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Washington, DC 20590

Comment Re: PHMSA–2019–0100, Draft Environmental Assessment for a Special Permit Request for Liquefied Natural Gas by Rail

To William S. Schoonover, Associate Administrator of Hazardous Materials Safety, and Pipeline and Hazardous Materials Safety Administration:

PHMSA received a request for special permit from Energy Transport Solutions, LLC seeking authorization to transport “Methane, Refrigerated Liquid” (UN1972), commonly known as liquefied natural gas (LNG), in DOT-113C120W tank cars. Please accept these comments on

The shipment of LNG via rail would impose significant new health, safety, environmental, and economic hazards for communities along potential rail routes. Because PHMSA’s proposed permit and analysis provide very little data and only a cursory analysis of potential LNG rail safety hazards, we are concerned that this permit may create new, unaddressed risks that could put communities in danger from LNG train derailments, fires, explosions, and other hazards. Recent oil train derailments in North America—such as Lac Megantic, Quebec, Mosier, Oregon, and over a dozen other communities—demonstrate that rail-related accidents can lead to health hazards, public safety risks, environmental damage, and even fatalities. LNG trains may pose even more severe fire and safety risks than oil trains. Data on LNG rail hazards are relatively non-existent, which raises serious questions about the wisdom of issuing a special permit that could lead to LNG shipments throughout cities, towns, and sensitive areas nationwide.

We urge PHMSA to withdraw the 23-page Environmental Assessment (EA) for this proposal and instead prepare a full, thorough Environmental Impact Statement (EIS) to address the serious public safety, environmental, and economic risks associated with shipping large volumes of LNG via rail through communities across the United States. Alternatively, we urge PHMSA to deny the special permit because of the significant unaddressed risks of shipping LNG via rail. Furthermore, we urge PHMSA to extend the public comment period for an additional 90 days to allow the public to evaluate the significant new hazards introduced by shipping LNG by rail.

**EA Fails to Adequately Assess the Direct, Indirect, and Cumulative Environmental, Health, Safety, and Economic Consequences of the Proposed Action**

PHMSA’s Draft EA falls far short of providing adequate data or analysis to address the potential environmental, public safety, or economic hazards associated with proposed LNG-by-rail shipments. LNG trains would pose extreme dangers for the communities through which they travel in the event of a derailment. If an LNG train derails and any of its cars puncture and release LNG, the spilled LNG would likely re-vaporize quickly, forming a vapor cloud that could
ignite.\textsuperscript{1} The ensuing fire could impact people, property, and natural resources over a large area. If the LNG failed to ignite initially, the unignited, dense LNG vapor cloud could move over a large distance, find an ignition source, and burn back to the point of the LNG release. In summary, the fire, explosion, and vapor cloud risks associated with a train carrying three million gallons of LNG could impact a multi-mile radius from the site of an LNG train derailment.\textsuperscript{2}

Recent incidents related to LNG storage and manufacturing provide examples of the highly volatile nature of LNG. These incidents demonstrate that LNG-related hazard distances are measured in miles, spanning large areas. For example, in Plymouth, Washington, a fire and explosion at an LNG facility injured five workers and prompted the evacuation of two-mile radius near the ruptured LNG tank.\textsuperscript{3} The Plymouth evacuation stemmed in part from the risk of a flammable vapor cloud, and it caused a major disruption to the local area, including disruptions to rail and road traffic as well as a lengthy evacuation for local residents. According to a report on the incident from Sightline Institute,

Fumes from the facility sickened residents and emergency responders and endangered the public. The leak formed a dangerous cloud of gas vapors, which an east wind pushed toward the town of Plymouth. Vapor clouds become more dangerous as they drift away from the site of the leak and mix with oxygen: at a 5 to 15 percent concentration, a vapor cloud that meets a spark or flame can catch fire and burn all the way back to the source. To protect public safety, state officials evacuated Plymouth LNG employees as well as residents within two miles of the facility. They shut down traffic on the nearby Columbia River, parts of Highway 14, and the rail lines near the plant, which helped reduce ignition sources for the escaping gas.

Emergency responders—there were more than 100 on the scene—had to wait for the wind to dissipate the natural gas before they could safely enter the facility and address the leak. The wait was drawn out by LNG’s extremely low temperature: the leak kept forming ice blockages over the hole in the tank. External temperatures would then melt the ice, and the leak would continue. Hazardous materials experts were finally able to enter the facility eight hours after the explosion.\textsuperscript{4}

\textsuperscript{1} Sandia National Laboratories. (March 21, 2018). Review of "LNG Project Spill Consequence Analysis", October 2015.


The risks of LNG trains are potentially greater than LNG storage because LNG trains would be moving at speeds up to 50 miles per hour through populated areas, making rapid, widespread evacuations difficult. Additionally, local first responders may be uninformed about LNG-by-rail risks, and the EA does not describe how specific LNG-related risks can be addressed in rail communities.

LNG poses unique risks that deserve focused attention in a full EIS. LNG rapidly vaporizes when it comes in contact with water. When spilled, research demonstrates that LNG vapors can asphyxiate people nearby by displacing oxygen, and direct skin contact with LNG can flash-freeze human flesh. The flammability range of LNG vapor in air (LNG vapor, which is primarily methane, will burn at vapor concentrations of 5 to 15%) differs significantly from other cryogenic fuels such as ethylene and may contribute to enhanced vapor cloud risks. A recent research compendium on natural gas prepared by physicians and health experts found that fires caused by LNG accidents can result in second-degree burns up to one mile away. Additionally, LNG processing sites have been identified by agencies including the Congressional Research Service (CRS) as vulnerable to terrorist activity due to extreme risks from explosions. The CRS report also identified how spills of LNG during storage or transport can lead to pool fires and flammable vapor clouds.

The entire EA is 23 pages: the cursory analysis provided does not present any detailed analysis of how an LNG derailment, fire, vapor cloud, or explosion could impact the communities along potential rail routes. Indeed, the EA does not identify any rail routes other than “existing main lines.” PHMSA’s proposed action will likely bring LNG trains close to homes, schools, businesses, small towns and large cities, fire-prone forests, protected waterways, wetlands, and a wide range of critical energy infrastructure resources that remain unaddressed in PHMSA’s cursory draft EA. PHMSA should produce a full EIS that addresses how LNG train derailments could impact areas near “existing main lines.” As currently drafted, the EA fails to describe both the proposed action and its potential consequences. The EA sidesteps potential consequences with a blanket assurance that these risks are “similar” to other cryogenic rail shipments, without adequately addressing the volume, frequency or chemical differences in the proposed LNG shipments or potential impacts on likely routes.

The EA fails to assess the impact of a worst case scenario derailment. In fact, the EA stops short of addressing multiple LNG tank car failures occurring in short succession and a potential “cascading failure” of cars in an LNG unit train. The EA asserts that the “DOT-113’s double wall design reduces the probability of cascading failures of multiple other undamaged DOT-113

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specification tank cars.” PHMSA should develop an EIS that assesses the impact of multiple LNG-laden DOT-113 cars failing during a derailment. PHMSA should recognize that both damaged and undamaged cars could be vulnerable to the intense fire and potential explosion risks associated with one or more ruptured LNG cars. The EA states that “(b)reach of a cryogenic tank car will result in the loss of the entire volume of material in the tank car,” yet the EA fails to address in detail how breaches of LNG-laden tank cars could impact other cars in the train, or how multiple failures could compound safety risks. The EA’s failure to provide adequate analysis of multiple failures of LNG rail cars renders the document completely inadequate for addressing the potential safety, health, economic, and environmental risks of an LNG train accident.

The EA fails to describe the realistic consequences of a worst-case scenario, while acknowledging that local public safety agencies have little recourse in an accident outside of evacuation. The EA states, “Response and mitigation techniques beyond evacuation for breaches in cryogenic tank cars do not exist or are impractical during a derailment scenario.” The EA gives no detailed information about the distances, timeframe, or other details required for developing a plan for evacuation. We urge PHMSA to address this deficiency by developing a full, thorough EIS that evaluates a broad range of potential spill volumes and scenarios, up to and including the release of all LNG contained in an LNG unit train (roughly 3 million gallons). PHMSA should also address whether cities and other communities along “main line routes” are prepared to address an LNG train derailment, fire, and potential explosion.

The EA fails to address the ramifications of a Boiling Liquid Expanding Vapor Explosion (BLEVE), which could occur in the event of an LNG train derailment. The EA states that “it is not possible to state with certainty whether a BLEVE is possible in case of a LNG tank car derailment and what conditions need to be there for such an event to occur.” The EA presents conclusions from a test that did not involve LNG (the test used nitrogen) in order to downplay potential BLEVE risks associated with LNG rail shipments. Additionally, the EA does not address the potential for a BLEVE to occur if pressure relief valves are damaged or are insufficient. As a result, the EA fails to present actual test data for the type of rail shipments the special permit would authorize, and the EA falls short of providing a reasonable assessment of the BLEVE risks associated with LNG-by-rail.

The EA does not provide adequate data or analysis to support its conclusions about how DOT-113 cars and their cargoes will behave in a crash on main line rail routes. The EA suggests that trains will move at speeds up to 50 mph. In the Pacific Northwest, trains routinely travel 50 mph or more through the Columbia River Gorge. The EA states, “...derailments conditions could result in punctures of both the outer and inner tanks leading to a release of the product. The risk

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7 EA p. 7
8 Id.
of puncture increases with speed; but there are no test data or computer models that could be
used to predict the probability of puncture at any particular speed, or identify a threshold speed at
which the probability of puncture of the inner tank becomes high.”9 The EA’s lack of analysis
regarding the likelihood and ramifications of tank cars puncturing while traveling 50 mph
undermines the document’s conclusion that the safety risks are acceptable and comparable with
other rail shipments. It seems highly likely that an LNG unit train derailing at 50 mph could lead
to the rupture of both inner and outer shells of multiple DOT-113 cars. Yet, the EA gives very
little analysis to the potential ramifications of this type of high-speed, high-impact derailment
and resultant fire and explosion risks. The EA also does not adequately evaluate speed
limitations on LNG trains. It would be reasonable, for instance, for PHMSA to consider limiting
LNG trains to speeds at which LNG tank cars are proven not to puncture. Since this data does
not exist, PHMSA should not authorize LNG trains without further tests and study.

In the absence of rigorous testing of DOT-113 cars carrying LNG, PHMSA cannot reliably
conclude that the pressure relief valves will adequately release rapidly boiling LNG in the event
of a derailment and fire that subjects LNG tank cars to severe heat. The pressure relief valves and
the conditions for LNG loading may be primarily designed to ensure that LNG trains retain most
of their cargo in transit without boiling off too much of the LNG product. Furthermore, the
pressure relief valves may become damaged in a derailment. The rail cars valves may be
overwhelmed in a situation where an LNG train derails, and the contents of ruptured cars catch
fire and subject adjacent cars to severe heat. Neither PHMSA’s EA or the underlying study of
DOT-113 cars appear to address the adequacy of pressure relief systems in extreme conditions,
but the EA cites these pressure relief systems as a safety measure that will reduce explosion
risks. These fire and explosion issues led at least one Southern Oregon rural firefighter to
comment to PHMSA, “Transporting LNG by rail is a risk we cannot afford to take.”10

The EA cites the safe transport of cryogenic liquid ethylene as a precedent, but that is a false
comparison. Cryogenic liquid ethylene is not shipped in unit trains of 100 rail cars. A more
appropriate comparison is a unit oil train, and the history of unit oil train derailments indicates
the likelihood of multiple tank cars rupturing in a derailment, though the consequences of a low-
lying, easily ignited LNG vapor cloud are more volatile and dangerous than crude oil. The
historical safety record of DOT-113 double wall tank cars is also misleading: they have not been
used in unit train configurations for LNG transport. Finally, as PHMSA is well aware, railway
lines leading to LNG facilities pass through highly populated areas. Conveying large quantities
of LNG through these areas is a dangerous gamble, one that could result in fatalities and serious
environmental consequences over large areas.

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9 EA. p. 10.
10 See comment of Alexander Cox, firefighter in rural Southern Oregon.
Finally, the EA lacks any meaningful analysis of the climate-changing pollution that will result from LNG-by-rail shipments. The EA states that LNG rail shipments will supply LNG export facilities. The resulting increased consumption of LNG, and the potential for increased production of conventional and fracked gas, represent a drastic net increase in greenhouse gas emissions, overwhelming the decreased fuel emission savings of rail transport cited in the EA. Further, the EA provides inadequate analysis of the greenhouse gas impacts of LNG production, handling, and shipment, glossing over the tremendous global warming potential of concentrated shipments of methane. Methane has a global warming potential 86 times greater than carbon dioxide over a 20-year timeframe. The EA does not provide a detailed analysis of how methane may vent or escape during the different stages of LNG rail transport. The EA only provides a generic comparison of different modes of freight transport (comparing a generic truck vs. a generic railcar), with no specific assessment of how LNG-by-rail could lead to releases of methane pollution. The omission of any meaningful greenhouse gas analysis of the LNG being considered for shipment renders the EA incomplete and inadequate for evaluating the special use permit.

**EA Presents an Unreasonable Range of Alternatives and a False Comparison**

The EA presents a misleading comparison of shipping LNG via rail or truck. The comparison is misleading for several reasons. First, the volumes of LNG likely to be shipped via truck would be far less than the volumes likely moved in large unit trains of LNG, which the draft permit would authorize. The draft permit does not propose any enforceable limit on the quantity of LNG-by-rail shipments, and so the proposed action remains unclear. Second, the EA fails to provide an actual No Action Alternative. The EA’s baseline case for the No Action Alternative assumes 1200 LNG truck shipments per day. That quantity of LNG cargo trucks is unsafe and hazardous. Were it proposed, it should receive its own detailed review in a full EIS. A more accurate No Action Alternative would involve assessing the current volume of LNG truck transport, with no additional increase. Furthermore, a more reasonable analysis would contrast the current absence of LNG-via-rail shipments with Energy Transport Solutions’ proposal for a potentially dramatic increase in LNG-by-rail traffic, and it would provide a limit on the actual amount of LNG-by-rail traffic authorized.

The EA acknowledges that Energy Transport Solutions seeks to send LNG unit trains to LNG export facilities. LNG export facilities are not likely to be supplied via truck. Rather, they are far more likely to be supplied via pipeline. It is unreasonable to assume that, if LNG via rail were not authorized as Energy Transport Solutions requests, that the same volume of LNG would be shipped via truck to LNG export facilities.

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11 See EA p. 21. Study cited for Table 3 is not specific to LNG shipments nor does it evaluate the potential contribution of intentionally or accidentally released methane in its greenhouse gas comparison.
Additionally, LNG-by-rail presents dramatically different safety issues than LNG-by-truck because of the potential for cascading failures between rail cars. The EA compares the safety hazards of single LNG trucks to single LNG cars without giving adequate analysis to the dramatic multiplication of risk associated with a string of LNG rail cars in a 100-car unit train. PHMSA’s conclusion that LNG trains will “decrease the risks to the public...associated with transporting LNG” is profoundly misleading, and it results from relying on an inappropriate comparison of truck shipments versus rail shipments. It is far more likely that an actual “No Action Alternative” would result in dramatically fewer LNG shipments overall than a simple replacement of LNG rail shipments with truck shipments.

Conclusion

On behalf of Washington Physicians for Social Responsibility, Columbia Riverkeeper, Earth Ministry, Washington Interfaith Power & Light, 350 Tacoma, 350 Seattle, 350 Salem, 350 PDX, 350 Eugene, Food and Water Watch, Umpqua Watersheds, South Umpqua Rural Community Partnership, Cascadia Wildlands, Washington Environmental Council, STAND, Douglas County Global Warming Coalition, Friends of the San Juans, Citizens for Renewables, Advocates for a Cleaner Tacoma, Redefine Tacoma, Vashon Climate Action Network, Rogue Climate, Oregon Physicians for Social Responsibility, Sierra Club, Citizens for a Healthy Bay, Center For Biological Diversity, RE Sources for Sustainable Communities, the Power Past Fracked Gas Coalition, and our tens of thousands of members and supporters, many of whom live in communities that could face increased safety hazards from LNG shipments, we urge PHMSA to withdraw the Draft EA for Energy Transport Solutions special permit and instead prepare a full, thorough Environmental Impact Statement addressing the serious potential risks with large-scale LNG-by-rail shipments. Alternatively, based on the extreme, unaddressed risks of LNG-by-rail shipments, PHMSA should deny the special permit application.

Sincerely,

Ken Lans, MD, Washington Physicians for Social Responsibility

Dan Serres, Conservation Director, Columbia Riverkeeper

LeeAnne Beres, Executive Director, Earth Ministry and Washington Interfaith Power & Light

Carol Kindt, 350 Tacoma

Thomas Meyer, Food & Water Watch
David Perk, 350 Seattle

Debby McGee, Director, 350 Eugene

Joseph Patrick Quinn, Volunteer Conservation Chair, Umpqua Watersheds, Inc.

Stanley Petrowski, President, South Umpqua Rural Community Partnership

Sam Krop, Grassroots Organizer, Cascadia Wildlands

Rebecca Ponzio, Climate & Fossil Fuel Program Director, Washington Environmental Council

Stuart Liebowitz, Douglas County Global Warming Coalition

Alex Ramel, STAND.earth

Lovel Pratt, Marine Protection Program Director, Friends of the San Juans

Natalie Ranker, President, Citizens for Renewables

Todd Hay, PhD, President, Advocates for a Cleaner Tacoma

Val Peaphon, Co-founder, Redefine Tacoma

Suzanne Greenberg, Board Member of the Vashon Climate Action Group

Allie Rosenbluth, Campaigns Director, Rogue Climate

Damon Motz-Storey, Healthy Climate Program Director, Oregon Physicians for Social Responsibility

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Stephanie Hillman, Northwest Campaigns Representative, Sierra Club

Emily Jeffers, Staff Attorney, Center for Biological Diversity

Melissa Mallot, Executive Director, Citizens for a Healthy Bay

Shannon Wright, Executive Director, RE Sources for Sustainable Communities
Dineen O’Rourke, Campaign & Action Organizer, 350 PDX

Also on behalf of: Power Past Fracked Gas Coalition

Cc:
Congressman Peter DeFazio, Chairman, House Transportation and Infrastructure Committee
Oregon Governor Kate Brown
Washington Governor Jay Inslee
Senator Ron Wyden
Senator Jeff Merkley
Senator Maria Cantwell
Senator Patty Murray