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Elaine Chao, Secretary, United States Department of Transportation
Howard McMillan, Executive Director, Pipeline and Hazardous Materials Safety Administration

Re: **Docket No. PHMSA-2016-0077**
Pipeline and Hazardous Materials Safety Administration
Hazardous Materials: Volatility of Unrefined Petroleum Products and Class
3 Materials

Dear Secretary Chao and Executive Director McMillan:

The following constitutes our comments on the above-referenced Advance Notice of Proposed Rulemaking issued on January 18, 2017 (“ANPRM”). The ANPRM requests input on whether the Pipeline and Hazardous Materials Safety Administration (“PHMSA”) should revise its regulations to establish vapor pressure limits for unrefined petroleum based products, and potentially all Class 3 flammable liquid hazardous materials, that would apply during the transportation of the products or materials by any mode.¹

Scenic Hudson’s Interest

Scenic Hudson works to protect and restore the Hudson River as an irreplaceable national treasure and a vital resource for residents and visitors. A crusader for the valley since 1963, today Scenic Hudson is the largest environmental group focused on the Hudson River Valley. Scenic Hudson combines land conservation, support for agriculture, citizen-based advocacy and sophisticated planning tools to create environmentally healthy communities, champion smart

¹ 82 Fed. Reg. 5499, *available at*: <https://www.federalregister.gov/documents/2017/01/18/2017-00913/hazardous-materials-volatility-of-unrefined-petroleum-products-and-class-3-materials>.

economic growth, open up riverfronts to the public and preserve the valley's inspiring beauty and natural resources.

We urge PHMSA to move forward with the proposed rulemaking, especially regarding the transport of unrefined petroleum based products by any mode. The Hudson Valley in New York State has become a multi-modal "superhighway" for transport of highly volatile Bakken crude oil. Trains to and from oil terminals in Albany, NY, travel next to drinking water supplies, over vital tributaries and down the length of the west side of the Hudson, threatening densely populated commercial and residential areas, parks, public access points, and historical and cultural resources, as well as significant environmental resources, putting at risk both human health and safety, and the ecological stability of the entire river system. As crude oil production in the Bakken shale region ramps up again, we can once again expect increased rail transport through the Hudson Valley, bringing with it increased risk of accidents. In addition, the lifting of the crude oil export ban is placing even more pressure on the system. The maritime industry has made a request of the United States Coast Guard ("USCG") for it to establish, by rulemaking, 10 new anchorage grounds for 43 new berths in anticipation of increased transport of domestic crude oil by vessel for export. And a third method of transport, pipeline, is also a possibility in the Hudson Valley – an applicant proposes a double petroleum pipeline to run over 170 miles between the Port of Albany and refineries in Linden New Jersey, carrying crude oil south and refined products north. The proposal would cut through 6 counties and 23 municipalities in New York, and occupy over 90 miles of the New York State Thruway, a roadway that saw almost 110,000,000 vehicle trips in 2016.

The public health and safety in the communities of the Hudson Valley is at great risk from the transport of highly volatile Bakken crude oil, and under threat of even more. PHMSA has a statutory mandate to provide for the safe transportation of hazardous materials.² For this reason, it must proceed with the proposed rulemaking. If the opportunity exists to reduce of harm that results from the inevitable accidents that will occur from the increased transport of domestic crude oil by reducing its volatility and explosiveness, it must be taken for PHMSA even begin to meet its mandate. There is too much at stake in the Hudson Valley, and in communities all across America, to allow vapor pressure to go unregulated. Industry cannot be allowed to shift the economic risk of catastrophe from shipment of crude oil onto the residents, visitors, and natural and cultural resources of the Hudson River Valley.

² 49 U.S.C. 5103(b)(1).

I. BAKKEN CRUDE OIL TRANSPORT PRESENTS A UNIQUE AND UNACCEPTABLE THREAT

a. Bakken Crude is More Volatile than Most Other Types of Crude, Which Correlates to Increased Ignitability and Flammability

Crude oil from the Bakken region of North Dakota presents a unique and significant threat when transported through communities on its way from the oil field to refineries. This became evident when domestic oil production from the Bakken region expanded exponentially beginning in 2011, leading to increasing need transport it from the Country's interior to refineries on the coasts, with rail transportation suddenly becoming the preferred method of transport because there was insufficient pipeline capacity.³ Unfortunately, the number of rail accidents rose exponentially along with this increased production and shipment of crude oil.⁴

The first (and worst) disaster came on July 6, 2013. 47 residents of Lac-Mégantic, Quebec, lost their lives when an unattended unit train full of Bakken crude rolled backwards down a hill toward the town, hitting speeds of 65 miles per hour and derailling, damaging the inadequate tank cars that held it so they released their cargo which resulted in huge explosions and subsequent fires, requiring the evacuation of 2,000 people and devastating nearly the entire downtown core.⁵ The harmful effects of this disaster have gone on ever since. Two years later, there was still a "pile of toxic dirt" where the center of the town used to be, and residents suffering a psychological toll were experiencing substance abuse and mental health issues.⁶ Three years later, the area was still a gated-off construction site, as the town leadership continued to struggle with how to move forward but still hold on to the past.⁷

In response, on September 6, 2013, PHMSA issued an Advance Notice of Proposed Rulemaking to amend the Hazardous Materials Regulations ("HMR") "to improve the regulations applicable to the transportation of hazardous materials by rail."⁸ It also launched Operation Classification, a sampling and testing program for volatile crude oil. Despite numerous emergency orders, safety advisories, and adoption of new industry safety practices, the rail accidents, explosions and fires continued:

³ See Final Regulatory Impact Analysis, ("Final RIA"), p. 16, available at: <https://www.regulations.gov/document?D=PHMSA-2012-0082-3442>.

⁴ Final RIA, p. 18.

⁵ Lac Megantic Runaway Train and Derailment Investigation Summary, available at: <http://www.tsb.gc.ca/eng/rapports-reports/rail/2013/r13d0054/r13d0054-r-es.asp>.

⁶ Two years after oil train disaster, profound scars remain in Lac Megantic, July 6, 2015, available at: <http://www.commondreams.org/news/2015/07/06/two-years-after-oil-train-disaster-profound-scars-remain-lac-megantic>.

⁷ Lac Megantic: rebuilding a town and a community, July 4, 2016, available at: <http://montrealgazette.com/news/quebec/lac-megantic-rebuilding-process-underway-three-years-after-fatal-derailment>.

⁸ 78 Fed. Reg. 54849, available at: <https://www.gpo.gov/fdsys/granule/FR-2013-09-06/2013-21621>.

- Aliceville, Alabama, November 8, 2013: Twenty-five of a train's 90 cars derailed near a 60-foot-long wooden trestle in the early hours of the morning, and a number were still on fire 18 hours later, sending flames hundreds of feet high that could be seen from over 10 miles away.⁹
- Casselton, North Dakota:, December 30, 2013: A BNSF train carrying crude oil in North Dakota collided with another train, setting off a series of explosions that left at least 10 cars ablaze. Local residents heard five powerful explosions just a mile outside of the small town of Casselton after a westbound train carrying soybeans derailed, and an eastbound 104-car train hauling crude oil ran into it.¹⁰
- Plaster Rock, New Brunswick, January 8, 2014: A train hauling crude oil and propane derailed in northwestern New Brunswick, causing a massive fire and resulting in evacuations of over 50 homes in the area. Health officials cited concerns that the fire could affect air quality east of the derailment and those most vulnerable, including infants, children, older adults and people with chronic heart or lung diseases, were advised to stay indoors.¹¹
- Lynchburg, Virginia, April 30, 2014: A CSX Corp train carrying crude oil derailed and burst into flames in downtown Lynchburg, Virginia, spilling oil into the James River and forcing hundreds to evacuate.¹²

On August 1, 2014, PHMSA issued a Notice of Proposed Rulemaking (“NPRM”) that proposed: 1) new operational requirements; 2) improvements in tank car standards; and 3) bolstered requirements for offerors to ensure proper classification and characterization of unrefined petroleum-based products, designed to “lessen the frequency and consequences of train accidents involving HHFTs.”¹³ As PHMSA acknowledges in the NPRM, “transporting crude oil can be dangerous if the crude oil is released into the environment because of its flammability. This risk of ignition is compounded in the context of rail transportation of crude oil. It is commonly shipped in [unit trains] that may consist of over 100 loaded tank cars, and there appear to be uniquely hazardous characteristics of crude oil.”¹⁴

⁹ Crude oil tank cars ablaze after train derails in Alabama, available at: <http://www.reuters.com/article/us-crude-train-explosion-idUSBRE9A70Q920131109>.

¹⁰ Train collision in North Dakota sets oil rail cars ablaze, available at: <http://www.reuters.com/article/us-northdakota-collision-idUSBRE9BT0OV20131230>.

¹¹ Train derailment near Plaster Rock, New Brunswick sparks large fire, available at: <https://www.theweathernetwork.com/news/articles/train-derailment-near-plaster-rock-new-brunswick-sparks-large-fire/19116>.

¹² CSX train carrying oil derails in Virginia in fiery blast, available at: <http://www.reuters.com/article/us-railways-accident-virginia-idUSBREA3T0YW20140430>

¹³ 79 Fed Reg. 45016, <https://www.federalregister.gov/documents/2014/08/01/2014-17764/hazardous-materials-enhanced-tank-car-standards-and-operational-controls-for-high-hazard-flammable>

¹⁴ 79 Fed. Reg., at 45041.

Based on its sampling and testing, PHMSA also released its Operation Safe Delivery Update.¹⁵

Bakken crude's high volatility level – a relative measure of a specific material's tendency to vaporize – is indicated by tests concluding that it is a 'light' crude oil with a high gas content, a low flash point, a low boiling point and high vapor pressure. The high volatility of Bakken crude oil, and its identification as a 'light' crude oil, is attributable to its higher concentrations of light end hydrocarbons.... Given Bakken crude oil's volatility, there is an increased risk of significant incident involving this material due to the significant volume that is transported, the routes and the extremely long distances it is moving by rail.¹⁶

A 2014 New York study in response to the risks of the sudden increase in crude transport concludes the same about the crude oil transported along and on the Hudson River, which originates from the Bakken Shale in North Dakota and is inherently more volatile than other crudes, with a flash point and vapor pressure similar to gasoline.¹⁷ Information provided to Congress in early 2014 also indicated that Bakken crude is classified as a "light sweet" crude oil, and is a mixture of oil and highly volatile organic compounds that include propane, butane and ethane.¹⁸ Compared to other crude oils, Bakken crude oil has a higher concentration of these light-end volatile compounds.¹⁹

Volatility refers to petroleum's evaporation characteristics. Vapor pressure is a liquid's ability to volatilize, and increases with temperature. Vapor pressure is an important consideration for both crude oil producers and refiners in determining general handling and initial refinery treatment – they have an interest in maintaining a certain vapor pressure in order to protect their equipment and personnel.

Vapor pressure also serves as an indirect measure of the evaporation rate of volatile petroleum solvents; with higher vapor pressures indicating greater losses from evaporations.²⁰ In other words, vapor pressure of crude oil increases with the presence of flammable gases and other volatile components. As described above, Bakken crude has high concentrations of such

¹⁵ Operation Safe Delivery Update, August 1, 2014, p. 16, available at: https://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Hazmat/07_23_14_Operation_Safe_Delivery_Report_final_clean.pdf

¹⁶ *Id.*

¹⁷ NYS Div. of Homeland Sec. and Emergency Servs., et. al., *Transporting Crude Oil in New York State*, at 14, 2014.

¹⁸ See Andrews, A., "Crude Oil Properties Relevant to Rail Transport Safety: In Brief," Congressional Research Service, February 18, 2014.

¹⁹ *Id.*

²⁰ *Id.* 3.

components, leading PHMSA to conclude that *Bakken crude is “more volatile than most other types of crude – which correlates to increased ignitability and flammability.”*²¹

Despite this knowledge, the rail accidents with explosions and fires continued:

- Mount Carbon, West Virginia, February 16, 2015: Hundreds of families were evacuated and nearby water treatment plants were temporarily shut down after cars derailed from a train carrying three million gallons of North Dakota crude, shooting fireballs into the sky, leaking oil into a Kanawha River tributary and burning down a house nearby.²²
- Galena, Illinois: March 6, 2015. After another derailment, firefighters’ only to access the fire was via a bike path, but when they reached it they had to pull back and let the fire burn out due to its intensity.²³
- Gogama, Ontario, March 7, 2015: One day later, several tanker cars caught fire after a Canadian National Railway train carrying crude oil derailed in northern Ontario, prompting officials to advise nearby residents to stay indoors and avoid consuming water from local sources. Some of the rail cars that caught fire entered the Mattagami River System.²⁴
- Heimdal, North Dakota, May 6, 2015: A BNSF train carrying crude oil derailed and caught fire, forcing the evacuation of about 40 residents from the Wells County town of Heimdal after 10 tank cars left the rails. Black smoke was visible for miles as more than 300,000 gallons of crude oil burned. Emergency responders from five communities set up a command center near scorched wheat fields adjacent to the train tracks.

These brief summaries of the accidents do little to fully describe their impacts on the people affected. When these rail accidents occur, the potential for wide-spread and significant human health impacts is great, all of which can be exacerbated by the volatility of the material being transported:

[When combustion events in rail transport occur,] in addition to the individual hazards associated with these events, the cascading potential for ignition of nearby infrastructure should be considered in a hazard analysis. Smoke propagation should also be considered since it too can be hazard, such as when it is drafted through a

²¹ Operation Safe Delivery Update, August 1, 2014, p. 16, available at: https://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Hazmat/07_23_14_Operation_Safe_Delivery_Report_final_clean.pdf (emphasis added).

²² Train carrying 3million gallons of crude oil exploded after West Virginia derailment even though tanker cars were upgraded BEYOND federal requirements, available at: <http://www.dailymail.co.uk/news/article-2958214/W-Va-oil-train-derailment-1-3-safer-tank-cars.html>

²³ Derailed oil train continues to burn in Illinois, available at: <http://www.npr.org/sections/thetwo-way/2015/03/07/391368331/derailed-oil-train-continues-to-burn-in-illinois>

²⁴ Train carrying crude oil derails near Gogama, Ont. This is the 4th train derailment in northern Ontario this year, available at: <http://www.cbc.ca/news/canada/sudbury/train-carrying-crude-oil-derails-near-gogama-ont-1.2985703>

building's ventilation system. Human behavior during evacuations also needs to be considered since it affects the number of casualties/injuries, and hence, total damage. With large populations and complicated pathways for exit strategies, effective evacuation efforts can be extremely difficult. All of these factors should be considered to understand the damage potential.²⁵

b. Regulatory Action Thus Far Does Not Eliminate the Risk of Fire and Explosion from the Transport of Highly Volatile Bakken Crude

The final High Hazard Flammable Train rule ("Final Rule") was issued May 8, 2015, effective July 7, 2015.²⁶ Both the Final Regulatory Impact Analysis ("RIA") and PHMSA concluded:

Based on these train accidents, the projected continued growth of domestic crude oil production, and the growing number of train accidents involving crude oil ... the potential for a train accident involving crude oil has increased, which has raised the likelihood of a catastrophic train accident that would cause substantial damage to life, property, and the environment."²⁷ An increase in transport will result in an increase in accidents.²⁸ For trains in particular, the risk of flammability is compounded by the fact that the crude oil is often transported in unit trains, with up to 100 tanker cars or more on a single train.²⁹

Neither the NPRM nor the Final Rule included specific measures to address the inherent and dangerous volatility of Bakken crude or included any requirements for limiting the vapor pressure of this material, although the NPRM invited comment and discussion on the issue.

On December 9, 2014, the North Dakota Industrial Commission ("NDIC") had approved an order requiring all producers in North Dakota to install and utilize oil-conditioning equipment to "significantly reduce" the vapor pressure of all Bakken crude oil beginning April 1, 2015.³⁰

²⁵ Literature Survey of Crude Oil Properties Relevant to Handling and Fire Safety in Transport (Sandia Report), March 2015, p. 75, available at: <http://prod.sandia.gov/techlib/access-control.cgi/2015/151823.pdf>

²⁶ 80 Fed. Reg. 26643, available at: <https://www.regulations.gov/document?D=PHMSA-2012-0082-3460>. After passage of the "Fixing America's Surface Transportation Act of 2015," or FAST Act, PHMSA issued a revised rule on November, 2015 to make specific regulatory amendments to the tank car design standards and phase-out schedule. 81 Fed. Reg. 53935, available at: <https://www.federalregister.gov/documents/2016/08/15/2016-19406/hazardous-materials-fast-act-requirements-for-flammable-liquids-and-rail-tank-cars>.

²⁷ See Final Regulatory Impact Analysis, ("Final RIA"), p. 19, available at: <https://www.regulations.gov/document?D=PHMSA-2012-0082-3442>.

²⁸ See Final RIA, p. 6.

²⁹ Final RIA.

³⁰ North Dakota Industrial Commission, Order No. 25417, available at: <https://www.dmr.nd.gov/oilgas/Approved-or25417.pdf>; North Dakota Industrial Commission, Oil and Gas Division, FAQs, available at: <https://www.dmr.nd.gov/oilgas/ConditioningFAQ040215.pdf>.

The goal of the order was to produce crude oil that does not exceed a vapor pressure of 13.7 pounds per square inch (psi), or 1 psi lower than a “nationally recognized standard” for “stable crude oil” of 14.7 psi, adjusting for an error margin of one psi in the sampling procedures and measurement equipment.³¹ Per NDIC, “the oil conditioning order was written as a matter of safety.”³²

In adopting the Final Rule, however, it was stated in the Final RIA:

It is our understanding that the level of pre-treatment described in [the NDIC] order will not have a drastic effect as most of the crude in North Dakota tests below 13.7 already. We are not able make any definitive statements on the impact on the baseline likelihood of future fires or explosions from derailments involving North Dakota crude.³³

A table included in the Petition for Rulemaking submitted by the New York Attorney General and repeated in the ANPRM, accidents for which data is available involved vapor pressure readings below the so-called “stable crude” 14.7 psi limit referenced in NDIC Order 25417.³⁴

Incident	Vapor Pressure
Lac-Megantic, Quebec (7/13)	Average between 9.0 to 9.5 psi
Lynchburg, Virginia (4/14)	Average of 14.3 psi
Mt. Carbon, WV (2/15)	13.9 psi
Heimdal, ND (5/15)	10.8 psi

³¹ North Dakota Industrial Commission, Oil and Gas Division, FAQs, available at: <https://www.dmr.nd.gov/oilgas/ConditioningFAQ040215.pdf>. NDIC Order 25417 required Vapor Pressure to be measured using VPRC tests performed in accordance with the latest version of ASTM D6377, conducted quarterly. Reid Vapor Pressure (RVP) is measured using Standard Test Method ASTM D323. Industry is utilizing the VPCR4 (37.8 C, 100 F) as a replacement to the original D323 RVP measurement. Literature Survey of Crude Oil Properties Relevant to Handling and Fire Safety in Transport (Sandia Report), March 2015, available at: <http://prod.sandia.gov/techlib/access-control.cgi/2015/151823.pdf>

³² Id.

³³ Final RIA p. 26.

³⁴ See December 1, 2015, Petition for Rulemaking; 82 Fed. Reg. at 5501.

Based on these facts, the Petition for Rulemaking requests that PHMSA establish a nationwide vapor pressure standard for crude oil shipped by rail throughout the United States of less than 9 psi (Reid Vapor Pressure). Scenic Hudson supports this request made by the New York Attorney General.

The Final Rule and North Dakota's conditioning requirement were adopted just in time to see a significant drop-off in rail transport as the price of crude fell and pipeline capacity expanded.³⁵ This did not eliminate the risks, however. On June 3, 2016, a train traveling on Union Pacific's Portland Subdivision Line derailed near the town of Mosier, Oregon.³⁶ The Federal Railroad Administration's ("FRA") preliminary factual findings state:

- A total of 16 tank cars derailed.
- The train was traveling only 25 miles per hour in compliance with a speed restriction due to the curvature of the track.
- The Union Pacific derailment was caused by broken lag bolts leading to wide track gauge.
- The train consisted of two head-end locomotives, one distributed power locomotive at the rear, two buffer cars, and 94 tank cars loaded with Bakken crude oil.
- "Dakota Plains loaded the tank cars for U.S. Oil in New Town, North Dakota. Dakota Plains reports the crude oil had a vapor pressure of 9.2 psi, measured at the loading facility."
- The tank cars were general purpose specification DOT-111 tanks cars, modified to the Association of American Railroads (AAR) CPC-1232 standard. The cars were equipped with full-height head shields and metal jackets with insulation, but did not have thermal protection.
- During the derailment, a coupler struck one tank car, mechanically puncturing it. This puncture allowed crude oil to come into contact with an ignition source, leading to a fire that burned for approximately 14 hours. Four cars were eventually involved in the fire. The four tank cars involved in the fire were the punctured car, and three additional tank cars – two that had their bottom outlet valves sheared off in the derailment, and one car with the gasket melted out from

³⁵ Crude slump, pipeline expansion mark end of US oil train boom, July 25, 2016, <https://www.wsj.com/articles/crude-slump-pipeline-expansion-mark-end-of-u-s-oil-train-boom-1469484016>

³⁶ Federal Railroad Administration, PRELIMINARY FACTUAL FINDINGS REPORT, Derailment of Union Pacific's Unit Crude Oil Train ONETU 02 Transporting Bakken Crude Oil for U.S. Oil Mosier, Oregon, June 23, 2016, available at: https://www.fra.dot.gov/eLib/details/L18393#p1_z10_gD_IAC.

under the manway cover.

- “The tank cars involved in the derailment performed as expected in the incident based on tank car performance metrics.”

After the accident, the Mosier Fire Chief concluded that the shipment of Bakken crude by rail is “insane,” and stated: “I’ve been very hesitant to take a side up to now, but with this incident, and with all due respect to the wonderful people that I’ve met at Union Pacific, shareholder value doesn’t outweigh the lives and happiness of our community.”³⁷ Hazardous materials teams and firefighters had to come from across the northwest to deal with the disaster. Fire suppression foam was useless due to the heat of the fire, and it took responders 8-10 hours to cool the cars with water drawn from the Columbia River enough to finally be able to put out the fire. The situation was described as an “apocalypse” with “exhausted firefighters everywhere you look.” The Fire Chief said that it could have been even worse if the accident had happened just 24 hours earlier, because high prevailing winds would have caused the fire to spread. Over a month after the spill, groundwater contamination in the form of elevated levels of benzene and other volatile organic compounds from the Bakken crude was discovered, causing concerns over potential impacts to wetlands and wildlife.³⁸

This accident occurred despite use of retrofitted tank cars per PHMSA’s 2015 rulemakings and apparent compliance with both operational controls and the crude oil conditioning requirements imposed by NDIC. The fact remains that accidents can and will occur, and explosions and fires will happen, creating serious risk to public health and safety. Obviously, even crude oil considered to be “stable,” that might not boil when exposed to normal atmospheric pressure at room temperature in a testing laboratory, can still cause huge explosions and fires and damage in the event of an accident during transport. In order to reduce the damage done in these accidents and in the interest of human safety and environmental protection, PHMSA must move forward with its proposed rulemaking and limit the volatility of the materials being shipped.

II. HUDSON RIVER VALLEY COMMUNITIES ARE AT SERIOUS RISK

A. The Hudson River Valley

The Hudson River is an irreplaceable national treasure and a vital resource for residents and visitors, and is a major driver of the Hudson Valley region’s over \$4 billion tourism and recreation industry. The River has nationally important historical, cultural, ecological and aesthetic values. The estuarine portion of the river – that is, the portion of the River that is

³⁷ Mosier Fire Chief Calls Shipping Bakken Crude Oil By Rail 'Insane', available at: <http://www.opb.org/news/series/oil-trains/oil-sheen-slick-found-columbia-river-mosier-train-derailment/>

³⁸ Mosier groundwater contaminated after oil derailment, available at: <http://www.opb.org/news/series/oil-trains/mosier-groundwater-contaminated-oil-train-derailment/>

subject to tidal influence and upriver flow of salty ocean water - stretches for 153 miles from north of Albany to New York Harbor. It is one of the most productive and biologically diverse ecosystems in the nation.

Eighty-four waterfront communities are situated along the River's shorelines. As one of only 49 National Heritage Areas in the country, the communities along the Hudson River have been designated by the U.S. Congress as a landscape with nationally unique natural, cultural, historic, and/or scenic resources. In 2000, the National Trust for Historic Preservation named the Hudson Valley one of America's "Eleven Most Endangered Historic Places." When announcing its selection, the National Trust characterized the region as "a mix of scenery and history that is unmatched anywhere else in the country".³⁹

Despite – or perhaps because of – its natural and cultural treasures and proximity to the largest metropolis in the United States, the Hudson has endured an unfortunate legacy of industrial pollution. Industrial development in the region changed the river basin's ecology and physical function, and compromised the economic, recreational and cultural activities associated with it. Throughout much of the twentieth century, the Hudson endured enormous sewage discharges, the filling of wetlands and secondary channels, erosion of scenic vistas, fish kills in industrial cooling water intakes, and toxic chemicals that disrupted the food chain. During the 1960s, bacteria consumed so much oxygen that fish suffocated in the water. The most infamous toxic legacy in the Hudson River is polychlorinated biphenyls (PCBs), primarily from General Electric plants located on the Upper Hudson River. These toxic PCBs enter food webs in the River, leading the state to close most once robust commercial fisheries and the state Department of Health to issue fish consumption advisories aimed at recreational anglers.

The impacts of degraded habitats, hardened shorelines, reduced floodplains and the decline of a once thriving fishery earned the Hudson a reputation as a dirty, industrial river. The public stayed away, and the historical, cultural and scenic treasures of the Hudson Valley were all but forgotten. Since the 1970s, however, through efforts of federal and state agencies, scientists, and citizens and vast investment of public and private funds⁴⁰, water quality in the Hudson River has improved significantly. Many fish species are on their way to recovery, and commercially important species such as striped bass have increased more than tenfold since the 1980s. Since 2009, General Electric has been conducting a cleanup of PCB hotspots in the Upper Hudson River.

³⁹ Silverman, Miriam D., Stopping the Plant: The St. Lawrence Cement Controversy and the Battle for Quality of Life in the Hudson Valley, 2006, at 37.

⁴⁰ A sampling of public money invested in restoring the Hudson River and its shorelines through the Hudson River Estuary Program since the 1990s includes: more than \$72 million in water quality improvement projects; \$83 million in waterfront planning and development; \$12 million for conservation and river access; \$110 million for water quality and aquatic restoration projects; \$15 million for cleanup of contaminated sites on the riverfront; and \$11 million for planning and trail projects. (See Hudson River Estuary Program Report, 2010).

Given its historical and ecological legacy, the river and its communities are the focus of several federal programs that work towards its protection. The Hudson River Valley was designated as a National Heritage Area by Congress in 1996 to recognize the national importance of the Hudson Valley's history and resources. The Hudson River is one of only fourteen American Heritage Rivers in the entire nation, and the Hudson River National Estuarine Research Reserve protects four exemplary wetland sites on the estuary. The U.S. Army Corps of Engineers is working with local communities and not-for-profit organizations to create a comprehensive, federally-recognized Hudson River Restoration Plan, aiming to improve ecosystem function and health and also to enhance regional economic potential.

The Hudson Valley's natural resource economy is thriving, making significant contributions to the region's quality of life and its ability to attract outside investment and create jobs. Investments made in the natural environment by federal, state and local governments for the past five decades have spurred an era of growth in this sector. There is now broad recognition of the inherent connection between the Hudson Valley's economy and its environment. Tourism remains a primary beneficiary of our healthy environment with the region contributing \$4.75 billion in economic activity in the Hudson Valley region annually⁴¹, including \$184 million alone from recreational boating in the Hudson River.⁴²

Clean water, scenic views, natural habitat, public waterfronts and a healthy environment are the foundation of regional economic development. Green infrastructure provided by the Hudson River, defined as intact natural systems (open space, wetlands, beaches, etc.), provide a myriad of public benefits. For each \$1 million spent on water infrastructure, 26 jobs are created.⁴³ Development of parks returns \$5 to the local community for every \$1 invested⁴⁴, while the state's own Environmental Protection Fund has been shown to return \$7 to the economy for every \$1 invested in land and water conservation.⁴⁵ The Hudson Valley Economic Development Corporation has noted that natural resources and quality of life are principal drivers in corporate CEOs deciding to relocate their businesses to the region.

The Hudson flows cleaner today than it has in many decades. On warm summer days, the river teems with recreational boaters, diners pack into waterfront restaurants, and visitors from across the nation come to take in the scenic beauty of the Hudson River from Walkway over the Hudson State Park. Tourism is the center of the Hudson Valley's economy. It is unthinkable that, as the Hudson is finally rebounding from its legacy of pollution, the Valley has become a virtual "superhighway" for the transport of volatile Bakken crude oil which poses a serious safety threat

⁴¹ Hudson Valley Tourism, report prepared by Tourism Economics for Empire State Development, 2012.

⁴² SeaGrant New York report; Cornell University Dept. Natural Resources. Available at: www.seagrant.sunysb.edu/nysportfishing/recboating

⁴³ *Infrastructure Investment and Economic Growth*, Progressive Policy Institute, March 2014.

⁴⁴ The NYS Park System: An Economic Asset to the Empire State, Executive Summary, 2009.

⁴⁵ The Economic Benefits of New York's Environmental Protection Fund, Trust for Public Land, 2012.

to its communities and could erase the efforts of so many who fought to bring the River back to health.

B. The River Subdivision Rail Line

The dramatic expansion of U.S. shale oil production resulted in the Hudson River quickly becoming a “virtual pipeline” for the rail transport of Bakken crude oil, with hundreds of thousands of barrels per day transported by rail.⁴⁶ The Hudson River became a key transport corridor for roughly one fifth of all oil produced from the Bakken shale deposits in North Dakota.⁴⁷ By mid-2014, fifteen to 30 trains, each carrying at least 1 million gallons of Bakken crude oil, passed through the Hudson Valley each week, according to information provided to New York State by CSX Transportation.⁴⁸ This level of traffic may be revisited on the Hudson Valley once again, as market analysts predict that the comeback of domestically-produced oil could be much faster and stronger than once anticipated.⁴⁹ Per a March 3, 2017, article, since September, U.S. production has climbed roughly 125,000 bpd on average each month, pushing total production above 9 million barrels per day, which is a much faster pace of growth than the original shale boom, which saw growth of 93,000 bpd during the period from 2011-2014.

The “River Subdivision” line owned by CSX Transportation travels directly along the Hudson River’s western shoreline for most of its route from New Jersey to Selkirk, New York outside of Albany, for a total of 47.7 riverfront miles. Canadian Pacific also owns approximately two miles of track at the far northern end of the Hudson. The River Subdivision line travels mere feet from dozens of designated Significant Coastal Fish and Wildlife Habitats, and transects Iona Island, a National Natural Landmark and National Estuarine Research Reserve site. Some areas of the rail line on the lower Hudson are located on narrow berms with water on both sides. The location of the River Subdivision line could not be worse for the magnitude of potential impacts to sensitive, nationally recognized environmental and cultural resources in the case of a crude oil spill.

A train accident and derailment on the River Subdivision line would present a serious threat to public safety and onshore resources. The Hudson River shoreline is a heavily populated area, and all along the waterfront, revitalization efforts are underway. Restaurants, boat launches, and parks draw people to the shoreline just feet away from the River Subdivision line. A map prepared by Scenic Hudson at the height of the rail transport boom in 2014 and attached hereto

⁴⁶ Global Partners LP, 2012 Form 10K 55 (Mar. 15, 2013).

⁴⁷ Mouawad, Jad, *Bakken Crude, Rolling Through Albany*, N.Y. Times, Feb. 27, 2014. Available at: <http://www.nytimes.com/2014/02/28/business/energy-environment/bakken-crude-rolling-through-albany.html>

⁴⁸ “CSX: 15-30 Oil Trains Move Weekly on Hudson River Line”, Poughkeepsie Journal, July 16, 2014. Available at: <http://www.poughkeepsiejournal.com/story/news/local/new-york/2014/07/16/csx-releases-oiltrain-data/12740573/>

⁴⁹ US Shale Production Growing at an Unprecedented Rate, <http://oilprice.com/Energy/Energy-General/US-Shale-Production-Growing-At-An-Unprecedented-Pace.html>.

depicts the many resources within a one-mile “blast zone” of the River Subdivision Line. As demonstrated, a derailment, explosion and fire on this rail line could impact:

- 239,764 people, 100,020 households
- 12 sewage treatment plants
- 6 drinking water intakes
- 69 K-12 schools
- 9 colleges and universities
- 91 State, County and Municipal public parks; and
- an estimated 80 medical facilities.

Of particular note, the West Point NY Military Academy is the oldest continuous operating Army post in the country and the entire central campus is a National Landmark. It is an irreplaceable mecca of historic sites, buildings, and monuments. Trains on the CSX River Subdivision line travel through a tunnel from the south end of the Academy under historic Thayer Hall. In addition, immediately adjacent to the tracks in Ulster County is one of the Valley’s premier tourist attractions, the Walkway Over the Hudson State Historic Park. The average amount of people visiting Walkway over the Hudson State Historic Park is nearly 500,000 annually. In addition to the devastating loss of human life that could occur in the event of derailment of a train carrying Bakken crude, the economic impact of a spill on water or fire on the shore would be devastating to the Hudson Valley.⁵⁰

On March 7, 2017, in Newburgh, New York, nearly dead-center of a major oil storage facility and just past a redeveloped waterfront full of people visiting restaurants and other businesses in the middle of the afternoon, a train traveling on the CSX River Subdivision Line struck a vehicle that was stuck on the tracks and derailed.⁵¹ The train was carrying sulfuric acid, sodium hydroxide, cardboard, corn oil and glass products. During the derailment, the train struck two pieces of CSX maintenance equipment that were on an adjacent track and two employees who were operating the equipment were treated for injuries.⁵² State police said that it was “close to a miracle” that more people were not injured. The photograph below shows the train after it came to rest in the center of the oil storage facility and across a public roadway. If this had been a unit train of explosive Bakken crude, the devastation would have been horrific.

⁵⁰ A crude oil spill would also seriously threaten the estuary’s wildlife and water quality.

⁵¹ CSX Freight train carrying hazardous materials derails in Newburgh, <http://pix11.com/2017/03/07/freight-train-derails-in-newburgh-blocks-roadway/>

⁵² State police: ‘close to a miracle’ more people weren’t hurt in Newburgh train derailment, available at: <http://newyork.cbslocal.com/2017/03/08/newburgh-freight-train-derailment/>



C. Transport of Volatile Crude by Vessel on the Hudson River is Anticipated to Increase

In addition to transport by rail along the River Subdivision line, Bakken crude is transported by barge on the River itself. Trains bring crude oil to transloading facilities at the Port of Albany, where it is transferred to vessels for transport to refineries on the coast and beyond. On June 9, 2016, The United States Coast Guard (“USCG”) issued an Advance Notice of Proposed Rulemaking to establish new anchorage grounds in the Hudson River from Yonkers, NY to Kingston, NY (the “ANPRM”).⁵³ The ANPRM was issued after receipt of requests from industry representatives. The specific details of the location and size of the ten new anchorage grounds and 43 new anchorage berths proposed in the ANPRM is taken verbatim from a request letter from The Maritime Association of the Port of New York/New Jersey Tug & Barge Committee, dated January 21, 2016 (the “Maritime Association Letter.”)⁵⁴ The sole stated

⁵³ 81 Fed. Reg. 37168, Docket Number USCG-2016-0132, Anchorage Grounds, Hudson River; Yonkers, NY to Kingston, NY, June 9, 2016, available at: <https://www.federalregister.gov/documents/2016/06/09/2016-13701/anchorage-grounds-hudson-river-yonkers-ny-to-kingston-ny#h-13>.

⁵⁴ See January 21, 2016 Letter to RDML Linda Fagan from The Maritime Association of the Port of New York/New Jersey Tug & Barge Committee (“Maritime Committee Letter”), available at:

justification for the proposed anchorages is the “expected increase in crude oil transport...”⁵⁵ The Maritime Association Letter states that the overriding purpose for its request is to promote and increase the transport and storage of crude oil on the environmentally sensitive and historically significant Hudson River:

For several years the United States of America has developed as a major energy producing nation and the great Port of Albany as a leading export port for Jones Act trade of American Bakken Crude Oil and Ethanol. Trade will increase on the Hudson River over the next few years with the lifting of the ban on American Crude exports for foreign trade and federally designated anchorages are the key to supporting trade.⁵⁶

The new anchorages would cover a total of 2,400 acres in the Hudson River, located just offshore of revitalized waterfronts, and presenting a significant hazard to recreational boaters. The transport of highly volatile Bakken crude by vessel could result in even more disasters, as evidenced by the grounding of the very first voyage of a vessel carrying Bakken crude oil out of Albany, groundings and collisions are very real risks of transporting crude oil by barge or tanker.⁵⁷ When the tanker *Stena Primorsk* ran aground on December 21, 2012, its outer hull was punctured; fortunately the vessel had a double hull and no oil was spilled.⁵⁸ However, a higher speed collision or grounding on a hard object could penetrate even a double hull.⁵⁹ These are nightmare scenarios for the Hudson Valley, where an oil spill and/or explosion from a vessel carrying Bakken crude would threaten densely populated riverfront areas and spoil the invaluable habitats in the Hudson River.

Further, as many if not most of the anchored vessels would be carrying large volumes of explosive Bakken crude oil, the existence of several vessels carrying this dangerous cargo anchored in close proximity to one another for a long duration presents a significant terror threat. Increasing the gravity of this threat is the fact that two of the new anchorages—the Montrose Point and Tompkins Cove anchorages, together comprising six berths—lie within three miles of the Indian Point nuclear power plant. Since the average barge carrying crude on the Hudson can carry about 4 million gallons of oil⁶⁰, 24 million gallons of volatile crude could be parked within

<https://www.federalregister.gov/documents/2016/06/09/2016-13701/anchorage-grounds-hudson-river-yonkers-ny-to-kingston-ny#h-13>.

⁵⁵ See Maritime Association Letter.

⁵⁶ Maritime Association Letter, available at: <https://www.regulations.gov/document?D=USCG-2016-0132-0075>.

⁵⁷ See Grondahl, Paul, et. al., “Tanker’s Outer Hull Pierced”, *The Albany Times-Union*, December 21, 2012, available at: <http://www.timesunion.com/local/article/Tanker-s-outer-hull-pierced-4134866.php>

⁵⁸ *Id.*

⁵⁹ Charles R. Cushing, Ph.D., P.E., Report to Hudson River Waterfront Alliance Concerning Proposed Hudson River Anchorages, available at: <https://www.regulations.gov/document?D=USCG-2016-0132-4948>, at p. 60.

⁶⁰ See Viera, Al. “U.S. Barge Operators Transport Domestic Crude on Inland Rivers”, *The Professional Mariner*, December 5, 2014: “According to Rich Hendrick, the Port of Albany’s general manager, the growth in crude traffic at his port began in mid-2012. Now, one of two berths at the port is being used daily for loading crude onto barges . .

three miles of an aging nuclear facility—a deadly prospect only 30 miles from our nation’s largest city.

D. The Hudson Valley is Also Threatened by Proposed Petroleum Pipelines

Yet a third mode of transport may also threaten Hudson Valley communities. Pilgrim Transportation of New York, Inc. has proposed two side-by-side petroleum pipelines between the Port of Albany, NY and refineries in the Linden, NJ area.⁶¹ One pipeline would carry Bakken crude oil from the Port of Albany to Linden, and the other would carry refined products from Linden back up to Albany. Each pipeline would be 170 miles long, buried in a 6’x6’ trench. 129.9 miles of pipeline is in New York; 79% of this route would be located within the New York State Thruway right-of-way (“ROW”), a roadway that saw almost 110,000,000 vehicle trips in 2016, putting drivers at risk.⁶² The remainder would be outside of the Thruway ROW, cutting through private property.

The project would cross through six counties and 23 municipalities in the Hudson Valley. The pipelines would cross the Hudson River twice just south of Albany and lateral offshoots of the main pipeline extend to the Hudson River shoreline in Newburgh and New Windsor in Orange County. The pipelines would cross or be adjacent to 19 public parks in New York, including Harriman State Park, Sterling Forest State Park and Catskill Park. The applicant itself estimates that a break of the crude oil pipeline would release 4,000 barrels (168,000 gallons) of crude oil assuming that the pump stations shut down exactly as designed. If they continue to operate for some time, the pipeline would release 8,500 barrels/357,000 gallons per hour and the release volume would be increased by pressurized flow during that time.

Pipelines are not immune from accidents involving explosions and fires. On June 10, 1999, a 16-inch fuel line owned by the Olympic Pipe Line Company ruptured in Bellingham, Washington, spilling 277,200 gallons of gasoline into Hanna and Whatcom creeks.⁶³ The volatile fuel exploded, killing three youths: Liam Wood, 18, and Wade King and Stephen Tsiornas, both age 10. The massive fireball sent a plume of smoke 30,000 feet into the air, visible from Anacortes to Vancouver, B.C., Canada. Unfortunately, a release of highly volatile Bakken crude from the Pilgrim Pipeline could result in a similar disaster and loss of life in the Hudson Valley.

.Hendrick said Reinauer Transportation has the majority of the tug business at his port, transporting Global products by ATBs — likely 100,000-plus barrels per shipment [4.2 million gallons], he said.”

⁶¹ NYSDEC Pilgrim Pipeline Project, <http://www.dec.ny.gov/permits/105174.html>.

⁶² NYSTA Statistics, 2016, available at:

<http://www.thruway.ny.gov/about/financial/monthly/2016/vtm/dec2016vtm.pdf>

⁶³ <http://www.historylink.org/File/5468>

III. CONCLUSION: PHMSA MUST MOVE FORWARD WITH THE PROPOSED RULEMAKING

As stated at the outset, the issue in this ANPRM is whether PHMSA should establish vapor pressure limits for unrefined petroleum-based products and potentially all Class 3 flammable liquid hazardous materials that would apply during the transportation of the products or materials by any mode. As demonstrated above, the transport of Bakken crude presents a unique and unacceptable risk due to its high volatility. Industry's compliance with the regulatory measures and conditioning requirements adopted thus far has not eliminated the risk of accidents resulting in damaging explosions and fires. As domestic shale oil production ramps up again, the Hudson Valley is faced once more with increasing rail transport, as well as industry proposals to facilitate more transport by vessels, as well as new pipelines.

PHMSA's failure thus far to address volatility leaves an unacceptable gap in the regulatory regime for the transport of highly flammable Bakken crude that must be closed. The residents of the Hudson Valley bear great risk of a catastrophic incident from an accident involving the transport of Bakken crude. For the Hudson Valley - and communities all across America - PHMSA must address this additional factor to mitigate the severity of incidents when they occur to the greatest extent possible. The response to PHMSA's question is: yes.

Respectfully submitted,

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Crude Oil Transport in the Hudson Valley: Environmentally Sensitive & Significant Areas at Risk within 1-Mile Blast Radius from CSX River Line

September 2014

Legend:

- 17 Scenic Hudson parks
- Drinking water intakes
- Sewage treatment plants
- Hudson River National Estuarine Research Reserve Sites (HRNERR)
- River Line track
- 47.7 miles of River Line track on the water and in the immediate blast zone
- Geographic area at risk
- Schools (K-12)
- Colleges and Universities
- Dams

Potential Resources at Risk:

- 7,808 acres of Scenic Hudson protected lands
- 239,764 people, 100,020 households
- 12 sewage treatment plants
- 6 drinking water intakes
- 69 K-12 schools
- 9 colleges and universities
- 91 State, County and Municipal public parks
- 68 dams
- 40 coastal fish & wildlife habitat areas comprising 42,825 acres
- 24,613 acres of protected lands
- 4 national estuarine research reserve sites
- 8,460 acres of tidal wetlands
- 6,638 acres of sub-aquatic vegetation
- 6 major tributaries are crossed by the rail line
- 36 secondary stream rail line crossings
- 91 DEC brownfields
- 20,499 acres of non-tidal wetlands
- 60,189 acres of forest
- 182 EPA designated polluted sites
- Estimated at least 80 medical facilities

Notes:
1. The risk area includes all locations within 1 mile of the river rail line and west of the Hudson River, as well as all locations along the river within the impact area of a storm surge 6' above high tide. The total area of risk is 209,982 acres.
2. Population and household impacts are estimated from census data using areal weighting methods on census block polygons. Areal weighting allocates data to target zones based on their proportion of the source zone's area.
3. Source data from: NYS DEC, Hudson River Estuary Program, NOAA, NYS DOS, NYS DOH, and US Census Bureau.

