

# RAIL

*MOVING AMERICA FORWARD*



# TRB Evaluation Response

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# Introduction

## **TRB's Tasks:**

- To help validate processes to identify new priorities for addressing emerging safety issues and trends.
- To evaluate the feasibility, usefulness, effectiveness, and impact of RD&T research in railroad safety.

## **Backstory on RD&T Peer Review:**

- Starting in 1995, Congress made a series of requests for external reviews of FRA R&D.
- For FY 2001, the Senate Appropriations Committee urged FRA to continue to support such peer reviews, which the agency has volunteered to do.

# Methods

The committee and sub-committees met with the RD&T Director, Division Chiefs, Program Managers, and FRA Office of Railroad Safety (RRS) to discuss:

- Portfolios
- Project selection/prioritization
- Budgets
- Staffing
- Use of safety data
- Coordination with RRS regulators and other DOT modes
- Collaboration with railroads
- Labor unions
- Relations with the research and technology communities

## TRB Plaudits for RD&T

**Overall**, the committee supported RD&T's use of safety data to address problems and incident causal factors. It also praised its project selection process, which considers the needs of industry, other FRA offices, Congress, and stakeholders.

The committee singled out the **Track Research Division** for its collaboration with railroads, suppliers, and RRS, which “increases the likelihood that the research will address practical problems and lead to innovations that will have application in the field.”

The committee was impressed by the sheer *breadth* of research the **Rolling Stock Research Division (RS)** conducts and in the multiplicity of interests it must satisfy.

The committee also praised the **Train Control and Communication Division (TC&C)** for its breadth and depth: “Having such a wide breadth of responsibility—from furthering PTC to grade-crossing safety—the division has demonstrated creativity in harnessing these technologies to address human performance and behavior issues that can affect safety.”

Several of **Human Factors Division's (HF's)** programs and projects “are coordinated effectively through partnerships with and implementations by railroads toward achieving desired safety benefits, including the trespassing and suicide countermeasures program and the work of the SLSI.”

## Recommendations and Actions Taken – Track Division

“The **Track Division** should ensure that technology transfer planning is sufficiently thorough and anticipatory at the outset of projects...including the management of intellectual property such as user and data rights.”

### **Actions Taken:**

- The division is looking carefully at intellectual property issues before project work commences.
- The division is also making a concerted effort to make its published work more readable for a general railroad audience.
- The Division Chief will begin a dialog with the National Association of Chief Engineers about its perception of technology and knowledge transfer; the Track Division will solicit suggestions on how RD&T can improve in this area.

## Recommendations and Actions Taken – Rolling Stock Division

- “The **Rolling Stock Division** should make industry consultations and collaborations a core feature of all research...”
- “The division should prioritize projects based on safety data...”

### **Actions Taken:**

- Coordination of the Very Long Train (VLT) study to include representatives of RRS, Class I railroads, AAR, railroad labor organizations, brake component manufacturers, the Transportation Technology Center, and rail industry experts.
- The division is also partnering with RRS, the US Department of Energy, and freight and commuter railroads to evaluate and promote alternative energy sources to reduce railroad emissions and industry contributions to greenhouse gases.
- A series of North American workshops for Environmentally Sustainable Energy Technologies Powering the Future of Rail was started in September 2021; a subsequent event is planned for 2023.

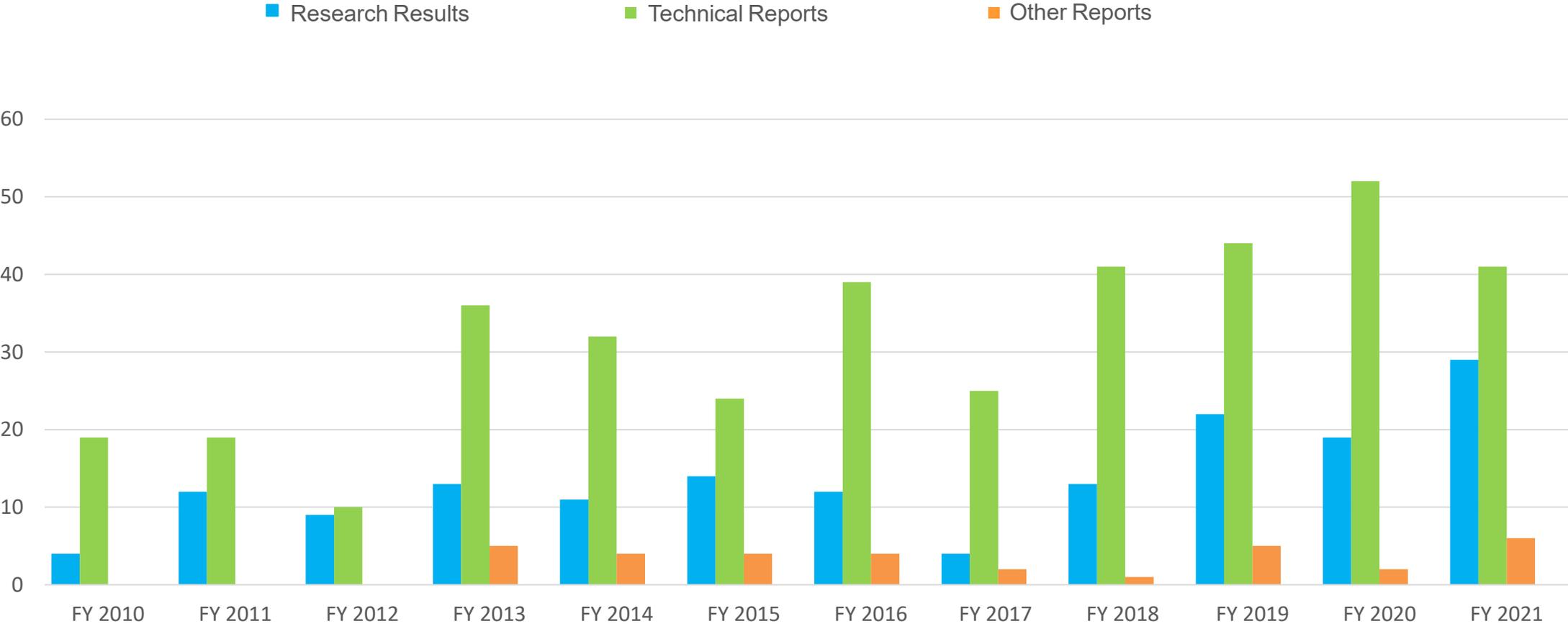
## Recommendations and Actions Taken – TC&C Division

“An observed need is for the **Train Control and Communication Division** to ensure that the results of its research are published and disseminated faster...”

### **Actions Taken:**

- RD&T now has a **new protocol** with the RRS for the review of reports with relevant subject matter (e.g., PTC, human factors).
  - Review times have been slashed from months to weeks, thus speeding the publication process.
- Since FY 2017, the number of annual RD&T publications has increased 29%.

# RD&T Publications on FRA eLibrary



## Recommendations and Actions Taken – Human Factors Division

“The **Human Factors Division** should become more involved in the design, development, and programming of research projects across FRA’s RD&T portfolio and engage regularly with other DOT modal administrations and other relevant federal agencies...”

### **Actions Taken:**

- Human-Automation Teaming in Track Inspection
- VLT in Collaboration with Rolling Stock
- HF Collaboration with TC&C on Grade Crossing Safety and Trespass Prevention
- HF Collaboration with TC&C on Project Evaluation
- Integration of Human Factors Methods in Upcoming TC&C Research
- Working with TC&C on Automated Train Systems

## Recommendations and Actions Taken – RD&T Support Functions

“...engage in **ongoing strategic planning** that not only articulates agency priorities, strategies for pursuing them, and justifications for its programs and budgets, but also clearly defines the support functions that are its responsibility and explains how those functions will be implemented.”

### **Actions Taken:**

- 2020-2024 Strategic Plan published, July 2020
- 2022-2023 Annual Modal Research Plan published, February 2022
- Annual Performance Plan
- Annual Funding Report
- Annual meetings with TRB and AAR to discuss strategic needs.

## Recommendations and Actions Taken – RD&T Support Functions

**“...make more judicious use of phased project procurement...”**

### **Actions Taken:**

- The creation of inter-division Program Manager positions will necessarily entail larger, phased projects.
- TC&C has consolidated funding to accelerate research and implementation of a phased approach for PTC research.

## Recommendations and Actions Taken – RD&T Support Functions

“...consult the four research divisions about their communications needs and challenges and **look for opportunities where support by the management team would be advantageous...**”

### **Actions Taken:**

- FRA RPD Virtual Track Support and Substructure Research Symposium, January 2022
- International Level Crossing Awareness Day, June 2022
- Ad hoc meetings with two major rail unions

## Recommendations and Actions Taken – RD&T Support Functions

“...develop a **more comprehensive approach to program and project evaluation**, including the development of a common evaluation framework that can be used by the four divisions to assess outputs, outcomes, and ultimate safety impacts of their work.”

### **Actions Taken:**

- An FRA contractor is formulating a **project evaluation tool** for RD&T.
- In the proof-of-concept pilot, Program Managers selected a project and answered a questionnaire regarding project performance.
- After gathering evidence and feedback, the tool is now being updated.
- Full rollout expected, CY 2022.

# RD&T Research Goals, FY 2022 and Beyond

## **Safety:**

- Improve safety in rail operations through research.
- Continue research on root causes of grade crossing and trespassing incidents.

## **Equitable Economic Strength and Improving Core Assets:**

- Fund research to increase the recruitment and retention of under-represented groups in the railroad industry.

## **Re-balancing Investments to Meet Racial Equity and Economic Inclusion Goals:**

- RD&T will continue its partnership efforts with minority-serving institutions.

## **Climate and Resilience:**

- Research alternative fuels and advanced motive power technologies.
- Partner with RRS to host a transcontinental workshop to promote safe, clean fuel and motive power technologies for railroad applications.

## **Transformation and Future-Proofing:**

- Infrastructure investments will be resilient, safe, equitable, and sustainable.
- FRA's Transportation Technology Center plays a key role, providing RD&T and other DOT modes a facility to conduct infrastructure research and share information.

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