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COMMENTS OF THE AMERICAN FUEL & PETROCHEMICAL MANUFACTURERS ON THE PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION'S "ELECTRONICALLY CONTROLLED PNEUMATIC BRAKING – UPDATED REGULATORY IMPACT ANALYSIS" DOCKET NO. PHMSA-2017-0102-0014 (OCTOBER 13, 2017)

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I. INTRODUCTION

The American Fuel & Petrochemical Manufacturers ("AFPM") welcomes the opportunity to comment on the Pipeline and Hazardous Materials Safety Administration ("PHMSA") and the Federal Railroad Administration's ("FRA") update of the original Regulatory Impact Analysis ("RIA")[1] associated with the Electronically Controlled Pneumatic (ECP) brake provision of PHMSA's May 8, 2015, Final Rule titled, "Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains" ("Final Rule").[2]

On October 16, 2017, PHMSA published a notice of availability and request for comments (the "Notice")[3] related to a revised analysis entitled, "Electronically Controlled Pneumatic Braking – Updated Regulatory Impact Analysis" (the "Revised RIA").[4] PHMSA and FRA published the Revised RIA in response to Section 7311 of the Fixing America's Surface Transportation ("FAST") Act, which required further study, testing, and analysis of ECP braking and the associated impacts.[5] The Revised RIA incorporates new testing and analysis reviews from the National Academy of Sciences ("NAS"), recommendations from two U.S. Government Accountability Office ("GAO") audits, and updates to the costs and benefits of the provision of the Final Rule based on current economic conditions. PHMSA invited comments on all aspects of the updated RIA. This document details AFPM's comments on the ECP braking requirements and the associated Revised RIA.

A. AFPM's Interest in PHMSA's Revised Regulatory Impact Analysis

AFPM is a national trade association representing nearly 400 companies that encompass virtually all U.S. refining and petrochemical manufacturing capacity. AFPM's member companies produce the gasoline, diesel, and jet fuel that drive the modern economy, as well as the chemical building blocks that are used to make the millions of products that make modern life possible–from clothing to life-saving medical equipment and smartphones.

To produce these essential goods, AFPM member companies rely on a reliable and safe transportation system to move materials to and from refineries and petrochemical facilities. AFPM member companies utilize all modes of transportation, including rail, to move their products and are committed to supporting and improving the safety and efficiency of the transportation system.

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[1] *See* "Final Regulatory Impact Analysis" [Docket No. PHMSA-2012-0082-3442], published May 2015, https://www.regulations.gov/document?D=PHMSA-2012-0082-3442.

[2] *See* "Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains, Final Rule" (HM-251), [PHMSA–2012–0082], 80 *Fed. Reg*. 26644 (HM-251), published May 8, 2015, https://www.gpo.gov/fdsys/pkg/FR-2015-05-08/pdf/2015-10670.pdf.

[3] *See* "Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains, Notification of availability; request for comments" [Docket No. PHMSA-2017-0102-0017], published October 16, 2017, https://www.regulations.gov/document?D=PHMSA-2017-0102-0017.

[4] *See* "Electronically Controlled Pneumatic Braking - Updated Regulatory Impact Analysis" [Docket No. PHMSA-2017-0102-0014], published October 13, 2017, https://www.regulations.gov/document?D=PHMSA-2017-0102-0014.

[5] *See* Section 7311 of "Fixing America's Surface Transportation Act," signed December 4, 2015, https://www.congress.gov/114/bills/hr22/BILLS-114hr22enr.pdf.

Rail transportation plays an integral role in the fuel and petrochemical supply chain. With approximately 140,000 miles of freight railroads[6] in the U.S., the rail transportation system does more than just move people, it drives our economy. Rail transportation serves as a delivery mechanism for moving refined products, feedstocks, and intermediates from refineries and petrochemical manufacturing facilities to final consumers. In order to ship crude and ethanol, AFPM members lease and own tens of thousands of rail tank cars. With most rail shipments of crude and ethanol being carried in unit trains, the requirement to equip tank cars with ECP braking systems directly impacts our members. AFPM member companies therefore have a vested interest in future determinations surrounding ECP braking systems.

B. AFPM's Unwavering Commitment to Safety

AFPM member companies possess a strong appreciation for safety and environmental responsibility. Our members are committed to protecting the health and safety of their workers, contractors, customers, and the surrounding communities. To this end, a clear, reliable, and efficient regulatory system that encourages environmentally sound and safe transportation is ideal for both industry and the American public.

AFPM supports a holistic, preventative approach to improving the safe transportation of crude oil by rail and other modes, and is committed to continuing to work with PHMSA and FRA on this issue. The fuel and petrochemical industries have demonstrated this commitment to the safe transportation of crude oil and other feedstocks through a massive upgrade to rail infrastructure. Specifically, tank car owners in the flammable liquid service, including many AFPM members, are in the process of retrofitting approximately 90,000 tank cars at an estimated cost of $520 million.[7] The requirement to equip tank cars with ECP braking systems would therefore greatly impact this in-process fleet upgrade. AFPM supports a comprehensive approach to rail safety that includes both preventive measures (derailment prevention and improvements in track integrity) and mitigation techniques (enhanced means of containment and better emergency response).

II. EXECUTIVE SUMMARY OF AFPM'S COMMENTS

AFPM supports informed, risk-based, and cost-justified approaches to developing regulations related to transportation safety, and is committed to working with PHMSA and FRA on this issue. While the bulk of this document details AFPM's concerns regarding these requirements, our main concerns with the ECP braking requirements are highlighted below:

- ECP braking does not address the primary root causes of most derailments: track integrity and human error. The Department of Transportation ("DOT" or the "Department") should focus efforts on derailment prevention rather than focusing solely on mitigating the impacts of train accidents, as this would provide far greater safety improvements.

[6] *See* "Freight Rail Network," May 15, 2017, https://www.fra.dot.gov/Page/P0362.
[7] *See* PHMSA–2016–0011, 81 *Fed. Reg*. 53935 (HM-251C), published August 15, 2016, https://www.gpo.gov/fdsys/pkg/FR-2016-08-15/pdf/2016-19406.pdf.

- DOT's argument that there is a market failure resulting in the need for the adoption of ECP braking in crude and ethanol service is flawed and outdated. Safety improvements, resulting from voluntary industry action and new regulatory requirements, undermine DOT's market failure argument related to accident mitigation and thus the need for ECP braking is brought into question.

- An extensive study conducted by NAS determined the updated testing and modeling conducted by PHMSA and FRA, while improved, is inconclusive regarding the emergency performance of ECP brakes relative to other braking systems.

- The updated testing and modeling, albeit inconclusive, improves upon the original analysis in a number of ways. These improvements now demonstrate even more clearly that ECP is not a cost-beneficial technology under all of the analysis scenarios.

- The Revised RIA uses assumptions and data points that still underestimate the costs of implementing ECP braking while overestimating the benefits of ECP compared to current braking systems. Therefore, while the Revised RIA demonstrates ECP is not a cost-beneficial technology under all of the analysis scenarios, it is likely still communicating an overly optimistic viewpoint of ECP braking.

AFPM values market certainty on considerable investments such as tank cars, locomotives, and the braking systems with which they are equipped. AFPM requests that DOT act swiftly in determining that it should not move forward with ECP braking in light of the considerable evidence that ECP braking is not cost-justified, as well as the lack of definitive and conclusive evidence that ECP provides any enhancement in emergency performance relative to other braking systems. With no compelling data to support the adoption of ECP, we request that DOT rescind the requirement to equip and operate certain train configurations transporting large volumes of flammable liquids with ECP brakes. A quick resolution on this matter will help to establish market certainty and allow for more efficient fleet management and investment in tank car infrastructure, thus improving safety.

III. PREVENTING DERAILMENTS

Any effort to enhance rail safety must begin with addressing the primary root causes of derailments and other accidents. Track integrity and human error are the primary causes of most train derailments. Investments in track integrity would result in the greatest risk reduction of rail incidents. Despite track failures being a leading cause of derailments, much of DOT's regulatory efforts related to the transport of flammable liquids have been primarily focused on the characteristics of the materials transported and the tank car specification, neither of which is a causal factor of derailments. Improvements in track integrity paired with the in-progress upgrading of the flammable liquid tank car fleet are likely to drastically reduce both the frequency and consequences of derailments.

On October 11, 2017, NAS, through the Transportation Research Board, released the results of a multi-year study on energy transportation entitled, "Safely Transporting Hazardous

Liquids and Gases in a Changing U.S. Energy Landscape."[8] This study was completed by the Committee for a Study of Domestic Transportation of Petroleum, Natural Gas, and Ethanol and focused on rail, pipeline, and maritime transport of energy products.[9] While the report stressed that the vast majority of these energy supplies have been transported without incident, the study makes policy recommendations that could help reduce the likelihood of future incidents involving the transportation of these domestic energy supplies. The report highlighted the importance of preventing derailments through frequent track inspection in its findings. Specifically, the report noted:

> *"[A] deeper understanding of crash-causation factors will, among other things, inform railroad track inspection programs. Ensuring that these programs spot track defects that can lead to failures is essential to ensuring the safe operation of flammable liquids unit trains. To strengthen these programs, the committee recommends that FRA enable and incentivize more frequent and comprehensive inspections of rail routes with regular energy liquids traffic, particularly by enabling railroads to exploit new inspection capabilities made possible by advances in sensor, high-resolution imaging, and autonomous systems technologies."*

While railroads have adopted some new technologies to monitor the health of the tracks and flag potential safety issues for maintenance, as the report notes, more work can be done to identify track defects. These technologies include: track geometry cars that collect and process valuable infrastructure data and notify operators of potential track defects, onboard tools that check the alignment of the track, and wayside detectors that monitor passing trains for potential issues. Further, in the September 2017 DOT Significant Rulemaking Report (the last report the Department has published), there was an announced rule entitled, "Track Safety Standards; Improving Rail Integrity."[10] The abstract for this rulemaking noted the action "would amend or add regulations addressing continuous testing of rail defects, rail head wear, inspection records, continuous welded rail, qualified operators, and Class 6-9 rail inspection frequencies."

AFPM would support DOT efforts to improve track integrity through fostering advancements in technology, adding more track inspection equipment, hiring more qualified inspectors, conducting more frequent track inspections, or supporting a regulatory and financial environment that encourages continued private investment in the nation's freight railroad system. AFPM also supports efforts to address the NAS recommendations on track inspection discussed above.

IV. ELECTRONICALLY CONTROLLED PNEUMATIC BRAKING SYSTEMS

On May 8, 2015, PHMSA, in coordination with FRA, issued a final rule entitled, "Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains," intended to improve the safety of trains transporting large volumes of flammable liquids, such as

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[8] *See* "Safely Transporting Hazardous Liquids and Gases in a Changing U.S. Energy Landscape," October 11, 2017, https://www.nap.edu/catalog/24923/safely-transporting-hazardous-liquids-and-gases-in-a-changing-us-energy-landscape.

[9] *See* Committee biographies, http://www.trb.org/PolicyStudies/CommitteeBios.aspx.

[10] *See* "Significant Rulemaking Report Archive, December 2016 report" at 59, December 2016, https://cms.dot.gov/regulations/significant-rulemaking-report-archive.

crude oil and ethanol.[11] This rule adopted a provision requiring high hazard flammable unit trains[12] to be operated with an ECP braking system after December 31, 2020. This provision was adopted despite many highly critical comments. In addition, the provision was adopted despite estimates that the technology would produce marginal benefits and significant costs. According to the final RIA issued in May 2015, the ECP braking provision would cost $492 million (discounted at 7 percent), while the projected benefits ranged from $470.3 million (based on the observed historical accident level) and $1.1 billion (based on a high consequence low probability scenario). Following publication, many were critical of the ECP inclusion in the final rule and the RIA's apparent overestimation of the benefits and underestimation of the costs of ECP braking. This ultimately led to legal challenges and congressional action on the topic of ECP braking.

Signed into law on December 5, 2015, as part of the FAST Act, DOT was required to revisit the ECP braking requirements adopted in May 2015. Specifically, the FAST Act required DOT to test ECP braking[13] and reevaluate the RIA supporting the ECP braking requirement. This legislation also required the GAO and NAS to study the costs, benefits, and performance of ECP brakes.[14] This additional research of ECP braking was designed to verify safety performance and determine if ECP braking is an improved technology in comparison to more widely-used conventional braking systems.

On September 29, 2017, NAS released their review of the DOT additional testing entitled, "Review of the Department of Transportation Testing and Analysis Results for Electronically Controlled Pneumatic Brakes: Letter Report (Phase 2)."[15] Following the release of the NAS report, on October 16, 2017, DOT published the Revised RIA on ECP braking.[16] While the Revised RIA accounted for some of the GAO recommendations, it did not consider NAS's final report, and noted DOT "was unable to get the results of the NAS's final study prior to the publication of this [revised] RIA." The table below details the findings of the studies and the Revised RIA:

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[11] *See* Docket No. PHMSA-2012-0082, 80 *Fed. Reg.* 26643, published May 8, 2015, https://www.federalregister.gov/documents/2015/05/08/2015-10670/hazardous-materials-enhanced-tank-car-standards-and-operational-controls-for-high-hazard-flammable.

[12] A High Hazard Flammable Unit Train is defined as a train comprised of 70 or more loaded tank cars containing class 3 flammable liquids traveling at greater than 30 mph.

[13] Given the high cost of physical testing, DOT and NAS agreed to more advanced computational analysis of ECP braking and limited physical testing in lieu of a full scale physical test.

[14] *See* "Fixing America's Surface Transportation Act," Section 7308, signed December 5, 2015.

[15] *See* "A Review of the Department of Transportation Testing and Analysis Results for Electronically Controlled Pneumatic Brakes: Letter Report (Phase 2)," publicly released September 29, 2017, https://www.nap.edu/catalog/24903/a-review-of-the-department-of-transportation-testing-and-analysis-results-for-electronically-controlled-pneumatic-brakes-letter-report-phase-2.

[16] *See* Docket No. PHMSA-2017-0102-0014, "Electronically Controlled Pneumatic Braking- Updated Regulatory Impact Analysis," posted October 13, 2017, https://www.regulations.gov/document?D=PHMSA-2017-0102-0014.

Table 3: Relevant Study and Analysis of Electronically Controlled Pneumatic Braking Performance		
Agency	**Study Title / Citation**	**Relevant findings**
Government Accountability Office	"DOT's Rulemaking on Electronically Controlled Pneumatic Brakes Could Benefit from Additional Data and Transparency," GAO-17-122: Published Oct 12, 2016.	DOT should acknowledge uncertainty in its revised economic analysis of ECP brakes, collect data from railroads on their use of ECP brakes, and publish additional information about ECP brake modeling.
	"2015 Electronically Controlled Pneumatic Brake Rule: Comparison of DOT Forecasts for Selected Data Points for 2015 and 2016 to Preliminary Data for Those Years," GAO-17-567R: Published May 31, 2017.	Based on preliminary data, DOT's forecasted values for selected variables in 2015 and 2016 in its analysis supporting its 2015 rule on ECP braking may be higher than values realized for those years.
National Academy of Sciences	"A Review of the Department of Transportation Testing and Analysis Results for Electronically Controlled Pneumatic Brakes: Letter Report (Phase 2)": Publicly released September 29, 2017.	The committee is unable to make a conclusive statement about the emergency performance of ECP brakes relative to other braking systems on the basis of the results of testing and analysis provided by DOT.
Department of Transportation	"Electronically Controlled Pneumatic Braking, Regulatory Impact Analysis," Docket No. PHMSA-2017-0102: Published October 16, 2017.	Under all scenarios, costs and benefits were lower in the Revised RIA than in the original. The decreases in both costs and benefits are mainly due to a decrease in the predicted number of carloads. **The Revised RIA states that costs exceed the benefits of ECP braking in all analysis scenarios.**

The FAST Act provides specific deadlines regarding a final decision on this matter. Following the completion of the NAS study and additional ECP braking testing, DOT was required to update the original RIA based on results of the new testing and modeling (90 days after testing is completed). As mentioned above, DOT did publish the Revised RIA on October 16, 2017, and gave until November 1, 2017, to provide comments. The FAST Act also requires that no later than two years after the date of enactment of the Act (December 5, 2017), the Secretary shall determine whether the applicable ECP braking requirements are justified and if so, publish in the *Federal Register* the determination and reasons for such determination.

In light of the results of the NAS's "Review of the Department of Transportation Testing and Analysis Results for Electronically Controlled Pneumatic Brakes: Letter Report (Phase 2)" and DOT's updated "Electronically Controlled Pneumatic Braking, Regulatory Impact Analysis," AFPM strongly supports DOT formally rescinding the requirements related to ECP

braking. While the updated testing used to support the analysis remains inconclusive, the improvements in that testing further enhance and inform DOT's Revised RIA. Further, these improvements now show that ECP braking is not cost beneficial in any scenario. Below are some salient high-level points that support the need to formally rescind the requirements related to ECP braking.

A. FAST Act Testing

Section 7311 of the FAST Act required complete testing of ECP braking systems, including scenarios involving the emergency uncoupling of a train equipped with 70 DOT–117/R specification tank cars. Due to concerns about this testing method and associated costs, DOT did not complete such testing. While DOT was unable to complete the testing exactly as stipulated in the FAST Act, FRA did work with NAS to address concerns in the original model and complete alternative ECP braking tests. Despite working with NAS to devise an acceptable testing plan, as DOT notes, they published their Revised RIA without fully considering the results of NAS's final study, which raised concerns with both the testing and modeling used in DOT's analysis.

As the NAS notes in their report, the field data, derived from the alternative testing, proved useful in helping to ensure appropriate brake system latency times and brake pipe and brake cylinder pressure-time relationships. These elements are just a few aspects of derailment physics. While this improves the analysis, it does not fully address concerns that the revised testing still does not provide a comprehensive data set that would predict real-world accident behavior.

While the additional testing improves the subsequent computer modeling, upon which the Revised RIA is based, it still is inadequate. The DOT model may have validated brake timing, but DOT is far from validating all the factors that go into a derailment. This led to the NAS review committee being unable to make a conclusive statement about the emergency performance of ECP brakes relative to other braking systems. While the testing does not provide a conclusive statement regarding ECP's performance compared to existing, in use, braking technology, it vastly improves upon the original analysis.

B. Computer Modeling

While the revised DOT computer modeling represents considerable enhancements over the original DOT results, there remains a concern that the model is not a validated and repeatable physics-based model that can accurately predict a real-world derailment scenario. Specifically, concerns remain regarding DOT's approach to model validation, identification of model parameters, and the statistical validity of the updated results. AFPM echoes the concerns noted in the NAS study related to the computer modeling and highlights below a few particularly concerning aspects of the modeling:

- DOT's modeling approach does not account for the three-dimensional effects of the surrounding terrain on a derailment.

- DOT's validation efforts did not use derailment conditions similar to those the model can approximate.
- The validation process does not abide by standards for verification, validation, and uncertainty quantification for computational models.
- There was no detailed vetting process of the model simulations by outside experts.[17]

The NAS study concludes the following related to the DOT modeling efforts:

> *"DOT's efforts to validate its modeling and simulation approach in response to the committee's request do not instill sufficient confidence in DOT's comparison of the estimated emergency performance of ECP braking systems with that of pneumatic braking systems augmented with DP or EOT devices. DOT's efforts did not follow well-established standards for the validation of computational models."*

As a result:

> *"The committee is unable to make a conclusive statement about the emergency performance of ECP brakes relative to other braking systems on the basis of the results of testing and analysis provided by DOT."*

Based on these conclusions, AFPM does not believe DOT can realistically move forward with implementing ECP braking systems.

C. Revised RIA

Although the underlaying testing and analysis are still flawed, the Revised RIA does improve upon previous efforts to estimate the costs and benefits of ECP braking technology. It should be noted that under all scenarios (*e.g.*, low and high consequence scenarios), costs and benefits were lower in the Revised RIA than in the original. And when considering the sensitivity analysis,[18] the discrepancy in costs and benefits is even greater. The decreases in cost and benefit were not uniform, with the benefits reduced at a much more significant rate. The table below adapted from DOT's Revised RIA provides the most compelling rationale to rescind the ECP braking requirements.[19] As the table indicates, costs now always exceed the benefits of ECP braking requirements, and the actual Benefit-Cost ratio is likely lower when considering the sensitivity analysis. Further, the table demonstrates how the improved Revised RIA decreased the benefits at a greater rate than the costs.

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[17] *See* "A Review of the Department of Transportation Testing and Analysis Results for Electronically Controlled Pneumatic Brakes: Letter Report (Phase 2)" at 12-13, September 29, 2017, https://www.nap.edu/catalog/24903/a-review-of-the-department-of-transportation-testing-and-analysis-results-for-electronically-controlled-pneumatic-brakes-letter-report-phase-2.

[18] In the Revised RIA, DOT conducted two sensitivity analyses: 1) a scenario where transport of crude oil by rail continues to decline and 2) the railroad industry equips 100 percent of its locomotives with ECP braking. It could be argued a combination of these scenarios is the most realistic analysis scenario.

[19] The rows highlighted in red were added to illustrate the Benefit-Cost ratio (to be considered cost beneficial, the Benefit-Cost ratio must exceed 1) and the non-uniform reductions in costs and benefits between the original and revised analyses. Specifically, while the revised and improved analysis only marginally reduced annualized costs, the annualized benefit estimates were lowered by over 50 percent.

Table 4: 20-Year Total and Annualized Costs and Benefits in Millions				
	7 Percent Discount		3 Percent Discount	
	Low	High	Low	High
Total Costs	$375.6	$491.7	$402.1	$524.1
Total Benefits	$141.1	$284.2	$201.0	$396.8
Benefit-Cost Ratio	**.375**	**.578**	**.500**	**.757**
Annualized Costs (Revised RIA)	$35.5	$46.4	$27.0	$35.2
Annualized Benefits (Revised RIA)	$13.5	$27.1	$13.7	$26.9
Annualized Costs (Original RIA)	**$46.6**	**N/A**	**$38.9**	**N/A**
Annualized Benefits (Original RIA)	**$44.4**	**$57.9**	**$47.8**	**$62.7**

Given the incredibly short comment period, a detailed economic review of the Revised RIA was difficult. In lieu of a comprehensive economic review of the Revised RIA, AFPM has provided some additional key considerations and concerns below, along with an indication of how these issues impact total costs and benefits.

The Market Failure – In both the original and Revised RIAs, DOT claims there is a market failure resulting in the need for the adoption of ECP braking in crude and ethanol service. This argument is flawed. As DOT notes in the Revised RIA, the derailment rate for crude and ethanol has drastically decreased in recent years, far outpacing the overall derailment rate. DOT attributes this to a number of track improvement efforts on the part of the rail industry and FRA. Specifically, DOT notes the rail industry's use of the Automated Track Inspection Program ("ATIP") and FRA's use of the Crude Oil Route Track Examination ("CORTEX") Program as factors in improved derailment rates. These track inspection programs address the prevailing root cause of the market failure DOT claims exists. Further, improvements in tank car specifications, operational controls, and emergency response address DOT's original suggested market failure. Taken collectively, these efforts and the resulting safety improvements related to these efforts undermine the argument that there is a market failure and thus, the need for ECP braking is brought into question. Further, DOT should continue to focus on efforts to improve track integrity and reduce derailments as opposed to pursuing ECP braking, which only marginally mitigates the impacts of a derailment.

Derailment Prevention – In the Revised RIA, DOT suggests that, in addition to consequence mitigation, ECP braking can reduce the risk of derailments. Information available on crude oil train incidents indicates that the use of ECP brakes would have had no impact on preventing the incidents identified in the DOT rulemaking implementing this technology.[20] None of the derailments in the original or Revised RIAs, which DOT relied on to justify implementing ECP brakes, would have been prevented by ECP brakes.

[20] *See* John Rimer, CSX Transportation, "Braking Systems and Distributed Power," June 10, 2014, presented to the U.S. White House Office of Management and Budget by the Association of American Railroads, available at http://www.reginfo.gov/public/do/viewEO12866Meeting?viewRule=false&rin=2137AE91&meetingId=212&acronym=2137-DOT/PHMSA ("handout 2").

High Consequence Events – DOT used a probabilistic risk model, specifically a Monte Carlo simulation, to estimate a range of damages that could be observed in future high consequence events ("HCE"). While DOT revised their estimate for the number of HCEs downward, AFPM still questions the likelihood that the U.S. would potentially experience four HCEs in the next 20 years given the historical safety record and carload forecasts. In both the original and Revised RIA DOT assumed a point estimate of two events as its central estimate. DOT estimated a point estimate of two events by taking into account the risk of derailments being reduced by the voluntary actions taken by the railroads including (*e.g.*, speed restrictions and routing requirements). AFPM questions the rationale used to determine the central estimate of two events used in the Monte Carlo simulation for both the original and Revised RIA. Further, AFPM questions why this point estimate was not updated in the Revised RIA.

ECP Effectiveness Rates May Still be Overestimated – AFPM is concerned that, despite the additional testing and revised modeling, the effectiveness rates of ECP braking compared to conventional braking systems may still overestimate real-world ECP braking performance based on the findings in the NAS report.

Cost Per Gallon Spilled – In the Revised RIA, DOT continues to utilize the $200 / gallon cost figure related to spill clean-up for benefits calculations. While DOT failed to update this figure, the operating environment has changed, rendering it inaccurate. The flammable liquid tank car fleet upgrade has not been uniform between crude and ethanol fleets. For example, while carloads for crude oil have significantly decreased, ethanol carloads have remained steady. In fact, future ethanol carloads will soar even higher as Renewable Fuel Standard volumes increase. Further, the DOT-111 phase out has been faster for the crude oil fleet than the ethanol fleet due to the structure of the phase out timeline. Lastly, the cost for cleaning up crude versus ethanol differs greatly.[21] All of these factors suggest that the cost per gallon estimate is likely no longer accurate and therefore is an overestimate.

Speed of Derailment – The modeling that serves as the basis of the Revised RIA uses speeds of 30, 40, and 50 miles per hour. Further, while DOT provides a listing of derailments used to inform that modeling, they fail to include the data points for the speed at the time of derailment.[22] AFPM suggests that the modeling may overestimate the effectiveness of ECP, as it is likely that most derailments of crude and ethanol trains occur below 30 miles per hour. Using the actual range and distribution of speeds experienced in the DOT historical safety record would improve the accuracy of the modeling.

The ECP Experience – In the Revised RIA, DOT provides discussion on other nations' adoption of ECP braking technology. While this discussion does highlight some relevant comparisons, it neglects to include key differences. For example, there would be significant differences in train length between ECP-equipped trains in the U.S. and those in operation in

[21] *See* "Fleet Composition of Rail Tank Cars that Transport Flammable Liquids: 2013-2016," released September 2017, https://cms.bts.dot.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-and-data/surveys/annual-tank-car-facility-survey/208061/fleet-composition-rail-tank-cars-flammable-liquids-sept-5-2017.pdf.

[22] *See* Docket No. PHMSA-2017-0102-0014, "Appendix A: Incident Data" of "Electronically Controlled Pneumatic Braking - Updated Regulatory Impact Analysis," posted October 13, 2017, https://www.regulations.gov/document?D=PHMSA-2017-0102-0014.

other nations, such as Australia. This difference in train length (potentially twice as long) would result in differing realization of the claimed benefits / efficiencies related to ECP braking. Further, other countries that have implemented ECP braking operate in closed loop systems allowing for more efficient use of ECP braking. Given the nature of the rail industry in the U.S., this is less likely and thus would present a logistical challenge to operate. Lastly, other countries that have implemented ECP braking have done so in a system where the railroad owns tank cars. This is not the case in the U.S. and, given that tank cars move between services and can be privately owned by shippers or leased, this would complicate the implementation of ECP.

Reliability Concerns – DOT underestimates or ignores costs associated with reliability issues. While DOT attempts to explain away reliability concerns with the discussion of "runaround cables," this is an oversimplification of the issue. Interoperability and associated network slowdowns remain one of the primary concerns with ECP braking.

Training Costs – DOT specifically requested comments with regard to estimates related to training costs in the Revised RIA. While AFPM does not have specific data to support an estimate for training costs, we do question the assumption that additional training costs are only incurred initially and that there are not increased training costs in future years.

Carload Forecasts are not Realistic – In the Revised RIA, DOT has two forecast scenarios for crude oil carloads: 1) assuming rail retains its share relative to other modes and based on Energy Information Administration production projections, and 2) assuming the demand for rail transport will be cyclical averaging that of the 2012-2016 cycle. AFPM does not believe the carload forecast scenarios are likely. Further, AFPM believes these forecasts potentially overestimate crude and ethanol rail traffic given increases in pipeline takeaway capacity (*e.g.*, increased pipeline takeaway capacity of 450 Md/d from the Bakken Region in the form of the Dakota Access Pipeline) and location of growing shale plays (*e.g.*, new shale development is taking place in the Permian Basin, which is already serviced with a large number pipelines). In fact, DOT's own sensitivity analysis seems to acknowledge diminished crude oil rail traffic.

Benefits Overestimation – AFPM questions the level of business benefits ECP would provide. While FRA issued a final rule permitting the use of ECP braking systems in 2008, we have yet to see widescale adoption of the technology. That, combined with concerns of interoperability and potential disruptions in operations due to equipment failure, raises question on the business benefits this technology offers. Further, DOT assumes there are benefits that accrue in an early phase-in period. Specifically, DOT claims tank car owners, shippers, and railroads will implement ECP braking systems well in advance of the regulatory deadlines (three years before 2020 for crude deadline and five years for ethanol deadline in 2023). Given the difficultly of such a transition to ECP and the concurrent regulatory deadlines for the flammable liquid tank car fleet upgrade and Positive Train Control, an early phase in of ECP is highly unlikely, as ECP braking artificially inflates the benefits of ECP technology.

Introduction of New Risk – AFPM member companies also question if the adoption of ECP braking may cause the introduction of new unintended risks. Flammable liquids exposed to an ignition source will catch fire. In a derailment scenario, the ignition source is most frequently a result of sparking due to metal interaction. ECP braking systems may increase the risk of

ignition in a derailment scenario due to the presence of batteries required for ECP to function. In addition, the risk of human error may increase from the adoption of a more complex technology such as ECP braking.

D. International Harmonization

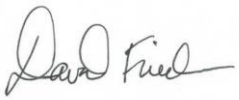
North American businesses desire consistent regulation given the prevalence of cross border transportation. In the Revised RIA, DOT even notes the need for consistent regulation across jurisdictional borders.[23] Equipment, such as tank cars and locomotives, cannot be changed in the middle of a delivery route without introducing significant inefficiencies and potentially raising safety concerns. Differing standards across North America would unnecessarily complicate and impede compliance. To date, Canada and Mexico have made no efforts to adopt ECP braking technology. U.S. adoption of ECP braking could stifle oil trade with our largest trading partners. Specifically, as trains in Mexico and Canada would not be equipped with ECP braking, they would not be able to import crude or ethanol into the U.S. after the stipulated deadlines.

AFPM requests that DOT act swiftly in determining how to move forward with ECP braking in light of the considerable evidence that ECP braking is not cost-justifiable, as well as the lack of conclusive evidence that ECP braking provides any enhancement in emergency performance relative to other braking systems. With no compelling data to support the adoption of ECP braking, we request that DOT rescind the requirement to equip and operate certain train configurations transporting large volumes of flammable liquids with ECP brakes. A quick resolution on this matter will help to establish market certainty and allow for more efficient fleet management and investment in tank car infrastructure, thus improving safety.

V. CONCLUSION

AFPM supports informed, risk-based, and cost-justified approaches to developing regulations related to transportation safety and is committed to working with PHMSA and FRA on rail safety issues. AFPM does see improvement in DOT's analysis of the costs and benefits of ECP braking. While the testing and modeling remain inconclusive, the analysis has been enhanced and now demonstrates even more clearly that ECP is not a cost-beneficial technology under all analysis scenarios. Please contact me at (202) 602-6604 or dfriedman@afpm.org if you wish to discuss these issues further.

Sincerely,



David Friedman
Vice President, Regulatory Affairs

[23] *See* Docket No. PHMSA-2017-0102-0014, "Electronically Controlled Pneumatic Braking - Updated Regulatory Impact Analysis," at 8, posted October 13, 2017, https://www.regulations.gov/document?D=PHMSA-2017-0102-0014.