Executive Summary

Future home of ATI and related transportation research centers.

Smart Communities and Innovation Building
Future home of ATI and related transportation research centers.
Alabama Department of Transportation’s Transportation Systems Management and Operations Center

Located on the 3rd Floor of Cyber Hall, the Tuscaloosa Traffic Management Center monitors the local traffic network to maximize efficiencies for applications such as gameday operations and severe weather response.
Welcome to the Alabama Transportation Institute Annual Report Executive Summary for Fiscal Year 2022, covering the period from October 1, 2021, through September 30, 2022.

ATI continues to have enormous impact on the state of Alabama and on the economic condition and well-being of its residents through working with key state stakeholders on projects that support the growth, impact, and sophistication of our transportation system. In this reporting year alone, we continued to experience rapid, exponential growth in our portfolio in the areas of connected infrastructure, shared mobility, electrification, and safety.

The partnerships that we have developed over our short history have created tremendous value for Alabama and its residents, using our capabilities to support those partnerships in transportation planning, engineering, operations, safety, policy, and economics, in pursuit of automated, connected, electric, shared, and safe mobility.

Through our continued support of Rebuild Alabama, we have helped enable the state to raise nearly $1 billion in revenue to support its highway infrastructure, and our ongoing partnership with the Alabama League of Municipalities will enable the state to effectively track the economic impact of this groundbreaking legislation to effectively plan investments for the future.

ATI is taking an active leadership role in helping Alabama get ready for electric vehicles. Last year, ATI initiated the Alabama Mobility and Power (AMP) Center in partnership with Alabama Power and Mercedes-Benz US International. In August 2022, we hired Mike Oatridge as the inaugural Executive Director for AMP. Mike has over 30 years of experience in the auto industry, most recently as Senior Vice President for Honda North America. He promises to bring transformational leadership to AMP and to Alabama’s transportation electrification efforts. In 2023, AMP will move into state-of-the-art facilities in the new Smart Communities and Innovation Building.

ATI is proud to serve the transportation enterprise for the state of Alabama. We welcome your feedback and look forward to serving you for years to come.

Sincerely,

Allen Parrish

Before ATI, Dr. Parrish served as Associate Vice President for Research and Professor of Computer Science and Engineering at Mississippi State University and Chair of the Department of Cyber Science at the US Naval Academy.

He served for 26 years on the faculty at The University of Alabama in a variety of roles, including Professor of Computer Science, Associate Vice President for Research, and Founding Director of the Center for Advanced Public Safety.

Throughout his career, Dr. Parrish has obtained well over 200 funded projects totaling over $100 million from a variety of state and federal sponsors. Dr. Parrish has published in refereed journals in areas as diverse as data science, software engineering, transportation safety and technology education.

ALLEN S. PARRISH
Professor of Computer Science
Executive Director,
Alabama Transportation Institute

ATI is organized around the concept of ACES² mobility, representing emergent themes in modern transportation.
TPRC’s services are routinely requested for any number of needs ranging from policy and economic impact analysis, assistance with state and federal grant applications, researching legislative best practices, and identifying funding mechanisms for construction and maintenance of physical infrastructure. These services are available to any community in the state of Alabama. Our primary research areas are focused around the following issues: legal, finance, equity and progress.

Center for Advanced Public Safety

CAPS works with law enforcement across Alabama and other southeastern states to develop, maintain, and support a variety of cutting-edge safety technologies. This includes electronic traffic citations, crash reporting, DUI reporting, crime reporting, search, and data analytics, enabling the daily operation of over 10,000 sworn officers, 400 police agencies, 400 local, circuit and district courts, as well as traffic safety engineers and professionals across Alabama. In 2022, CAPS provided significant support to more than a dozen Alabama state agencies.

Alabama Mobility and Power Center

AMP envisions an innovative electric vehicle ecosystem where stakeholders from across the EV supply chain can confidently and effectively participate in activities that advance transportation electrification and is uniquely positioned to support the new EV economy. The combination of significant automotive manufacturers and supplier presence in the southeast, combined with substantial mining capacity for the necessary materials for batteries and other critical EV systems, makes Alabama an ideal home for a center devoted to the EV ecosystem.

Rebuild Alabama

ATI has supported legislative leaders and the Governor’s office in Alabama on efforts that led to the Rebuild Alabama (Transportation Infrastructure) legislative package being enacted. This package was projected to generate approximately $320 million annually for the state to invest in roads and bridges and the Port of Mobile. This was the first time in 27 years that the state raised the revenue streams for transportation.

Monthly updates on Rebuild Alabama are published in our newsletter and in the Information Center on ati.ua.edu.
City of Troy Partnership

(1) Teamed with Auburn University to lead a Safe Streets for All (SS4A) application to the FHWA for $3 million in safety improvements in Troy, Alabama. (2) Supported the City of Troy, in conjunction with Auburn University, on a $6 million USDOT Thriving Communities Program grant application. (3) Assisted Troy with Strengths Mobility and Revolutionizing Transportation (SMART) grant applications totaling more than $5 million in federal funds.

HBCU Bridge Program

ATI affiliated faculty Dr. Shanlin Pan, along with UA Graduate school, received a $1 million grant from the NSF to develop a bridge program for students from three Historically Black Colleges and Universities interested in opportunities in renewable energy. Project goals center on enhancing the competitiveness of HBCU students to graduate school.

Wiregrass Economic Development

The BUILD grant awarded to the Southeast Alabama Regional Planning & Development Commission funded the economic feasibility study for two traffic projects. ATI developed the report that quantified, at a broad macroscopic level, the costs associated with the status quo and presented findings of key economic and safety benefits associated with the proposed expansion.

Build Back Better Challenge

UA was one of 60 awarded national finalists for the Build Back Better Regional Challenge Award sponsored by U.S. Economic Development Administration, an agency within the U.S. Department of Commerce. The “Build Back Better Regional Challenge” is a program aimed at building strong regional economies and supporting community-led economic development. The 60 finalists were chosen from a pool of 529 applicants.

PROACT

The U.S. DOT’s FHWA awarded a $5 million Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) grant to ALDOT for the Proactive Route Operations to Avert Congestion in Traffic (PROACT) in Cullman, Alabama. ATI researchers Dr. Alex Hainen and Ms. Elsa Tedla will help ALDOT deploy and integrate advanced traffic technologies that support critical transportation communication networks.

Decatur Infrastructure Assistance

Assisted the City of Decatur in developing a successful application to the USDOT for $14.2 million in federal funding for a road and bridge construction project with an additional $4 million from ALDOT.
Electrify UA Crimson Ride

The University of Alabama was the only university to get funded directly from the U.S. Department of Transportation Federal Transit Administration’s Low- and No-Emissions Vehicle program. The $10 million project at UA, which includes $2 million in matching funds, will be unique by adding research components and workforce development initiatives relating to electric transit vehicles.

Tuscaloosa Infrastructure

ATI coordinated efforts with various stakeholders including, but not limited to, the City of Tuscaloosa, ALDOT and DCH Regional Medical Center to secure $6.87 million in federal funding for the construction of a new University Boulevard bridge over McFarland Boulevard. The new bridge will lengthen and widen the overpass to create greater efficiency and safety, providing more access to education, healthcare, and business and employment opportunities.

BUILD Grant

ATI was instrumental in obtaining a $15 million BUILD grant for Tuscaloosa and has continued to serve as a go-to organization for state and local agencies who need assistance with transportation projects. In this area, we were successful in helping Tuscaloosa obtain a $15 million BUILD grant to support a portion of the Riverwalk project, along with the Saban Center and some bridge improvements.

ACTION

Continued to lead a $16.8 million Advanced Transportation and Congestion Management Technologies Deployment project sponsored by the Federal Highway Administration in the Tuscaloosa County region to support developing a connected infrastructure capable of supporting automated vehicular traffic, resolving congestion challenges, improving safety, and supporting efficient freight delivery for just-in-time manufacturing.

University Boulevard Corridor

The City of Tuscaloosa received a RAISE grant for over $17.1 million from the USDOT for University Boulevard Corridor improvements. ATI provided the cost benefit analysis and grant development assistance.

Birmingham Transit

Worked with the BJTCA to win a $780,000 grant from the Federal Transit Administration (FTA) to study public transportation operations under the Route Recovery and Restoration Program.

50+ Projects led by ATI in FY22 provided significant service in urban and rural areas in AL
Institute-wide Achievements

**$20+ Million**
Three major FHWA ATCMTD awards
building national leadership in connected highway infrastructure

**$30 Million**
in total 2022 awards
either granted or in negotiation, representing a 50% increase from the previous year

**$40 Million**
State-of-the-Art Facility
under construction to open in 2023

Initiation of AMP Center
to provide statewide leadership in transportation electrification, including research and workforce development

**$5 Million**
in SMART grant applications
Supported multiple proposals to assist Birmingham, Troy, and Tuscaloosa apply for Strengthening Mobility and Revolutionizing Transportation (SMART) grants
MAJOR PROJECTS

centered around ACES² mobility, and support for rural development projects across the state of Alabama.

Collaborated with the Alabama Clean Fuels Coalition to jointly develop the Alabama Electric Vehicle Infrastructure Plan for approval by the FHWA.

Organized the DRIVE coalition (Driving Regional Innovation through Vehicle Electrification) and was selected as a Finalist for the US Economic Development Administration’s Build Back Better Regional Challenge to bring innovative transformation to the impoverished Wider West Alabama region.

Initiated construction on the $40 million Smart Communities and Innovation Building to house ALDOT, ATI, city and county traffic engineering professionals, and the Alabama Mobility and Power Center, a public-private partnership to support the effective transition toward sustainable transportation.

Collaborated with Alabama Power and Mercedes-Benz US International to obtain $4 million from the US Department of Energy for a research project to investigate applications for second-life batteries, such as those that have been partially used in electric vehicles.

Supported the City of Troy, in conjunction with Auburn University, on a $6 million USDOT Thriving Communities Program application.

Competed in the Indy Autonomous Challenge as part of the PoliMOVE team, an international collaboration between Politecnico di Milano (Italy) and The University of Alabama. In January, the first head-to-head autonomous racecar competition was held at the Las Vegas Motor Speedway. PoliMOVE took home the grand prize and made autonomous racing history. In the spring, PoliMOVE went to the Kennedy Space Center and set the record for the World’s Fastest Autonomous Racecar of 192.2 MPH / 309.3 KPH over 1,000 meters.

Competed in the 4-year EcoCAR Challenge, a US Department of Energy Competition. The Year 3 challenge involved advanced propulsion systems, connected and automated technology and improving energy, safety and consumer appeal. UA won 1st place in the Year 3 challenge. UA is one of 13 teams that qualified to compete in the upcoming year 4 challenge.

Competed in the Year 3 challenge of the EcoCAR competition for a research project to investigate electrification for bus transportation. UA was selected as a Finalist for the Federal Transit Administration (FTA) to study public transportation operations under the Route Recovery and Restoration Program.

Worked with ALDOT to secure $300K from the FTA to improve post-COVID rural paratransit operations.

Collaborated with local Tuscaloosa transit agencies to obtain $8 million from the FTA to support the transition to electric buses and to support research on the efficacy of electrification for bus transportation.

Continued to lead a $16.8 million Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) project sponsored by the Federal Highway Administration (FHWA), called ACTION, in the Tuscaloosa County region to support developing a connected infrastructure capable of supporting automated vehicular traffic, resolving congestion challenges, improving safety, and supporting efficient freight delivery for just-in-time manufacturing.

Obtained $5 million from the Federal Highway Administration in the FY2022 ATCMTD competition to initiate a second congestion management project to be led by ATI in conjunction with ALDOT. This project, called PROACT, will be matched by $5M from the State of Alabama to create a $10M project to improve the management and operation of a segment of I-65 and associated nearby diversion routes in and around Cullman, Alabama. These technologies will include advanced road weather tools, technologies and signal management systems.

Secured a technical leadership role on an additional $8.7 million ATCMTD project awarded in FY2022 to develop and deploy smart and connected technologies on the Atlantic City Expressway in New Jersey.

Supported a team led by Leidos on a successful bid to provide on-call transportation safety research to the FHWA. Total value of UA contract is $1.5 million over five years.

Teamed with Auburn University to lead a Safe Streets for All (SS4A) application to the FHWA for $3 million in safety improvements in Troy, Alabama.

Worked with law enforcement across AL and in other southeastern states (MS, AR, LA, GA) to develop, maintain, and support a variety of cutting edge safety technologies, including electronic citations, crash reporting, DUI reporting, crime reporting, search, and data analytics, enabling the daily operation of over 10,000 sworn officers, over 400 police agencies, over 400 local, circuit and district courts, as well as traffic safety engineers and related professionals on a statewide basis.
Michael Oatridge, an experienced leader in the automotive industry and entrepreneur, was selected to become executive director of the Alabama Mobility and Power (AMP) Center. Oatridge worked for Honda Motor Company for more than 30 years, retiring in 2021 as senior vice president of Honda Manufacturing of Alabama. Most recently, he has been president and owner of Strategic Workforce Solutions, a startup company in Birmingham that helps recruit businesses to the state.

A strategic leader with extensive automotive knowledge including new product development, manufacturing and supply chain optimization, Oatridge has been able to successfully sustain high performance across an organization by use of internal resources and a broad network of contacts in both the public and private sectors. Oatridge joined Honda in 1989 as an engineer, taking on increasing responsibilities at its manufacturing plant in Ontario, Canada. His tenure included an assignment at company headquarters in Tokyo, Japan, as well as a manufacturing plant in Ohio.

He came to the plant in Lincoln, Alabama, in 2001 and became vice president of manufacturing operations in 2010, a position he held until 2016 when he was promoted to senior vice president. In this position for five years, Oatridge directed day-to-day operations of a staff of over 6,000 employees, while ensuring the production of over 350,000 vehicles. He was responsible for company operations of more than $1.2 billion annually.

"The future of the AMP Center is to bring together all of the entities that are required to make the EV network work. From the customer’s needs, desires, and anxiety, to sourcing of the raw materials, to the component OEM manufacturing, the after-service where we will have to train and create a whole new network of people to work on electric cars, the charging infrastructure and finally the reuse with the recycling. It is really looking at the entire life cycle of that vehicle and the ecosystem for the vehicle."
Engineering Professor, Automotive Pioneer Adds New Research and Development Role

Dr. Bharat Balasubramanian, professor in the UA College of Engineering and executive director of the Center for Advanced Vehicle Technologies, accepted the additional responsibility of creating and implementing a vision for connected, automated and electric mobility research and elevating the profile of ATI globally.

With expertise in the fields of electric and automated vehicles and the requisite infrastructure, Balasubramanian, known on campus as Dr. B, brings nearly 40 years of experience in research and development with Daimler AG in the Mercedes-Benz Cars Division. After retiring from Daimler in 2012 as vice president of group research and advanced engineering, Balasubramanian accepted an appointment as professor in both mechanical engineering and electrical and computer engineering at UA.

Over the past decade at UA, he has been integral in improving automotive engineering education and research while helping to form partnerships between UA and the state’s automotive industry. He started and leads the Two Steps Ahead: International German Student Exchange Program designed for a select group of students to gain experience with multi-national companies in automotive engineering while learning German.

His leadership of CAVT has helped the center to design and test the transportation technology that will drive the newly emerging economies of mobility and power. In the past five years, Balasubramanian and his team have secured nearly $20 Million in grant funding from federal agencies, the Department of Defense, the Department of Transportation and the Department of Education. In these multi-disciplinary efforts, the projects typically involve between four to 12 faculty members from various departments and colleges.

Transportation Policy Research Center Expands with New Director

As part of a broadening of its scope, the Transportation Policy Research Center at UA will be led by longtime civil, construction and environmental engineering professor, Dr. Steven Jones. As the new director of the Center, Jones also became the full-time deputy director of ATI. He continues to serve as a full professor in the UA College of Engineering.

Dr. Jones brings more than 25 years of transportation engineering and planning experience spanning both academic and private sector consulting appointments. His research and professional efforts explore how transportation impacts human development through safety and accessibility as well as cultivating international relationships to facilitate collaborative research, education and technology transfer.

Dr. Jones served as principal investigator on approximately $15 million in externally sponsored projects from a range of funding sources and participated in and/or managed more than $2 million in projects as a consultant. He has authored or co-authored more than 150 journal articles, conference papers, design manuals and project reports on a range of transportation topics. Active internationally, Jones has participated in transportation projects in the United States, Europe, Asia and sub-Saharan Africa. He is currently serving a two-year stint as a Fulbright Scholar Alumni Ambassador for the program sponsored by the U.S. Department of State that supports domestic faculty to conduct research and scholarship in more than 130 countries.

Read full press releases and more news about ATI and its affiliates under the Research tab

news.ua.edu
As part of a $16.5 million bond announced by Governor Kay Ivey, the construction of the Smart Communities and Innovation Building was approved for The University of Alabama campus.

The SCIB will provide space for increasing academic research and workforce opportunities centering on the emerging EV market. The SCIB strengthens the partnership between UA, Mercedes Benz US International, and Alabama Power. The $42+ million project includes $36 million in funding from the Alabama Public Schools and Colleges Authority Bond.

SCIB will serve as an academic space that stimulates teaching, research, creative activity, and service for students. This significant investment in the UA campus will be the site for innovative research focused around smart and resilient grid technology, electric battery testing, and a 3,851 GSF garage lab.
The first installation of a system of this kind in the state of Alabama is at a UA intersection. This system will enable students and researchers to monitor operations, collect data, and deploy new algorithms.