ALABAMA 2025 ECONOMIC DEVELOPMENT GUIDE

A comprehensive resource for site selection

INSIDE

Development Incentives
Success Stories
Economic Sectors
International Trade
Business Resources
Statewide &
Pagional Economies

Regional Economies

Economic Development Agencies

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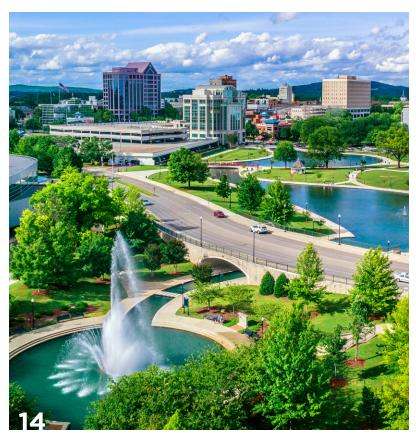


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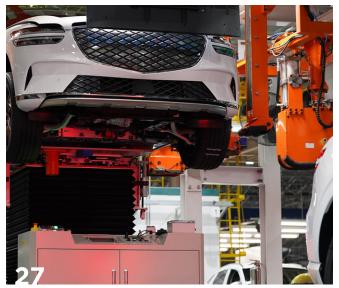
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Photos: 14. A view of downtown Huntsville. Photo courtesy of Huntsville/Madison County Chamber of Commerce. 20. Fishing tournaments in the area, like this one on Lake Jordan, had an economic impact of more than \$2.4 million during 2022-2023, according to the Elmore County Economic Development Authority.

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ON THE COVER: Alabama's steel mills are adding electric arc furnaces — this one at U.S. Steel, plus new ones at AM/NS Calvert, American Cast Iron Pipe Co., SSAB Alabama near Mobile and Nucor Steel in Tuscaloosa, Decatur and Birmingham.

Photos: 22. A helicopter at Fort Novosel. 24. Owa's \$75 million aqua adventure. With 23 rides and 300 palm trees, the waterpark features a retractable roof and is climate-controlled for year-round use. 27. Workers install a battery in a Genesis Electrified GV70 SUV, which Hyundai began producing - along with its fueled version - in 2023. 33. Earlier this year, Icon tested a mock-up of a robotic arm in the V-20 testing chamber at NASA's Marshall Space Flight Center in Huntsville. Photo courtesy of NASA.



GOVERNOR'S LETTER



Greetings

I am pleased to introduce the 2025 Alabama Economic Development Guide.

Having once served as the assistant director of the Alabama Development Office, now known as the Alabama Department of Commerce, I have a deep understanding of how important the work of economic development is to our state. Since day one, it's been a top priority of my administration to build on the successful track record of Alabama's economic development

team. Truly, with no stopping point in sight, Alabama's economic momentum is on the rise, as more companies, some world leaders in their industry, decide to call Alabama home.

Alabama is the location of choice for many critical sectors of the economy. Our highly skilled workforce, commitment to infrastructure development and attractive economic development incentives assure industry leaders our great state provides nothing less than business success. Alabama continues to distinguish itself as a world leader in sectors like automotive manufacturing, aerospace, biotechnology and information technology. Since 2017, when I took office, we've been able to create over 87,000 new jobs in economic development projects, bringing \$49 billion of new capital investment to the state.

As we elevate the level of collaboration between the public and private sectors, we will continue to create new opportunities for the people that call Alabama home, and we remain more than ready for other top companies to plant their roots here in Alabama.

Companies that choose Alabama know our state is a great place to live and work. They quickly recognize that our hardworking citizens are our greatest asset, and our state's natural beauty truly reflects that of our people. Alabama's unwavering economic success is a great story, and new, successful chapters are being written every day.

Governor of Alabama

ALABAMA

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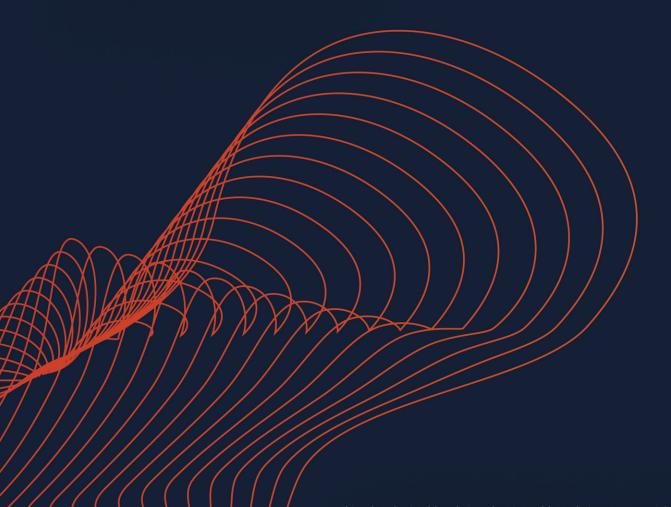
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STATEWIDE ECONOMIC OVERVIEW



Alabama's economy is flourishing.

The state saw \$6 billion in new economic development in 2023, following record-setting \$10 billion in 2022. This year's 184 newly announced projects fall in 43 of the state's 67 counties, creating 8,095 jobs.

Alabama set a record for exports in 2023, tallying a 6% increase to \$27.4 billion. Alabama-based Regions Financial earned a prestigious President's "E" Award for Export Service for its role in supporting that international commerce.

And the state took top honors for auto exports at \$11.2 billion, nudging long-time leader South Carolina out of the top spot.

To support all that commerce, the Alabama State Port Authority is deepening and widening the port — when the project is complete next year, the port in Mobile will be the deepest on the Gulf Coast — and it's creating inland container hubs in Montgomery and Decatur.

Norfolk Southern, meanwhile, is investing \$200 million to improve its 3B Corridor, which connects portions of northern and central Alabama to the port.

Online source SmartAsset gave top

Coca-Cola Botting Co. United has announced plans for a \$330 million investment in a new headquarters and plant in Birmingham.

honors to Huntsville as the nation's best job market.

Again in 2024, worldwide industries picked Alabama for new industrial plants. Meta, parent of Facebook, announced plans for an \$800 million data center in Montgomery. German appliance maker Miele picked Opelika. AE Industrial Partners chose the Shoals, where it's working to convert a facility designed to produce railcars into a supplier for the aerospace companies that call north Alabama home.

Meridiam broke ground on a \$230 million project in Selma to provide fiber optic services across Alabama's Black Belt region. Two Rivers Lumber Co. began work on a \$115 million lumber mill in Coosa County. And South Korean auto supplier firm Samkee began work on its first U.S. plant in Tuskegee, convenient to Hyundai in Montgomery. Veyer,

owned by Office Depot, announced plans for a \$9 million investment in the Mobile area, almost at the same time that Simpson Strong-Tie announced plans for a \$7.5 million plant there. Frito-Lay kicked off work on an \$8 million plant in nearby Prichard. And Magneco/Metrel opened its \$8 million plant in Gadsden, making refractory products.

Major expansions made news, too — in several cases even bigger than announcements of new projects.

Norfolk Southern has long been active in Alabama before announcing its \$200 million boost.

Likewise, Coca-Cola Botting Co. United has long centered its business in Birmingham, before announcing plans this year for a \$330 million investment in a new headquarters and bottling facility in the city.

Nucor Steel this year announced a \$280 million expansion at its facilities in Tuscaloosa. Airbus in Mobile began work on a third final assembly line. Chart Industries began work on a second plant to build massive cryogenic tanks in Mobile just four years after starting work at its first Alabama facility.

Raytheon announced a \$115 million expansion of its Huntsville missile integration facility.

Tastiest of the announcements is one from iconic brand Conecuh Sausage. It has operated a major plant in Evergreen since 1947 and announced plans this year for a second plant in Andalusia — a \$57.8 million investment. Also on the tasty side, Southern Roots Nut Co. announced plans for a \$17 million plant in Dothan.

Biotech is big news here, too.

The University of Alabama at Birmingham and its neighbor, Southern Research, have teamed to provide cancer drugs, relief from COVID-19 and more, while HudsonAlpha Institute for Biotechnology in Huntsville provides cutting-edge research in genetics and encourages a quick path from research to remedy.



MADE IN ALABAMA. POWERED IN BIBB COUNTY.

Mercedes-Benz has built luxury cars in Alabama for 25 years. Now, they're building an all-electric, carbon-neutral future here. Starting in a state-of-the-art battery factory in Bibb County, high-performance lithium-ion batteries are prepared for production of the EQE and EQS SUVs in Tuscaloosa. The electric evolution is coming straight from rural Alabama.

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ECONOMIC OVERVIEW

The state also has new data centers to support Google and Facebook, and Gunter Annex at Maxwell Air Force Base is home to that service's information technology experts.

The state took special pride in the launch of Artemis to the moon, the first step in plans for humans to revisit the moon and go even deeper into space. Meanwhile, work is in progress at Marshall Space Flight Center to puzzle out ways of building infrastructure on the moon to support long-term life there and create a stepping stone to the planets beyond.

In less than 30 years, Alabama has moved to the forefront of American automobile manufacturing. Since Mercedes-Benz opted to build its first U.S. plant in Vance in Tuscaloosa County in the mid-1990s, automotive work has been a highlight of Alabama's economy. The state boasts five major manufacturers Mercedes, plus Hyundai in Montgomery, Honda in Lincoln, Mazda Toyota in Huntsville and a major Toyota engine plant, also in Huntsville. All those plants are introducing new electric models, and many have launched expansions and upgrades to make the new vehicles. This year, Birmingham's Autocar announced plans to team with General Motors to develop zeroemission trucks.

Alabama's contribution to the nation's ground transportation doesn't stop at cars and SUVs. We build railroad cars, buses and trucks, too.

Hankering to move cargo? We build ships, too. Mobile has been a shipbuilding hub for centuries. Today Austal USA dominates the Mobile waterfront, building aluminum-hulled ships for the U.S. Navy and just kicking off new steel ship capabilities. And our Port of Mobile is among the busiest in the nation.

Want to get there faster? We build airplanes, too. Since 2015, Mobile has been home to the only U.S. final assembly line for European aircraft giant Airbus, delivering A320 and A220 family commercial jets. Now the company is adding its third FAL, markedly increasing production and employment.

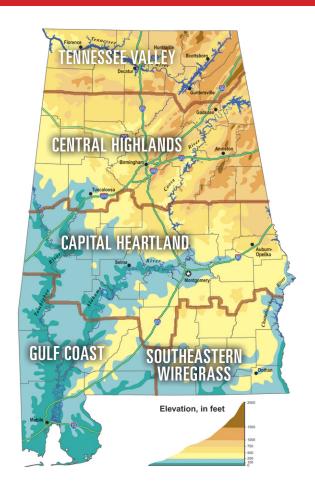
And if you need to get there really, really fast — think Huntsville and Decatur. That's where we build rockets. The workaday rockets that take most of America's payloads to space are crafted at United Launch Alliance in Decatur and the spacecraft of the future at NASA in Huntsville, with key elements coming from an array of the nation's biggest space and defense contractors — Boeing, Lockheed Martin and Raytheon — along with newcomers like Blue Origin, Beyond Gravity and Aerojet Rocketdyne.

Defense industries flex their muscle in north Alabama, clustered around Redstone Arsenal in Huntsville. The missiles to protect America from threats are designed and built there and in Pike County. Military folks also take care of land vehicles in Anniston and helicopters in Dothan.

The old Fort McClellan in Anniston now trains the nation's first responders for whatever catastrophe may arise — from an Ebola outbreak to an earthquake. And the Coast Guard trains its aviators in Mobile, ready to thwart drug smugglers, protect ports and rescue those stranded on the high seas.

For decades, Alabama's universities have built football legends, but the Alabama university system is much more than sports. Arts, law, medicine, pharmacy, business — all help today's students flourish as tomorrow's leaders. Working in partnership with the state's colleges and universities and with its in-

REGIONAL OVERVIEW



dustrial sector, the Alabama Community College System prepares students to pursue a higher degree or a high-tech industrial career.

For all that Alabamians build, create, blast off, launch or study, the state's roots run deeper still. Crops thrive on farms rich with Black Belt soil; cotton creates a landscape of white; trees soar to the skies. Seafood thrives in the Gulf waters. And Alabama chickens feed millions here and abroad.

Beneath the surface there's coal — Alabama shipped \$2 billion worth of metallurgical coal overseas in 2018, while overall exports topped \$21 billion. Warrior Met Coal recently announced plans for a new \$500 million mine and a \$50 million barge loading facility to take that coal to market. Westwater Resources is taking initial steps to process graphite in Coosa County, anticipating the market created by automotive batteries.

All the while that manufacturing thrums, commerce hums, research expands our horizons and agriculture grows, Alabama continues to attract more and more people who just want to enjoy — staring in awe at the rockets towering overhead at the U.S. Space and Rocket Center, thrilling to the zoom of NASCAR at Talladega, fishing, hunting, hiking, canoeing, watching Shakespeare or just relaxing on the sugar white sand of Alabama's Gulf Coast beaches.



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TENNESSEE VALLEY

Rockets roar, autos roll and North Alabama commerce rocks on

Alabama aims for the stars.

For nearly three-quarters of a century, scientists have worked diligently in Huntsville to convert dreams of space exploration into the realities of rockets, satellites, telescopes and propulsion systems.

In the mid-1950s, the federal government brought a team of former German rocket scientists to the nearly defunct Redstone Arsenal. From that quiet start, the U.S. leaped into the space race — an effort that continues today as NASA and a host of companies, big and small, work to develop the mighty new Space Launch System. No longer aiming just for the moon but also to

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the planets beyond, the Space Launch System will be bigger and faster, able once again to carry humankind beyond the known. And a team at Marshall Space Flight Center is strategizing about how to build the infrastructure on the moon for those next giant

When Artemis 1 launched in late 2022, it carried an Alabama pedigree with key elements designed and crafted by Marshall Space Flight Center, Boeing, Lockheed Martin, Dynetics, United Launch Alliance and more.

Even as they work on the newest of rockets in Huntsville, Boeing and Lockheed Martin team in a joint venture called United

Launch Alliance in nearby Decatur, building the Atlas

and Delta rockets that have long been the mainstays of U.S. spaceflight. ULA is doubling in size to meet the demands of the Amazon Kuiper Project. Blue Origin



ABOVE: A view of downtown Huntsville. Photo courtesy of Huntsville/Madison County Chamber of Commerce.

is newest to the flock, chosen to develop a new engine for those ULA rockets one that will replace the Russian-made version. Aerojet Rocketdyne has now joined the mix.

Always on the cutting edge, Huntsville is also working with Sierra Space as they prepare to land the firm's Dream Chaser spacecraft on the runways at Huntsville International Airport — maybe even this

As glamorous as its rocketry may be, the northernmost region of Alabama has many more facets. National defense goes hand in hand with Huntsville's space science. Clustered around Redstone Arsenal are firms that design and build missiles to protect the country and simulations to help soldiers learn to make the right decision in an instant. Huntsville is also home to a major FBI campus.

Cummings Research Park, one of the largest in the nation, and the newer Redstone Gateway are home to an array of defense firms like those that encircle the Pentagon. The synergy of space science and defense engineering has attracted scientific minds to Alabama's northern tier — not limited to those original fields.

In fact, Huntsville and its variety of opportunities have propelled it past Birmingham as Alabama's largest city.

Automaking is a big player here. Toyota has operated a major engine plant for the better part of 20 years and a newcomer, Mazda Toyota Manufacturing, is using one plant to build both the Toyota Corolla Cross and the Mazda CX-50. Just this year, supplier Shape Corp. announced plans for a second plant in Alabama, a \$74 million investment in Tanner.

Facebook, which kicked off a massive data center four years ago, now says its expected \$750 million investment could well reach \$1 billion. Google's data center in Jackson County, at the northeast corner of the state, is now operational.

The Tennessee Valley is also home to some of the state's brightest lights in biotechnology.

HudsonAlpha Institute for Biotechnology focuses on encouraging biomedical researchers and entrepreneurs to work together so that new developments can



come efficiently to the marketplace. HudsonAlpha is making a name for itself and for Alabama in the intricate world of genetic research.

The northern tier's other industry is as varied as your imagination. Constel-

lium makes the sheet metal for food and beverage containers in the Shoals, and its new furnace can recycle 20 billion aluminum cans a year. Carpenter Technologies has added a \$52 million research center in Athens, where it





works on additive manufacturing technology. GE makes appliances and Ascend Performance Materials makes high tech

Keeping the workforce up to date, Alabama's new robotics center at Calhoun Community College trains workers in how to operate and maintain the high-tech machines, while offering space for industry to design and test robotic components.

Now the state is building a \$30 mil-

Steelmaker Nucor plans to build transmission towers at new Decatur facility.

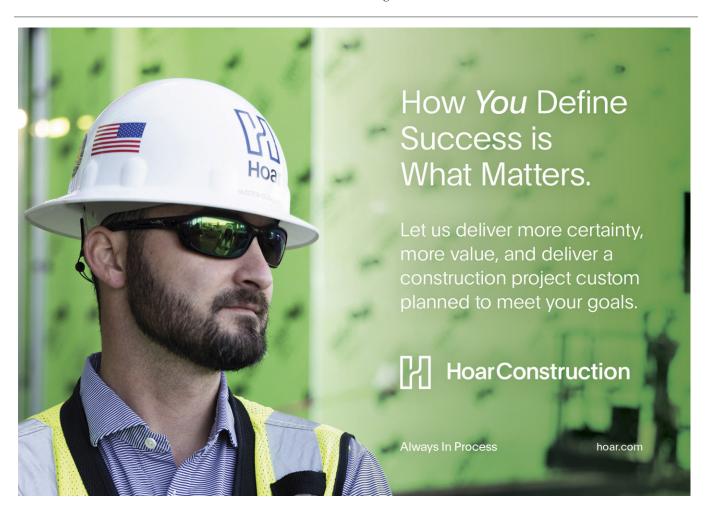
lion workforce center in Decatur to train workers for the electric vehicle industry.

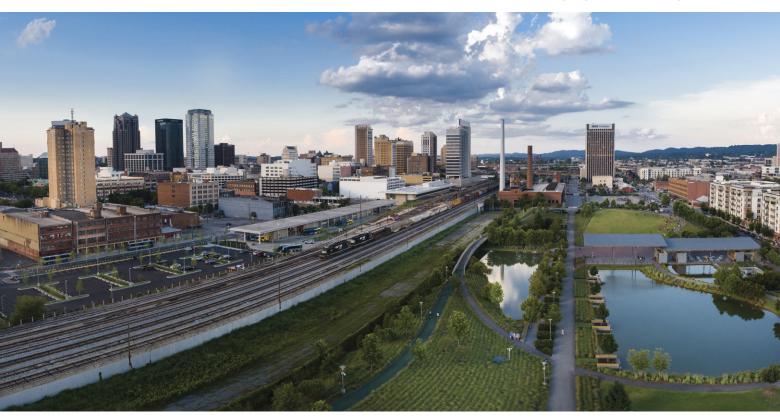
Agriculture is strong here, too. Marshall County leads the state in poultry processing and ranks second for producing poultry.

It's not all work and no play here. The Tennessee River brings opportunities for fishing, hunting, birding, even riding a riverboat as it flows through these northern counties.

Music is nearly as fundamental to the Shoals as the water itself. This is the home of Muscle Shoals Sound and FAME Recording Studios, where some of the biggest names in pop music recorded — from Aretha Franklin to the Rolling Stones.

And baseball joined the mix when Madison opened its new ballpark, home to the Los Angeles Angels' Double-A team, the Rocket City Trash Pandas.





CENTRAL HIGHLANDS

From coal and steel to the heights of high-tech

Alabama's Central Highlands area is grounded in coal and steel. From that solid foundation, the region has grown and prospered in a wide-ranging economy including everything from higher education and health care to insurance and banking to biotech and info tech.

Stretching from the foothills of the Appalachians in the east to the University of Alabama in the west, the Central Highlands region also boasts two of the state's major automakers and the world-famous Talladega Superspeedway.

As data centers, biotech research and information technology flourish here, Forbes magazine pondered whether Birmingham may earn a new moniker as "the Southern Silicon Valley."

The updated image is another tribute to the adaptability of Alabama's Central Highlands.

Born in the steel industry, Birmingham still counts major manufacturers like American Cast Iron Pipe Co., U.S. Pipe and Foundry, McWane Inc. and O'Neal Industries among the

ABOVE: Downtown Birmingham.



stalwarts of its economy. U.S. Steel has fired up a new electric arc furnace at its plant in Fairfield, modernizing this basic industry. And Warrior Met Coal is still a major player here, with a new mine and a new loading dock at work.

But more advanced industries have grown from those basics. Banking gives Alabama its own homegrown Fortune 500 company — Regions Financial. This year, Regions earned the prestigious President's "E" Award for supporting exports, just as the state set an export record.





Shelby County Shelbv Countv **The Natural Choice for Business** Birminghan **Choose Shelby County** to Locate and Expand · Software & IT Biotech & Financial Services · Automotive Supplier Learn More at 58inc.org Construction of the J.M. Smucker plant in McCalla is well underway. Photo from J.M. Smucker.

PNC Financial, which recently completed its \$11.6 billion acquisition of BBVA, plans a regional technology center here. Downtown is also home to Infinity Property & Casualty, now part of Kemper, and to ProAssurance, as well as the U.S. headquarters of Protective Life, recently purchased as a U.S. foothold for Dai-Ichi Life of Japan.

Downtown boasts headquarters for delivery service Shipt, now part of Target, and of lodging service Landing — both developed in recent years by entrepreneur Bill Smith.

Biotechnology is a major player here, too. Nurtured by the University of Alabama at Birmingham and Southern Research, medical care is offered for those in need today while teams of scientists search for the causes and cures for ills still hard to treat. New medicines and medical devices are always in development. Seven current FDA-approved cancer drugs have been developed at Southern Research, while UAB is launching the state's first proton therapy option for advanced cancer care. Both have been major players in the fight to tame COVID-19. Just last year, UAB announced plans for a \$76 million biotech research facility, and Southern Research announced plans for an incubator for young biotech firms. Meanwhile, BioCryst announced a \$22 million expansion of its facilities in Hoover.

And, while educating its students and caring for its neighbors' health, UAB also won honors from Forbes as the nation's best place to work in 2021.

Arts, sports, entertainment and an array of eateries show Birmingham as the major city it is - among the largest in the Southeast. The city boasts seven James Beard award-winning chefs and restaurants.

Tuscaloosa is home to the University of Alabama. A highly ranked educational institution, Bama also fields one of the most recognizable football squads in the nation, repeatedly winning national championships while attracting crowds to the university city.

Moreover, the Tuscaloosa County city of Vance boasts another claim to fame as the wellspring of Alabama's auto-making industry. In the mid-1990s, Mercedes-Benz U.S. International announced plans to launch a U.S. plant, and Vance beat out all rivals for the honors. MBUSI has grown and expanded repeatedly over the years, building popular luxury SUVs and in 2022 introducing its first all-electric vehicle, while making batteries in nearby Bibb County. Mercedes is Alabama's leading exporter, sending vehicles to countries around the world.

Talladega County has a pair of autorelated success stories. Like Tuscaloosa, it's home to one of Alabama's major auto plants. Honda builds the Odyssey minivan, the Pilot SUV, the Ridgeline pickup and the Passport and Passport Trailsport models in Lincoln. And across the county, speed dominates the auto scene at the Talladega Superspeedway, famous for its sizzling speeds and challenging curves. If speed's your thing, don't miss the Barber Motorsports Museum, with hundreds of vintage motorcycles and a great view of the motorcycle and Indy races on the nearby course.

The Central Highlands are also home to the cities of Cullman, Anniston and Gadsden — all big contributors to the Alabama economy. Gadsden, on the Coosa River at the foot of the Appalachians, is Alabama's mountain gateway a tourist attraction with a charming riverfront and a popular park that showcases Noccalula Falls.

A pacesetter city, Anniston was first in Alabama to be wired for electricity, in 1882, and it added telephones in 1884. Its major employer is the Anniston Army Depot, the maintenance center for tracked vehicles. Nearby McClellan, a planned community growing on the site of the former Fort McClellan, also hosts the Department of Homeland Security's Center for Domestic Preparedness, helping first responders from across the nation be prepared, whether they face Ebola or an earthquake. Like its Central Highlands neighbors, Anniston and Calhoun County are also home to automotive supplier firms that have emerged in the past 20 years.

Cullman has kept its agricultural roots strong. It's one of the nation's top 60 counties for agricultural income. But Cullman has taken to the highways as well. The county is also home to three

relatively new Tier 1 auto suppliers and a host of smaller firms.

The region has seen its share of the state's economic development wins, too. Coca-Cola Bottling Co. United is investing \$330 million in a new headquarters in Birmingham. Nucor Steel is investing \$280 million to upgrade its facilities in Tuscaloosa. In Pell City, Ford Meter Box is starting a \$23 million expansion; Douglas Manufacturing

REGIONAL PROFILE

is starting an \$11.7 million expansion of the plant where it makes conveyor system components and Allied Mineral Products has kicked off a \$23.5 million expansion. In Gadsden, Magneco/Metrel is investing \$8 million in a new-to-it facility to make refractory products.

And the huge new J.M. Smucker plant, a \$1.1 billion investment in McCalla, is on the brink of crafting the company's popular Uncrustable sandwiches.





CAPITAL HEARTLAND

Cars, cotton and civil rights create Alabama's Capital Heartland

Cotton and catfish, cars and the Capitol, universities and history — all abound in Alabama's Capital Heartland, a rich and varied land that's both prosperous and forward-thinking.

This Alabama heartland lies in the famed Black Belt and once produced cotton to clothe the world. The sounds of agriculture still fill the air, but the fields now sprout products undreamed of when plantation life was at its peak. Today you'll find catfish ponds where the farmers raise \$120 million in fish and harvest the algae to make biodegradable plastic, and even an inland shrimp farm or two.

Trees grow here, too, for construction, paper and more. And the leftovers — the sawdust, chips and bits and pieces from tree

BIBB COOSA Centreville Lafavette Dadeville CHILTON Marion ELMORE LEE PERRY AUTAUGA Prattville MACON RUSSELL Montgomery MONT-Springs **GOMERY** WILCOX BUTLER

trimming — are processed into pellets that substitute for coal. More traditional forest products thrive here. International Paper recently invested more than \$550 million to boost productivity at its Selma mill. And Ikea Group invested in its first U.S. forest, purchasing 25,000 acres in rural Lowndes County.

Also growing here is one of the most sophisticated cyber networks in the nation, a Montgomery-based partnership among local government, the Air Force internet experts at the Maxwell-Gunter base plus education and industry.

During 2024, Meta, parent company of Facebook, announced plans for an \$800 million data center in Montgomery.

There's another new product growing here, too — popular

Elantra and Sonata sedans, Tucson and Santa Fe SUVs and Santa Cruz pickup trucks, rolling off the line at Hyundai Motor Manufacturing Alabama — which celebrated production of its 5 millionth vehicle in 2021. The multibillion-dollar, 2-million-square-foot plant opened in 2006 and today produces nearly 400,000 vehicles a year. The plant has attracted 35 Tier 1 suppliers and another 43 Tier 2, bringing an added \$650 million in industrial investment and



ABOVE: Alabama's capital city is celebrating its best-ever year for economic development.





employing another 7,000 workers. The firm announced another investment in 2023, planning to spend \$290 million to prepare for updated models.

The Heartland is also home to a new type of building product — a \$220 million James Hardie Building Products plant in Prattville.

And new warehouse and distribution centers — led by a \$100 million Amazon investment — are taking advantage of the busy transportation network.

Serving all that industry, the Alabama State Port Authority is building a container terminal in Montgomery to help ship goods to the state's deepwater port in Mobile.

Montgomery is a living mix of history and trendy lifestyle options. The city centers on the Capitol complex and all the myriad offices that handle the public's business. But just down the street one way is Old Alabama Town, showcasing the area's pioneer roots. Down the street another way are the remembrances of the hard times of the civil rights era. Turn yet another way and you find an array of nightspots, restaurants, riverfront parks and loft apartments.

And just for fun, the city and county have opened Montgomery Whitewater, a \$40 million water park with a whitewater course and other attractions near the Alabama River.

Education is a cornerstone of the Capital Heartland. Auburn University, the state's original land grant university, lies in the eastern edge of the region. Programs in engineering, architecture and veterinary medicine are hallmarks of the school. The state's newest medical school, a branch of the Virginia-based Edward Via College of Osteopathic Medicine, is also in Auburn.

Education made news, too. Tuskegee University is starting a flight training program. And a brand-new health sciences high school is in the works in Demopolis.

The campus region is also home to a variety of high-tech businesses, from GE Aviation's innovative 3D printing plant that makes jet engine components to AUBix LLC, a \$120 million data center adjacent to the university campus that opened in 2022.

Cities across the Heartland are making their business headlines.

Auto supplier Samkee opened its \$128 million plant in Tuskegee to make diecast aluminum parts for Hyundai.

During 2024, Meridiam kicked off a \$230 million fiber optic project in Selma; Two Rivers Lumber announced plans for a new \$115 million lumber mill in Coosa County, and German appliance maker Miele announced plans for a new plant in Opelika. GenPak opened a \$22 million expansion food plant in Hope Hull while Hyundai Power Transformers kicked off a \$14 million expansion in Montgomery.

Craig Field in Selma was chosen for a high-tech aviation tower that lets air traffic controllers monitor multiple airfields from a single location.

Graphite deposits are attracting activity to Coosa County like iron to a magnet. Westwater Resources began work on

TOP LEFT: Knauf Insulation in Lanett employs almost 300 people making fiberglass insulation. TOP RIGHT: Fishing tournaments in the area, like this one on Lake Jordan, had an economic impact of more than \$2.4 million during 2022-2023, according to the Elmore County Economic Development Authority.

a graphite processing plant in Kellyton, a \$602 million project, while Canadian firm South Star Battery Metals took the first steps toward reopening a graphite mine. The draw — graphite is a critical component in the high-performance batteries needed to power electric vehicles.

Bibb County celebrated the opening of the Mercedes-Benz battery plant in 2022. Sumter County is watching progress on a \$175 million biomass plant being built by Maryland firm Enviva at the Port of Epes.

Butler County is home to a new \$86 million solar farm in Greenville. Chambers County has seen two expansions at John Soules Foods in Valley, totaling more than \$60 million.

Macon County has kicked off work on the 683-acre Regional East Alabama Logistics Park.

Phenix City is now home to a worldclass whitewater course on the Chattahoochee River, a partnership with Columbus, Georgia, on the opposite bank. Phenix City is spiffing up its downtown to give those visitors a good welcome.

And you can get a close-up look at the history of the civil rights movement by following U.S. Highway 80 from Selma to Montgomery, traveling in the footsteps of the civil rights marchers from the Edmund Pettus Bridge to the Capitol steps.



SOUTHEASTERN WIREGRASS

Crops, choppers and front-porch living

On the ground, in the air and in between, Alabama's Wiregrass is thriving.

On the ground are crops to feed the Southeast and beyond especially if they're hankering for peanuts or chicken. Pointing skyward are the trees to feed the lumber and paper mills.

In between are new industrial plants, busy participants in the state's economic clusters of aviation, aerospace, automotive and beyond. And in the air are the aircraft — especially missiles and helicopters — that are the new face of the Wiregrass economy.

This southeastern corner of the state, nestled alongside Georgia and just north of the Florida Panhandle, is the epicenter of the nation's peanut crop. More than half the peanuts grown in the U.S. are grown within 100 miles of Dothan, which honors the tasty legume with an annual festival. It's such an important crop that the city of Enterprise has a statue honoring the boll weevil,





which forced farmers to find an alternative to cotton.

Chickens are part of the agricultural mix, too, with several plants that process broilers among the major employers.

Two food-related companies made big announcements for the Wiregrass in 2024.

Iconic brand Conecuh Sausage, a fixture in nearby Evergreen since 1947, announced plans for a second plant — a \$57.8 million investment — in the Wiregrass city of Andalusia, in Covington County.

The same month that Conecuh made its headlines, Southern Roots Nut Co. announced plans for a new \$17 million plant in Dothan.

And one more crop defines the agriculture of the Wiregrass trees. Forests feed the lumber mills and provide the raw materials for sawmills, paper and wood-products plants big and small. Rex Lumber is among the newest to the Wiregrass, but it moved in in a big way, with a \$110 million investment in a yellow pine sawmill.

In Henry County, Abbeville Fiber LLC has invested \$40 million in a new mill to provide wood for Great Southern Wood Preserving Inc. The first logs arrived in 2019, with plans to handle 80 to 90 truckloads of logs a day at full capacity.

Henry County has also seen more than \$10 million in investments in peanut processing operations, a cotton gin and other

ABOVE: Fort Novosel.







LEFT: TOP: Eufaula and other cities in the area have several historic districts depicting various architecture. TOP RIGHT: Specialty gear crafted at Isolair in Andalusia can turn an ordinary helicopter into a workhorse. BOTTOM RIGHT: Wallace Community College - Dothan.

agricultural improvements.

While farmers and foresters have tended to their crops, a new realm of industry has flown into the Wiregrass in the contrail of Fort Novosel. The Army base opened in 1942 to train troops, but in less than a decade was reimagined as the Army's aviation training facility. It continues to fill that role today, training Army and Air Force helicopter pilots, as well as those from U.S. allies around the world.

CAE USA won a major Army contract and opened a new facility in 2017, training Army aviators. A major fleet of helicopters at Fort Novosel has attracted its own cluster of supporters. Lockheed Martin, Sikorsky and Bell Helicopter all maintain a presence nearby.

Dothan had been nurturing a new MRO sector — companies that perform aircraft maintenance, repair and overhaul — when its major player abruptly moved out. In 2013, local officials lured Commercial Jet into the empty property and the sector continues to move forward.

Yulista Holdings just opened a new facility to maintain both fixed and rotarywing aircraft in Andalusia. That allows the region to take full advantage of the Alabama Aviation Center campus in nearby Ozark.

Houston County welcomed two big business announcements recently — a \$62 million expansion at SmartLam North America, which makes crosslaminated timber products, and a \$30 million pellet plant being built by Peak Renewables.

The Wiregrass is an important player in Alabama's higher education scene, too, as home to Troy University. Troy has built a reputation as an international campus, welcoming overseas students and offering Troy classes abroad. Now Dothan is home to one of the state's two new medical schools, the Alabama College of Osteopathic Medicine. The school's first students completed coursework in 2017.

And before long, the region will be serving the state's military in yet one more way. The state's fifth veterans' home in Enterprise is ready to welcome patients.

Along with the staples of agriculture, aircraft, Army and medicine, the Wiregrass is also home to several of Alabama's most unusual businesses.

Lockheed Martin maintains its Pike County facility in Troy, building mis-

siles to protect the world. The defense powerhouse is now doubling the size of its Pike County facility with the goal of nearly doubling its output of missiles. In mid-2022, President Joe Biden stopped at the facility to thank workers for their dedication to producing Javelin missiles that the U.S. is providing to aid Ukraine as it tries to fend off Russian invasion.

Ecore International's new \$25 million tire recycling plant is now open in Ozark in Dale County. The company uses the old tires to make flooring.

Fishing is big business in Eufaula. The city is home to Humminbird-Johnson Outdoors, which makes fish finders, depth sounders, marine radios and GPS systems for anglers, while a neighboring company, Strikezone Lures, makes fishing lures. Also in Eufaula, look for Southern Plastics, maker of wiggly plastic fishing worms for some of the nation's biggest retailers.

And over in Enterprise, you'll find Enterprise Electronics. Lest you expect an appliance store, be assured that this is the home of a remarkable product — the Doppler weather radar used around the world to protect us all from approaching storms.



GULF COAST

Ports, planes, ships and surf



Mobile's deep-water seaport has long been Alabama's connection to the wide world. Shipbuilding and shipping have been mainstays for centuries.

That tradition continues today, but now airships thrive alongside the waterborne variety. On the waterfront are modern variations of the shipbuilding craft that has flourished here for nearly three centuries. Austal USA, making ultramodern aluminum ships for the Navy, dominates the downtown waterfront and is the largest employer by far. Now, its new steel line is at work on a Coast Guard cutter, submarine modules and more. And it's adding even more workspace and a new ship lift system.

Hidden farther from the public eye, along the bayous of south Mobile County, smaller shipyards rear above backcountry roads, crafting tugboats, offshore platform tenders, shrimp boats and more. Master Boat Builders has built the nation's first electric tugboat, destined for the Port of San Diego, and is at work on more. Silver Ships just added a second location to its facilities.

Just a few miles away, Airbus builds commercial jets from the A220 and A320 families, augmenting the fleets of U.S. and overseas carriers for seven years now. In mid-2022 came news that the global firm plans a third final assembly line in Mobile — doubling the footprint and workforce and boosting production to help meet a global order backlog. Supplier firms like MAAS Aviation are stepping up their investment to match.

It's sometimes hard to remember that aviation was big business in Mobile

ABOVE: Owa's \$75 million agua adventure. With 23 rides and 300 palm trees, the waterpark features a retractable roof and is climate-controlled for year-round use.



before Airbus came to town a dozen years ago. One of the region's first international firms was Singapore-based Mobile Aerospace Engineering — now VT MAE — repairing and overhauling planes from the world's fleets. It's still among the region's top five industrial employers. Continental Motors, another face of Mobile's aerospace cluster that predates Airbus, is at work on a \$70 million upgrade.

Baldwin County, across the bay, also boasts a major cluster of aerospace firms — UTC Aerospace, making nacelles and more, is that county's largest industrial employer and growing.

And the air over coastal counties frequently thrums with the sound of Coast Guard helicopters, taking off from their national training facility at Mobile's commercial airport, while also protecting waterborne commerce and keeping all of us safe on the water.

Meanwhile, the Alabama State Port Authority operates Alabama's gateway to the world, where ships laden with coal, steel, chickens, chemicals and wood products head for ports around the world. The port is in the midst of massive improvements — \$366 million worth — deepening the channel and extending docks, while also adding the containers, cold storage and cranes to move ever more goods. And a roll on/roll off terminal is offering a new gateway for Alabama's automotive products, the state's largest export.

Steel, chemicals and timber are also big business along the Gulf Coast.

Just a few years ago, German-based ThyssenKrupp built a massive, \$5 billion steel mill at the Mobile-Washington County line. When the steel market nosedived and ThyssenKrupp backed away, the prospects looked bleak. But almost before you could say, "Fire up the furnace," world stainless leader Outokumpu Oyj, a Finnish company, had purchased the stainless mill. Then a partnership between the world's largest and second-largest steel producers — ArcelorMittal and Nippon Steel — had the cold-rolled steel mill up and running. AM/NS Calvert, as that mill is called, is now adding an electric arc furnace and other improvements totaling \$775 million.

Chemical plants line the riverbanks, winding inland from the bay — making products from herbicides to sugar substitutes.

And now the coast is sorting out a new line of work — an Amazon sortation center and a Walmart distribution center opened within a few miles of each other, taking advantage of the



TOP LEFT: The Old Monroe County Courthouse, which serves as a museum today. TOP RIGHT: Containers transit the Port of Mobile via sea, rail and truck.

interstate, port, air and rail connections. And a new \$350 million logistics park is in progress to help goods get to the port. Grocer Aldi and food service firm Imperial Dade have new distribution facilities in Baldwin County across the Bay.

Near the port, Chart Industries is adding a second plant to build massive cryogenic tanks, less than five years after launching its business in Theodore. Simpson Strong-Tie is investing \$7.5 million at a port-side industrial park for its steel connector plants, and Veyer, a subsidiary of Office Depot, is investing \$9.8 million for a facility nearby.

Frito-Lay has announced plans to invest \$8 million on a facility in Prichard.

And SSAB steel is investing \$12 million in its north Mobile County plant for a new furnace.

Baldwin County welcomed Novelis Inc. to its industrial mega site. The Georgia-based firm is investing some \$4 billion to create an aluminum plant there, part of its massive global operation recycling aluminum into re-use ready sheets.

In 2024, Baldwin announced plans for the Port Alabama Industrial Center in Loxley, a new industrial park with quick Interstate 10 access to Mobile's port. And Kaishin Compressor announced plans for an \$11 million expansion in Loxley.

In Escambia County, farmers and merchants have teamed on a new peanut processing plant, allowing local growers to increase their share of profits from their first-quality produce.

But the glory of the Gulf Coast is the beach. When Alabamians think of sprawling Baldwin County, they could be thinking of pleasant suburbs, timberland, agriculture, aircraft companies and more — but most likely they're thinking of the beach. Condos with stunning views, zoos, amusement parks — including the fabulous Owa built by the Poarch Band of Creek Indians — seafood, sports venues, fishing and fun, all stretch along some of the most beautiful beach in the world. White sand, brilliant sunshine, clear water — it's Alabama's playground.

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Automotive Update

ALABAMA'S AUTO INDUSTRY KEEPS ROLLING, THOUGH POTENTIAL POTHOLES COULD BE FORMING

BY CARY ESTES

ver since that first ML 320 SUV rolled off the assembly line at the Mercedes-Benz manufacturing plant in Vance in 1997, Alabama's burgeoning automobile industry has primarily had its cruise control set on success. The state has added three more OEM assembly plants since then — Honda, Hyundai and Mazda Toyota along with a major Toyota engine plant and approximately 150 Tier I suppliers and logistics companies.

Along the way, Alabama has become one of the top-five auto production states in the country, a ranking that is expected to continue in 2024. But a bumpier ride could lie ahead, with potential challenges involving proposed worker unionization,

the expansion of electric vehicles and the need for additional skilled labor in the sector

Despite these possible potholes, most of the current numbers in the industry are as smooth as a freshly paved road. For

- Combined production capacity at the state's auto plants is more than 1.3 million vehicles annually.
- Direct employment in Alabama's automotive manufacturing sector is approaching 50,000 jobs, with more than half that number (27,000) in the state's supplier network.

ABOVE: Autocar specializes in severe duty trucks built for specific tasks — like refuse collection trucks.

AUTOMAKERS

- ► Mercedes-Benz, Vance

- ► Toyota, Huntsville
- ► Mazda Toyota,
- Autocar, Birmingham

BY THE NUMBERS

- ▶ 1.3 million cars and light trucks capacity each year
- ► Top five auto producer
- ▶ 150 Tier 1 and 2 supplier
- ▶ 50,000 jobs

EXPORTS

- ► Automotive products are Alabama's top export
- Exports topped \$22.3 billion in 2024
- ► Mercedes-Benz is Alabama's top exporter



- Motor vehicles are Alabama's top export category, at more than \$11 billion (tops in the nation), while exports of Alabama-made auto parts and products are close to \$500 million.
- Honda, Hyundai and Toyota have the production capacity to build 1.9 million engines annually at their Alabama
- plants. Together, they have produced a total of more than 18 million engines in the state.
- Between 2020 and 2022, companies in the automotive manufacturer sector announced plans to invest approximately \$3.4 billion in projects in Alabama, creating nearly 7,000 jobs.

Toyota celebrated production of its 10 millionth engine in 2024.

"The automotive industry in Alabama continues to thrive," says Ron Davis, president of the Alabama Automotive Manufacturers Association. "Since 1997, Alabama's OEMs have combined to invest around \$15 billion in their assembly operations and have produced more than 15 million vehicles."

As a result, many state officials are taking the approach of, "If it ain't broke, don't fix it," when it comes to unionization efforts at the Alabama auto plants. The United Auto Workers has been actively campaigning to unionize Alabama's manufacturing plants, particularly the Mercedes facility. Workers voted against joining the union in May.

"Alabama's auto industry has been the primary growth engine for the state's economy for decades, but I have a very strong concern about how unionization efforts in our state could affect those growth prospects," Davis says. "This is a pivotal moment for Alabama's auto





industry, which directly employs around 50,000 people in good-paying jobs across the state. This was done without the presence of the UAW.

"The AAMA respects the right of the state's autoworkers to make their own decision on this issue. However, we do not want continued growth of our auto industry hampered by unnecessary conflict and messy confrontation that could disrupt the very strong reputation we currently have in our workplace environment and the production of vehicles in Alabama."

Another issue facing the auto industry that isn't quite as contentious — but still could be problematic — is the transition to producing more electric vehicles. Automakers worldwide have invested billions of dollars in improving EV technology, but sales growth in electric vehicles slowed significantly in 2023.

According to data released by the automotive consulting company Motor Intelligence, year-over-year sales growth for electric vehicles in the U.S. dropped from a high of 76% in April of 2022 to 42% in November of 2023. So, while the numbers are still increasing, the enthusi-

asm for EVs appears to be waning among consumers.

"We are making good strides in transitioning to electric vehicles, but as we navigate this transition, the market demands may be a little different than what we originally thought," Davis says. "In the meantime, we're still building very good internal-combustion cars and hybrid vehicles in the

state of Alabama, along with high-quality engines."

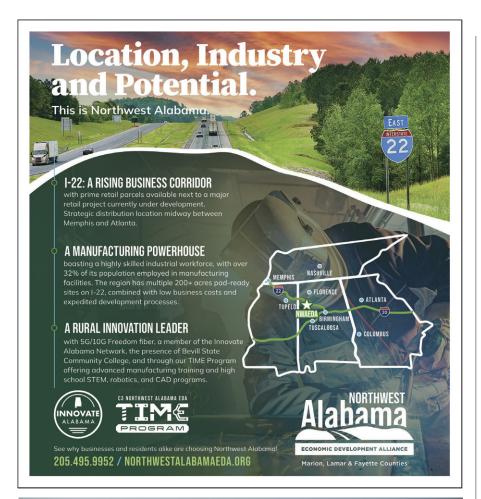
Despite the current decrease in demand, most analysts expect EVs to continue becoming a larger portion of the overall auto-production market. Davis says Alabama is preparing for this seemingly inevitable transition through several major projects.

"Alabama is poised for a build-out of



an EV supply chain, most notably with Hyundai's announcement of a \$205 million project to open an EV battery

TOP: Workers install a battery in a Genesis Electrified GV70 SUV, which HMMA began producing — along with its fueled version — in 2023. BOTTOM: Workers at the new Mazda Toyota plant are proud of the vehicles they produce, including this Toyota Corolla Cross.





module plant in Montgomery," Davis says. "The facility will employ 400 and supply batteries to the Hyundai plant in Alabama and a Kia plant in Georgia.

"Alabama also is contributing to sustainability solutions for EV's Li-Cycle (lithium battery recycling) by opening a recycling facility that will help Mercedes dispose of end-of-life EV batteries. In addition, Birmingham's Southern Research is studying ways to repurpose EV batteries that are no longer used.

"And Alabama will become home to the nation's first graphite processing facility, providing automakers with a domestic source for material that is critical to EV production. Westwater Resources will invest a total of \$202 million in the first phase of a project to open a facility in Alabama (near Alexander City)."

Davis says efforts also are underway to increase the number of EV charging stations in Alabama. He says AAMA is working with the Alabama Clean Fuels Coalition to create a plan for the implementation of charging stations throughout the state. "We have a crossfunctional team that includes our OEMs, state leadership and Alabama Power that is proceeding aggressively on that," Davis

Finally, an issue affecting a number of industries these days is the need for more skilled workers. According to a 2023 survey of auto manufacturing officials conducted by ABB Robotics in partnership with Automotive Manufacturing Solutions, 56% of the respondents listed specific-skill labor shortages as a major concern.

"We're making progress to provide more skilled workers into our auto industry," Davis says. "It's a team effort that includes our OEMs, the Governor's office, the Department of Commerce, AIDT (Alabama Industrial Training), ATN (Alabama Technology Network), the community college system and K through 12.

"We tremendously value those partnerships as we work together to address the labor concerns and needs of the industry, so we can continue to produce worldclass, quality auto products in Alabama."

This story appeared originally in March 2024 Business Alabama. Some figures have been updated.

Biotech bonanza

ALABAMA HAS A BIOTECH HUB IN BIRMINGHAM, AND RESEARCH CENTERED ON PEOPLE AND PLANTS IN THE NORTHERN AND SOUTHERN **ENDS OF THE STATE**

BY NEDRA BLOOM



labama's role in the world of biotechnology has been growing steadily. From roots at the ■University of Alabama at Birmingham and its partner Southern Research have sprung seven anti-cancer drugs now in use and another dozen in various stages of the approval process.

Now UAB has invested \$76 million in a facility for biomedical research and psychology. The new facility will feature wet and dry research labs and research support space.

"Interdisciplinary collaboration is a longtime strength and hallmark of UAB. State-of-the-art facilities like this advance the aims of our strategic plan, Forging the Future, make UAB more competitive globally and bring better health and quality of life to the people of Alabama and beyond," said UAB President Ray Watts.

And Southern Research is opening a business incubator designed specifically for biotech firms. "We conducted a feasibility study in 2022 that highlighted the gap between the needs of Birmingham's growing biotech scene and the availability of services and wet lab space," said Abi Kulshreshtha, chief business officer. "By offering biotech companies access to our space and our expertise, we can

Southern Research is opening a business incubator designed specifically for biotech

nurture their growth and further develop Birmingham's biotech corridor."

Aiding these and other biotech projects, the state has kicked off a new program to train biotech workers. "We are leaving no stone unturned in developing our workforce to meet and exceed industry demands in Alabama," said Gov. Kay Ivey. "Bioscience has grown to be one of our state's premier industries, and we have numerous firms like Hudson-Alpha and Southern Research making groundbreaking advancements daily."

Down south at the USA Health Mitchell Cancer Institute, drug discovery and patient care share one facility, reassuring patients that their illness is of concern to scientists and reminding scientists of the people who are relying

Up north is HudsonAlpha Institute for Biotechnology, at the forefront of genomic medicine and also leading the way in applying bioscience advances to the critical world of crop production. In fact, HudsonAlpha has opened a new facility in Dothan with a special focus on agriculture issues, looking for ways "to improve plants used for food, feed, fuel and fiber."

BIOTECH BY

- 780 bioscience companies
- ▶ 50 medical device companies
- ▶ Private investment in bioscience tops \$280M since
- ▶ \$7.3 billion annual economic impact
- ▶ \$385 million in NIH funding
- ▶ 18,000 bioscience workers
- ▶ 576 bioscience patents awarded 2016-2019
- ▶ 7 FDA-approved anticancer drugs discovered at Southern Research
- ▶ 12 more drugs in approval pipeline

INFOTECH BY THE NUMBERS

- 147,000 IT employees statewide
- ▶ 25,000 data center jobs
- ▶ 10 cybersecurity startups
- ▶ \$1 billion in annual revenue
- ▶ 2,500 IT professionals at Maxwell AFB Gunter Complex

KEY CONTRIBUTORS

- ► Cummings Research Park in Huntsville is nation's second-largest research park
- ▶ DHS and the Secret Service operate National Computer Forensics Institute in Hoover
- HudsonAlpha Institute for Biotechnology in Huntsville is a national leader in genetic research
- ► Southern Research in Birmingham is a pacesetter in biotech research
- ▶ University of Alabama at Birmingham ranks in top 1% for NIH funding
- Alabama's universities excel in technological research



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To the Moon

THROUGH ITS
MMPACT PROGRAM
BASED IN HUNTSVILLE,
NASA WANTS TO MAKE
SPACE A PLACE TO
WORK AND LIVE

BY ALEC HARVEY

hen people go to the moon to either live or work which NASA's Artemis flight program is revising from pipe dream to real prospect — they'll need infrastructure.

Travelers — and residents — will need landing pads to land on, roads to travel on, buildings to work in, hotels and houses to stay in.

Just how to provide those necessities on the moon is the major question that Marshall Space Flight Center's MMPACT (Moon to Mars Planetary Autonomous Construction Technologies) project is trying to answer.

Among other things, they're looking at how regolith — the layer of dust, pebbles and rocks that covers the moon's surface — can be used for construction via a large 3D printer with a robotic arm.

For many, it's the stuff of sciencefiction movies, but for the folks working on MMPACT, it's a necessity for humanity's growth in other realms, locations where you can't just move cranes and other construction equipment to get the job done. And what MMPACT does can lead to thriving communities on the moon and beyond.

"We do get down deep into technical discussions, and then it's work," says Corky Clinton, principal investigator and senior advisor, Marshall Space Flight Center Science and Technology Office. "But then you take a step back, and you



can't not get excited about wanting to build humanity's first home on another planet."

National exposure

Others are excited by it, too. MMPACT was featured on CBS'"60 Minutes," which focused on NASA's work with Icon, a Texas construction company that uses 3D printing robotics to construct houses and other structures.

Icon and its co-founder and CEO,

Corky Clinton is principal investigator, and Jennifer Edmunson (not pictured) is project manager for the MMPACT program based at NASA's Marshall Space Flight Center in Huntsville. Photo by David Higginbotham.

Jason Ballard, came onto Clinton's radar when the company took part in NASA's 2019 Centennial Challenge to build a 3D-printed habitat for deep space exploration. Though Icon advanced in the competition, it couldn't compete in the finals because of a business commitment.



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Later, Ballard brought his son to Space Camp at Marshall and, while there, briefed Clinton and others on Icon's technology. "We saw immediately that they had made significant advances in the technologies," says Clinton, who leads the MMPACT team along with project manager and geologist Jennifer Edmunson.

In its work with MMPACT, Icon is developing a space-based construction system that takes the moon's regolith (simulated regolith at this point, based on samples brought back to Earth by Apollo astronauts), uses a laser to melt it and form it, and dispenses it in layers with a robotic arm to build structures.

Earlier this year, Icon's mockup of a terrestrial robot arm was tested in Marshall's V-20 testing chamber, which provides a simulated lunar environment with its vacuum and its extreme hot and cold temperatures. NASA and Icon are analyzing the results to determine next steps.

"We will finish the technology maturation phase of this project by the end of January 2025, and then we're looking forward to taking this into a flight demonstration phase that would allow us to demonstrate the technology in a lunar mission," Clinton says.

NASA's partners

Icon is just one of a number of entities NASA is partnering with on the MMPACT project. Among the partners are:

- Kratos SRE, based in Birmingham, which is developing a tool that will test regolith on the surface of the moon.
- Blue Origin, Jeff Bezos' aerospace company with a facility in Huntsville, helping to create lunar landing pad requirements.
- Astroport Space Technologies, a
 Texas company studying how molten regolith can be made into tiles.
- The Colorado School of Mines, which is providing the regolith simulant.

And there are others, including Drake State Community & Technical College, a Huntsville institution that developed an additive construction curriculum.

"Our role has been to create the workforce to support a trained workforce

Earlier this year, Icon tested a mock-up of a robotic arm in the V-20 testing chamber at NASA's Marshall Space Flight Center in Huntsville. *Photo courtesy of NASA*.

pool to support NASA," says Dr. Patricia Sims, the school's president. "A lot of the work on the MMPACT project is large-scale printing, so we were able to procure a large-scale 3D concrete printer here on campus to print test structures. ... The focus of that work is to print concrete structures and test them in different situations that are as close as possible to those that you would find on the moon."

Sims says the program, which started at Drake State in 2020, has touched about 600 students and teachers. "We're able to bring teachers on campus during the summer and show them this work, because it's important that they understand the advances in technology. If you're in the classroom, a lot of times you don't get to see that first-hand."

Artemis continues

MMPACT is separate from NASA's Artemis project, a series of launches



designed to get humans back on the moon and, eventually, to Mars. Artemis I, an uncrewed test flight around the moon, has already occurred. Artemis II, now scheduled for late 2025, will be a crewed flight around the moon. Artemis III will be a crewed lunar landing mission, and other missions will go to the planned Lunar Gateway, a new lunar space station.

"The agency is looking at a deployable habitat ... which is probably where the astronauts will go to stay for short periods of time in the early Artemis missions," Clinton says, adding that what MMPACT is creating will be for the long-term. "We talk about having a sustained human presence and a robust lunar economy."

And Mars? That's in Clinton's sights,

"The technologies that we're looking at today are definitely transferable to Mars," he says. "The Mars environment is much more hospitable, relatively speaking, than the lunar environment."

The new frontier

But first things first.

The initial mark of success for MMPACT will be a proof-of-concept demonstration of construction on the moon, says Edmunson. "This demonstration would encompass fabricating a few test pieces and a representative element of a future landing pad," she says.

That demonstration would be followed by a lunar mission to build a functional landing pad for cargo and human landers and then another lunar mission that demonstrates building a habitat.

"I would expect our industry partners to take it from there, building things like roads, radio telescopes, laboratory and mining facilities and resort hotels on the lunar surface," Edmunson says.

Key to all of this is getting humans on the moon again rather than relying on autonomous rovers and other equipment, she adds.

"It's important that humans complete the sortie missions because they are particularly adept at noticing small

changes in the surrounding geology," Edmunson says. "Humans can also make decisions 'on the fly' to investigate different areas or select different samples."

Edmunson is focused on the future while acknowledging the importance of

"The Apollo program did a great job giving us a foundational understanding of the moon, but there is so much left to explore and so much more to learn," she says.

All of this won't be easy, Edmunson says, but it's certainly possible.

"Humans are creative, resilient creatures in general," she says. "They live in the most remote and extreme environments on Earth and in Low Earth Orbit. They operate differently based on their environmental conditions, and they adapt to changes in those conditions."

"The moon is the new frontier," she continues. "It's humanity's next greatest challenge."

This story appeared originally in October 2024 Business Alabama.

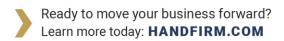


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More passengers, more carriers, more cargo

ALABAMA'S AIRPORTS RISE TO CHALLENGES OF INCREASING USE

BY NEDRA BLOOM

eady for a bad pun? Alabama's airports are flying Except it isn't a bad pun - it's an apt description of work in progress at most of the state's biggest airports and even some of the little ones.

At the top of the state, Huntsville has seen more passengers, more destinations, more private aviation options and more cargo destinations.

"At HSV, we have seen one of our best years financially as a result of the recovery of passenger traffic," says CEO Butch Roberts.

At the other end of the state, Mobile is making significant progress toward a new passenger terminal and a new parking garage at a new location, with a new tower in the offing, more property acquired and in the works, and generally building on its location alongside the port, with easy freeway and rail access, and one of the nation's key aviation players, Airbus, on site.

"We are poised for significant growth," says CEO Chris Curry. "For us, it doesn't stop with just the passenger aspect. We are co-located with the Alabama State Port, so in our future there's a large opportunity for cargo, as well as passengers. That sets us apart from most

Let's look at the airports from Huntsville to Mobile, with another half dozen in between.

Birmingham

Birmingham-Shuttlesworth International Airport is the state's busiest, serving more than 3 million passengers in 2023. And it added both Spirit and Southwest flights

Alongside commercial passenger traffic, the airport has a new logistics

The air cargo facility, 100% funded by the Birmingham Airport Authority, was completed in spring 2024 and global logistics firm Kuehne+Nagel, which began Birmingham operations in 2023, moved

in to the new facility in May of 2024.

The 53,000-square-foot facility is designed to transport goods between aircraft and trucks, and it includes offices, conference rooms and related space.

Huntsville

HSV in Huntsville serves more than 1.47 million passengers annually and several key projects are designed to make that experience more appealing. A cell phone lot (a \$600,000 project) makes passenger pick up easier and upgrades underway in the terminal (a \$13 million project) will make the trek from TSA to the gate simpler and more attractive. Rental car space is being expanded, too. And the airport has added nonstop leisure destinations with the addition of low-cost carrier Breeze Airways.

But HSV is more than passenger services.

ABOVE: Pryor Field, in Tanner, is upgrading a taxiway and access road and has plans to add a new hangar.





Cargo has been a game-changer for HSV since global supply chain logistics company DSV located there. Now multiple carriers offer direct cargo service to Luxembourg, Hong Kong and Brazil.

"Real opportunities exist for us in attracting big developers and big companies that want to take advantage of the assets we have to offer at HSV," Roberts says. "Our intermodal facilities combined with large tracts of land ready for development make us particularly well-suited for warehousing and distribution centers."

Meanwhile, Signature Flight Support has invested \$11.3 million to upgrade its facilities, creating a more appealing first impression when private jets pick HSV. "It's important for people looking to make investments in Huntsville to experience an airport that lives up to the national superlatives our city is known for as one of the best places to live in the U.S., as having the best tech job market, for prosperity, and for income growth," says Roberts. "Signature is the first and last image that corporate executives and decision-makers representing large commercial interests from the federal side to private industry will remember about our community."

And while all the improvements for passengers and cargo are in progress, HSV is all set whenever Sierra Space Dream Chaser is ready to land. The airport received federal approval in 2022 to land that particular model of spacecraft as it returns from missions.

Mobile

Mobile is making progress toward what will feel like a whole new airport. Commercial passenger service will move from the Mobile Regional Airport on the city's far west side to the Mobile Aeroplex at Brookley — joining Airbus and a host of other aviation firms that have clustered there for two or more decades.

Moving to the new terminal and adding a new parking garage total a \$350 million project, says Airport President Curry. The new terminal will open with five gates and the capacity to expand to 12, while the low-cost carrier terminal nearby will offer another two gates.

The terminal is under construction and should be ready — and debt free — by November 2025.

As the new terminal rises and Airbus continues with its third — and possibly fourth — expansion, the next project will be a new tower.

"The tower we have today is not suitable for the development plans of the airport going forward," Curry says. Beyond commercial air travel plans — and the airport would love to attract more carriers — Airbus is jumping from building seven aircraft a month to a target of 20 per month. "They're tripling their production," Curry says, adding, "and once that's completed, we'll be the fourth largest location for aircraft assembly in the world."

Once the airport selects a suitable site
— able to see the entire length of both

LEFT: Birmingham has added new cargo facilities to accommodate new tenant, Kuehne + Nagel.

RIGHT: Mobile built this no-frills terminal at the Downtown Airport, now the Mobile International Airport, and is adding a second terminal to handle the rest of the airport's commercial passenger traffic.

runways without obstruction — the new tower could be done in two years, he says.

The airport recently purchased 100 acres on its eastern edge — toward the port and downtown — and another 272 acres nearby. Both will be invaluable if Airbus wins a contract to build a new Air Force tanker.

Montgomery

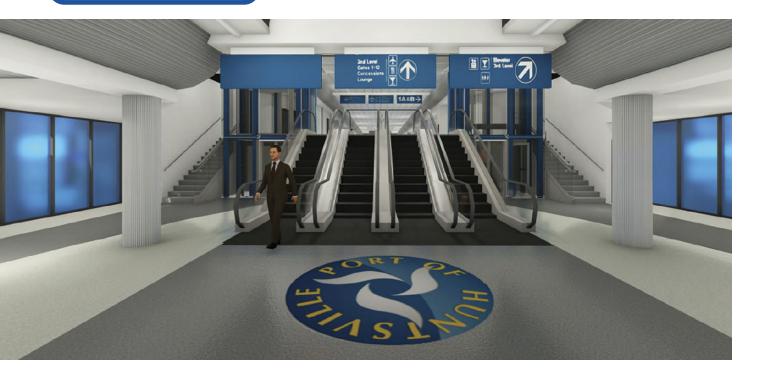
New technology and destinations are hot topics at Montgomery Regional Airport (MGM).

The airport broke ground in late 2023 for electric aircraft chargers, called BETA systems for Battery-powered Electric Terminal Aviation. The BETA systems provide quick battery charging, which translates to quick turnaround times for flights.

Wade A. Davis, executive director of MGM, says, "The future is here with the introduction of BETA electric aircraft chargers at MGM. This groundbreaking initiative signifies a significant leap forward for the future of aviation, our airport and the aviation industry as a whole."

Auburn

Auburn University Regional Airport is



owned and operated by the university but strongly supported by the cities of Auburn and Opelika and by Lee County, says Bill Hutto, the airport's executive director.

While it offers no commercial passenger flights, it is home to two flight schools — RD Aire teaches fixed-wing aircraft flying for the public and South Atlanta Helicopter teaches rotor-wing flying — plus the university's own aviation program with nearly 900 students in flight and aviation management programs.

Aircraft broker JetEffect also is new at the airport. The firm helps connect buyers and sellers for private aircraft.

Also in the works at the airport are new hangars for privately owned planes. A 10-bay hangar for smaller planes, most of which are used for recreational purposes, is done and a six-bay hangar for larger corporate planes is in progress.

Due to the size and types of planes now using the airport more frequently, the airport is extending the safety area at the end of the runway from 300 to 1,000 feet.

The Auburn airport also is in line for a new tower. At present, planes approach on a see-and-avoid basis, communicating with each other as they take off or land, Hutto explains. That system is augmented with a temporary tower on football game

days when traffic is much heavier. But with more takeoffs and landings - an expected 95,000 operations this calendar year — the airport will join the top 200 busiest airports in the country and needs a new tower. The estimated cost is \$8 million.

It's worth it, he says, because airport growth is "critical to continued economic growth of our community."

Pryor Field

Pryor Field in Tanner broke ground in 2023 on a concrete taxiway and access road, steps on the way to a new cargo ramp.

"Pryor Field handles a tremendous amount of on-demand freight for partners in the North Alabama area, as well as several from Tennessee," Airport Director Adam Fox explains. "Our northwest development will not only allow us to facilitate our freight operations, but also provide space for businesses to build facilities to accommodate their needs."

Four companies have sent letters of intent to the airport authority, indicating plans to locate on the northwest side of the site, and the authority has approved plans for construction of a 12,000-square-foot hangar north of the terminal.

"We recently completed an Airport Master Plan with Goodwyn Mills

Huntsville's airport is upgrading its concourse.

Cawood, our aviation planning and engineering partners, and are proud to now begin checking projects off the list," says Fox.

Tuscaloosa

The City of Tuscaloosa has authorized \$7 million to improve and expand runways at Tuscaloosa National Airport in hopes of bringing commercial passenger service back to the airport.

The 862-acre airport has 62 hangars, two fixed-base operators, a flight school and a car rental firm.

The airport offers special services on University of Alabama football game days.

Demopolis

Demopolis Municipal Airport is in the midst of a \$5 million project to renovate and improve facilities, including a new terminal. Although the airport does not offer commercial passenger service, it provides services for flight training, emergency medical flights, agricultural flights and others.

This story originally appeared in December 2023 Business Alabama and has been updated.

HIGHER EDUCATION

Higher Education







igher education in Alabama offers students many pathways to a successful future.

The University of Alabama System is educating some 70,000 students, providing health care for some 2 million patients and is the state's largest employer with more than 40,000 workers across the system.

All three academic institutions in the system — the University of Alabama, the University of Alabama at Birmingham and the University of Alabama in Huntsville — are regarded as key research universities.

Auburn University is the state's original land grant institution, now offering particular expertise in pharmacy, veterinary medicine, engineering and more.

BY THE NUMBERS

- ▶ 14 public universities
- ► 12 independent colleges & universities
- ▶ 24 community & technical colleges

BIGGEST PUBLIC INSTITUTIONS Universities

- ► University of Alabama, with 41,021 students
- ► Auburn University, with 34.160 students
- ► University of Alabama at Birmingham, with 22,369 students

Community Colleges

- ► Jefferson State Community College, with 9,697 students
- ► Calhoun Community College, with 8,767 students
- ► Coastal Alabama Community College, with 7,744 students

AIDT WORKFORCE TRAINING

- ► More than 1 million job seekers trained
- ► 5,494 companies assisted

University of Alabama; University of Alabama at Birmingham; Auburn University.

The state also has major public universities in Florence, Athens, Huntsville, Jacksonville, Normal, Livingston, Troy, Montgomery, Mobile and a specialty university in Montevallo known for its small-college feel.

Complementing the public universities are a collection of 12 private colleges and universities and 24 community and technical colleges.

Off campus, the state's highly regarded AIDT works directly with business and industry helping recruit and train workers with curriculum tailored to the company's specific needs.

Alabama Colleges and Universities









TRAINING OUR STATE FOR THE BETTER!



The ACCS Innovation Center, a division of the Alabama Community College System, brings together the state's community colleges, business and industry, and community partners to deliver

rapid, industry-recognized non-credit training within some of the state's most in-demand career fields. By bringing together community colleges, businesses, and community partners, we create Skills for Success courses that are built by Alabamians for Alabamians. The Innovation Center is committed to building a skilled workforce in Alabama through accessible, industry-recognized training programs that prepare individuals for successful careers.



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PICK THE RIGHT SOLUTIONS FOR YOUR BUSINESS

ATN provides the most extensive workforce training, technical assistance, and business solutions designed to empower and strengthen manufacturers in Alabama. The ATN staff has over 1,000 years of combined manufacturing experience, including the knowledge and capability to provide Alabama companies with services and private resources to sustain jobs, optimize operations, create efficiencies, and stay competitive.







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New & Retained Jobs



218 Clients Assisted

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2023 Total Client Impact

*Based on FY23

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bout 1.4 billion lightning bolts strike the Earth each vear. Around 40 million of those hit the ground in the United States, and, according to Vaisala Weather's annual report, Alabama had a total of nearly 6.5 million lightning strikes in 2022.

"Everybody has got a story related to lightning," says Dr. Phillip Bitzer, a lightning physicist and associate professor in the Department of Atmospheric and Earth Science at The University of Alabama in Huntsville (UAH). "And yet we still don't have answers to some fundamental questions about it."

That's what first sparked the New Orleans native's interest in the subject. Shortly after Hurricane Katrina, as a first-year graduate student, Bitzer attended a talk about how lightning was being used to better forecast the onset of severe weather events like hail, strong winds and tornadoes. He remembers wondering if the same measurements could be used to help predict hurricanes and tropical storms. "The answer then was, 'We don't know yet," Bitzer says, but he knew he wanted to be a part of efforts to learn more.

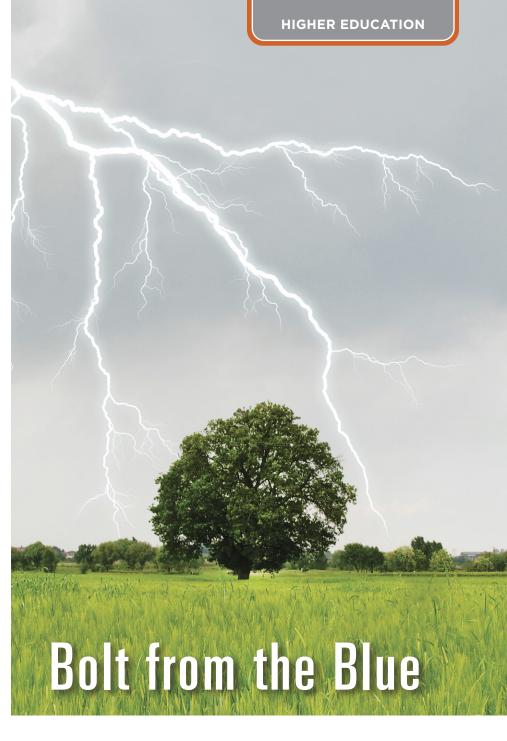
Bitzer earned his Ph.D. in physics at UAH and has served on the faculty since

For nearly 10 years, Bitzer has worked on team projects in Panama, in partnership with ecologists at the University of Louisville and the Carey Institute of Ecosystem Studies as well as researchers from the Smithsonian Tropical Institute, to study the impact of lightning strikes on tropical forests.

"We're trying to understand what happens when lightning strikes a tree," Bitzer explains. "So, what would cause a tree to die, how long it would take and why some trees die and some trees don't." In fact, he adds, not only do some trees survive lightning strikes, some actually appear to thrive.

"There are a lot of implications for what this means in terms of how the climate is responding and how the forest responds to lightning," says Bitzer.

For example, when a tree is struck by lightning and dies, it releases carbon into the atmosphere, which contributes to global warming. The dying tree also



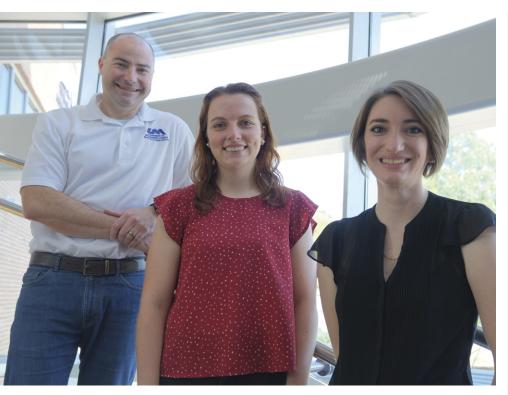
FOR A PHENOMENON THAT STRIKES MORE THAN A BILLION TIMES A YEAR, WE KNOW REMARKABLY LITTLE ABOUT LIGHTNING. A UAH TEAM HOPES TO FILL IN SOME OF THE **KNOWLEDGE GAPS**

BY KATHERINE MacGILVRAY

provides an opportunity for the forest to replenish itself, and as it dies back others take its place.

But the effects of lightning strikes on tropical forests can be tricky to observe.

"When lightning strikes a tree [in the tropics], you don't know it right away," he says. "There's no obvious visible damage, and it can be days, weeks or even months before you start to see the damage."



The team uses a network of electric field charge meters and a network of CCTV cameras to monitor lightning strikes in the forest and use those to locate trees that have been struck and assess the damage.

Bitzer describes himself as an "instrument guy," and the Panama project uses instruments very similar to one he helped create, the Huntsville Alabama Marx Meter Array (HAMMA) that detects lightning from a group of instruments located in and around the Huntsville area. In addition to Panama, related arrays also have been placed in Argentina.

Bitzer and a team of UAH colleagues collaborated with Lockheed Martin to develop the Geostationary Lightning Mapper (GLM) that is currently monitoring lightning from space and a lightning imaging sensor (LIS) developed with NASA's Marshall Space Flight Center that is in use on the International Space Station and previously flew as part of the Tropical Rainfall Measuring Mission.

Lightning data collected from multiple perspectives is something Bitzer's colleague Dr. Sarah Stough, a research associate and part-time lecturer at UAH, is also using in her research.

"Lightning is a really important byproduct of thunderstorms," says Stough, who earned her master's and doctoral

degrees at UAH, where she focused on the relationship between rapid increases in the amount of lightning in thunderstorms and their intensification prior to severe weather production and, later, the development of unusual electrical structures in thunderstorms.

Stough is the principal investigator for a team that won a 2022 NASA Research Opportunities in Space and Earth Science (ROSES) proposal to study lightning in deep convection from airborne, ground-based and satellite instruments.

Stough says that, while a lot can be learned from ground-based lightning observations, adding space-based detection can provide a much bigger and broader picture about the nature of a thunderstorm, its level of severity, whether or not it is intensifying and, ultimately, how it is likely to impact people.

Stough's collaborators include Bitzer and a team of research associates from UAH's Earth System Science Center as well as civil servants from NASA. The three-year project is funded for more than \$400,000 and will fully support a graduate student researcher in the department of atmospheric and earth science.

"We're really excited about getting started," says Stough. "It's a big undertaking to look at data in ways we haven't really peeled it apart before."

Bitzer and Stough also bring their

UAH lightning researchers Phillip Bitzer, Kelley Murphy and Sarah Stough. Photo by Liz Junod/UAH.

research to the classroom where they are teaching the next generation of meteorologists and atmospheric scientists.

The quantity of innovative lightning research being conducted at UAH is the main reason why UAH Research Associate Kelley Murphy decided to take a job opportunity with the university after completing her master's degree out of state.

Murphy's work particularly centers on lightning and its impact on human safety. Currently she is focusing on finding new ways to use lightning data from groundbased and spaceborne instruments as part of the Short-term Prediction Research and Transition (SPoRT) center at NASA's Marshall Space Flight Center. Established in 2002, SPoRT collaborates with researchers, innovators and stakeholders from government, academia and the private sector to develop and improve the application of NASA research and data in the operational weather community. That includes developing lightning safety products to help people monitor for the threat of lightning.

Murphy, who has also been a member of SPoRT's Engagement Training and Assessment Team for a little over a year, helps transition lightning research and products to end users like the National Weather Service. This past summer she worked with operational weather forecasters while they used lightning safety products to monitor the threat of lightning at an outdoor concert in Cullman.

"We collected their feedback, which enabled us to tailor the lightning products for them, such as making small tweaks to the way data were displayed," she explains. "Their feedback can also help us by sparking new ideas for continued lightning research."

Using lightning prediction technology to keep people safe at outdoor events resonates with Murphy, who played soccer growing up and in college. She remembers as a goalkeeper being able to see storms build but that games often wouldn't be canceled until the first flashes of lightning were visible or thunder was heard.

"My interest in weather merged with

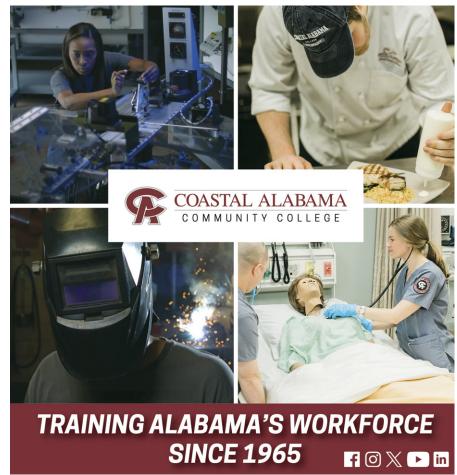
what I did for fun, and I wanted to answer those types of questions: How do we know when it's safe for people to be on a soccer field or even just be outdoors when storms are nearby? I've always been drawn to research that has a direct impact or connection to people, and really nobody can argue that weather doesn't impact them."

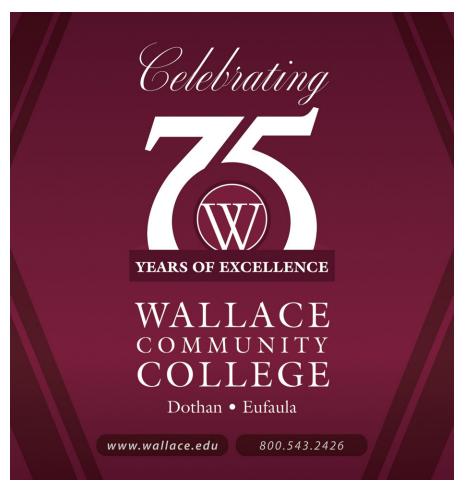


Bitzer, Stough and Murphy are quick to point out that they are just three members of a larger team of lightning researchers at UAH. For example, Bitzer points to UAH scientists serving on NASA's Lightning Advisory Panel to develop and improve the Lightning Launch Commit Criteria and UAH researchers who are helping the Japan Aerospace Exploration Agency (JAXA) develop its own lightning launch criteria.

"We're really just starting to scratch the surface with what we do here [at UAH]," says Bitzer. "Everything from basic instrument development to applying what we learn to keeping people safe, it really is a broad spectrum. When you think of something about lightning, there is probably someone here that has looked at it or is currently looking at it."

This story originally appeared in November 2023 Business Alabama.







elders make good money, and just a glance at job postings shows they have no trouble finding work.

The new multi-million-dollar training facility at a north Alabama community college ensures they'll have the latest welding skills — including operating robots.

The \$8.8 million, 30,000-squarefoot Welding Technology and Innovation Center opened in 2023 at Wallace State Community College in Hanceville, with college officials describing it as the largest training center in the Southeast.

"The new welding facility allows us to impact more lives by providing more opportunities for students to receive training that leads to highdemand, high-wage jobs," says college President Dr. Vicki Karolewics.

The welding area includes 20 grinding booths, a fabrication area with two welders, pipe-welding equipment and three classrooms with built-in cameras, microphones and speakers for online classes.

Students had asked for training in robotics and more room to learn fabrication methods, college officials say.

"We needed a larger training center to allow more students to attend and to ABOVE: Learning the techniques of robotic welding at Wallace State. BELOW: Checking out new equipment in Wallace State's Welding Technology and Innovation Center.

have the ability to offer more specific types of training that we did not have the



room to do before," says Randy Hammond, Wallace State welding department chair and instructor.

"We are now the only college in the state to offer an associate degree in robotic welding technician," Hammond

The program also offers various welding certificates and has three American Welding Society-certified inspectors on staff at its campuses in Hanceville and

The up-to-date technology will better prepare students to enter the Alabama workforce. They are learning the four main arc welding processes: shielded metal, gas metal, flux cored and gas tungsten.

Instructors also explain how to cut and bevel metal with various processes, such as oxy-fuel with acetylene and alternative fuels, plasma arc cutting, and carbon arc cutting and gouging. Students learn how to read and interpret fabrication prints and weld symbols. By learning blueprint reading, they can put the knowledge into action by fabricating parts.

Classes also teach principles of weld inspection and testing in both destructive and non-destructive testing methods, as well as theories of working with AC and DC currents.

In the robotic welding classes, Hammond says, students learn to work safely around robotic equipment and how to program and edit commands to create a program that will weld out assembly parts.

The center has 85 manual welding stations and four robotic welding cells, with plans for more. Students learn how to work with sensors, programmable logic controls and motor controls within a robotic welding cell.

For the fall semester of 2023, 99 students enrolled in the program. All welding students must pass two American Welding Society welding certification tests before graduating.

Then they walk right into a job.

"We have a 100% job placement with all graduates of the welding program," Hammond says.

"We have numerous companies that

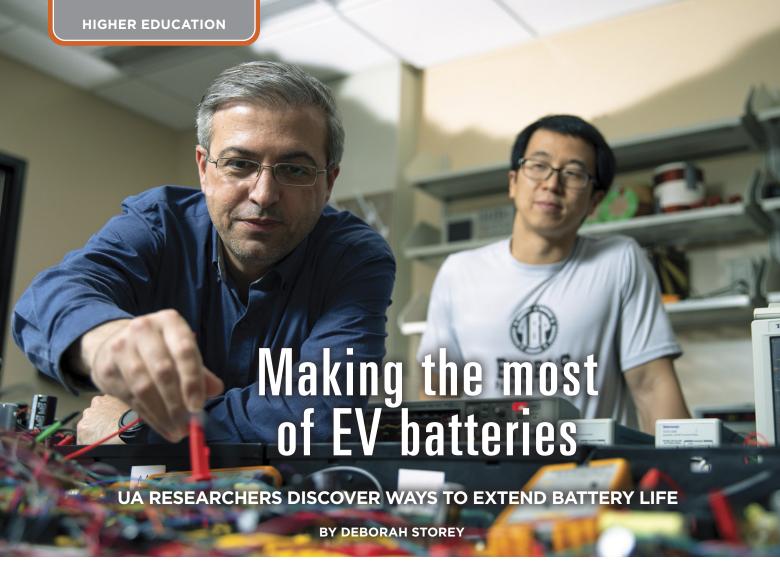
come monthly and speak to our students about what they build or produce and the benefits that they have to offer employees," he says. "Many of our students are working in internship programs with companies while they are here in classes."

The college received several grants for the center, including \$2 million from the U.S. Economic Development Administration and \$200,000 from the Appalachian Regional Commission. The program is expected to provide an estimated 110 workers yearly in the Southern Appalachian region to supply the roughly 40 new and current manufacturing businesses there. That approximate payroll for the next eight years is projected at \$25 million.

Wallace State offers more than 200 options in academic, health and technical programs. Its main campus is in Cullman County on 300 acres in Hanceville, with a satellite location in downtown Oneonta.

This story originally appeared in November 2023 Business Alabama.





lectric vehicles are gaining traction as many consumers choose a more environmentally friendly way to get around.

But what happens if all those used-up EV batteries end up in landfills?

Researchers at the University of Alabama are finding ways to extend the life of old EV batteries for use in charging stations and even homes and solar panels.

One of the main goals is to provide a safer and "more techno-economically viable" system to use the old batteries, researchers say. Specifically, they want to find ways to extend their life, reduce the carbon footprint and ultimately lessen the demand on the nation's power grids.

Supported financially by the U.S. Department of Energy and in partnership with Alabama Power and Mercedes-Benz U.S. International Inc., the research is part of the Alabama Mobility and Power Center at Tuscaloosa, which focuses on the EV market.

After EV batteries are retired, they

are likely to become hazardous waste if not reused or recycled, explains Dr. Jaber Abu Qahouq, a professor of electrical and computer engineering at UA. He is also director of the Energy and Power Electronics System and Devices Laboratory and chief scientific officer of the Alabama Mobility and Power Center.

Lithium-ion battery packs are replaced when they can no longer store a charge of more than 70% to 80% of their original capacity. The battery modules, or cells, degrade unevenly, causing operational risks.

The UA project connects those modules to power converters with control algorithms that monitor the used batteries' health to avoid overstressing. The batteries could charge back up during times of low power demand and recharge an EV during peak demand.

"Fortunately, the retired EV batteries can continue to be used in a variety of less demanding second-use applications in order to utilize them to their full potential," Qahouq explains.

As alternative energy storage they can

Dr. Jaber Abu Qahouq and Zhiyong Xia, who recently completed his Ph.D., work on a UA project to extend the useful life of EV batteries.

be used as backup power for buildings and homes, for example.

The EV battery modules get a second life, Qahouq says, "where they continue to support electrified transportation infrastructure and electric vehicles but in a less demanding stationary application."

The closest simple comparison, he says, is with the use of batteries in a camera flashlight versus a TV remote controller.

"The camera flashlight demands instant high power from the batteries and therefore one needs new highly healthy, high-quality batteries in order to operate properly," Qahouq explains. "On the other hand, a TV remote controller is likely to function well with older, weaker batteries and/or batteries with lower quality or lower health."

Batteries no longer used for vehicles on a daily basis still have a certain percentage



Battery life research is a core component of our domestic battery industry strategy and key to unlocking the potential of our advanced battery technologies and accelerating EV adoption among consumers."

- Michael S. Malley Jr., associate research professional for the Alabama Transportation Institute and Alabama Mobility and Power Center

of their initial capacity, Qahouq says. They can continue to support charging stations but must be monitored.

"These batteries can also be utilized in homes and buildings as emergency backup power source when grid power is not available or to store photovoltaic solar panels energy to be used during times when electricity pricing is high or during peak power demand hours," he says.

Old EV batteries include toxic material and can catch fire if not handled appropriately, notes Qahouq. Using them in new ways and later recycling the materials "can help in reducing impact on the environment by reducing landfill waste and the demand for new raw materials."

The recycled batteries "store clean and renewable energy for later use."

In addition to the benefit to the environment, reusing batteries can save money.

"It can potentially be more cost effec-

tive compared with manufacturing new batteries," says Qahouq.

Maximizing the economic benefit "is something we are and will be considering as we progress in this project," he says.

And when the batteries can no longer provide useful power, says Qahouq, "Later their material can potentially be recycled." That can be a benefit, too, because the jump in EV sales also triggers a jump in the need for the minerals lithium and graphite — projected to grow as much as 4,000% in coming decades.



Part of a broader program

Michael S. Malley Jr. is an associate research professional for the Alabama Transportation Institute and Alabama Mobility and Power Center, a partner in this effort. The center at the university supports this research in power technology and delivery and provides a chance for university students to apply their skills after graduation.

The AMP Center focuses on three areas, Malley explains: use-inspired research, economic development and workforce development. The center directs and supports R&D projects related to advanced battery components and energy storage systems.

It also commissions reports to inform the public and "steer state and local directives around transportation electrification," he says. In addition, it helps actively recruit businesses across the EV ecosystem and develops learning programs to

support EV-related careers.

The AMP Center is headquartered in the Smart Communities and Innovation Building on the UA campus. It includes three facilities, Malley explains.

First, the Laboratory for Advanced Battery Component Research develops battery and energy storage technologies. It addresses raw materials production, materials processing and cell manufacturing, module and pack manufacturing and end-of-life recycling and reuse, Malley explains.

The second component is the Laboratory for Power Research. "This cutting-edge facility is a test bed for the research and development of customer-focused energy storage products and services to enable a new energy economy," Malley says. "It includes a working micro-grid, solar array, charging infrastructure and more."

The National Training Center, the third part of the AMP Center, is a collaborative space where industry, academia and government develop high-tech training and joint ventures.

"Students, faculty and staff do a lot of the work," Malley says, but other colleges, workforce development agencies and EV companies support the work being done there.

"Battery life research is a core component of our domestic battery industry strategy and key to unlocking the potential of our advanced battery technologies and accelerating EV adoption among consumers," Malley says.

Extending the life and usefulness of EV batteries brings several major benefits, he explains. Malley agrees with Qahouq in saying that one of the biggest is a reduction in the environmental impact.

"This is realized in several ways, such as a diminishing need for extracted resources (like lithium, cobalt and nickel), reductions in waste due to the less frequent disposal of batteries," he says, as well as "lower manufacturing emissions by way of declining demand for new batteries."

The other good thing to come from the ongoing research is "better overall energy efficiency as a byproduct of improved battery longevity and innovation," he adds.

The battery-life research project team at Alabama also includes specialists from Southern Company Services.

This story originally appeared in April 2024 Business Alabama.



bale of North Alabama cotton sails on a ship for a month on its way to Vietnam. Workers there fashion it into a men's shirt, pack it up and ship it back to a buyer for a retail store in Mobile.

That's not a farfetched scenario, say Alabama bankers who earned a prestigious award for helping make the remarkably complex world of importing and exporting easier for businesses.

Birmingham-based Regions Bank is one of 10 U.S. entities recognized with the nation's highest export service honor—the 2024 President's "E" Award for Export Service for providing financial solutions for corporate banking clients.

"Our focus at Regions Bank is helping business clients maximize opportunities for growth, and our work with exporters helps American businesses expand their global reach while building on their success," says Ronnie Smith, head of Corporate Banking for Regions.

A 1961 executive order created the "E" Award as the highest recognition a person or entity can receive for making a significant contribution to the expansion of American exports in the global marketplace.

"Regions Bank has a strong legacy of supporting vibrant trade," says Carson Strickland, head of the Regions Global Trade Finance Relationship team. Strickland is based in Mobile and has been with Regions for more than 25 years.

Regions works with all types of exporters, he says, mostly in the Regions footprint of the Southeast, Midwest and Texas but elsewhere in the country as well.

"The large majority are manufacturing something or distributing something internationally, or selling something another company makes," he says.

"There are at least a couple of hundred companies that we support of all sizes," Strickland says, "from your mom-and-pop businesses up to your Fortune 10 companies at this point."

Exported materials travel anywhere they can be sold.

"If you think about your kind of base product exports, you think about your commodities and raw materials and things like that, they go all over the world," Strickland says.

"We just produce as a country a lot



more than what we use," Strickland says.

American businesses, including those in Alabama, have plenty to sell internationally.

In February, Gov. Kay Ivey announced that Alabama's exported goods and services were worth more than \$27.4 billion in 2023, setting a new record.

Alabama exports went to 190 countries in 2023, landing everywhere from the world's biggest economies to tiny locations like the Solomon Islands, Palau and Gibraltar, data shows.

Bryan Ford, head of treasury management in the Regions Memphis office, has worked at Regions for more than 17 years.

"In the agriculture space, we have a fairly deep relationship with the cotton industry," Ford says, and quite a bit of the region's cotton is exported globally.

As a country, "we produce 20-something million bales of cotton a year," Strickland says. "We use about 3 domestically and the rest of it goes somewhere else."

A lot of basic manufacturing has moved into southern Asia, in countries like Pakistan, Bangladesh and Vietnam. Carson Strickland, head of the Regions Global Trade Finance Relationship team, in his office in downtown Mobile.

"Those types of countries buy a lot of commodities, agricultural and otherwise, from the U.S. to produce products that get sold to consumers all over the world," Strickland says. Ford says, "It really does span the world, just depending on the client and what it is they're producing and exporting.

"We often are helping our clients because many are looking to expand their business beyond the U.S. and domestic opportunities," Ford adds. "They're looking internationally. Sometimes one of the first questions that Carson's team will get is, 'How do I start?,' 'How do I do this?' That's where we're able to help clients understand what resources and tools are available through Regions Bank to help them with that strategic goal they have of exporting their goods."

Regions' global trade finance options include treasury management to improve cash flow and mitigate risk, letters of credit to support contracts with foreign buyers, working capital solutions, and fi-

nancing to help international companies receive goods and services from U.S.based operations.

Strickland says they also point clients to sources of legal, transportation and logistics information such as government agencies. "The main things we're helping companies to do to grow their international sales are to help manage risk and provide financing or working capital," Strickland says.

Risks can include uncertainty about payment, currency exchange issues, an

extended sales cycle and whether the customer actually receives the items.

"When you think about selling internationally, goods are on the ocean for a longer period of time," says Ford.

"The export component is just different" in that way, Strickland says.

"You've got a container of goods that's on the water potentially 45 to 60 days," Strickland explains. "Compare that to a company sitting in Huntsville that's got a customer in Atlanta. That's a same-day delivery in most cases. All of that creates specialized financing solutions for that company."

The biggest surprise for anyone not well versed in America's import/export market, Strickland says, might be that "we import more than we export."

Even with imported goods, "there's a very high likelihood that something in that product actually came from the U.S. originally" — like the Alabama cotton shirt example.

When American businesses sell something internationally, "to put it as simply as I can think of," Strickland says, "you're getting somebody else's money, so you're injecting that back into the U.S. economy rather than just relying on what's going on domestically to drive economic growth."

Another export benefit is more humanitarian in nature.

"Countries that trade with each other tend not to fight with each other as much," he says. "You're relying on the flow of goods, the flow of capital between countries. It might not appear that way, but they tend to get along better than if they were not doing that."

Regions Bank has been an EXIM Delegated Authority Lender since 1994 and an EXIM (the nation's export credit agency) Letter of Credit policyholder since 1991. In February 2020, EXIM's Board of Directors unanimously approved an increase in the delegated authority for Regions, allowing the bank to increase support for exports of U.S. goods and services from small and mediumsized companies.

The bank's first export recognition came in 1968 when the Merchants National Bank of Mobile, a predecessor bank to Regions, received the President's "E" Award for Export Service.

Regions has been recognized by other government agencies for its work to support exports. The U.S. Small Business Administration recognized Regions in 2019 and 2023 as its Export Lender of the Year. EXIM named Regions Bank Lender of the Year in 2020 and awarded Deal of the Year Recognition in 2022.

Regions Financial Corp., with \$155 billion in assets, is a member of the S&P 500 Index.

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labama companies exported goods and services worth more than \$27.4 billion in 2023, a new annual record. Exports in 2023 rose 6% from the previous year, according to the Alabama Department of Commerce.

Exports included shipments of vehicles, aerospace parts, minerals and metals, according to Commerce data.

"Exporting acts as a fundamental economic pillar that supports growth in Alabama, sparking both new investment and job creation here at home," Gov. Kay Ivey said. "The recordbreaking success of our exporters extends the reach of the 'Made in Alabama' brand while reflecting the high level of demand for our homegrown products."

Out of 190 countries where Alabama exports went in

2023, the top five destinations were Germany, Canada, China, Mexico and South Korea.

"This second consecutive record year for exports really highlights the fact that companies across Alabama continue to provide top-quality goods and services that are sought by customers worldwide," said Ellen McNair, secretary of the Alabama Department of Commerce. "Looking forward, the potential for greater export growth is there, and we are already exploring new and expanding markets for Alabama companies."

Transportation equipment, which includes motor vehicles, ships and aerospace products, remained the state's No. 1 export category at \$14.8 billion. Other categories with more than \$1 billion in exports in 2023 were minerals and ores, chemicals and primary metals, according to Commerce data.





TOP: The Mobile River lined by port and Austal facilities. MIDDLE: APM Terminals moves containerized cargo. BOTTOM: ACIPCO pipe ready for shipment.

Where in the World?

Alabama goods shipped abroad \$27.4 billion

Top destination

Germany — \$5 billion

4 More Billion-Dollar Partners

- Canada
- ▶ China
- Mexico
- Korea

Smallest Trade Partner

► Solomon Islands — \$2,596

Top Exports

- ▶ **Motor vehicles** \$14.8 billion
- ▶ Minerals and ores \$2.2 billion
- **Chemicals** \$2.2 billion
- ▶ **Primary metals** \$1.8 billion

PORT OF HUNTSVILLE

he Port of Huntsville is Alabama's inland gateway for international commerce as the busiest air cargo and intermodal terminal in the state. Strategically located adjacent to Interstate 565, the Port encompasses 7,400 acres and is home to Huntsville International Airport (HSV), the International Intermodal Center, Jetplex Industrial Park, and Spaceport. The convergence of commercial passenger service, cargo operations and business enterprises sets the Port of Huntsville apart as unique among airports and cargo ports in the U.S.

The Port of Huntsville exerts a total regional economic impact of more than \$1.8 billion and contributes 38% of the state's aviation jobs and 38.5% of payroll according to a study commissioned by the Aviation Council of Alabama. Sources of revenue include commercial passenger air service, rail cargo, air cargo, land purchase

and lease and airport-owned and leased facilities.

Huntsville maintains its ranking as 21st largest international air cargo airport in the continental United States and is the North American hub for global freight forwarder DSV. HSV is served by domestic and international cargo carriers Atlas Air, Cargolux Airlines, Federal Express, LATAM, UPS and Kerry Logistics Network. Weekly international cargo service links Huntsville directly to Luxembourg, , Hong Kong and Sao Paulo, Brazil.

Freight forwarder DSV operates nonstop 747 freighter international air cargo service to Europe, Asia, and South America and offers fully integrated and customizable supply chain solutions in Huntsville. DSV serves high-tech customers in health care and chemical industries with temperature-controlled storage and transport capabilities. Advanced warehouse services, customizable

The Port of Huntsville combines passenger, air cargo, rail and interstate access into a major intermodal hub for the Southeast.

IT enhancements and direct access to its road feeder service in Huntsville allow DSV to also provide last-minute solutions for needs of all customers.

Handling diverse cargo including everything from automotive parts to beverage exports, the International Intermodal Center (IIC) at the Port of Huntsville provides a single-hub location that delivers world-class, multimodal (rail, air and highway) services and facilities. The IIC specializes in receiving, transferring, storing and distributing international and domestic cargo via rail and highway. U.S. Customs and Border Protection port inspectors, USDA inspectors, freight forwarders and customs brokers are located onsite. Intermodal rail service is provided by Norfolk Southern, connecting Huntsville to seaports at the Port of

Savannah and Port of Charleston on the East coast and the Ports of Long Beach and Los Angeles on the West coast.

The Port of Huntsville owns five air cargo buildings with 10 bays totaling more than 435,000 square feet of warehouse and office space that is adjacent to 2.1 million square feet of paved ramp. Within those facilities are 35,000 square feet of dedicated cold storage space enhancing its supply chain logistics solutions facilities. Capital investment in infrastructure to support airport and tenant operations at Huntsville International Airport totals \$2.1 billion.

Huntsville International Airport (HSV) at the Port of Huntsville is keeping pace with the rapid growth of Alabama's largest city fueled by a record year for passenger traffic and multi-milliondollar investment in infrastructure.

HSV celebrated 57 years of operation in 2024 and was named Best Small Airport in the U.S. by Newsweek in an online reader poll. Since its inception in 1967, HSV has grown its footprint to 7,400 acres, making it among the largest commercial airports in the southeastern

United States. The HSV Airport Master Plan shows a desired ultimate development that includes five parallel runways flanked by additional cargo bays, warehousing, and distribution facilities.

Passenger service is provided by four commercial airlines: American Airlines, Delta Air Lines, United Airlines and Breeze Airways. HSV served 1.47 million customers in 2023 with more than 70 commercial passenger flights on peak days to 14 nonstop destinations. The airport features two parallel runways with lengths of 10,000 feet and 12,600 feet, the second-longest in the southeastern U.S. Runways are separated by 5,000 feet allowing for simultaneous operation in instrument conditions.

Huntsville is the hub of Alabama aerospace enterprise; the Saturn V rocket that put man on the moon was designed there, and now the largest aerospace and defense companies in the world maintain offices in Huntsville. But Huntsville also sets the pace for using aircraft to get products and people from one place to the other in record time. Now these two will share a common horizon as

Huntsville International Airport is the first commercial airport in the United States to receive an FAA license to land a commercial space vehicle. Working with Sierra Nevada Space, HSV anticipates that the company's Dream Chaser spacecraft could be the first space vehicle to land at a commercial airport, and that could happen right here in Alabama.

The Huntsville UAS Vertical Research Center (HUVR) is the newest addition to Port of Huntsville's high-tech portfolio. The HUVR campus includes an office building housing UAS companies for drone first responder training as well as launch facilities for UAS and CUAS research, training and development.

Besides the four main operating entities, Port of Huntsville amenities include fixed base operator Signature Aviation which is just completing a \$12 million terminal renovation, Sunset Landing Golf Course and Four Points by Sheraton hotel.

For more information, visit the Port of Huntsville website at portofhuntsville.org and the Huntsville International Airport website at flyhuntsville.com



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ALABAMA STATE PORT AUTHORITY



orbes Magazine named The Alabama Port Authority the second fastest-growing port of entry in the U.S. in 2024. In addition to expansion projects actively underway at the container terminal and the harbor deepening and widening project, the port has more than \$2 billion in planned investments over the next ten years. These investments include inland intermodal container facilities, constructing on-dock rail access at the container terminal, enhancing general cargo piers, and modernizing McDuffie Coal Terminal.

A recent economic impact study showed that the Port of Mobile, harborwide, delivered \$98.3 billion in value to the State of Alabama over the calendar year 2022. In addition, economic activity at the port creates about one in seven jobs statewide, with a total of 351,359 jobs across the state. The economic activity from the port and related businesses also

provides \$2 billion in tax revenue to the state and local governments each year.

The Alabama Port Authority serves all 67 counties in Alabama and oversees the deep-water public port facilities at the Port of Mobile. The port is directly connected to five Class I railroads and four short-line railroads, one of which is Port Authority's Terminal Railway (TASD). TASD is one of the nation's largest port authority-owned railroads and provides switching services for the port authority's terminals. TASD handled more than 191,000 revenue-producing rail cars in 2023 and maintains over 75 miles of track and eight locomotives. In addition to rail, the port has access to nearly 15,000 miles of inland waterways, an international airport, and two interstate systems, I-65 running north/south and I-10 running east/west.

The Port of Mobile offers 31 general cargo berths, with approximately 2.4 million square feet of open yards adjacent Alabama Port Authority facilities line the banks of the Mobile River where it flows into Mobile Bay.

to piers and railroad tracks and more than 2.6 million square feet under roof. The general cargo facilities also feature heavy-lift terminals, along with a heavylift crane capable of lifting cargo up to 400 tons from ship to barge, rail, truck, or specialized carrier. Other facilities include a freezer terminal, a cement terminal, a grain terminal, and three RO/RO berths, all of which can accommodate vessels up to 40-foot draft.

In 2020, the U.S. Army Corps of Engineers and the Alabama Port Authority began multi-phase construction on the harbor modernization and anticipate an on-time completion for the project in 2025. The harbor modernization project will deepen the lower harbor, which serves McDuffie Coal Terminal, Pinto Steel Terminal, and the container terminal, to -50 feet. This will allow larger



Pinto Steel Terminal.

vessels to make Mobile their first port of call, increasing efficiency and further positioning the port for growth. In addition to added depth, the project includes a channel widener for vessel transit efficiencies in and out of the port.

Once the channel deepening and widening project is completed, the Port of Mobile will be the deepest port in the Gulf of Mexico. The intermodal container transfer facility (ICTF), which will be an on-dock facility when Phase IV of the container terminal expansion is completed, provides access to all nine railroads that touch the port. Containerized cargo moving over Mobile can be discharged from a vessel and delivered to distribution centers around the Chicago area in just three days.

Container Terminal

The Port Authority's container terminal, operated by APM Terminals, will expand its capabilities to one million TEUs upon completing the Phase IV expansion. In 2023, the container terminal handled a record 365 vessels, an increase of 53 vessels from 2022. The same year, the port posted record container shipping numbers for the calendar year, with 563,537 twenty-foot equivalent container units (TEUs) handled, making the Port of Mobile one of the only container

terminals in the U.S. to see an increase in total container volumes year over year. APM Terminals also offers extensive capacity for cold cargo, with a state-of-theart, temperature-controlled, international distribution center operated just outside of the terminal gates.

Inland Container Depots

At the beginning of 2024, the Port announced the location of its third intermodal container transfer facility (ICTF) in Alabama. Strategically positioned in Decatur, the new facility is in partnership with CSX Transportation (CSX) and will complete rail connectivity from the ICTF at the Port of Mobile to customers in the central and northern parts of the state. The Port will redevelop a portion of an existing CSX facility, expediting its ability to serve customers in North Alabama. The North Alabama ICTF marks the next step in the Port Authority's inland rail expansion and follows the ongoing success of its first inland rail partnership with CSX in Montgomery. More than \$3 billion in private investments have been announced in the area since the Montgomery ICTF project began in 2022.

Waterways

Along Alabama's inland waterways, the Alabama Port Authority owns eight inland dock facilities that can be served by either barge or rail. The facilities are located throughout the state's river systems — in Bridgeport on the Tennessee River, Demopolis and Cordova on the Warrior River, Selma and Montgomery on the Coosa Alabama River, Columbia and Eufaula on the Chattahoochee River and Axis on the Mobile River. The State of Alabama has more inland waterways than any state in the nation, with lock and dam structures along the Tennessee-Tombigbee Waterway, Black Warrior, Coosa-Alabama and Tennessee rivers that provide access not only to Alabama's heart-

land but also to the Tennessee and Ohio valleys and the Great Lakes. The Port of Mobile is also accessible to the Gulf Intracoastal Waterway, providing coastal connections from Texas to Florida. These waterways are critical to the movement of bulk commodities such as coal, steel, liquids and aggregates, in and out of the Port of Mobile.

Coal and Steel

The Alabama Port Authority's McDuffie Coal Terminal (MCT) is one of the largest coal-handling facilities in the nation and a critical piece of the supply chain for steel production worldwide. MCT provides diverse handling capabilities ship, barge, and rail — and with Alabama's metallurgical coal exports surging to support global steel production, MCT and the Port are rising to meet the demand with a \$200 million investment underway to improve terminal operations and efficiencies.

After being exported from the port as a bulk commodity, metallurgical coal can return to Mobile in the form of slab steel, often via Pinto Steel Terminal, which has a 5 million-ton annual throughput capacity. The terminal offers a 45-foot draft, a 1,050-foot-long ship berth, an automated barge-handling system, and a slab storage yard. This terminal is equipped with three post-Panamax gantry cranes, the first

in North America to use magnet technology in a ship-to-shore cargo handling operation. The Port also moves stainless and carbon steel coils at Alabama Steel Terminals. This is a multi-modal steel coil handling facility with four 50-ton bridge cranes, a 173,280-square-foot warehouse, and an adjacent 168,000-square-foot open yard, all supported by integrated technology that provides shippers real time cargo data and tracking.

Roll-on, Roll-off

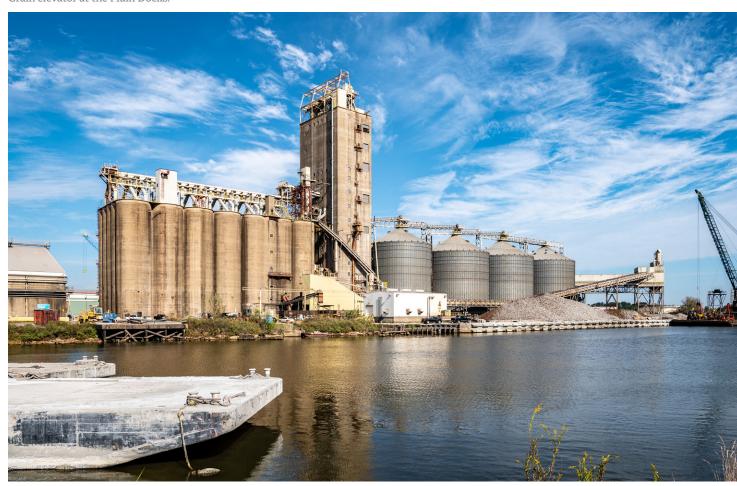
Steel can also be found at the port's new AutoMOBILE International Terminal in the form of automobiles. This is a \$61 million finished automobile and automotive logistics facility, providing world-class RO/ RO processing and handling. The port also handles RO/RO operations for Airbus at a dedicated terminal, located approximately four miles from the Mobile Aeroplex at Brookley, home to Airbus' assembly lines for its A320 and A220 aircraft.

Unique to Mobile is the TASD-served rail ferry terminal that provides rail shippers twice weekly sailings into the Veracruz region of Mexico via the GC Railway. This is a joint venture of Genesee & Wyoming Inc. and SEACOR Holdings Inc. In 2022, CG Railway placed into service two new vessels, the Cherokee and the Mayan, which feature a twin-deck design for quicker loading. The ships can haul 135 rail cars per voyage without loading and unloading cargo, shaving nearly two weeks off the typical rail services into Mexico. The service provides a three-day rail service between the Ports of Mobile and Coatzacoalcos (Veracruz), Mexico.

Grain elevator at the Main Docks.

PORT FACTS ALABAMA PORT AUTHORITY TERMINALS ONLY

- **Acreage:** 4,000
- Number of Berths: 41
- **Channel Depth:**
- 45 feet in the lower harbor (50 feet by 2025)
- 40 feet in the upper harbor
- Warehousing and Open Yards:
 - 4.8 million square feet
 - **Number of Vessel Calls Port-Wide: 1,590**
- Overall Tonnage: 43.3 million Containers: 563,191 TEUs
- Imports: heavy lift and oversized cargo, containerized cargoes, thermal coal, aluminum, iron, steel, copper, pig iron, wood pulp, plywood, fence posts, veneers, automotive components, frozen fish, furniture components, wind energy components, aviation components, retail goods, cement, aggregates and chemicals.
- **Exports:** metallurgical coal, heavy lift and oversized steel, automotive components, lumber, plywood, wood pulp, OSB, laminate, flooring, roll and cut paper, frozen poultry, grain and chemicals.



Alabama Economic **Development Incentives**

"Alabama has one of the most competitive business climates in the nation," says the Alabama Department of Commerce. And the fact that tax incentives are statutory — part of the state's constitution and codes - "gives industry a stable framework for long-term investment."

Citing Alabama's tax burden as among the lowest in the nation, the Economic Development Partnership of Alabama says, "Alabama is one of a small number of states that allow a full deduction of federal taxes paid from state income tax liability."

That provision drops an actual 6.5% corporate tax rate to an effective rate of 4.5%, lower even than any of the state's Southern neighbors.

Here's a quick look at major tax incentives and credits:

Jobs Act Incentives

- ▶ Jobs Credit. Annual cash refund up to 3% of the previous year's gross payroll for up to 10 years, with enhanced benefits for companies employing veterans, locating in a targeted or jumpstart county, qualifying as a technology company or underrepresented company, or engaging in pharmaceutical, biomedical, or medical supplies or R&D activities.
- ▶ **Investment Credit.** Credit of up to 1.5% of the qualified capital investment costs for up to 10 years. Credit can be taken against the Alabama income tax, financial institution excise tax, insurance premium tax, utility tax and/or utility license tax liability.

Credit is available for up to 15 years for companies locating in a targeted or jumpstart county or qualifying as an underrepresented company.

Alabama Reinvestment and Abatements Act

- ▶ New Facility and Expansion.
- 1. Abatement of non-educational portion of sales and use taxes on construction materials, and
- 2. Abatement of non-educational portion of property tax for up to 20 years.
- **Existing Facility:** Refurbishments, Upgrades or Placed Back in Service.
- 1. Abatement of non-educational sales and use taxes on construction materials and equipment
- 2. Abatement of non-educational property taxes for up to 20 years of the incremental property tax increases
- 3. Exemption from taxes for increased utility services for up to 10 years, and
- 4. AIDT worker training.
- ▶ **Property Tax Abatement.** New and expanding businesses can abate all of the state and local non-educational portion of the property taxes on all real and personal property incorporated into a qualifying project, for up to 20 years. Data processing center projects can receive an extended abatement up to 30 years, contingent on total capital investment in a project.
- ▶ Sales and Use Tax Abatements.

Companies can abate all state and the local non-educational portion of the sales and use taxes on the acquisition, construction and equipping of a qualifying project. Data processing center projects can receive an extended abatement associated with constructing and equipping a project, including refresh, for up to 30 years, contingent on total capital investment in a project.

► Full Employment Act Credit. Employers with fewer than 50 employees are eligible for a \$1,000 nonrefundable income tax or financial institution excise tax credit for each qualifying job created.

- ▶ **Heroes for Hire Credit.** Employers may also be eligible for an additional \$1,000 nonrefundable income tax or financial institution excise tax credit if the employee is a qualifying veteran.
- ▶ Net Operating Loss Carryforward. Companies may carry forward any operating losses for up to 15 years.
- ▶ Alabama Enterprise Zone Credit. Credits and exemptions based on numbers of employees for businesses locating in depressed areas of the state.
- ▶ Income Tax Education Credit. Allows an employer to take a tax credit for 20% of the cost of an employersponsored program to improve basic skills though high school level.

Here's a look at financing incentives:

- ▶ Industrial Development Grants. Local governments and authorities can receive state grants to help businesses with the cost of site preparation. These grants are available to industrial, warehousing and research firms or headquarters facilities for other types of firms.
- ▶ Industrial Revenue Bonds. Taxexempt bonds up to \$10 million can be issued covering all or part of the cost of land and building acquisition, construction, furnishings and some soft costs.
- ► Alabama Infrastructure Grant Program. Helps finance water, sewer and road facilities.
- ► Alabama Industrial Access Road and Bridge Program. Helps finance the roads and bridges needed to connect public roads to industrial projects.
- ► Certified Capital Company Program. Provides financing for projects considered to be too risky for conventional financing options.

More Information: Alabama Department of Revenue, Alabama Department of Commerce and other state agencies.



ROLLIN' ON THE RIVER

ALABAMA WATERWAYS DRIVE COMMERCE

BY NANCY MANN JACKSON

PHOTO BY DENNIS KEIM

arly on the morning of Jan. 16, 2024, the lock operator at the Demopolis Lock and Dam on the Tombigbee River heard a loud boom. Suddenly, water was rushing uncontrolled under the gate. The concrete on the almost 70-year-old gate had given way.

A lock helps level out water at a dam to allow traffic to pass through, such as moving from an upper pool elevation to a lower pool elevation. Suddenly, without an operable lock, the Demopolis area was closed to river traffic.

Barge traffic, which typically moves about 21 million tons of coal, steel and other cargo annually along the Warrior-Tombigbee Waterway, came to a halt. Since January, a trip that typically takes a week to move cargo from one end of the state to the other and back has taken a month, because waterway traffic that would usually head south has to instead ship north up to the Ohio River in Paducah, Kentucky, over to the Mississippi River and then back down to the Gulf Intracoastal Waterway to reach Mobile,

says Cline Jones, chairman of the Coalition of Alabama Waterways.

When the break occurred, the U.S. Army Corps of Engineers worked quickly to stop the flow of water and has spent the past several months repairing the lock, pouring more than 2,000 cubic yards of concrete. The Demopolis lock reopened in May, four months after the break.

The failure of the Demopolis lock has cost companies millions of dollars, highlighting the importance of Alabama's rivers to the economy of the state and nation — as well as the critical need for ongoing maintenance and repairs to the aging waterway infrastructure.

The river economy

Alabama has nearly 1,270 miles of navigable, inland waterways, ranking it sixth in the country. In 2021, 27.8 million tons of freight, valued at \$5.3 billion, moved on Alabama's rivers, the equivalent of 695,000 truckloads, and those figures continue to grow. Numerous industries throughout the state and neighboring

Tim Parker III (left) and Tim Parker Jr., both of Parker Towing Co., talk with Cline Jones (right), chairman of the Coalition of Alabama Waterways, at the christening of Parker's newest ship in Decatur in May.

states depend on river commerce.

"The poultry industry in northeast Alabama is successful because of the Midwest farm products barged into Guntersville feed mills," Jones says. "Huge transportation savings yields less expensive feed products that gives Alabama poultry producers a competitive edge. Also, rockets built in Decatur launch national security payloads, communications and weather satellites. United Launch Alliance ships eight loads of rockets out of Decatur annually. A conservative estimate of their value alone would be well in excess of \$1 billion. If we are going back to the moon or to Mars, we will go by river first, through Wilson Lock in Florence."

In other areas of the state, a variety of industries depend on shipping through the river system, says Wynne Fuller, president of the Warrior-Tombigbee Waterway Association. They include crude oil and petroleum; chemicals; coal for domestic manufacturing and export; coke; scrap steel, iron and other raw materials supporting steel manufacturing; finished steel coils; manufactured goods such as pipe; aggregates, such as rock, sand and gravel supporting construction and road building; and most recently, wood pellets, a renewable energy product that is exported to Europe.

In 2021, the most recent year for which figures are available, Alabama's inland ports, waterways and industries dependent on them supported nearly 134,000 jobs, according to the National Waterways Foundation. That translates into \$8.4 billion in personal income, \$15.9 billion in gross state product, and \$35.4 billion in total output, giving rise to \$1.7 billion in state and local tax revenue.

The Warrior-Tombigbee Waterway is the state's busiest, "with tonnage steadily growing, particularly as new coal mines in the Holt area, between Birmingham and Tuscaloosa, are being opened," Fuller says. While the prolonged outage at the Demopolis Lock will affect tonnage in 2024, Fuller expects it "to snap back rapidly as repairs are completed at the end of May and shippers can return to the waterway."

Unfortunately, the Demopolis lock isn't the only one in the state facing challenges. At the Tennessee River's Wilson Dam in Florence, remnants of Hurricane Ida sank a floating guidewall in 2021. There's no money for a replacement, which would cost \$185 million, and while lock operations continue, everything takes longer. Barges are waiting an average of 13 to 15 hours to begin locking through Wilson Lock, and lock processing time has risen to an average of seven hours, according to analysis by TVA and the Corps of Engineers.

Shutdowns and delays like this translate into negative effects on the state economy, as companies must wait longer and pay more for needed goods such as asphalt, petroleum products, chemical products and sand. "Delays at Wilson Lock are hurting the economy in Huntsville and Decatur, and the Demopolis shutdown is killing companies in South Alabama and Mississippi," Jones says.

Benefits of river shipping

Transporting goods along the state's rivers is both cost-effective and environmentally advantageous. Shipping by barge rather than by rail or truck reduces costs by an estimated \$400 to \$500 million each year, and those reductions ease prices for consumers, says Adam May, media relations spokesperson for the Tennessee Valley Authority (TVA), which operates the three locks in north Alabama along 201 miles of the Tennessee River.

"Barges also have big environmental benefits," May says. "One barge can ship as much tonnage as 60 semi-trucks or 15 railcars, which means that water transportation can reduce highway traffic, fuel consumption, air pollution, wear and tear on roads and the number of tires sent to landfills."

Barges also have a lower carbon footprint than trucks or rail, producing 15.1 tons of CO2 per million ton-miles. That's 43% less than rail, which produces 21.6 tons of CO2 per million ton-miles, and 832% less than trucks, which produce 140.7 tons per million ton-miles.

In addition, river shipping "is the safest mode of surface transportation, with the lowest number of accidents per ton shipped of any mode," Fuller says. "The probability of highway and rail accidents would increase if all this cargo were shifted from water to highway or rail. It also reduces the wear and tear on highways and congestion on already overtaxed roads."

Eyes on failing infrastructure

The recent lock failure at Demopolis and guide wall sinking at Wilson have brought attention to the fact that "most of our river infrastructure is 70 to 100 years old," Jones says.

As a result, decision makers are considering how to prioritize lock evaluations and potential replacements. For example, the Army Corps of Engineers has announced it will examine locks annually rather than every five years, as has been the standard. Leaders in the Mobile district are "reevaluating their locks and looking to do repairs," Jones says. "They're starting the process of studying replace-

Replacing historic river infrastructure is not a simple proposition. A new, 600foot lock costs \$1 billion and takes 12 to 15 years to build, Jones says. For example, new Tennessee River locks underway at Kentucky and Chickamauga started in 2007 and are nearing completion.

Towboat operators pay a \$0.29 per gallon gas tax, which provides \$400 million annually to go toward major renovations and construction projects. However, with aging infrastructure and a backlog of projects, it will take years to provide funding to go around, Jones says. Leaders in the Alabama waterways take trips to Washington, D.C., regularly to educate legislators about the needs and request funding, with varied success. "The rivers are a priority, but there's so much competition for federal dollars," Jones says.

River shipping's impact on the state

Alabama's inland waterways make several of its industries possible, providing the economic backbone for many of the cities and towns located along the rivers throughout the state. But the rivers also offer promise for continued and sustainable economic development for the state.

"The availability of low-cost and environmentally sustainable waterborne transportation makes Alabama particularly attractive to major industries, industries with some of the highest paying jobs in the country," Fuller says. "Few states tout the terrific network of our waterway system that is attractive to large industries, importers and exporters of raw materials and manufactured products."

For example, the Warrior-Tombigbee Waterway and the Tennessee-Tombigbee Waterway comprise the M-65 Marine Highway, part of the National Marine Highway System. This designation provides Alabama industries access to markets throughout the Northeast, Midwest and South. "When industries are making very strategic decisions on the siting of a new plant, access to a reliable waterway is often the deciding factor," Fuller says.

This story originally appeared in June 2024 Business Alabama.

ON THE GO

ALABAMA BUILDS PLANES, TRAINS, SHIPS AND CARS — AND THE INFRASTRUCTURE TO KEEP THEM MOVING

BY NEDRA BLOOM

lanes, trains, cars and ships keep Alabama's economy moving. And the state is constantly at work to make each element move faster and easier.

Planes

Alabama has seven commercial airports, with five handling cargo as well as passengers. Birmingham broke ground on facilities to handle new cargo flights to and from Germany, and Mobile is moving its passenger operations into a brand-new terminal with international capabilities.

Dotted around the state in cities as big as Mobile and as small as Andalusia, specialty firms perform maintenance, repair and overhaul services - keeping planes airworthy.

Alabama builds planes, too — with two final assembly lines and a third under construction at Airbus in Mobile.

Trains

Rail service is growing, too. CSX, Canadian Pacific Kansas City and Genesee & Wyoming announced plans in 2023 for a new rail interchange in Myrtlewood in Marengo County.

"This strategic acquisition will bring more shipping options to intermodal, automotive and other customers by providing a new, efficient corridor connecting expanding markets in Mexico, Texas and the U.S. Southeast," said Keith Creel, CPKC president and CEO.

"This new service is a demonstration of our commitment to creating product offerings for shippers that help them leverage the efficiency and sustainability advantages of rail to drive growth," said Joe Hinrichs, president and CEO of CSX.

And the Alabama State Port Authority is building intermmodal container terminals in Montgomery and Decatur. "This



project will provide our shippers costcompetitive transportation services to and from one of the nation's fastest growth containerized cargo gateways," said John C. Driscoll, director and chief executive officer for the Alabama Port Authority.

Alabama builds trains, too, with a Progress Rail plant in Albertville building engines and infrastructure needs.

Most of us get where we're going by car, and Alabama is at work to make those drives safer and easier.

A new bridge across Mobile Bay at Mobile is in its early stages, aiming to decrease congestion at Interstate 10 and Causeway tunnels.

A second bridge is under construction linking the Gulf Coast beach to the nearby cities.

A West Alabama Highway is under construction to ease access to Tuscaloosa and other western cities. And work is in progress to add lanes to the state's north-south artery Interstate 65. Plus, improving rail access has the added benefit of decreasing long-haul truck traffic, officials say.

Alabama builds cars, too. Major OEM facilities include Mercedes-Benz U.S. International in Tuscaloosa County; Hyundai Motor Manufacturing Alabama in Montgomery, Honda Alabama in Talladega; The Port in Mobile is upgrading to handle 1 million cargo units a year. Cargo is measured in twenty-foot equivalent units

Toyota Motor Manufacturing Alabama in Huntsville and Mazda Toyota Manufacturing, also in Huntsville.

Ships

The Alabama State Port Authority is building on back-to-back record years. The port itself is in the midst of major upgrades — deepening and widening channels to handle more and bigger ships more efficiently.

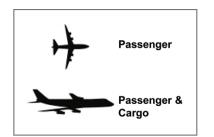
Its cargo handling partner, APM Terminals, is expanding for the fourth time since it opened in 2008, with plans to be able to handle 1 million 20-foot equivalent units by 2025.

Waterways stretch from the port to the interior of the state, with the Tennessee-Tombigbee Waterway offering connections to the Tennessee River and on into the interior of the U.S. Midwest.

Alabama builds ships, too. Austal USA in Mobile has added steel shipbuilding capabilities to its aluminum work and is at work on its first steel ships for the U.S. Navy and Coast Guard. A host of smaller companies build fishing boats, tugs and more.



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ALABAMA WATERWAY SYSTEM

ALABAMA DEPARTMENT OF COMMERCE

Commerce takes lead in Alabama's economic development efforts

The Alabama Department of Commerce is at the center of the state's successful economic development strategies, which focus on creating jobs that provide career opportunities for the state's citizens and attracting investment that invigorates communities.

Commerce spearheads this effort by supporting the comprehensive efforts of its economic development allies and community partners to secure highimpact business growth projects. Under the direction of Secretary Ellen McNair, Commerce's project managers maintain a global outlook as they build business relationships and pursue potential projects that will energize Alabama's economic growth. Through AIDT, Commerce also plays a crucial role in the state's workforce development efforts, which ensure that businesses operating in Alabama have the highly motivated and skilled workforces they require for long-term

Commerce and the Alabama economic development team have built a consistent track record of winning game-changing projects that introduce important new dimensions to the state's evolving economy. As a result, Alabama's economic development team has received numerous awards, and site-selection consultants routinely recognize Alabama as a top state for doing business. In recent years, the Alabama team has worked with an expansive roster of industry leaders, including Boeing, Airbus, Lockheed Martin, Austal, Meta Platforms, Google, Amazon and the five global automakers



Meta Platforms has announced plans for an \$800 million data center in Montgomery.

located in the state.

In 2023, economic development activity in Alabama generated \$6.4 billion in new capital investment as a steady stream of projects has flowed across a range of key target industries.

At the request of Governor Kay Ivey, Commerce led the development of a new strategic economic development growth plan to guide the state's efforts through the next decade and beyond. This next-generation strategic plan includes a broader focus than the previous framework, Accelerate Alabama, and incorporates new elements such as elevating human capital, spurring entrepreneurship, promoting rural development, and energizing talent attraction. It also concentrates on quality placemaking, which includes leveraging the state's outdoor recreation infrastructure.

In addition, Commerce is closely aligned with the state's primary workforce development efforts, which serve to streamline the process for prospects. AIDT, the state's highly regarded jobtraining agency, remains a central pillar of Commerce's economic growth strategies, as evidenced by a new \$30 million EV Technology Center being constructed at Alabama Robotics Technology Park in North Alabama.

A critical Commerce objective is to identify prospects for partnerships that can broaden Alabama's economic base and create jobs for its citizens. Other objectives are to attract domestic and foreign investment, expand international trade and Alabama exports, facilitate small business growth and attract film and entertainment projects. Commerce has also strengthened its commitment to facilitating economic growth in rural communities, resulting in \$5.8 billion in new capital investment from projects since the beginning of 2020.

Ellen McNair | Alabama Department of Commerce | Alabama Center for Commerce 401 Adams Avenue || Montgomery, AL 36130 || (334) 242-0400 or (800) 248-0033 || Fax: (334) 242-5669 || www.madeinalabama.com

A D ALABAMA'S WORKFORCE TRAINING AGENCY

Workforce expertise from AIDT is a major incentive for businesses locating to or expanding in Alabama

Alabama has one of the strongest workforce training programs in the world in support of the state's commitment to new and expanding industries.

AIDT has long been recognized among the nation's top workforce training programs by industry observers. AIDT's pre-employment training program holds an ISO 9001:2015 certification for quality and continuous improvement.

AIDT has assisted new and expanding companies in recruiting, selecting and training over one million job seekers over the last 50-plus years. AIDT training produces a workforce that employers recognize for high performance achievement — a result of both the technical assessment and training AIDT trainees receive and the process by which they are selected.

AIDT stays at the forefront of workforce development through its innovative approaches to common issues and its ability to partner with education and industry leaders, as well as other state agencies. This includes the continuous evolution of training techniques such as e-learning through modules and webinars, virtual reality training and more traditional hands-on learning.

From automotive to aerospace, logistics, warehousing and biomedical, AIDT researches and identifies the needs of each company served and uses that information to develop a full range of technical pre-employment selection programs customized to each company.

AIDT SERVICES INCLUDE:

► Identification of needed employee skills and knowledge, training criteria and curricula content definition, and required







AIDT programs are tailored to the needs of specific industries, from complex wiring to the elements of today's smart factory.

behavior and performance criteria the company expects of employees.

- ▶ Recruitment of trainee candidates for potential employment. AIDT interviews and enrolls applicants in training programs that are acceptable to the company.
- ▶ Program development, instructors, equipment, consumable supplies and training aids such as manuals, workbooks and videos are provided at no cost to trainees or employers.
- ▶ Pre-employment training. Job seekers who meet the selection criteria designed by AIDT and the employer are enrolled in job-specific training for detailed assessment of attitude, character, work ethic, literacy, teamwork and technical learning ability.

A division of the Alabama Department of Commerce, AIDT also provides leadership development, on-the-job training, industrial maintenance assessments and industrial safety assessments. Leadership development conducted by AIDT is designed to develop and retain quality leaders, improve retention and create loyal and dedicated employees. Industrial maintenance and safety assessment services help identify candidates best qualified for effective and efficient operations through corrective and preventive maintenance.



KEY CONTACT

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ADECA ALABAMA DEPARTMENT OF ECONOMIC AND COMMUNITY AFFAIRS

ADECA connects communities with funding opportunities

The Alabama Department of Economic and Community Affairs (ADECA) distributes hundreds of millions of dollars annually to Alabama cities, counties, non-profit organizations and others to support economic development projects, infrastructure improvements, job training, energy conservation, law enforcement, traffic safety, recreational development, high-speed internet expansion and electric vehicle infrastructure.

Since coming on board in 2017 at the beginning of Gov. Kay Ivey's administration, Director Kenneth Boswell has emphasized the importance of forming partnerships to improve Alabama communities and carry out Gov. Ivey's desire to improve commerce and create job opportunities for Alabamians.

ADECA houses numerous programs that focus available resources to address a variety of local challenges.

Several ADECA grant programs help Alabama communities with economic development projects and enhance commerce either directly or indirectly:

Community Development Block **Grants** are funded through the U.S. Department of Housing and Urban Development and support local efforts to attract and prepare for new or expanding industries, rehabilitate neighborhoods, provide water and sewer services or fund other infrastructure improvements that support business development or enhance the quality of life. Many of the funds are awarded annually on a competitive basis, but a portion of the allocation is kept in reserve for economic development projects that help industries and businesses locate and expand in Alabama. In 2023, ADECA received about 80 competitive applications from small cities, large cities, counties and planning organizations

across Alabama, and the agency awarded a total of 44 projects totaling \$17.5 million, enabling local governments to address critical infrastructure needs. Fourteen grants, amounting to nearly \$5.5 million, were awarded through ADECA's economic development CDBG program. Those funds are used to supply infrastructure for new businesses and industries, providing 1,827 immediate or future jobs.

- Grants from the Appalachian Regional Commission (ARC) are awarded to encourage economic development and improve the quality of life of Alabamians living within 37 north Alabama counties considered part of the Appalachian Region. Projects that develop and improve infrastructure and support education, workforce development and community development are funded through the program. In 2023, almost \$10.6 million was invested in 28 projects in ARC counties, helping to create or retain jobs and/or provide job training.
- ▶ Delta Regional Authority (DRA) is another state-federal partnership that encourages the development of new jobs and helps with basic community improvements in a rural region that includes 20 counties primarily in the Black Belt region of Alabama. In 2023, ADECA partnered with DRA to fund 11 projects totaling \$3.8 million creating or retaining many jobs and preparing others for jobs in new and demanding fields.
- The new Southeast Crescent Regional Commission, created in the likeness of the ARC and DRA programs, was expected in late 2024 to award its first grants to provide economic development and workforce training in 13 Alabama counties, primarily in southeast Alabama and Autauga, Baldwin, Lee, Montgomery and Mobile, that are not part of ARC or DRA.

- Two recreational programs are managed by ADECA, the Land and Water Conservation Fund and the Recreational Trails Program, to fund parks and recreational facilities. Many of those projects help attract tourists, aid local economies and improve quality of life. In 2023, ADECA awarded \$2.5 million for eight Recreational Trail projects and \$3.9 million for 17 LWCF projects.
- ▶ ADECA's Alabama Digital Expansion Division was created to take on the state task of providing high-speed internet service to unserved areas of Alabama. Under the banner of "Be Linked Alabama," several programs have been established from multiple funding sources to accomplish that task. State and federal funds have been used to provide middle- and last-mile projects to benefit households, businesses and public service operations that choose to be connected. In 2023, Gov. Ivey awarded about \$33 million in broadband expansion grants.
- ► The Electric Vehicle Charging Infrastructure Program helps provide electric vehicle charging stations along Alabama interstate and major highways. The program is designed to accommodate owners of electric vehicles and support Alabama automobile manufacturers who produce electric vehicles. In 2023, more than \$2 million in state funds was allocated to install charging stations at eight locations in Alabama. Additional monies from the National Electric Vehicle Infrastructure grant program have been used to provide charging infrastructure along the interstates in Alabama, and more awards are expected.
- ▶ ADECA also helps manage the state's water resources, supports law enforcement and traffic safety efforts, and distributes state and federal surplus property.

KEY CONTACT

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ATN

ALABAMA TECHNOLOGY NETWORK

Technical experts work directly with Alabama industries to increase productivity, profitability and competitiveness





ATN sends experts into training facilities and workplaces to help businesses solve technical problems and advance competitiveness.

Focused on Alabama manufacturers, the Alabama Technology Network provides the most extensive workforce training, technical assistance and business solutions designed to empower and strengthen Alabama's manufacturers. Experts in technical assistance and innovation work directly with Alabama's existing industry to sustain jobs, optimize operations, create efficiencies and stay competitive.

As part of the Alabama Community
College System, the network's 19 sites
are located at 15 community colleges
and the state's three research universities
— Auburn University, the University of
Alabama, and the University of Alabama
in Huntsville. ATN's team of experts helps
solve industry and business needs through
innovative, sustainable, cost-effective

solutions. ATN can conduct detailed needs assessments, outline potential solutions based on the results, and provide technical assistance to help companies solve those problems or identify those who can. Services include lean enterprise, quality services training, continual improvement methods, environmental health and safety training, industrial maintenance training, sustainability in manufacturing, and innovation engineering.

ATN is an affiliate of the National Institute of Standards and Technology's Manufacturing Extension Partnership, which provides hands-on assistance and training to smaller manufacturers.

From 2015 through 2023, the following are client-reported economic impacts:

- ▶ 1,334 independent client surveys completed
- ▶ 4,330 new jobs
- ▶ 16,881 retained jobs
- ▶ \$2.7B increased & retained sales
- ▶ \$562M in new client investments
- ▶ \$874M in cost savings

Totals

- ▶ 21,211 jobs
- ▶ \$4.2B client impacts

In addition to its training services, ATN partners in presenting the Alabama Manufacturer of the Year awards and powers Connex Alabama, an online platform that connects all U.S. manufacturers into one single, accurate and searchable supply chain database.

KEY CONTACT

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NAIDA NORTH ALABAMA INDUSTRIAL DEVELOPMENT ASSOCIATION

One of the first industrial development organizations in the U.S., NAIDA was formed in 1949 to assist in creating quality jobs for the 13 North Alabama counties served by TVA power

The North Alabama region is home to companies that build some of the most outstanding, complicated, and widely known products in the world — and they continue to experience great success as a result of what the area has to offer.

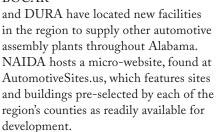
KEYS TO SUCCESS

Many reasons companies in North Alabama flourish include:

- ▶ Institutions of higher education in 20 locations.
- ▶ State-of-the-art, world-class automation and employee training provided by AIDT and the Robotics Technology Park (RTP).
- ▶ An electric system powered by TVA and its distributors.
- ▶ Transportation access North Alabama offers various means of transportation via water, rail, highway and air to meet speed-to-market requirements. Huntsville International Airport provides direct flights to major cities and also provides air cargo service to international destinations along with on-site U.S. Customs & Border Patrol and FTZ #83.
- ▶ Over 2,000 acres of available land designated as Advantage Sites and over 5 million square feet of available buildings ranging from 5,000 to 2 million square feet, are available in the region.

STRONG ECONOMIC SECTORS

The North Alabama automotive sector continues to grow with companies such as Mazda Toyota Manufacturing (MTM), Toyota Motor Manufacturing, Navistar, Polaris and Tiffin Motor Homes. The supplier base has more than 100 automotive-related companies. Toyota Boshoku, YKTA, Daikyo Nishikawa, Vuteq and others have established facilities on or near the MTM site. **BOCAR**



The aerospace and defense sectors, featuring companies such as Boeing, Raytheon, Northrop Grumman, Lockheed Martin, Beyond Gravity and ULA, continue to grow year after year. ULA continues the tradition of building rockets in North Alabama for the Vulcan Rocket program. Locally manufactured rocket engines produced by Blue Origin and hypersonic development and integration taking place by Lockheed Martin are key to national space and defense, as is GE, producing state-ofthe-art SiC and CMC materials.

Alloys/Metalworking companies such as Carpenter Technology, Constellium, Nucor and Progress Rail are located in North Alabama.

More than 70 chemical companies operate in the region, including 3M, Daikin, Hexcel, OCI, Occidental Chemical, Toray, Ascend Performance



NAIDA created this map of potential industrial sites in the 13 counties of Northern Alabama, View it interactively at: automotivesites.us

Materials and Polyplex.

The HudsonAlpha Institute for Biotechnology and its 50 associate companies are operating in the cutting edge of the life sciences sector.

Other additions to the area's hightech economy include world-class datacenters by META, Google, DC Blox and Simple Helix.

Currently, twice as many individuals are employed in manufacturing occupations in this region compared to the national average. This current industrialization owes its roots to the 1950s, when industry began locating along the Tennessee River, and the development of the rockets that took man to the moon began taking shape in the region.

NAIDA offers confidential services to companies seeking a new or expansion site. It also offers assistance in finding suppliers and services to meet company needs. This online tool can be accessed at IndustrialServices.naida.com.

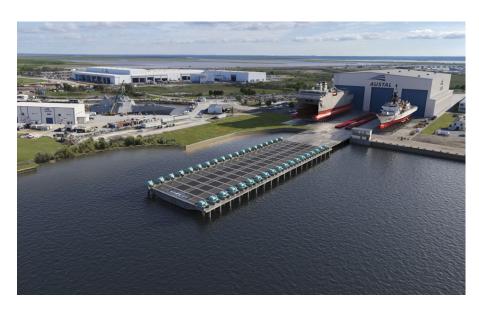
KEY CONTACTS

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EDAA ECONOMIC DEVELOPMENT ASSOCIATION OF ALABAMA

EDAA unites professionals committed to Alabama's economic development



Economic development can have a multitude of meanings, but at its core, it is a collaborative effort among businesses, communities, organizations and government agencies. Since 1968, the Economic Development Association of Alabama (EDAA) has facilitated that collaboration to both attract new investment to the state and work to expand those companies that are already located here. EDAA provides a forum for discussion of specific issues affecting economic development and provides programming

The EDAA Leadership Institute represents a partnership between EDAA and GEDI to educate and engage elected officials, ED board members and other community leaders about key issues in economic and community development. For more information contact: EDAA (334) 676-2085

and training to cultivate expertise in Alabama's economic developers.

The EDAA membership consists of 500 individuals involved in economic development from many different areas and disciplines. EDAA members are economic development professionals, attorneys, engineers, architects, state agency personnel, utility employees, bankers, contractors, real estate agents, educators and municipal and county officials.

SERVICES

A voluntary member association, EDAA conducts workshops and seminars covering the ideas, principles, practices and ethics of economic development. Most of the EDAA educational programs focus on enhancing the skills of economic development professionals by providing them with new tools to address the challenge of remaining one of the nation's top states in economic development. EDAA holds multiple networking opportunities, publishes a membership directory,

Austal USA plans another final assembly line on the Mobile waterfront, this one with a Shiplift system.

conducts two major conferences each year and holds quarterly workshops.

EDAA is diligent in addressing state and federal legislative and regulatory issues impacting economic development in Alabama. With a full-time lobbying presence when the Alabama Legislature is in session, EDAA is a leader in forming economic development policy and legislation for its members. Legislative efforts on the state level in recent years have seen EDAA lobby for competitive and sustainable economic development incentives and adequate funding for state recruitment efforts and worker training programs. In addition to its legislative efforts in support of positive economic development policies, EDAA endeavors to defeat legislation that would pose a threat to Alabama's economic development effort and actively seeks innovative solutions to challenges that could negatively impact the state's business climate.

PARTNERSHIPS

In addition, EDAA works with other organizations in the state to improve Alabama's economic development environment. Strategic alliances with the Alabama Department of Commerce, Alabama Department of Economic and Community Affairs and the Economic Development Partnership of Alabama enable EDAA to provide its membership with substantive skills and resources. EDAA is also a partner with Auburn University's Government and Economic Development Institute (GEDI) in conducting the Economic Development Leadership Institute.

KFY CONTACT

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EDPA ECONOMIC DEVELOPMENT PARTNERSHIP OF ALABAMA

EDPA works to attract investment, support business expansions, encourage startups and attract and retain talent

For more than 30 years, the Economic Development Partnership of Alabama (EDPA) has been a catalyst for economic growth in the state. A private, nonprofit organization supported by Alabama's leading businesses, EDPA is uniquely positioned to partner with state, local and private allies to drive the state's economic development efforts.

EDPA'S FIVE PILLARS

EDPA's program of work today is focused on

- 1. Lead Generation: Identify and target leading companies that are good prospects to bring quality jobs and investment to the state.
- 2. Innovation and Entrepreneurship: Provide resources and support to startup companies that have high-growth potential.
- 3. Talent Attraction and Retention: Work to attract and retain the talent needed to support economic growth.
- 4. Business Intelligence and Economic Development Research: Support both lead generation and business attraction efforts through business intelligence, data and analytics.
- 5. Statewide Economic Development Policy: Promote existing policies and shape future policies key to Alabama's economic success.

SITE EVALUATION ECONOMIC **DEVELOPMENT STRATEGY (SEEDS)**

SEEDS is a matching grant program and governed by the State Industrial Development Authority (SIDA). The EDPA is proud to administer the groundbreaking SEEDS program — a key portion of Governor Kay Ivey's "Game Plan" package of economic development bills approved by the Legislature last year - takes direct aim at the urgent need for quality industrial sites in Alabama at a time when other states are spending heavily to expand their site programs.

ALABAMA LAUNCHPAD

EDPA has also been a statewide leader in encouraging innovation, commercialization and entrepreneurship. The mission of EDPA's Alabama Launchpad program is to help high-growth companies start, stay and grow in Alabama through its business pitch competition.

Alabama Launchpad is the state's most active, early-seed investor and drives innovation and job growth through three startup competitions annually, offering non-dilutive funding along with mentoring and other services. Since it started in 2006, Alabama Launchpad has awarded \$6.3+ million to 121 Alabama companies, which have created more than 1,400 jobs.

In an effort to diversify the pipeline of tech talent and create opportunities for underserved populations in the tech sector, EDPA in partnership with the Appalachian Regional Commission (ARC) and Innovate Alabama, announced the launch of the HBCU Innovation Internship Program in early 2024. This fall, the program will welcome an expanded cohort of eight talented interns, marking a significant growth from the inaugural session.

Building on the success of the inaugural program, which concluded in April 2024, this new cohort will benefit from placements with both returning and new employer partners. The program now includes three additional employers: Analytical AI, the Alabama Business Intelligence Center, and Chambers County Innovation Center, alongside the original six partners of Techstars EnergyTech Accelerator, Prosper HealthTech Accelerator, Innovation Depot, HudsonAlpha AgTech Accelerator, Immediate and Decatur-Morgan County E-Center. The program is proud to continue and build upon partnerships with four Historically Black Colleges and Universities (HBCUs) in Alabama: Alabama Agricultural and Mechanical University,

Miles College, Shelton State Community College, and Tuskegee University.

TALENT

With private sector engagement and strong public sector ties, EDPA leverages its relationships across industries to facilitate talent retention efforts in conjunction with local and state government, colleges and universities and companies. This collaborative effort, called Fuel Alabama (FuelAL), focuses on making sure Alabama has the competitive talent necessary for continued growth. In its first two years, EDPA has hosted two statewide conferences, conducted research alongside the Alabama Commission on Higher Education, and exposed students to various communities across the state through a summer program called FuelAL. Each of these components of Fuel Alabama connect communities, employers, and talent — the pivotal intersection that could change our state's ability to both retain and attract the talent the state needs.

EDPA also operates ALEX: The Alabama Experience — a mobile, digital outreach initiative showcasing Alabama career, education and lifestyle opportunities to residents and visitors — to pop-up throughout various communities, workforce and organizations across Alabama.

BUSINESS INTELLIGENCE

The business development efforts of EDPA, the state and local communities are supported with robust insights and data. This includes proactive steps to derive insights and analysis from industries and businesses that meet Alabama's value propositions. It also provides research data on sites, labor, wages and other key indicators to support the research efforts of site consultants, corporate and community economic developers, and the Alabama Department of Commerce.

Greg Barker, President | Miller Girvin, Chief Operating Officer

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TRAINING OUR STATE FOR THE BETTER, ONE SKILL AT A TIME

ACCS INNOVATION CENTER POWERS WORKFORCE DEVELOPMENT ACROSS ALABAMA

The
Alabama
Community
College
System
(ACCS)
Innovation
Center is
committed
to making
life
better by
providing



Excavator Operator Course

rapid, industry-recognized training programs that prepare residents for in-demand careers across the state. Our mission, "Training Our State for the Better, One Skill at a Time," reflects this dedication to upskilling Alabama's workforce through accessible, high-quality training. Made possible through legislative funding, this training is delivered directly through Alabama's 24 community colleges and over 130 locations statewide.

A Customizable Solution for Businesses



Drake State Community College - Flooring Installation Technician Course

Whether you're looking for entrylevel workers or want to upskill your current employees. the ACCS Innovation Center can develop and support the colleges to deliver training that fits vour needs and schedule, reducing onboarding time by **30-60 days**. Each course is crafted in collaboration with local businesses and industry experts to ensure the training aligns with the

specific skills employers need, helping you build a workforce that's job-ready from day one.

Hybrid Learning for Maximum Flexibility

The Skills for Success program features a **hybrid model** of online, self-paced learning combined with **hands-on lab training** at local community colleges. This approach allows participants to gain real-world skills while offering the flexibility to learn on their own time. Following the online coursework, practical labs provide participants with the opportunity to master skills in environments that mirror their future workplaces.

Meeting Industry Demands and Expanding Offerings

Some of our most popular courses include training in CDL A and CDL B, Fiber Optics, Hotel Operations, and Heavy Equipment Operation—all developed in direct response



Fiber Optic Technician & Installer Course - LBW Community College

to industry needs. As we look to the future, we're expanding our offerings to include new courses in **Veterinary Assistant, Customer Service**, and **Biotechnician** training, ensuring that Alabama's workforce stays competitive and adaptable.

Empowering Communities Through Partnerships

The ACCS Innovation Center's collaborative approach is transforming not only industries but also entire communities. In partnership with **LBW Community College**, the Covington County Sheriff's Office trained inmates in equipment operation, offering them valuable skills and certifications to help secure employment post-release. This initiative exemplifies how the ACCS Innovation Center is addressing critical societal challenges while strengthening Alabama's workforce.

Scalable and Standardized for Statewide Impact

With over **20,000 enrollments** and **8,500 course completions**, the ACCS Innovation Center delivers **standardized, high-quality training** statewide for the colleges to deliver in their communities. This consistency ensures that whether they're in Huntsville or Mobile, businesses can rely on a skilled, job-ready workforce that meets local demands.

Partner with Us Today

The ACCS Innovation Center offers a **customizable**, **rapid-response workforce solution** for Alabama businesses, including assistance in connecting with your local community college's workforce departments. Visit **TrainForAlabama.com** to learn more about how we can support your workforce development goals.







ALABAMA'S TRAILBLAZER

DAVID BRONNER HELPED BOLSTER THE STATE'S IMAGE THROUGH CREATION OF THE RTJ GOLF TRAIL

BY CARY ESTES — PHOTOS BY JONATHAN HOOMES, COURTESY OF RTJ GOLF TRAIL

n 1990, the state of Alabama was only a few decades removed from some of the most violent visuals of the civil rights era. In fact, a mere four years earlier, George Wallace — known throughout the country primarily as a staunch 1960s segregationist — had not yet finished his fourth term as the state's governor.

Those memories could not be easily erased from the national consciousness. But David Bronner, CEO of the Retirement Systems of Alabama, was determined to try to move the state past its reputation. He decided the best way to accomplish this was, of all things, to build a series of golf courses forming a sort of trail across the state.

Nearly 35 years later, Bronner's vision—the 26-course Robert Trent Jones Golf Trail—has become one of the leading tourist attractions in Alabama. A total of approximately a half-million rounds of golf are played at the 11 RTJ sites each year, and the Alabama Tourism Depart-

ment has estimated that about half those rounds are by golfers who live outside the state

"When we started the project, George Wallace was all some people knew about Alabama," Bronner says. "RTJ gave us the opportunity to talk about something else. I wanted to see if we could change the world's impression of Alabama through the use of a sport. I wanted something that would give us a constant flow of a positive image."

At first, Bronner simply was trying to come up with a way to effectively diversify the assets of the RSA pension fund. In the process, he decided he also wanted to help change the conversation away from Alabama's controversial past and instead focus on the state's attributes, namely as an outdoor recreation location for tourists and a business-friendly environment for industry.

"Back then, when recruiters in Alabama were looking to bring in industry, businesses still had visions of fire hoses

Cambian Ridge, in Greenville, has 27 holes on three courses. Pictured is one of the holes on the Canyon course.

and police dogs," says former Jacksonville State University Professor Mark Fagan, whose book "The Robert Trent Jones Golf Trail: Its History and Economic Impact" was published in 2016 and updated and re-released this year. "He wanted a quality-of-life attraction for industries and their employees, and a tourism attraction to get people to stop here and spend money instead of just passing through on the way to Florida or New Orleans."

Once the idea was formed, Bronner needed places to build the courses, as well as somebody within the industry to create them. He says he chose the approximate locations simply by sticking pins in a wall map near the cities he thought should be represented on the trail. "I didn't know the exact site," Bronner says. "I just knew the areas I wanted to be in."



Finding a golf course architect willing to take on such an enormous project was a bit more challenging, and Bronner admits that a few people turned him down. But he found a willing partner in Robert Trent Jones, a British-born designer who had worked on more than 500 courses in 35 countries throughout his career.

"If I was going to establish an animal like this in Alabama," Bronner says of the trail concept, "then I needed somebody with credibility in the world of golf. Bobby had just finished a project in Florida. I went and looked at it and said, 'Let's try to get him.' What did we have to lose?"

Jones accepted, though he was 84 years old at the time and unable to handle some of the on-site work involved in creating even a single golf course, let alone seven at one time. So, he enlisted a younger course architect, Roger Rulewich, for assistance. Then, as Fagan puts it, Bronner gave the duo "a canvas so they could do their artistry."

In 2012, during an event at the RTJ Oxmoor Valley course in Birmingham marking the 20th anniversary of the Trail's opening, Rulewich recounted how the project formulated quickly, and progressed into a rare opportunity for elaborate creativity from the course designers.

"I was over in Ireland at the time,"

Rulewich said, "and I get a call from Bobby and he says, 'There's something going on in Alabama, I think you'd better get there.' So, I came directly here, met Bobby, and he took me out to this very site.

"The way we worked with this project was probably what every golf course architect would like to do but never gets a chance to. We scratched out a road for these golf courses, then we walked them, staked them, adjusted them, changed them. Bobby and I probably did 99 percent of all the markings to decide where these holes were going to go, and then it was free-form from there.

"We weren't working off the detail and the planning that we would normally see on a golf course. We did what we wanted to do, and we adjusted everything to what we thought was the way it should be done. We sort of did this by the seat of our pants. We built holes that we wanted to build. We built ponds, dams. Whatever hazards we wanted were available to us."

And all this happened at a rapid pace. The first four courses opened in 1992, a mere two years after Bronner initially contacted Jones, and three more followed in 1993. The trail was so expansive and different that it gained national and even global attention. It also became the hot property to have in Alabama. "As word started getting out how popular they were," Fagan says, "communities

Hampton Cove, located in Owens Cross Roads near Huntsville, is the northern gateway to the trail.

around the state wanted one of these golf courses."

So, courses were added in four more locations: Prattville, Point Clear (at the Grand Hotel), Muscle Shoals and Hoover. But expansion lost steam after Jones passed away in 2000. Still, by that time, the RTJ Golf Trail was firmly established as one of Alabama's premier attractions.

"It can be very difficult to do things that take longer than a week or two to develop," Bronner says. "When you elect politicians, you want them to get rid of 20 years of errors in an hour and a half, but it can't be done. You have to go step-by-step.

"We're just part of the big puzzle. You need politicians, mayors, economic development people. But you also have to have something to sell to industry and tourism to get them to come here. When Mercedes and the other automotive companies started coming here (in the 1990s), I saw the impact the Trail could have. I think it has made a positive difference in Alabama."

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