FY2023 RESEARCH AT-A-GLANCE

IOWA | DOT

LEADING THE WAY

From its inception, the Iowa Department of Transportation has been a leader in transportation research. Iowa DOT has stayed on the leading edge of innovations in materials, processes, and technologies that have brought improvement and longevity to transportation systems around the world.

Our Mission: Driving a quality research program that delivers targeted solutions for Iowa's transportation future.

FOCUS AREAS

We organize our research efforts around four focus areas:

SAFETY

Reducing transportation fatalities and serious injuries through system-wide, multimodal, data-driven, and proactive strategies.

MOBILITY

Improving the accessibility, reliability, time, and costs associated with the movement of people and goods.

SUSTAINABILITY

Considering how transportation supports economic, social, and environmental progress with a long-term perspective.

TECHNOLOGY

Evaluating both current and potential technologies and incorporating them effectively into existing agency functions.

SUPPORTING IOWA DOT'S RESEARCH PROGRAM

Iowa's transportation innovations are possible with oversight and technical and financial support from a variety of sources:

IOWA HIGHWAY RESEARCH BOARD (IHRB) This advisory group is responsible for assisting Iowa's cities and counties and Iowa DOT in the development and continuation of an effective program of research and progress in highway transportation. Funding for IHRB comes from Iowa's Road Use Tax Fund for research.

STATE PLANNING & RESEARCH (SPR) PROGRAM Funding from this Federal Highway Administration (FHWA) program supports statewide planning and research activities at state DOTs. SPR funds are also used for participation in the Transportation Pooled Fund Program.

STATE TRANSPORTATION INNOVATION COUNCIL (STIC) Another FHWA-supported program, the STIC network offers technical assistance and funds to support the costs of standardizing innovative practices in state transportation agencies. STIC members come from federal, state, and local agencies; industry; and academia. IHRB serves as the STIC for Iowa DOT.

ENGAGING & COLLABORATING WITH IOWA DOT RESEARCH

Iowa DOT Research strives to deliver top-quality, targeted solutions for Iowa's transportation future. Whether you're looking to get involved in our research, already have an approved project in the works, or simply want to learn more about our team, we can help.

GET INVOLVED

- **Submit an Idea.** Research ideas can be submitted by anyone (within or beyond the department) at any time through our Research Ideas site.
- **Provide Input.** While ideas are in the open feedback stage, anyone can provide written comments or vote on new proposed ideas.

WORKING WITH US

- **Respond to a Proposal.** Requests for proposals (RFPs) are posted to the Open Requests for Proposal web page six times per year. Sign up to receive email notices of new RFP postings on our Requests for Proposal page under Stay Connected.
- **Discover Our Process.** Once a proposal is approved for funding, the work can begin! Learn more about the steps the research team goes through, from contract to final report.

LEARN MORE

- **Follow the Money.** Our research projects are funded through three primary programs: the Iowa Highway Research Board, State Planning and Research, and State Transportation Innovation Council. Find out more about them and how they each contribute to Iowa DOT as a national leader in innovative research.
- **Meet Our Partners.** Iowa DOT works with a variety of institutions and external agencies to achieve our goals.

PROGRAM OUTREACH

Workshops and peer exchanges are an efficient and cost-effective way for transportation professionals to discuss their programs and best practices. Iowa DOT is frequently invited to participate as a model research program. Here are examples of our outreach in Fiscal Year 2023:

Research Peer Exchange, May 2023 – This four-day event, hosted jointly by the Kansas and Missouri DOTs, brought together representatives from six Midwestern states, two universities, the Federal Highway Administration (FHWA), and the U.S. Department of Transportation to share best practices on a wide range of issues. Topics included project management and leadership, equity and diversity in research, working with University Transportation Centers, and research funding sources.

Research Peer Exchange, September 2022 – The theme of this two-day virtual event, hosted by Rhode Island DOT, was "reimagining research." Eleven state DOTs, FHWA and the Transportation Research Board came together to discuss topics related to aligning research functions with an agency's mission and goals.

University Collaboration

Through formal collaboration agreements with Iowa university partners, Iowa DOT is able to conduct state-of-the-art research and testing to discover new products and materials that will benefit all Iowans.

Iowa State University
since 1997

The University of Iowa
since 2003

University of Northern Iowa
since 2007

Iowa DOT also partners with other universities and private sector firms on the state, national, and international levels.

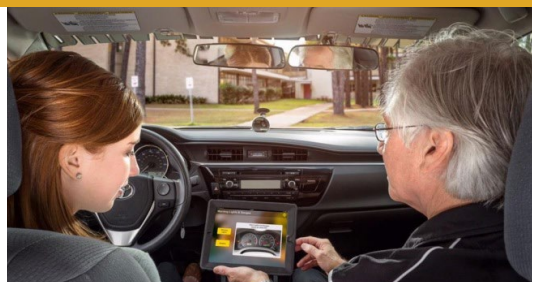
FOCUSING ON IOWA DOT RESEARCH

Research projects highlighted below and on the following page are a sampling of the nearly 200 research projects that are in process or recently completed grouped by the four focus areas.

SAFETY

What Drives You Campaign

Despite decades of highway safety advancements, driver error continues to be the cause of 94% of all crashes. This project aims to develop strategic media campaigns and advertisements to help drivers understand how their behavior -- such as wearing a seatbelt and not driving while distracted, can improve safety for all road users. TSIP Project 491



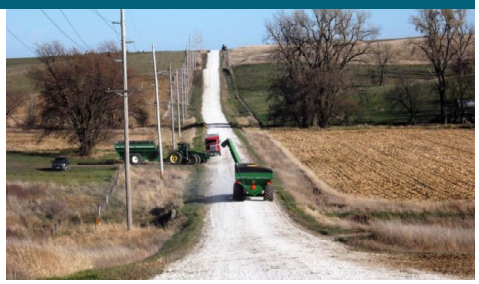
Multi-Disciplinary Safety Team Facilitation

Iowa's Multi-Disciplinary Safety Team (MDST) consists of professionals from a variety of backgrounds who meet and discuss the causes of local crashes in order to identify innovative safety improvements and crash response practices across the state. TSIP Project 470

MOBILITY

Development of Pavement Structural Analysis Tool for Iowa Local Roads

Iowa's secondary roads provide important connections for moving people and goods throughout the state. To estimate the structural capacities of these roads, this study developed an Excel-based tool to make load capacity estimations easier for Iowa's county engineers. IHRB Project TR-762

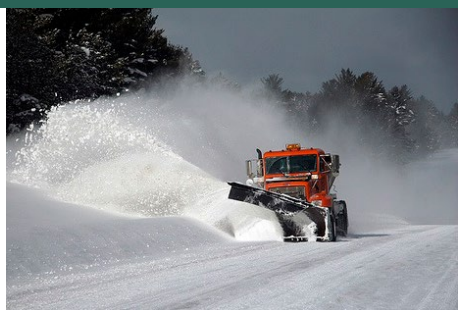


Projected Changes in Flood Peak Discharge Across Iowa: A Flood Frequency Perspective

Traditionally designed roads and bridges can easily withstand the occasional flood, but as storms become more frequent and extreme, Iowa DOT must ensure its infrastructure is ready. This research developed a new flood prediction tool that can be used to update building standards in flood-prone areas. 20-SPR2-002

SUSTAINABILITY

Evaluating Alternative Fuels in Snowplow/Maintenance Vehicles and Identified Barriers to Adoption



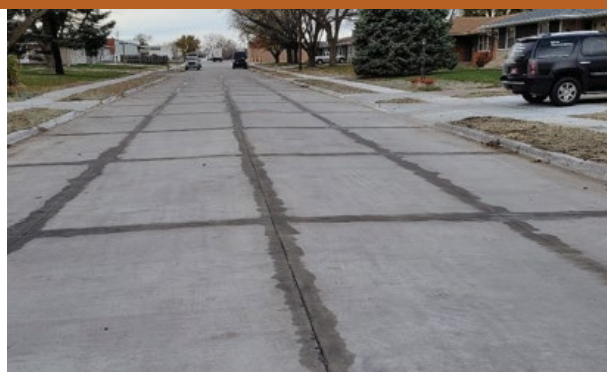
In 2019, Iowa DOT became the first transportation agency in the country to use a 100% renewable fuel in its plows. Comparing the performance and fuel consumption against Iowa DOT's traditional diesel-fueled snowplows, the agency has collected significant data demonstrating the costs and environmental benefits of making the switch to biodiesel. SPR Project RE-22017

An Economical and Sustainable Dust Suppressant for Gravel Roads

As vehicles travel along Iowa's unpaved gravel roads, the crushed aggregates can emit a dust that poses a serious threat to travelers and those who live hearby. This study aims to identify sustainable and cost-effective solutions to suppress the dust and keep the roads from deteriorating prematurely. easement and use of existing infrastructure to decrease costs. IHRB Project TR-813

TECHNOLOGY

Evaluation of Penetrating Sealers for Concrete



Concrete joints are susceptible to rain or moisture, which can penetrate the surface and decrease the concrete's durability as it freezes and thaws. A variety of sealer products on the market offer to prevent moisture penetration, and this study developed test methods and guidance for evaluating the products' performance. IHRB Project TR-765

Building Information Modeling for Infrastructure

Building information modeling, or BIM, is a collaborative and wholistic approach to collecting data about a structure's design and construction and applying it throughout its life cycle. Iowa DOT leads a pooled fund of 20 states seeking to coordinate efforts and advance this technology. SPR Project TPF-5(480)

Get Involved! Iowa DOT staff and partners from local public agencies and industry can be part of the research process by becoming a member of a research group or committee, submitting an idea, or providing feedback on other ideas. Staff can also represent Iowa at the national level by serving on research and technical committees convened by the Transportation Research Board and AASHTO.

LEVERAGING FUNDING WITH PARTNERSHIPS

Getting the Most From Our Research Dollars

By leveraging partnerships, efforts led by Iowa DOT get **12x more funding for the same investment.**

Transportation Pooled Fund Program

By joining forces, two or more DOTs with a shared research goal can get all the benefits of the research results at a fraction of what it would cost individually. Iowa DOT is a nationally recognized leader in transportation research, participating in 57 active Transportation Pooled Fund (TPF) studies and serving as the lead agency for 17 of these. Project results help Iowa DOT make better-informed decisions, conserve resources, and remain on the cutting edge of technological advancements.

TPF-5(474): Bridge Deck Preservation Portal

Technological advances have created opportunities for engineers to manage the life cycle of infrastructure assets. Iowa DOT serves as the lead state for this pooled fund project, which focuses on developing a framework for aiding bridge owners and engineers in data-driven decision-making.

TPF-5(435): Aurora

Rapidly changing weather conditions can reduce visibility and create hazards for the traveling public. Iowa DOT leads this pooled fund project, which investigates cutting-edge tools, technologies, and practices that can help transportation agencies respond to potential weather-related hazards quickly and cost-effectively.

Iowa Highway Research Board

As the first organization of its kind in the United States to investigate road construction problems at the local level, the work of the Iowa Highway Research Board (IHRB) over the past 70 years has contributed to Iowa's reputation as a leader in transportation solutions. The IHRB consists of 15 regular members and represents a variety of stakeholders. The group oversees approximately 20 research projects each year and has overseen over 800 projects since it was established.

TR-819: Statewide Historical Bridge Survey Update

Iowa is home to more than 14,000 bridges that were built between 1876 and 1985. Many of these structures are historically significant and subject to state and federal regulations. This project will evaluate the bridges and document 45 different characteristics so that Iowa's local engineers can have up-to-date information to effectively prioritize their maintenance and repair activities.

TR-774: Cold In-Place Recycling Project Selection and Guidance for Iowa Roadways

Cold in-place (CIR) recycling, which involves removing and replacing the surface layer of asphalt pavements, can be an effective solution to common pavement distresses like rutting and cracking. By investigating previous CIR projects across the state, this research aimed to identify process improvents that could lead to longer-lasting pavements.

DRIVING INNOVATION

To maximize the state's investments and ensure its transportation infrastructure is designed, built, and maintained with cost-effectiveness and durability in mind, the Iowa DOT is continually exploring ways to improve the materials and methods it uses to get work done faster, better, and smarter.

A variety of federal programs are available to help Iowa DOT offset the costs of its innovative pursuits.

Accelerating Market Readiness Program

AMR Accelerating Market Readiness

The Accelerating Market Readiness (AMR) program provides funding to advance innovations that have the potential to enhance roadway safety, shorten the project delivery process, and improve the performance of the transportation infrastructure. Funding is available for testing and field evaluations, pilot demonstration projects, and documentation and dissemination of performance results to widen the knowledge base on the innovations.

State Transportation Innovation Council

STIC State Transportation Innovation Councils

The State Transportation Innovation Councils (STIC) Incentive Program awards each state up to $125,000 in federal funds per year to support or offset the costs of putting research into practice. To receive funding, each state must establish its own STIC—an oversight committee that serves to identify and recommend innovations and manage the approved project to completion. In Iowa, the IHRB serves this role.

Since the STIC program launched in 2014, Iowa has applied STIC funds to dozens of innovation pilot and implementation projects. With allocations also dedicated to training, education and dissemination, Iowa has been able to advance the use of effective methods that might otherwise have been deemed too time- or cost-prohibitive for traditional research funding.

Accelerated Innovation Deployment Demonstration Program

AID Demo Accelerated Innovation Deployment

This federal program helps states put innovative strategies into practice by providing up to $1 million toward any phase of a highway transportation project. Among other eligibility requirements, a project must include a proven innovation and be ready to start within six months of the state's receipt of the award. So far, AID Demonstration funds have been granted to Iowa DOT for six projects, allowing the state to pilot state-of-the art technologies, gain valuable hands-on experience, and develop specifications for further deployment in the future.

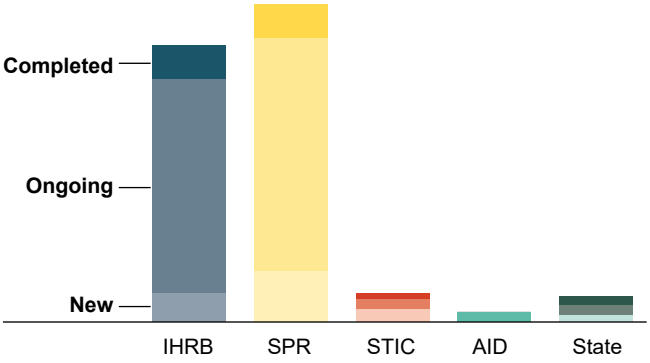
Innovation Matters! A quality research program allows Iowa DOT to:

- Identify opportunities for improving current practices
- Enhance the quality of life of all Iowans
- Increase efficiency and support economic growth
- Build knowledge to support effective decisions and policies

IOWA DOT'S RESEARCH PROGRAM BY THE NUMBERS

Research Program Activity

Iowa DOT Research staff oversaw 212 projects in FY2023.

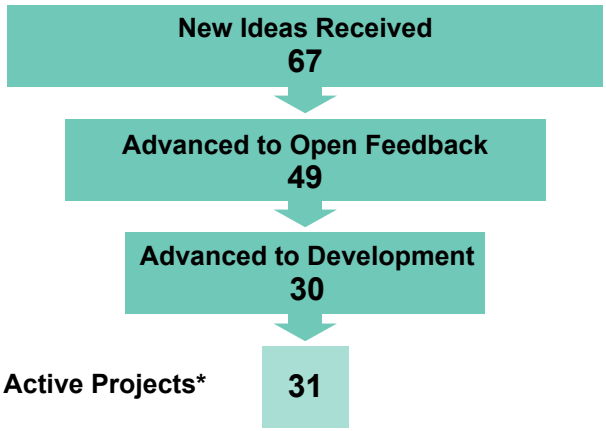


Project Type	IHRB	SPR	STIC	AID	State	Total
New	9	16	4	0	2	31
Ongoing	68	74	3	3	3	151
Completed	11	11	2	0	3	30

Research Idea Submissions

Research ideas can be submitted by anyone at any time through the Research Ideas site. While ideas are in the open feedback stage, anyone can provide written comments or vote on a new idea.

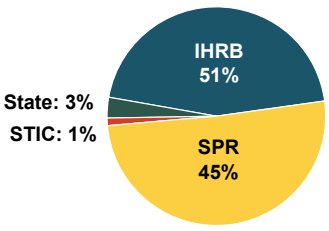
Almost all of the FY2023 research ideas progressed to the open feedback stage; more than three-fourths advanced to development.



*Includes projects developed in previous fiscal years.

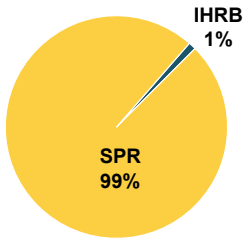
FY2023 FUNDING BY PROGRAM:

New FY2023 Funding



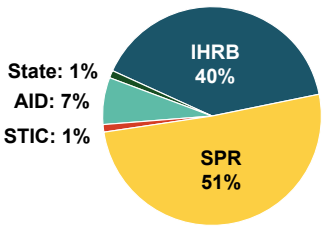
IHRB	$4,179,051
SPR	$3,692,398
STIC	$100,000
AID	—
State	$250,000
Total	**$8,221,449**

New Leveraged Funding for FY2023



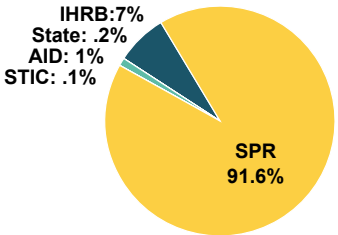
IHRB	$859,279
SPR	$99,944,185
STIC	—
AID	—
State	—
Total	**$100,803,464**

Total Iowa Funding for All Active Projects



IHRB	$10,843,923
SPR	$14,015,406
STIC	$200,000
AID	$1,797,500
State	$378,000
Total	**$27,234,829**

Total Funding from All Sources for All Active Projects

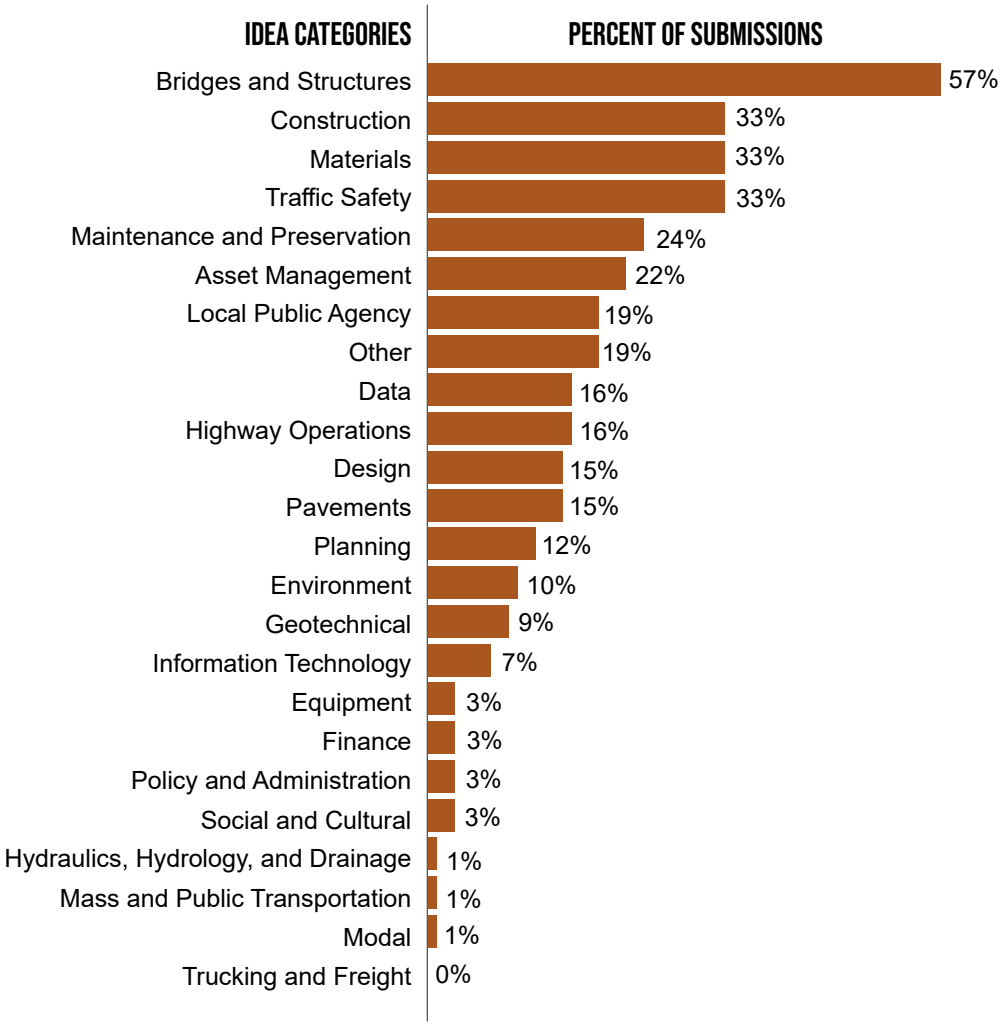


IHRB	$11,758,473
SPR	$154,687,435
STIC	$200,000
AID	$1,797,500
State	$378,000
Total	**$168,821,408**

IOWA DOT'S RESEARCH PROGRAM BY THE NUMBERS

Categorizing Research Ideas

The categories assigned to all research ideas submitted provide an early indication of what future projects will focus on. More than one category can be assigned to an idea.



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