



CTS PERFORMANCE MEASURES FY22

Report Prepared for the
CTS Executive Committee

August 2022

Prepared by:



CENTER FOR
TRANSPORTATION STUDIES
UNIVERSITY OF MINNESOTA

PERFORMANCE MEASURES FY22 REPORT INTRODUCTION

This *Performance Measures FY22 Report* was created by the Center for Transportation Studies (CTS) for its Executive Committee. The goal of this report is to quantify on an annual basis the Center's impacts in effecting changes that improve transportation. The Center annually gathers performance measures data, reviews the data with the Executive Committee, creates initiatives to address any areas needing improvement, and recognizes accomplishments made during the year.

Three important companion pieces to this document are the Center's strategic plan, the annual report, and the Center's annual budget. The strategic plan identifies the Center's annual priority initiatives and activities. The annual report communicates accomplishments of the Center over the previous year to sponsors and stakeholders. The budget allocates resources by program for the next fiscal year and is reviewed annually by the Executive Committee.

The Center's performance measures reporting, as well as its strategic planning process, are anchored around a framework called the "Areas of Excellence," established in 1997 by the Executive Committee. These Areas of Excellence were updated in FY16 based on the guidance of the Strategic Management Subcommittee and continue to be used in this report. They are intended to guide CTS on where it should focus its efforts and resources in support of the Center's vision and mission, and the University's land grant mission. The Areas of Excellence are:

- Strengthen research expertise and knowledge development
- Champion knowledge transfer and education
- Foster stakeholder and public engagement



AREAS OF EXCELLENCE

A: Strengthen research expertise and knowledge development

The Center will strengthen the research and education expertise in transportation-related fields among the faculty and staff within the University. The Center will foster the development of new ideas, knowledge, and solutions through faculty-led research programs and interdisciplinary teams that the Center administers and supports. In addition, the Center will work to attract other University of Minnesota faculty to apply their expertise to critical transportation issues and to advocate for new faculty and research positions in areas where expertise is lacking. The Center will promote dissemination of new knowledge to solve transportation's critical challenges.

B: Champion knowledge transfer and education

The Center will lead and support activities that develop a diverse transportation workforce for the future. Activities will incorporate both specialized and cross-disciplinary knowledge and training that students will need to remain on the cutting edge of transportation. In addition, the Center will work with faculty, practitioners, and industry to help implement research results and best practices, driving real-world solutions and innovations.

C: Foster stakeholder and public engagement

The Center will initiate and support engagement by stakeholders and the public on existing and emerging transportation-related issues. In doing so, it will become visible as a catalyst for focusing the debate on these issues while maintaining the role of an objective convener. The Center will be proactive in communicating with and disseminating information to practitioners, elected officials, public interest groups, the media, and ultimately the public on current and future issues in transportation.

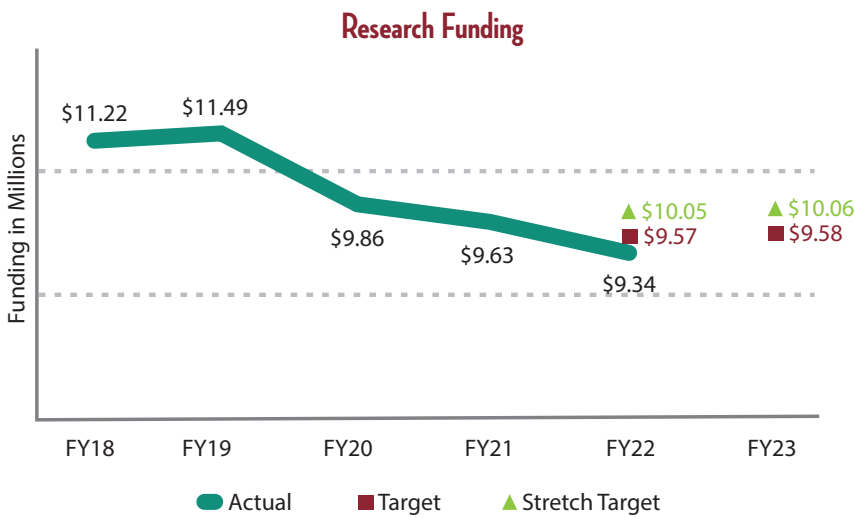


A: STRENGTHEN RESEARCH EXPERTISE AND KNOWLEDGE DEVELOPMENT

Research Funding

The research funding performance measure nearly met its target in spite of the continued uncertainties, delays, and disruption from the COVID-19 pandemic. University researchers successfully secured funding from both federal and local sources in FY22.

Research funding levels fluctuate depending upon the completion of major one-time projects and with expected variations in consistent funding sources such as MnDOT and LRRB. The large decrease from FY19 to FY20, for example, can be attributed to the completion of a large research implementation project and decreased research project funding from MnDOT, partially due to competition from other universities. The fluctuation and slight downward trend of overall research dollars between FY20–FY22 is partially driven by the competition for MnDOT/LRRB funds and the ebb and flow of larger federal grants. We expect overall funding to remain fairly consistent in the years ahead with similar smaller variations depending on proposal funding or completion.



Highlights

Three automated vehicle (AV) shuttle pilot projects in Minnesota are incorporating University research. In Rochester, a research team will analyze pedestrian safety and driver behavior near the AVs. In Grand Rapids, researchers will design and digitally prototype one or more AV mobility hubs along the shuttle route. In Grand Rapids and White Bear Lake, research teams will evaluate pilot community engagement efforts and impacts.



FY22 Analysis

The University’s transportation research enterprise remains strong. A critical mass of faculty and research scholars, representing diverse backgrounds and interests, are actively engaged in research. Funding continues to be secured from a variety of local, national, and international sources to support research on a wide breadth of issues. The current USDOT solicitation for University Transportation Centers (UTCs) demonstrates the University’s recognition as a leader in transportation research; the University may be involved in up to six proposal consortia. Some targets were missed, however, and we will continue to monitor those measures for long-term trends.

FY23 Outlook

The USDOT UTC competition is extremely competitive and we are cautiously optimistic that the University of Minnesota will successfully secure funding in FY23. In addition, it is expected that researchers will continue to respond to other funding opportunities from federal sources such as the National Science Foundation, National Cooperative Highway Research Program, and federal agencies. CTS will continue to assist researchers in pursuing new funds at the local, state, and national level, with a heightened focus on IIJA funding.

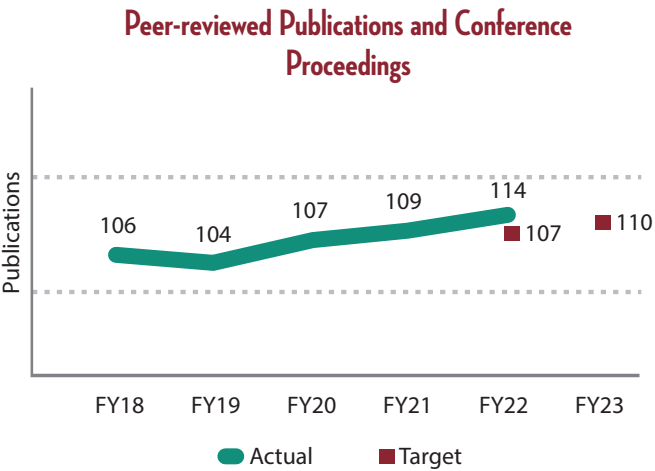


New mechanical engineering faculty member Sayan Biswas secured three large grants for research related to engines and emissions. One study, with Professor Will Northrop, will explore a plasma-assisted ignition system that could transform the natural gas (NG) engine market. The \$1.2 million grant was awarded by the Department of Energy. Two other studies are funded by DOE’s Advanced Research Projects Agency–Energy. The first, for \$500,000, aims to reduce NG engine methane emissions by improving operation. The second, for \$2.1 million, will develop a plasma-assisted system for unmanned pipe flares, eliminating the need for a continuously burning pilot.

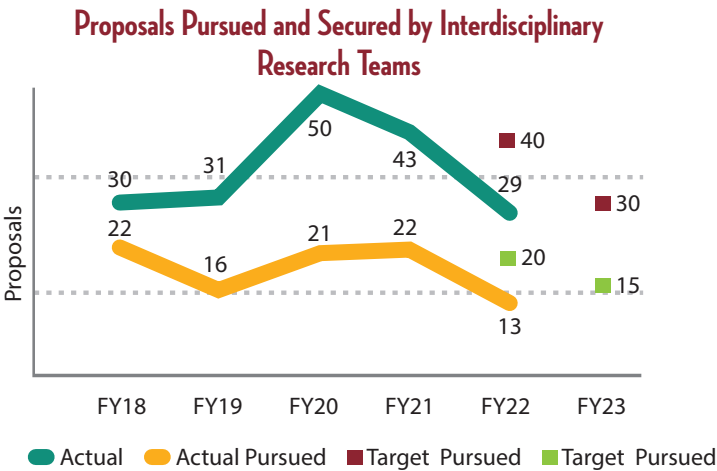


The Accessibility Observatory (AO) will assist in a pilot implementation program of access measures and tools specific to Appalachia. The Maryland, Virginia, and North Carolina state DOTs are guiding the pilot. AO staff will provide enhanced access measures and new mapping products and ensure consistency with national datasets. The project is an offshoot of the National Accessibility Evaluation, a pooled-fund project conducted by AO and supported by 11 state DOTs and the Federal Highway Administration. Maryland, Virginia, and North Carolina are long-term participants in and sponsors of the pooled fund, which measures multimodal job access for the entire U.S. on an annual basis.

Featured Measures



Publications and proceedings reached an all-time high this year. This record, combined with the upward trend line, shows that University of Minnesota researchers are active and continuing to transfer knowledge throughout the pandemic.

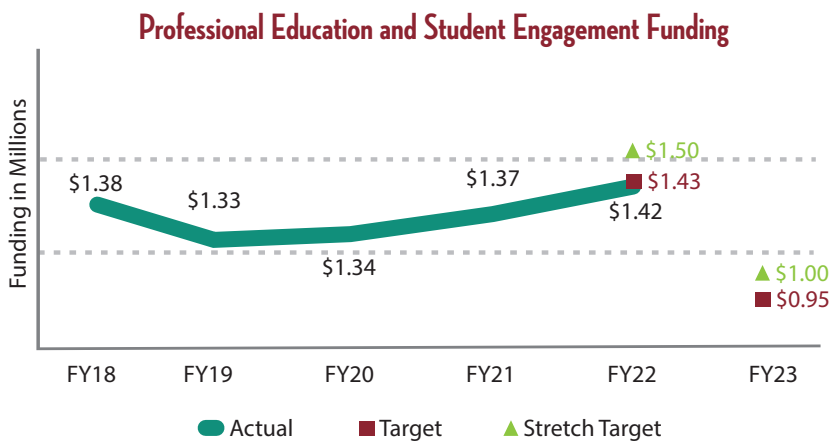


The number of proposals pursued naturally fluctuates over time. Additionally, the measure is a challenge to influence, as the number of proposals can be impacted by factors outside of our control, such as the overall funding landscape and researcher capacity. The number of secured proposals in FY22 reflects the competitive nature of the transportation research environment at both the local and national level. To position research teams for future success, CTS will continue to foster the development of interdisciplinary teams, identify project champions, and facilitate relationships between sponsors and researchers.

B: CHAMPION KNOWLEDGE TRANSFER AND EDUCATION

Professional Education and Student Engagement Funding

FY22 was another successful year for professional education and student engagement at CTS. Several factors contributed to this success: all funding for operational programs was secured, new funding was brought in for delivery of the CAV Career Pathways Camp, and more revenue was collected than anticipated for training courses. We anticipate a dip in funding in FY23 as development and delivery of a few one-time courses will be complete, and two operational programs are able to apply pandemic-related cost savings to their FY23 activities, therefore not needing any new revenue.



Highlights



The Minnesota Local Technical Assistance Program (MnLTAP) expanded its reach in workforce development this year. In a project sponsored by the Minnesota Local Road Research Board, MnLTAP created a suite of tools

to help local agencies fill open Civil Engineering Technician positions, including the *Training Roadmap for Civil Engineering Technicians*. New materials were also developed to introduce young audiences to careers in local agency highway departments. MnDOT nominated the project for an AASHTO high-value research award.

MnLTAP also developed a new Civil Engineering Technician certificate for local agencies, the third certificate in its Roads Scholar Program. The goal of the new certificate is to help local agencies engage and develop employees for career advancement in civil engineering technician positions, which are often hard to fill. The certificate incorporates the *Training Roadmap for Civil Engineering Technicians* created in the workforce project highlighted above. MnLTAP also

FY22 Analysis

FY22 was yet another year of transition and adaptation. Practitioners are continuing to turn to CTS as a trusted provider of quality training, whether that be in-person or virtual. University students saw the value of in-person networking opportunities provided at events, through internships, or via work on research projects. Engagement was more difficult with university students when in-person options were not available. Participation of K-12 students in activities organized by CTS remained low due to COVID impacts on events geared toward young audiences, including camps and museum events.

FY23 Outlook

As a part of the FY23 CTS Strategic Plan, an evaluation of workforce development and education activities will take place next year. This work will provide future direction for our professional education and student engagement priorities. By looking at the full spectrum of the workforce development pipeline, we hope to build on our current successful programs and identify new opportunities for each of our targeted audiences.



created new curricula in land surveying and AutoCAD that are being used in the new certificate program. This new certificate offers yet another opportunity for credentials to highway maintenance personnel.

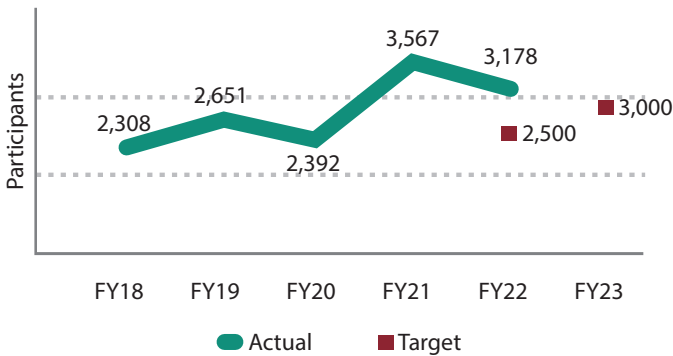
CTS delivered the first Connected and Automated Vehicle (CAV) Career Pathways Camp in August 2021. Eighteen high school students received hands-on opportunities with automated vehicles, took field trips to organizations working on CAV technology, and attended information sessions with practitioners and U of M researchers.



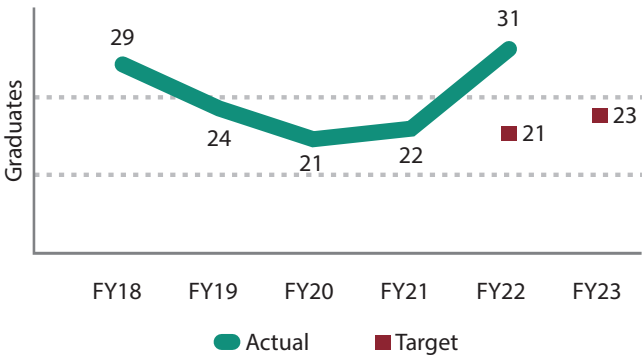
The Airport Technical Assistance Program (AirTAP) hosted a forum in Rochester on PFAS (per- and polyfluoroalkyl substances), also known as “forever chemicals.” These substances have been attracting attention as their health and environmental risks are becoming better known. The forum gathered environmental experts, state and federal regulatory officials, and airport managers to discuss how best to transition away from PFAS. The event was sponsored by the MnDOT Office of Aeronautics and administered by AirTAP, in partnership with Minnesota’s Local Air Service Action Committee. AirTAP staff developed a summary report of the forum.

Featured Measures

Participants in Customized Training and Technical Assistance Programs

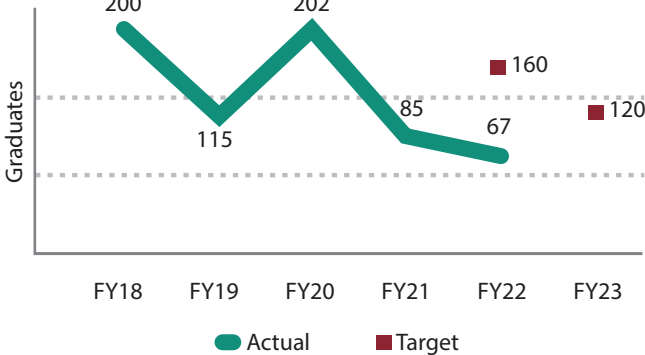


Roads Scholar Graduates



FY22 was a promising year for our Customized Training and Technical Assistance programs. The number of attendees at events far surpassed the target, and although lower than the previous year, stayed above pre-pandemic numbers. The variety of virtual and hybrid training options offered this year demonstrates our Center’s ability to adapt and transition to meet stakeholder needs. As a result of this success, we also saw a record high number of Road Scholar graduates in FY22.

Postsecondary Students Attending CTS Events

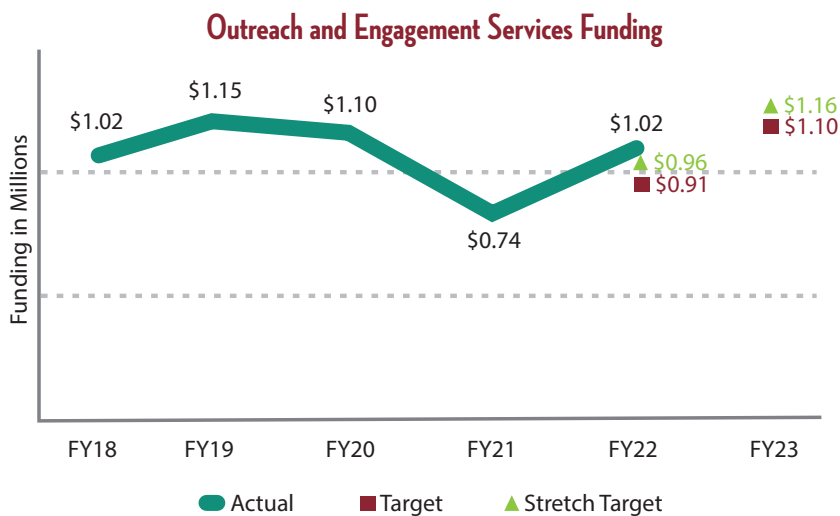


University students attending events remained low in FY22 as virtual-only options did not seem to provide the same level of engagement value for students. Other University student engagement, such as participation in internship programs and research projects, remained strong.

C: FOSTER STAKEHOLDER AND PUBLIC ENGAGEMENT

Outreach and Engagement Services Funding

Funding in FY22 rebounded to pre-pandemic levels—and the stretch target was met—due in significant part to new funding that was secured for CAV-related engagement activities and the NSF autonomous shared vehicles project. Several ongoing programs also saw small increases in revenues. It is anticipated that FY23 will be another strong year with a combination of ongoing programs and new projects.



Highlights

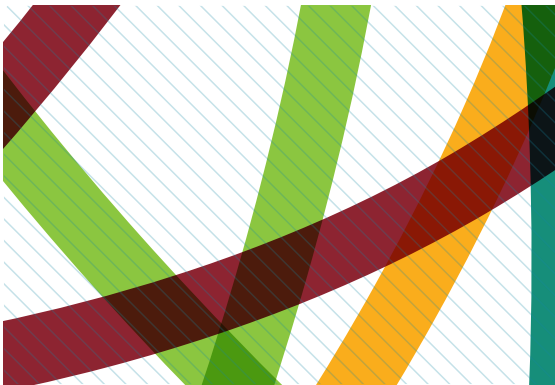
CTS offered several events in a hybrid format for the first time during FY22, including the Freight and Logistics Symposium and the CTS Joint Councils Meeting. This provided an alternative for stakeholders to comfortably participate in these events and ultimately increased overall participation. In addition, virtual meetings continued to be successful in FY22; for example, the CTS Research Council webinars recorded 628 participants—a record high—and included many national attendees.

FY22 Analysis

FY22 was a strong year for stakeholder and public engagement efforts. Funding exceeded the stretch target, and stakeholders continued to turn to CTS as a trusted source of information. This was shown in the significant number of media mentions, visits to our websites, stakeholder groups convened, and participants at events. CTS-hosted events were low in FY22, but those are outside of our direct control and likely still impacted by COVID.

FY23 Outlook

With the addition of our new Communications Director, FY23 will see a focus on raising visibility of the Center’s brand, work, and programs as well as cultivating engaged audiences through strategic, multi-channel efforts. These include traditional media relations, social media, targeted email campaigns, and online presence. We will also continue to offer a variety of ways for stakeholders to engage with CTS, implement a new customer management tool, and initiate additional stakeholder and public engagement activities if successful in securing a University Transportation Center grant.



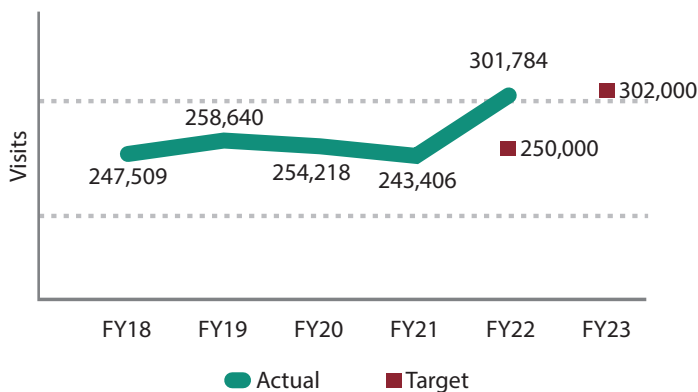


CTS leadership continued to connect with key partners while navigating telecommuting and hybrid work. Strong internal relationships were maintained with existing partners such as the College of Science and Engineering and the Humphrey School of Public Affairs. Partnerships were explored with new U of M connections such as the School of Public Health, the Natural Resources Research Institute, and the Institute on the Environment. CTS staff also participated in several external committees, including the Governor’s Connected and Automated Vehicles Advisory Council, the MnDOT Programming Update Workgroup, the

MnDOT Sustainable Transportation Advisory Committee, and the MnDOT Climate and Resilience Workgroup. CTS leadership also presented at the MnDOT Advocacy Council for Tribal Transportation and began to build connections with transportation professionals in tribal nations. Further, CTS continued the conversation with MnDOT on equity and sustainability topics. These relationships are critical parts of the Center’s engagement strategy.

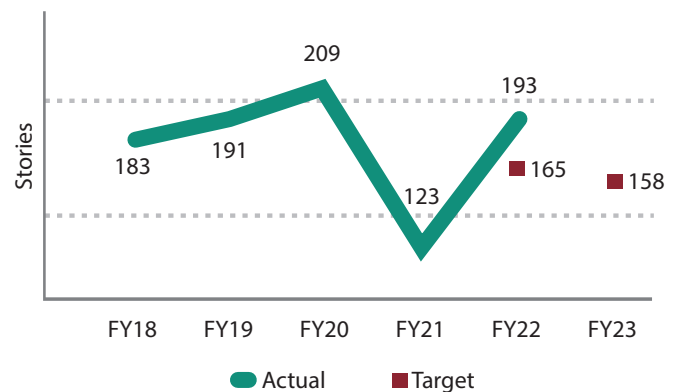
Featured Measures

Visits to CTS Websites



Several websites across CTS’s portfolio saw increased activity this year, notably a 60% increase in site visits for LTAP and a 93% increase for AirTAP. These increases were due to the addition of virtual trainings to our portfolio as well as the release of new technical assistance resources.

Media Stories Referencing University Transportation Research and Outreach



Coverage in the news media in FY22 saw a return to pre-pandemic levels, and stories once again covered topics unrelated to COVID-19 such as research. In addition, University of Minnesota experts had increased availability to devote to media coverage, with a few specific topics—including traffic safety, trucking, and local road agency innovations—generating several media stories.

FY22 PERFORMANCE MEASURE RATINGS SUMMARY

CTS collects data on 26 individual performance measures to develop the information presented in this FY22 Performance Measures Report. Each measure is given an associated rating based on a comparison of its fiscal year actual data to an established target. This page summarizes the 26 measures and shows their color rating, indicating whether or not they met their target goal for FY22.

A: Strengthen research expertise and knowledge development

- Research funding
- Research funding sources
- Proposals pursued and secured by interdisciplinary research teams
- Active research projects
- Faculty and staff with active research projects
- Peer-reviewed publications and conference proceedings
- Citations of peer-reviewed publications
- Patents/licenses applied for and granted
- Intellectual property disclosures

B: Champion knowledge transfer and education

- Professional education and student engagement funding
- Research presentations given
- New products or practices influenced by research and applied by organizations
- Participants in customized training and technical assistance programs
- Postsecondary student engagement with CTS
- Students participating in research projects
- Roads Scholar graduates
- Postsecondary students attending CTS events
- Postsecondary students participating in CTS-facilitated internships
- K-12 students engaging with CTS experiential learning activities

C: Foster stakeholder and public engagement

- Outreach and engagement services funding
- Media stories referencing University transportation research and outreach
- Subscribers to CTS-produced publications and social media
- Visits to CTS websites
- Committees, councils, task forces, and other stakeholder groups convened
- Participants at CTS-sponsored events
- Number of CTS-hosted events

Legend

- Met or exceeded target
- Between 90-99% of target
- Less than 90% of target
- A rating is not available because this measure did not have an FY22 target

