

Turner-Fairbank Highway Research Center (TFHRC) Long-Range Plan



U.S. Department of Transportation
Federal Highway Administration

Turner-Fairbank
Highway Research Center

Long-Range Plan

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About This Document

The Turner-Fairbank Highway Research Center (TFHRC) Long-Range Plan identifies principles, goals, and strategies that are critical for meeting TFHRC's long-term mission and vision. This document serves as a focusing framework for TFHRC leadership to support strategic initiatives, continuous improvement efforts, and stakeholder engagement over the next decade and beyond.

A working group of staff from across TFHRC offices developed this framework, incorporating feedback from Federal Highway Administration (FHWA) leadership and program offices. This plan should be revisited periodically as part of a regular strategic planning process to ensure that new projects and initiatives drive TFHRC toward its mission and vision.



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About TFHRC



Source: FHWA.

TFHRC, located in McLean, VA, is home to the FHWA Office of Research, Development, and Technology. The Center conducts innovative research to support FHWA's mission of delivering a world-class transportation system that advances safe, efficient, equitable, and sustainable mobility choices for all roadway users while strengthening the Nation's economy.⁽¹⁾

The Center employs a team of dedicated specialists, scientists, and engineers whose expertise encompasses a broad spectrum of transportation-related disciplines. TFHRC's premier laboratories and data centers are a vital resource for advancing the Nation's transportation goals. TFHRC conducts a substantial amount of collaborative research with partners in FHWA program offices and programs across the U.S. Department of Transportation (USDOT). TFHRC researchers also collaborate with other Federal, State, and local agencies and the broader transportation community to provide resources, expertise, and an improved understanding of transportation research needs. In service of these research needs, TFHRC leverages its top-tier facilities and leading expertise to develop deployable solutions and objective data and research to push the boundaries of knowledge and advance the future of our transportation system.

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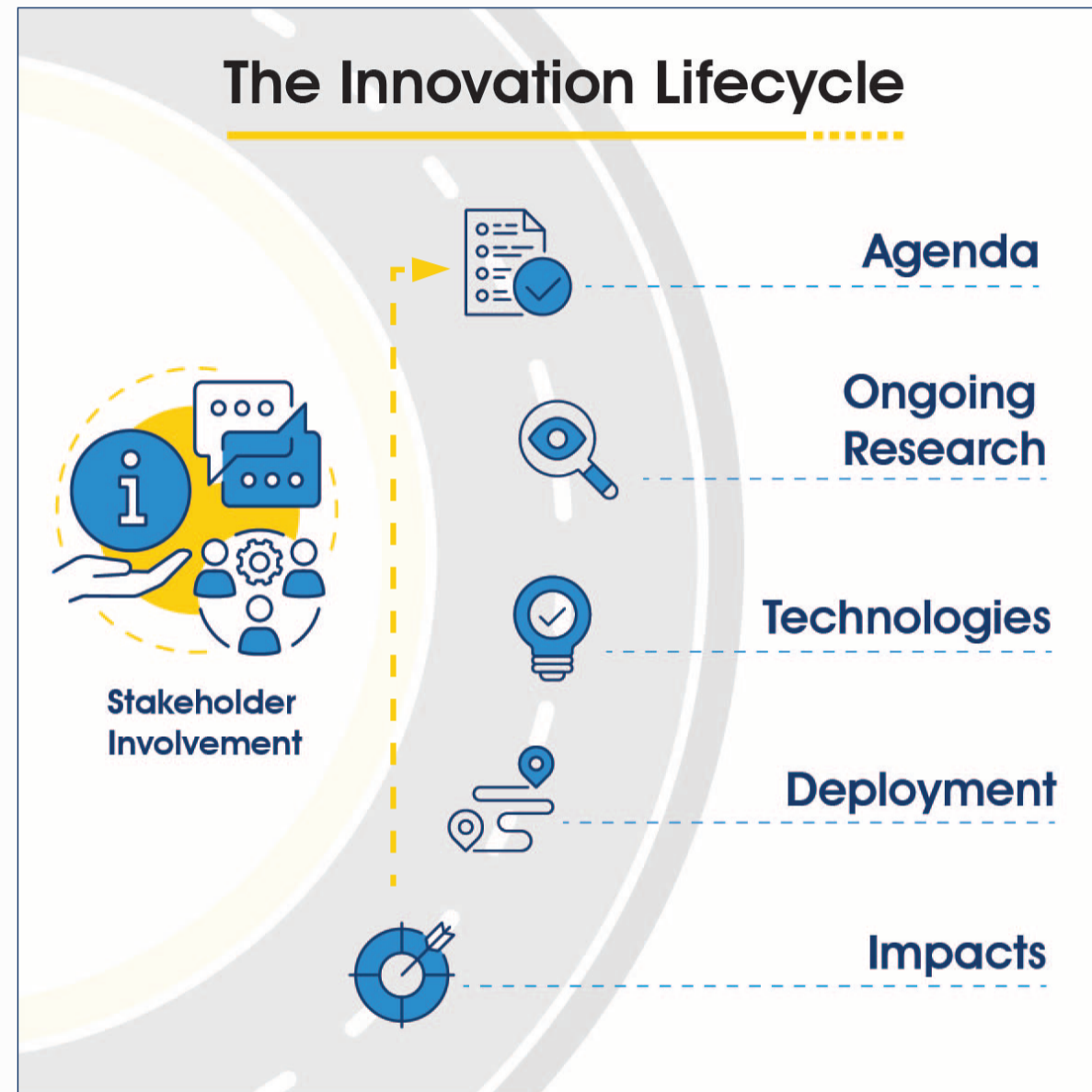
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The Role of TFHRC Within FHWA



Source: FHWA.

As part of FHWA's Innovation Lifecycle, TFHRC conducts and coordinates research and technology development in collaboration with FHWA program offices, Resource Center, division offices, and Office of Federal Lands Highway.⁽²⁾ Working together, FHWA researchers and program managers advance innovative technologies, policies, and practices to support FHWA's mission.

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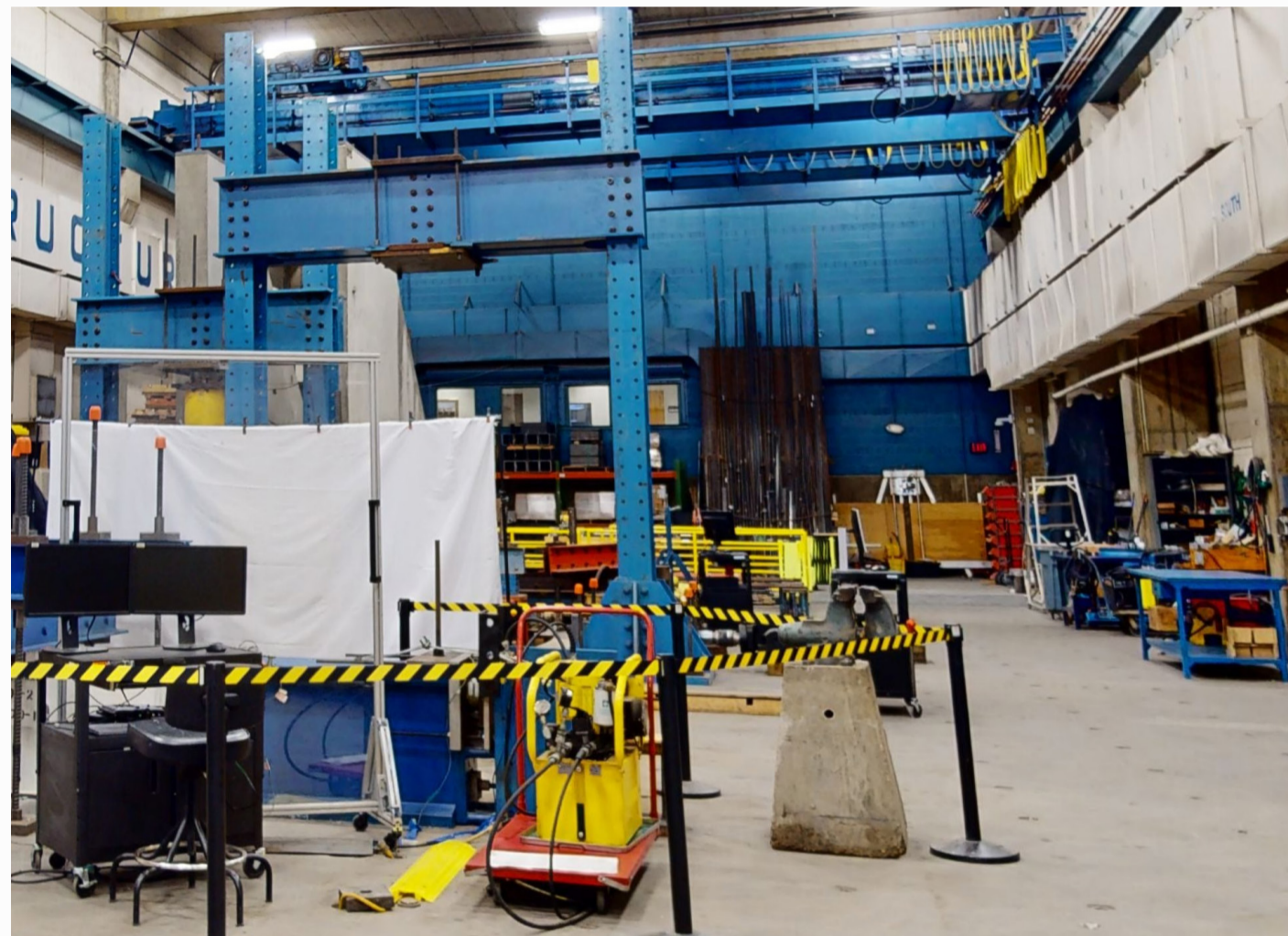
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TFHRC's Mission

We conduct and coordinate transportation research and advance innovation to enhance safety and mobility for all. We provide objective, timely, high-quality technical expertise, leadership, and results.



Source: FHWA.



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TFHRC's Vision

We are a leading center for innovative and collaborative research and development that shapes the future of surface transportation.



Source: FHWA.



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TFHRC is a research hub where the following happens:

-  Transportation practitioners go to understand emerging issues and technologies and find innovative solutions.
-  The FHWA program offices, Resource Center, division offices, and other USDOT modes develop innovations and receive technical assistance to support the Department's strategic goals.
-  Researchers conduct high-risk and high-reward research with the potential to transform our transportation system.
-  Stakeholders, partners, and practitioners find reliable and timely data and research products to support their work.
-  Researchers from across the transportation community can work together on common challenges.
-  The public can find objective, unbiased information.
-  Leading highway experts use state-of-the-art facilities to conduct cutting-edge research.
-  Researchers develop advanced workforce training and education tools to support the deployment of innovative research products.
-  The next generation of highway researchers can learn and be inspired.



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These principles drive our research and development work and are core to achieving our vision:



Impact: We focus on research that has the potential to meaningfully impact the highway transportation challenges our Nation faces, and we seek to deliver results in a timely and accessible way.



Integrity: We conduct rigorous, objective, unbiased, and ethical research that meets the highest standards of scientific integrity.



Creativity: We encourage exploration, innovation, and risk taking to develop new ways to address transportation problems.



Accessibility: We seek to facilitate the free flow of scientific and technical information by making research data and results available to the public in accessible formats.



Diversity and inclusion: Our research considers and benefits diverse populations and embraces different perspectives and backgrounds.



Collaboration: We invite other transportation modes, partners, and stakeholders to join us in our research efforts. Pursuing common goals and leveraging collective capabilities, facilities, and research infrastructure ensures the most productive use of taxpayer funds.



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Goals and Strategies



Source: FHWA.

The following goals and strategies are intended to guide the development of initiatives and actions that will help TFHRC achieve its mission and vision for the future. Goals and strategies should be broad enough to support changing and emerging needs distinct from one another, but they should encompass the different focus areas identified while developing a long-range plan.



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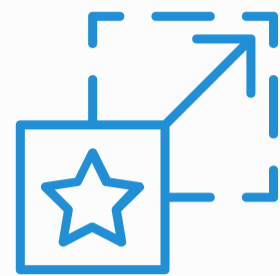
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Goal 1:

Enhance Research Excellence, Collaboration, and Innovation

- ★ **Make TFHRC a hub for collaborative research:** Cultivate an environment that encourages interdisciplinary and cross-modal collaboration among researchers, taking advantage of the capabilities and knowledge at TFHRC. Encourage joint projects and teamwork that leverage diverse expertise, fostering a culture of knowledge sharing and collective problem solving.
- ★ **Adopt advanced technologies:** Proactively incorporate cutting-edge technologies into research methodologies. Focus on staying ahead of technological advancements to enhance research capabilities and outcomes and provide leadership to other partners and stakeholders.
- ★ **Support innovation and creativity:** Create and fund programs that specifically encourage innovative and exploratory research in emerging areas. Support high-risk, high-reward research endeavors to push the boundaries of current knowledge and technology.
- ★ **Invest strategically:** Make significant investments in critical thrust areas and emerging areas of potentially transformational research to achieve impactful results sooner and more completely.
- ★ **Continuously improve research processes:** Regularly evaluate and enhance research methodologies and programs through peer reviews and impact evaluations. Focus on increasing the quality, relevance, and impact of research outcomes.



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Goal 2:

Develop and Support a Highly Skilled Research Team

- Recruit top talent:** Strategically recruit and hire exceptional talent in critical transportation technology and policy areas.
- Retain and foster talent:** Prioritize ongoing professional development and training opportunities to support existing staff and enhance skills and knowledge while actively building a high-quality work environment.
- Promote diversity and inclusion:** Seek out and hire talent from diverse backgrounds. Create a workplace culture that is welcoming and inclusive, where diverse perspectives and expertise are valued and contribute to innovative and robust research outcomes.



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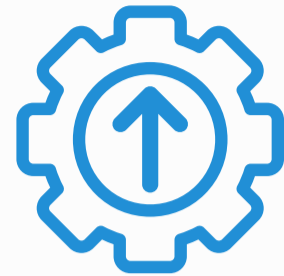
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Goal 3:

Achieve Operational Excellence and Sustainability

- ⦿ **Enhance research facilities and infrastructure:**
Maintain and strategically upgrade the physical and technological infrastructure of research facilities to a state-of-the-art level while also retiring research facilities that are no longer deemed necessary or a priority. Modernize laboratories, improve digital infrastructure, and ensure facilities meet sustainability standards.
- ⦿ **Develop a needs-based budgeting process:**
Prioritize investments based on identified stakeholder needs and priorities.
- ⦿ **Establish strong data management standards:**
Develop and implement comprehensive data management policies and procedures that ensure data security, quality, accessibility, and compliance with legal and ethical standards and principles.
- ⦿ **Advance the use of alternative procurement practices:**
Improve the procurement process to be more flexible and efficient to accommodate research in new and rapidly evolving fields.



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Goal 4:

Foster Strong External Connections and Community Engagement



Build strategic partnerships and networking:

Actively seek and cultivate partnerships with Federal, State, regional, and local agencies; international partners; academic institutions; and industry stakeholders. Focus on creating mutually beneficial relationships that can provide resources, expertise, and opportunities for collaborative research.



Disseminate knowledge: Implement effective strategies for sharing research findings with a broader audience.

This outreach includes publishing in academic journals, presenting at conferences, engaging with media, and using digital platforms to reach the broader public and specific stakeholders and partners.



Communicate research objectives: Develop platforms and methods that describe to the public, our partners, and stakeholders our long-term goals and showcase how our research agenda will help us achieve those goals.



Support research deployment: Facilitate the practical application and timely deployment of research findings.

Work closely with industry and government agencies to translate research into real-world solutions, policy recommendations, and innovative practices.

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Source: FHWA.

TFHRC's research programs will adopt a strategy of identifying and pursuing research thrusts that deliver innovations to address critical or significant challenges in surface transportation at an accelerated pace to supplement other program research goals. A strategic research thrust is a focused area of research and investment that aligns with an organization's long-term goals and priorities, often responding to emerging trends, challenges, or opportunities in a specific field. Strategic investments in these areas facilitate more efficient and impactful results and should be broader than a specific project, as mechanisms for getting project funding are already available. Instead, the strategic thrusts should be areas of research or innovation that require significant strategic investment and may include multiple cross-disciplinary projects.



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The following are diverse examples of defining strategic thrusts to guide investment:

- ✓ National Aeronautics and Space Administration's Aeronautics Research Mission Directorate has identified six strategic thrusts to align investments with the agency's long-term goals.⁽³⁾
- ✓ The Defense Advanced Research Projects Agency points out in its 2019 strategic plan that incremental investments are often insufficient to meet the agency's most critical needs, and therefore, agencies should align major investments to strategic priorities.⁽⁴⁾
- ✓ Within TFHRC, the Exploratory Advanced Research Program periodically identifies and redefines focus areas of interest where critical breakthroughs and investment are needed.⁽⁵⁾

This document defines a framework for determining and leveraging strategic thrusts. Still, TFHRC will need to take additional steps to define the process and criteria by which strategic thrust areas are identified and assessed and to identify a funding mechanism for investing in them.



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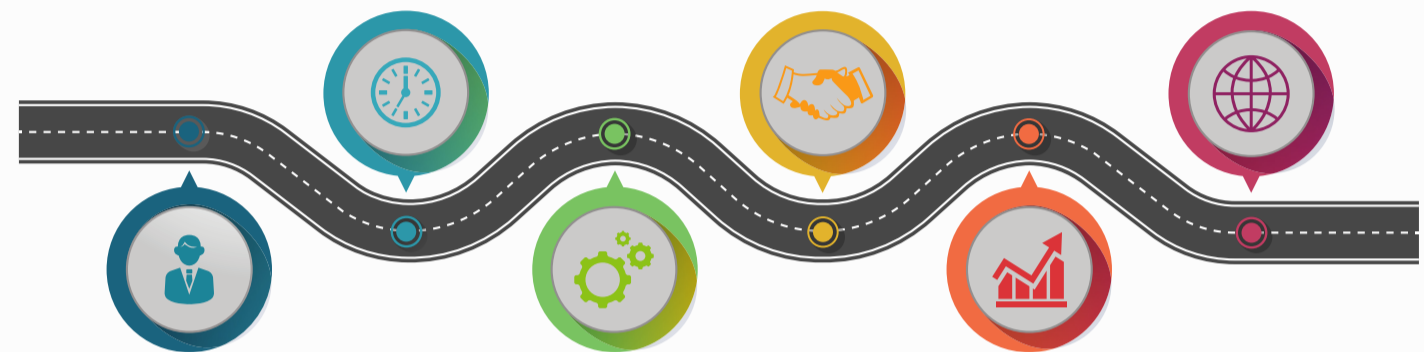
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Shorter term action planning aligned with the TFHRC Long-Range Plan will help the Center plan, make strategic decisions, and monitor progress toward its vision over time:

- Communicate the mission, vision, goals, and strategies with the Center's staff to encourage projects that align with the TFHRC Long-Range Plan.
- Develop measurable initiatives and objectives aligned with each strategy:
 - Establish a timeline for implementation and review.
 - Assign responsibilities and resources for each objective to teams or individuals.
 - Regularly monitor progress toward objectives and adjust strategies as necessary.
- Review proposed initiatives and programs annually to ensure consistency with the goals and strategies established by the TFHRC Long-Range Plan.



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Source: FHWA.

The TFHRC Long-Range Plan should provide a roadmap for the Center that is adaptable to changing conditions in the research environment while also providing consistent direction to researchers:

- Review the TFHRC Long-Range Plan roughly every 5 yr to ensure that it continues to reflect the Center's mission and vision as well as the goals of staff and leadership.
- Be open to adapting goals and strategies in response to new challenges, opportunities, and changes in the research landscape.

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