



**Re: Re: Docket Number PHMSA–2018–0025 (HM–264)**

Delaware Riverkeeper Network (DRN) submits this comment, in addition to other comments submitted by our organization to the above referenced PHMSA docket, in opposition to the proposed rulemaking by the Pipeline and Hazardous Materials Safety Administration (PHMSA), with the Federal Railroad Administration (FRA), to change the Hazardous Materials Regulations to allow for the bulk transport of Methane, refrigerated liquid, commonly known as liquefied natural gas (LNG), in rail tank cars. The proposal would authorize the transportation of LNG by rail in the DOT-113C120W specification rail tank car. DRN opposes the proposed Hazardous Material Regulation changes and calls for the denial of the proposed rulemaking and the Proposed Alternative.

**COMMENTS ON THE WEAK INDUSTRY/AGENCY CASE  
FOR A MARKET NEED FOR APPROVING NATIONWIDE  
US TRANSPORT OF LNG IN RAIL TANK CARS/UNIT TRAINS**

- I. The Railroads’ Petition and information from other industry proponents for a new federal de-regulation of LNG on nationwide rail in tank cars offer nearly no evidence of any market need for such a regulation, nor do federal agency documents or the historical record of only minimal federal safety research on the “unique safety risks” of LNG on Rail.

The Pipeline and Hazardous Materials Safety Administration [PHMSA] and the Federal Railroad Administration [FRA] have jointly produced a sweeping Notice of Proposed Rulemaking [NPRM] proposing to allow liquefied natural gas [LNG] to be transported nationwide in railroad tank cars. The NPRM has findings on market need and on public safety, officially published in the Federal Register: <https://www.federalregister.gov/documents/2019/10/24/2019-22949/hazardous-materials-liquefied-natural-gas-by-rail>

There is only one new short 24-pp technical document on the PHMSA docket at [www.regulations.gov](http://www.regulations.gov) [PHMSA-2018-0025], namely, the Preliminary Regulatory Impact Analysis [PRIA] .

FRA and PHMSA are collaborating agencies on what they term this whole “deregulatory” NPRM effort, “needed to eliminate an unnecessary regulatory burden” – the longtime ban on LNG tank car rail transportation [PRIA, p. 5] . The agencies also state they consulted with the Federal

Highway Transportation Administration, but do not mention consulting with the other main LNG safety regulatory agencies, the Federal Energy Regulatory Commission and the US Coast Guard, which deal with LNG facilities and LNG port activities, respectively.

The NPRM was set in motion in response, as PHMSA's PRIA outlines [pp. 4-5] to the American Association of Railroads [AAR] 2017 Petition [Docket No. PHMSA-2017-0020] and to "a comment received" in the Trump Administration's Regulatory Review [Docket No. DOT-OST-2017-0069-0001], later seen to be from "Interested Parties", an ad hoc group of hazmat producers, shippers and carriers with no website, no office, no staff, and no return address or contact information on the letterhead. **[See ATTACHMENT ONE]**

The AAR was said to have noted that LNG was already allowed by truck in the US and "expressed the opinion" that rail transportation is safer than truck in comparison.

The 5-pp. AAR Petition number P-1697 is extraordinarily slim with its unsubstantiated suggestions of a real world market need for LNG in rail tank cars:

*This petition is filed by the Association of American Railroads ("AAR"), on behalf of itself and its member railroads, pursuant to 49 C.F.R. § 106.100.1. AAR petitions for rulemaking to authorize the transportation of methane, refrigerated liquid ("LNG"), by rail in DOT-113C120W and DOT-113C140W tank cars.<sup>2</sup> LNG should be authorized for rail transportation because it is a safe method of transporting this commodity [and] LNG shippers have indicated a desire to use rail to transport it... [p. 1]*

*... The current and expected future demand for transportation of LNG by rail warrant prompt authorization by the Pipeline and Hazardous Materials Safety ("PHMSA").<sup>3</sup>*

*There Is A Commercial Interest In Transporting LNG by Rail.*

*Currently, the only way to transport LNG is by obtaining special approval from PHMSA for rail transport, or by transporting it via highway.<sup>4</sup>*

*Notwithstanding the requirement for a special approval, customers have expressed interest in shipping LNG by rail from Pennsylvania to New England, and between the U.S. and Mexico. Authorizing transportation of LNG by rail likely would stimulate more interest. In addition, several railroads are actively exploring LNG as a locomotive fuel. If railroads are to use LNG-powered locomotives, they would need to supply LNG along their networks. Transporting LNG in tank cars would be an optimal, if not essential, way to transport LNG to those locations.*

AAR mentions [note 3] that "Notably, Transport Canada authorizes the transportation of LNG in DOT-113 cars. There is no reason for DOT and Transport Canada to have different regulations with respect to rail transport of LNG." But AAR fails to mention that the Canadian approval was followed by not a single rail tank car shipment up to the present, a stunning hint that the current hasty push for regulatory approval of LNG on rail is similarly based on only dubious hopes for a future market need in North America.

See the similar vague and baldly unsupported market assertions also in the AAR letter from 2017 on the respective dockets.

10 13 17 Letter re ETS Special Permit 20534: “Recent advances in natural gas production and storage have made rail transportation of LNG increasingly attractive, and PHMSA’s grant of authorization will remove an outdated regulatory barrier to this commercial opportunity”.

[The more recent 7 8 19 AAR letter has no mention of any market demand, and is only about safety issues.]

From the AAR’s official 10 27 16 slide presentation “Getting LNG onto US Rail Lines” [pp. 6 ff]

#### *The Need*

- *There is a huge increase in the production of methane in the US as a result of fracking*
- *The price of natural gas is low*
- *Shippers are starting to pursue transportation of LNG by rail*
- *Car builders are receiving requests for quotes to build new cars to transport LNG*
- *There is a shortage of pipeline capacity in certain areas of the country*
- *As a result, the need to transport*

*October 27, 2016 © ASSOCIATION OF AMERICAN RAILROADS p. 6*

#### *LNG as a Possible Fuel Source*

- *Railroads are exploring the use of LNG as a locomotive fuel*
- *Until infrastructure can be built, there will be a need to get LNG to railroad fueling points*
- *Tank car transportation is a good alternative to the movement of that LNG [p. 8]*

*When DOT-113 tank cars were developed for the transportation of cryogenic liquids, there was no contemplated demand for the transportation of LNG, and as a result, it was not included in the list of authorized commodities.*

The only context in which any real interest can be found in rushing approval for LNG by Rail in tank cars is the overall Trump Administration deregulatory campaign that produced this deregulation push by the rail industry along with other risk-imposing industries seeking deregulation in their own contexts. See the “Interested Parties” appeal to PHMSA of 11 15 17 with a list of desired prompt agency de-regulations on hazardous materials safety issues, of which LNG is a minor part, on their page 5. **[ATTACHMENT TWO]**

Neither before nor currently outside this deregulatory effort [with former top railroad executives now at the head of both PHMSA and FRA] can any other significant evidence of keen and sustained interest, much less “market demand”, be found. This contrasts, for example, with:

- not only the documented evidence preceding and sustaining the surging industry momentum, federal approvals, local tax breaks, and construction of the major new US LNG export facilities

- but also with the Congressional bills introduced in recent years to allow and expedite US LNG export to all interested buyers in foreign nations.

By contrast, for the promotion of US LNG by Rail in tank cars [“LNG Rail”], there are, to our knowledge:

- No bills introduced in Congress
- No extensive long-distance railroad trials [only a few limited trials since 2013 with LNG-fueled locomotives in various nations, which new and cheaper power technology does not entail LNG Rail. [See, e.g., the FERC experiment with 24 locomotives transporting LNG by smaller ISO intermodal containers, and not a whisper of need for LNG Rail in tank cars.]
- No visible demand for LNG Rail during the US LNG import era, roughly 2000-2012 when up to 50 new North American LNG import facilities were planned and in the approvals process at FERC. The Everett MA facility, e.g., served by LNG trucks the communities within 150 miles underserved by natural gas pipelines. An entrepreneur who wished in 2010 to load LNG trucks at the Elba Island GA LNG import facility and to truck up to 58 truckloads per day through Savannah residential streets to the Southeast US met fierce resistance and eventually lost interest as the import era faded.
- Now in the US LNG export era, no railroad loading or unloading facilities at the new major LNG export facilities, all of whom receive natural gas by pipeline and export LNG by ship.
- No evidence of demand for, or historical shipments of, LNG Rail in any of the foreign nations surveyed by PHMSA in this rulemaking process, even in Canada and Japan where LNG Rail is approved.
- No significant federal or expert R&D efforts specifically on the market viability or release disaster safety risks of LNG Rail.
- The US federal agencies certainly have felt no significant market demand for LNG in rail tank cars that would drive them to conduct the necessary market and safety research for promulgating a new regulation. The LNG Rail research desert on the safety side features:
  - No field tests of survivability of an LNG-loaded tank car [using the AAR and NPRM-proposed DOT-113 design tank car not yet approved for LNG service]
  - Nor of even generic tests of the DOT-113 tank car loaded with ethylene or other cryogenic flammable cargo.
  - Nor simulation of tank car hulls using metal plates by expert firms or government agencies on the survivability of LNG-filled tank cars [only one wind-blown botched open-air field fire test by FRA in 2017 – by analogy using a single ISO container filled with nitrogen on a rail flat car.] FRA could not get the budget for 2018 to re-do testing with a better design.
  - No computer modeling of survivability events.
  - Not even any publicly available key safety data from the analogous rail LNG shipment demonstration projects in FL and AL beginning in 2015/2016.

- No publicly available modeling estimates by PHMSA or private consultants on the downwind distances an LNG Rail release can travel into trackside communities [needed for candid emergency event training materials for rail workers and local emergency responders]

In recent years PHMSA national audience slide presentations have candidly outlined many LNG safety “research gaps” [including as one part the consequences and probabilities of the future risks in LNG Rail transportation] that PHMSA implicitly feels should be filled before a respectable rulemaking could be undertaken. [cf. our later discussion e.g., of the 2019 Willauer Report, etc.]

The agency in its NPRM documents including PRIA does not reiterate the 2016 statement by FRA top safety official Dr. Karl Alexy in his [2015?] approval letter for Florida East Coast Railroad regional pilot for LNG by rail using intermodal containers. Alexy’s letter underscored that LNG on US rail lines poses “unique safety risks” and that thus FRA would impose special safety conditions on FECR’s time-limited pilot project – [later extended to 2020]. The much larger LNG tank cars in similar transportation environs would no doubt pose even more serious multi-car derailment risks.

II. Instead of a reaction to real market demand, the push for LNG by rail tank cars is clearly part of the current overall federal rail safety deregulatory effort for various aspects of rail safety regulation:

1. Early in the Trump Presidency, PHMSA responded to industry and Administration pressures by providing a formal “Regulatory Review” process in which “public” commenters [likely most often industry groupings] could seek de-regulatory actions from federal transportation safety agencies pursuant to Trump Admin E.O 13771 dated 10 2 17.

This Regulatory Review overhaul selects and aims to cripple several major rail safety initiatives underway in recent years, especially from the Obama Administration years. Aims included reversing the longstanding federal ban on LNG by Rail using the standard size 30,000-gallon tank cars [it seems no Special Permit was ever before either requested or granted]. [Previously some smaller LNG rail transport was allowed by special permits, e.g., granted to Union Pacific and other railroads for their episodic experiments with using some smaller LNG storage tanks [“tenders”] hauled behind a very few new design LNG-fueled locomotives, testing the feasibility of this new mode of powering locomotives.]

The NPRM cites a document from rail industry firms, the “Interested Parties” 11 15 17 memo that attaches a long list of industry-desired deregulatory priorities involving hazardous materials transportation [hazmat] safety regulations. The industry groupings also ask for new additional regulatory language underscoring federal preemption over state and local officials in hazmat matters. [ATTACHMENT TWO]

2. Next PHMSA proposed, over thousands of objections filed on the docket, to issue a Special Permit to an individual shipper, and produced a slim 23-pp. Environmental Assessment [EA] that accompanied the Special Permit 20534 proposal -- see that docket at [www.Regulations.gov](http://www.Regulations.gov) PHMSA 2019-0100. PHMSA did in fact in December 2019 promptly issue Special Permit 20534 for ETS logistics company, connected with New Fortress Energy, to make shipments of LNG by railroad tank car DOT-113s, but only on a

specific short route from Wyalusing PA to Gibbstown NJ. Issued for a renewable period of ten years, the permit had no costly or onerous new safety conditions, only some monitoring and reporting requirements regarding ETS plans to move from single car shipments to unit trains. And the permit took pains to underscore that no methane life cycle climate change implications had been considered:

*b. The safety analyses performed in the development of this special permit only considered the hazards and risks associated with the transportation in commerce.*

3. Finally, the current PHMSA/FRA NPRM, which features some of the same basic arguable assertions as the earlier [and ongoing] Special Permit 20534 proposal, but the NPRM would promulgate a much more important and sweeping and permanent opening for all shippers of the whole US rail system to ship LNG in tank cars.

The PHMSA NPRM documents [dubiously] assert a Finding of No Significant Impact [FONSI] that means PHMSA says it does not have to do an EA or EIS.

The NPRM is accompanied on the docket by a supporting document, a 24-pp. Preliminary Regulatory Impact Analysis [PRIA] dated October 2019.

- III. The overall challenge for PHMSA, of course, is rationally to justify the NPRM not only on safety grounds, but also on the market need for the regulation, and the regulatory documents try to argue that, but with little success.

In the current PHMSA docket's NPRM and PRIA assertions:

- The evidence presented in the PRIA include several features not present in the earlier EA for Special Permit 20534, most of which new evidence actually undermines the arguments PHMSA is trying to make in justifying the present NPRM effort.
- There are various current developments in LNG infrastructure growth, public safety and politics which PHMSA documents are remiss in ignoring or misinterpreting.

For example, numerous media reports indicate clearly that the Trump Administration is pressing nations in Europe and Asia to buy US LNG exported by ship, as a way of countering Russian geopolitical influence based on Russia's ability to provide relatively cheap Russian natural gas by pipelines which are significantly expanding apace. Even such developments are not sufficient to predict confidently that LNG by Rail in tank cars and unit trains will be needed to facilitate such exports, since the new major US LNG export facilities can all export to the significant new overseas markets by ship. **[ATTACHMENT THREE]**

- A. Regarding evidence for any [real world energy market] need for the proposed regulation, PHMSA in the NPRM documents can manage only to speculate weakly on a possible future market demand for LNG by Rail. While reaching widely for evidence, PHMSA provides hardly any ringing endorsement of its own case, saying "there may

be a demand" [p. 5] and that some industry sectors have shown "interest" in LNG by Rail [p. 6] . Unsurprisingly, in the de-regulation environment, PHMSA is determined nevertheless that it should make the LNG Rail opportunity available if and when some real-world energy industry market demand actually materializes.

The NPRM's PRIA Executive Summary suggests how speculative and biased this whole rulemaking is:

*"This proposed rulemaking does not impose new compliance costs [on the regulated industry], since it would merely enable the transportation of LNG by an alternative mode. The potential benefits include transportation efficiency; market impacts; emissions reductions; and safety impacts. This proposed rule is expected to expand production opportunities to the industry by allowing LNG transportation by rail. PHMSA evaluated the benefits categories and expected cost savings qualitatively rather than quantitatively because this is an enabling rule and there is limited information about the potential market for the transportation of LNG by rail." [PRIA, p. 3]*

There is no discussion of imposing additional costs on local and state emergency response agencies.

- B. Recent industry comprehensive future market prediction surveys of LNG developments mention not even a hint of any need for or industry demand for LNG bulk transport by rail:

**[Market Report Gazette](#)**

*Technology News, Latest Technology News, Trending Market News*

<http://www.marketreportgazette.com/2019/11/massive-growth-of-oil-and-gas-logistics-market-2019-and-share-size-estimation-demand-overview-leading-key-company-analysis-and-industry-outlook-2026-with-gulf-agency-company-ltd-agility-p-2/> November 11, 2019 Robin

- C. PHMSA's own most recent [2019] consultant report "Risk Assessment of Surface Transport of Liquid Natural Gas", by David Willauer, [which we will discuss more fully below] assesses modestly that:

- "North American railroads" are for now only experimenting with "pilot" LNG-fueled locomotives, "running [them] across the country to assess their durability in diverse climates", while also testing Compressed Natural Gas-fueled locomotives. [p. 23]
- Even in a "fast developing" small scale US LNG market, LNG by Rail Transport is only "on the horizon."  
<https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/research-and-development/hazmat/reports/71651/fr2-phmsa-hmtrns16-oncall-20mar2019-v3.pdf>

**[For a fuller discussion of the weak market need case in the Willauer Report, see ATTACHMENT SIX.]**

D. PHMSA correctly notes the large growth in LNG facilities between 2012 and 2018 [PRIA pp. 6-7] and industry momentum in adding new large facilities, a “thriving” export market and export by foreign-flagged maritime carrier vessels [the US has none]. But the PHMSA-cited industry “interest” argument does not offer a single concrete or plausible business plan for use of bulk LNG by Rail for any current or near-future market demand in the US or in Mexico [except perhaps to transport LNG to the railroads’ own far-flung potential future LNG locomotive re-fueling stations – even this is an uncertain prospect] . PHMSA relies abstractly on US LNG growth “trends” [p. 8] and on the “interest” expressed by some for LNG fueled rail locomotives and for exporting LNG to Mexico [p. 10] PRIA notes the lack of data on highway shipments of LNG or other hazmat cargoes [p. 7] and studiously ignores throughout the question of why US truck LNG shipments cannot continue to suffice for foreseeable domestic needs.

E. An egregious NPRM omission is any evidence that there are any real-world North American market demands that could not be served adequately by the current or somewhat higher numbers of LNG truck shipments that have long served small markets not near natural gas pipelines, often remote mining and greenhouse operations in the US and Mexico. PHMSA has offered no showing that rail LNG is needed for such locations, nor that it could reach those locations economically.

LNG truck shipments have been adequate for such small scale markets, using LNG tank truck or ISO containers that are much smaller than a rail tank car. PHMSA's PRIA admits that LNG supply is needed to supply natural gas to such remote locations, but does not provide evidence that LNG by Rail on current rail lines could reach a significant number of such locations, nor even a single concrete industry or agency planning document aimed at assessing this potential.

PHMSA NPRM without evidence simply repeats the unsubstantiated assertions from some industry groups [such as the original AAR petitioners for this rulemaking and a group calling themselves “Interested Parties”] that the lack of prior US authorization for LNG by Rail tank cars was due to “lack of demand” in the US, and PHMSA fails to show any significant change in that lack of demand situation.

F. As far as the NPRM’s assertions that the US LNG growth will be impacted by “international market trends” [p. 8] e.g., being stimulated by rising LNG demand from Europe and/or Asia, this is a big gamble given the demonstrated ability for these nations to import LNG from many suppliers besides the US. Leaders in Germany and the Netherlands, for example, just approved a new big Russian gas pipeline Nord 2 expansion, displeasing the Trump Administration.

Trade analysts and media reports say European leaders state that imports of US LNG ship-borne gas will have to compete on price with other suppliers. So the future of US [expensive ship-borne] export of LNG may depend on the success of US non-economic muscling in on current suppliers’ market share [especially Russia’s] for [relatively cheap] natural gas by pipeline to Europe and Asia.

G. The weakness of the NPRM market need argument is underscored by the thin evidence overhyped by pro-LNG Rail Railway Age magazine’s recent Nov 2019 regulatory hurry-up demand article by Contributing Editor Jim Blaze:

- a single LNG rail contract arrangement in Europe [an area well served by rail lines overall] and
- the tiny and unique regional LNG Rail experiment in Florida – not even using LNG rail tank cars in a clever corporate vertical integration scheme to avoid any market competition [discussed further later in this statement].

#### [ATTACHMENT FOUR – RAILWAY AGE ARTICLE EXCERPTS]

H. Tellingly, PHMSA’s PRIA [p. 8] cites the extremely weak examples of Canada, Europe and Japan [since 2000] regarding already existing approvals in national regulations allowing bulk LNG by rail tank cars, but PRIA admits it cannot cite a single rail tank car shipment in any of these nations.

Neither the Railway Age articles nor PHMSA/s NPRM mention any positive results from Russia’s early experimentation with LNG-fueled locomotives, beginning with field trials of the world’s first such locomotive in 2013. Even given Russian agencies’ penchant for secrecy, if the trials had led to widespread adoption on the massive Russian railway system, some publicity or information leaks may have resulted. The Railway Technology February 23 2015 article on this does not even hint that LNG would be transported in bulk on Russian railways, only that LNG locomotive fuel would be cheaper than diesel. [See Attachment]

And the FRA documentation of the Japanese experience are being withheld, and recent US trade press reports describe a recent 2018 European 2-nation trip of LNG ISOs as a “pilot journey”. It was in fact a very basic level LNG promotional demonstration, co-funded by the European Commission, by 42 partners from European logistics industry and port officials of the intermodal flexibility of ISO containers to move between nations using three modes of travel: train, truck and ship. The shortest leg of the trip was by rail.

<https://www.railfreight.com/intermodal/2018/12/13/lng-transport-by-road-rail-and-sea-in-pilot-journey/>

I. PHMSA cites the enormous “growth” of the US LNG industry’s facility infrastructure, with many now being planned, federally approved for siting and for export to almost all nations, and constructed with maritime docks for liquefied export of the (over-optimistic public relations-driven) “prodigious” volumes of North American fracked natural gas. PHMSA neglects to mention, however, that the vast majority of the future transportation movements of gas in the US will by necessity continue to be in the ever-expanding number of natural gas pipelines to coastal LNG liquefaction export facilities that are being rushed to completion -- so they can then transport their product by [increasingly huge] maritime vessels to the major LNG markets emerging in Europe and Asia [only some of which would be served by US LNG].

Also not mentioned is that this would require a marked increase in new fracked gas wells in already-overburdened communities in shale plays. Not only is the reliability of a steady shale gas supply stream economically weak, it is also questionable if the public and decisionmakers will continue to tolerate the enormous and virtually permanent environmental and public health costs and losses that accompany fracking. See Delaware

Riverkeeper Network's NPRM comment submitted to PHMSA December 20, 2019. Additionally, it ignores that some analysts consider future shale gas supply to be severely limited due to overly effusive estimates of how much gas is actually recoverable. (See Professor Anthony Ingraffea discuss the limited nature of shale gas and the overblown predictions of reserves <https://www.youtube.com/watch?v=ZQdLA-6Y8LA>).

PHMSA cites no reports of any of the new export facilities building rail unloading terminal infrastructure in anticipation of future reliance on bulk LNG Rail instead of pipelines or even as a supplemental supply.

J. The well-known underlying LNG market volatility may in any case dash the hopes of ever-expanding LNG industry growth. The petrochemical trade press reports that with recurring market uncertainties [including predictions of milder winters ahead], many LNG projects are being delayed and some well-heeled companies are backing out of investment commitments.

K. PHMSA's PRIA neglects to cite whatever economic [and safety] lessons the agencies learned from the experimental LNG by Rail pilot projects that FRA approved beginning in 2016 in Alaska and Florida regional railroads. Both projects used not rail tank cars [since no approved tank cars exist] but intermodal ISO T-75 standard containers [one-third the quantity of rail tank cars] tied down [experimentally] on rail flat cars.

The Alaska project reportedly "ran only a couple of LNG trains" of undetermined length, and then reportedly abruptly "stopped for lack of a market" [personal communication with Alaska Railroad Corporation official]. The Florida project is ongoing, as it is designed to supply and is supplying a small energy market demand in the Caribbean islands by loading individual ISO containers on to normal freight vessels. [Although the New Fortress Energy shippers may aspire to enlarge their reach domestically from their current very small scale LNG liquefaction facility [quietly sited on a tiny 13-acre site in the middle of Miami] to markets in Europe and perhaps elsewhere.]

In both the Florida and Alaska small regional railroad LNG Rail pilot project cases, the DOT agencies have withheld from public scrutiny both:

- the agency-possessed project data on economic lessons learned from the project operations and
- the public safety and rail crew risk documents regarding the key factors on which one could assess the safety lessons of the LNG rail shipments, sometimes by agency citing of "commercial or business privacy" exemptions to FOIA requests.

L. Finally, any PHMSA bullish predictions of a growing market need for LNG by rail tank car must be assessed cautiously by industry investors and government regulators alike. Even the use of LNG to fuel rail locomotives [a relatively minor market matter at best] is dubious, given the simultaneous rail industry and governments' interest in exploring more eco-friendly alternative means for that purpose, including the use of hydrogen as fuel and battery/electric power. See numerous Railway Technology journal articles in their archives at <https://www.railway-technology.com/?s=LNG>

Also, see DRN 12.20.12019 NPRM PHMSA comment on climate change impacts of the continued development of shale gas and the urgent need to reduce greenhouse gas-emitting energy sources, including methane, the worst of all fossil fuels in terms of global warming potential over the all-important, highly consequential 20-year period.

A much fuller overall story on the European picture regarding the use of LNG-fueled locomotives emerges in the illuminating January 26 2017 Railway Technology article [uncited by NPRM or Railway Age] which cites numerous technical developments which undercut the PHMSA and Railway Age arguments for LNG as the most likely railroad fuel even for the near-term future. e.g., <https://www.railway-technology.com/features/featurepowering-the-trains-of-tomorrow-5723499/>

M. A homegrown US cautionary analogous tale also may be seen in the recent 2018 decision of the extensive and well-used Washington State Ferries System to abandon their early enthusiasm and extensive planning to switch their passenger ferries from diesel to LNG fuel, which would have entailed weekly LNG re-fueling of each vessel from some infrastructure yet to be developed. Safety and climate change factors played a big part of the state agency decision instead to pursue less dangerous and non-fossil fuel opportunities for future vessel fuel conversions away from diesel fueling. The first three vessel conversions will be to hybrid-electric power:

Study backs plan to shift Washington ferries to hybrid-electric power By [Workboat Staff](#) on SEPTEMBER 4, 2018 <https://www.workboat.com/news/passenger-vessels/study-backs-shift-wsf-ferries-hydro-electric-power/>

<http://www.tacomadailyindex.com/blog/washingtons-ferries-are-going-electric/2444534/>

Given the existential need for rapid progress on limiting disastrous climate change, prudent investors will challenge assertions like those in the NPRM that predict the likely future use of massive quantities of fossil fuel LNG for other bulk energy purposes such as in power plants. Just as worldwide railroads are experimenting with alternatives to LNG, so are those responsible for developing more climate-friendly sources of energy in other, more significant market sectors.

**[See ATTACHMENT FIVE Railway Technology article]**

DRN appreciates the opportunity to comment on the PHMSA docket PHMSA-2018-0025 for the Notice of Proposed Rulemaking **regarding the market need for the regulation.**

Finally, DRN opposes the proposed rulemaking and the Proposed Alternative. If this proposal moves any further towards approval, DRN states that current regulations require a comprehensive Environmental Impact Statement under the National Environmental Policy Act must be completed.

In closing, DRN also urges that the NPRM should not rely, in any way, on the flawed PHMSA approval of Special Permit SP 20534. DRN considers the approved Special Permit SP 20534 to Energy Transport Solutions, a subsidiary of New Fortress Energy, a mistake that must be corrected. Reliance on any materials used by PHMSA to support the Special Permit SP 20534 approval is likewise flawed. DRN urges in the strongest terms possible that SP 20534 be rescinded, based on the threat to public safety and health of the communities being exposed to life-threatening risk from the LNG transport in DOT 113 rail cars from its inception in Wyalusing,

PA, to its destination in Gibbstown NJ and the millions who will be exposed along the railroad corridor. We consider the approved use of rail cars to transport LNG on rail lines uses Pennsylvania and New Jersey communities as “guinea pigs” because of the untested circumstances. This is unjust and completely unacceptable. As outlined in DRN’s comments submitted to PHMSA on 8.7.2019, DRN considers the approval of SP 20534 to only serve special interests without basis, at the expense of jeopardizing public health, the environment and the nation’s economy.

This comment is submitted by Delaware Riverkeeper Network in addition to DRN comments submitted to this NPRM PHMSA Docket on December 20, 2019 and in comments submitted by Earthjustice in which DRN is represented.

Respectfully submitted,

Handwritten signatures in blue ink. The signature on the left reads "Maya van Rossum" and the signature on the right reads "Tracy Carluccio".

Maya van Rossum  
the Delaware Riverkeeper

Tracy Carluccio  
Deputy Director

Imbedded Attachments: Att. 1, 2, 3, 4, 5, 6.

**ATTACHMENT ONE: "INTERESTED PARTIES" members 10 12 07 2 of 5p**

## INTERESTED PARTIES FOR HAZARDOUS MATERIALS TRANSPORTATION

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October 12, 2007

Susan E. Dudley  
Administrator  
Office of Information and Regulatory Affairs  
Office of Management and Budget  
725 - 17th Street, NW  
Washington, DC 20503

VIA Facsimile: 202-395-3888

DEPT. OF TRANSPORTATION  
EMERGENCY  
2007 OCT 23 A 9:55

RE: Request to Modify the Hazardous Materials Public Sector Training and Planning Grants Application  
(OMB Control Number 2137-0586)

Dear Administrator Dudley:

On behalf of the Interested Parties for Hazardous Materials Transportation, the undersigned organizations write in regard to the matter noted above. We have written previously regarding the Pipeline and Hazardous Materials Administration's (PHMSA) submission for a three-year renewal and extension of its Information Collection Request to authorize Hazardous Materials Public Sector Training and Planning Grants (PTGP); we urged the Administrator to provide only a one-year extension. We have also written PHMSA to express our support for the agency's pursuit of additional information from Hazardous Materials Emergency Preparedness (HMEP) grant recipients.<sup>1</sup>

As representatives of companies that actually provide the program's funding that has resulted in \$152 million in grants since its inception in 1992,<sup>2</sup> we are not arguing to discontinue it or to deny funding for any entities that can properly demonstrate eligibility for grants. Instead, we seek to improve upon the program and to help PHMSA meet its frequently stated goals of collecting reliable data that enables the agency to address risks. Toward that end, we have urged PHMSA to focus on distributing grant funds to States and Indian tribes that are capable of demonstrating needs, as Congress required.

Our purpose for writing is to support the July PHMSA proposal to revise its information collection requirements under the HMEP grant program<sup>2</sup> by responding to commenters' objections. We note that the comments opposing PHMSA's proposal were submitted by individuals representing or serving on State or local emergency planning organizations currently receiving HMEP grants under the PTPG program. Despite the number of comments filed by opponents to the Interested Parties' petition, the filings are clearly form letters or variations thereof. While they may lend to the docket the appearance of a sizable objection, most are actually coordinated variations on the same point.

We address commenters' key points, below.

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<sup>1</sup> 72 Federal Register 36754 (July 5, 2007)

<sup>2</sup> EPGP data, PHMSA, 2006.

<sup>3</sup> 72 Federal Register at 36754.

and met. State disclosure of the information PHMSA has requested together with an objective assessment of existing State programs and permits is the only means by which to do so.

We continue to believe safe transportation of hazardous cargoes is of paramount importance, and we support emergency responders' planning and training efforts aimed at preventing injury or loss of life arising out of hazardous materials transportation incidents. Where non-federal fees are applied and enforced in accordance with the HMTA, we do not object to their existence. However, because a State's or Indian tribe's hazardous materials transportation fee must be allocated to planning and training for purposes related to hazardous materials transportation, we support PHMSA's proposal to ensure that HMEP grant funds only go to States or tribes that demonstrate real need.

We believe that PHMSA's proposal will aid the agency's risk-based approach while ensuring that legislative intent is achieved.

Respectfully,

Agricultural Retailers Association  
 American Chemistry Council  
 American Pyrotechnics Association  
 American Trucking Associations, Inc.  
 Association of Hazmat Shippers  
 The Chlorine Institute, Inc.  
 Compressed Gas Association  
 Council on Radionuclides and Radiopharmaceuticals,  
 Inc.  
 Council on Safe Transportation of Hazardous Articles  
 Dangerous Goods Advisory Council  
 The Fertilizer Institute  
 Gamma Industry Processing Alliance  
 Industrial Packaging Alliance of North America  
 Institute of Makers of Explosives

International Vessel Operators Hazardous Materials  
 Association, Inc.  
 International Warehouse Logistics Association  
 National Association of Chemical Distributors  
 National Association of Shell Distributors  
 National Paint & Coatings Association  
 National Private Truck Council  
 National Propane Gas Association  
 National Tank Truck Carriers, Inc.  
 Nuclear Energy Institute  
 Petroleum Marketers Association of America  
 Petroleum Transportation and Storage Association  
 Radiopharmaceutical Shippers & Carriers Conference  
 Reusable Industrial Packaging Association  
 Steel Shipping Container Institute  
 Truckload Carriers Association

cc: Ted Willke, Associate Administrator for Hazardous Materials Safety, DOT

ATTACHMENT TWO: INTERESTED PARTIES WISH LIST FOR DE-REGS, BRIEF MENTION OF LNG, NOT LISTED AS FINANCIALLY SIGNIFICANT

*INTER. PARTIES - 2017- DEREG RAIL ASKS -*

INTERESTED PARTIES FOR HAZARDOUS MATERIALS TRANSPORTATION

~~November 15, 2017~~

*(No Website)*

Docket Management Facility  
U.S. Department of Transportation  
1200 New Jersey Ave., SE  
Washington, DC 20590

- 9  
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Re: Docket Number DOT-OST-2017-0069<sup>1</sup>

On behalf of the Interested Parties for Hazardous Materials Transportation (Interested Parties)<sup>2</sup>, I am submitting comments on the above referenced docket issued by the Office of the Secretary of Transportation (OST) to review and evaluate existing regulations and agency actions to determine their continued necessity, and whether they are crafted effectively to solve current problems. Further, OST asks specifically whether any of these rules or agency actions are "good candidates for repeal, replacement, suspension, or modification."

Interest of the Interested Parties

Hazardous materials are ubiquitous in our society and essential to maintain the quality of life we enjoy. The value of hazardous materials in commerce is estimated to be greater than two trillion dollars annually, and the transportation of these materials supports over 1.5 million jobs. At the same time, the quantity of hazmat transported in the United States is increasing. According to the most recent Economic Census of the United States, hazmat transportation increased nearly 16 percent from 2.2 to 2.6 billion tons between 2007 and 2012.

As representatives of businesses that produce, store, transport and distribute hazardous materials, we are committed to ensuring the safety and security of the products we transport, and we strongly support a robust and efficient hazardous materials transportation regulatory program within the Department of Transportation (DOT) focused on these goals. At the same time, we agree that policies and regulations can become dated or otherwise unnecessary burdens on commerce, and we support the OST initiative to identify such regulations with a goal to minimize regulatory burdens without impairing safety.

In this context, we believe certain regulations could be improved, and agency actions could be taken to better support industry efforts to ensure that hazardous materials are efficiently transported in a safe and secure manner.

<sup>1</sup> 82 FR 45750 (October 2, 2017).

<sup>2</sup> The Interested Parties is a volunteer-run coalition of organizations that share an interest in legislative and regulatory issues related to the safe and secure domestic and international transportation of hazardous materials. Interested Parties members include associations representing hazardous materials shippers, carriers, packaging manufacturers and other related groups. The following Interested Parties participants have approved these comments: Agricultural Retailers Association; American Chemistry Council; American Fuel & Petrochemical Manufacturers; American Trucking Associations; American Pyrotechnics Association; Association of HazMat Shippers; The Compressed Gas Association; Council on the Safe Transportation of Hazardous Articles; Dangerous Goods Advisory Council; The Petroleum Institute; Gases and Welding Distributors Association; Institute of Makers of Explosives; International Liquid Terminals Association; International Vessel Operators Dangerous Goods Association; Medical Device Battery Transport Council; National Association of Chemical Transporters; National Private Truck Council; National Tank Truck Carriers; Plastics Industry Association; Petroleum Marketers Association of America; Radioactive Pharmaceutical Shippers & Carriers Conference; Railway Supply Institute, Inc.; Responsible Industrial Packaging Association; Sporting Arms Ammunition Manufacturers Institute; The Sulphur Institute; Utility Solid Waste Activities Group.

*[Handwritten bracket on the left side of the footnote]*

*[Handwritten arrow pointing up on the right side of the footnote]*

51 Monroe Street, Suite 812 ~ Rockville, MD ~ 20850 ~ 301-577-3780

*10 23 17*

### Role of the Office of Hazardous Materials Safety (OHMS)

The Secretary of Transportation (Secretary) has delegated authority for regulating the commercial transportation of hazardous materials to the Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA so closely controls hazmat transportation that these materials may only be transported if authorized by a regulation, special permit or approval.<sup>3</sup> Within PHMSA, the responsibility to promulgate the Department's hazardous materials regulations (HMR), which include rules for obtaining special permits and approvals, rests with the OHMS.<sup>4</sup> This level of regulatory control is necessary to facilitate domestic and international movements of hazardous materials.

### Impact of E.O. 13771

According to the preamble to this docket, E.O. 13771 directs "an executive department or agency" to repeal "at least two existing regulations" whenever a new regulation is proposed or promulgated.<sup>5</sup> (Emphasis added.) This statement is confusing because E.O. 13771 defines "a cabinet department" as "a single agency." Please clarify, for purposes of DOT, whether PHMSA would follow this E.O. if the "two existing regulations" to be repealed were Department regulations other than those promulgated by PHMSA.

Clarification of which "agency" rules may be repealed is important because, as noted above, the regulation of hazardous materials transportation is structured to be comprehensive to ensure that these materials move seamlessly from one jurisdiction to another. In 2003, for example, PHMSA's predecessor agency, the Research and Special Programs Administration (RSPA) finalized a rulemaking withdrawing agency jurisdiction over aspects of loading, unloading and storage incident to the transportation of hazardous materials. The action left open the door for the Environmental Protection Agency, the Occupational Safety and Health Administration, and non-federal entities to attempt to regulate in this space. DOT's process to update and repeal unnecessarily burdensome regulations must ensure that there are no gaps or omissions in PHMSA's hazmat regulatory framework, and ensure that its rules are promptly harmonized with international standards.

### Exercise of Preemption Authority Essential

OST asks whether "existing regulation could be better handled fully by the states without Federal regulations." Regarding hazardous materials transportation, the short answer is "no." Federal law grants the Secretary express authority to preempt state or local regulations that conflict with, present an obstacle to, or, in some areas, are not substantively the same as, a federal rule. The purpose of this authority is to promote safety by ensuring that myriad state and/or local regulations do not impede commerce or enable the export of transportation risks to other jurisdictions.

The hazardous materials industry and the public rely upon uniform regulation, both domestic and international, to ensure the safe, secure and expedited transportation of hazardous materials. Uniform regulation has the added benefit of promoting effective hazmat employee training, which is crucial because the safe transportation of hazardous materials begins with well-trained employees. The Secretary has delegated this authority to PHMSA, and the agency has exercised it numerous times over the years to overturn various permit, inspection and local fee programs that delay hazardous materials movements and/or unnecessarily increase the cost of transportation. The Interested Parties strongly support PHMSA's exercise of

<sup>3</sup> We are disappointed that the Department's summary of its responsibilities did not specifically mention this pervasive regulatory role.

<sup>4</sup> The DOT Operating Administrations have limited authority to promulgate hazmat regulations specific to their modes.

<sup>5</sup> 82 FR 45751 (October 2, 2017)

this authority. If anything, PHMSA should be encouraged to reach determinations of preemption more promptly following the receipt of petitions.

#### **Rules Deserving to be Repealed, Replaced, Suspended, or Modified**

OST invites recommendations of rules or agency actions that are "good candidates for repeal, replacement, suspension, or modification." The Interested Parties recommend the following actions in no order of priority:

- Suspension and Modification of Standards of Fitness – 49 CFR 107 Subpart B and H

As noted above, hazardous materials may only be transported if appropriately authorized. Regulatory flexibility is needed for such activities as authorizing one-time movements of hazardous materials and facilitating the emergence of new and innovative technologies or packagings. Special permits and approvals are the regulatory mechanisms that PHMSA uses for these purposes. PHMSA processes thousands of special permits and approvals requests annually.

Since 1996, PHMSA has had authority to determine the fitness of applicants for special permits and approvals.<sup>6</sup> The agency sought this authority to enable it to deny or revoke special permits or approvals requested by or issued to those who had violated the HMR. In 2009, PHMSA rewrote the administrative procedures used to determine the fitness of applicants for special permits and approvals without public notice and comment.<sup>7</sup> The new procedures instituted a three-tier, multi-signoff approach to process special permit and approval applications.

At the time, the Interested Parties were deeply concerned that the standards of fitness used by the agency to trigger the need for greater scrutiny of the applicant at higher tier levels was not publicly disclosed. Consequently, the regulated community faced uncertainty about what actions would result in a denial. Congress directed PHMSA to initiate a rulemaking on this subject, which was issued in 2015.<sup>8</sup> However, the rule "[did] not change previously established policies." Regarding fitness standards at the final third-level of review, the agency retained subjective standards of performance based on whether an applicant has "implemented sufficient corrective actions for prior violations, or is at risk of being unable to comply with the terms of an application for or an existing special permit, approval, or the HMR."<sup>9</sup>

Moreover, this final assessment of "fitness" is delegated to field enforcement staff (or, in some cases, other DOT Operating Administrations), who, after an onsite visit, decide whether an applicant has met or not these subjective standards. In short, the criteria used by field enforcement staff are still subjective, and their decisions at this final level of review may, therefore, be based on minor compliance issues having nothing to do with the activity covered by the special permit or approval.

When PHMSA promulgated its final rule establishing fitness criteria, it committed "to investigate opportunities to improve its special permit and approval application review processes in the future, as these opportunities become available to the agency." We believe this rulemaking presents an opportunity to direct PHMSA to establish clear performance standards that will give companies certainty that they will be found "fit" to be granted requested special permits and approvals. Applicants should be deemed "fit" unless the agency has

<sup>6</sup> HM-207C (May 9, 1996).

<sup>7</sup> <https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/Special%20Permits%20Standard%20Operating%20Procedures%20Version%201.0.pdf> and [https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/Approvals%20Program%20SOP\\_6.30.2011.pdf](https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/Approvals%20Program%20SOP_6.30.2011.pdf).

<sup>8</sup> HM-233E (September 10, 2015).

<sup>9</sup> Additionally, a finding of "unfit" for one application, could jeopardize other special permits or approvals held by the company.

evidence of HMR violations that are factually relevant to the application. Open-ended onsite investigations should be the exception, not the rule.

- Storage and Unloading of Tank Cars

By statute, “transports” or “transportation” of hazardous materials means “the movement of property and loading, unloading, or storage incidental to the movement.”<sup>10</sup> Congress understood the need for such a comprehensive definition of DOT’s authority to ensure uniformity of regulation that is essential to safety. Yet, as noted above, DOT chose to restrict the scope of this statutory authority when, in 2003, it limited its regulatory authority over to the storage and unloading of bulk transportation equipment.<sup>11</sup> These functions would no longer be covered by DOT’s regulations unless they were performed by or in the presence of carrier personnel. Because motor carrier personnel are present in most instances of transportation-related cargo tank storage and unloading, the primary impact of this retraction of the scope of DOT regulations has been on the storage of tank cars incidental to transportation and the unloading of those cars by non-carrier personnel. See, for example, 49 CFR 171.1(c)(2) and (d)(2).

This change by DOT, adopted in the face of nearly unanimous industry opposition, has opened the storage and unloading of tank cars to varying restrictions and practices in each jurisdiction where these activities occur. Safety is impaired by variations that fall within the statutory jurisdiction of DOT, but not the scope of its regulatory authority. For these reasons, we believe the Department’s 2003 regulatory decision must be reopened for further comment and consideration.

- Routine Incorporation of Proven Special Permits into the HMR – 49 CFR 107.113(i)

As noted above, special permits authorize specific hazmat transportation activities when no clear regulatory authority exists. Special permits, however, were never intended to become a default means of regulation. The HMR provide that rulemaking should be initiated to incorporate the provisions of proven, widely-used or long-standing special permits into regulation. The value of such incorporation is that the regulated community has immediate access to the regulatory flexibility offered by proven special permits, thus facilitating commerce while maintaining an appropriate level of safety. Incorporation also eliminates the paperwork burden associated with repeated renewal requests.

PHMSA’s failure to actively seek to incorporate proven special permits into the HMR prompted Congress, in 2012, to require that the agency conduct a review and analysis of special permits that have been in effect for a 10-year period to determine whether the permit should be converted into the HMR.<sup>12</sup> PHMSA initiated such a review, and in 2016 promulgated a final rule that incorporated 96 of more than 1,000 permits that met the review criteria.<sup>13</sup> Given the directive from Congress, the regulated community anticipated that PHMSA would annualize this review. At the time, however, PHMSA declined to commit to an annual review, stating that all special permits leading up to the 2016 final rule had been reviewed and that another review would not be necessary for 10-years. The Interested Parties disagree with this assessment, particularly given the relatively few special permits that were incorporated in the agency’s initial rulemaking. The Interested Parties recommend that 49 CFR 107.113(i) be modified to reflect the desire of Congress that PHMSA provide, at least annually, an opportunity for the regulated community to nominate proven special permits for incorporation into the HMR.

<sup>10</sup> 49 U.S.C. 5101(i)(2).

<sup>11</sup> HM-223, rulemaking initiated by RSPA.

<sup>12</sup> 49 U.S.C. 5117(f).

<sup>13</sup> HM-233F (January 21, 2016).

# INDUSTRY - LNG by RAIL -

5

- Incident Reporting – 49 CFR 171.16

PHMSA's hazardous materials transportation safety program relies upon DOT Form F 5800.1, *Hazardous Materials Incident Report*, to gather basic information on hazmat incidents that meet specified criteria listed in Section 171.16 of the HMR. PHMSA uses the data and information reported to evaluate the effectiveness of the existing regulations and industry operating procedures, ascertain the need for regulatory changes, and to identify major safety issues that should receive priority attention. This data is also used by both the government and industry to chart trends, identify acute transportation safety problems and training inadequacies, evaluate packaging performance, and assess ways to reduce releases. Therefore, ensuring the integrity and quality of the data and related information is extremely important.

The Interested Parties believe that the incident data ~~now being~~ collected on Form 5800.1 is not as comprehensive, consistent or robust as it could and should be to meet the laudable goals of the program. To this end, the Interested Parties urge PHMSA to ~~revise the data collection~~ form to eliminate inconsistencies and limit the opportunity for subjective and non-specific responses. The descriptive portions of the Form should be limited to purely factual accounts of incidents. The Interested Parties also recommend that the codes indicating the type of packaging that failed, how it failed, and the cause of failure be ~~evaluated for accuracy~~ and relevance, and that PHMSA be encouraged to focus on the collection of essential incident data that can guide the development of future hazardous materials transportation practices that limit the risk of harming people, property or the environment.

- Authorize LNG for Rail Transport

Liquefied Natural Gas (LNG) is currently missing from the list of commodities authorized for rail transportation in the United States. For the following reasons, we believe LNG should be authorized for transportation by rail in the United States

LNG is similar in all relevant properties to other cryogenic materials authorized by rail and has been moved in the United States safely under a special permit. This material is authorized for transportation by rail in DOT-113 rail cars by Transport Canada, and the safety record in that nation is excellent. Importantly, there is now commercial demand for rail transport within the U.S. and ~~between~~ the U.S. and Mexico.

- Petitions for Rulemaking – 49 CFR 106.95

The HMR provide opportunity for the public to petition PHMSA to add, amend, or delete a regulation. Currently, PHMSA has accepted 51 petitions for rulemaking which are pending at the agency.<sup>14</sup> The majority of these petitions have been filed by the regulated community, and the oldest dates to 2006. We urge OST to consider these petitions as recommendations consistent with the goals of this rulemaking. Further, the Interested Parties urge PHMSA to institute procedures to expedite, within 180 days of the receipt of a petition, action to accept, deny or further review petitions; and to prioritize petitions based on their potential to reduce incidents, improve enforcement, and reduce unnecessary burdens. Such administrative procedures are like those Congress directed the Federal Motor Carrier Safety Administration to implement when enacting the "FAST" Act.

- Public Meeting

OST states that it may hold a public meeting to discuss and consider comments from members of the public related to this docket. The Interested Parties urge OST to host such a meeting with a goal to benchmark

<sup>14</sup> <https://www.phmsa.dot.gov/hazmat/rulemakings/hazardous-materials-petitions> [October 22, 2017].

agency actions implementing regulatory reform recommendations. As noted in the preamble to this docket, PHMSA conducts 10-year cyclical reviews under section 610 of the Regulatory Flexibility Act. However, there is little evidence that these reviews have resulted in substantive regulatory reforms.

Conclusion

The Interested Parties appreciate this opportunity to comment on Docket No. DOT-OST-2017-0069. We are available to respond to any questions regarding our recommendations or matters affecting hazardous materials transportation. Meanwhile, we look forward to the opportunity for a public meeting to advance regulatory reform initiatives.

Sincerely,



Paul W. Rankin, Chair

*RIPA - see its website for my scans?*

## ATTACHMENT THREE: US-RUSSIA CONFLICTS REGARDING MARKET SHARE OF LNG EXPORTS TO EUROPE AND ASIA

CRS study 2013 *Europe's Energy Security: Options and Challenges to Natural Gas Supply Diversification* <https://fas.org/sgp/crs/row/R42405.pdf>

[Columbia | SIPA Center on Global Energy Policy](#) *The Impact of US LNG on Russian Natural Gas Export Policy* DECEMBER 17, 2018 BY [DR. TATIANA MITROVA](#) AND [DR. TIM BOERSMA](#)

<https://energypolicy.columbia.edu/research/report/impact-us-lng-russian-natural-gas-export-policy>

*Let's not exaggerate: Southern Gas Corridor prospects to 2030* Oxford Institute for Energy Studies <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2018/07/Lets-not-exaggerate-Southern-Gas-Corridor-prospects-to-2030-NG-135.pdf>

### Bloomberg Politics

U.S. Concedes Defeat on Nord Stream 2 Project, Officials Say By [Jennifer Jacobs](#), [Nick Wadhams](#), and [Lars Paulsson](#) December 17, 2019, 9:22 PM EST *Updated on December 18, 2019*

<https://www.bloomberg.com/news/articles/2019-12-18/u-s-concedes-defeat-on-nord-stream-2-pipeline-officials-say>

*Trump Team Wants to Bring Zelensky to US Natural Gas Posts* 12 13 19

<https://www.thedailybeast.com/trump-team-wants-to-bring-zelensky-to-us-natural-gas-posts>

## ATTACHMENT FOUR:

Railway Age Nov 2019 on need to hurry new regs on LNG by Rail

<https://www.railwayage.com/regulatory/assessing-lng-by-rail-safety/?RChannel=home>

**Assessing LNG-By-Rail Safety** Written by [Jim Blaze](#), Contributing Editor

*Chart Industries teamed up with VTG to develop cryogenic tank cars for the European rail network. Chart Industries photo.*

*“...Safety is important. Yet, we can do safety research and development a lot faster. It’s timely to ask why the regulatory process takes so long... **While** awaiting additional safety studies, here are two market examples of how railroad movement of LNG is proceeding on a commercial basis....*

*In Europe, Germany-based VTG Aktiengesellschaft ([whose U.S. subsidiary is VTG Rail](#)) signed a contract in 2015 with Norway-based Skangass AS to haul LNG by rail. The operation involves leasing up to 20 LNG tank cars that can move as much as ~1,500 cubic meters of LNG per trip. That would replace use of over-the-highway tank trucks.*

*An LNG European disruptive force is Czech Republic-based Chart Ferox, a division of U.S.-based [Chart Industries](#).*

*Translation: European railway regulatory agencies now have three or more years of actual operational performance with which to determine the safety aspects of transporting LNG by rail.*

*A second disruptive commercial example comes from the Florida East Coast Railway (FEC). Operating freight trains over more than 300 miles of track between Jacksonville and Miami, FEC introduced LNG-fueled locomotives in 2017. **FEC is part of Grupo Mexico Transportes.**”*

## **ATTACHMENT FIVE: Railway Technology article 1 26 17 on new technologies emerging to ditch dirty fossil fuels**

<https://www.railway-technology.com/features/featurepowering-the-trains-of-tomorrow-5723499/> 26 JANUARY 2017 *Railway Technology*

### ***Powering the trains of tomorrow***

*While diesel still plays a major part on many routes in many countries, rail is experimenting with new forms of power, including hydrogen fuel cells and batteries, while making old, dirty locomotives more efficient.*

[\*Alstom's Coradia iLint combines hydrogen and oxygen in an onboard fuel cell.\*](#)

[\*Photo: courtesy of Alstom.\*](#)



[\*The Talent 3 EMU has a battery system that can be recharged by overhead wires. Photo: courtesy of Bombardier.\*](#)

[\*In 2015, the UK's Network Rail trialled the first battery-powered passenger train to run on Britain's rail network in more than half a century. Photo: courtesy of Hugh Llewelyn.\*](#)

*Globally, there's a trend toward greener forms of transport. Backed by new regulations and a steely resolve from environmental groups, this trend is forcing a whole host of industries to confront some difficult, but necessary, questions. For example, how do we ensure the rail industry's growth over the past decade continues uninterrupted while limiting damage to the environment?*

*It would be wrong to suggest that this is a completely new dilemma, as for many years large sections of track have been electrified; however, in recent times there has been a stronger effort to rid rail of diesel, or at least make diesel engines less harmful.*

*Still, the European Commission claims that 20% of Europe's current rail traffic is hauled by diesel locomotives, with the UK, Greece, Estonia, Latvia and Lithuania high up on the list. In late December, a report from market research firm Technavio suggested that the worldwide diesel locomotive market will grow steadily, with a compound annual growth rate of nearly 3% in 2020.*

*In addition, a 2015 study by the University of Cambridge, University of Minnesota, and Minnesota State University Mankato, found that enclosed railway stations where diesel trains are present are a health risk. Researchers discovered that London Paddington train station was in breach of European limits regarding nitrogen dioxide (NO<sub>2</sub>) for outdoor air quality over a period of five days.*

*So there is progress to be made, but just what is the industry doing?*

*Hydrogen fuel cells in trains*

*If you're interested in hydrogen fuel cells, then look towards Germany. The European nation is playing host to Alstom's Coradia iLint train, which works by combining hydrogen and oxygen in an onboard fuel cell to generate electricity.*

*In 2014, Alstom signed letters of intent with the German regions of Lower Saxony, North Rhine-Westphalia and Baden-Württemberg, to act as a testing ground before passenger trains enter service in 2018.*

***"The Coradia iLint combines hydrogen and oxygen in an onboard fuel cell."***

*As well as this, Hydrail, an umbrella term for all rail vehicles that use onboard hydrogen for energy, has gone from strength to strength, with projects in Germany, the UK and China, where in 2015 a hydrogen-powered tram opened in Qingdao.*

*On a slightly smaller scale, students from the University of Birmingham built a working locomotive powered by fuel cells in 2012. Lead researcher Stephen Kent was quoted by Wired explaining that hydrogen could be ideal for rural, quieter routes. He said: "It is highly unlikely they [the routes] will ever be electrified," he*

*said. "At some point diesel is going to become too scarce and too expensive to carry on using. Hydrogen appears to be an ideal alternative."*

*All eyes will be on Germany and the success, or otherwise, of the iLint.*

### *Battery-powered locomotives*

*In 2015, the UK's Network Rail trialled the first battery-powered passenger train to run on Britain's rail network in more than half a century.*

*Travelling between Harwich International and Manningtree, with the words 'Batteries Included' splashed on the side, the Class 379 Electrostar could one day be operating across the network. "[They are] quieter and more efficient than diesel-powered trains," said a Network Rail spokesperson.*

*Furthermore, in January, Bombardier announced it had signed a \$1.9bn contract with the Austrian Federal Railways (OBB) to provide 300 Talent 3 trains for regional and suburban rail, with services expected to begin sometime in 2019.*

*Talent 3's electric multiple unit (EMU) has a battery system that can be recharged by overhead wires on electrified tracks or by charging stations on non-electrified routes.*

### *LNG for cleaner railways*

*Liquefied natural gas (LNG) is being used in the rail industry as an option for dual-fuel locomotives. In July, Russian Railways, Gazprom, Transmashholding and Sinara Group signed an agreement to develop the necessary infrastructure to support the use of LNG to power locomotives.*

*Russia was also in the headlines back in 2015, when it unveiled what it called the world's first LNG-generated locomotive, the TEM19.*

*Also late last year, Spanish operator RENFE announced it was to replace a diesel engine in a Class 2600 DMU with a LNG equivalent, and test it against a diesel version in the same locomotive. The LNG DMU will run on a 20km section of track in northern Spain.*

*According to Railway Gazette, RENFE wants to cut emissions to below 20g of CO<sub>2</sub> per passenger-km by 2020, and has reduced the use of diesel fuel from 41% in 1990 to 32% in the present day.*

*GE Transportation also runs a natural gas retrofit kit, which it claims can convert its Evolution series locomotives to operate on as much as 80% natural gas. But, is LNG the way forward? GE CEO Jeffrey Immelt said in 2014: “[The] age of natural gas is upon us. This is an economic story that has environmental impact.”*

#### *GE's Evolution Tier 4*

*Sticking with GE and its Evolution series, the company developed the Tier 4 diesel engine, designed to meet US Environmental Protection Agency (EPA) regulations on emissions.*

*GE completed the first production test on the Tier 4 back in April 2015, and the company claims it can reduce nitrogen oxides (NO<sub>x</sub>) and particular matter (PM) emissions by at least 70%.*

#### ***"The Tier 4 engine meets US EPA regulations."***

*In the same year, Ed Hall, GE senior general manager for engine engineering, told Wired: “We looked very hard at what it would take to reduce [pollutants]. How we manipulate the fuel, manipulate the air, control the whole combustion process. We were able to do it. This will be our crown jewel product for the next eight years.”*

*Last year, GE celebrated producing the 1,000<sup>th</sup> Tier 4 locomotive, to be used by the Canadian National Railway Company.*

#### *The Prima family*

*The Alstom Prima H3 and H4 locomotives, designed for shunting purposes, come in a number of versions.*

*They can be operated in single or double-engine modes: either one 1,000KW diesel generator or two 350KW diesel generators, or in hybrid and battery configurations.*

*The H3 hybrid can reduce fuel use by 30% to 50% as it incorporates a battery alongside the diesel generator. The full battery mode, designed for more populated areas or in tunnels, can operate emission-free.*

*As for the H4, its hybrid setting is suited for use on non-electrified track, while a bi-mode battery version couples a battery and catenary system. Alstom claims the H4 double engine can cut diesel fuel consumption by up to 15%.*

*In October, German operator Deutsche Bahn introduced five H3 hybrids to its fleet. Daniel Croonen, director of service for Alstom Germany and Austria, said at the time: “[The] Prima H3 locomotive is paving the way to the new reality of zero-emission freight transport in Europe.”*

## ATTACHMENT SIX:

### The Weak Market Need Case in the 2019 Willauer Report

A key indicator of how thin and speculative is the PHMSA market need case for LNG by railroad tank cars is PHMSA's own 150-pp. report by a Cambridge Systematics team headed by consultant David Willauer, "Risk Assessment of Surface Transport of Liquid Natural Gas" ["the Willauer Report" or "Report"], final report dated March 20 2019.

In its Part A, the Willauer Report provided much valuable information on basic natural gas and LNG transportation patterns, in part to suggest possible growing market interest in LNG by Rail tank cars and the geographical shape of any future LNG Rail transportation network, and to outline the beginnings of a thorough risk assessment. Given his broad and detailed knowledge of the US natural gas industry, however, it is notable that his report provides no set of specific cases of business plans, final investment decisions, etc. having been held up by lack of availability of the huge quantities of LNG [3 million gallons per 100-car unit train] for which the current rail industry Petition seeks federal approval.

[The railroads have consistently maintained that the longstanding current ban on LNG by rail tank car is because of a historic, decades-long lack of market demand, not because LNG is inherently less safe than other cryogenic cargoes allowed for rail tank car shipments.]

The Willauer report also reported significant data gaps that limit the validity of all analytical efforts, and the report's overall conclusions are notably and appropriately modest and tentative – see much use throughout the Report of "could" statements:

*p. ES-3: LNG by Rail LNG is not shipped by rail in the U.S. because it is not authorized by the Federal Railroad Administration (FRA), except by special permit. The code of Federal regulations, 49 C.F.R. § 172.101 Hazardous Materials Table lists natural gas with high methane content as forbidden to be transported by rail. The FRA has granted special permits [for LNG rail by intermodal containers only] to the Florida East Coast Railroad and to the Alaska Railroad. While several Class I railroads have piloted LNG propulsion programs, the comparatively low price of diesel fuel has delayed such programs. [Another factor is the lack of a North American infrastructure for re-fueling LNG locomotives, the solution of which gap is perhaps the single most important reason railroads are now supporting future approved LNG by rail tank cars.]*

*Nevertheless, authorizing LNG rail shipments could change existing demand patterns; demand of LNG transport by rail could appropriate market share from either trucking or pipeline, depending on the network characteristics and other factors. In the case of New England, for example, the railroad network could supplement the existing pipeline network. In addition, availability of LNG transport by rail could affect the market share of other energy sources.*

The otherwise thorough Report provides none of what it alleges as the “evidence that a market demand exists for shipping LNG by rail”, while prefacing its safety case section by admitting that the public safety implications for such transport have not been researched:

*[p. ES-9]: ...With this increased [US] demand for natural gas, LNG transportation complements the distribution of natural gas by pipeline, providing access to areas that are not sufficiently supplied by the pipeline network. While surface transportation of LNG currently is only allowed by truck, and by rail with special permit, modal choice for LNG delivery would increase the opportunity for energy consumers to make competitive choices about their energy supply. There is evidence that a demand exists for shipping LNG by rail, and that rail shipments of LNG can be both competitive and complementary to the truck and pipeline networks. Since railroads have unique advantages and disadvantages compared to trucks, and the public safety implications are not fully developed, [future] risk assessments provide additional insight into the shipment of LNG by rail...*

Without any evidence that the current truck delivery system for LNG in North America has failed to serve even a single market demand in some remote area, the Report’s comparison of natural gas and LNG transportation delivery modes is summarized also with modest and tentative conclusions. It strains to imagine hypothetical situations including national emergencies, that could favor LNG by rail tank car trains instead of more flexible truck deliveries:

*[p. ES-5]: LNG Mode Choice*

*Rail and truck delivery of goods complement and compete with each other; this could be the same for LNG.*

*For intermodal deliveries, trucks complement the rail network by providing consignees and shippers not directly served by rail lines access to rail terminals. For heavy loads and long hauls, rail delivery is more efficient than truck. One tank car can replace almost three truck cargo tank trailers. However, rail delivery of LNG has limitations particular to the railway network. In addition, rail delivery operationally takes longer than truck delivery because rail*

*loads in manifest trains must be consolidated and sorted onto trains at rail yards, whereas truck delivery is a direct point-to-point delivery. This would be different if unit trains were employed, in which only LNG railcars were transported from origin to destination without requiring railyard sorting. Rail routing also is circuitous because rail companies prefer to stay on their own tracks to avoid interchange fees.*

*There are certain origin and destination pairs that would make rail delivery of LNG more attractive than truck delivery, but since LNG supply points are spread out across the country, the overall distance that LNG would have to travel from the origin is limited, and this could favor truck delivery.*

*Rail delivery of LNG could replace or supplement the pipeline delivery of natural gas, such as during a supply disruption, where the rail option could provide duplication and redundancy. If a pipeline had to close due to immediate or planned maintenance work, or due to a pipeline malfunction, railroads could move large supplies of LNG to the demand regions. In addition, railroads could supply natural gas via LNG to destinations that the pipeline would not be able to service. For regions not currently served by pipeline, the demand for large volumes of natural gas on a consistent basis triggers the justification process for building a pipeline, which leaves several years for non-pipeline demand and delivery that could be replaced by pipelines if approved for construction.*

*Rail delivery could reach areas of the U.S. that currently do not use natural gas because it is too expensive to source and other sources are more accessible. If rail delivery of LNG is cheaper than truck delivery, then the LNG could travel longer distances from the supply source, to compete with other energy sources in areas previously out of reach. These are some of the factors to consider comparing LNG transport by truck and by rail.*

*The potential origins of LNG are facilities that liquefy natural gas or store LNG. These would include peak shaving facilities, export facilities, merchant plants, natural gas processing facilities, market hubs, and market centers that have liquefaction capabilities. Generally, there would be a large number of facilities that currently supply LNG for truck transport that could potentially supply LNG for rail transport to a single destination. For most destinations, that number can be reduced to a much smaller number by considering the alternative modes of trucking and pipeline, and using the costs of those modes to limit the potential rail origins.*

The 2019 Willauer report's national map and discussion of the existing truck routes [p. 42] and combined volumes from several major LNG shipper companies did usefully suggest that LNG truck shipments, not without accidents but without major disaster, were already

reaching widely to many areas of the US, e.g., in New England areas and in western states presumably not adequately served by current natural gas pipelines.

[Cf. Cambridge Systematics Willauer Slide 15 of 73 slides QRA LNG transport May 2018 PHMSA event <https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/research-and-development/hazmat/58176/day-1-pm-2.pdf>]

[The Willauer Report's aggregated "gross" US LNG truck routes map, while suggestively useful, is not a compilation of any state or federal tracking reports of such shipments, which do not exist. So the map in Figure 4.11 seems a rough estimate somehow combining some public EIA information with private data from some shippers, the completeness of which is unknown and unknowable.]

An interesting Report observation was that *"the majority of the [LNG truck] movements are within the [EIA-designated] natural gas regions, but some of the LNG movements do move more than 1,000miles."* [p. 42] This would seem to raise the question of whether some US LNG shippers might have considered many years ago a move from truck to slightly less costly [per energy unit delivered – see p. ES-7 chart] rail tank car shipment, and pressed for federal approval of an LNG tank car.

But the Willauer Report cites not a single industry effort to do so, and suggests no Rail by LNG tank car push until the two very modest and preliminary regional AK and FL experimental LNG by rail ISO container movements in the current era [2014-present] and the current hurry-up LNG Rail tank car push in the context of the Trump Administration's across the board federal rail safety deregulation moves on LNG and other safety issues.

The market need/safety tradeoff question here is whether the US current and future LNG market demands would be likely to support shipping much larger rail tank car quantities [possibly in long manifest train consists or even in unit trains] to the identified LNG-using locations, especially given the much larger release disaster risks especially to urban populations. One answer to that question was already suggested in the useful analogous case of the Alaska Railroad Corporation's very short-lived LNG Rail experiment in transporting to LNG-using locations in Alaska using the much smaller ISOs: the dismissive phone interview comment from one top ARRC official: "We only sent a couple of LNG trains... but there was no market, so we stopped." [Detailed volumes, safety risk, and emergency response training information on this effort has been withheld by FRA from FOIA requestors.]

Another market/safety tradeoff question is raised by the Willauer Report's modest conclusion that LNG might find a market to some locations, *"if shipments do not need to be*

*time-sensitive*” [p. 50] -- the author’s diplomatic allusion to the US freight railroads’ frequent issues with slow delivery and many long system delays [compared with truck]. [p.42] Overall the Willauer Report compiles a valuable but thin batch of available data, inadequate for basing a respectable national rulemaking on LNG by rail tank car/unit trains.

The corresponding Report analysis of the potential routing of rail LNG [p. 50], for example, did not include any realistic routes, but instead used abstract state centroids, and did not consider the most basic question of what major cities might be traversed by LNG Rail.

If approved, rail tank car transport would be an alternative to truck for surface transport of LNG, and Figure 4.18 shows the routes that might be used if volumes of LNG similar to those currently moved by truck were moved by rail, to supplement or replace existing truck shipments should rail shipments of LNG be allowed in the HMR. [Cf. pp. 40-43]

The key safety-related contribution from the Willauer Report’s market demand section is the revelation that the LNG trucking industry [both with ISOs and tank trucks] is so extensive, both geographically and in infrastructure. The US FMCSA data accessed October 2017 shows 18 US motor carriers utilizing a total of 3056 trucks [“units”] and with an impressive safety record. [Willauer Report, p. F-5]

By comparison, the Report indicates that the LNG Rail history anywhere in the world is very thin. Even in Japan, cited by recent federal and industry documents as having approved LNG by rail, Willauer Report says the effort is only experimental.

The Report outlines how the comparative economics of various LNG modal delivery options is complicated by many factors:

*[p. 59] Natural gas movements are a function of price and delivery convenience. Truck and rail delivery are a “flexible and competitive complement to traditional pipeline transportation” for the transport to market from “remote locations not adequately served by pipelines.” Natural gas delivered by rail would be slower than truck delivery, unless enough natural gas were delivered at once to build a unit train. Unit trains are treated with higher priority than manifest trains. This comes with additional risk, which will be discussed in Part 2. Natural gas delivered by rail and trucks provide more flexibility in their networks ability to access multiple delivery destinations across the country—pipelines are constrained in their access and delivery points. Different than the development of non-pipeline crude oil rail deliveries, natural gas comes from many sources. Natural gas comes from many suppliers, and goes to even more users. There is enough natural gas supply and demand spread out across the country, and nearly all of it is transported by pipeline. It is hard to predict if rail delivery can compete with the convenience and speed of truck delivery.*

*Here Willauer cites[only] one oil and gas industry energy expert's 2015 book [Rusty Braziel's "The Domino Effect"] which looks back comprehensively on the recent history of all the moving pieces in energy markets [including the rail industry's massive move into shipping crude oil in unit trains in a notoriously puncture-prone 50-year old design rail tank car, the DOT-113]. The Report cites Braziel's brief speculation on the future, a grandiose generalization:*

*"Whenever production exceeds pipeline capacity, the railroads can step in. Whenever new production has to wait for a pipe, it will travel by rail. Whenever markets are disrupted by pipeline congestion, railroads will step in to bypass the tangle. In remote plays where there are no pipelines at all, railroads will be the primary transportation mode." 41 [Willaur adds, without citing any evidence:] This is true except if rail delivery is not allowed. In that case, truck or vessel is the only other option.*

The 2019 Willauer report [the most recent and comprehensive research document on the market case for LNG by rail tank cars] tries to hype the LNG tank car developments in other nations, but can only show very tentative beginnings, speculative hopes, and no ongoing commercially viable rail transportation of LNG anywhere. For example, see regarding Europe:

*[p. F-9:] The first LNG Tank Car in Europe was a project between Chart Industries and VTG AG. 127 VTG invested in the rail tank cars "to create a so-called rolling pipeline to deliver LNG to industries that have sizeable energy requirements. It plans to work with Brunsbüttel to use LNG tank cars to supply Baltic Sea ports." 128]*

**[END]**