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2023

Michigan Tech Transportation Institute 2023 Annual Report

Michigan Tech Transportation Institute

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Michigan Tech Transportation Institute



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Michigan Tech Transportation Institute

2023

ANNUAL REPORT

MISSION STATEMENT

The Michigan Tech Transportation Institute will provide the operating structure, resources, recognition, and leadership, in a collaborative environment, that supports research, education and outreach leading to sustainable solutions for transportation.

VISION

Partnering for the future of transportation.

FOCUS

The Michigan Tech Transportation Institute (MTTI) is a multidisciplinary affiliation of faculty and professional staff actively engaged in a wide range of transportation-related activities. MTTI has a singular charge; to leverage University resources for the purpose of increasing external funding of transportation-related activities including research, education, training, product development, outreach, and technology transfer to assist in development of transportation systems. To achieve this goal, MTTI provides an administrative structure and resources for programs, individuals, and initiatives. MTTI resources are necessarily distributed to support activities of the Institute.

SUMMARY OF FY23 HIGHLIGHTS AND ACTIVITIES

Per suggestions from the University, one of the main focuses of MTTI for FY23 was to increase the communication and direct activities with the current and potential future members. We approached the task from multiple directions, including:

- Hosting two informational sessions on funding available through the Federal Railroad Administration and the USDOT Small Business Innovation Research program. These sessions were available to all campuswide researchers and notices were posted in Tech Today for further outreach.
- Hosting two guest speakers to highlight mobility and transportation opportunities within the State. Sean Kelly from Mannik & Smith Group presented remotely as part of the MTTI membership luncheon. MTTI also hosted Janine Ward, TITLE from the Michigan Office for Future Mobility and Electrification (OFME) for a two-day visit that included a presentation and numerous lab tours across the campus (including several other centers/institutes).
- Two general member/friend meetings to provide updates on MTTI activities to members and for general conversation on strategies of the institute.
- Starting a monthly newsletter to showcase MTTI research projects and provide current news updates to MTTI members, MTU researchers, students, and our external partners.
- Instituting a regular email message from the Director in which he updates members on the current MTTI events and opportunities for research.

Besides the increased communication and information transfer with members/friends, MTTI's primary activity was supporting proposal development, including providing matching funds when necessary. In FY23, a total of 51 proposals were submitted by 12 different PIs with a total proposal value of \$24 million. MTTI also supported its members by covering the cost of MnDOT National Road Research Alliance Associated membership that allows MTTI members to submit proposals to the Local Road Research Board (LRRB) program.

GOVERNANCE STRUCTURE

MTTI is governed by a member elected Director and five-member Executive Committee. The Director is approved by the VPR Office and is responsible for the overall operation of the organization.

The Director is the main representative internally to the university and externally to other universities, state and federal agencies and private organizations. The Director is installed, renewed, or removed in accordance with procedures outlined in the MTTI By-Laws. The Director reports to the Vice President of Research.

The Executive Committee consists of five members elected by and from the Institute's Principal and Affiliate Members. An elected term for an Executive Committee member is three (3) years and terms are staggered such that at least one (1) member is elected yearly. The Executive Committee also includes the MTTI Director serving as an ex officio (non-voting) member.

The Director and Executive Committee establish policies/procedures and recommend strategic financial decisions, including but not limited to an annual MTTI operating budget, project cost share commitments, staffing decisions to support the activities of the Institute, capital investments, and other strategic initiatives.

The MTTI fiscal year 2023 Executive Committee included Jake Hiller (CEGE), Colin Brooks (MTRI) and Robert Handler (CHEMENG) as affiliate members. Principal members were Kuilin Zhang (CEGE), Zhen Liu (CEGE) and Pasi Lautala (CEGE) as Director.

Elections are held annually during the spring semester. As of July 1, 2023, new members include Qingli (Barbara) Dai (CEGE), Zhanping You (CEGE) and Elizabeth Veinott (CLS), replacing Jake Hiller and Robert Handler, whose terms expired, and Zhen Liu, who left the university. Each will serve three-year terms on the committee.

This past fiscal year, one goal of MTTI was to increase diversity in both membership and in leadership. This is the first time we will have two female members serving the institute on the Executive Committee.

MEMBERSHIP

MTTI membership is open to all campus researchers. Members are divided into two groups: principal members and affiliate members. All others are invited to be friends of the institute.

Principal Members - Those eligible for membership who in the last three years have served as the Principal Investigator (PI) or Co-Principal Investigator (Co-PI) on one or more MTTI Activities that result in combined average IDC recovery greater than or equal to \$5000/year over the three previous fiscal years.

Affiliate Members – Eligible PI or Co-PI (as defined previously) with successfully awarded project(s) that qualify as a MTTI Activity(-ies) but does not meet the combined minimum \$5,000/year IDC rule over the three previous fiscal years. Additionally, one may qualify as an Affiliate Member if he/she has submitted at least three proposals in the last three fiscal years through MTTI.

Friends of the Institute - All others who request to join MTTI as a friend.

New members to the institute in fiscal year 2023 include Mohammadhossein Sadeghi (CEGE), Abdolmajid Erfani (CEGE), Bo Xiao (CEGE), Tom Oliver (CEGE), Jae Sung Kim (CEGE), Quang Tran (CEGE) and Vihn Nguyen (MEEM). A list of current members is included in Appendix A.

MEMBERSHIP INVOLVEMENT AND CAPACITY BUILDING

MTTI provides informational sessions on current and upcoming funding opportunities (via Zoom and in person) for all members of the campus research community in an effort to expand MTTI membership and to be inclusive of all researchers. In addition, invited guest speakers provide updates on the latest topics in transportation and mobility to our MTTI members and interested campus staff.

During the MTTI general meeting in 2023, invited keynote speaker Sean Kelly, senior vice president of Mannik & Smith Group Inc., presented his talk "Evolution of Transportation and Mobility Landscape" to friends and members of the institute.

Janine Ward, Program Manager for the State of Michigan Office of Future Mobility & Electrification (OFME) visited campus for tours and presentations. Ward's site visits included the Keweenaw Research Center (KRC), Advanced Power Systems Research Center (APSRC) and the APS Lab. In addition, Ward met with multiple individual researchers for lab tours and discussions. Ward also visited the managers of the cities of Houghton and Hancock and met with personnel at the SmartZone and the Western Upper Peninsula Planning and Development Region (WUPPDR). MTTI hosted a reception for campus members where Ward, speaking on Mobility in Michigan, presented a talk titled "State of Michigan Office of Future Mobility and Electrification (OFME) funding platforms - Opportunities for Michigan Tech and Upper Peninsula".

An informational session on the Federal Railroad Administration's Broad Agency Announcement (BAA) was hosted by Director Lautala, providing members with an overview of the RFP, a preview of the application process, and examples of successfully funded FRA projects in effect. Over the past decade, Michigan Tech has received 17 total projects from the BAA program, led by 10 different PIs and 16 separate Co-PIs and totaling over \$6.5 million in external funding.

MTTI and MTRI collaborated to host an online informational session on the USDOT Small Business Innovation Research Funding (SBIR) notice. The session was led by Colin Brooks (MTRI) and shared MTRI, Inc.'s experience partnering with Michigan Tech faculty on successful SBIR/STTR proposals and reviewed some of the interesting topics on this particular call. Nate Yenor, director of technology business incubation with Michigan Tech's Office of Innovation and Commercialization shared his experiences with other SBIR proposals and provided information about small business partnerships available beyond MTRI, Inc.

BUDGET OVERVIEW

FY2023 BUDGET SUMMARY

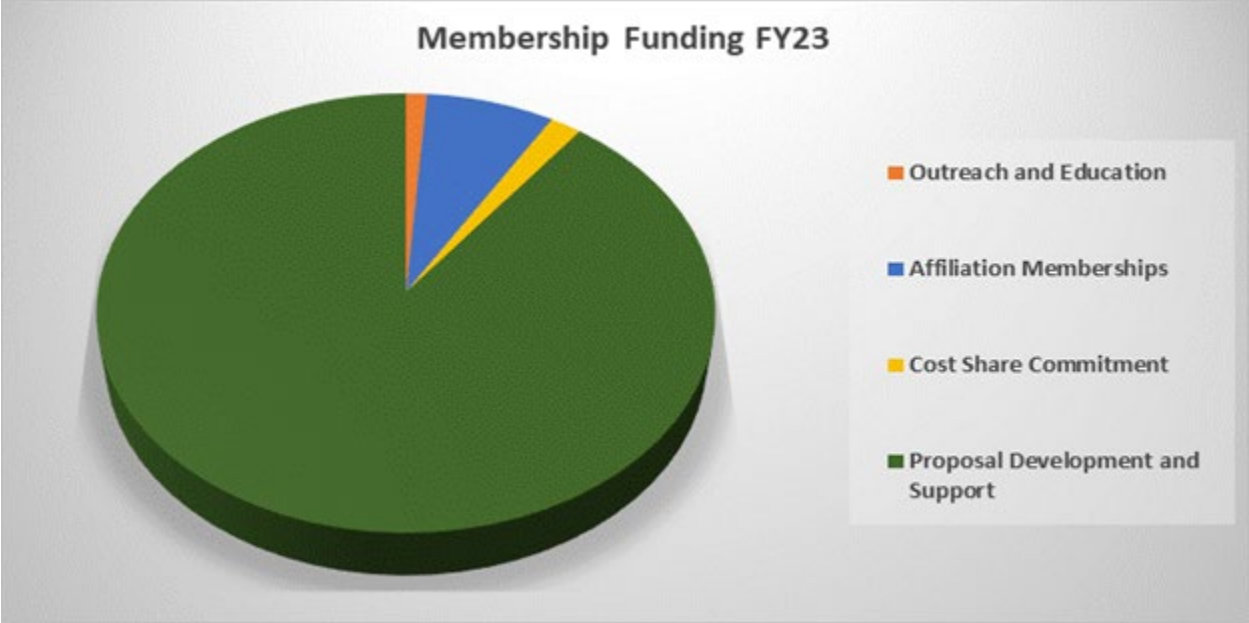
The MTTI Director and Executive Board set an annual budget for the Institute to guide IRAD expenditures available to support our members. The proposed and actual budgets for FY23 are included below.

Budget FY23	Proposed	Actual
Faculty Summer (Director)	\$0	\$5,032
Other - Pam Hannon	\$55,000	\$48,102
Other Technical Staff	\$0	\$0
Fringe Benefits	\$23,430	\$22,635
Equipment	\$0	\$0
Travel/Meals	\$0	\$1,160
Supplies	\$2,000	\$3,187
Services (Fees) - MnDOT	\$2,000	\$4,043
Other - Education	\$0	
Other - Cost Share	\$0	
	\$82,430	\$84,160

IRAD

MTTI is allocated Institutional Research and Development (IRAD) funds by the Vice President of Research Office, used for operating expenses and for investment in membership to encourage growth of the institute. Proposal development and support continues to be the largest funded benefit to MTTI members and is a strength of the institute as many departments lack designated proposal development personnel. The percentage of that commitment from total expenditures has been even higher, since the pandemic and loss of involved faculty reduced the annual revenues drastically, a trend that is finally turning around. We expect the funding for membership activities to be increased in the next fiscal year for the following reasons; first, MTTI research expenditures are increasing as we continue to clear the backlog from the pandemic time projects, and second, we are taking action to reduce the program coordinator's dependence on MTTI overhead funds through post-award support and time-share with other departments/centers who need proposal support. We expect that past MTTI expense categories, such as major and minor initiatives, equipment upgrade funding, cost share funding, educational activities, sponsored speakers, and membership travel, will again become part of MTTI support portfolio.

FY23 funding was allocated as seen in the chart below.



MTTI IRAD returns (Figure 1), expenditures (Figure 2), and IRAD balances (Figure 3) are depicted for a five-year period from FY19 – FY23.

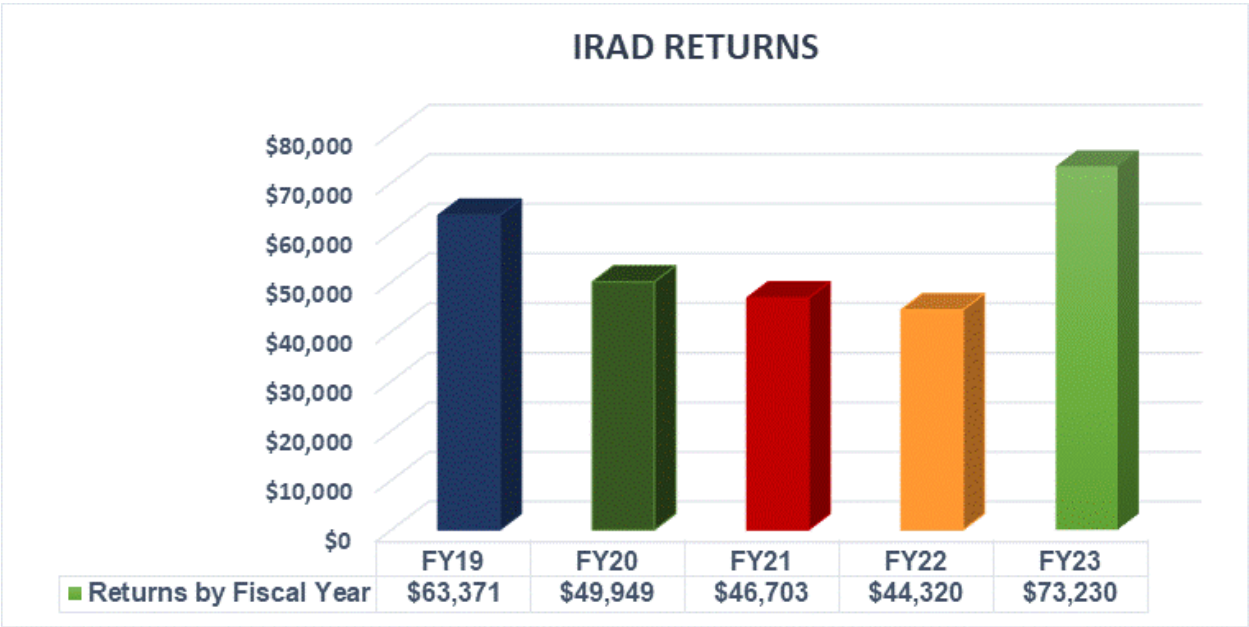


Figure 1: IRAD Returns FY23 Year End Close

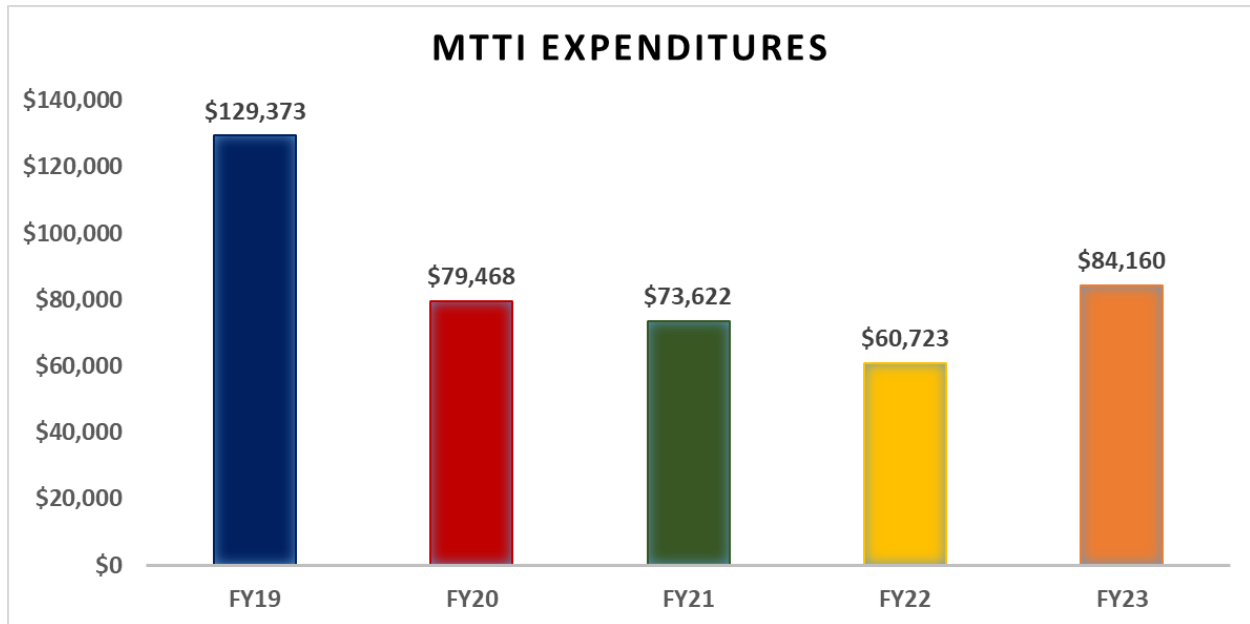


Figure 2: IRAD Expenditures FY23 Year End Close

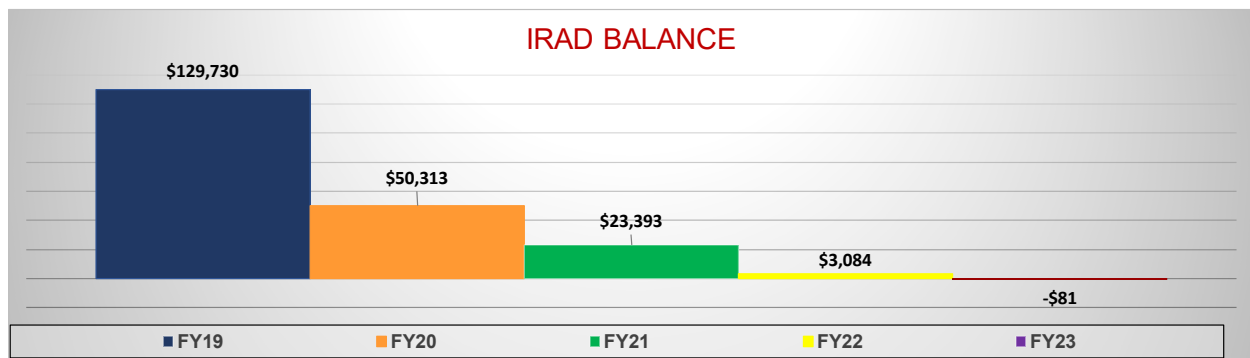


Figure 3: IRAD Balances for Past Five Years

PROPOSAL LIST

A list of proposals submitted through MTTI in FY23 is included as Appendix B. 12 principal and 24 different co-principal investigators from 9 departments were involved in promoting MTTI research activities.

PROPOSALS, PROJECTS, AWARDS

During fiscal year 2023, MTTI researchers submitted **51** proposals to 27 different sources requesting \$24,430,296 in funding. **15** projects were awarded with a value of \$1,653,924. MTTI current has **33** projects in progress valued at \$5,474,869.

The Figure 4 below provides a summary of proposals, awards, and on-going projects over the previous five fiscal years. Figure 5 provides the awards for the past five fiscal years.

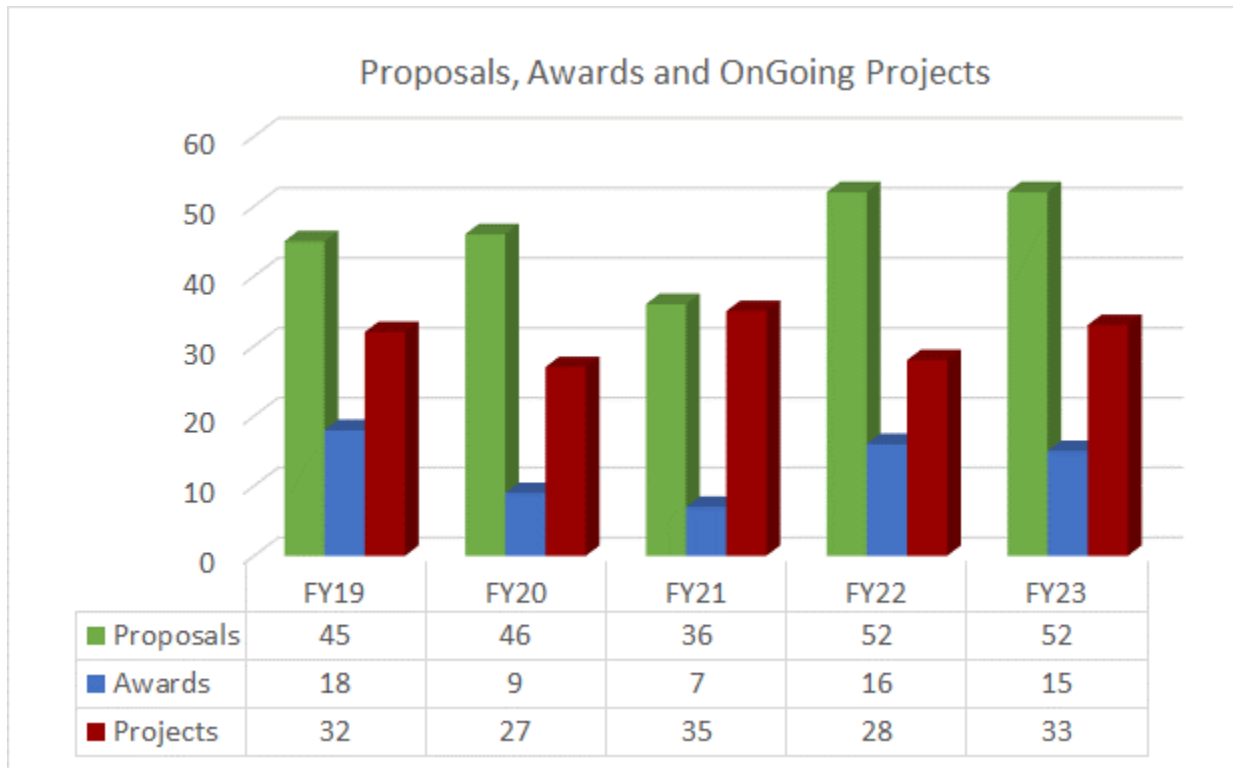


Figure 4: Proposals, Awards, and Projects (FY19-FY23)

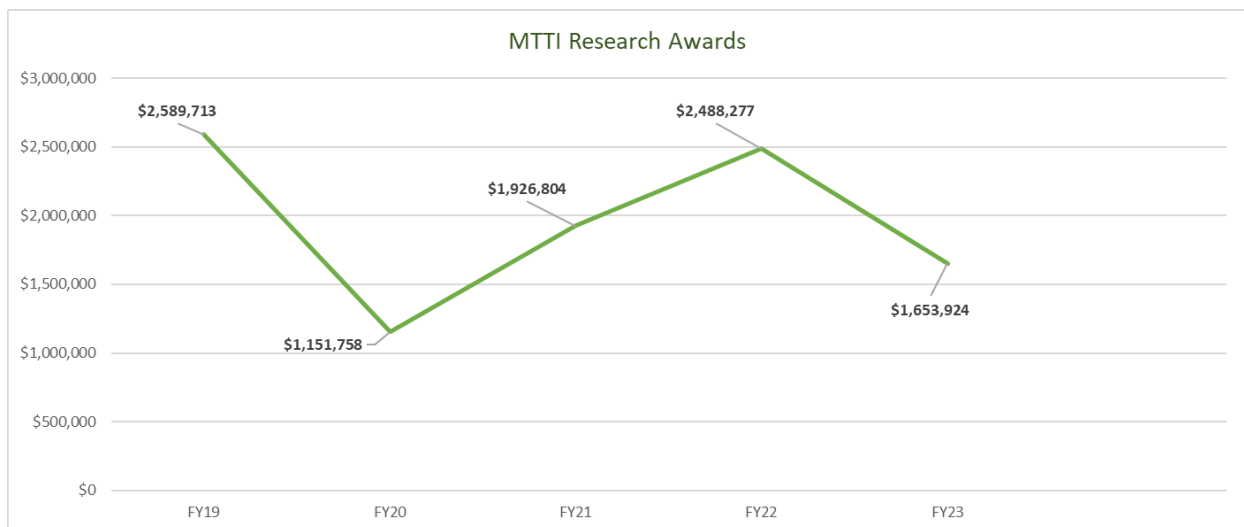


Figure 5: MTTI Research Awards Past 5 Years

ASPIRE PROJECTIONS

Figure 6 and related table show projections from the ASPIRE system for proposal value, award value, and IRAD returns for MTTI from FY24 through FY28. The projections clearly show the expected increase in research expenditures for the FY24 and FY25.

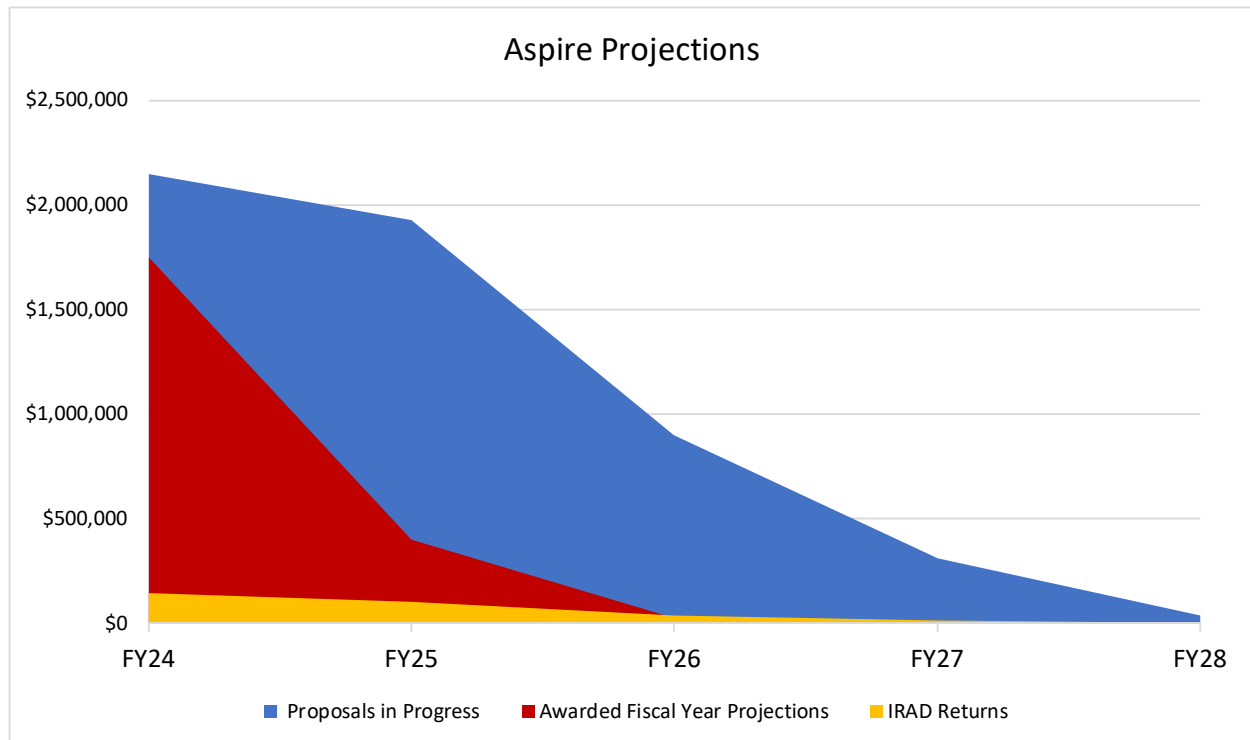


Figure 6: ASPIRE Projections (FY24-29)

ASPIRE	FY24	FY25	FY26	FY27	FY28
Proposals in Progress	\$2,144,279	\$1,926,636	\$899,938	\$310,417	\$40,069
Awarded Fiscal Year Projections	\$1,747,152	\$399,534	\$24,475	\$0	\$0
IRAD Returns	\$145,485	\$101,542	\$40,305	\$14,780	\$2,057

While these are only projections, several of the projected projects and project extensions (new funded phases) have already been awarded to MTTI during the first three months of the FY24. Current awarded projects for FY24 to date total **\$2,963,209**, exceeding the total awards in FY23. Additionally, MTTI research expenditures in FY23 were the highest expended in over five years. See Figure 7.

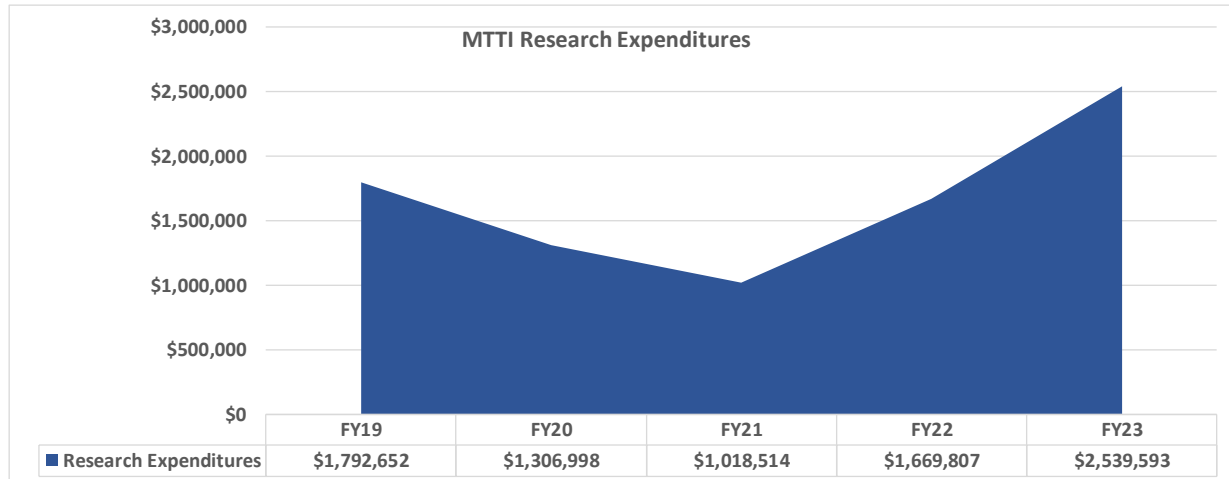


Figure 7: Research Expenditures (FY19-23)

FUTURE PLANS AND GOALS

STRATEGIC PLANS AND GOALS

As has been stated earlier, MTTI has gone through several tumultuous years from several reasons, ranging from departing researchers to COVID pandemic. Per VPR guidance, the emphasis of FY23 was to increase the communication and direct activities with the current and potential future members which was completed successfully. We were also able to turn around the declining trend in research expenditures. These aspects, together with new faculty hires in our area, gives us a solid foundation to rebuild MTTI back to the strength it once possessed. While new awards during FY23 were somewhat a disappointment, the start for FY24 has been explosive. MTTI member Kuilin Zhang (CEGE) was recently awarded two projects; “A Decarbonized and Resilient Intermodal Freight Transportation (DRIFT) Modeling Platform for Intermodal Logistical Decisions under Uncertainty” project was awarded by ARPA-e in the amount of \$1,050,000 with and additional \$150,000 funding for the Argonne National Lab, and a project with ENSCO, Inc. through the Federal Railroad Administration (\$910,427). In addition, the FRA has awarded three researchers with Phase II funding already in FY 24. Yousef Darestani, Thomas Oommen (now P. Lautala) and P. Lautala. We were also just informed of the FRA’s intention to fund a \$5 million National University Center of Rail Excellence at the University of Illinois-Urbana Champaign, in which MTTI is a partner. MTTI’s budget is \$870,000 over three years with a 100% match.

Since MTTI is slated for renewal discussions in late October, 2024, we are working on the long-term strategy for the Institute and consider it more appropriate to present that strategy as part of the renewal presentation, once it’s completed. Therefore, we have not included a detailed strategic plan as part of this report. MTTI’s current revenues have allowed very limited investments beyond our main mission, proposal support, but with the increase in research revenues/expenditures, as well a with re-alignment of the MTTI coordinator’s role, we expect to start diversifying our support to institute members, starting in FY24. We are also exploring closer

alignment with one or more Tier-1 centers/institutes to expand our capabilities for going after larger, multi-investigator proposal opportunities.

FINANCIAL AND MEMBERSHIP GOALS TO ENHANCE MEMBER EXTERNAL AWARDS

MTTI started actively increasing its visibility among Michigan Tech faculty during the FY23 with positive outcomes. While the specific goals will only be revealed as part of the renewal presentation, we expect the membership in MTTI to both grow and diversity over the next FY and beyond.

SPACE AND FACILITY NEEDS

MTTI has use privileges in the rooms listed below. In addition, MTTI members share research and lab space with other member researchers.

- 301J Dillman Hall (Conference room)
- 315 Dillman Hall (CN RTEC Media Room/CTT Webinar studio)
- 316 Dillman Hall (CN Rail Transportation Education Center),
- 318A and 318B offices,
- 318 cubicle and
- 301B Dillman Hall.

There are no immediate additional space requirements for the Institute.

FINANCIAL DEFICIT IN ACHIEVING GOALS

A gap continues to exist in achieving our financial goals although IRAD return to the institute has increased. As a result of the challenges over the previous two years, IRAD spending for membership is still not at a pre-COVID level. Although funding has increased, a deficit continued during this fiscal year. The Vice President of Research Office provided a funding for a month's salary for P. Hannon. We expect the financial status to stabilize in FY24 due to increased research expenditures.

STRATEGIES TO FILL DEFICIT

Two options exist to reduce P. Hannon's salary load on the MTTI budget and include effort on other proposals (CEGE or other centers/institutes) or post award support on projects. Lowering the salary dependence on MTTI IRAD will increase the opportunity to spend overhead on members. MTTI has notified members of the post award support option available.

An agreement has been reached with the CEGE Department for the MTTI Coordinator to provide post award support to those researchers who need assistance and can provide an index to fund the staff time. In addition,

those CEGE faculty members outside of the MTTI membership can request the MTTI Coordinator to assist in proposal preparation with funding provided by the department.

An increased effort will be made to include the MTTI Coordinator resources and wages as a direct line item in MTTI research budgets for items including event organization and educational activities. In addition, some of the MTTI cost share is now provided in the form of staff support.

A meeting was held between Director Lautala and Humanities Department Chair Stefka Histrova for discussions on combining staff resources between the two departments.

CHALLENGES AND BARRIERS

As a transportation institute, our focus has been fairly narrowly defined, though an effort is in effect to broaden our scope to the larger mobility field. The potential to expand to other departments on campus is achievable and we've entered into memorandums of understanding (MOU's) with non-traditional transportation departments and centers/institutes such as the Ecosystem Science Center (ESC), Cognitive and Learning Sciences Department (CLS) and the Health Resources Institute (HRI). In addition, we've partnered with the Great Lakes Research Center (GLRC) and the Michigan Tech Research Institute (MTRI) on multiple IRAD sharing projects.

The majority of researchers in the transportation field on the Michigan Tech campus come from the Civil, Environmental and Geospatial Engineering Department which has seen a great number of faculty leave the department, lowering the number of MTTI members currently submitting proposals. Five CEGE faculty members who were members of MTTI have left the university (A. Mukherjee, J. Hiller, Z. Liu, R. Eiris, Melanie Kueber-Watkins, as well as one MTTI member from GMES (T. Oommen). One positive note is that CEGE has hire two new faculty members with transportation backgrounds and experience for the next academic year who have already submitted proposals through MTTI. In addition, MTTI has had faculty from other departments submit their first proposals through the institute over the last year.

APPENDIX A: MEMBERS FY23

Ahlborn, Theresa
Brooks, Colin
Buller, William
Colling, Timothy
Dai, Qingli
Darestani, Yousef
Eiris, Ricardo
Erfani, Abdolmajid
Ge, Dongdong
Handler, Rober
Hiller, Jacob E
Jin, Dongzhao
Lautala, Pasi
Liu, Zhen
Minkata, Daisuke
Morse, Audra
Mueller, Shane
Mukerjee, Amlan
Nelson, Dave
Nguyen, Vinh
Oliver, Tom
Oommen, Thomas
Perrine, Kathryn
Sadeghi, Mohammad
Sanders, Paul
Swartz, Andrew
Ten, Chee-Wooi
Veinott, Elizabth
Watkins, Dave
Watkins, Kueber Melanie
Xiao, Bo
You, Zhanping
Zhang, Kuilin

APPENDIX B: PROPOSALS SUBMITTED FY23

PROPOSAL ID	PRINCIPAL INVESTIGATOR	SPONSOR NAME	REQUESTED AMOUNT	TOTAL PROJECT AMOUNT	PROPOSAL TITLE
2211076P	Lautala, Pasi T	University of South Florida	\$1,114,826	\$1,393,532	A Comprehensive Approach to Promoting Railroad Careers and Developing the Current Rail Industry
2304001P	Zhang, Kuilin	US Dept of Energy	\$1,249,774	\$1,348,241	A Decarbonized and Resilient Intermodal Freight Transportation (DRIFT) Modeling Platform for Intermodal Logistical Decisions under Uncertainty
2212010P	Zhang, Kuilin	US Dept of Transportation	\$734,753	\$765,857	AI-SHREC: AI-based Secured Heterogeneous Resource-Constrained Edge Computing Framework for Highway Cooperative Perception using Roadside and Mobile Sensors
2302019P	Dai, Qingli	Wisconsin Department of Transportation	\$200,000	\$200,000	Alternative Conditioning Methods to Calculate Formation Factor for Wisconsin Concrete Pavement
2208038P	Liu, Zhen	US Dept of Transportation	\$2,000,000	\$3,000,000	Center for Inclement Weather Adaptive Transportation (CIWAT)
2208004P	Oommen, Thomas	University of Kansas	\$200,000	\$300,000	Center for Preserving Existing Transportation Earthworks (C-PETE)
2208020P	Liu, Zhen	Case Western Reserve University	\$200,000	\$300,000	Center on Sustainable Preservation and Innovative Renewal of Bridges (SuPIRB)
2209035P	Liu, Zhen	National Science Foundation	\$318,519	\$318,519	Collaborative Research: CDS&E: A Computational Framework for Soft Robot Modeling and Control
2304026P	You, Zhanping	National Science Foundation	\$135,000	\$135,000	Collaborative Research: Enzymatic Depolymerization of Plastic Wastes for Improving Performance of Asphalt
2305044P	Dai, Qingli	National Science Foundation	\$200,000	\$200,000	Collaborative Research: Physics-Informed AI Blade Dynamic Analysis for Real Time Diagnosis and Origami-Structure Control to Mitigate Ice Accretion Hazards
2301006P	Eiris, Ricardo M	National Science Foundation	\$1,006,090	\$1,006,090	Collaborative Research: Racial Equity: VR-Diverse- Addressing Systemic Racism through Web-based Immersive Storytelling.
2210102P	You, Zhanping	Michigan Dept of Environment Great Lakes and	\$418,814	\$919,453	Construction of Rubber Asphalt Concrete Pavement on Portland Cement Pavement on Dixie Highway
1909026P	You, Zhanping	Minnesota Department of Transportation	\$220,000	\$220,000	Cost-benefit of applying a higher asphalt film thickness (AFT) vs. doing chip seal at Year 1
2211072P	Lautala, Pasi T	University of Nebraska	\$1,651,096	\$2,063,883	C-STARR Rail Safety Institute
2108008P	You, Zhanping	Resource Recycling Systems	\$18,124	\$18,124	Developing a Preliminary Specification for Local Roads with Rubber Modified Asphalt
2109031P	You, Zhanping	Minnesota Department of Transportation	\$312,000	\$312,000	Development of Process to lower GWP of Construction Materials
2109031P	You, Zhanping	Minnesota Department of Transportation	\$390,000	\$390,000	Development of Process to Lower GWP of Construction Materials
2211017P	Dai, Qingli	St Clair County Road Commission	\$75,000	\$150,000	Durable Rubber and Glass Modified Epoxy Polymer Concrete Overlay for Bridge Deck Protection
2209020P	Dai, Qingli	Minnesota Department of Transportation	\$250,000	\$270,792	Evaluation of Conditions that Cause Negative Environmental Impacts When Using Recycled Concrete Aggregate
2209020P	Dai, Qingli	Minnesota Department of Transportation	\$217,190	\$237,982	Evaluation of Conditions that Cause Negative Environmental Impacts When Using Recycled Concrete Aggregate
2302016P	Morse, Audra N	Engineering Information Foundation	\$10,360	\$13,054	Girls-Build: Immersing Young Women in Construction Learning
2210059P	You, Zhanping	Dickinson County Road Commission	\$95,000	\$190,000	Glass Rubber Asphalt for County Roads in Dickinson
2208008P	Zhang, Kuilin	George Washington University	\$100,000	\$150,000	Health Transportation Equity Center (HEALTH-TEC)
2305013P	You, Zhanping	Minnesota Department of Transportation	\$181,912	\$181,912	Hot rubber seal coating to survive wet and frozen environments
2301034P	Zhang, Kuilin	Michigan Dept of Transportation	\$336,596	\$357,247	Identify Best Locations for New Flex-Route Projects Throughout the State of Michigan
2301028P	Dai, Qingli	National Academies of Sciences Engineering and Medicine	\$650,000	\$650,000	Impact of Flooding on the Resiliency of Pavement Systems
2306021P	Lautala, Pasi T	University of Illinois	\$870,000	\$1,740,000	In CAYUSE: 23-0209 National University Rail Center of Excellence
2306068P	Erfani, Abdolmajid	National Science Foundation	\$199,477	\$199,477	In CAYUSE: 23-9230 Collaborative Research: Track 2 - Modeling Career Trajectories: Unraveling the Dynamics of Career Progressions for Underrepresented Groups
2306069P	You, Zhanping	Columbia University	\$113,308	\$113,308	In CAYUSE: 23-9269 Partnerships for Reduction Innovation and Capacity Empowerment: Advancing Sustainability in Tackling Environmental Plastic Pollution
2210066P	You, Zhanping	St Clair County Road Commission	\$95,000	\$190,000	Incorporating tire rubber in asphalt paving with plastic additives
2305002P	Sadeghi, Mohammad	Minnesota Department of Transportation	\$216,845	\$216,845	Instrumentation and data management/analyses for Measurement While Drilling (MWD) technology
2302007P	Sadeghi, Mohammad	Wisconsin Department of Transportation	\$230,000	\$230,000	Investigation of MSE Wall Corrosion in Wisconsin
2211085P	You, Zhanping	Michigan Soybean Promotion Committee	\$218,978	\$326,373	Marketing development of a soybean oil as a rejuvenator agent to reconstruct pavement with old asphalt: lab and field study
2210068P	You, Zhanping	St Clair County Road Commission	\$95,000	\$190,000	Microsurfacing of Asphalt Rubber in St. Clair County
2210094P	You, Zhanping	Michigan Dept of Environment Great Lakes and	\$482,549	\$1,063,466	Multi Agency Reconstruction of Asphalt Pavement with Rubber in Bay County to prepare US 10 Detour
2208006P	Lautala, Pasi T	Rowan University	\$299,980	\$599,960	National Center for Equitable Transformative Safe and Zero-emissive Transportation System through Education and Research Opportunities (NETZERO)
2306021P	Lautala, Pasi T	University of Illinois	\$580,000	\$1,160,000	National University Rail Center of Excellence
2210067P	You, Zhanping	Clare County Road Commission	\$95,000	\$190,000	New Construction of Rubber Asphalt Pavement on Recycled Asphalt Mills in Clare County
2211083P	Oommen, Thomas	MTRI Inc	\$302,094	\$302,094	Online and Offline Terrain Strength Estimation Using Remote Sensing for Ground Vehicle Mobility - Phase II
2209032P	You, Zhanping	Michigan Dept of Transportation	\$62,066	\$62,066	Pavement Demonstration Projects Technical Reports

2208039P	You, Zhanping	Michigan State University	\$40,000	\$40,000	Pavement Design: Performance of Base vs. Subbase
2208012P	Lautala, Pasi T	Kansas State University	\$219,977	\$329,966	Preserving Rail and Intermodal Surface Mobility by Automation Technology Infrastructure and Connectivity (PRISMATIC)
2302026P	You, Zhanping	Wisconsin Department of Transportation	\$130,000	\$130,000	Proactive Prevention of Pavement Buckling
2211070P	Lautala, Pasi T	Pennsylvania State University	\$734,751	\$918,438	Rail Center for Research Enhancing Shortline Transportation (RailCREST)
2305052P	Sadeghi, Mohammad	Michigan Technological University	\$30,000	\$39,961	REF-RS: Measurement While drilling in geotechnical engineering: Laboratory experiments and Machine Learning models
2303021P	You, Zhanping	Columbia University	\$184,000	\$184,000	SAI-R: Enzymatic depolymerization of plastic wastes for improving performance of asphalt pavement
2303057P	Dai, Qingli	Michigan Economic Development Corporation	\$50,000	\$90,726	Synthesis of low-cost Mesoporous Zeolite with waste materials for wastewater treatment and air purification
2303056P	Buller, William T	Aveopt	\$99,935	\$99,935	Unmanned Aircraft Systems Communication Mesh Test Deployment
2208047P	Dai, Qingli	Auburn University	\$83,276	\$83,276	Use of Plastic in Road Materials (Paving)
2208009P	You, Zhanping	University of Rhode Island	\$298,259	\$447,391	UTC Tier 1 - Innovative Center on Durability and Sustainability of Transportation Infrastructure to Reduce Climate Changes
2301030P	Eiris, Ricardo M	National Science Foundation	\$391,328	\$391,328	VROnSite - Exploring Engineering Field Trips Delivery Modality for Learning Collaborative Problem-Solving
	52 proposals	27 agencies	\$18,406,877	\$24,430,296	

APPENDIX C: PROJECTS AWARDED FY23

PRINCIPAL_NAME	SPONSOR_NAME	PROPOSAL_TITLE	AWARDED_AMOUNT	DIRECT_CS
Zhanping You	MI Dept of Environment Great Lakes and E	Recycling E-Waste Plastics for Asphalt Pavemnet Construction	\$ 50,000.00	\$ 26,308.00
Thomas Oommen	US Dept of Transportation	An Integrated and Automated Decision Support System for Ground Hazard Risk Mitigation for Railroad using Remote Sensing and	\$ 214,890.00	\$ 32,000.00
Zhanping You	MI Dept of Environment Great Lakes and E	Three-Life--Pavement Structures of Tire Rubber Asphalt for Heavy Traffic Road Reconstruction: Midland Road Adjacent to US10 in	\$ 26,666.00	\$ 140,592.00
Pasi T. Lautala	US Dept of Transportation	Expanding Summer Youth Programs in Rail through Virtual Learning and a National Campus Network	\$ 155,181.00	\$ -
Qingli Dai	City of Muskegon	Build Sustainable and Durable Rubber-Modified Concrete Pavement	\$ 76,659.00	\$ 38,937.00
Zhen Liu	Wisconsin Dept of Transportation	Seasonal Weight Restriction Decision Making based on Understanding and Monitoring of Frost Susceptibility of Pavement Structures	\$ 250,000.00	\$ -
Elizabeth S. Veinott	Virginia Tech	Multi-Site Simulation to Examine Driver Behavior Impact of Intergrated Rail Crossing Violation Warning (RCVW) and In-Vehicle Auditory/Visual Alert (IVAA) System	\$ 69,701.00	\$ -
Pasi T. Lautala	University of Michigan	Crossing-I Harnessing Drone Data and Analytics for Efficient Grade Crossing Management	\$ 58,359.00	\$ 16,915.00
Amlan Mukherjee	Minnesota Department of Transportation	Development of Process to Lower GWP of Construction Materials	\$ 260,278.00	\$ -
Pasi T. Lautala	US Dept of Transportation	Railroad Track Maintenance Life-Cycle Assessment (LCA) Development; Framework Data Tools and Implications for Multi-Modal Transport Decisions	\$ 192,000.00	\$ 9,976.00
Zhanping You	Michigan Dept of Transportation	Pavement Demonstration Projects Technical Reports	\$ 62,066.00	\$ -
Zhanping You	Michigan Soybean Promotion Committee	Marketing development of a soybean oil as a rejuvenator agent to reconstruct pavement with old asphalt: lab and field study	\$ 100,000.00	\$ -
Zhanping You	Resource Recycling Systems	Developing a Preliminary Specification for Local Roads with Rubber Modified Asphalt	\$ 18,124.00	\$ -
Qingli Dai	St Clair County Road Commission	Durable Rubber and Glass Modified Epoxy Polymer Concrete Overlay for Bridge Deck Protection	\$ 90,000.00	\$ 43,849.00
Mohammad Sadeghi	Michigan Technological University	REF-RS: Measurment While drilling in geotechnical engineering: Laboratory experiments and Machine Learning models	\$ 30,000.00	\$ 9,961.00
			\$ 1,653,924.00	\$ 318,538.00