

Summary of the RSI-CTC Commissioned Report by The Brattle Group: “A Review of PHMSA’s Draft Regulatory Impact Analysis for HM-251”

At the request of the Railway Supply Institute’s Committee on Tank Cars (“RSI-CTC”), The Brattle Group conducted a critical review of the Pipeline and Hazardous Materials Safety Administration’s (“PHMSA”) Draft Regulatory Impact Analysis (“DRIA”) for its Notice of Proposed Rulemaking (“Proposed Regulations”) regarding Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains (HM-251). The RSI is the international trade association of the railway supply industry. The members of the RSI-CTC collectively build more than ninety-five percent (95%) of all new railroad tank cars and own and provide for lease more than seventy percent (70%) of railroad tank cars operating in North America. The Brattle Group provides consulting and expert testimony in economics, finance, and regulation to corporations, law firms, and governments around the world. As a result of its long-standing and extensive experience in working with regulated network industries Brattle has particular expertise in the fields of energy, transportation, and regulatory economics.

In its report, Brattle identifies numerous instances in which PHMSA overstates the benefits or understates the costs of the Proposed Regulations. Brattle also compared the impact of PHMSA’s proposal with RSI-CTC’s recommendations filed in the rulemaking proceeding.

Brattle concludes that none of the regulatory alternatives identified by PHMSA in its Proposed Regulations are likely to generate benefits in excess of costs. However, Brattle concludes that the RSI-CTC’s proposal avoids many of the pitfalls in the Proposed Regulations that are attributable to railcar repair capacity shortages and modal shifts resulting from PHMSA’s overly aggressive modification timeline.

Benefits of the Proposed Rule are Overstated

The benefits presented in the DRIA are overstated due to:

- 1) PHMSA’s erroneous characterization of the baseline scenario;
- 2) PHMSA’s assumptions regarding expected damages from derailments and related spills; and
- 3) the effectiveness of the Proposed Regulations in mitigating these damages.

PHMSA acknowledges that the regulation is unlikely to impact non-mainline derailments. Therefore, it should have focused only on mainline derailments to predict future derailments in its baseline scenario. Failure to do so caused the agency to inflate predicted accident rates and overstate baseline damages by \$700 million on a present value basis. Baseline damages are further overstated by assuming a worst-case event five times worse than Lac-Mégantic, which itself was an extreme outlier by at least three measures—speed, the number of tank cars releasing hazardous material, and gallons released—and is well outside the range of incidents that PHMSA relied on in the DRIA.

PHMSA admittedly used data it considered unreliable to calculate gallons spilled per incident. Had PHMSA consistently used the data it judged to be reliable, estimated baseline damages would fall from \$2,664 million to just \$994 million.

The Brattle report finds that PHMSA's effectiveness estimates are deficient for two primary reasons. First, its estimate of the effectiveness of ECP braking is not supported by research. Second, it fails to consider the consequences of potential modal shifts caused by the Proposed Regulations.

Given the interdependent relationship of some of these factors, the total reduction in estimated potential benefits of the Proposed Regulation is \$2.09 billion.

PHMSA Underestimates the Size of the Affected Fleet and Makes Unsupportable Assumptions Regarding its Disposition

PHMSA underestimates the number of tank cars requiring modification, primarily because PHMSA does not correctly project that its Proposed Regulations would actually require modification of the entire existing tank car fleet. It also fails to correctly project early retirements that will occur as a result of its Proposed Regulations.

- 1) PHMSA's High-Hazard Flammable Train ("HHFT") concept is unworkable and will result in all cars needing to be modified.
- 2) The projected fleet as of the end of 2015 will have 5,700 more tank cars in crude oil and ethanol service than PHMSA estimated.
- 3) PHMSA fails to anticipate the early retirement of a portion of the legacy DOT-111 fleet.
- 4) PHMSA erroneously assumes, without any supporting evidence, that more than twenty thousand existing tank cars will be transferred into Canadian oil sands service. This is an incorrect assumption since proposed Canadian regulations would prohibit such a transfer unless costly and extensive modifications were completed. Additionally, demand for rail transportation of oil sands is not growing rapidly enough to absorb such a large transfer of tank cars.

Per Car Costs of Modifications to Existing Tank Cars Are Understated

- 1) PHMSA assumes unsubstantiated "economies of scale" will reduce modification cost estimates by 10%.
- 2) PHMSA underestimates the direct costs of both ECP brakes and the installation of a full height head shield.
- 3) PHMSA incorrectly assumes there will be no costs associated with upgrading tank cars from 263,000 Gross Rail Load ("GRL") to 286,000 GRL (costs that will range from \$2,800 to \$24,000 per tank car depending on tank car configuration).
- 4) PHMSA incorrectly assumes that jacketed CPC-1232s scheduled for delivery in 2014 or early 2015 will be built with the pressure relief valve and reconfigured bottom outlet valve handle that are called for in the Proposed Regulations.

PHMSA Underestimates the Time Necessary to Carry Out the Required Modifications

There is no reliable evidence that suggests that modification of the entire crude oil and ethanol fleet can be completed by 2018 to meet the proposed Packing Group (“PG”) I and PG II deadlines.

- PHMSA assumes that during the 2016-2018 period, 43,805 non-jacketed legacy DOT-111 tank cars and 22,380 non-jacketed CPC-1232 tank cars will be modified.
- PHMSA fails to anticipate the ramp up period that would be required to configure production areas, order parts and components, and hire and train the necessary workforce.
- PHMSA predicts modifications will be carried out at a rate of more than 1,400 tank cars per month, far in excess of the 550 per month the industry projects to achieve six months after a final rule is in place. While the RSI-CTC expects that monthly capacity will expand modestly as providers gain experience in completing the work and further capital investments are made, the industry does not expect to come close to the 1,400 monthly capacity assumed by PHMSA.

Given the limited resources of the tank car repair shop network, nearly 103,000 tank cars would have to be parked awaiting modification at various points during the modification program to comply with the modification deadlines in the Proposed Regulations.

Economic Effect of Transportation Impacts, Including Modal Shift

The Proposed Regulations reduce the ability of the existing tank car fleet to provide rail transportation of flammable liquids through four distinct mechanisms, which will substantially reduce the rail transportation capacity available to shippers of crude oil and ethanol.

- 1) While tank cars are undergoing modifications they will be unavailable for service.
- 2) Some percentage (RSI estimates 28%) of the existing fleet is expected to be retired from flammable liquids service rather than modified.
- 3) Tank cars that cannot be modified by the proposed deadlines will have to be removed from service until they can be modified.
- 4) Some sub-fleets are expected to experience a loss of capacity as a result of the modification process.

In total, almost a million tank car years of capacity may be lost due to the combined effect of the time required for modifications, early retirements, and tank cars parked while awaiting modification.

Crude Oil: If shippers turn to truck transport to offset the loss in rail transportation capacity, Brattle calculates that more than 62 billion ton-miles of crude oil traffic will be diverted to truck traffic in 2018, which could increase shipping costs that year by approximately \$13.6 billion.

- During the entire period from 2017 through 2034, the potential increases in shipper costs attributable to modal shift could total approximately \$80.9 billion for the transport of crude oil.
- If shippers cannot absorb these costs and choose to decrease oil production instead, more than 300 million barrels of oil (roughly one twelfth of projected national production) could potentially be stranded in 2018.

Ethanol: In 2019, the peak impact year for ethanol, approximately one-third of the projected baseline ethanol traffic could be diverted to trucks, and ethanol shippers could be required to absorb or pass on to consumers \$5.3 billion in increased costs attributable to modal shift.

- The potential increase in annual ethanol shipper costs is projected to remain above one billion dollars through 2021. Ethanol shippers may not be able to absorb costs of this magnitude and instead may choose to reduce ethanol production.
- More than 100 million barrels of ethanol production (over 30% of U.S. ethanol production) could be at risk of shutdown in 2019.
- Given the U.S. requirements to blend gasoline with ethanol, a reduction in ethanol production may also impact the availability and price of gasoline.

Diversion to Trucks: Replacing lost rail capacity in 2017 with truck transportation for crude oil in North America would require approximately 20,000 trucks carrying more than 360,000 truckloads on North American highways.

- In 2018, the first full year in which the loss of capacity will be felt for crude oil, and the year in which new requirements for the ethanol fleet become effective, replacement transportation would require approximately 65,000 trucks carrying more than 1.4 million loads.
- In addition to the safety consequences of increased truck traffic, an average of more than 10 million additional annual tons of CO₂ through 2021 would be associated with this increase in truck traffic.
- It is unclear whether a modal shift of this magnitude to truck transportation is either operationally or economically feasible, given the challenges associated with driver recruitment and retention and that the surge in truck demand would only be temporary, limiting the truck industry's incentive to respond.

Given these deficiencies, the benefit-cost analysis conducted by PHMSA does not provide a sound basis for rulemaking. Implementing them would not be economically efficient. Should PHMSA elect to proceed despite this finding, the RSI-CTC proposal is a more cost-effective regulatory alternative than those proposed by PHMSA because it achieves many of the same benefits while reducing the costs associated with implementation.

- 1) The most significant difference between the RSI-CTC proposal and PHMSA's Proposed Regulations involves the modification timeline.
- 2) The RSI-CTC's recommendations account realistically for the shop capacity available to carry out the required modification work and avoid many of the fatal flaws, deficiencies, and costs that are attributable to the modal shift accompanying an overly aggressive timeline.