding and only find out about the special permit after it is already in use. Additionally, without more information PHMSA can only speculate as to whether special permit cargos will traverse routes that include critical habitat for federally listed threatened or endangered species, a factor that is directly relevant to whether PHMSA must consult with federal wildlife agencies before issuing the special permit.⁷ In short, without such information, PHMSA and the public are left to speculate

⁶ This is not just a procedural flaw. As described below, *infra* § III.c., the operational controls adopted by the LNG by Rail Rule were not sufficient to protect public safety and therefore cannot provide an independent basis for concluding that the special permit ensures the safe transportation of cryogenic ethane or is otherwise in the public interest.

⁷ Depending on where these trains will travel the special permit may also trigger a requirement to engage in formal consultation with the Fish and Wildlife Service and National Marine Fisheries Service to ensure it is “not likely to

about when and where these shipments will occur.⁸ The destination of these shipments is undoubtedly a “material fact” that Gas Innovations was required to include in its application and the failure to do so leaves PHMSA with no choice but to deny the application. *See* 49 C.F.R. § 107.113(f)(3).

- b. The application fails to show that ethane can be safely shipped in the requested manner and that doing so is consistent with the public interest.

Gas Innovations’ application also fails to comply with 49 C.F.R. § 107.105(d), which establishes minimum requirements for an applicant to “demonstrate that a special permit achieves a level of safety at least equal to that required by regulation, or if a required safety level does not exist, is consistent with the public interest.” An applicant must either substantiate “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,” *id.* § 107.105(d)(3)(i), or “if the regulations do not establish a level of safety, an analysis that identifies each hazard, potential failure mode and the probability of its occurrence, and how the risks associated with each hazard and failure mode are controlled for the duration of an activity or life-cycle of a packaging.” *Id.* § 107.105(d)(3)(ii).

The transportation of ethane in rail tank cars is not currently authorized by regulation. An application for a special permit to ship ethane by rail tank car should therefore have to provide the detailed analysis required by 49 C.F.R. § 107.105(d)(3)(ii). But Gas Innovations has inexplicably disclaimed 49 C.F.R. § 107.105(d)(3)(ii) as “Not Applicable”. Application at 4. The application should therefore be denied.

Instead of complying with 49 C.F.R. § 107.105(d)(3)(ii), Gas Innovations attempts to fit its application within the § 107.105(d)(3)(i) framework. Application at 4. But allowing the applicant to do so would make little sense as that section requires PHMSA to assess whether a special permit “will achieve a level of safety that is at least equal to that required by [regulation].” That standard has no meaning if, as here, there is no underlying regulation to apply.

Even if PHMSA finds that Gas Innovations can proceed under 49 C.F.R. § 107.105(d)(3)(i), it has failed to comply with that provision, which requires an applicant to

jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat.” Endangered Species Act § 7(a)(2), 16 U.S.C. § 1536(a)(2).

⁸ When PHMSA granted a special permit to ship LNG in rail cars to Energy Transport Solutions in 2019 it knew that shipments would originate in Wyalusing, PA and end in Gibbstown, NJ.. *See* DOT-SP 20534, Dec. 5, 2019, available at <https://www.regulations.gov/document/PHMSA-2019-0100-3006> (Special Permit granted for shipment of LNG in rail tank cars between Wyalusing, PA and Gibbstown, NJ). Similarly, when the FRA granted permits to ship LNG in ISO tank cars or two previous projects it knew both the origin and destination of those shipments. *See* Federal Railroad Administration letter to Mr. Clark Hopp, Chief Operating Officer Alaska Railroad Corp., June 21, 2021 (Approving rail shipment of LNG in ISO containers between Seward, AK and Fairbanks, AK and from Port Whittier, AK to a specific milepost of the Alaska Railroad Corporation’s mainline.); Congressional Research Service, *Rail Transportation of Liquefied Natural Gas: Safety and Regulation* at 7 (July 28, 2020), <https://sgp.fas.org/crs/misc/R46414.pdf> (Discussing FRA approval to transport LNG in ISO tank cars between Jacksonville and Miami, Florida). .

provide analyses, data, or test results showing that the special permit is at least as safe as existing regulations. *Id.* Gas Innovations attempts to satisfy that standard by stating that “ethane would meet all criteria for rail transportation as laid out in [the LNG by Rail Rule],” Application at 3, but, as described in § III.c. below, the LNG by Rail Rule has been largely discredited and PHMSA is considering suspending the portion of the Hazardous Materials Regulation that authorizes the transportation of LNG in rail tank cars. Additionally, Gas Innovations’ claim that it will comply with the LNG by Rail Rule is inconsistent with the application’s request to use both “DOT113C120W and DOT113C120W9 tank cars,” Application at 2, because the LNG by Rail Rule only allows LNG to be shipped in the DOT113C120W9 tank cars.

The application also relies on an oversimplified statement that “the transportation via rail of UN1961 Ethane is as safe or safer than UN 1038 Ethylene due to its nature as a non-VOC, its lower vapor pressure, and increased stability.” Application at 4. But that statement fails to provide the type of scientific analyses required by regulation and cannot therefore provide the basis for PHMSA to grant the special permit. 49 C.F.R. § 107.105(d).

Nor does comparing ethane to ethylene demonstrate that ethane can be safely transported in rail tank cars. It is true that ethane and ethylene possess roughly comparable boiling points, ignition temperature, expansion ratios, and heat of combustion and that ethylene is authorized to be transported by rail tank car.⁹ These properties do not, however, indicate that ethane is inherently safe for transportation in rail tank cars. Additionally, the specific gravities of ethane and ethylene are significantly different. *Id.* While ethylene’s specific gravity is lighter than air, meaning that it will disperse when released into atmospheric conditions, ethane’s specific gravity is heavier than air and will not so easily disperse. *Id.* Thus, ethane tends to form ground-hugging clouds, which may increase the risk of cascading car failures as pooling around other non-compromised tank cars may lead to embrittlement of outer tank steel and loss of containment. Pooled ethane can also pose a risk of fire even well after an accident has occurred.¹⁰ These qualities present unique concerns for nearby communities and emergency first responders. Additionally, ethylene has never been shipped in the quantities envisioned by the special permit, but instead tends to be shipped only a few cars at a time in more general freight configurations. Comparisons to the safety record of transporting ethylene by rail are therefore not helpful to Gas Innovations’ application. PHMSA must therefore deny the special permit as the applicant has failed to demonstrate that granting it would “achieve a level of safety at least equal to that required by regulation” or, alternatively, that granting it would be “consistent with the public interest.” 49 C.F.R. § 107.105(d).

⁹ Compare NOAA, CAMEO Chemicals, *Ethane*, <https://cameochemicals.noaa.gov/chemical/8619> with NOAA, CAMEO Chemicals, *Ethylene*, <https://cameochemicals.noaa.gov/chemical/8655>.

¹⁰ National Academies of Sciences, Engineering, and Medicine, *Preparing for LNG by Rail Tank Car: A Review of a U.S. DOT Safety Research, Testing, and Analysis Initiative 2021*, at 19 n.24 (“Phase I Report”) (“A pool fire can occur when a flammable liquid spills, spreads, mixes with air as it vaporizes, and finds a source of ignition. The fire is fueled by the continuing vaporization of the volatile liquid such that the mixture with air remains within its flammability limit.”).

- c. The LNG by Rail Rule itself was extremely flawed and cannot support approving the special permit.

Gas Innovations attempts to meet its burden of showing that the special permit would be both safe and in the public interest by relying heavily on the LNG by Rail Rule. *See* Application at 3 (adopting measures of LNG by Rail docket); 3-4 (quoting crash statistics). But the LNG by Rail Rule does not provide a sufficient basis to approve the special permit. That rule was promulgated without scientific support and PHMSA itself now questions whether it adequately provides for public safety.

PHMSA published its proposed LNG by Rail Rule on October 24, 2019, in direct response to an executive order that instructed the Secretary of Transportation to propose a rule “that would treat LNG the same as other cryogenic liquids and permit LNG to be transported in approved rail tank cars.” Exec. Ord 13,868 § 4(b), 84 Fed. Reg. 15,495, 15,497 (Apr. 15, 2019). But Exec. Order 13,868 did not provide any scientific basis or analysis to show that LNG could be safely transported by rail, and it did not override the laws that govern PHMSA’s approval of such matters. A number of parties, including the National Transportation Safety Board (NTSB), commented on that proposed rule to highlight the dangers of transporting bulk quantities of LNG by rail tank car and the lack of analysis showing that rail transportation of this hazardous cargo could be done safely.¹¹

The final LNG by Rail Rule included a handful of operational controls that were not included in the original proposal as well as a requirement increasing the minimum outer shell thickness of all rail cars allowed to transport LNG. 85 Fed. Reg. at 44,994. Many of the undersigned Attorneys General, as well as non-governmental organizations and the Puyallup Tribe have challenged the final LNG by Rail Rule in the United States Court of Appeals for the District of Columbia Circuit arguing that it failed to adequately protect public safety, was based on an insufficient record, and lacked an adequate evaluation of environmental impacts as required by NEPA.¹²

Several studies published after the LNG by Rail Rule was finalized have raised significant concerns regarding the safety of transporting LNG by rail. In 2020, Congress directed PHMSA to commission the National Academies of Sciences, Engineering, and Medicine (NAS) to conduct a two-part study to determine the risks posed by transporting LNG in rail tank cars. Phase I of that report examined the “quality, completeness, and relevance” of

¹¹ To the extent that they are relevant this letter incorporates by reference comments filed in the LNG by Rail Rule Docket, PHMSA-2018-0025. *See e.g.*, Nat’l Transp. Safety Bd., Comment Letter on Proposed Rule: Hazardous Materials: Liquefied Natural Gas by Rail, Docket No. PHMSA-2018-0025 (Dec. 5, 2019); Attorneys General of Maryland, New York, California, Delaware, Illinois, Massachusetts, Michigan, New Jersey, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, Washington, and the District of Columbia, Comments Re: Notice of Proposed Rulemaking – Hazardous materials: Liquefied Natural Gas by Rail, Docket No. PHMSA-2018-0025 (Jan. 13, 2020); National Association of State Fire Marshals, Comments Re: Docket Number PHMSA-2018-0025; Earthjustice, Comments Objecting to the Proposed Rulemaking to Authorize the Transportation of Methane, Refrigerated Liquid by Rail, Docket No. PHMSA-2018-0025 (Jan 13, 2020).

¹² *See Maryland v. U.S. Dep’t of Transp.*, No. 20-1318 (D.C. Cir. filed Aug. 18, 2020); *Sierra Club v. U.S. Dep’t of Transp.*, No. 20-1317 (D.C. Cir. filed Aug. 18, 2020); *The Puyallup Tribe of Indians v. Pipeline and Hazardous Materials Safety Administration*, No. 20-1431 (D.C. Cir. docketed Oct. 26, 2020).

existing and planned research, testing, and analysis concerning the shipment of LNG by rail. Phase I Report at 2. Completed in 2021, the Phase I report identified significant gaps in the information available to PHMSA when it finalized the LNG by Rail Rule. The gaps identified included a lack of full-scale impact testing, pool fire testing, worst case scenario analysis, and quantitative risk assessment, all of which called into question PHMSA’s ability to evaluate the public safety and environmental risks of shipping cargos under the LNG by Rail Rule. *See* Phase I Report at 6-8. The report then recommended a series of measures to close those data gaps and address remaining uncertainties, *id.* at 8-10, before concluding that “ensuring the safety of LNG by rail ... will require continued monitoring and adjustment of practice and regulations.” *Id.* at 10. Few, if any, of the data gaps identified in the Phase I Report have been addressed since the report was released.

PHMSA itself acknowledged the data gaps identified in the Phase I Report when it proposed suspending the LNG by Rail Rule in 2021, noting that “uncertainty regarding the potential benefits and safety and environmental risks of rail transportation of LNG ... has in fact increased,” since the rule was finalized. Proposed Suspension Rule, 86 Fed. Reg. 61,731, 61,735 (Nov. 8, 2021).¹³ In particular, PHMSA observed that the NAS’s “peer review of testing cited in the LNG by Rail final rule has raised additional questions.” *Id.*

The NAS’s Phase II report only served to accentuate those concerns. The report’s second phase was designed to “identify areas where additional investigation, analysis, and monitoring may be warranted so that industry and regulators can better assess LNG’s risks in rail transportation and make choices about how best to manage those risks.”¹⁴ Phase II Report at 1. The report offered two recommendations. First, that PHMSA and the Federal Railroad Administration (FRA) launch an “LNG safety assurance initiative” prior to any LNG tank cars being placed into service. *Id.* at 2. This initiative would include active monitoring of LNG traffic activity, outreach to emergency responders in communities with high levels of LNG rail traffic, training for personnel handling LNG shipments, establishing additional protocols for train makeup, handling, and operations suitable to LNG shipping patterns, targeted track inspection protocols, and risk assessment analysis under 49 C.F.R. §172.820. *Id.* Second, the report recommended that PHMSA and FRA review the DOT-113C120W9 tank car “to ensure that it adequately accounts for the cryogenic and thermal properties of LNG that could contribute to a tank release and cascading impacts.” *Id.* The need for these measures illustrates that the LNG by Rail Rule itself was not sufficient to ensure the safe transportation of LNG.

¹³ Many of the Attorneys General joined comments that urged PHMSA to promptly finalize the Proposed Suspension Rule and stressed “that the review of any special permit applications to transport LNG by rail pursuant to 49 C.F.R. §107.105... address the[] same safety, environmental/climate, and equity concerns,” acknowledged in the Proposed Suspension Rule. Comments of the Attorneys General of Maryland, New York, Connecticut, Delaware, Illinois, Massachusetts, Michigan, Minnesota, New Jersey, Oregon, Pennsylvania, Rhode Island, Vermont, Washington, and the District of Columbia, Docket No. PHMSA-2018-0025 at 5, n.19, Dec. 23, 2021. Similar concerns apply here even though the application is to ship ethane and not LNG.

¹⁴ National Academies of Sciences, Engineering, and Medicine, *Preparing for LNG by Rail Tank Car: A Readiness Review*, 2022, at 1, available at <https://nap.nationalacademies.org/catalog/26719/preparing-for-lng-by-rail-tank-car-a-readiness-review> (“Phase II Report”).

The Phase II report also discussed the results of more recent impact testing that showed the vulnerability of the DOT113C120W9 tank car to puncture at speeds exceeding 20 mph. *Id.* at 47. In May 2022, for example, the FRA conducted a side-impact test of a DOT113C120W9 tank car that was filled with liquid nitrogen. *Id.* Both the inner and outer shells were punctured at a speed of 22 mph and the analysis showed that the car would be expected to resist puncture only up to a collision speed of 19 mph. *Id.* These speeds are significantly lower than the 50 mph voluntary speed limit suggested by AAR Circular OT-55, which PHMSA relied upon to justify its decision not to set mandatory speed limits in the LNG by Rail Rule, *see* 85 Fed. Reg. at 45,018, and which may not even apply to trains carrying special permit cargo depending on the train’s composition.¹⁵

That same study also revealed that “following the puncture, the outer tank of the tested DOT-113C120W9 tank car experienced brittle fracture, manifest by an initiating crack at the puncture site and a large, circumferential crack caused by cryogenic damage. Additional brittle fractures occurred over the next few days as the liquid nitrogen fully dissipated.” *Id.* The report goes on to note that brittle fractures occur if steel falls below its average nil-ductility transition (NDT) temperature, which for the TC-128B steel used in DOT-113C120W9 tank cars is -59.8 F. *Id.* at 47-48. While ethane’s boiling point (-127.5 F) is higher than that of LNG (-260 F), it is still significantly lower than the point at which TC-128B steel experiences NDT. Thus, the risk of embrittlement and fracture is present when transporting cryogenic ethane, which increases the risk of a cascading failure of other nearby tank cars.

Together, these studies have raised significant concerns about the safety of transporting LNG by rail, concerns that apply equally, if not more so, to the special permit application at issue here. Cryogenic ethane presents similar flammability and embrittlement risks as LNG.¹⁶ But, as described above, a release of cryogenic ethane is likely to result in ground-hugging clouds that will resist dispersing and therefore maintain flammable concentrations for longer periods. Those same clouds may retain critically cold temperatures sufficient to damage the outer tanks of nearby rail cars and cause direct harm to emergency first responders reporting to the scene of any accident. These issues are further compounded by Gas Innovations’ proposal to ship ethane in DOT113C120W cars, a model that is potentially less protective than that required for the transportation of LNG. *See* LNG by Rail Rule, 85 Fed. Reg. at 45,004-05. Accordingly, even if Gas Innovations complied with every facet of the LNG by Rail Rule – which is far from clear from the application – it would not be sufficient to show that the special permit would adequately protect public safety or advance the public interest.

¹⁵ *See* Association of American Railroads, Circular OT-55, *Recommended Railroad Operating practices for Transportation of Hazardous Materials*, May 1, 2019, <https://public.railinc.com/sites/default/files/documents/OT-55.pdf> (maximum speed is only suggested for “key trains”, i.e. those carrying at least one car of poisonous cargo, or one car of spent nuclear fuel/high level radioactive waste, or 20 cars of any combination of hazardous material).

¹⁶ *Compare* NOAA, CAMEO Chemicals, *Ethane Refrigerated Liquid*, <https://cameochemicals.noaa.gov/chemical/661> with NOAA, CAMEO Chemicals, *Liquefied Natural Gas (Cryogenic Liquid)*, <https://cameochemicals.noaa.gov/chemical/3757>.

- IV. PHMSA cannot grant the special permit until it has complied with NEPA and taken a hard look at the special permit's environmental impacts.

PHMSA must comply with NEPA and at a minimum conduct an environmental assessment to determine whether the special permit would authorize an activity that has the potential to significantly affect the human environment. NEPA was passed in recognition of “the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man,” 42 U.S.C. §4331, and has long been considered our country’s “basic national charter for protection of the environment.” 40 C.F.R. § 1500.1 (2013). The Act requires that before an agency undertakes “major federal action[] significantly affecting the quality of the human environment,” the lead action agency must evaluate the potential environmental consequences of its proposed action. *Id.* §4332(c)(2); *see also Sierra Club v. U.S. Army Corps of Engineers*, 803 F.3d 31, 43 (D.C. Cir. 2015) (NEPA requires federal agencies to “study and publicly explain anticipated environmental effects” of their major actions).

An agency is allowed to first assess whether its action is likely to significantly affect the environment by preparing a preliminary environmental assessment (EA). If an EA does not indicate any potential significant environmental impacts, then the agency may issue a Finding of No Significant Impact (FONSI). If, however, an EA indicates that potential significant environmental impacts are likely, the agency must prepare an Environmental Impact Statement (EIS). An EIS is required for “major federal actions significantly affecting the quality of the human environment,” 42 U.S.C. § 4332(2)(C), including where “substantial questions are raised as to whether a project may cause significant environmental impacts.” *Friends of the Wild Swan v. Weber*, 767 F.3d 936, 946 (9th Cir. 2014); *see also Brodsky v. U.S. Nuclear Regulatory Comm'n*, 704 F.3d 113, 119 (2d Cir. 2013). Because both requirements are met here PHMSA would violate NEPA if it approved the special permit without first evaluating its potential environmental impacts, both direct and indirect, including any potential cumulative impacts on communities with environmental justice concerns.

- a. Approving the special permit would constitute a major federal action.

The special permit decision presently before PHMSA is a major federal action that requires NEPA review before it can be granted. NEPA’s implementing regulations define “major federal action” to include “actions approved by permit or other regulatory decisions.” 40 C.F.R. § 1508.1(q). In fact, permitting of specific projects or activities is the quintessential federal action triggering NEPA review. *See e.g., Ramsey v. Kantor*, 96 F.3d 434, 444 (9th Cir. 1996) (“It is clear... that if a federal permit is a prerequisite for a project with adverse impact on the environment, issuance of that permit does constitute major federal action and the federal agency involved must conduct an EA and possibly an EIS before granting it.”). Notably, PHMSA developed an EA prior to granting a special permit for the shipment of LNG in rail tank cars between Wyalusing, PA and Gibbstown, NJ in 2019.¹⁷ While PHMSA’s analysis in that EA fell short of what NEPA required, the threshold act of preparing an EA signals that PHMSA

¹⁷ *See* SP 20534 Special Permit to transport LNG by rail in DOT-113C120W rail tank cars, Final Environmental Assessment, Dec. 5, 2019, available at <https://www.regulations.gov/document/PHMSA-2019-0100-3007>.

acknowledges that granting a special permit is a major federal action that requires NEPA compliance.

- b. The special permit may have a significant impact on the environment and could disproportionately burden communities with environmental justice concerns.

PHMSA should evaluate all reasonably foreseeable environmental impacts of granting the special permit with particular attention to the potential effects on already overburdened communities. This must include an assessment of the project's impacts on greenhouse gas emissions and its likely upstream and downstream environmental impacts.

NEPA's current implementing regulations define "effects or impacts" to mean "changes to the human environment from the proposed action or alternatives that are reasonably foreseeable." 40 C.F.R. § 1508.1(g). Such effects or impacts include "direct effects, which are caused by the action and occur at the same time and place," as well as "indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable ... [and] may include growth inducing effects and other effects related to induced changes," and "cumulative effects, which are effects on the environment that result from the incremental effects of the action when added to the effect of other past, present, and reasonably foreseeable actions." 40 C.F.R. §1508.1(g)(1)-(3). Here, direct effects would include the air emissions and increased risk to public safety involved with shipping ethane by rail. Indirect effects may include increased ethane production and consumption fueled by shipment via the special permit.

The permitting decision at issue here may also have significant effects on communities with preexisting environmental justice concerns, an aspect of granting the permit that must be analyzed in any NEPA analysis. Executive Order 14,008 requires each federal agency to "make achieving environmental justice part of their missions by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts." Exec. Order 14,008, *Tackling the Climate Crisis at Home and Abroad*, 86 Fed. Reg. 7619, 7629 (Jan. 27, 2021).¹⁸ DOT's recently updated Order 5610.2(c) further amplifies the importance of environmental justice to agency decision making by stating that "no population, due to policy or economic disempowerment, is forced to bear a disproportionate burden of the negative human health and environmental impacts,

¹⁸ Executive Order 14,008 was just one in a long line of executive orders directing federal agencies to consider the equitable impacts of their actions. *See e.g.*, Exec. Order 13,985, 86 Fed. Reg. 7009 (Jan. 25, 2021) (directing all federal agencies to "work to redress inequities in their policies and programs that serve as barriers to equal opportunity"); Exec. Order 13,990, 86 Fed. Reg. 7037 (Jan. 25, 2021) (directing all executive departments and agencies to address any actions that conflict with goals of reducing greenhouse gas emissions and prioritizing environmental justice, among other national objectives); Exec. Order 13,563, 76 Fed. Reg. 3821 (Jan. 21, 2011) (directing agencies to select regulatory approaches that maximize net benefits including "distributive impacts[] and equity"); Exec. Order 12,898, 59 Fed. Reg. 7629 (Feb. 16, 1994) (directing each federal agency 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"); Exec. Order 12,866, 51 Fed. Reg. 51,735 (Oct. 4, 1993) (ordering agencies to consider "distributive impacts[] and equity" in designing regulations).

including social and economic effects, resulting from transportation decisions, programs and policies made, implemented and enforced at the Federal, State, local or tribal level.”¹⁹

Those orders require PHMSA to ensure that the significant safety concerns, and other environmental burdens, that would result from shipping ethane under the proposed special permit do not fall disproportionately upon communities with environmental justice concerns or impose inequitable cumulative impacts on underserved communities. While Gas Innovations has provided only a vague description of the destinations for its ethane shipments, it is reasonable to expect that the special permit would have a disproportionate impact on communities with environmental justice concerns and PHMSA must fully explore the permit’s potential to impact such communities before granting the application.

At the outset, it is important to recognize that the Marcus Hook Industrial Complex where the shipments would originate, and its surrounding communities are considered environmental justice areas by Pennsylvania.²⁰ And it is likely that trains authorized by the special permit would pass through other communities with environmental justice concerns as well. If a shipment were to move from Marcus Hook to petrochemical or LNG liquefaction facilities in Canada, as the special permit anticipates, it would likely cross the border in New York, Michigan, or one of the New England states, following freight lines that traverse communities with environmental justice concerns along the way. Similarly, shipments to Baja, Mexico, or the Gulf Coast of the United States would likely pass south through the congested east coast rail corridor which runs through cities like Wilmington, DE and Baltimore, MD.²¹

Additionally, there is a high likelihood that the “petrochemical, or LNG liquefaction facilities,” which would be serviced by shipments under the special permit are located near communities with environmental justice concerns. Application at 1. This is particularly likely along the U.S. Gulf Coast where petrochemical facilities have a long history of contributing to environmental injustices and where a surge of LNG export construction has layered additional environmental burdens onto overly burdened communities.²² In short, any evaluation of the special permit’s environmental impact must comprehensively assess how those impacts will affect already overburdened communities.

¹⁹ U.S. Department of Transportation Actions to address Environmental Justice in Minority Populations and Low-income Populations, Order 5610.2(c), <https://www.transportation.gov/sites/dot.gov/files/Final-for-OST-C-210312-003-signed.pdf>.

²⁰ See Pennsylvania Department of Environmental Protection, *Environmental Justice Areas Viewer*, <https://padep-1.maps.arcgis.com/apps/webappviewer/index.html?id=f31a188de122467691cae93c3339469c> (designating the Port of Marcus Hook and surrounding areas as environmental justice area).

²¹ The Attorneys General note that Class I freight lines run through major cities in each of their respective states. For more detailed rail maps please see the comments of the Attorneys General on the Proposed LNG by Rail Rule and Proposed LNG by Rail Suspension Rule.

²² See Courtney Bernhardt, *Plastics industry boom brings flood of new ethylene “cracker” plants, despite frequent environmental violations*, Oil and Gas Watch, Sept. 20, 2022, <https://news.oilandgaswatch.org/post/plastics-boom-brings-flood-of-new-ethylene-cracker-chemical-plants-despite-frequent-environmental-violations>; see also WE ACT for Environmental Justice, *EJLF Letter to DOE Regarding Guidelines on LNG Exports*, Oct. 27, 2022, <https://www.weact.org/ejlf-letter-to-doe-regarding-guidelines-on-lng-exports/> (describing how the expansion of LNG export capacity “comes at a great cost to frontline communities, especially in the Gulf Coast of Texas and Louisiana.”).

CONCLUSION

Gas Innovations has requested a special permit to ship cryogenic liquefied ethane in DOT113C120W and DOT113C120W9 rail tank cars at quantities never before moved in interstate commerce. The application fails to show that this can be done safely or is otherwise in the public interest and largely relies on the discredited LNG by Rail Rule to justify its safety claims. Moreover, PHMSA has provided no indication that it has assessed the environmental impacts of the application, including the impacts on already overburdened communities, and it cannot grant the special permit before doing so. We therefore ask that PHMSA deny Gas Innovations' application for a special permit.

Respectfully Submitted,

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