Center for
Technology & Training
Michigan Technological University

Annual Report to the Vice President of Research

for Calendar Year 2023

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Michigan Technological University
Civil, Environmental, and
Geospatial Engineering

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1.0 MISSION STATEMENT

The mission of the Center for Technology & Training is:

> *To foster innovation in the civil and environmental infrastructure management field by providing access to a highly talented, multidisciplinary, technical team capable of providing expert advice, data, tools, and training to both private entities and state, local, and federal governmental units that own and manage infrastructure.*

The CTT serves as a resource to faculty, staff, and students by connecting them with the broader civil and environmental infrastructure community. The CTT provides these opportunities to connect with public and private infrastructure owners by maintaining a close working relationship with industry practitioners.

2.0 CENTER ACTIVITIES AND HIGHLIGHTS

2.1 Center Overview

The Center for Technology & Training (CTT) started from a single soft-money-funded program (Michigan Local Technical Assistance Program, or LTAP) in 1986. The Michigan LTAP served as a gateway project that allowed the development and growth of soft-money-funded research staff working in the field of transportation. Since 1986, the center has grown in size and diversification, transitioning from a narrow focus on transportation to a broader civil and environmental infrastructure focus.

Since its inception, the CTT has operated as an "informal" university center and has been continuously managed as a soft-money, staff-based center. Operating as an informal center allowed the CTT to grow and change as necessary and to develop from a loosely run single project into a more formally managed, professional organization. During this transition, the CTT has experienced wider name recognition with clients, formalized business processes, and developed a management structure that allows the CTT to make a positive impact on accomplishing Michigan Technological University's mission.

In October 2017, the CTT petitioned the Vice President of Research at Michigan Tech to formally organize as a university center within the Civil, Environmental, and Geospatial Engineering Department. The request to organize was approved on November 6, 2017.

The CTT focuses on four action areas to create an impact in the infrastructure community: applied research; training and education; technical assistance; and the development of software tools. All projects within the center include one or more of these activities to support and advance the state of practice in public infrastructure.

2.1 Center Governance

The CTT is governed by a Director, an Associate Director, and a Senior Project Manager who make up the management team. The center has a transition plan in place for its management team and is constantly seeking to develop the next generation of center leaders. The transition plan has been instrumental in assisting the center with negotiating several retirements in its leadership structure.

2.2 Center Capacity Building

The primary capacity-building activity that CTT has focused on over the last year is staff recruitment, onboarding, and training. Post-pandemic job growth and job portability have led to significant competition in the job market, which has resulted in higher than normal staff turnover. The tight job market has increased competition for technical staff with competitors offering higher wages, broader benefit packages, and more flexible office working arrangements. The CTT and Michigan Tech as a whole must adapt to this new work reality.

2.3 Center Education Activity

A major role of the CTT is to extend the University's reach beyond graduation to practicing engineers and other technical staff working with civil and environmental infrastructure. In an average year, the CTT typically provides around 120 training opportunities that include instructor-led traditional classroom events, web-based instructor-led training, and multi-day technical conferences. The CTT's education audience includes local, state, and federal infrastructure owners; engineering consultants; operations and maintenance workers; and elected officials. The CTT delivers almost 100% of its educational events off of Michigan Tech's campus to reach this audience efficiently. This high level of offsite educational activity broadens the profile and extends the reach of Michigan Tech in the national infrastructure engineering community.

The CTT has experienced continual growth in training event participation over the last 5 years growing by 27% over that time, and with 2023 being a historic high point. This growth is reflective of class offerings in new topic areas and the option for remote attendance at many of CTT's large in-person events.

In 2023 the CTT delivered 118 training events which was significantly higher than the 89 events delivered in 2021 and nearly the same as 2022. These events consisted of 563 hours of training delivered. Attendance for the year was up significantly with 6,686 participants (an increase of 1,376), with a total of 28,830 contact hours (an increase of 2,754). As a means of comparison, the CTT's contact hours are equivalent to about 27 average size three-credit courses at Michigan Tech. Appendix A lists the attendance, hours of instruction, and contact hours for all the CTT training events completed in 2023.

Figure 1: Bridge Week Conference

2.4 Center Staff

The CTT staff consists of 29 professional staff positions, and from five to eight student employees. Currently, the CTT has four open full-time positions.

The CTT staff are 100% funded by soft money external research projects and receive no general fund support. Currently, there are no tenure-track faculty in the CTT. However, two of the CTT staff, Dr. Tim Colling, and Dr. Chris Gilbertson, have adjunct faculty appointments with the Department of Civil, Environmental and Geospatial Engineering. The current CTT staff roster is as follows:

Management

Tim Colling, PhD, PE, Director
Chris Gilbertson, PhD, PE, Associate Director
Nick Koszykowski, Sr. Project Manager, Software Development and Information Systems

Research Engineers

John Sullivan, PE, Senior Research Engineer (half-time)
Pete Torola, PE, Research Engineer II (80%-time)
Zack Fredin, MS, PE, Research Engineer I
Ingrid Sandberg, MS, PE, Research Engineer I
Vacant - Senior Research Engineer (environmental engineering)

Software Engineers and Developers

Luke Peterson, Principal Programmer
Norman Clerman, MS, Scientific Programmer
Jacob Coulson, Software Developer
Gary Schlaff, Scientific Programmer (half-time)
Christoforo Delreal, System Administrator
Scott Dohrman, Software Developer
Anupama Josyula, Software Developer

Justin Millman, Software Developer
Daniel Morgan, Software Developer
Vacant, Software Developer
Vacant, Software Developer

Training

Greg Pearson, MBA, Water & Wastewater Trainer
Cynthia Elder, Senior Events Specialist
Noah Rule, Marketing Specialist

Support and Communications

Christine Codere, Sr. Business & Training Support Specialist (half-time)
Scott Bershing, Technical Specialist
Victoria Kaplewski, MS, Technical Writer (80%-time)
Alex Radke, Technical/IT Support Specialist
Amy Spahn, Center Coordinator
Lindsey Wells, User Interface/User Experience Specialist
Vacant, Business and Training Support Specialist

Balancing staff resources to project funding is a major challenge for the center; since a staff level that exceeds externally funded support requires overhead funds to make payroll, and an overly conservative staff level risks non-delivery of project tasks. In the over 30 years that the CTT has been operating, there has never been a staff layoff. A track record of providing a stable, well-funded center is critical to attracting and retaining talented, efficient staff.

The CTT believes it is important to invest in developing employee talent and actively encourages continuing education among its employees. Historically, the CTT has had several employees who have furthered their formal education while working at the CTT. The center has ongoing continuing education of technical staff as a goal, ensuring that licensed staff meet their continuing education requirements.

Like many other university centers, institutes, and departments, the CTT is working hard to maintain staffing levels by offering a welcoming work environment, interesting work, and competitive salaries. There has been significant competition for employees in the civil infrastructure job market as federal, state, and local governments work to backfill open positions.

A significant component of the CTT's workforce are student employees drawn from civil engineering, construction management, mechanical engineering, computer engineering, computer science, and scientific and technical writing. Student employees act as a workforce multiplier for full-time professional staff. The CTT also depends on student employees as a talent pipeline for full-time positions that are often hard to fill, specifically in the software engineering field.

Student employees work directly with professionals in their field, as well as with students and professionals outside their field on common projects. The CTT student employee program is focused on providing real world technical experience in the student's subject area. As students gain experience on projects they are encouraged to work more directly with the center's industry and government clients, providing project management and leadership skills. In cases where the CTT students cannot gain on-the-job experience in their field of study working for the CTT, the center works with other centers and institutes to provide opportunities for learning and on-the-job experience. The CTT has also extended temporary post-graduation employment to students while they explore their career options.

3.0 BUDGET OVERVIEW

The CTT is a 100% soft money funded center and does not receive any general fund monies for its operation. As a result, the CTT employees spend the vast majority of their time working on funded projects. Tasks that are required for administration of the center, or are general university business (mandatory training, meetings, engagement with administration), or tasks that exceed project contract values, are funded through Institutional Research and Development (IRAD) funds from the center. IRAD funds make it possible for the CTT to operate as a business unit.

3.1 Staff Utilization Rate

The CTT measures utilization rate, or the percentage of employee time spent working on funded projects respective to the total hours available for work after leave and vacation time are removed. Aggregate annual utilization rates for full-time employees have historically been in the mid to low 90% range. High utilization rates (above 85%) are positive from the perspective that they correspond with a lower use rate of IRAD funds for salary; however, high utilization rates also indicate that staff have little free time to pursue new proposals, learn new skills, and secure new projects. Lower utilization rates afford staff the time to write proposals and papers but come at the cost of higher IRAD expenditures.

The CTT tries to maintain utilization rates between 85% and 90% to provide a balance between economy and readily available staffing. Over the last several years, the CTT has made a conscious attempt to lower its utilization rate from a high of 95% to a more sustainable level with a target to provide more time to PI's to write proposals and provide staff development. The 2023 utilization rate was 89% which allowed more capacity to take on new projects and conduct internal training. This utilization rate also reflects the fact that the CTT has brought on seven new staff which require onboarding and training to reach full productivity and has several vacant positions due to turnover. The CTT has an internal training program for software engineers to transfer skills from staff on the cusp of retirement to newer staff. This training program is funded by CTT IRAD and will result in continued lower utilization rates.

The lower staff utilization rate is also reflective of the additional administrative staff time necessary to work through administrative processes with human resources, payroll, and accounting which have been taking longer, and putting more of a burden on center staff post-Covid.

The historical utilization rate for the CTT is illustrated in Figure 2.

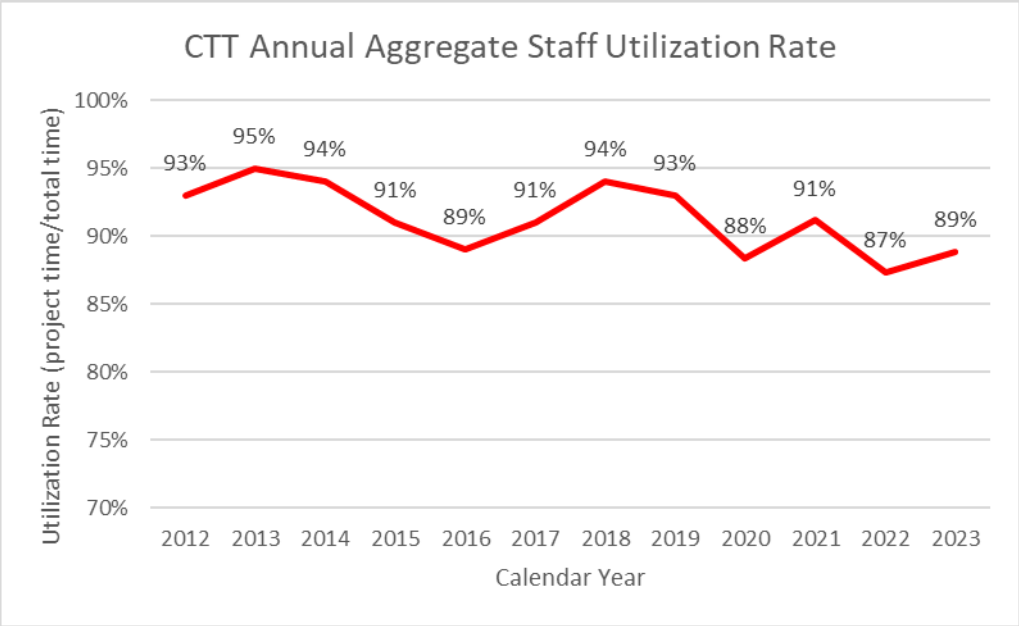


Figure 2: The CTT Staff utilization rate.

3.2 Proposal Activity and Awards

In 2023, the Center for Technology & Training submitted proposals with center staff as either the PI or Co-PI with the following metrics:

- 11 proposals submitted for a total of $4,437,876 in funding requested*
- 7 proposals accepted with a total of $4,000,009 in funding awarded
- 2 proposals pending with a total of $94,923 in funding under consideration
- 2 proposals were unsuccessful with a total of $255,260 in funding rejected
- 1 collaborative proposal with other centers or departments totaling $ 1,348,241
- 7 different project sponsors or divisions

*CTT materially contributed to a University Tribal Transportation Center proposal worth $3.3 million over five years, which is not listed in these metrics. CTT staff were expected to play a major role in launching this center and were a significant part of the staffing plan.

Figure 3 below illustrates the history of proposals that the CTT led as PI or Co-PI each calendar year. This figure illustrates the dollar values proposed and awarded to all units at Michigan

Tech for these proposals, as well as dollar values awarded to the CTT. Figure 3 illustrates a strong and sustained growth in total proposal dollars, CTT awarded dollars, and total awarded dollars. The number of proposals submitted was down in 2023 due to several large collaborative proposals from previous years that were still pending, and concerns over having sufficient staff to complete the committed scopes of work, however, even with a reduced number of proposals the award totals were near all-time highs.

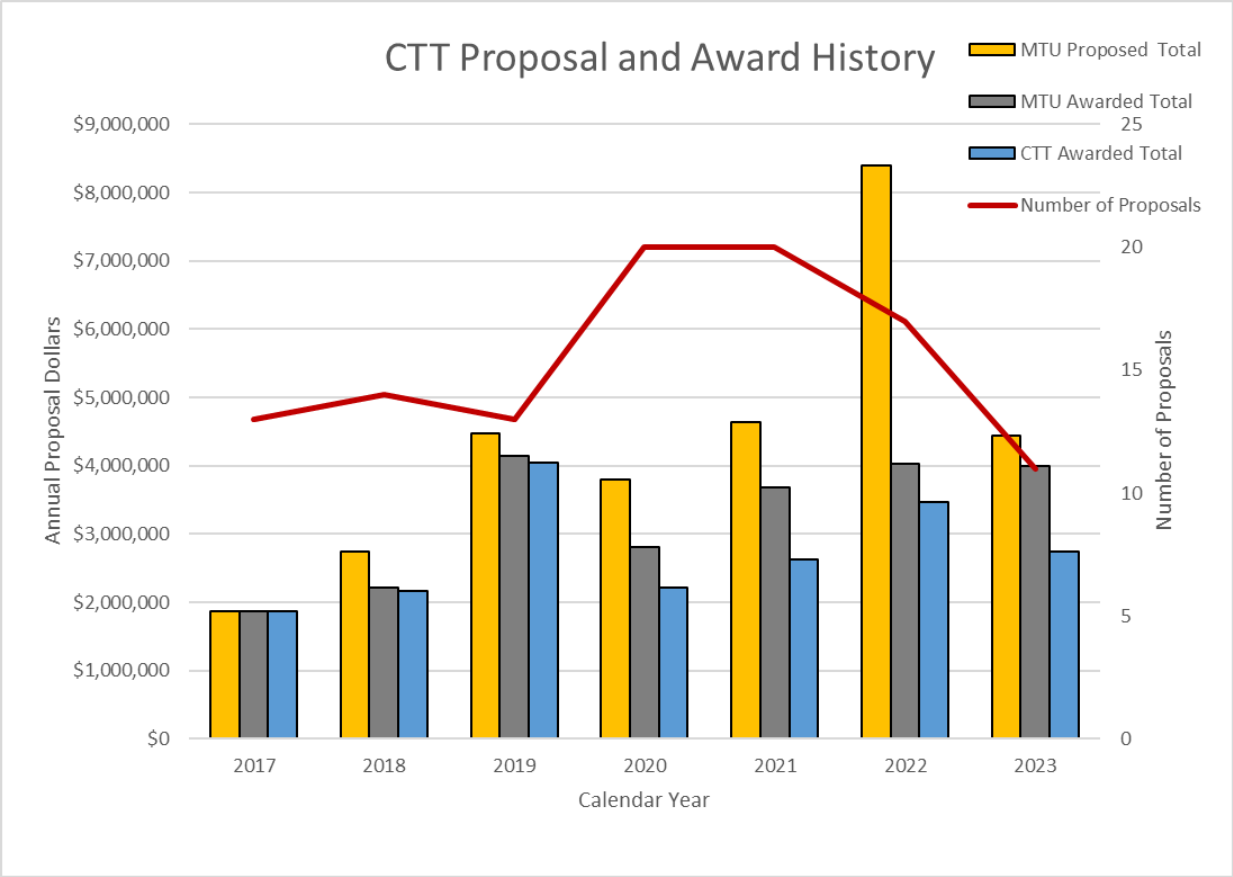


Figure 3: The CTT Calendar Year Proposal and Award Statistics

3.3 Secured External Funding and Spending

The CTT had $4,643,275 of projects under contract in 2023, which is the highest the center has ever experienced. Externally funded project awards and project expenditures both illustrate steady growth over the last seven years. Research spending and awards were slightly down in 2020 and 2021 as a lack of travel expenses due to Covid restrictions, and staff attrition impacted the center's total spending. Both spending and awards have rebounded in 2023 to their highest level ever for CTT. Figure 4 illustrates the historical growth of research awards under contract and expenditures over time. Note that Figure 4 contracted dollars and spending represent only the CTT's portion of the awards, so portions of the award that PIs or Co-PIs from outside the center have received are not included in this figure. The net between spending

and contracted dollars is primarily the result of multi-year contracts that will be spent in future years, which bring stability to the center's operations.

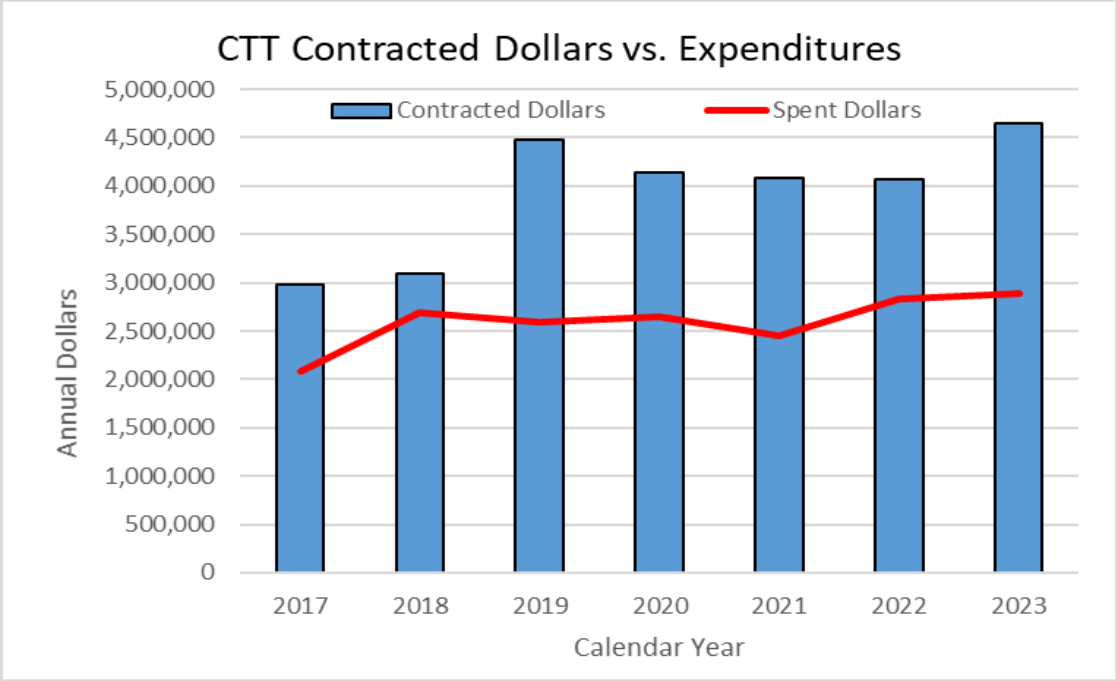


Figure 4: The CTT's annual soft money dollars under contract at the beginning of the calendar year vs. expenditures at the end of the calendar year. Note that 2019 funding levels are a result of a multi-year large contract award.

3.4 Institutional Research and Development Funding (IRAD)

The CTT receives Institutional Research and Development (IRAD) returns for all of its externally funded research. IRAD returns follow standard distributions that match most other academic based Centers and Institutes at Michigan Tech, which before October 2022 were: Principal Investigator (PI) 10%, Department 7.5%, College 7.5%, and Center 17%. As of October 2022, IRAD return rates were modified based on the IRAD Task Force recommendations to the Principal Investigator (PI) 10%, Department 9%, College 9%, and Center 18%. While this increase over the previous return rate is welcome, it still represents a decrease from historical levels before 2017 (Principal Investigator 10%, Department 10%, College 10%, and Center 20%).

IRAD is used by the CTT to meet three primary needs: funding staff administrative time to manage the center and write proposals, funding maintenance of the center facilities, and funding a reserve fund to provide security for soft money staff during periods of financial downturn.

The CTT had several high-level staff retirements over the last several years and is in the process of replacing staff losses from turnover. This will require the CTT to continue to spend additional funds on training and recruiting staff to maintain its staffing level, which will put stress on IRAD reserves over the next few years. This is apparent from higher IRAD expenses in 2020 to 2023.

Previous decreases in the IRAD return percentage in 2017 and 2021 had the impact of stagnating the CTT available IRAD balance even in the face of sharp increases in award activity. The restoration of a portion of those IRAD cuts in the fiscal year 2023 has allowed the CTT's IRAD balances to resume making progress toward center goals. Figure 5 illustrates the historical IRAD revenue and expense volume for the CTT.

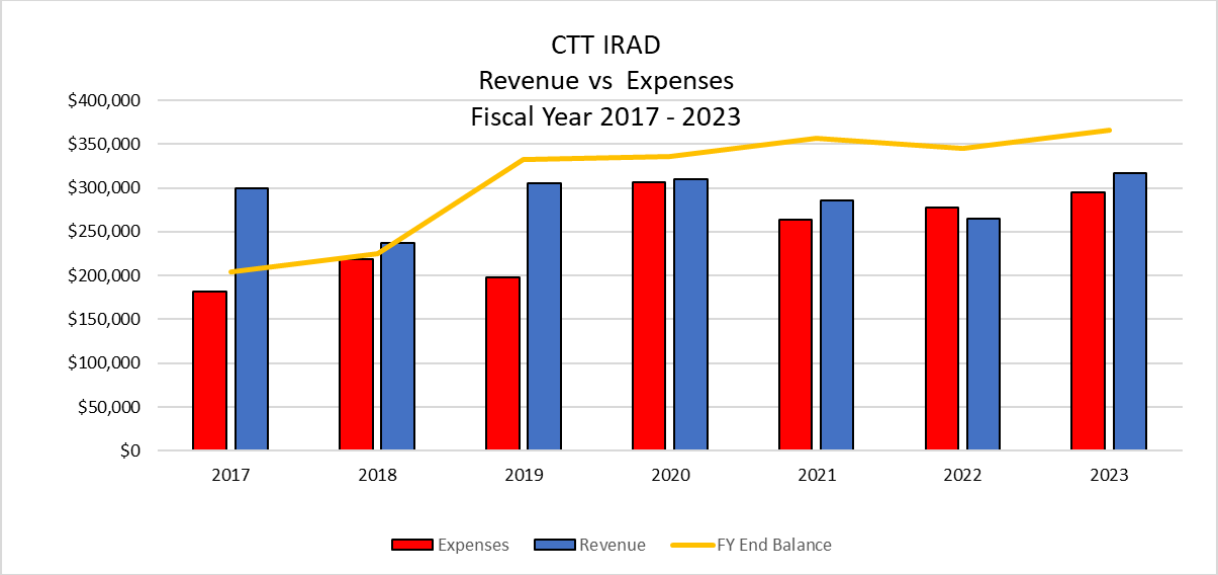


Figure 5: IRAD Expenses, revenue, and fiscal yearend balance. NOTE: IRAD return rates were reduced on July 1, 2017, and again on July 1, 2021. IRAD rates were increased in October 2022 which will show up in this graph under fiscal year 2023.

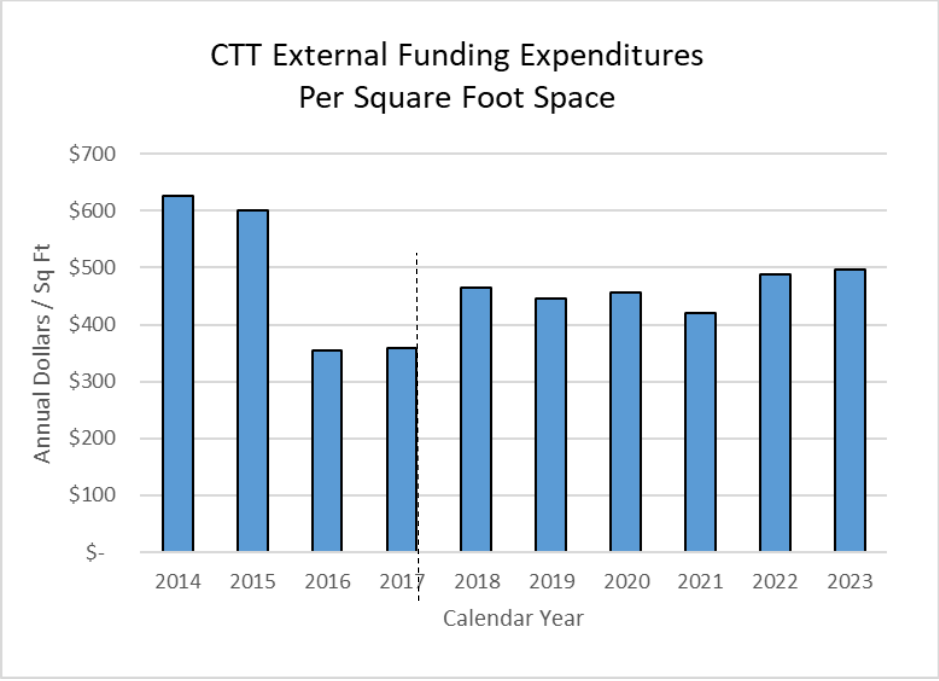
Table illustrates the CTT's fiscal year-end IRAD balance and expense categories which includes PI and Center IRAD accounts. The FY 2023 IRAD balance provides the CTT staff with approximately seven weeks of full salary and benefits in the event of a funding disruption. The Center's long-term goal is to secure four to six months of salary and benefits as a reserve fund to maintain staff in the event of a financial downturn. Future expansion of office space or renovation to keep up with wear and tear is expected to have a significant financial impact on IRAD in upcoming years.

Table 1: IRAD Fiscal Year Balance and Spending Categories

ALL CTT IRAD Balances Including PI	FY 2017*	FY 2018	FY 2019	FY 2020	FY2021**	FY2022	FY2023
Carryforward Budget	**$ 86,535**	**$ 206,678**	**$ 224,979**	**$ 332,430**	**$ 335,824**	**$ 357,311**	**$ 344,650**
Transfers-In	$ 300,071	$ 237,396	$ 305,895	$ 309,604	$ 285,215	$ 265,042	$ 316,544
Less Expenses:							
Salary & Wages	$ 100,913	$ 111,110	$ 99,522	$ 172,887	$ 159,153	$ 148,650	$ 170,701
Fringe	$ 30,565	$ 34,601	$ 29,312	$ 57,035	$ 60,081	$ 57,445	$ 62,368
Supplies & Service	$ 47,946	$ 40,178	$ 46,836	$ 59,180	$ 43,071	$ 47,699	$ 57,300
Designated Fund Admin Fee	$ -	$ 8,393	$ 11,110	$ -	$ -	$ 161	$ -
Travel	$ 2,587	$ 12,082	$ 516	$ 3,312	$ 1,423	$ 1,894	$ 2,901
Total Expenses	**$ 182,010**	**$ 206,364**	**$ 187,296**	**$ 292,414**	**$ 263,728**	**$ 255,849**	**$ 293,271**
Encumbrances	$ -	$ -					
Transfers-Out	$ -	$ 12,732	$ 11,147	$ 13,796	$ -	$ 21,854	$ 1,808
Balance on June 30th	**$ 204,596**	**$ 224,979**	**$ 332,430**	**$ 335,824**	**$ 357,311**	**$ 344,650**	**$ 366,114**
*IRAD return rates were reduced on July 1, 2017, which reduces CTT's IRA return share by 4%							
**IRAD return rates were reduced on July 1, 2021, which reduces CTT's IRA return share by an additional 4%							

Productivity of space can be measured in many different ways; one of which is to look at the annual expenditure of externally generated funding per square foot of space. These values for the past nine years are shown in Figure 6. In 2016, the CTT completed a significant renovation that resulted in a 42% increase in its space as illustrated by the reduction in expenditure per square foot.

Figure 6: The CTT Annual research expenditures per square foot of facility space. In 2016 there was a 42% increase in space, leading to a difference in metrics for previous years.



4.0 FUTURE PLANS AND GOALS:

2024 Goals

The CTT will seek to increase the production value of its web-delivered training events that maximize user attention and learning. CTT believes that increased use of web-delivered training has the potential to saturate the market with low-quality or poorly delivered content. Providing quality web-delivered training content that mirrors the high-quality on-site events that CTT produces will continue the center's growth and reach.

The CTT will continue to collaborate with other centers, institutes, and individual faculty to propose and land large, multi-year projects.

The CTT will successfully maintain or increase its staffing levels and will onboard and train its newly hired staff members, bringing them up to speed on center operations and the state of practice in center research areas. In 2024 the CTT expects to continue to seek out and hire new staff to maintain staffing levels.

2029 Goals

The CTT plans to continue to diversify the type and source of its project funding over the next few years to add stability to the center.

The CTT will continue to secure an increased number of longer-term multiyear contracts, which provide a base to build new programs and capacities.

The CTT will continue to increase its fiscal stability by maintaining an unspent IRAD balance with a goal of securing a fund equal to a minimum of four months of staff wages and benefits.

5.0 CHALLENGES AND BARRIERS:

Hiring and retaining talented people, specifically in software engineering and civil engineering has always been difficult, but the CTT is expecting that recruitment and onboarding of staff will remain a challenge in what is expected to be a tight labor market going forward for several years.

Soft money units are constantly in a struggle to maintain a healthy IRAD balance to meet the basic needs of their employees. IRAD funds nearly every non-project-related expense for soft money staff, including training, hiring new staff, non-project travel, office space, IT equipment, administrative and management staff functions, accounting, writing proposals, project overruns, and maintaining staffing between funded projects. As a result, soft money units are extremely sensitive to small changes in IRAD return rates to their unit.

APPENDIX A: 2023 TRAINING METRICS

Table 1: Year 2023 Training Events and Attendance

Class Name	Participants	Training Hours	Contact Hours
Materials Acceptance Process Virtual Seminar - Jan 11	19	6	114
Using Thawcaster to Predict Weight Restrictions	35	1.5	52.5
MDOT LAP: New Section 106 Review Process - Jan	104	1	104
Asphalt Paving Inspection Virtual - Jan 24 & 25	121	5	605
Materials Acceptance Process Virtual Seminar - Jan 25	23	6	138
Introduction to MERL Webinar - Jan 26	8	2	16
Introduction to MERL Webinar - Jan 31	12	2	24
IBR System for Rating Unpaved Roads - Feb	105	1.5	157.5
Michigan County Engineers' Workshop - Sault Ste Marie	268	16.5	4422
PASER Training - Class 1 Webinar (Feb)	172	2	344
Materials Acceptance Process Virtual Seminar - Feb	21	6	126
Intermediate MERL Training: Bid Utility Tool Webinar	8	1	8
PASER Training - Class 2 Webinar (Feb 15 & 16)	146	4	584
Intermediate MERL: Local Job Manager Webinar	6	1	6
Culvert Condition Assessment Webinar Training - Feb	170	2	340
Gravel Road Basics for Decision Makers Webinar - Feb	83	3	249
Roadsoft Special Topics: Roadsoft Mobile App	11	1.5	16.5
Roadsoft Special Topics: Laptop Data Collector	19	1.5	28.5
Asphalt Paving Inspection Workshop - Livonia	71	5	355
Asphalt Paving Inspection Workshop - Grand Rapids	29	5	145
PASER Training - Class 1 Webinar (Mar)	119	2	238
PASER Training - Class 2 Webinar (Mar 8 & 9)	110	4	440
Michigan Bridge Week - Day 1	319	6.25	1993.7
Materials Acceptance Process Virtual Seminar - Mar	24	6	144
Michigan Bridge Week - Day 2	256	7.5	1920
Michigan Bridge Week - Day 3	222	4	888
Meeting the TAMC Investment Reporting Req. - Mar	19	1.5	28.5
RS Data Collection Cycle for Planning Organizations	23	2	46
PASER Training - Class 2 (Livonia)	11	4	44
Writing Skills: Structures	16	6	96
PASER Training - Class 2 (Grand Rapids)	10	4	40
Asset Management Basics for Paved Roads - Apr	69	3	207
Writing Skills: Clear & Concise Sentences	27	3	81
Presentation Skills	11	3	33
Pile Driving Inspection Workshop - Apr	128	3	384
Roadsoft User Group Meeting - Apr	50	3	150

Class Name	Participants	Training Hours	Contact Hours
PASER Training - Class 2 (Houghton)	6	4	24
Maintaining Water Quality in the Distribution System	163	1	163
PASER Training - Class 2 (Gaylord)	21	4	84
IBR System for Rating Unpaved Roads - Apr	74	1.5	111
Bridge Load Rating - From Plans to Rating - April	25	2	50
Materials Acceptance Process Virtual Seminar - Apr	32	6	192
Michigan Highway Maintenance Conference - Day 1	93	6.5	604.5
Michigan Highway Maintenance Conference - Day 2	73	6.5	474.5
Michigan Highway Maintenance Conference - Day 3	33	4.5	148.5
Bridge Load Rating: Theory & Policy - May	17	2	34
Intro to Roadsoft: Just the Basics 2-Day Webinar - May	44	3	132
Bridge Asset Management Plan Webinar - May	8	2	16
Bridge Asset Management Plan 4-day Virtual Workshop	5	3	15
Motor Grader Training - Calhoun CRC (Level 2)	10	16	160
Wellhead Protection	249	1	249
Motor Grader Training - Farmington /Southfield (Level 2)	5	16	80
Motor Grader Training - Muskegon CRC (May - Level 1)	4	30	120
Pavement Asset Management Plan 2-day Virtual Workshop	14	3	42
Bridge Load Rating 2-Day Virtual Workshop	32	6	192
Updating a Bridge, Pavement, or Compliance Plan Webinar - May	13	2	26
Roadsoft Treatment Value Assessment Roundtable	10	3	30
Motor Grader Training - Menominee CRC (Level 2)	12	16	192
Advanced Topics in Bridge Load Rating: June	28	2	56
Writing Skills: Structures - June	11	6	66
Motor Grader Training - Mackinac CRC (Level 2)	6	16	96
Microsoft Word Workshop	21	2	42
Motor Grader Training - Genesee/Southfield (Level 1)	12	30	360
Collection System Maintenance	141	1	141
Presentation Skills - June	10	3	30
Microsoft Excel Workshop	21	2	42
PASER Training - Class 1 Webinar (June)	78	2	156
Advanced Topics in Bridge Load Rating: Part 2 - June	21	2	42
PASER Training - Class 2 Webinar (June 21 & 22)	60	4	240
Microsoft PowerPoint Workshop	19	2	38
IBR System for Rating Unpaved Roads - June	40	1.5	60
Motor Grader Training - Genesee (July - Level 2 & 3)	10	30	300

Class Name	Participants	Training Hours	Contact Hours
Financial Analysis & Management for Utilities	169	1	169
Welding for Maintenance Workers - Grand Rapids	11	16	176
Introduction to Water Asset Management	73	2	146
HEC-RAS 6.4 Training - Lansing	20	30	600
Welding for Maintenance Workers - Escanaba	6	16	96
Updating a Bridge, Pavement, or Compliance Plans -Aug	15	2	30
Microsoft Word Workshop - Aug	27	2	54
Microsoft Excel Workshop - Aug	39	2	78
Engineering Ethics Webinar	225	2	450
PASER Training - Class 1 Webinar (Aug)	41	2	82
Culvert Condition Assessment Webinar Training - Aug	80	2	160
PASER Training - Class 2 Webinar (Aug 30 & 31)	48	4	192
Microsoft PowerPoint Workshop - Aug	15	2	30
Bridge Load Rating: The Basics - Aug	13	2	26
Roadsoft User Group Meeting - Sept	51	3	153
Roadsoft Special Topics: Culvert Module	21	1.5	31.5
Bridge Load Rating: Theory & Policy - Sept	16	2	32
Bridge Load Rating 2-Day Virtual Workshop - Sept	5	6	30
TAMC Asset Management Conference	128	6.5	832
Gravel Road Basics for Decision Makers - Lyndon Twp.	14	2	28
Meeting the TAMC Investment Reporting Req. - Oct	18	1.5	27
Advanced Topics in Bridge Load Rating: Part 1 - Oct	14	2	28
Roadsoft Pavement Management Topics Series	21	5	105
Michigan Winter Operations Conference - Bellaire	209	9	1881
Michigan Winter Operations Exhibitor Show	0	0	0
Advanced Topics in Bridge Load Rating: Part 2 - Oct	7	2	14
Local Concrete Seminar - Livonia	45	3.5	157.5
Roadsoft Special Topics: Sign Module	21	1.5	31.5
Local Concrete Seminar - Okemos and Virtual	65	3.5	227.5
Chlorine Disinfection and CT Calc. for Water Systems	152	2	304
Materials Acceptance Process Virtual Seminar - Nov	25	6	150
Introduction to Welding Defects & Discontinuities	35	1.5	52.5
Introduction to MERL Webinar - Nov 7	13	2	26
Introduction to MERL Webinar - Nov 9	11	2	22
Wellhead Protection for Small Water Systems	165	2	330
Intro to Roadsoft: Just the Basics 2-Day Webinar - Nov	33	3	99
MDOT: ROW - Disposal, Valuation, & Offer	109	2.5	272.5

Class Name	Participants	Training Hours	Contact Hours
Financial Management for Small Water Systems	78	2	156
Bridge Asset Management Plan Webinar - Dec	3	2	6
Roadsoft Special Topics: Tips & Tricks	35	1.5	52.5
Materials Acceptance Process Virtual Seminar - Dec	28	6	168
Intermediate MERL: Bid Utility Tool Webinar - Dec	10	1	10
Updating a Bridge, Pavement, or Compliance Plan - Dec	9	2	18
Intermediate MERL: Local Job Manager - Dec	14	1	14
Transportation & the Environment Conference	134	12	1608
Engineering Ethics Webinar - Dec	149	2	298
Total	**6686**	**562.75**	**28830**