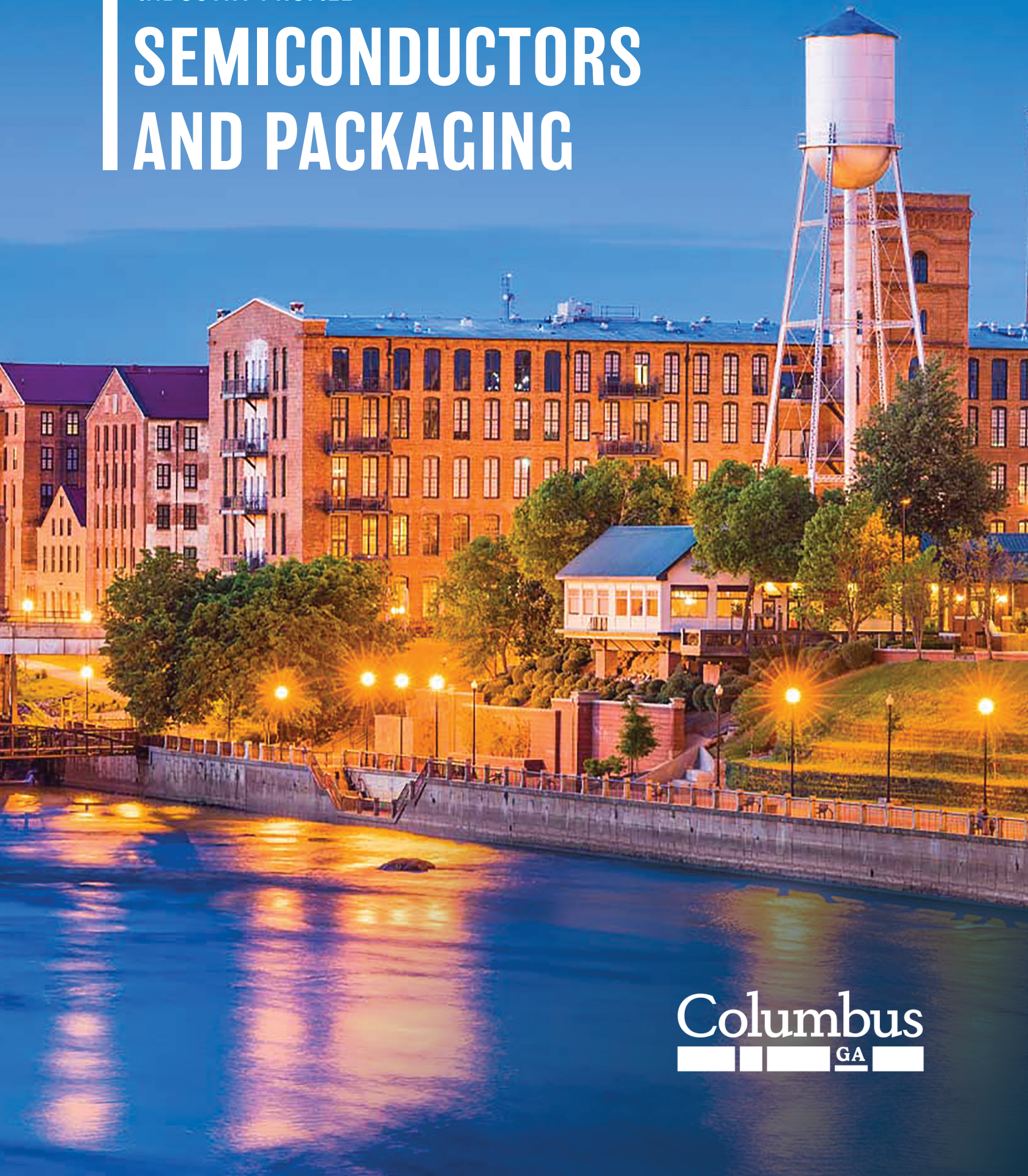


INDUSTRY PROFILE

# SEMICONDUCTORS AND PACKAGING



Columbus  
GA

# COLUMBUS, GEORGIA

Located just 90 miles southwest of Hartsfield-Jackson Atlanta International Airport, Columbus is Georgia's second-largest city and a thriving metro of 300,000 residents.

In addition to easy access to the world's busiest airport, Columbus enjoys a dynamic economy fueled by a bi-state workforce and employers that include the country's fifth largest military base in Fort Moore; manufacturers such as Kia, NCR, and Pratt & Whitney; and the corporate headquarters of Aflac, TSYS, Synovus Financial Corp., and the W.C. Bradley Co.



## THE VISION

Columbus believes in big, bold ideas that propel our future.

**This ambition drives the vision for Columbus to be the southeast's leader in the growth of U.S. semiconductor manufacturing.**

The work to achieve this vision is underway now in our community. Dozens of organizations have come together to ensure Columbus is prepared to serve growing semiconductor and packaging companies with a competitive location.

# WHY COLUMBUS

Columbus has several unique advantages that, in combination, no other U.S. location can offer:

## **A significant veteran population.**

Columbus is home to Fort Moore, and Georgia ranks in the top five most popular states for transitioning veterans, attracting approximately 3,400 annually. This results in strong alignment between the semiconductor industry's in-demand technical skills and those prevalent in the Columbus workforce.

## **A global gateway that offers flexibility and accessibility.**

Hartsfield-Jackson Atlanta International Airport has non-stop passenger flights to 230 destinations in 45 countries.

## **Georgia Tech, one of the world's foremost electrical engineering institutions.**

A leader in semiconductor-related education and sponsored research, GA Tech provides world-class capability in close proximity to Columbus.

## **Semiconductor industry growth.**

Companies like Micron and Absolics have announced substantial investments in Georgia, validating the state's broad technical capabilities.

## **The nation's #1 business climate.**

Columbus sits in a powerhouse of a state offering advantages that lead numerous experts to rank Georgia as the nation's #1 business climate. Georgia is among the most competitive U.S. states for manufacturing when considering operating costs, market access and availability of talent.

## **A team that moves at the speed of business.**

Columbus is mobilized, ready to understand your unique requirements, and prepared to work quickly to deliver a location solution.

# COMPANIES IN THE MARKET

## NOTABLE COLUMBUS EMPLOYERS



WC | BRADLEY  
COMPANY



ALUDYNE



HYUNDAI  
DYMOS



SYNOVUS

## GEORGIA SEMICONDUCTOR COMPANIES



Micron located an advanced memory chip design center in Midtown Atlanta in early 2022. It is now operational and will ultimately employ 500.



A subsidiary of SKC Co. Ltd., Absolics is developing a \$600 million glass substrate manufacturing facility in Covington, creating 400 new jobs.



Synopsys is at the forefront of advanced technologies for chip design, verification, IP integration, and software security and quality testing.



Headquartered in Georgia, Silicon Creations is a leading silicon IP developer with a worldwide presence.

## GEORGIA ELECTRONIC EQUIPMENT MANUFACTURERS EMPLOYEE COUNT

NCR	SIEMENS INDUSTRY, INC.	HONEYWELL	IBM	PANASONIC AUTOMOTIVE SYSTEMS
1,655	1,396	1,155	995	800
CISCO	VIASAT	L3HARRIS TECHNOLOGIES	HEWLETT PACKARD	BROADCOMM
800	350	350	275	255



Georgia understands our needs. They proactively find ways to help, and they ultimately are partners in our success.

– SCOTT MEYERHOFF, COO/CFO, INCOMM

# COLLEGES AND UNIVERSITIES

## GEORGIA TECH

Georgia Tech produces 3,407 engineering graduates annually. It's also one of the nation's top schools for awarding bachelor's, master's and doctoral degrees in STEM fields to African-Americans, Hispanics and Native Americans, and it awards more undergraduate engineering degrees to women than any other school.

Georgia Tech is a leader in engineering education and sponsored research, with industry-focused centers that include:

- **CoCoSys, the Center for the Co-Design of Cognitive Systems** which is focused on cognition, and **CogniSense, the Center on Cognitive Multispectral Sensors** which is focused on intelligent sensing to action.
- **Georgia Tech's Institute for Electronics and Nanotechnology (IEN)**, which includes 35,000 square feet of nanotechnology core facilities, housing more than 200 tools. More than 500 undergraduate and graduate students are trained at IEN annually.
- **The Georgia Tech 3D Systems Packaging Research Center (PRC)**, a graduated NSF Engineering Research Center focusing on advanced packaging using 2.5D and 3D heterogeneous integration technologies. The center conducts research and education in all aspects of advanced packaging.
- **The Advanced Manufacturing Pilot Facility (AMPF)**, a 20,000 square foot reconfigurable research and development high bay manufacturing facility supporting companies and serving as a teaching laboratory. AMPF is where industry works alongside researchers and students to take early-stage concepts from idea to reality, and can house future manufacturing innovation projects.

## AUBURN UNIVERSITY

Auburn enrolls nearly 7,000 undergraduate and graduate students in engineering programs.

The Alabama Micro/Nano Science and Technology Center (AMNSTC) at Auburn is the state's premier micro/nanofabrication center. AMNSTC advances microelectronics science, technology and education by providing facilities that encourage interdisciplinary research activities — including micro/nanofabrication and characterization tools accessible to students, scientists and engineers. The center supports activities that focus on basic, long-term research while also addressing the shorter-term technological needs of the semiconductor and electronics industries.





## COLUMBUS STATE UNIVERSITY

Columbus State University (CSU) offers a spectrum of programs tailored to meet the demands of the semiconductor industry.

Undergraduate programs in computer science include computer programming, cybersecurity, algorithms, and software development. Graduate programs delve into applied computer science, artificial intelligence, machine learning, and cybersecurity, equipping graduates with the skills needed to navigate the complexities of the evolving tech landscape.

Columbus State University's industry commitment extends to multidisciplinary education in robotics engineering, general chemistry, and related fields. Students acquire essential knowledge in materials science directly relevant to semiconductor fabrication and characterization.

## TROY UNIVERSITY

The Center for Materials and Manufacturing Sciences is a fully integrated multi-disciplinary research facility across majors and academic ranks. Undergraduate students are encouraged to enter into research early in their academic careers to develop a sustained and deeper understanding of the field. The Center augments Troy University's partnership with the local polymer and plastics industry.

Troy University also offers a bachelor of science in mathematics, with concentrations that include applied mathematics, statistics, and actuarial science, as well as other courses that support STEM disciplines.

Additional offerings include bachelor of science degrees in chemistry, physics, or computer science.

# HISTORICALLY BLACK COLLEGES AND UNIVERSITIES

## SPELMAN COLLEGE

in Atlanta is ranked #1 among HBCUs by U.S. News and World Report. It has a student body of 2,100, offering degrees in chemistry, computer and information science, general science, and math.

## TUSKEGEE UNIVERSITY

in Alabama is ranked #3 by U.S. News and World Report and is located within an hour of Columbus. It offers over 60 degree programs and is Alabama's largest producer of African-American-held baccalaureate degrees in math, science, and engineering.

## MOREHOUSE COLLEGE

in Atlanta is ranked #4 among HBCUs by U.S. News and World Report, offering majors in applied physics, business, chemistry, computer science, math, physics, and software engineering.



**Tuskegee University has a groundbreaking partnership with Intel to equip the next generation of engineering graduates to excel in the semiconductor industry.**

Undergraduate students will be provided with training opportunities in semiconductor technology and manufacturing, attaining hands-on skills in engineering design, semiconductor processing, and device fabrication, including experience working in the microelectronics cleanroom fabrication facility.

# AREA GRADUATES

## 2021 GRADUATION DATA

### ENGINEERING

**Georgia: 5,312**

School	Graduates
Georgia Tech	3,407
Kennesaw State	727
UGA	463
Mercer	186
Savannah College of Art And Design	32
Emory	27
Oglethorpe	23
Morehouse	13
Gordon State	7
Columbus State	5
Piedmont	4
Valdosta State	2
Andrew College	1
Wesleyan College	1

**Alabama: 3,927**

School	Graduates
Auburn	1,458
Alabama	1010
Alabama Huntsville	624
Alabama Birmingham	389
South Alabama	225
Tuskegee	109
Alabama A&M	102
Alabama State	7
Birmingham-Southern	2
Spring Hill	1

### ENGINEERING TECHNICIANS

**Georgia: 1,584**

School	Graduates
Kennesaw State	259
Chattahoochee Tech	189
Georgia Northwestern Tech	112
Athens Tech	108
Gwinnett Tech	95
Altierus Career College- Norcross	68
Lincoln College -Marietta	68
Georgia Southern	67
West Georgia Tech	54
Savannah Tech	46
Central Georgia Tech	45
Lanier Tech	44
Southern Regional Tech	40
Augusta Tech	37
Savannah State	31
Columbus Tech	31
Omnitech Institute	30
North Georgia Tech	28
Albany Tech	28
South Georgia Tech	26
Ogeechee Tech	24
Georgia Piedmont Tech	22
Coastal Pines Tech	19
Georgia Tech	19
Atlanta Tech	18
Southern Crescent Tech	17
Middle Georgia State	16
Fort Valley State	11
Valdosta State	10
Dalton State	8
Berry College	5
Wiregrass Georgia Tech	4
North Georgia	3
Georgia State	2

**Alabama: 3,573**

School	Graduates
Columbia Southern	1492
John C Calhoun State	705
Coastal Alabama	193
Jefferson State	184
George C Wallace State	138
Southern Union State	104
JF Drake State	99
Northwest Shoals	79
Gadsden State	79
Lawson State	78
Jacksonville State	69
Northeast Alabama	55
Bevill State	45
Trenholm State	40
George Wallace- Dothan	33
Shelton State	29
Bishop State	25
West Alabama	23
Alabama A&M	21
Chattahoochee Valley	19
North Alabama	14
Remington College	14
George Wallace - Selma	12
Auburn	11
Troy	8
Central Alabama	3
Lurleen Wallace	1



# FORT MOORE AND THE MANEUVER CENTER OF EXCELLENCE

Fort Moore employs more than 45,000 in Columbus with a wide variety of education, military technical training, and leadership experience. Home to the U.S. Army's Maneuver Center of Excellence, Fort Moore is the epicenter of armor and infantry training, doctrine, research, and capability development, with representation from over 100 different countries. It is the only Army installation serving as home to a combination of training, operational, and special mission units.

Fort Moore's Career Skills Programs (CSP) are designed to help transitioning personnel with the next step in their career. A CSP curriculum can be developed for working in a chip fab. This upskilling can be done in partnership with private industry and an institution of higher education and potentially supported by Georgia's renowned Quick Start training program.



Georgia consistently ranks within **THE TOP FIVE SOLDIER VETERAN DESTINATION STATES** within the United States.



Over the past five years, Fort Moore has transitioned an annual average of **2,300 SOLDIERS** back to civilian life.



## THE CHATTAHOOCHEE VALLEY FAB LAB

The Chattahoochee Valley Fab Lab, in development now, will provide students and adults in the area with a simulative environment that fast-tracks training that aligns with industry needs. The Fab Lab provides a cost-effective way to train essential skills for careers in microchip manufacturing and creates a competitive advantage for companies in the area.

# GLOBAL ACCESS

Georgia is the gateway to the world, with transportation infrastructure cited by businesses as one of the state's most vital competitive advantages. The world converges here through a network of air, land, and sea transport, and Georgia businesses experience growth through the power of accessibility. The busiest airport in the world and the fastest-growing port in the nation provide direct connections to people, suppliers, and customers.

## HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT

Hartsfield-Jackson Atlanta International Airport is world-renowned, with 1,000 daily and direct flights to more than 380 locations. It provides nonstop passenger service to over 150 domestic and 70 international destinations. Seventeen cargo operators connect Georgia directly to Europe, Asia and the Middle East.

## INTERSTATE ACCESS

An extensive interstate highway system adds hundreds of miles of accessibility to Georgia's infrastructure. The three major highways that converge near the airport in Atlanta contribute to the state's status as the transportation hub of the Southeast.

- 20,000+ miles of state and federal highway
- Georgia products can reach 80% of Americans within a 2-day drive
- \$14 billion of approved funding for new roadways on trucking routes

## PORT OF SAVANNAH

The Port of Savannah is the largest and fastest-growing container terminal in the U.S.

- Located four hours from Columbus
- Home to the largest single-terminal container facility of its kind in North America
- The fourth busiest container-handling facility in the United States
- 10,000 feet of contiguous berth-space
- Expanding container capacity from 6 million to 9.5 million annual TEUs by 2025.



**Georgia's connectivity allows businesses located here access to almost any market in the world through our ports, airport, rails, and highways. By investing in what already makes Georgia a great place to do business and constantly innovating to meet business needs, it's clear why companies consistently see a great partner in the State of Georgia.**

— BRIAN KEMP, GOVERNOR OF GEORGIA

# HEAVY UTILITY POTENTIAL



## BROADBAND

Columbus has broadband coverage from 19 providers.

## ELECTRICITY

Georgia Power, a subsidiary of Southern Company, serves customers with a reliable network powered by 15,300 MW of generating capacity.

- Electricity rates are lower than the national average
- Energy-intensive businesses can rely on systems designed for high-density loads that include several layers of redundancy and network power distribution systems
- Loads of 900 kW and above may choose the electric provider through a competitive bid process
- 500 new solar projects are planned
- Alabama Power, a subsidiary of Southern Company, serves customers with a reliable network powered by 11,678 MW of generating capacity.
- Electricity rates are lower than the national average
- Diverse generation sources include natural gas, coal, nuclear and hydro

## WATER AND WASTEWATER

Columbus Water Works is an award-winning, municipally-owned water and wastewater facility.

- Substantial excess capacity is available to supply new industries
- Water supply is from the Chattahoochee River and poses no limitation in a 50-year planning horizon
- Best rates in the Southeastern United States

### Potable Water

90 MGD permitted capacity  
 61 MGD maximum (peak day) use to date  
 32 MGD average daily flow  
 40 MGD average daily flow available capacity

### Wastewater

42 MGD wastewater treatment capacity  
 27 MGD average daily treated  
 15 MGD average daily flow available capacity

# RENOWNED BUSINESS CLIMATE

## TOP-RANKED BUSINESS LOCATION

Georgia is renowned as a competitive business location by multiple measures.



*Site Selection* magazine has ranked  
**GEORGIA NO. 1 FOR BUSINESS**  
for eight consecutive years\*

*Area Development* magazine named  
**GEORGIA NO. 1 FOR BUSINESS**  
for eight straight years.

*Area Development* magazine ranked  
**GEORGIA NO. 1 FOR COOPERATIVE  
AND RESPONSIVE STATE  
GOVERNMENT.**



Georgia truly understands the requirements of doing business better than most other states. From the start, we appreciated and recognized the business-friendly community.

— JAMES WILLIAMS, SENIOR VICE PRESIDENT,  
MITSUBISHI HITACHI POWER SYSTEMS



\*Based on an analysis of announced projects, tax climate and a survey of site selection professionals.

## COMPETITIVE TAX ENVIRONMENT AND INCENTIVES

Georgia's corporate tax rate is 5.75%, with in-state sales being the single factor apportioned. The State of Georgia has maintained the highest bond rating possible by Moody's, Fitch, and Standard and Poor's.

Georgia offers a variety of incentives for job creation and programs.

### Job tax credits with the potential for enhanced benefits

**Tax credits include the potential for enhanced benefits** for jobs paying at least 110% of the county average wage, or for mega projects representing 1,800 net new jobs, meeting average wage thresholds, and a minimum \$450 million investment or annual payroll of \$150 million.

### Sales and use tax exemptions

**Sales and use tax exemptions are available for a wide range of expenditures, including:**

- Manufacturing machinery and equipment
- Clean room equipment
- Repairs to industrial machinery
- Raw materials and packaging
- Energy used in manufacturing
- Primary material handling equipment
- Pollution control equipment

### Georgia Quick Start

**Georgia Quick Start** develops and delivers customized, strategic workforce solutions for qualified companies, including:

- Pre-employment assessment
- Customized post-employment and job-specific training
- Leadership and productivity enhancement training

### R&D tax credits

**Research and development tax credits** can include in-state purchases of materials and supplies, fees for Georgia-based contract work, and the portion of wages and salaries of personnel and direct support dedicated to R&D. Qualifying R&D expenses can include activities beyond new product development, such as:

- Developing and testing new prototypes, dies and molds
- Developing and testing new manufacturing assembly lines or new distribution facility processes
- Implementing and testing new plant equipment or ERP software
- Improvement of legacy software solutions or cloud storage

# LIFE IN COLUMBUS



Area residents enjoy the opportunities and amenities of a large city, with a cost of living **25% LOWER** than the U.S. average.

In Columbus, brick and steel buildings of the past anchor the character of a renovated 21st century skyline. The legendary Chattahoochee River invites you in, arts and cultural entertainment surprise, and world class museums inspire.

Boutiques and local gifts anchor unique shopping, and as far as the culinary scene goes, let's just say you should come hungry.

The Chattahoochee River rushing through the heart of Uptown Columbus adds heightened energy to the pulse of the region. While the expansive array of recreation may start with the waterway — which includes the longest urban whitewater course in the world — it doesn't end there.

Wide-open spaces, walking trails, and bike paths abound, from Woodruff Riverfront Park, complete with a splash pad and interactive playground, to Standing Boy Creek Wildlife Management Area, offering 1,580 acres of hiking, hunting, and wildlife viewing on the shore of Lake Oliver. Standing Boy Creek is also home to 25 miles of first-class mountain biking trails. Dragonfly Trails is the Columbus region's network of off-road greenways for recreation and transportation, and includes the Riverwalk and Fall Line Trace, connecting residents and visitors to the Chattahoochee River, neighborhoods and jobs.

Residents of Columbus also enjoy award-winning sports facilities, the country's top-ranked golf courses, and critically acclaimed arts and culture, from ballet to Broadway shows.



**Columbus is a vibrant and welcoming community. Fort Moore soldiers add to the cosmopolitan nature of the bi-state region and are a significant asset to the Chattahoochee Valley. The rich fabric of the area - the arts and culture, outdoor recreation, low cost of living, sense of community, and the genuinely welcoming people who live here - these things make it an amazing place to live.**

—GENERAL PATRICK DONAHOE,  
FORMER COMMANDING GENERAL, FORT MOORE

## ARTS AND CULTURE



One of the Southeast's largest museums, **The Columbus Museum** brings art and history to life with over 14,000 artifacts and objects that tell the story of the area's development and an extensive fine art collection from renowned American artists.



**The Springer Opera House**, a brilliantly restored historic theatre, is the region's premier professional theatre and is the State Theatre of Georgia.



**The RiverCenter** features Broadway touring theatrical presentations, concerts, ballet, comedians and all entertainment genres.



**The National Infantry Museum**, named by *USA Today* as America's Best Free Museum and Best History Museum, tells the story of our nation's past with multimedia exhibits and technological innovation. These are a few of many Columbus cultural institutions that enrich the hearts and minds of those who walk through their doors.



When the sun goes down, craft breweries, sports bars, nightclubs and neighborhoods come alive in Columbus. You'll find craft cocktails, local beers and different vibes to choose from, including a Friday night concert series in the heart of Uptown.

## DINING

The Columbus region is filled with innovative bistros, sidewalk cafes, fine dining, and southern cooking. The culinary scene is nationally acclaimed, with a Top 40 fine dining eatery, the Best Burger in the South, and nationally recognized southern barbecue — in addition to beloved establishments that have stood the test of time for decades, serving up southern classics.

## HOUSING

Both historic and progressive, the area boasts diverse housing options – from historic homes to walkable family neighborhoods, riverfront apartments to lakefront gated communities. Access to regions like this usually comes with a steep price tag, but a dream home is affordable in Columbus.



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The Chattahoochee Hub for Innovation and Production of Semiconductors (CHIPS4CHIPS) is the Columbus region's bi-state coalition dedicated to serving the semiconductor industry.

Contact [bmoser@unitedcv.org](mailto:bmoser@unitedcv.org) to learn how we can help.