



**Semi-Annual Progress Report for University Transportation Centers #2**  
**October 1, 2023 - March 31, 2024**

Federal Agency: U.S. Department of Transportation, Office of the Assistant Secretary for Research and Technology

Federal Grant #: 69A3552348331

Project Title: Maritime Transportation Research and Education Center (MarTREC)

Center Director: Heather Nachtmann, Ph.D., Professor, Department of Industrial Engineering, University of Arkansas, [hln@uark.edu](mailto:hln@uark.edu), (479)575-3484

Center Manager: Amy Shell, M.S., University of Arkansas, [shell@uark.edu](mailto:shell@uark.edu), (479)575-6021

Submission Date: April 30, 2024

DUNS: 1914297450000

EIN: 71-6003252

Recipient Organization: University of Arkansas  
800 W. Dickson St.  
Fayetteville, AR 72701

Project/Grant Period: Start Date: June 1, 2023  
End Date: May 31, 2029

Reporting Period End Date: March 31, 2024

Report Term or Frequency: Semi-annual

Signature: 

## INTRODUCTION

MarTREC, the Maritime Transportation Research and Education Center, is a U.S. Department of Transportation Tier 1 University Transportation Center funded through the Office of the Assistant Secretary for Research and Technology. MarTREC was competitively awarded under MAP-21 and the FAST Act. Now through funding of the Bipartisan Infrastructure Law, MarTREC's theme is *Preserving the Nation's Transportation System through Sustainable and Resilient Maritime and Multimodal Supply Chains and Infrastructure*.

MarTREC's vision is *to be recognized as the nation's premier source for expertise on maritime and multimodal transportation research and education*. Made up of renowned maritime transportation researchers dedicated to transferrable research and inclusive education and workforce development, the MarTREC consortium includes the University of Arkansas, Jackson State University; Louisiana State University, University of New Orleans, Texas A&M University/Texas Transportation Institute, and Vanderbilt University.

This semi-annual progress report is submitted as per our UTC grant reporting requirements.

### 1. ACCOMPLISHMENTS

#### What are the major goals of the program?

MarTREC will contribute primarily to four United States (U.S.) Department of Transportation (DOT) strategic goals: 1) Economic Strength and Global Competitiveness by addressing resilient supply chains and system reliability and connectivity; 2) Climate and Sustainability by increasing the safety, effectiveness, equity, and sustainability of our nation's transportation infrastructure and the communities it serves; 3) Safety by supporting system response and recovery plans and protocols to minimize the effects of system disruptions and hasten system recovery; and 4) Equity by expanding transportation options in underserved rural and urban communities.

The following performance metrics are used to evaluate the effectiveness of our research, leadership, education and workforce development, and technology transfer and collaboration and assess our progress towards meeting our semi-annual goals.

Research Performance Metric	Semi-Annual Goal	Semi-Annual Progress
# of peer-reviewed journal articles (published, accepted, submitted)	10 / 6 month	0
# of conference presentations given	10 / 6 month	0
# of students participating in transportation research projects funded by UTC	10 / 6 month	6

Leadership Performance Metric	Semi-Annual Goal	Semi-Annual Progress
# of national and regional leadership positions held	5 / 6 month	33
# of invited talks given	5 / 6 month	0
# of leadership and research awards received	1-2 / 6 month	2

Education and Workforce Development Performance Metric	Semi-Annual Goal	Semi-Annual Progress
# of transportation-related degrees conferred to supported students	7/ 6 month	0
# of technician certification programs offered	4 / 6 month	6
# K-12 outreach programs offered	2-3 / 6 month	29

Technology Transfer and Collaboration Performance Metric	Semi-Annual Goal	Semi-Annual Progress
# of existing collaborative partnerships	10 / 6 month	0
# of new collaborative partnerships formed	2-3 / 6 month	4
# of project deliverables submitted	2-3 / 6 month	0
# of collaborative research/tech transfer agreements	1-2 / 6 month	0

**What was accomplished under these goals?**

- MarTREC’s progress towards our semi-annual goals is presented above. The stated goals are for steady-state operations, which require a startup period to achieve.
- Seven new research projects began during this reporting cycle as presented in the table below.

New Project Title	Lead Institution
Evaluation of Employment Options in the Inland Waterways Sector	Texas A&M Transportation Institute
Analyzing the Economic Development Impacts of Truck Parking in Louisiana	University of New Orleans
Economic Impact Analysis of Artificial Draft Restriction on the Lower Mississippi River Port Complex	University of New Orleans
Climate Financing for Marine Transport: Analyzing the Impact of Climate Adaptation Investments in Inland Waterways (Part II)	Vanderbilt University
Modeling Drivers’ En-route Diversion Behavior During Congestion: A Pilot Study	Louisiana State University
Continuous Decision Plan for Optimizing Budget Allocation for Dredging Projects Considering Shoaling Effect within a Multi-year Horizon	Texas A&M University
Strategies for Potential Emissions Reductions for Commercial Maritime Vessels at Ports	Texas A&M Transportation University

- Three new education and workforce development programs began this reporting cycle:
  - Jackson State University: The 2024 Mississippi Summer Transportation Institute (MSTI) aims at introducing a diverse group of motivated pre-college students (10th to 12th grade) to the transportation industry. During the two-week program, students will participate in academic and enhancement activities designed to improve their skills in Science, Technology, Engineering, and Mathematics (STEM) and leadership. Jackson State University has hosted the MSTI Program for over 10 years with support from the Mississippi Department of Transportation, Federal Highway Administration, and MarTREC.

- University of Arkansas: MarTREC is hosting our sixth annual girls transportation engineering summer day camp to be held on the University of Arkansas Fayetteville campus July 8-12, 2024. The camp focuses on fun, hands-on activities related to transportation engineering from roads to railroads to waterways. The camp is designed for rising sixth and seventh grade girls and consists of field trips, interacting with industry experts, and learning from engineering faculty and students.
- University of Arkansas: MarTREC is hosting a one-day transportation-focused day camp in coordination with the University of Arkansas Outreach Department. The Arkansas and Missouri Railroad depot is a half mile walking distance from the camp location at the Jones Center in Springdale, AR. The campers will visit the depot to explore how a depot operates as well as take a ride on the train.
- Began planning for hosting 2025 CUTC Summer Meeting including identifying and executed contract with venue
- December 12, 2023: The Center for Training Transportation Professionals (CTTP) at the University of Arkansas held its Annual Review Meeting with the Arkansas Department of Transportation (ARDOT). Heather Nachtmann and Amy Shell were in attendance along with the CTTP team and multiple stakeholders from ARDOT.
- January 7-11, 2024: Several members of the MarTREC consortium participated in the annual TRB Annual Meeting in Washington DC.
- January 23, 2024: MarTREC Center held a virtual consortium meeting with all MarTREC partners.
  - Reiterated the message from Dr. Firas Ibrahim that it is critical to serve the goals of USDOT strategic plan
  - Discussed the emphasis on technology transfer and the importance of addressing MarTREC's theme in our funding activities
  - Discussed applications for Year 2 UTC Program Funding due to USDOT by March 27, 2024
  - Discussed status of ongoing activities and future plans
  - The MarTREC consortium leadership team is as follows:

Center Personnel	Title	Organization
Heather Nachtmann	Center Director	University of Arkansas
Michelle Barry	Center Associate Director	University of Arkansas
Stacy Williams	Center Associate Director	University of Arkansas
Amy Shell	Center Manager	University of Arkansas
Hiba Baroud	Site Director	Vanderbilt University
Jim Kruse	Site Director	Texas A&M Transportation Institute
Bethany Stich	Site Director	University of New Orleans
Bruce Wang	Site Director	Texas A&M University
Robert Whalin	Site Director	Jackson State University
Brian Wolshon	Site Director	Louisiana State University

**How have the results been disseminated?**

- Nothing to report

**What do you plan to do during the next reporting period to accomplish the goals?**

- Continue work on ongoing research projects and begin Year Two projects

- Continue building collaborations to ensure MarTREC leads use-inspired research serving USDOT and its associated constituents
- Continue planning towards hosting 2025 Summer CUTC meeting to be held June 24-26, 2025
- Planning for 2024 Advisory Board Meeting at the University of Arkansas on October 22-23, 2024
- Attend 2024 Summer CUTC meeting on June 10-13, 2024 in San Padre Island, TX
- Attend USDOT UTC Future of Transportation Summit on August 13-15, 2024 in Washington, DC
- Host 2024 k-12 summer camps and programs
- University of New Orleans will host National Academies 2024 Marine Board Spring Meeting on April 16-17, 2024

## 2. PARTICIPANTS & COLLABORATING ORGANIZATIONS

**What organizations have been involved as partners?**

Organization	Location	Contribution
Louisiana Department of Transportation	New Orleans	Providing data
National Waterways Foundation	Washington DC	Providing funding
Port of South Louisiana	New Orleans – Baton Rouge LA	Data collection and mapping collaboration
U.S. Army Engineer Research and Development Center (ERDC)	Vicksburg MS	Advice and personnel support

Advisory Board Member	Title	Organization
Harold Beaver	District Engineer, (Retired)	Arkansas Department of Transportation
Scott Bennett	VP Transportation Marketing Director	Volkert Inc.
Reese Brewer	Director	Frontier Metropolitan Planning Organization
Jack Buffington	Director, (Retired)	Mack Blackwell Transportation Center
Cassandra Caldwell	Executive Director	Arkansas Waterways Commission
Bryan Day	Executive Director	Port of Little Rock
Dan Flowers	Director, (Retired)	Arkansas Department of Transportation
Ann Gilbert	Executive Director	Arkansas Transit Association
Gary Hunt	Vice President, (Retired)	ABF Freight System, Inc.
Mike Johnson	Associate Vice Chancellor, Facilities (Retired)	University of Arkansas
Caren Kraska	President/Chairman	Arkansas & Missouri Railroad
Glenn Moore	Advisor, Cyber Security and Infrastructure Security Agency	U.S. Dept. of Homeland Security
Ned Mitchell	Research Civil Engineer	U.S. Army Corps of Engineers
Shannon Newton	President	Arkansas Trucking Association
Craig Philip	Professor, Civil Engineering	Vanderbilt University
Matthew Smith	Technical Director, Water Resources Infrastructure	U.S. Army Corps of Engineers

Melissa Tooley	Director, External Initiatives	Texas A&M Transportation Institute
Lorie Tudor	Director	Arkansas Department of Transportation

**Have other collaborators or contacts been involved?**

- Nothing to report

**3. OUTPUTS**

**Publications, conference papers, and presentations:**

Journal publications:

- Nothing to report

Books or other non-periodical, one-time publications:

- Nothing to report

Other publications, conference papers and presentations:

- Nothing to report

Website(s) or other Internet site(s)

<https://martrec.uark.edu/>

<https://www.uno.edu/academics/colaehd/la/centers-institutes-affiliates/transportation>

<https://tti.tamu.edu/>

<https://www.vanderbilt.edu/vector/>

Technologies or techniques

- Nothing to report

Inventions, patent applications, and/or licenses

- Nothing to report

**4. OUTCOMES**

- Through the offering of distinguished lectures from industry partners, we increased the understanding and awareness of transportation issues
  - Chris Handzel, "Bus Rapid Transit," University of New Orleans, October 2023, 15 attendees.
  - Dan McGrath, "Data analyses for determining transit and active transportation demand," University of New Orleans, October 2023, 15 attendees.
  - Dwight Norton, "Public Transportation in New Orleans," University of New Orleans, October 2023, 15 attendees.
  - Caren Kraska, "Arkansas Missouri Railroad," MarTREC Professional Advisory Board Meeting Distinguished Lecture, University of Arkansas, November 2023, 100 attendees.
  - Derek Chisolm and Anne Watkins, "Transportation Finance with AECOM," University of New Orleans, February 2024, 15 attendees.
  - Ellen Soll, Colin Ash, Jonathan Gambino, "Planning Safe Streets for All with ATG and Volkert," University of New Orleans, February 2024, 15 attendees.

- Marin Stephens and Joanna Farley, " Transit-Oriented Communities with RTA and City of New Orleans," University of New Orleans, February 2024, 15 attendees.
- Jeff Roesel, "Leading Our Growth and Development: An Inside Look at the Regional Planning Commission," University of New Orleans, March 2024, 28 attendees.
- Randy Guillot, "A View from Every Level: President, Owner, Operator on Supply Chain Trucking," University of New Orleans, March 2024, 20 attendees.
- Awards bestowed upon consortium members as a result of their contributions to the understanding and awareness of transportation issues
  - Brian Wolshon, 2023 Innovator & Influencer Award, Resilient Roads Roundtable, Transportation Industry Advocacy Group.
  - Hiba Baroud, Fellow of the International Science Council.  
<https://engineering.vanderbilt.edu/2024/01/04/hiba-baroud-is-named-a-fellow-of-the-international-science-council/>
- MarTREC increased the body of knowledge through workforce development activities including:
  - At Texas A&M Transportation Institute, Jim Kruse, was the moderator at the Texas Department of Transportation short course panel on "Goods Movements in Texas: Transportation Needs from the Perspective of Industry Partners," October 2023.
  - MarTREC Center hosted its Annual Professional Advisory Board Meeting on November 2 and 3, 2023. This meeting included industry board members, faculty, site directors, government official representatives, and students.
  - University of Arkansas faculty met with the U.S. Army Corps of Engineers ERDC to discuss collaborative research opportunities
- MarTREC enlarged the pool of trained transportation professionals by:
  - The Center for Training Transportation Professionals at the University of Arkansas executed six workforce development training programs through 33 classes, with the attendance of 1381 individuals completing transportation certified courses in the areas of Asphalt, Aggregates, Concrete, Traffic signals, Soils, and Stormwater Management.
  - MarTREC graduated six students into the transportation workforce.

## 5. IMPACTS

### **What is the impact on the effectiveness of the transportation system?**

- Nothing to report

### **What is the impact on the body of scientific knowledge?**

- 12 editorial journal positions in the field of transportation are held by MarTREC researchers

### **What is the impact on transportation workforce development?**

- MarTREC provided exposure to transportation, science and technology through 29 k-12 Events
  - 2,512 students participated (34% female and 31% under-represented STEM population)

## 6. CHANGES/PROBLEMS

### **Changes in approach and reasons for change**

- Nothing to Report

**Actual or anticipated problems or delays and actions or plans to resolve them**

- Nothing to Report

**Changes that have a significant impact on expenditures**

- Nothing to Report

**Significant changes in use or care of animals, human subjects, and/or biohazards**

- Nothing to Report

**7. SPECIAL REPORTING REQUIREMENTS**

- Nothing to Report