Policy Studies Completed Reports 2017

TRB Special Report 323: *In-Service Performance Evaluation of Guardrail End Treatments* develops a research design for evaluating the in-service performance of guardrail end treatments and other roadside safety devices and identifies the data required to do so. Given the substantial data requirements and methodological challenges of conducting successful evaluations of particular end treatments, the committee concludes that state highway agencies will require more information about the benefits, costs, and practicality of routine in-service evaluation of end treatments in general before deciding to undertake new data collection and analysis programs necessary to carry out more challenging analyses. The committee recommends research to advance practice and test the feasibility of and costs associated with more complex evaluations. It also recommends research to examine whether procedures for testing the performance of devices should be altered.

Motor Carrier Safety Research Analysis Committee Letter Report: March 13, 2017 advises the Federal Motor Carrier Safety Administration (FMCSA) Research and Technology (R&T) program on a number of topics. At the request of the FMCSA, this first letter report explores the goals and strategy of the FMCSA R&T Program as well as the recommendations regarding data made in the 2016 National Academies of Sciences, Engineering, and Medicine report, Commercial Motor Vehicle Driver Fatigue, Long-Term Health, and Highway Safety: Research Needs. Among other topics addressed in the letter, the Committee provides suggestions and recommendations to FMCSA on using existing data sets to assemble motor coach and truck crash relevant information and approaches to validating proxy measures for crashes used in naturalistic driving studies. The charge of the MCSRAC is to strengthen FMCSA's R&T program to better meet the needs of the Agency's safety mission as well as to inform commercial motor vehicle carrier enforcement, the research community, safety advocates, and industry of active and planned projects. In addition, the MCSRAC assists FMCSA in refining its research methodologies; identifying and utilizing current research in the transportation and related communities; and promoting transparency of the FMCSA R&T activities.

Long-Term Pavement Performance and Long-Term Bridge Performance Committees Joint Letter Report: March 14, 2017 advises the Federal Highway Administration (FHWA), and the American Association of State Highway and Transportation Officials (AASHTO) regarding reductions in funding for research, development, and technology in the Fixing America's Surface Transportation (FAST) Act and the implications for the LTPP and LTBP programs. In response to a joint meeting held at the request of FHWA, the committees make recommendations to preserve the essential elements of the LTPP and LTBP programs, on future areas of emphasis for the two programs, possible alternate sources of supplemental funding, and possible areas for enhancing program efficiency.

The Research and Technology Coordinating Committee (RTCC), in a March 28, 2017 Letter Report to the U.S. Federal Highway Administration (FHWA), offers recommendations addressing the barriers to deploying private-sector innovations and technologies; the evaluation of demonstration programs deploying technologies and pilot testing user-fee financing mechanisms; the completion of case studies of FHWA's research and technology program; and planning for a research and technology program to address the major challenges facing highway transportation for Congress's next transportation authorization. The RTCC's charge is to monitor and review FHWA's research and technology activities; advise FHWA on setting a research agenda and coordination of highway research with states, universities, and other partners; review strategies to accelerate the deployment and adoption of innovation; and identify areas where research may be needed. RTCC's review includes the process of research agenda setting; stakeholder involvement; and the conduct of research, peer review, and deployment. The committee's role is to provide strategic, policy-level advice on topical priorities, processes, and strategies to accelerate the adoption of innovation.

The Transit Analysis Research Committee (TRAC), in a June 5, 2017 Letter Report to the Associate Administrator for Research, Demonstration, and Innovation, explores efforts by the FTA's Office of Research, Demonstration, and Innovation with mapping its programs to the priorities outlined by its latest strategic plan, and developing metrics for identifying and explaining the connection between the goals of the programs and the strategic goals of the FTA.

Letter Report on Acquisition and Operation of Polar Icebreakers: Fulfilling the Nation's Needs, issued 7/2017, advises the U.S. Congress on strategies to minimize life-cycle costs of polar icebreaker acquisition and operations. The report recommends the number and type of polar icebreakers to fund and an acquisition strategy that achieves a lower cost. The report offers an independent cost estimate using available concept designs to determine if the U.S. Coast Guard's existing cost estimates for heavy and medium icebreakers are reasonable. It also compares operating costs of the current fleet to the prospective operating costs of new vessels. The report recommends a science-ready design for the new icebreakers and the use of an enhanced maintenance program to ensure continuity of operations for existing icebreakers. The report was mandated by the Coast Guard Authorization Act of 2015, and sponsored by the USCG

Letter Reports on the Review of the U.S. Department of Transportation's Testing of Electronically Controlled Pneumatic (ECP) Brakes review the planning, conduct, and results of USDOT's tests comparing the emergency braking performance of ECP brakes relative to other braking technologies in reducing the incidence and severity of spills of crude oil or ethanol from derailments. The committee's first letter report reviewing the test and analysis plan, issued in February 2017, recommended that USDOT test the timing of brake propagation for

alternative systems, conduct statistical analyses of the multiple factors contributing to derailments, and extend its validation of its modeling and simulation approaches for comparing ECP brakes to other brake systems. The committee's final letter report reviewing the results of the testing and analysis, issued in September 2017, found that USDOT's efforts to validate its model and simulation approaches are incomplete and unconvincing. Based on the results of testing and analysis provided by USDOT, the committee was unable to make a conclusive statement about the emergency performance of ECP brakes relative to other braking systems.

TRB Special Report 324: Designing Safety Regulations for High-Hazard Industries, issued 10/2017, examines key factors relevant to government safety regulators when choosing among regulatory design types, particularly for preventing low-frequency, high consequence events. Asked to compare the advantages and disadvantages of so-called "prescriptive" and "performance-based" regulatory designs, the report explains how these labels are often used in an inconsistent and misleading manner that can obfuscate regulatory choices and hinder the ability of regulators to justify their choices. Informed by academic research and by insights from case studies of the regulatory regimes of four countries governing two high-hazard industries, the report concludes that too much emphasis is placed on simplistic lists of generic advantages and disadvantages of regulatory design types. The report explains how a safety regulator will want to choose a regulatory design, or combination of designs, suited to the nature of the problem, characteristics of the regulated industry, and the regulator's own capacity to promote and enforce compliance. This explanation, along with the regulatory design concepts offered in this report, is intended to help regulators of high-hazard industries make better informed and articulated regulatory design choices.

TRB Special Report 325: Safely Transporting Hazardous Liquids and Gases in a Changing U.S. Energy Landscape, issued 10/2017, reviews how the pipeline, rail, and barge industries have fared in safely transporting the increased volumes of domestically produced energy liquids and gases. The report, sponsored by TRB, reviews the safety record of the three transportation modes in moving these hazardous shipments and discusses key aspects of each mode's safety assurance system. The report urges the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration to further the development of increasingly robust safety assurance systems that will ensure more timely and effective responses to future safety challenges. The recommendations include advice on traffic and safety data reporting, industry and local community consultation, and the creation of risk metrics. The Federal Railroad Administration is urged to enable and incentivize more frequent and comprehensive inspections of rail routes that are used regularly by trains transporting large volumes of flammable liquids.