

**In The
Supreme Court of the United States**

STATE OF FLORIDA,

Plaintiff

v.

STATE OF GEORGIA,

Defendant

Before the Special Master

Honorable Ralph I. Lancaster

AMICUS BRIEF SUBMITTED ON BEHALF OF
THE METRO ATLANTA CHAMBER OF COMMERCE, INC.; REGIONAL BUSINESS COALITION
OF METROPOLITAN ATLANTA, INC.; AND GEORGIA CHAMBER OF COMMERCE, INC.
IN SUPPORT OF THE DEFENDANT STATE OF GEORGIA

Susan A. Cahoon
Kilpatrick Townsend & Stockton LLP
1100 Peachtree Street, Suite 2800
Atlanta, Georgia 30309
Tel.: (404) 815-6325
scahoon@kilpatricktownsend.com

TABLE OF CONTENTS

I. INTRODUCTION 1

II. STATEMENT OF INTEREST OF THE *AMICI* METRO
ATLANTA BUSINESS COMMUNITY REPRESENTATIVES2

III. MATERIAL FACTS THAT DEMONSTRATE WHY METRO
ATLANTA IS A CRUCIAL REGIONAL, NATIONAL AND
GLOBAL CENTER.....2

 A. The Ninth Largest Metro Area.3

 B. Metro Atlanta Supports a Major Economic Area4

 C. The Primary Southeastern Regional Transportation Hub9

 D. University and Cultural Center.10

 E. Recreation.....12

 F. Conventions and Tourism.12

 G. Metro Atlanta’s Horticulture and Landscaping Industry Is
 Larger than Florida’s Apalachicola Oyster Industry13

 H. Metro Atlanta Is Aggressively Conserving Water14

IV. ARGUMENT 15

V. CONCLUSION.....23

TABLE OF AUTHORITIES

Cases

Colorado v. Kansas, 320 U.S. 383 (1943)..... 21

Colorado v. New Mexico, 467 U.S. 310 (1984)..... 20, 21

Evans ex rel Idaho v. Oregon, 422 U.S. 1017 (1983)..... 21, 22

Greene v. Pennsylvania Bd. of Law Examiners, 751 F. Supp. 536 (E.D. Pa. 1990) 3

Kansas v. Colorado, 206 U.S. 46 (1907)..... 18

LeMaire v. Maass, 745 F. Supp. 623 (D. Or. 1990) 3

Liberty Mut. Ins. Co. v. Pardis, 764 F. Supp. 13 (D.R.I. 1991)..... 3

Reynolds v. Sims, 377 U.S. 533 (1963)..... 2

Steelworkers v. Weber, 443 U.S. 193 (1979)..... 2

Rules

Connecticut v. Massachusetts, 282 U.S. 660 (1931) 16

Fed. R. Evid. 201(b)(2)..... 2

I. INTRODUCTION

This *amicus* brief is submitted in support of the State of Georgia on behalf of the Metro Atlanta Chamber of Commerce, Inc. (“MAC”); the Regional Business Coalition of Metropolitan Atlanta, Inc. (“RBC”); and the Georgia Chamber of Commerce, Inc. (collectively, “the Metro Atlanta Business Community”).¹

The Metro Atlanta Business Community has a unique perspective on the importance of the Metro Atlanta community to the Southeastern United States, the Nation and the international community. Our perspective touches upon all of the crucial contributions Metro Atlanta provides and will continue to provide unless its access to water resources is constrained. A secure and abundant water supply is critical to the continued vitality of the Metro Atlanta region. Water influences all aspects of our community and its availability is essential to our efforts to sustain the quality of life that has drawn, and continues to draw, citizens and businesses to our community.

Metro Atlanta is a thriving 29-county region that has grown in population and economic activity while at the same time cutting its consumptive use of water. Any remedy that would impose a consumption cap on Metro Atlanta water usage would be devastating to its citizens and the economy. Moreover, it would be inequitable. The region is recognized as a leader in its stewardship of water resources. Yet, Florida seeks to roll back Metro Atlanta’s water usage to 1992 levels or cap usage below current levels. Either remedy is unprecedented. The Metro Atlanta Business Community is not aware of any equitable apportionment decision by the United States Supreme Court that directed a thriving metropolis to cap its water usage at current levels,

¹ Pursuant to Supreme Court Rule 37.6, the Metro Atlanta Business Community *amicis* declare that the State of Georgia and its counsel did not author or pay for any part of this brief and that they have paid the fees for the brief.

let alone imposed a draconian remedy of rolling back water usage to levels last seen over two decades ago. The Metro Atlanta Business Community respectfully asks that the Special Master decline to set precedent by granting Florida the relief it requests.

II. STATEMENT OF INTEREST OF THE *AMICI* METRO ATLANTA BUSINESS COMMUNITY REPRESENTATIVES

MAC is a 501(c)(6) nonprofit corporation that represents the interests of approximately 3,000 businesses in promoting the development of the Atlanta MSA (Metropolitan Statistical Area) as a place to locate and grow businesses in an environment that provides top tier quality of life for those they employ and their families. RBC is a 501(c)(6) corporation, founded in 1998, whose mission is to promote the common business interests of its members and provide business leadership in resolving regional issues in the Atlanta MSA. RBC membership is comprised of 16 local Chambers of Commerce throughout the Metro Atlanta area. The Georgia Chamber is a 501(c)(6) nonprofit corporation that represents business interests throughout Georgia. Its approximately 40,000 members employ over 2 million workers in businesses ranging from storefronts to Fortune 500 companies.

III. MATERIAL FACTS THAT DEMONSTRATE WHY METRO ATLANTA IS A CRUCIAL REGIONAL, NATIONAL AND GLOBAL CENTER

Under Rule 201 of the Federal Rules of Evidence, the Special Master “may judicially notice a fact that is not subject to reasonable dispute because that fact “can be accurately and readily determined from sources whose accuracy cannot be reasonably questioned.” Fed. R. Evid. 201(b)(2). Federal courts routinely apply Rule 201 to take judicial notice of economic data and statistics, information in government reports and newspaper accounts of events.²

² See, e.g., *Steelworkers v. Weber*, 443 U.S. 193, 255 n.1 (1979) (“Judicial findings of exclusion from crafts on racial grounds are so numerous as to make such exclusion a proper subject for judicial notice.”) *Reynolds v. Sims*, 377 U.S. 533 (1963) (upheld district court’s taking judicial notice of census data and population growth); *Liberty Mut. Ins. Co. v. Pardis*, 764 F. Supp. 13

The Metro Atlanta Business Community submits information about Metro Atlanta that highlights the importance of that community to global commerce, the Nation generally, and the Southeast, specifically. The sources of this information are government reports, media accounts and non-profit community organizations. These sources and the cited information are the types of information for which courts routinely take judicial notice in resolving disputes. Courtesy copies of the source documents are provided for the benefit of the Special Master and the parties.

The following paragraphs highlight for the Special Master's consideration salient facts about the importance of the Atlanta MSA as a global, national, and regional center.³

A. The Ninth Largest Metro Area.

The Atlanta MSA consists of 29 counties in north Georgia. In 1990, the Atlanta MSA had a population of 3.1 million people. Today, it is the ninth largest metropolitan region in the United States and is home to approximately 5.7 million people. If Metro Atlanta were a stand-alone state, it would be the twenty first largest state by population and comparable in population to the state of Wisconsin, based on 2010 census data.⁴ By 2050, the population in the MSA is expected to grow to 9.5 million.⁵ Fourteen of its 29 counties draw their potable water from the

(D.R.I. 1991) (judicial notice of 10-year cost of living index data); *LeMaire v. Maass*, 745 F. Supp. 623, 636 n.8 (D. Or. 1990) (judicial notice of media accounts of events); *Greene v. Pennsylvania Bd. of Law Examiners*, 751 F. Supp. 536, 539 n.10 (E.D. Pa. 1990) (judicial notice of press releases).

³ MAC as part of its efforts to PROMOTE Metro Atlanta has prepared and published a summary of key attributes and features of the area, which is available at http://www.metroatlantachamber.com/docs/default-source/2016-One-Pagers/2016-ytd-atlanta-rankings_10_2016.pdf?sfvrsn=2. Ex. 1

⁴ United States Census Bureau Population Data, <http://www.census.gov/popest/data/state/totals/2015/index.html>. Ex. 2.

⁵ Ex. B; Woods & Poole Economics, Inc. 2016 Complete Economic and Demographic Data Source (CEDDS). Ex. 3.

Apalachicola-Chattahoochee-Flint (“ACF”) basin.⁶ The other fifteen counties rely on the Coosa, Ocmulgee, Tallapoosa or Oconee basins.⁷

B. Metro Atlanta Supports a Major Economic Area

The Atlanta MSA is a major economic engine for global commerce and the Nation as a whole, and more particularly, the Southeast.⁸ Measured by the number of jobs, there were approximately 2.7 million people employed in Metro Atlanta at the end of 2015.⁹ Measured by economic activity, the U.S. Bureau of Economic Analysis estimated this MSA had a gross domestic product (“GDP”) of \$339.2 billion in 2015.¹⁰ The GDP is expected to grow to \$659 billion by 2050.¹¹ The economy has grown enormously over the last 20 years. In 1992, the year

⁶ The Atlanta MSA counties drawing some or all of their drinking water from the ACF are Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Heard, Lamar, Meriwether, Pike and Spalding.

⁷ These counties include Barrow, Bartow, Butts, Carroll, Cherokee, Dawson, Haralson, Henry, Jasper, Morgan, Newton, Paulding, Pickens, Rockdale and Walton.

⁸ Florida’s complaint relies heavily on harm that Georgia’s use of water allegedly has caused to Florida’s \$10 million oyster industry in Apalachicola Bay to justify its demand that that water used to support a current \$339 billion economy be reduced to a 1992 usage level. That does not make sense. If the stark contrast in economic activity were not enough, Florida’s ability to protect this oyster industry as it has been practiced is far from assured no matter what the outcome of this litigation. That industry is expected to face increased competition from the thriving oyster aquaculture industry that is growing along the southeastern Atlantic coast. *See* “Why The Southeast Could Become The Napa Valley Of Oysters” <http://www.npr.org/sections/thesalt/2016/01/27/462929374/why-the-southeast-could-become-the-napa-valley-of-oysters> (“NPR Oysters Report”) Ex. 4; *see also* USDA Aquaculture Census (2013) , which is available through the University of Florida website at <http://shellfish.ifas.ufl.edu/wp-content/uploads/2013-Census-of-Aquaculture.pdf>. Ex. 5.

⁹ U.S. Department of Labor Bureau of Labor Statistics, http://www.bls.gov/eag/eag.ga_atlanta_msa.html. Ex. 6.

¹⁰ U.S. Bureau of Economic Analysis GDP Data, Ex. 7.

¹¹ Ex. 3.

at which Florida's complaint has pegged its request for relief, the Atlanta MSA GDP was \$153.8 billion.¹²

Metro Atlanta is recognized as a business powerhouse for several reasons. The region offers competitive business costs through low taxes, balanced regulations and state and local incentives such as loans and grants. The region provides an enjoyable lifestyle, with temperate weather, and a full array of community, food, recreation, cultural and educational experiences, described in further detail below. Atlanta also has a relative low cost of living for major expenses such as housing, food, gasoline and clothing. Growth in Georgia job postings over the last five years has exploded, increasing by 154 percent. This job growth ranks fourth nationally.¹³ Having such a vibrant, growing economy draws younger adults – millennials – which in turn attracts investment capital and businesses looking for a young and motivated workforce.¹⁴

The Atlanta MSA is home to a critical life sciences industry. The Center for Disease Control and Prevention (“CDC”), which is located here, provides essential services in combating infectious disease wherever it occurs in the world (as evidenced by its role in addressing the recent crises involving the *ebola* and *zika* virus outbreaks) and contributing to the overall health of the nation and the world through research and education. This work often involves cooperation with Atlanta area educational institutions such as Emory University and its highly ranked School of Medicine and Rollins School of Public Health. In coming years, fast-growing

¹² Ex. 7 adjusted to 2016 dollars.

¹³ Burning Glass, <http://burning-glass.com/labor-insight/>. Ex. 8.

¹⁴ See Jenkins, “8 Reasons This City Is a Powerhouse” Inc.com, June 20, 2016, <http://www.inc.com/ryan-jenkins/why-atlanta-is-the-best-city-to-base-your-company.html>. Ex. 9; Dill, “The Top 10 Cities For Relocation,” Forbes, May 23, 2014, <http://www.forbes.com/sites/kathryndill/2014/05/23/the-top-10-cities-for-relocation/#30f22bd257ab>. Ex. 10.

Georgia State University, located in downtown Atlanta, will also increasingly be involved in the Life Sciences through its recently announced plan to build a \$35 million, 55,000 square-foot center for infectious disease research.¹⁵

Based on 2010 data, the CDC, by itself, generates 7,551 jobs in the State of Georgia and contributes \$1.4 billion for the state's economy. The CDC also is a magnet for research and development by universities and colleges, as well as private sector companies. When the CDC, academic R&D and life science companies are combined, the economic impact includes 33,359 direct jobs and 94,106 total jobs. These jobs generate \$9.3 billion in state GDP, \$5.6 billion in earnings; and \$557 million in state and local tax revenues.¹⁶ This industry also includes pharmaceutical and medical device manufacturing, R&D in biotechnology, and testing and diagnostics companies. The jobs in this industry are well paying: average wage in the manufacturing segment is over \$64,000 per year; the average salary in biotech R&D is over \$72,000.¹⁷

Another rapidly growing segment of the metro area's economy, attracting high paying technology jobs to the region, is the financial technology industry. More than 60 percent of transaction processing companies are based in Atlanta (over 100 companies) and 70 percent of all payments in the United States run through Georgia.¹⁸ These companies employ 30,000 in Georgia and 130,000 globally.¹⁹ These companies include: Equifax, Inc.; Kabbage;

¹⁵ See <http://www.bizjournals.com/atlanta/news/2016/10/11/georgia-state-university-plans-35-million.html>. Ex. 11.

¹⁶ *Shaping Infinity*, 2012 Georgia Life Sciences Industry Analysis (Georgia Bio and the University of Georgia Terry School of Business) ("Shaping Infinity"), at 1. Ex. 12.

¹⁷ Ex. 12, at 2.

¹⁸ American Transaction Processing Coalition <http://www.atpcoalition.org/georgia-impact>. Ex. 13.

¹⁹ Metro Atlanta Fintech Fact Sheet. Ex. 14.

Groundfloor; bitpay; ADP, Inc.; Fiserv, Inc.; LexisNexis RIAG; Macy's Systems & Technology; RBS WorldPay; NCR; Cardlytics; First Data Corp.; GE Money; Elavon; Global Payments, Inc.; S1 Corp.; TSYS (Total Systems Services, Inc.) and Fidelity National Information Services.²⁰ Nicknamed "Transaction Alley," Metro Atlanta and Georgia processes over 118 billion transactions annually, with a value of over \$2 trillion dollars, on behalf of 4 million merchants.²¹

Overall, Metro Atlanta's technology industry is thriving with a well-developed telecommunications infrastructure, including an extensive fiber optics network. More than 189,000 workers are employed in the tech industry at 14,000 tech establishments.²² Leading technology companies include AirWatch (software developer for device security), Manhattan Associates (logistics software), Secure Works (internet security services) and many others.²³ Metro Atlanta ranks as the fourth most competitive metro area in North America for the IT and communications industry and as such is a top ten market for that talent.²⁴

The television and motion picture industries also have found a home in Metro Atlanta. Georgia now ranks third behind California and New York as the location for original television and motion picture production with an economic impact topping \$7 billion. Atlanta has played backdrop to over 140 films and television shows over the past eight years. In 2014, production

²⁰ See <http://www.metroatlantachamber.com/business/technology/payment-processing>. Ex. 15.

²¹ <http://tsys.com/payments-hub/featured/georgias-fintech-community-touts-growth-influence.html>. Ex. 16.

²² Technology Association of Georgia, <http://www.tagonline.org/files/documents/FinTech/tag-fintech-ecosystem-report-2016.pdf>. Ex. 17.

²³ See <http://www.tagonline.org/news-press/tag-names-top-40-innovative-technology-companies-in-georgia-2/> (partial list of Atlanta technology companies). Ex. 18.

²⁴ See "Atlanta makes the latest list of tech hubs (number four?)" <http://www.ajc.com/business/atlanta-makes-the-latest-list-tech-hubs-number-four/KvhyCTq4UDtd0Yi8cGZNXI/>; "ATL Named 6th Fastest Growing Market for Talent" <http://hypepotamus.com/news/atl-6th-fastest-growing-market-tech-talent/>. Ex. 19.

companies spent \$1.3 billion in Metro Atlanta. Last year, in 2015, that number increased to \$1.7 billion for 248 projects. The film and television industry is expected to continue growing.²⁵ For example, actor Tyler Perry is currently completing a major production facility on the site formerly occupied by Ft. McPherson that will add an estimated 8,300 new jobs.²⁶

Through these and other growing businesses, Metro Atlanta now is home to the corporate headquarters of 25 Fortune 1000 companies, of which 16 are Fortune 500 companies.²⁷ These Fortune 1000 companies represent global brands from many business sectors including Delta Air Lines, The Coca-Cola Company, The Home Depot, UPS and Newell Brands. The Atlanta MSA also is home to the regional headquarters and major divisions of many other corporations, including AT&T Wireless and GE Energy. The American Cancer Society and CARE, two world renowned charitable organizations, call Atlanta home. In addition, more than 80 consulates and trade offices, and 34 bi-national chambers of commerce are located in Metro Atlanta.²⁸

Collectively, enterprises such as these have drawn a diverse and highly skilled work force to live in the Atlanta MSA, to enjoy its quality of life and to raise their families here. Approximately one-third of Metro Atlanta adults hold a bachelor's degree (compared to a national average of 27 percent).²⁹ Importantly, these companies and industries described above

²⁵ See "Atlanta's Explosive Film and TV Growth By The Numbers," Atlanta Journal Constitution, Aug. 21, 2015, <http://www.ajc.com/entertainment/movies/atlanta-explosive-film-and-growth-the-numbers/vJ5qcYzqz37YQDcRxOY48L/>. Ex. 20.

²⁶ See <http://www.bizjournals.com/atlanta/news/2015/08/05/tyler-perrys-new-studio-could-create-up-to-8-300.html>. Ex. 21.

²⁷ FORTUNE magazine, June 6, 2016; Metro Atlanta Chamber <http://www.metroatlantachamber.com/docs/default-source/2016-One-Pagers/2016-fortune-500-and-1000-companies22A1C52BAC79.pdf?sfvrsn=2>. Ex. 22.

²⁸ Atlanta.net at p. 16.

²⁹ "Fast Facts About Higher Education in the Atlanta Region," Atlanta Regional Council for Higher Education,

are not intensive consumers of water resources. That, together with water conservation efforts discussed below, is why Atlanta has been able to reduce water usage even as its population and economy have grown so significantly. As Metro Atlanta continues to thrive and grow, the impact of growth on the region's need for water is primarily increased usage needed to support population increases.

C. The Primary Southeastern Regional Transportation Hub

Metro Atlanta is a primary hub in the nation's hub and spoke transportation and distribution system, with its central location in the Southeastern region and its well-developed interstate highway and railroad transportation links to neighboring states and beyond. Eighty (80) percent of the entire U.S. population is within a two-hour flight from Atlanta³⁰ and forty (40) percent of the manufacturing and distribution centers are within 500 miles.³¹

Atlanta is home to Hartsfield – Jackson Atlanta International Airport, the busiest and most efficient airport in the world which provided service to approximately 101.5 million passengers in 2015, of whom over 11 million were international travelers. Flights from Hartsfield-Jackson include non-stop flights to 150 U.S. destinations and nearly 70 international destinations in more than 45 countries.

Metro Atlanta's rails and highways also serve as a gateway for cargo exported and imported through the Georgia Ports Authority ports in Savannah and Brunswick, Georgia. The

<http://atlantahighered.org/Reports/FastFactsAboutHigherEducation/tabid/732/Default.aspx>. Ex. 23.

³⁰ “*Know Atlanta*” The Relocation Guide, <http://www.knowatlanta.com/atlanta-airport-hartsfield-jackson-interntional/airport/>. Ex. 24.

³¹ “Where to Warehouse: The Top 10 for 2009”, *Feb 24, 2009*, <http://multichannelmerchant.com/mcm/where-to-warehouse-the-top-10-for-2009-24022009/>. <http://multichannelmerchant.com/mcm/where-to-warehouse-the-top-10-for-2009-24022009/>. Ex. 25; Material Handling Brings New Show to Atlanta in 2012, <http://www.tsnn.com/news-blogs/material-handling-brings-new-show-atlanta-2012>. Ex. 26.

Metro Atlanta area relies on its proximity to the Georgia ports to attract business and people. The Georgia Ports Authority has gathered data about the economic activity attributed to its ports, including data for a multi-county region that the Authority calls “Metro Atlanta”(a subset of the full Atlanta MSA).³² As to these counties, exports and imports via the ports help contribute to 167,394 jobs.³³

D. University and Cultural Center.

The Brookings Institute recently named metro Atlanta as a global knowledge capital.³⁴ The designation is appropriate. Metro Atlanta is home to 70 colleges and universities, including the Georgia Institute of Technology (Georgia Tech); Emory University; Georgia State University; and several Historically Black Colleges and Universities (“HBCU”) such as Morehouse, Spelman and Clark-Atlanta University. Annually, more than 275,000 students attend Metro Atlanta colleges and universities.³⁵ This large enrollment ranks Metro Atlanta as eighth in student enrollment among the nation’s largest metro areas and seventh in degrees conferred annually (bachelor degrees or higher).³⁶ STEM degrees comprise a significant number of the degrees awarded and have grown approximately 40 percent from 2005-2014. Metro Atlanta ranks among the top eight metro areas in the number of degrees awarded (bachelors or

³² The counties include Cherokee, Clayton, DeKalb, Douglass, Fayette, Fulton, Gwinnett, Henry, and Rockdale.

³³ The Georgia Ports Authority maintains this information and makes it available to the public through its website, <http://www.gaports.com/moreimpact/#/intro>. Ex. 27.

³⁴ “Brookings Institute names Atlanta a 'Knowledge Capital’”, Atlanta Business Chronicle, October 2, 2016, <http://www.bizjournals.com/atlanta/news/2016/10/02/brookings-institute-names-atlanta-a-knowledge.html>. Ex. 28

³⁵ “Metro Atlanta’s Future: Educate. Innovate. Collaborate.” Metro Atlanta Chamber, November 2013, p. 3 <http://www.metroatlantachamber.com/docs/default-source/business-higher-educatin/bhe-rankings-book.pdf?sfvrsn=2>. Ex. 29. The National Center for Education Statistics, <http://nces.ed.gov/collegenavigator/> provides the data for the number of colleges and universities. Ex. 30. The current data shows 70 colleges and universities in Metro Atlanta.

³⁶ Ex. 29, p. 5.

higher) in the fields of business, engineering, computer sciences, math, physical and biological/biomedical sciences.³⁷ These colleges and universities generate R&D across all industries and attract college-educated 25 to 34 year olds to Metro Atlanta.³⁸

The colleges and universities in Metro Atlanta are a major source of employment and economic activity. This sector generates \$10.8 billion for the Georgia economy, which is 3.2 percent of its annual gross product. There are nearly 5.7 million visits annually, 1.5 million overnight stays, campus tours, commencement, alumni events, conferences and other educational and cultural activities associated with the colleges and universities. More important is research. In 2011, research and development expenditures in Metro Atlanta were nearly \$1.5 billion.³⁹

Atlanta has been chosen as the location for important centers for social and political change that honor Nobel Peace Laureates. The King Center for Nonviolent Social Change pays homage to the Reverend Martin Luther King, Jr. and continues his work for justice through non-violence. The Carter Center is home to the Presidential Library of President Jimmy Carter and serves as the operational base for his international and national civic works.

Metro Atlanta is a thriving hub for the arts. The Woodruff Arts Center, the nation's third largest arts center, includes the High Museum, the multiple Grammy award winning Atlanta Symphony and venues for concerts, theater and creative arts education that reach over 200,000 students. Other notable museums and educational venues include the Booth Museum of Western Art, the Atlanta History Center, the Tellus Science Museum, the National Center for Civil and

³⁷ Metro Atlanta Chamber Press Release titled "Higher Education Report shows Metro Atlanta is a national leader in several higher education indicators", dated 8/11/2013, <http://www.metroatlantachamber.com/news/items/2013/11/08/higher-education-report-shows-metro-atlanta-is-a-national-leader-in-several-higher-education-indicators>. Ex. 31.

³⁸ <http://atlantahighered.org/Reports/FastFactsAboutHigherEducation/tabid/732/Default.aspx>; <http://www.atlanta.net/explore/colleges-universities>. Ex. 32.

³⁹ Ex. 29, p. 9.

Human Rights, Fernbank Museum of Natural History and Science Center, Zoo Atlanta, the College Football Hall of Fame, and the Georgia Aquarium.

Recently, the American Planning Association, a professional association of urban and community planners, named one of Atlanta's neighborhoods, the City of Atlanta's Midtown community, as one of five "Great Places" in the country in part because of its proximity to the cultural attractions in Atlanta. The Association was impressed by Midtown's "planning initiatives, colorful history, vibrant arts and cultural scene, connected street grid and investments in walkability."⁴⁰ Midtown is a great place that is part of a larger and great metropolitan region that is growing and should be allowed to continue to thrive and support the millions of people who call Atlanta home and who visit the region each year.

E. Recreation.

From professional sports teams in baseball, basketball, football, lacrosse and soccer to public parks such as Stone Mountain, Kennesaw Mountain, the Chattahoochee National Recreational Area, Lake Lanier Islands, Piedmont Park (home of the Atlanta Botanical Gardens) and the biking paths of the Silver Comet Trail or the Atlanta Beltline, the metro area provides numerous recreational outlets for locals and for tourists – especially those coming from areas in neighboring states who do not have a professional team closer to their homes to watch.

F. Conventions and Tourism.

Metro Atlanta draws hundreds of thousands of visitors to conventions at the space offered in the Georgia World Congress Center (GWCC), which can accommodate most of the largest national and international tradeshows and expositions, and in the many hotels and local meeting

⁴⁰ "Which Atlanta Neighborhood is Ranked One of Five "Great Places" in the Country?", Atlanta Business Chronicle, October 4, 2016, <http://www.bizjournals.com/atlanta/news/2016/10/03/which-atlanta-neighborhood-is-ranked-one-five.html>. Ex. 33.

spaces. GWCC is the world's largest LEED certified convention center. For years, Atlanta has ranked in the top five convention destinations because of its convention and tourism infrastructure, as well as the restaurants and attractions that occupy the visitors outside of meeting hours.

In 2015, 49 million people visited Metro Atlanta: 35 million visited for leisure; 14 million visited for business. The Atlanta Convention and Visitors Bureau hosted more than 800 meetings in 2015, including 21 major conventions. Overall, tourism and conventions generated approximately \$13 billion for the economy and employed 240,000 workers.⁴¹

The downtown area next to the GWCC is attractive to residents, conventioners and tourists alike. Centennial Olympic Park is the centerpiece of many educational, cultural and entertainment opportunities. Adjacent to Centennial Olympic Park are the College Football Hall of Fame, the National Center for Civil and Human Rights, the Georgia Aquarium, the World of Coca-Cola, and the CNN studio (which hosts tours).

G. Metro Atlanta's Horticulture and Landscaping Industry Is Larger than Florida's Apalachicola Oyster Industry

Florida is seeking to protect its \$10 million oyster industry by imposing draconian water use restrictions on Metro Atlanta. One of Florida's proposed experts to explain what remedies it seeks opines that this region should cut back outdoor water usage that he attributes to landscaping and horticulture activities by 50% at all times and by 75% during drought periods, claiming that while such reductions would adversely affect the quality of life in this region, they would have no direct economic impact.⁴² Florida fails to recognize there is a significant direct economic impact from these activities. Dr. Stavins, one of Georgia's proposed expert witnesses,

⁴¹ Atlanta Convention and Visitors Bureau 2015 Annual Report. Ex. 34.

⁴² Expert Report of Dr. David Sunding, May 20, 2016, at 1-4. Ex. 35.

presents data showing that 13,810 persons were employed in 2013 in Upper Chattahoochee based landscape and horticultural services.⁴³ These persons contributed \$621 million to GDP and \$910 million in output. Another 526 were employed in greenhouse, nursery and floriculture production, generating \$37 million in GDP and \$54 million in output. These activities individually, and combined, are significantly more than the figures Florida has offered about the economic impact of the Apalachicola oyster and Tupelo honey industries on the Florida economy. With greatly reduced water available to support residential horticultural activities, these industries inevitably have less demand for their services and will be harmed significantly. Many of their employees are relatively unskilled laborers and among those least able to find alternative employment if they are no longer needed in this segment of the region's economy.

H. Metro Atlanta Is Aggressively Conserving Water

Even though the population of Metro Atlanta has increased by 2.6 million since 1990, its total consumptive water usage has been relatively flat. The State of Georgia created the Metropolitan North Georgia Water Planning District in 2001 to develop water conservation plans. The Planning District includes most of the counties in the Atlanta MSA. According to the Metropolitan North Water Planning District, since 2000 the per capita water demand has dropped thirty percent. The Metro Atlanta population and economy are projected to grow, as noted. Yet, because of conservation, current projections for water usage needs in 2050 are now 25 percent lower than prior projections, while still showing a need for increased water usage to service the growing population and economy.⁴⁴ This relatively flat total consumptive water usage as the population has grown thus far is the result of deliberate policies and planning. Over the past

⁴³ Expert Report of Dr. Stavins, May 20, 2016, at 29 (Ex. 43 to Georgia's Trial Brief). Ex. 36.

⁴⁴ 2015 Activities & Progress Report, Metropolitan North Georgia Water Planning District, pages 1 and 5. Ex. 37.

fifteen years, the water utilities in the Planning District have implemented an aggressive conservation program that includes:

- A tiered pricing structures that charge higher rates the more water that is used to provide a direct economic incentive for conservation;
- A sophisticated leak detection program that has enabled water utilities to detect and repair over 23,000 leaks in the past four years;
- A toilet rebate program that has replaced over 110,000 fixtures with high efficiency models; and
- Water use restriction programs during periods of drought.⁴⁵

Metro Atlanta has stepped up as a water resource steward. Those efforts should be recognized and provide sufficient grounds to reject any caps on consumptive use whether at 1992 levels or even at current use levels. A net reduction in available water can only impede the predicted further growth in the Atlanta MSA, which depends on water from the Chattahoochee for its citizens to drink at home or at their places of business and use in everyday life, for its businesses to use that require water for their processes and also, for the millions of visitors to the region each year, to provide them with the water they need while they are here.

IV. ARGUMENT

The MAC, RBC and Georgia Chamber as *amicus* submit that the Special Master should reject any remedy for Florida that directly or indirectly imposes a cap on Metro Atlanta's water usage, whether retroactively to 1992 levels or even a cap at current levels. The Metro Atlanta Business Community is not aware of any equitable apportionment decision by the United States Supreme Court that would impose a consumptive use cap on a metropolitan region, with its inevitable adverse impact on the region's ability to support a growing population's needs for

⁴⁵ "Consumers, water suppliers need to conserve," Atlanta Journal Constitution, October 16, 2016, page A20. Ex. 38.

water for drinking and other domestic purposes, let alone a retroactive cap set at 20-year old levels. As explained below, the facts here do not support creation of such a draconian precedent.

As an initial matter, the Metro Atlanta Business Community believes that the State of Georgia's Pretrial Brief has properly analyzed the burden of proof that Florida must bear in seeking to change Georgia's existing use of water from the ACF basin by capping the total amount of water that Georgia may use at a level below current consumptive usage, and also imposing additional caps during peak months of drought periods.⁴⁶ Georgia has also demonstrated why Florida's evidence will not satisfy its heavy burden of proving by clear and convincing evidence (a) that Georgia's current use of water is unreasonable, (b) that Georgia has not taken reasonable measures to conserve water resources and (c) that the harm to Georgia from reducing its current usage to a level capped below its current usage is outweighed by the benefits to Florida from whatever increase in the flow of the Apalachicola might result. However, there are several principles that are particularly significant as they pertain to Florida's claim with respect to Georgia's use of water in the Atlanta MSA that the Metro Atlanta Business Community highlights in the following portion of its brief.

First, within the Atlanta MSA, direct human consumption constitutes the overwhelming preponderance of consumptive use. The Supreme Court has recognized that using water for "drinking and other domestic purposes" is the highest priority use in any equitable apportionment analysis for water. *See Connecticut v. Massachusetts*, 282 U.S. 660, 673 (1931).

⁴⁶ It is unclear from Florida's pretrial brief precisely what remedy Florida will seek at trial. Its complaint, which has never been amended, sought to cap Georgia's usage at the 1992 level. The pretrial brief indicates Florida will rely on its purported experts' trial testimony to explain what remedies it will seek. *See Florida Pretrial Br.*, at 37-39. From some of the calculations used by one of Florida's proposed expert witnesses, it appears that the consumption level as of 2011 is a baseline, at least for his attempt to demonstrate ways to reduce usage to achieve the drought year cap he proposes. *See Ex. 35*, at 1, ¶ 2.

Application of *Connecticut v. Massachusetts* to the facts shown in Part III of this brief support summary denial of Florida's request for a consumption cap – whether set at 1992 consumption usage or at current consumption usage levels – that would affect Metro Atlanta's use of the Chattahoochee River. The usage by Metro Atlanta is the highest use of water and the level of consumption is reasonable and appropriate.

As the facts presented earlier demonstrate, even those who live in counties within the Atlanta MSA who do not draw residential drinking and domestic water from the Chattahoochee often work at locations within the MSA whose water comes from the Chattahoochee, and they attend events, visit outdoor recreational sites and patronize restaurants within the MSA that rely on water from the Chattahoochee. The number of people who depend directly on water from the Chattahoochee is growing rapidly. Yet, despite this high priority on the use of water for human domestic purposes, Florida seeks a fixed cap on consumptive use at levels below recent annual average total consumption. Florida tries to skirt the impact of such a cap on Metro Atlanta, which already has implemented numerous conservation programs (discussed briefly in Part III, but elaborated upon by Georgia and other *amici* in more detail) and has succeeded in achieving a generally flat total consumption in comparison to earlier time periods and a reduction in average per capita consumption, despite the explosive growth in population. Florida effectively asks the factfinder to assume that continued population growth can be similarly sustained without more water, merely through continuing types of conservation measures that already have been implemented, without any recognition that only finite effects can be achieved through such measures. Florida also argues that because it appears that 21% of the water from a sample of residential users is used outdoors, that usage can be drastically reduced without harming Metro Atlanta's growth. Yet, even Florida concedes that reducing outdoor uses of water affects the

quality of life,⁴⁷ and as the facts about Metro Atlanta's growth provided earlier demonstrate, the quality of life in this region has been a key driver in that dramatic growth.

Second, all of the Supreme Court cases dealing with issues of allocating water between sovereign states that have examined existing uses of water by one versus a proposed increased use by the other have done so in a context in which both existing and proposed uses had a direct and largely quantifiable economic impact on persons or businesses located in the competing states, each of which would physically use the water in some manner. Even where one competing state argued that an upstream state's diversion of water prevented naturally occurring flooding downstream, the harm that was argued (in that case, unsuccessfully) was not the mere change in flow from that which nature would have produced downstream, but rather the interference with human reliance on natural flooding to irrigate crops located adjacent to the river. *See Kansas v. Colorado*, 206 U.S. 46, 117 (1907). The Supreme Court has never recognized a "non-use" of water by one state as a basis for depriving another state of beneficial use of water that passes through its boundaries, and certainly never indicated any inclination to do so when the defendant state is using water for domestic purposes, as is the case with Metro Atlanta's use of water. Yet, the arguments being made here by Florida with respect to preserving the "natural" ecosystem of portions of the Apalachicola River (an ecosystem already altered by man as a result of the construction of dams and other physical alterations to the river's flow) require an unprecedented recognition of intangible benefit from the absence of any physical use of water by the claimant state as an equitable allocation factor. The issue for the Court heretofore has always focused on actual economic uses that each state and its citizens derived from the water in question, not an unquantifiable and highly subjective opinion about the value

⁴⁷See Sunding Report, 2/29/2016 at 76, ¶ 134, Ex. 39; *see also* Ex. 35 at 4, ¶ 12.

of preserving nature or natural beauty, or comparing natural beauty with man-made beauty that might be compromised by reducing water needed to sustain it.⁴⁸

To the extent that there are federal policies to protect endangered species and to conserve and preserve wild spaces, there are federal statutes and regulations expressing those policies to which both Florida and Georgia are subject. If actions by Georgia are implicated in violating federal law, there are remedies the United States and its agencies charged with enforcing those laws may impose. However, the federal common law of equitable apportionment between states as to use of water has never been the blunt instrument with which to address these types of policy judgments, and should not become one in this dispute between Georgia and Florida.

The Court's jurisprudence highlights the seriousness of water disputes between states, for each state comes before the Court as a sovereign, on equal footing, seeking in the forum constitutionally provided to resolve disputes between them to obtain a just adjudication. Neither state's state law controls the outcome; rather, federal common law as developed in the cases cited in both parties' pretrial briefs has developed the standards that govern equitable apportionment.

Were consideration now to be given to the novel argument made about protecting an ecosystem as a factor to weigh in assessing harm or benefit, then as noted above, an equally novel argument about intangible quality of life factors affecting a community would also have relevance, especially given the direct impact on the humans living and working in an area such as Metro Atlanta who experience that quality of life impact every day, whereas only those

⁴⁸ Ironically, while Florida's experts have offered no quantification for the subjective value of preserving the Apalachicola ecosystem for its natural beauty, Dr. Sunding does provide a "welfare cost" of over \$121 million to Metro Atlanta users of a 30% reduction in their outdoor water use from their 2011 usage levels - not the 50% to 75% reduction that his report requires in drought conditions. Ex. 39, at 76, Table 13.

relatively few who visit the areas of the Apalachicola River discussed in Florida's brief experience the natural beauty of those areas.

Third, the Court's jurisprudence requires comparing any harm Florida can prove by clear and convincing evidence to be caused by Georgia's water usage with the benefits of Georgia's use and the adverse effects of reducing that use to determine whether the equities favor Florida's request. *Colorado v. New Mexico*, 467 U.S. 310, 317-18 (1984) ("*Colorado II*"). Under that analysis, on the one hand Florida argues Georgia's usage of water and consumption reduces fresh water flows into the Apalachicola Bay and adversely impacts wild oyster habitat, which in turn has harmed the oystermen who for generations have harvested oysters from that area. But those arguments must be weighed against other factors that have adversely affected the oyster industry, such as red tide and competition from aquaculture. Even if one accepts Florida's data about causation and the economic impact on the affected individuals and on the oyster industry completely, its quantifiable impact appears to be significantly less than the economic impact of drastically curtailing the outdoor watering in Metro Atlanta during summer months that is essential to maintain lawns, provide sufficient water for flowering plants, nurture shrubs and keep newly planted trees alive. Without sufficient water for those purposes, the home gardening and landscaping industries will be harmed. As explained in Part III, more people are employed in the home garden and landscaping related industries in Metro Atlanta than there are oystermen, and the value of the goods and services generated by the gardening and landscaping business in Metro Atlanta is substantially greater than the entire amounts claimed for the Apalachicola oyster industry, the Tupelo honey industry, or any other economic impact cited by Florida as the harm it purports to have incurred as the result of Georgia's water usage.

Fourth, the need for equitable apportionment is assessed as of the time of the complaining state's complaint. *Colorado v. Kansas*, 320 U.S. 383, 394-95 (1943); *see also Evans ex rel Idaho v. Oregon*, 422 U.S. 1017, 1025-29 (1983). Yet, much of Florida's trial brief is devoted to complaints about Georgia's conduct in 1992 and thereafter. While Florida complains that it suffered for years in the 1990s and thereafter because Georgia was slow to implement conservation measures, the Court's precedent makes clear that a request for an equitable apportionment of a natural resource is not a vehicle for punishing a state for something it may have done in the past, even if that may have harmed the claimant state. *See Evans ex rel Idaho v. Oregon, supra*, 422 U.S. at 1029-30. Thus, the starting point for assessing Florida's claims must be the status quo as of no earlier than October 1, 2013, when Florida filed its motion for leave to file a bill of complaint. By then, Georgia, and especially the Metropolitan North Georgia Water Planning District, had developed and implemented significant, successful programs to conserve water resources, as previously discussed.

Fifth, where the challenged use of water is associated with harm to established existing economies as is the case here, the Court also has made it clear that the equities supporting protecting those existing economies are compelling factors in any equitable apportionment analysis. *See Colorado II* at 317. Moreover, where, as here, there is evidence that the defending state has recognized and implemented conservation measures to preserve and protect water resources, the Court also has placed an additional, heavy burden on the claimant state to demonstrate by clear and convincing evidence that the efforts to use water responsibly were not financially and physically, within practicable limits, given alternatives available. *Id.* at 318-19. Indeed, even where a state in the past may have made relatively little effort to conserve natural resources, if at the time the claim is brought it is actively pursuing reasonable conservation

measures, the factfinder in an equitable apportionment case cannot find that the claimant has satisfied its burden of demonstrating substantial likelihood of future injury sufficient to warrant the invocation of the equitable apportionment remedy. *See Evans ex rel Idaho v. Oregon, supra*, 422 U.S. at 1029-30 (discussing defendant's current efforts to reduce the catch allowed of certain fish species before the fish could return to Idaho waters to spawn).

Whatever complaints Florida may have about Georgia's behavior in the 1990s, there is no clear and convincing evidence that Georgia currently is ignoring reasonable conservation measures or that it is likely to do so in the future. There may be disagreements at times between Florida and Georgia about whether, for example, particular drought conditions have occurred sufficient to trigger Georgia's mandatory restrictions on water usage that are discussed in the evidence and briefing from others. But it is evident that Georgia has established a serious approach to water conservation and that the Metro Atlanta region in particular has focused on being a good steward of water, as evidenced by its active programs to require new developments to use more water efficient plumbing, to reward people for changing to low flow toilets, to detect and fix water leaks, to restrict outdoor watering in serious drought conditions and a host of other measures described briefly above and discussed in Georgia's trial brief and by other *amici*. Yet Florida would require ever more, with no basis for any comfort that imposing a reduced consumptive use cap generally (not even limited to drought conditions) would enable this region to address and fill the needs of its ever growing population for potable water and other domestic uses.

Sixth, the cap on water usage remedy sought by Florida – whether set at current levels or rolled back to 1992 levels – effectively would impose a moratorium throughout Metro Atlanta and impede further growth, for growth requires more, not less water. A moratorium would

create uncertainty for businesses and residents because communities that do not grow recede. The moratorium would prevent, or at least discourage, new businesses from coming to Metro Atlanta and people from choosing Metro Atlanta as the place to live. These developments would have impacts throughout the region. Instead of being a growing, vibrant region requiring new construction, both residential and commercial, and the related services associated with construction, the construction industry would stagnate as it did during recent recessionary periods. Without new, increasing demand for housing, homeowners' property values decline and resale opportunities decrease. Lower income service industry workers especially struggle and have difficulty making ends meet when an economy feels the impact of a recession. When that recession is localized, those who are best equipped financially and by education to find other places to live and work do so, while the poorest and least educated remain and must bear an ever increasing share of the cost of governmental services.

V. CONCLUSION

Thus, based on Supreme Court precedent for resolving disputes between states about the use of water, and given the importance not only to those who live and work in Metro Atlanta, but to a much broader regional, national and even global community of having the Atlanta SMA continue to grow and have the quality of life that sustains such a vibrant community, and for the many reasons explained in Georgia's pretrial brief that will not be repeated here, MAC, RBC and the Georgia Chamber urge the Special Master upon hearing all of the evidence to reach the conclusion that we believe will be fully supported by the evidence: Florida has failed to carry its heavy burden of proof and its claim for an equitable apportionment must be dismissed.

Respectfully submitted this 21st day of October, 2016.

s/ Susan A. Cahoon
Susan A. Cahoon
KILPATRICK TOWNSEND & STOCKTON
LLP
1100 Peachtree Street N.E., Suite 2800
Atlanta, GA 30309-4528
Telephone: (404) 815-6500
Facsimile: (404) 815-6555

CERTIFICATE OF SERVICE

This is to certify that Metro Atlanta Chamber of Commerce, Inc.; Regional Business Coalition of Metropolitan Atlanta, Inc.; and Georgia Chamber of Commerce, Inc.'s Motion for Leave to File an Amicus Brief on Their Behalf in Support of the Defendant State of Georgia has been served on October 21, 2016, in the manner specified below:

<u>For State of Florida</u>	<u>For United States of America</u>
<p><u>By U.S. Mail and Email:</u></p> <p>Gregory Garre <i>Counsel of Record</i> Latham & Watkins LLP 555 Eleventh Street, NW Suite 1000 Washington, DC 20004 T: 202-637-2207 gregory.garre@lw.com</p> <p>Jonathan L. Williams Deputy Solicitor General Office of Florida Attorney General The Capital, PL-01 Tallahassee, FL 32399 T: 850-414-3300 Jonathan.Williams@myfloridalegal.com</p>	<p><u>By U.S. Mail and Email:</u></p> <p>Donald J. Verrilli Solicitor General <i>Counsel of Record</i> Department of Justice 950 Pennsylvania Avenue, N.W. Washington, DC 20530 T: 202-514-7717 supremectbriefs@usdoj.gov</p>
<p><u>By Email Only:</u></p> <p>Pamela Jo Bondi Craig Varn Christopher M. Kise James A. McKee Adam C. Losey Matthew Z. Leopold Philip J. Perry Abid R. Qureshi Claudia M. O'Brien Paul N. Signarella Donald G. Blankenau Thomas R. Wilmoth floridaacf.lwteam@lw.com floridawaterteam@foley.com</p>	<p><u>By Email Only:</u></p> <p>Michael T. Gray Michael.Gray2@usdoj.gov</p> <p>James DuBois James.Dubois@usdoj.gov</p>

For State of Georgia

By U.S. Mail:

Craig S. Primis, P.C.
Counsel of Record
Kirkland & Ellis LLP
655 15th Street, N.W.
Washington, D.C. 20005
T: 202-879-5000
Craig.primis@kirkland.com

By Email Only:

Samuel S. Olens
Britt Grant
Seth P. Waxman
K. Winn Allen
Sarah H. Warren
Georgiawaterteam@kirkland.com

Respectfully Submitted,

/s/ Susan A. Cahoon
Susan A. Cahoon
Kilpatrick Townsend & Stockton LLP
1100 Peachtree Street, Suite 2800
Atlanta, Georgia 30309
Tel: (404) 815-6325
scahoon@kilpatricktownsend.com

October 21, 2016

No. 142, Original

**In The
Supreme Court of the United States**

STATE OF FLORIDA,

Plaintiff

v.

STATE OF GEORGIA,

Defendant

Before the Special Master

Honorable Ralph I. Lancaster

THE METRO ATLANTA CHAMBER OF COMMERCE, INC.; REGIONAL BUSINESS COALITION
OF METROPOLITAN ATLANTA, INC.; AND GEORGIA CHAMBER OF COMMERCE, INC.
IN SUPPORT OF THE DEFENDANT STATE OF GEORGIA

AMICUS BRIEF APPENDIX OF EXHIBITS

Susan A. Cahoon
Kilpatrick Townsend & Stockton LLP
1100 Peachtree Street, Suite 2800
Atlanta, Georgia 30309
Tel.: (404) 815-6325
scahoon@kilpatricktownsend.com

Exhibit	Description
1.	Metro Atlanta Chamber Ranking 2016, http://www.metroatlantachamber.com/docs/default-source/2016-One-Pagers/2016-ytd-atlanta-rankings_10_2016.pdf?sfvrsn=2 .
2.	United States Census Bureau Population Data, http://www.census.gov/popest/data/state/totals/2015/index.html .
3.	Woods & Poole Economics, Inc. 2016 Complete Economic and Demographic Data Source.
4.	Why the Southeast Could Become the Napa Valley of Oysters, http://www.npr.org/sections/thesalt/2016/01/27/462929374/why-the-southeast-could-become-the-napa-valley-of-oysters .
5.	USDA Aquaculture Census (2013), http://shellfish.ifas.ufl.edu/wp-content/uploads/2013-Census-of-Aquaculture.pdf .
6.	U.S. Department of Labor Bureau of Labor Statistics, http://www.bls.gov/eag/eag.ga_atlanta_msa.html .
7.	U.S. Bureau of Economic Analysis GDP Data.
8.	Burning Glass, http://burning-glass.com/labor-insight/ .
9.	<i>8 Reasons This City Is a Powerhouse</i> ” Inc.com, June 20, 2016, http://www.inc.com/ryan-jenkins/why-atlanta-is-the-best-city-to-base-your-company.html .
10.	<i>The Top 10 Cities For Relocation,</i> ” Forbes, May 23, 2014, http://www.forbes.com/sites/kathryndill/2014/05/23/the-top-10-cities-for-relocation/#30f22bd257ab .
11.	http://www.bizjournals.com/atlanta/news/2016/10/11/georgia-state-university-plans-35-million.html .
12.	<i>Shaping Infinity</i> 2012 Georgia Life Sciences Industry Analysis (Georgia Bio and the University of Georgia Terry School of Business).
13.	American Transaction Processing Coalition http://www.atpcoalition.org/georgia-impact .
14.	Metro Atlanta Fintech Fact Sheet.
15.	http://www.metroatlantachamber.com/business/technology/payment-processing .
16.	http://tsys.com/payments-hub/featured/georgias-fintech-community-touts-growth-influence.html .
17.	Technology Association of Georgia http://www.tagonline.org/files/documents/FinTech/tag-fintech-ecosystem-report-2016.pdf .
18.	http://www.tagonline.org/news-press/tag-names-top-40-innovative-technology-companies-in-georgia-2/ .
19.	Atlanta makes the latest list of tech hubs (number four?) http://www.ajc.com/business/atlanta-makes-the-latest-list-tech-hubs-number-four/KvhyCTq4UDtd0Yi8cGZNXI/ ; ATL Named 6th Fastest Growing Market for Talent http://hypepotamus.com/news/atl-6th-fastest-growing-market-tech-talent/ .
20.	Atlanta’s Explosive Film and TV Growth By The Numbers, Atlanta Journal Constitution, Aug. 21, 2015, http://www.ajc.com/entertainment/movies/atlanta-explosive-film-and-growth-the-numbers/vJ5qcYzqz37YQDcRxOY48L/ .

Exhibit	Description
21.	http://www.bizjournals.com/atlanta/news/2015/08/05/tyler-perrys-new-studio-could-create-up-to-8-300.html .
22.	FORTUNE magazine, June 6, 2016; Metro Atlanta Chamber http://www.metroatlantachamber.com/docs/default-source/2016-One-Pagers/2016-fortune-500-and-1000-companies22A1C52BAC79.pdf?sfvrsn=2 .
23.	Fast Facts About Higher Education in the Atlanta Region,” Atlanta Regional Council for Higher Education, http://atlantahighered.org/Reports/FastFactsAboutHigherEducation/tabid/732/Default.aspx .
24.	<i>Know Atlanta</i> ” The Relocation Guide, http://www.knowatlanta.com/atlanta-airport-hartsfield-jackson-interntional/airport/ .
25.	Where to Warehouse: The Top 10 for 2009”, <i>Feb 24, 2009</i> , http://multichannelmerchant.com/mcm/where-to-warehouse-the-top-10-for-2009-24022009/ . http://multichannelmerchant.com/mcm/where-to-warehouse-the-top-10-for-2009-24022009 .
26.	Material Handling Brings New Show to Atlanta in 2012, http://www.tsn.com/news-blogs/material-handling-brings-new-show-atlanta-2012 .
27.	http://www.gaports.com/moreimpact/#/intro .
28.	Brookings Institute names Atlanta a ‘Knowledge Capital’, Atlanta Business Chronicle, October 2, 2016, http://www.bizjournals.com/atlanta/news/2016/10/02/brookings-institute-names-atlanta-a-knowledge.html .
29.	Metro Atlanta’s Future: Educate. Innovate. Collaborate.” Metro Atlanta Chamber, November 2013, p. 3 http://www.metroatlantachamber.com/docs/default-source/business-higher-educatin/bhe-rankings-book.pdf?sfvrsn=2 .
30.	The National Center for Education Statistics, http://nces.ed.gov/collegenavigator/
31.	Higher Education Report shows Metro Atlanta is a national leader in several higher education indicators”, dated 8/11/2013, http://www.metroatlantachamber.com/news/items/2013/11/08/higher-education-report-shows-metro-atlanta-is-a-national-leader-in-several-higher-education-indicators .
32.	http://atlantahighered.org/Reports/FastFactsAboutHigherEducation/tabid/732/Default.aspx ; http://www.atlanta.net/explore/colleges-universities .
33.	Which Atlanta Neighborhood is Ranked One of Five “Great Places” in the Country?”, Atlanta Business Chronicle, October 4, 2016, http://www.bizjournals.com/atlanta/news/2016/10/03/which-atlanta-neighborhood-is-ranked-one-five.html .
34.	Atlanta Convention and Visitors Bureau 2015 Annual Report.
35.	Proposed Expert Report of Dr. David Sunding, May 20, 2016.
36.	Proposed Expert Report of Dr. Stavins, May 20, 2016.
37.	2015 Activities & Progress Report, Metropolitan North Georgia Water Planning District.
38.	Consumers, water suppliers need to conserve,” Atlanta Journal Constitution, October 16, 2016, page A20.

Exhibit	Description
39.	Proposed Expert Report of Dr. David Sunding, 2/29/2016/
40.	B. Ruhl, <i>Equitable 2 Apportionment of Ecosystem Services: New Water Law for a New Water Age</i> , 19 J. LAND USE & ENVT'L LAW 47 (2003).
41.	Office of Management & Budget: Standards for Defining Metropolitan and Micropolitan Statistical Areas; Notice.

EXHIBIT 1

METRO ATLANTA RANKINGS 2016

BUSINESS

1 of 4

One of four U.S. cities with the most FORTUNE Global 500 Headquarters, ranking #17 globally with four FORTUNE Global 500 Headquarters (tied with Chicago, IL; Munich, Germany; and Taipei, Taiwan).

Source: Georgia Power analysis of 2016 FORTUNE Global 500 list, FORTUNE, August 2016

#1

#1 Metro Area for Lowest Cost of Doing Business (among the 10 largest U.S. metro areas).

Source: KPMG, "2016 KPMG Competitive Alternatives," March 2016

#2

#2 Metro Area for Overall Regulatory Friendliness.

Source: Thumbtack, "2016 Thumbtack Small Business Friendliness Survey," June 15, 2016

#3 Metro Area for Health & Safety Regulations.

Source: Thumbtack, "2016 Thumbtack Small Business Friendliness Survey," June 15, 2016

#3 Emerging Startup Hub to Watch in 2016.

Source: Inc., "16 Emerging Startup Hubs to Watch in 2016," December 29, 2015

#3

#3 Metro Area for Tax Code and Tax Regulations.

Source: Thumbtack, "2016 Thumbtack Small Business Friendliness Survey," June 15, 2016

#3 city with the most FORTUNE 500 Headquarters.

Source: Metro Atlanta Chamber analysis of 2016 FORTUNE 500 list, FORTUNE, June 15, 2016

#3 city for Inc. 5000 headquarters (fast-growing companies).

Source: Inc., 2016 Inc. 5000, August 2016

#4

#4 Metro Area for Licensing Requirements.

Source: Thumbtack, "2016 Thumbtack Small Business Friendliness Survey," June 15, 2016

#4 Metro Area for Inc. 5000 Headquarters (fast-growing companies).

Source: Inc., 2016 Inc. 5000, August 2016

#5

#5 Metro Area for Ease of Starting a Small Business.

Source: Thumbtack, "2016 Thumbtack Small Business Friendliness Survey," June 15, 2016

#6

#6 City for Global Future Potential (Global Cities Outlook).

Source: A.T. Kearney 2016, "Global Cities 2016," May 2016

#6 Metro Area for Environmental Rules.

Source: Thumbtack, "2016 Thumbtack Small Business Friendliness Survey," June 15, 2016

#7

#7 Metro Area for Zoning Regulations.

Source: Thumbtack, "2016 Thumbtack Small Business Friendliness Survey," June 15, 2016

#7 City to Found a Startup.

Source: DataFox, "2015's Best Cities to Found a Startup Outside Silicon Valley and New York (and How They Did It)," December 14, 2015

#10

#10 Metro Area for Overall Small Business Friendliness.

Source: Thumbtack, "2016 Thumbtack Small Business Friendliness Survey," June 15, 2016

Metro Atlanta Chamber 

METRO ATLANTA RANKINGS 2016

JOB GROWTH

#6

#6 Metro Area for Exceeding Projected Job Growth.

Source: Career Builder, "Top 10 U.S. Metro Areas Exceeding Projected Job Growth," February 4, 2016

#6 Metro Area for Employment, Labor & Hiring.

Source: Thumbtack, "2016 Thumbtack Small Business Friendliness Survey," June 15, 2016

#7

#7 Metro Area for STEM Job Growth.

Source: RCLCO/CapRidge, "2016 STEM Job Growth Index"

METRO ATLANTA RANKINGS 2016

TAXES

#1

#1 Major Metro Area in the Nation for Lowest Total Tax Index for R&D Services sector, with 22.9 Percent Lower Corporate Tax Burden than the U.S. Baseline.

Source: KPMG, "Focus on Tax: KPMG's Guide to International Tax Competitiveness, Competitive Alternatives - Special Report," 2016

#3

#3 Major Metro Area in the Nation for Lowest Total Tax Index for Corporate Services sector, with 16.1 Percent Lower Corporate Tax Burden than the U.S. Baseline.

Source: KPMG, "Focus on Tax: KPMG's Guide to International Tax Competitiveness, Competitive Alternatives - Special Report," 2016

#3 Major Metro Area in the Nation for Lowest Total Tax Index for Manufacturing sector, with 20.6 Percent Lower Corporate Tax Burden than the U.S. Baseline.

Source: KPMG, "Focus on Tax: KPMG's Guide to International Tax Competitiveness, Competitive Alternatives - Special Report," 2016

#4

#4 Major Metro Area in the Nation for Lowest Total Tax Index (Overall), with 18.4 Percent Lower Corporate Tax Burden than the U.S. Baseline.

Source: KPMG, "Focus on Tax: KPMG's Guide to International Tax Competitiveness, Competitive Alternatives - Special Report," 2016

METRO ATLANTA RANKINGS 2016

TECHNOLOGY

#1

#1 U.S. City for Web Developers.

Source: SpareFoot.com, "The 10 Best Cities for Web Developers," January 13, 2016

#1 Place to Live and Work as a Filmmaker.

Source: Moviemaker.com, "Best Place to Work and Live as a Filmmaker," January 20, 2016

#3

#3 Metro Area for STEM Professionals by Highest Quality of Engineering Universities.

Source: WalletHub, "2016's Best & Worst Metro Areas for STEM Professionals," March 2016

#5

#5 U.S. City for Tech Start-Ups.

Source: Sungard Availability Services, 10 of the Best U.S. Cities for Tech Start-Ups," 2016;
Atlanta Business Chronicle, "Atlanta No. 5 American city to launch tech startup," July 6, 2016

#6

#6 Market for Gender Diversity in Tech Occupations.

Source: CBRE, "2016 Scoring Tech Talent: Influencing Innovation, Economic and Real Estate Growth in 50 North American Markets," June 30, 2016

#7

#7 Metro Area with the Most IT Graduates.

Source: Site Selection Group, "Top 20 Metros with the Most IT Graduates," April 25, 2016

#8

#8 Market for Tech Talent Labor by Size of Labor Pool (among large tech talent markets).

Source: CBRE, "2016 Scoring Tech Talent: Influencing Innovation, Economic and Real Estate Growth in 50 North American Markets," June 30, 2016

#8 Region for Tech Degree Completions (in 2014).

Source: CBRE, "2016 Scoring Tech Talent: Influencing Innovation, Economic and Real Estate Growth in 50 North American Markets," June 30, 2016

#9

#9 Market for Tech-Talent (Overall).

Source: CBRE, "2016 Scoring Tech Talent: Influencing Innovation, Economic and Real Estate Growth in 50 North American Markets," June 30, 2016

#10

#10 Market for Tech Talent Labor Pool Growth (among large tech talent markets).

Source: CBRE, "2016 Scoring Tech Talent: Influencing Innovation, Economic and Real Estate Growth in 50 North American Markets," June 30, 2016

METRO ATLANTA RANKINGS 2016

SUSTAINABILITY

#4

#4 City with the Most ENERGY STAR Certified Buildings.

Source: EPA, "List of 2016 Top Cities with the Most ENERGY STAR Certified Buildings," March 31, 2016

#7

#7 City for Total Floor Area of ENERGY STAR Certified Buildings.

Source: EPA, "List of 2016 Top Cities with the Most ENERGY STAR Certified Buildings," March 31, 2016

#9

#9 City for Cost Savings from ENERGY STAR Certified Buildings.

Source: EPA, "List of 2016 Top Cities with the Most ENERGY STAR Certified Buildings," March 31, 2016

METRO ATLANTA RANKINGS 2016

PEOPLE

1 of 4

1 of 4 Fastest-Growing Hot Spots for Women Entrepreneurs.

Source: Inc., "4 Fastest-Growing Hot Spots for Women Entrepreneurs," May 10, 2016

#1

#1 Fastest-Growing Hot Spot for Women Entrepreneurs In Terms of Revenue Growth.

Source: Inc., "4 Fastest-Growing Hot Spots for Women Entrepreneurs," May 10, 2016

#3 Metro Area for Population Change (2014-2015).

Source: U.S. Census Bureau, 2015 Population Estimates, March 2016

#3

#3 City for Growth of Women-Owned Businesses.

Source: Center for an Urban Future, "Growth of Women-owned Businesses," March 2016

#3 Market for Educational Attainment.

Source: CBRE, "2016 Scoring Tech Talent: Influencing Innovation, Economic and Real Estate Growth in 50 North American Markets," June 30, 2016

#4

#4 Metro Area for Net Migration (2014-2015).

Source: U.S. Census Bureau, 2015 Population Estimates, March 2016

#5

#5 Metro Area for Women-Owned Firms in 2016.

Source: American Express Open, "2016 State of Women-Owned Business Report".

#5 Metro Area for Retaining College Grads (four-year institutions).

Source: City Lab, "The U.S. Cities Winning the Battle Against Brain Drain," March 15, 2016; Brookings Institution, "Beyond College Rankings: A Value-Added Approach to Assessing Two- and Four-Year Schools," Metropolitan Policy Program, November 7, 2015

#5

#5 Metro Area for Number of Graduates in Mechatronics.
Source: Site Selection Group, "Top 15 Metro Areas for Graduates in Mechatronics," January 25, 2016

#6

#6 Metro Area for Growth in Number of Women-Owned Firms, 2007-2016.
Source: American Express OPEN, "2016 State of Women-Owned Business Report"

#6 Metro Area for Growth in Economic Clout of Women-Owned Firms, 2007-2016.
Source: American Express OPEN, "2016 State of Women-Owned Business Report"

#8

#8 Market for Millennial Concentration.
Source: CBRE, "2016 Scoring Tech Talent: Influencing Innovation, Economic and Real Estate Growth in 50 North American Markets," June 30, 2016

#9

#9 Largest Metro Area for Population.
Source: U.S. Census Bureau, 2015 Population Estimates, March 2016

#9 City for Mid-Career Professionals in 2016.
Source: Forbes, "America's Best Cities for Mid-Career Professionals in 2016," May 31, 2016

#10

#10 Metro Area for Graduates in Financial Services.
Source: Site Selection Group, "Top 20 Metro Areas for Graduates in Financial Services," May 23, 2016

METRO ATLANTA RANKINGS 2016

TOURISM & HOSPITALITY

#1 Most Traveled Airport.

Source: Airports Council International, April 2016; Atlanta Business Chronicle, "Hartsfield-Jackson Keeps Status as World's Busiest Airport," April 4, 2016

#1

#1 City for Discretionary Consumer Services Sector Exhibitions.

Source: Atlanta Business Chronicle, "Atlanta ranks No. 3 for number of events," February 26, 2016; Center for Exhibition Industry Research, "2014 Industry Census"

#1 City for Education Events.

Source: Atlanta Business Chronicle, "Atlanta ranks No. 3 for number of events," February 26, 2016; Center for Exhibition Industry Research- "2014 Industry Census"

#3

#3 City for Total Number of Events.

Source: Atlanta Business Chronicle, "Atlanta ranks No. 3 for number of events" February 26, 2016; Center for Exhibition Industry Research, "2014 Industry Census"

METRO ATLANTA RANKINGS 2016

QUALITY OF LIFE

One of the Least Expensive U.S. Cities to Live (tied with Cleveland).

Source: *The Economist Intelligence Unit, "2016 Worldwide Cost of Living Survey," March 2016*

1 of 10

1 of 10 U.S. Suburbs that are Surprisingly, Genuinely Cool (Roswell, GA).

Source: *Huffington Post, "10 U.S. Suburbs that are Surprisingly, Genuinely Cool," April 11, 2016*

#1

#1 Moving Destination in the Nation for 2015.

Source: *Penske, "Penske Truck Rental Announces 2015 Top Moving Destinations," February 3, 2016*

#1 Mobile-Friendly U.S. City.

Source: *NerdWallet, "Top Mobile-Friendly U.S. Cities," July 5, 2016*

#1 City for Singles for Romance and Fun.

Source: *WalletHub, "2015 Best & Worst Cities for Singles," 2016*

#1 City for the Greatest Number of Restaurants per Capita.

Source: *WalletHub, "2015 Best & Worst Cities for Singles," 2016*

#1 City for the Greatest Number of Shopping Centers per 100,000 Population.

Source: *WalletHub, "2015 Best & Worst Cities for Singles," 2016*

#1 Grilling Hot Spot in the U.S.

Source: *Atlanta Business Chronicle, "Atlanta is No. 1 'Grilling Hot Spot' in U.S.," April 15, 2016*

#2

#2 Metro Area with Magnificent Hiking Trails.

Source: *Marmot, "Escaping the City: 5 U.S. Metro Areas with Magnificent Hiking Trails," March 28, 2016*

#3

#3 City to Get Married.

Source: *WalletHub, "2016's Best and Worst Cities to Get Married," February 2016*

#3 City for Wedding Facilities and Services.

Source: *WalletHub, "2016's Best and Worst Cities to Get Married," February 2016*

#4

#4 City for Singles.

Source: *WalletHub, "2015 Best & Worst Cities for Singles," 2016*

#4 Frugal City.

Source: *Coupons.com, "Most Frugal Cities List," May 2, 2016*

#5

#5 Most Moved to City by Millennials in 2015.

Source: *Atlanta Business Chronicle, "Atlanta was No. 5 for millennial movers in 2015," April 5, 2016; Mayflower, "Mover Insights Study," April 5, 2016*

#5 Real Estate Market to Watch in 2016.

Source: *Realtor.com, "The Top 10 Real Estate Markets to Watch in 2016," December 2, 2015*

#5 City for the Highest Percentage of Single People.

Source: *WalletHub, "2015 Best & Worst Cities for Singles," 2016*

Metro Atlanta Chamber 

#5

#5 City for the Greatest Number of Bridal Shops per 100,000 Residents.
Source: WalletHub, "2016's Best and Worst Cities to Get Married," February 2016

#6

#6 Target for Real Estate Investors in the Americas.

Source: Saporta Report, "Metro Atlanta forecast to be a target for real estate investors," March 20, 2016; CBRE, "Americas Investor Intentions Survey 2016," March 9, 2016

#6 Metro Area for Future Walkable Urbanism by Fair Share Index.

Source: The George Washington University School of Business, "Foot Traffic Ahead: Ranking Walkable Urbanism in America's Largest Metros, 2016," June 14, 2016

#7

#7 College City in the U.S.

Source: WalletHub, "2015's Best and Worst College Cities and Towns in the U.S.," December 18, 2015

#7 City for the Greatest Number of Wellness & Spa Centers per 100,000 Population.

Source: Wallet Hub, "2015 Best & Worst Cities for Singles," 2016

#8 Sweet Spot for Homeownership.

Source: Zillow, "Breakeven Horizon," June 15, 2016

#8

#8 Metro Area for Future Walkable Urbanism by "WalkUP" Space in Suburbs.

Source: The George Washington University School of Business, "Foot Traffic Ahead: Ranking Walkable Urbanism in America's Largest Metros, 2016," June 14, 2016

#8 National Park in the U.S. for Urban Escapes (Chattahoochee River National Recreation Area).

Source: Citi IO, "Top 10 National Parks in the USA for Urban Escapes," April 14, 2016

#9

#9 City for Recent Grads.

Source: Nerd Wallet, "Best Cities for Recent Grads 2016," March 28, 2016

#10 City for Home Affordability and School Quality (Buford, GA).

Source: HomeUnion, "Where Can You Spend the Least on a Home and Get Great Schools?" May 13, 2016

#10

#10 "Boom Town" (Atlantic Station, Atlanta, GA - Zip Code 30363).

Source: Atlanta Business Chronicle, "Atlanta ZIP code named a Top 10 'Boom Town' in U.S.," April 18, 2016; Realtor.com, "The Boom Towns: America's Fastest-Growing Neighborhoods," April 18, 2016

#10 Metro Area for Walkable Urbanism by Population per "WalkUP."

Source: The George Washington University School of Business, "Foot Traffic Ahead: Ranking Walkable Urbanism in America's Largest Metros, 2016," June 14, 2016

#10 Metro Area for Future Walkable Urbanism by "WalkUP" Absorption.

Source: The George Washington University School of Business, "Foot Traffic Ahead: Ranking Walkable Urbanism in America's Largest Metros, 2016," June 14, 2016

METRO ATLANTA RANKINGS 2016

HIGHER EDUCATION

Clayton State University

#8 Public School (Regional Colleges - South)

Source: *U.S. News & World Report, 2016*

Emory

#8 Nursing Master's Program

#10 Nursing School for Family Nurse Practitioner Training

Source: *U.S. News & World Report, 2016*

Georgia State

#5 Graduate Public Finance and Budgeting Programs

#6 Health Care Law School

#9 Graduate City Management and Urban Policy Programs

#10 Graduate Non Profit Management Programs

Source: *U.S. News & World Report, 2016*

Georgia Tech

#1 Graduate Industrial/Manufacturing/Systems Engineering Program

#2 Graduate Aerospace/Aeronautical/Astronautical Engineering Program

#2 Graduate Biomedical Engineering/Bioengineering Program

#2 Graduate Information and Technology Management Program

#4 Graduate Civil Engineering Program

#5 Graduate Environmental/Environmental Health Engineering Program

#6 Graduate Computer Engineering Program

#6 Graduate Electrical/Electronic/Communications Engineering Program

#6 Graduate Mechanical Engineering Program

#7 Graduate Engineering Program

#7 Public School (National Universities)

#8 Graduate Chemical Engineering Program

#8 Graduate Materials Engineering Program

#8 Graduate Nuclear Engineering Program

Source: *U.S. News and World Report, 2016*

Kennesaw State University

#6 Most Innovative School

Source: *U.S. News & World Report, 2016*

Morehouse

#4 in Historically Black College and Universities

Source: *U.S. News & World Report, 2016*

Spelman

#1 in Historically Black College and Universities

#10 Most Innovative School (National Liberal Arts College)

Source: *U.S. News & World Report, 2016*

University of Georgia

#1 for First-Time Pass Rates on the Certified Public Accountant Exams during 2015 (among large programs).

Source: *University of Georgia, "Terry grads rank No. 1 for first-time CPA exam pass rates," March 9, 2016; National Association of State Boards of Accountancy, "Candidate Performance on the Uniform CPA Examination - University Edition," February, 2016*

#2 Graduate Public Finance and Budgeting Program

#2 Graduate Public Management Administration Program

#3 Graduate Student Counseling and Personnel Services Program

#3 Graduate Vocational/Technical Program

#3 Online Graduate Education Program

#4 Graduate Public Affairs Program

#4 Graduate Secondary Teacher Education Program

#4 Online Graduate Education Program

#5 Online Degree Program

#6 Graduate Elementary Teacher Education Program

#8 Graduate Curriculum and Instruction Program

Source: *U.S. News & World Report, 2016*

Metro Atlanta Chamber 

EXHIBIT 2

Table 1. Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2015

Geographic Area	April 1, 2010		Population Estimate (as of July 1)						
	Census	Estimates Base	2010	2011	2012	2013	2014	2015	
United States	308,745,538	308,758,105	309,346,863	311,718,857	314,102,623	316,427,395	318,907,401	321,418,820	
Northeast	55,317,240	55,318,348	55,387,174	55,638,038	55,835,056	56,019,353	56,171,281	56,283,891	
Midwest	66,927,001	66,929,897	66,977,505	67,156,487	67,340,231	67,565,788	67,762,069	67,907,403	
South	114,555,744	114,562,953	114,862,858	116,080,257	117,331,340	118,487,418	119,795,010	121,182,847	
West	71,945,553	71,946,953	72,119,326	72,894,054	73,595,996	74,354,836	75,179,041	76,044,679	
Wyoming	563,626	563,767	564,516	567,768	577,080	583,131	584,304	585,107	
District of Columbia	601,723	601,767	605,126	620,472	635,342	649,540	659,836	672,228	
Vermont	625,741	625,745	625,984	626,687	626,388	627,129	626,767	626,042	
North Dakota	672,591	672,591	674,530	685,326	702,265	723,626	740,040	756,927	
Alaska	710,231	710,249	714,021	722,720	731,228	737,442	737,046	738,432	
South Dakota	814,180	814,191	816,299	824,289	834,631	845,270	853,304	858,469	
Delaware	897,934	897,936	899,791	907,916	917,099	925,353	935,968	945,934	
Montana	989,415	989,417	990,643	997,746	1,005,157	1,014,402	1,023,252	1,032,949	
Rhode Island	1,052,567	1,052,931	1,053,219	1,051,866	1,052,393	1,052,866	1,054,907	1,056,298	
New Hampshire	1,316,470	1,316,466	1,316,708	1,318,344	1,321,393	1,322,660	1,327,996	1,330,608	
Maine	1,328,361	1,328,361	1,327,695	1,328,257	1,328,888	1,328,778	1,330,256	1,329,328	
Hawaii	1,360,301	1,360,301	1,363,980	1,378,227	1,392,641	1,408,765	1,420,257	1,431,603	
Idaho	1,567,582	1,567,652	1,570,986	1,584,134	1,596,097	1,612,785	1,634,806	1,654,930	
Nebraska	1,826,341	1,826,341	1,830,025	1,842,383	1,855,973	1,869,300	1,882,980	1,896,190	
West Virginia	1,852,994	1,853,011	1,854,225	1,854,948	1,856,283	1,852,985	1,848,751	1,844,128	
New Mexico	2,059,179	2,059,192	2,064,741	2,078,226	2,084,792	2,086,890	2,085,567	2,085,109	
Nevada	2,700,551	2,700,691	2,703,440	2,718,819	2,754,874	2,790,366	2,838,281	2,890,845	
Utah	2,763,885	2,763,888	2,775,426	2,816,440	2,866,343	2,903,685	2,944,498	2,995,919	
Kansas	2,853,118	2,853,132	2,858,824	2,869,917	2,886,281	2,894,630	2,902,507	2,911,641	
Arkansas	2,915,918	2,915,958	2,922,384	2,938,538	2,949,499	2,957,957	2,966,835	2,978,204	
Mississippi	2,968,103	2,968,103	2,970,316	2,977,999	2,985,650	2,990,976	2,993,443	2,992,333	
Iowa	3,046,355	3,046,869	3,050,694	3,055,389	3,076,636	3,082,224	3,109,481	3,123,899	
Connecticut	3,574,097	3,574,118	3,579,717	3,589,759	3,593,541	3,597,168	3,594,762	3,590,886	
Oklahoma	3,751,351	3,751,616	3,759,586	3,766,626	3,817,679	3,853,405	3,879,610	3,911,338	
Oregon	3,831,074	3,831,073	3,837,972	3,868,509	3,899,444	3,928,030	3,971,202	4,028,977	
Kentucky	4,339,367	4,339,349	4,347,937	4,367,882	4,382,667	4,398,500	4,412,617	4,425,092	
Louisiana	4,533,372	4,533,479	4,544,951	4,575,381	4,603,676	4,627,491	4,648,990	4,670,724	
South Carolina	4,625,364	4,625,401	4,635,894	4,652,381	4,721,341	4,768,498	4,829,160	4,896,146	
Alabama	4,779,736	4,780,127	4,785,161	4,801,108	4,816,069	4,830,533	4,846,411	4,858,979	
Colorado	5,029,196	5,029,324	5,048,254	5,119,480	5,191,731	5,271,132	5,355,588	5,456,574	
Minnesota	5,303,925	5,303,925	5,310,903	5,348,119	5,380,443	5,420,541	5,457,125	5,489,594	
Wisconsin	5,686,986	5,687,289	5,690,204	5,709,171	5,726,422	5,743,653	5,759,432	5,771,337	
Maryland	5,773,552	5,773,785	5,788,409	5,844,120	5,890,740	5,936,040	5,975,346	6,006,401	

Table 1. Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2015

Geographic Area	April 1, 2010		Population Estimate (as of July 1)						
	Census	Estimates Base	2010	2011	2012	2013	2014	2015	
Missouri	5,988,927	5,988,927	5,996,052	6,010,587	6,025,468	6,043,708	6,063,827	6,083,672	
Tennessee	6,346,105	6,346,275	6,356,585	6,398,408	6,455,469	6,496,130	6,547,779	6,600,299	
Arizona	6,392,017	6,392,307	6,408,208	6,468,732	6,553,262	6,630,799	6,728,783	6,828,065	
Indiana	6,483,802	6,484,229	6,490,590	6,516,845	6,538,283	6,570,518	6,597,880	6,619,680	
Massachusetts	6,547,629	6,547,817	6,565,036	6,611,797	6,667,780	6,708,810	6,755,124	6,794,422	
Washington	6,724,540	6,724,543	6,743,060	6,823,229	6,897,292	6,973,281	7,063,166	7,170,351	
Virginia	8,001,024	8,001,045	8,025,787	8,110,783	8,193,374	8,267,875	8,328,098	8,382,993	
New Jersey	8,791,894	8,791,936	8,803,881	8,842,934	8,874,893	8,907,384	8,938,844	8,968,013	
North Carolina	9,535,483	9,535,692	9,558,979	9,651,025	9,747,021	9,845,432	9,940,387	10,042,802	
Georgia	9,687,653	9,688,681	9,713,454	9,812,280	9,917,639	9,991,562	10,097,132	10,214,880	
Michigan	9,883,640	9,884,129	9,877,369	9,876,589	9,886,879	9,900,506	9,916,306	9,922,576	
Ohio	11,536,504	11,536,725	11,540,766	11,545,442	11,551,783	11,572,232	11,596,998	11,613,423	
Pennsylvania	12,702,379	12,702,887	12,712,014	12,745,202	12,772,789	12,783,536	12,793,767	12,802,503	
Illinois	12,830,632	12,831,549	12,841,249	12,861,882	12,875,167	12,889,580	12,882,189	12,859,985	
Florida	18,801,310	18,804,623	18,849,890	19,105,533	19,352,021	19,594,467	19,905,569	20,271,272	
New York	19,378,102	19,378,087	19,402,920	19,523,202	19,606,981	19,691,032	19,748,858	19,795,791	
Texas	25,145,561	25,146,105	25,244,363	25,654,464	26,089,741	26,500,674	26,979,078	27,469,114	
California	37,253,956	37,254,503	37,334,079	37,700,034	38,056,055	38,414,128	38,792,291	39,144,818	
Puerto Rico	3,725,789	3,726,157	3,721,526	3,678,736	3,634,487	3,593,079	3,534,888	3,474,182	

Note: The estimates are based on the 2010 Census and reflect changes to the April 1, 2010 population due to the Count Question Resolution program and geographic program revisions. See Geographic Terms and Definitions at <http://www.census.gov/popest/about/geotermis.html> for a list of the states that are included in each region. All geographic boundaries for the 2015 population estimates series except statistical area delineations are as of January 1, 2015. For population estimates methodology statements, see <http://www.census.gov/popest/methodology/index.html>.

Suggested Citation:

Table 1. Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2015 (NST-EST2015-01)
 Source: U.S. Census Bureau, Population Division
 Release Date: December 2015

EXHIBIT 3

README.TXT

2016 COMPLETE ECONOMIC and DEMOGRAPHIC DATA SOURCE (CEDDS) on CD-ROM
TECHNICAL DOCUMENTATION

A formatted version of this file is in "CDTECH.PDF" on this CD-ROM.

The documentation for the CD-ROM can be found on pages i to vi of the Technical Documentation that was enclosed with this CD-ROM. Some of the text in this documentation is included in this file. A PDF file of the Technical Documentation that was enclosed with this CD-ROM (CDTECH.PDF) is also on this CD-ROM.

An explanation of the data sources, data definitions and forecast methods is in Chapter 2 "Technical Description of the Woods & Poole Economics, Inc. 2016 Regional Projections and Database." A summary of Chapter 2 is in the "TECH.TXT" file on this CD-ROM. It is important to note however, that this file does not have the highlighting, emphasized text, tables, graphs, and charts included in the printed chapter. Therefore some of the text included in this file may be out of context. It is important to refer to the printed chapter that was enclosed with this CD-ROM for a more complete description of the data sources, data definitions and projection methods.

Copyright 2016, Woods & Poole Economics, Inc.

All rights reserved. Reproduction by any method is prohibited.

ISSN 1044-2545

The 2016 Complete Economic and Demographic Data Source (CEDDS) on CD-ROM is provided subject to all terms and conditions of the Woods & Poole Economics, Inc. End User License Agreement including warranty limitations and disclaimers. The End User License Agreement is packaged with CEDDS and is also printed on the inside back cover.

README.TXT

Please read the "Technical Description of the Woods & Poole 2016 Projections and Database" (Chapter Two), for an explanation of projection methods, data sources, and data definitions. The last year of historical data in CEDDS is 2014. Some historical data are estimated and all historical data are subject to revision. All data in CEDDS for the years 2015 to 2050 are projected. Forecasts and projections are uncertain and future data may differ substantially from the forecasts and projections in CEDDS. Woods & Poole Economics, Inc. makes no guarantee as to the accuracy of the data, analysis, forecasts, and projections in CEDDS on CD-ROM.

INTRODUCTION

The Woods & Poole Economics, Inc. 2016 Complete Economic and Demographic Data Source on CD-ROM contains some of the Woods & Poole Economics, Inc. regional data and projections for the U.S. and all regions, states, Combined Statistical Areas (CSAs), Metropolitan Statistical Areas (MSAs), Micropolitan Statistical Areas (MICROS), Metropolitan Divisions (MDIVs), Designated Market Areas (DMAs), and counties for selected years from 1969 through 2050. The remainder of this introduction contains the technical description of the CD-ROM. Chapter 1 is an overview of the 2016 projections. Please read "Technical Description of the 2016 Regional Projections and Database" (Chapter 2) for an explanation of data sources, data definitions, and forecast methods. Appendices to Chapter 2 define the geographic areas used by Woods & Poole.

To view a comma separated value (CSV) file for a particular geography, such as Alameda County, California, start a spreadsheet program such as Access, Excel, QuattroPro, or Lotus on a PC or Apple computer. Look up

the name of the file from Appendix 8 (for Alameda see page 79). Then "open" or "retrieve" file WP506001.CSV (the file for Alameda County, California) from the "\\WPGE0\CA" folder, or directory, using the spreadsheet commands; the complete file name, including the ".CSV" suffix, may have to be typed; in the spreadsheet software it may need to be specified that a "*.CSV" file is being opened. There is no software on the CEDDS CD-ROM; a spreadsheet program, or some other application, must be used to view the CSV files. The CSV files on the CEDDS CD-ROM can be used on Apple, PC, and other computers running any version of Windows, any Apple OS, and other operating systems.

Lotus and 1-2-3 are registered trademarks of Lotus Development Corp. Excel, MS-DOS, and Windows are registered trademarks of Microsoft Corp. PC is a registered trademark of International Business Machines Corp. Macintosh is a registered trademark of Apple Computer, Inc.

2016 CEDDS CD-ROM FILES

The data files for the 2016 Complete Economic and Demographic Data Source (CEDDS) are provided in two different formats. The comma separated value (CSV) variable files are compact and allow the user to work with the data in many different spreadsheet, database, graphics, and mapping software programs. The CSV variable files are ideal for comparing counties to each other. The CSV geographic files are also already formatted and ready to use in any version of Access, Excel, Lotus, Quattro Pro, or other spreadsheet software. These files are ideal for viewing data for a specific county or MSA.

The data on the CD-ROM is in two Windows or Macintosh "folders", or DOS "directories." The folder, or directory, "\\WPVAR" contains the CSV variable files (122 files.) The folder, or directory, "\\WPGE0" contains the individual CSV geographic files (4,267 files).

README.TXT

CSV Variable File Description (directory \WPVAR on CD-ROM)

The 2016 CEDDS files on CD-ROM in CSV format contain data for all years from 1969 through 2050 for the U.S., regions, states, Combined Statistical Areas (CSAs), Metropolitan Statistical Areas (MSAs), Micropolitan Statistical Areas (MICROS), Metropolitan Divisions (MDIVs), and counties. Each variable is in a separate CSV file and there are 122 variables in all; the names of the files are explained below. All of the CSV variable files are in the "\WPVAR" folder, or directory, on the CD-ROM.

CSV Variable File Record (or line) Definition

At the beginning of each line of data in each CSV variable file, there are nine "fields", or columns, in quotes which facilitate identifying and sorting the various geographies. The complete definition of the "records" (or lines) of the CSV fields is as follows:

- Field 1: A 3 digit code identifying the file.
- Field 2: A 5 digit FIPS code for states and counties
- Field 3: A 1 digit Woods & Poole code for geographic area type; "1" is for the U.S. total, "2" is for regions, "3" is for states, "6" is for CSAs, "4" is for MSAs, "C" is for MICROS, "V" is for MDIVs, and "5" for counties.
- Field 4: A 1 digit code for BEA region.
- Field 5: A 3 digit code for BEA economic areas.
- Field 6: A 5 digit FIPS code for MSAs.

README.TXT

Field 7: A 3 digit FIPS code for CSAs.
Field 8: A 5 digit FIPS code for MDIVs.
Field 9: A 5 digit FIPS code for MICROS.
Field 10: The name of the geographic area in quotes.
Fields 11-92: Comma-delimited fields of data for all years, 1969 through 2050, (all 82 years), for a particular variable, e.g. total population in "WP001.CSV"

Each CSV variable file begins with data for the U.S., followed by regions, states, CMSAs, MSAs, and counties. Each CSV file has 4,267 lines (or "records"): U.S., 10 regions, 51 states (including District of Columbia), 166 CSAs, 381 MSAs, 536 MICROS, 31 MDIVs, and 3,091 counties.

On the CD-ROM the CSV variable files are in the "\WPVAR" directory or "WPVAR" folder. MSAs are Metropolitan Statistical Areas; CSAs are Combined Statistical Areas; MICROS are Micropolitan Statistical Areas; and MDIVs are Metropolitan Divisions; all are defined by the Office of Management and Budget, February 2013. BEA economic areas are aggregates of contiguous counties which measure cohesive regions in the U.S. There are 179 BEA economic areas and they are defined by the U.S. Department of Commerce, 2007.

2016 CEDDS CSV Variable File Names

Variable	File
Total Population	WP001.CSV
Population Age 0 to 4	WP002.CSV
Population Age 5 to 9	WP003.CSV

README.TXT

Population Age 10 to 14	WP004.CSV
Population Age 15 to 19	WP005.CSV
Population Age 20 to 24	WP006.CSV
Population Age 25 to 29	WP007.CSV
Population Age 30 to 34	WP008.CSV
Population Age 35 to 39	WP009.CSV
Population Age 40 to 44	WP010.CSV
Population Age 45 to 49	WP011.CSV
Population Age 50 to 54	WP012.CSV
Population Age 55 to 59	WP013.CSV
Population Age 60 to 64	WP014.CSV
Population Age 65 to 69	WP015.CSV
Population Age 70 to 74	WP016.CSV
Population Age 75 to 79	WP017.CSV
Population Age 80 to 84	WP018.CSV
Population Age 85 & Over	WP019.CSV
Median Age of Population	WP020.CSV
White Population	WP021.CSV
Black Population	WP022.CSV
Native American Population	WP023.CSV
Asian & Pacific Islander Population	WP024.CSV
Hispanic Population, any Race	WP025.CSV
Total Population Age 0 to 17	WP026.CSV
Total Population Age 15 to 17	WP027.CSV
Total Population Age 18 to 24	WP028.CSV
Total Population Age 65 & Over	WP029.CSV
Male Population	WP030.CSV
Female Population	WP031.CSV

README.TXT

Total Employment	WP032.CSV
Farm Employment	WP033.CSV
Forestry, Fishing, Related Activities, & Other	WP034.CSV
Mining Employment	WP035.CSV
Utilities Employment	WP036.CSV
Construction Employment	WP037.CSV
Manufacturing Employment	WP038.CSV
Wholesale Trade Employment	WP039.CSV
Retail Trade Employment	WP040.CSV
Transportation & Warehousing Employment	WP041.CSV
Information Employment	WP042.CSV
Finance & Insurance Employment	WP043.CSV
Real Estate & Rental & Leasing Employment	WP044.CSV
Professional & Technical Services Employment	WP045.CSV
Management of Companies & Enterprises	WP046.CSV
Administrative & Waste Services Employment	WP047.CSV
Educational Service Employment	WP048.CSV
Health Care & Social Assistance Employment	WP049.CSV
Arts, Entertainment, & Recreation Employment	WP050.CSV
Accommodation & Food Services Employment	WP051.CSV
Other Services, Except Public Admin.	WP052.CSV
Federal Civilian Government Employment	WP053.CSV
Federal Military Government Employment	WP054.CSV
State & Local Government Employment	WP055.CSV
Total Earnings of Employees	WP056.CSV
Farm Earnings	WP057.CSV
Forestry, Fishing, Related Activities & Other	WP058.CSV
Mining Earnings	WP059.CSV
Utilities Earnings	WP060.CSV
Construction Earnings	WP061.CSV

README.TXT

Manufacturing Earnings	WP062.CSV
Wholesale Trade Earnings	WP063.CSV
Retail Trade Earnings	WP064.CSV
Transportation & Warehousing Earnings	WP065.CSV
Information Earnings	WP066.CSV
Finance & Insurance Earnings	WP067.CSV
Real Estate & Rental & Leasing Earnings	WP068.CSV
Professional & Technical Services Earnings	WP069.CSV
Management of Companies & Enterprises	WP070.CSV
Administrative & Waste Services Earnings	WP071.CSV
Educational Service Earnings	WP072.CSV
Health Care & Social Assistance Earnings	WP073.CSV
Arts, Entertainment, & Recreation	WP074.CSV
Accommodation & Food Services	WP075.CSV
Other Services, Except Public Admin. Earnings	WP076.CSV
Federal Civilian Government Earnings	WP077.CSV
Federal Military Government Earnings	WP078.CSV
State & Local Government Earnings	WP079.CSV
Total Personal Income	WP080.CSV
Wages & Salaries	WP081.CSV
Other Labor Income	WP082.CSV
Proprietors Income	WP083.CSV
Dividends, Interest, & Rent	WP084.CSV
Transfer Payments to Persons	WP085.CSV
Less: Social Insurance Contributions	WP086.CSV
Residence Adjustment	WP087.CSV
Net Earnings	WP088.CSV
Total Personal Income per Capita (2009 \$)	WP089.CSV
Total Personal Income per Capita (Current \$)	WP090.CSV

README.TXT

Woods & Poole wealth Index	WP091.CSV
Gross Regional Product	WP092.CSV
Persons per Household	WP093.CSV
Retail Sales per Household	WP094.CSV
Mean Household Income (2009 \$)	WP095.CSV
Mean Household Income (Current \$)	WP096.CSV
Number of Households	WP097.CSV
Income Less Than \$10,000 (in 2009 \$)	WP098.CSV
Household Income \$10,000 to \$19,999	WP099.CSV
Household Income \$20,000 to \$29,999	WP100.CSV
Household Income \$30,000 to \$44,999	WP101.CSV
Household Income \$45,000 to \$59,999	WP102.CSV
Household Income \$60,000 to \$74,999	WP103.CSV
Household Income \$75,000 to \$99,999	WP104.CSV
Household Income \$100,000 to \$124,999	WP105.CSV
Household Income \$125,000 to \$149,999	WP106.CSV
Household Income \$150,000 to \$199,999	WP107.CSV
Household Income \$200,000 or More	WP108.CSV
Total Retail and Food Service Sales	WP109.CSV
Motor Vehicles and Parts Dealers Retail Sales	WP110.CSV
Furniture and Home Furnishings Retail Sales	WP111.CSV
Electronics and Appliance Retail Sales	WP112.CSV
Building Materials & Garden Equip. & Supplies	WP113.CSV
Food and Beverage Retail Sales	WP114.CSV
Health and Personal Care Retail Sales	WP115.CSV
Gasoline Stations Retail Sales	WP116.CSV
Clothing & Clothing Accessories Retail Sales	WP117.CSV
Sporting Goods, Hobby, Book, and Music Stores	WP118.CSV
General Merchandise Retail Sales	WP119.CSV
Miscellaneous Retail Stores Retail Sales	WP120.CSV

README.TXT

Nonstore Retailers Retail Sales	WP121.CSV
Food Services and Drinking Places Retail Sales	WP122.CSV

CSV File Variable Units

The units of the variables in the 2016 CEDDS CSV files are as follows:

Employment in thousands of jobs. Population in thousands of persons. Households in thousands. Median Age of population in years. Income, Earnings, and Gross Regional Product (GRP) in millions of 2009 dollars. Average Size of Households in number of people. Wealth Index U.S. = 100. Retail Sales in millions of 2009 dollars. Mean Household Income and Personal Income per Capita in current or 2009 dollars. Hispanic Population is persons of Spanish Origin, regardless of race.

Employment, earnings, income, and population data, 1969-2014, and state GRP data, 1969-2013, are historical from U.S. Department of Commerce; retail sales data are historical for 1972, 1977, 1982, 1987, 1992, 1997, 2002, 2007, and 2012 from U.S. Dept of Commerce; household data are historical for 1970, 1980, 1985, 1990, 2000, and 2010 from U.S. Dept of Commerce; households by money income bracket (in 2009 dollars) are historical for 1990, 2000, and 2010 only, from U.S. Department of Commerce; all other years of data, 1969-2014, for retail sales, households, population, and households by money income are estimated by Woods & Poole; all data, 2015-2050, are projected by Woods & Poole.

Employment and earnings by NAICS industries are estimated for the years 1969 to 2000. Total Retail Sales includes Food Services and Drinking Places Sales (NAICS 722).

README.TXT

Please read "Technical Description of the 2016 Regional Projections and Database" (Chapter Two) for an explanation of data sources, data definitions, and projection methods. Historical data is subject to revision. Projections are uncertain and future data may differ substantially from Woods & Poole projections. Woods & Poole Economics, Inc. makes no guarantee as to the accuracy of the historical data and projections on the 2016 CEDDS CD-ROM.

CSV Geographic Area File Description (folder, or directory, "\WPGEO")

Each data table in the 2016 CEDDS is in a separate CSV geographic file. The name of each worksheet file begins with "WP" followed by a one-digit code indicating the type of geography ("1" for U.S., "2" for regions, "3" for states, "4" for MSAs, "5" for counties, "6" for CSAs, "C" for MICROS, and "V" for MDIVs.) The next five characters of the name are the FIPS code for the geographic area. The files all have a ".CSV" extension.

All of the spreadsheet files are in the folder, or directory, "\WPGEO" on the CD-ROM. There are a total of 4,267 files: the U.S., 10 regions, 51 states (including the District of Columbia), 166 CSAs, 381 MSAs, 536 MICROS, 31 MDIVs, and 3,091 counties. There are 52 sub-directories, or folders, in "\WPGEO", for the U.S. and each state; the "\WPGEO\US" folder, or directory, has files for the U.S., regions, and states; "\WPGEO\MSA" folder, or directory, has files for the MSAs, CSAs, MICROS, and MDIVs; the state folders, or directories, (e.g. "\WPGEO\CA" for California) have the county files for a particular state. The names of all of the CSV geographic files are listed in Appendix 8 on pages 75 through 95 of this documentation.

All data for a particular geography can be found in the CSV files in

README.TXT

the "\\WPGeo" folder or directory. The "WPGeo\US" folder, or directory, has spreadsheet files for the U.S., regions, and states. The "WPGeo\MSA" folder, or directory, has spreadsheet files for the MSAs, CSAs, MICROS, and MDIVs.

To view a CSV geographic file for a particular geography, such as Alameda County, California, start a spreadsheet program such as Access, Excel, QuattroPro, or Lotus on a PC or Apple computer. Look up the name of the file from Appendix 8 (for Alameda see page 79). Then "open" or "retrieve" file WP506001.CSV (the file for Alameda County, California) from the "\\WPGeo\CA" folder, or directory, using the spreadsheet commands; the complete file name, including the ".CSV" suffix, may have to be typed; in the spreadsheet software it may need to be specified that a "*.CSV" file is being opened. There is no software on the CEDDS CD-ROM; a spreadsheet program, or some other application, must be used to view the CSV geographic files. The CSV geographic files on the CEDDS CD-ROM can be used on Apple, PC, and other computers running any version of windows, any Apple OS, and other operating systems.

Some Comparative Data can be found in the CSV file "WPCOMP.CSV" in the "\\WPCOMP" folder, or directory, on the CD-ROM. The "WPCOMP.CSV" contains civilian labor force, employed, unemployed and the unemployment rate, annually for 2005-2014 from the Bureau of Labor Statistics. It also contains the number of business establishments by 1-digit NAICS and by size (1-49 employees and 50 or more employees) for 2012 and 2013, respectively, from the U.S. Department of Commerce. In addition it contains the 2010 land area, as well as data on educational attainment (percent of the population age 25 and over not completing high school, completing high school only, and completing 4 or more years of college) for 1970, 1980, 1990, 2000, and 2010 from the U.S.

README.TXT

Department of Commerce.

Data on labor force, unemployment, number of business establishments by NAICS industries, land area, and educational attainment can be found in the file "WPCOMP.CSV" in the "\WPCOMP" folder.

EXHIBIT 4



the salt

FOR FOODIES

Why The Southeast Could Become The Napa Valley Of Oysters

January 27, 2016 · 1:53 PM ET

JILL NEIMARK



Capers Blades "singles on a half shell" oysters grown by farmer Dave Belanger (aka Clammer Dave) in Capers Inlet, S.C.

David Malosh/Bloomsbury

Oysters are the sea's version of fine wine: Their taste varies with the water they grow in.

And slow-growing oysters from northern waters — like the briny Wellfleets of Massachusetts and the sweet, mild Kumamotos of the Pacific Northwest — are among the most coveted.

That may be changing now. An oyster renaissance in the Southeastern U.S. is underway — from Virginia all the way down to Florida's Apalachicola Bay. The region is adopting the aquaculture that restored a decimated oyster industry in the north, and it has led to a huge boost in oyster production.

"The oyster industry is now casting its eye down the Southeast coast and seeing paradise," says Rowan Jacobsen, author of *The Essential Oyster: A Salty Appreciation of Taste And Temptation* to be published in October. "More than 6,000 miles of shoreline unmarred by a single metropolis and all ripe for growing oysters."

Americans already eat roughly 2.5 billion oysters every year, according to the Oyster Recovery Partnership. Around 85 percent of those oysters are from the Atlantic coast, and most start as hatchery-reared seeds that are "farmed" and raised in the ocean to be the plump, glistening "singles on a half shell" that oyster lovers prize. Oysters on the half shell also sell for three times as much as a wild oyster.



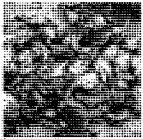
THE SALT

Acidifying Waters Are Endangering Your Oysters And Mussels



THE SALT

The Historic Allure Of A Late Night Oyster



THE SALT

Appetite For Gulf Seafood Is Back, But The Crabs And Oysters Aren't

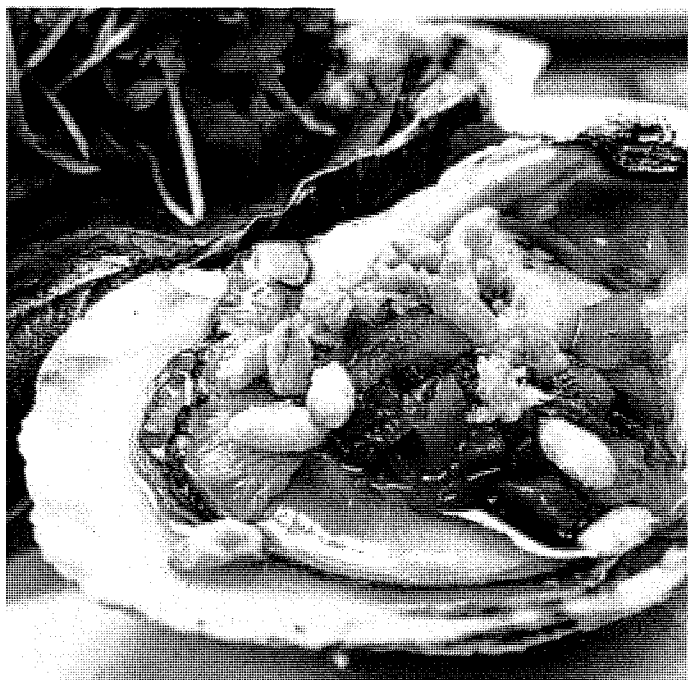
Southern states such as Georgia and the Carolinas have until now been known for wild oyster reefs that cluster in fantastical moonscapes. They are the result of "spat" — free swimming oyster larvae — that settle on other oysters and grow upon them. The clusters need to be hammered and pried apart in order to be served as succulent singles. That extra work, along with the fact that in warm months southern oysters are more

susceptible to an infection called *Vibrio vulnificus*, has limited their appeal.

Aquaculture has changed that, and Virginia leads the way. The state turned to Standish Allen of the Virginia Institute of Marine Science, to develop a triploid oyster from the common *Crassostrea virginica*, one that was already native to Virginia's waters.

Triploids are grown in hatcheries and then "tended" in the ocean. They are widely used today, because they have three sex chromosomes instead of two, which renders them sterile — allowing them to put all their energy into growing. As a result, they reach plump maturity in less than two years (as opposed to a wild oyster's three years). They are the "seedless watermelons" of the seafood world.

Cultivated oysters live in protective cages or floats, but they still attract marine life, from grass shrimp to crabs, that benefit the ecosystem. And, since every oyster filters and purifies 50 gallons of water a day— while feasting on algae and removing organic and inorganic particles from the water — this is one food that actually improves the ecosystem.



Chef Curtis Hackaday of 1703 Restaurant and Catering in Winston-Salem, N.C., tops Chadwick Creek Oysters with soy pickled garlic mignonette, fresh wasabi and puffed brown rice.

Courtesy of Curtis Hackaday/Chadwick Creek Oysters

In 2014, Virginia shellfish farmers sold nearly 40 million oysters, generating around \$17 million in revenue, according to the Virginia Institute of Marine Science. The success — and praise from the culinary world — has been so resounding that in 2015, Governor Terry McAuliffe launched the Virginia Oyster Trail, modeled after the state's popular wine

trail. The Oyster Trail tour covers seven distinct geographic regions, each producing oysters with a unique flavor, from the sweet mollusk magic of the Rappahannock River to the salty tastes of the Eastern shore.

"Just like the chardonnays of California, what you taste on the Oyster Trail is expressive of each locale," says Ryan Croxton, who co-owns the Rappahannock River Oyster Company in Topping, Va., with his cousin Travis.

Virginia's success has inspired its neighbors down the coast; now both North and South Carolina have taken up the oyster challenge. The Shellfish Research Hatchery at the University of North Carolina in Wilmington is developing triploid oysters from wild stock that naturally thrive in North Carolina waters. "The demand is incredible. I can't keep up with it. We are growing 2 million oysters a year right now and selling every last one," says former Marine Frank Roberts, who started Lady's Island Oyster Farm in Beaufort, S.C., in 2007.

Curtis Hackaday, chef at 1703 Restaurant and Catering in Winston-Salem, N.C., says he's been inspired by the new tide of regional oysters. "I wanted our restaurant to be known for odd but delicious oyster recipes," says Hackaday. Lately he's been serving them with pineapple, pickled garlic, fresh wasabi and puffed ground rice. "We think of ways to add spicy, sweet, and crunchy to go along with the briny of the oyster."



A low country oyster roast featured in *The Essential Oyster*, a book by Rowan Jacobsen to be published by Bloomsbury in October 2016.

David Malosh/Bloomsbury

Georgia has just launched its first oyster hatchery on Skidaway Island near Savannah, according to Thomas Bliss, director of the Shellfish Research Laboratory at the University of Georgia. "The hatchery produced 200,000 seedlings in 2015," which were handed out to 10 different oyster growers to raise in heavy mesh bags laid in the coastal waters, he says. "We hope to be producing five million a year by 2018."

Georgia is interested in pursuing the kind of floating aquaculture cages that rest in the water (rather than the muddy bottom), similar to those used farther north. It is called "farming off the bottom," and allows farmers to keep the oysters clean and safe, and to shake them in their cages to prevent them from clumping together. In addition, oysters can be grown in saltier waters that would usually attract predators, giving that mix of salty and sweet that is so prized.

Florida just changed its laws to allow this kind of oyster farming. The state already farms

a lot of clams, and is doubling down on oysters after drought and the Deepwater Horizon oil spill depleted its abundant oyster stock.

Author Rowan Jacobsen says he once called the Southeast "the sleeping giant of the oyster world." But now, he says, "the giant isn't sleeping anymore. With the warm south's longer season and faster growth, they can undercut northern producers on price, and they are poised to become a staple at oyster bars across North America."

Jill Neimark is an Atlanta-based writer whose work has been featured in Discover, Scientific American, Science, Nautilus, Aeon, Psychology Today and The New York Times.

Correction

Jan. 28, 2016

An earlier version of this post stated that Ryan and Travis Croxton are brothers. In fact, they are cousins.

[oyster farming](#) [oysters](#)

Get The Stories That Grabbed Us This Week

Delivered to your inbox every Sunday, these are the NPR stories that keep us scrolling.

subscribe

By subscribing, you agree to NPR's terms of use and privacy policy.

OLDER

The Price Of Almonds May Have Met A Slippery Slope

January 27, 2016

NEWER

Guest Workers, Legal Yet Not Quite Free, Pick Florida's Oranges

EXHIBIT 5

2012 | CENSUS OF AGRICULTURE

Census of Aquaculture (2013)

Volume 3 • Special Studies • Part 2

AC-12-SS-2

Issued September 2014

United States Department of Agriculture
Tom Vilsack, Secretary
National Agricultural Statistics Service
Joseph T. Reilly, Administrator

Contents

Introduction.....	Page V
-------------------	-----------

TABLES

1. Value of Aquaculture Products Sold by Type – United States and States: 2013 and 2005	1
2. Food Fish Production and Sales by Species and Size Category – United States: 2013	5
3. Sport Fish Production and Sales by Species and Size Category – United States: 2013.....	7
4. Baitfish Production and Sales by Species – United States: 2013.....	8
5. Ornamental Fish Production and Sales by Type – United States: 2013.....	8
6. Crustaceans Production and Sales by Species and Size Category – United States: 2013...	9
7. Mollusk Production and Sales by Species and Size Category – United States: 2013.....	10
8. Miscellaneous Aquaculture Production and Sales by Type – United States: 2013.....	11
9. Summary by Value of Aquaculture Products Sold – United States: 2013 and 2005	12
10. Freshwater and Saltwater Acres Used for Aquaculture Production – United States and States: 2013 and 2005.....	14
11. Sources of Water Used for Aquaculture Production – United States and States: 2013 and 2005	16
12. Methods Used for Aquaculture Production – United States and States: 2013	17
13. Food Fish Sales by Species – United States and States: 2013 and 2005.....	22
14. Catfish and Trout Production and Sales by Species and Size Category – United States and States: 2013	28
15. Sport Fish Sales by Species – United States and States: 2013 and 2005	33
16. Baitfish Sales by Species – United States and States: 2013 and 2005	36
17. Ornamental Fish Production and Sales by Species – United States and States: 2013 and 2005	39
18. Crustacean Sales by Species – United States and States: 2013 and 2005	43
19. Mollusk Sales by Species – United States and States: 2013 and 2005	46
20. Miscellaneous Aquaculture Production and Sales by Type – United States and States: 2013.....	51
21. Percent of Aquaculture Product Sales by Point of First Sale – United States: 2013.....	55
22. Aquaculture Products Produced and Distributed for Conservation, Recreation, Enhancement, or Restoration Purposes by Species – United States: 2013	55
23. Trout Produced and Distributed for Conservation, Recreation, Enhancement, or Restoration Purposes – United States and States: 2013.....	56
24. Acres Used for Hybrid Catfish – United States and States: January 1 to June 30, 2014	57

APPENDICES

A. Statistical Methodology A-1
B. General Explanation and Census of Aquaculture Report Form B-1

Publication Program Inside back cover

Table 7. Mollusk Production and Sales by Species and Size Category – United States: 2013

[For meaning of abbreviations and symbols, see introductory text.]

Species	Farms	Number sold (1,000)	Live weight (1,000 pounds)	Number per pound	Sales	
					Total (\$1,000)	Average price per pound (dollars)
Mollusks, total.....	756	(X)	(X)	(X)	328,567	(X)
Abalone	10	(X)	(X)	(X)	8,529	(X)
Food or market size	10	2,124	443	5	8,529	19.27
Broodstock.....	-	-	(X)	(X)	-	(X)
Larvae and seed	-	(X)	(X)	(X)	-	(X)
Other.....	-	(X)	(X)	(X)	-	(X)
Clams, total.....	375	(X)	(X)	(X)	123,293	(X)
Geoduck	20	(X)	(X)	(X)	29,051	(X)
Food or market size	17	1,955	1,483	1	27,940	18.83
Broodstock.....	-	-	(X)	(X)	-	(X)
Larvae and seed	4	(X)	(X)	(X)	1,111	(X)
Other.....	-	(X)	(X)	(X)	-	(X)
Hard.....	278	(X)	(X)	(X)	64,594	(X)
Food or market size	262	417,695	53,240	8	59,094	1.11
Broodstock.....	3	(D)	(X)	(X)	(D)	(X)
Larvae and seed	28	(X)	(X)	(X)	4,900	(X)
Other.....	2	(X)	(X)	(X)	(D)	(X)
Manila	80	(X)	(X)	(X)	24,438	(X)
Food or market size	77	145,601	8,372	17	23,040	2.75
Broodstock.....	-	-	(X)	(X)	-	(X)
Larvae and seed	4	(X)	(X)	(X)	1,398	(X)
Other.....	-	(X)	(X)	(X)	-	(X)
Other.....	22	(X)	(X)	(X)	5,210	(X)
Food or market size	15	9,907	560	18	(D)	(D)
Broodstock.....	1	(D)	(X)	(X)	(D)	(X)
Larvae and seed	5	(X)	(X)	(X)	(D)	(X)
Other.....	1	(X)	(X)	(X)	(D)	(X)
Mussels	32	(X)	(X)	(X)	12,253	(X)
Food or market size	31	99,526	4,911	20	(D)	(D)
Broodstock.....	-	-	(X)	(X)	-	(X)
Larvae and seed	1	(X)	(X)	(X)	(D)	(X)
Other.....	-	(X)	(X)	(X)	-	(X)
Oysters, total.....	483	(X)	(X)	(X)	180,150	(X)
Eastern	315	(X)	(X)	(X)	68,298	(X)
Food or market size	306	305,752	43,434	7	65,383	1.51
Broodstock.....	3	482	(X)	(X)	125	(X)
Larvae and seed	30	(X)	(X)	(X)	2,790	(X)
Other.....	-	(X)	(X)	(X)	-	(X)
Pacific.....	145	(X)	(X)	(X)	86,742	(X)
Food or market size	140	213,406	51,547	4	81,721	1.59
Broodstock.....	-	-	(X)	(X)	-	(X)
Larvae and seed	16	(X)	(X)	(X)	5,020	(X)
Other.....	-	(X)	(X)	(X)	-	(X)
Other.....	41	(X)	(X)	(X)	25,110	(X)
Food or market size	36	(D)	(D)	(D)	(D)	(D)
Broodstock.....	-	-	(X)	(X)	-	(X)
Larvae and seed	2	(X)	(X)	(X)	(D)	(X)
Other.....	3	(X)	(X)	(X)	(D)	(X)
Other mollusks.....	13	(X)	(X)	(X)	4,343	(X)
Food or market size	4	(D)	(D)	(D)	(D)	(D)
Broodstock.....	-	-	(X)	(X)	-	(X)
Larvae and seed	6	(X)	(X)	(X)	564	(X)
Other.....	4	(X)	(X)	(X)	(D)	(X)

Table 19. Mollusk Sales by Species – United States and States: 2013 and 2005

[For meaning of abbreviations and symbols, see introductory text.]

Geographic area	Total				Abalone				Clams, total			
	2013		2005		2013		2005		2013		2005	
	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)
United States	756	328,567	980	203,183	10	8,529	10	9,305	375	123,293	553	84,874
Alabama	-	-	-	-	-	-	-	-	-	-	-	-
Alaska	22	(D)	25	(D)	-	-	-	-	1	(D)	4	257
Arizona	-	-	-	-	-	-	-	-	-	-	-	-
Arkansas	-	-	-	-	-	-	-	-	-	-	-	-
California	27	16,992	21	20,064	9	(D)	7	(D)	4	(D)	5	(D)
Colorado	-	-	-	-	-	-	-	-	-	-	-	-
Connecticut	25	28,297	27	(D)	-	-	-	-	16	18,135	22	11,535
Delaware	-	-	-	-	-	-	-	-	-	-	-	-
Florida	132	19,641	154	10,694	-	-	-	-	127	18,729	154	(D)
Georgia	4	(D)	1	(D)	-	-	-	-	4	(D)	1	(D)
Hawaii	3	(D)	6	4,043	1	(D)	3	(D)	2	(D)	2	(D)
Idaho	-	-	1	(D)	-	-	-	-	-	-	1	(D)
Illinois	-	-	-	-	-	-	-	-	-	-	-	-
Indiana	-	-	-	-	-	-	-	-	-	-	-	-
Iowa	-	-	-	-	-	-	-	-	-	-	-	-
Kansas	-	-	-	-	-	-	-	-	-	-	-	-
Kentucky	-	-	-	-	-	-	-	-	-	-	-	-
Louisiana	39	13,355	135	28,499	-	-	-	-	-	-	-	-
Maine	22	(D)	32	2,861	-	-	-	-	-	-	5	106
Maryland	10	1,738	6	196	-	-	-	-	1	(D)	1	(D)
Massachusetts	132	(D)	138	6,157	-	-	-	-	34	(D)	80	(D)
Michigan	-	-	-	-	-	-	-	-	-	-	-	-
Minnesota	-	-	-	-	-	-	-	-	-	-	-	-
Mississippi	-	-	-	-	-	-	-	-	-	-	-	-
Missouri	-	-	-	-	-	-	-	-	-	-	-	-
Montana	-	-	-	-	-	-	-	-	-	-	-	-
Nebraska	-	-	-	-	-	-	-	-	-	-	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-
New Hampshire	-	-	2	(D)	-	-	-	-	-	-	-	-
New Jersey	50	10,303	67	2,820	-	-	-	-	39	2,334	51	2,098
New Mexico	-	-	-	-	-	-	-	-	-	-	-	-
New York	15	5,658	13	(D)	-	-	-	-	1	(D)	6	(D)
North Carolina	22	337	56	761	-	-	-	-	20	265	41	546
North Dakota	-	-	-	-	-	-	-	-	-	-	-	-
Ohio	-	-	-	-	-	-	-	-	-	-	-	-
Oklahoma	-	-	-	-	-	-	-	-	-	-	-	-
Oregon	17	10,555	21	11,584	-	-	-	-	-	-	1	(D)
Pennsylvania	1	(D)	2	(D)	-	-	-	-	1	(D)	1	(D)
Rhode Island	21	5,734	11	(D)	-	-	-	-	2	(D)	4	22
South Carolina	9	2,008	35	2,505	-	-	-	-	8	1,823	22	2,064
South Dakota	-	-	-	-	-	-	-	-	-	-	-	-
Tennessee	-	-	-	-	-	-	-	-	-	-	-	-
Texas	-	-	-	-	-	-	-	-	-	-	-	-
Utah	-	-	-	-	-	-	-	-	-	-	-	-
Vermont	-	-	-	-	-	-	-	-	-	-	-	-
Virginia	80	41,522	53	29,028	-	-	-	-	33	20,759	42	27,773
Washington	125	149,320	174	63,710	-	-	-	-	82	55,212	110	22,018
West Virginia	-	-	-	-	-	-	-	-	-	-	-	-
Wisconsin	-	-	-	-	-	-	-	-	-	-	-	-
Wyoming	-	-	-	-	-	-	-	-	-	-	-	-

--continued

Table 19. Mollusk Sales by Species – United States and States: 2013 and 2005 (continued)

[For meaning of abbreviations and symbols, see introductory text.]

Geographic area	Clams, geoduck				Clams, hard				Clams, manila			
	2013		2005		2013		2005		2013		2005	
	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)
United States.....	20	29,051	(NA)	(NA)	278	64,594	434	60,403	80	24,438	108	19,481
Alabama.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Alaska.....	1	(D)	(NA)	(NA)	-	-	2	(D)	-	-	-	-
Arizona.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Arkansas.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
California.....	-	-	(NA)	(NA)	-	-	-	-	4	(D)	5	(D)
Colorado.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Connecticut.....	-	-	(NA)	(NA)	16	18,135	22	11,535	-	-	-	-
Delaware.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Florida.....	-	-	(NA)	(NA)	119	(D)	154	(D)	-	-	-	-
Georgia.....	-	-	(NA)	(NA)	3	116	1	(D)	-	-	-	-
Hawaii.....	-	-	(NA)	(NA)	-	-	-	-	1	(D)	2	(D)
Idaho.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Illinois.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Indiana.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Iowa.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Kansas.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Kentucky.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Louisiana.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Maine.....	-	-	(NA)	(NA)	-	-	4	(D)	-	-	-	-
Maryland.....	-	-	(NA)	(NA)	1	(D)	1	(D)	-	-	-	-
Massachusetts.....	-	-	(NA)	(NA)	33	1,712	76	2,450	-	-	-	-
Michigan.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Minnesota.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Mississippi.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Missouri.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Montana.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Nebraska.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Nevada.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
New Hampshire.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
New Jersey.....	-	-	(NA)	(NA)	37	(D)	51	2,098	-	-	-	-
New Mexico.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
New York.....	-	-	(NA)	(NA)	1	(D)	6	(D)	-	-	-	-
North Carolina.....	-	-	(NA)	(NA)	20	265	41	546	-	-	-	-
North Dakota.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Ohio.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Oklahoma.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Oregon.....	-	-	(NA)	(NA)	-	-	1	(D)	-	-	-	-
Pennsylvania.....	-	-	(NA)	(NA)	1	(D)	1	(D)	-	-	-	-
Rhode Island.....	-	-	(NA)	(NA)	2	(D)	3	(D)	-	-	-	-
South Carolina.....	-	-	(NA)	(NA)	8	1,823	22	2,064	-	-	-	-
South Dakota.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Tennessee.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Texas.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Utah.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Vermont.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Virginia.....	-	-	(NA)	(NA)	33	20,759	41	(D)	-	-	-	-
Washington.....	19	(D)	(NA)	(NA)	4	11	8	58	75	(D)	101	17,461
West Virginia.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Wisconsin.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-
Wyoming.....	-	-	(NA)	(NA)	-	-	-	-	-	-	-	-

--continued

Table 19. Mollusk Sales by Species – United States and States: 2013 and 2005 (continued)

[For meaning of abbreviations and symbols, see introductory text.]

Geographic area	Clams, other				Mussels				Oysters, total			
	2013		2005		2013		2005		2013		2005	
	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)
United States	22	5,210	36	4,990	32	12,253	31	(D)	483	180,150	589	102,896
Alabama	-	-	-	-	-	-	-	-	-	-	-	-
Alaska	-	-	2	(D)	4	22	4	(D)	22	519	24	562
Arizona	-	-	-	-	-	-	-	-	-	-	-	-
Arkansas	-	-	-	-	-	-	-	-	-	-	-	-
California	-	-	1	(D)	9	(D)	3	(D)	18	9,877	15	12,388
Colorado	-	-	-	-	-	-	-	-	-	-	-	-
Connecticut	-	-	-	-	-	-	-	-	13	10,162	13	(D)
Delaware	-	-	-	-	-	-	-	-	-	-	-	-
Florida	10	(D)	-	-	-	-	-	-	4	(D)	2	(D)
Georgia	1	(D)	-	-	-	-	-	-	-	-	-	-
Hawaii	1	(D)	-	-	-	-	-	-	-	-	1	(D)
Idaho	-	-	1	(D)	-	-	-	-	-	-	-	-
Illinois	-	-	-	-	-	-	-	-	-	-	-	-
Indiana	-	-	-	-	-	-	-	-	-	-	-	-
Iowa	-	-	-	-	-	-	-	-	-	-	-	-
Kansas	-	-	-	-	-	-	-	-	-	-	-	-
Kentucky	-	-	-	-	-	-	-	-	-	-	-	-
Louisiana	-	-	-	-	-	-	-	-	39	13,355	135	28,499
Maine	-	-	2	(D)	5	1,838	8	1,236	17	(D)	21	1,519
Maryland	-	-	-	-	-	-	-	-	10	(D)	6	(D)
Massachusetts	4	(D)	15	(D)	-	-	3	(D)	126	10,970	99	3,026
Michigan	-	-	-	-	-	-	-	-	-	-	-	-
Minnesota	-	-	-	-	-	-	-	-	-	-	-	-
Mississippi	-	-	-	-	-	-	-	-	-	-	-	-
Missouri	-	-	-	-	-	-	-	-	-	-	-	-
Montana	-	-	-	-	-	-	-	-	-	-	-	-
Nebraska	-	-	-	-	-	-	-	-	-	-	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-
New Hampshire	-	-	-	-	-	-	1	(D)	-	-	1	(D)
New Jersey	3	(D)	-	-	-	-	-	-	19	7,969	17	723
New Mexico	-	-	-	-	-	-	-	-	-	-	-	-
New York	-	-	-	-	-	-	-	-	14	(D)	13	3,934
North Carolina	-	-	-	-	-	-	-	-	8	72	35	216
North Dakota	-	-	-	-	-	-	-	-	-	-	-	-
Ohio	-	-	-	-	-	-	-	-	-	-	-	-
Oklahoma	-	-	-	-	-	-	-	-	-	-	-	-
Oregon	-	-	-	-	-	-	1	(D)	17	10,555	21	(D)
Pennsylvania	-	-	-	-	-	-	1	(D)	-	-	-	-
Rhode Island	-	-	1	(D)	1	(D)	1	(D)	21	(D)	10	793
South Carolina	-	-	-	-	-	-	-	-	6	185	21	441
South Dakota	-	-	-	-	-	-	-	-	-	-	-	-
Tennessee	-	-	-	-	-	-	-	-	-	-	-	-
Texas	-	-	-	-	-	-	-	-	-	-	-	-
Utah	-	-	-	-	-	-	-	-	-	-	-	-
Vermont	-	-	-	-	-	-	-	-	-	-	-	-
Virginia	-	-	1	(D)	-	-	-	-	60	20,763	18	(D)
Washington	3	(D)	13	4,500	13	9,764	9	(D)	89	81,114	137	38,260
West Virginia	-	-	-	-	-	-	-	-	-	-	-	-
Wisconsin	-	-	-	-	-	-	-	-	-	-	-	-
Wyoming	-	-	-	-	-	-	-	-	-	-	-	-

--continued

Table 19. Mollusk Sales by Species – United States and States: 2013 and 2005 (continued)

[For meaning of abbreviations and symbols, see introductory text.]

Geographic area	Oysters, Eastern				Oysters, Pacific				Oysters, other			
	2013		2005		2013		2005		2013		2005	
	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)
United States	315	68,298	399	41,780	145	86,742	195	56,751	41	25,110	24	4,365
Alabama	-	-	-	-	-	-	-	-	-	-	-	-
Alaska	-	-	-	-	22	519	24	(D)	-	-	1	(D)
Arizona	-	-	-	-	-	-	-	-	-	-	-	-
Arkansas	-	-	-	-	-	-	-	-	-	-	-	-
California	3	(D)	2	(D)	18	(D)	14	10,732	5	(D)	6	(D)
Colorado	-	-	-	-	-	-	-	-	-	-	-	-
Connecticut	13	10,162	13	(D)	-	-	-	-	-	-	-	-
Delaware	-	-	-	-	-	-	-	-	-	-	-	-
Florida	2	(D)	1	(D)	-	-	-	-	2	(D)	1	(D)
Georgia	-	-	-	-	-	-	-	-	-	-	-	-
Hawaii	-	-	-	-	-	-	1	(D)	-	-	-	-
Idaho	-	-	-	-	-	-	-	-	-	-	-	-
Illinois	-	-	-	-	-	-	-	-	-	-	-	-
Indiana	-	-	-	-	-	-	-	-	-	-	-	-
Iowa	-	-	-	-	-	-	-	-	-	-	-	-
Kansas	-	-	-	-	-	-	-	-	-	-	-	-
Kentucky	-	-	-	-	-	-	-	-	-	-	-	-
Louisiana	18	3,389	135	28,499	-	-	-	-	21	9,967	-	-
Maine	17	(D)	21	1,519	-	-	-	-	-	-	-	-
Maryland	10	(D)	6	(D)	-	-	-	-	-	-	-	-
Massachusetts	123	(D)	99	3,026	-	-	-	-	3	(D)	-	-
Michigan	-	-	-	-	-	-	-	-	-	-	-	-
Minnesota	-	-	-	-	-	-	-	-	-	-	-	-
Mississippi	-	-	-	-	-	-	-	-	-	-	-	-
Missouri	-	-	-	-	-	-	-	-	-	-	-	-
Montana	-	-	-	-	-	-	-	-	-	-	-	-
Nebraska	-	-	-	-	-	-	-	-	-	-	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-
New Hampshire	-	-	1	(D)	-	-	-	-	-	-	-	-
New Jersey	19	7,969	17	723	-	-	-	-	-	-	-	-
New Mexico	-	-	-	-	-	-	-	-	-	-	-	-
New York	14	(D)	13	3,934	-	-	-	-	-	-	-	-
North Carolina	8	72	35	216	-	-	-	-	-	-	-	-
North Dakota	-	-	-	-	-	-	-	-	-	-	-	-
Ohio	-	-	-	-	-	-	-	-	-	-	-	-
Oklahoma	-	-	-	-	-	-	-	-	-	-	-	-
Oregon	-	-	-	-	17	(D)	21	(D)	1	(D)	1	(D)
Pennsylvania	-	-	-	-	-	-	-	-	-	-	-	-
Rhode Island	21	(D)	10	793	-	-	-	-	-	-	-	-
South Carolina	6	185	21	441	-	-	-	-	-	-	-	-
South Dakota	-	-	-	-	-	-	-	-	-	-	-	-
Tennessee	-	-	-	-	-	-	-	-	-	-	-	-
Texas	-	-	-	-	-	-	-	-	-	-	-	-
Utah	-	-	-	-	-	-	-	-	-	-	-	-
Vermont	-	-	-	-	-	-	-	-	-	-	-	-
Virginia	60	20,763	18	(D)	-	-	-	-	-	-	-	-
Washington	1	(D)	7	164	88	67,349	135	35,279	9	(D)	15	2,818
West Virginia	-	-	-	-	-	-	-	-	-	-	-	-
Wisconsin	-	-	-	-	-	-	-	-	-	-	-	-
Wyoming	-	-	-	-	-	-	-	-	-	-	-	-

--continued

Table 19. Mollusk Sales by Species – United States and States: 2013 and 2005 (continued)

[For meaning of abbreviations and symbols, see introductory text.]

Geographic area	Other mollusks			
	2013		2005	
	Farms	Sales (\$1,000)	Farms	Sales (\$1,000)
United States	13	4,343	9	(D)
Alabama	-	-	-	-
Alaska	-	-	-	-
Arizona	-	-	-	-
Arkansas	-	-	-	-
California	-	-	-	-
Colorado	-	-	-	-
Connecticut	-	-	-	-
Delaware	-	-	-	-
Florida	7	(D)	-	-
Georgia	-	-	-	-
Hawaii	-	-	1	(D)
Idaho	-	-	-	-
Illinois	-	-	-	-
Indiana	-	-	-	-
Iowa	-	-	-	-
Kansas	-	-	-	-
Kentucky	-	-	-	-
Louisiana	-	-	-	-
Maine	-	-	-	-
Maryland	-	-	-	-
Massachusetts	2	(D)	2	(D)
Michigan	-	-	-	-
Minnesota	-	-	-	-
Mississippi	-	-	-	-
Missouri	-	-	-	-
Montana	-	-	-	-
Nebraska	-	-	-	-
Nevada	-	-	-	-
New Hampshire	-	-	-	-
New Jersey	-	-	-	-
New Mexico	-	-	-	-
New York	-	-	1	(D)
North Carolina	-	-	-	-
North Dakota	-	-	-	-
Ohio	-	-	-	-
Oklahoma	-	-	-	-
Oregon	-	-	-	-
Pennsylvania	-	-	-	-
Rhode Island	-	-	2	(D)
South Carolina	-	-	-	-
South Dakota	-	-	-	-
Tennessee	-	-	-	-
Texas	-	-	-	-
Utah	-	-	-	-
Vermont	-	-	-	-
Virginia	-	-	2	(D)
Washington	4	3,229	1	(D)
West Virginia	-	-	-	-
Wisconsin	-	-	-	-
Wyoming	-	-	-	-

EXHIBIT 6



Economy at a Glance

SHARE ON: Southeast FONT SIZE: PRINT:

BROWSE EAG

U.S. ECONOMY

CENSUS REGIONS

ABOUT THE DATA

BROWSE ALL STATES

ALABAMA

ALASKA

ARIZONA

ARKANSAS

CALIFORNIA

COLORADO

CONNECTICUT

DELAWARE

D.C.

FLORIDA

GEORGIA

HAWAII

IDAHO

ILLINOIS

INDIANA

IOWA

KANSAS

KENTUCKY

LOUISIANA

MAINE

MARYLAND

MASSACHUSETTS

MICHIGAN

MINNESOTA

MISSISSIPPI

MISSOURI

MONTANA

NEBRASKA

NEVADA

NEW HAMPSHIRE

NEW JERSEY

NEW MEXICO

NEW YORK

NORTH CAROLINA

NORTH DAKOTA

Atlanta-Sandy Springs-Marietta, GA

Atlanta-Sandy Springs-Roswell, GA

Data Series	Back Data	Mar 2016	Apr 2016	May 2016	June 2016	July 2016	Aug 2016
Labor Force Data							
Civilian Labor Force (1)		2,883.3	2,876.6	2,886.9	2,918.8	2,947.7	(P) 2,923.1
Employment (1)		2,733.9	2,739.2	2,755.7	2,765.0	2,797.4	(P) 2,777.7
Unemployment (1)		149.4	137.3	131.2	153.8	150.3	(P) 145.4
Unemployment Rate (2)		5.2	4.8	4.5	5.3	5.1	(P) 5.0
Nonfarm Wage and Salary Employment							
Total Nonfarm (3)		2,625.2	2,645.0	2,664.1	2,656.7	2,653.3	(P) 2,667.8
12-month % change		3.1	3.2	3.1	2.6	2.8	(P) 2.7
Mining and Logging (3)		1.5	1.5	1.5	1.4	1.4	(P) 1.4
12-month % change		7.1	7.1	0.0	0.0	0.0	(P) -6.7
Construction (3)		112.5	113.7	115.1	116.1	117.0	(P) 117.2
12-month % change		7.8	6.6	7.2	6.8	7.3	(P) 7.0
Manufacturing (3)		161.0	162.2	160.8	162.4	162.9	(P) 160.9
12-month % change		3.2	4.2	2.7	3.2	3.3	(P) 1.9
Trade, Transportation, and Utilities (3)		589.4	591.5	595.1	593.7	595.8	(P) 597.0
12-month % change		3.6	3.4	3.4	2.9	3.1	(P) 3.0
Information (3)		86.1	87.3	87.9	88.3	88.8	(P) 88.6
12-month % change		-1.5	-0.8	-2.9	-1.9	-6.0	(P) -2.2
Financial Activities (3)		162.0	162.6	164.6	165.0	166.3	(P) 165.8
12-month % change		1.0	0.6	1.7	1.5	2.0	(P) 1.8
Professional and Business Services (3)		484.8	491.3	496.1	495.5	497.0	(P) 498.6
12-month % change		3.1	4.3	3.7	2.8	3.5	(P) 3.3
Education and Health Services (3)		325.9	326.1	328.0	321.9	324.6	(P) 328.5
12-month % change		3.4	2.9	3.0	2.1	3.1	(P) 2.6
Leisure and Hospitality (3)		275.0	284.0	290.7	292.6	291.6	(P) 293.2
12-month % change		5.1	5.7	6.1	5.2	5.7	(P) 5.8
Other Services (3)		96.9	97.0	97.2	97.1	96.7	(P) 95.6
12-month % change		2.2	0.7	0.2	-0.6	-1.5	(P) -1.9
Government (3)		330.1	327.8	327.1	322.7	311.2	(P) 321.0
12-month % change		1.5	0.8	1.0	1.1	0.8	(P) 1.1
Consumer Price Index: Atlanta, GA							
CPI-U, All items (4)			223.820		226.724		(R) 227.817
CPI-U, All items, 12-month % change (4)			1.9		0.7		(R) 1.2
CPI-W, All items (5)			220.923		224.201		(R) 225.005
CPI-W, All items, 12-month % change (5)			1.6		0.4		(R) 0.9

Footnotes

- (1) Number of persons, in thousands, not seasonally adjusted.
- (2) In percent, not seasonally adjusted.
- (3) Number of jobs, in thousands, not seasonally adjusted. See [About the data](#).
- (4) All Urban Consumers, base: 1982-84=100, not seasonally adjusted.
- (5) Urban Wage Earners and Clerical Workers, base: 1982-84=100, not seasonally adjusted.
- (R) Revised
- (P) Preliminary

Data extracted on: October 18, 2016

- OHIO
- OKLAHOMA
- OREGON
- PENNSYLVANIA
- PUERTO RICO
- RHODE ISLAND
- SOUTH CAROLINA
- SOUTH DAKOTA
- TENNESSEE
- TEXAS
- UTAH
- VERMONT
- VIRGIN ISLANDS
- VIRGINIA
- WASHINGTON
- WEST VIRGINIA
- WISCONSIN
- WYOMING

Source: U.S. Bureau of Labor Statistics

Note: More data series, including additional geographic areas, are available through the "[Databases & Tables](#)" tab at the top of this page.

Geographically based survey data available from BLS:

Employment & Unemployment

- ✦ [Employment, Hours, and Earnings from the CES survey \(State and Area\)](#)
- ✦ [Local Area Unemployment Statistics](#)
- ✦ [Create Customized Maps -- Unemployment Rates](#)
- ✦ [Quarterly Census of Employment and Wages](#)
- ✦ [Occupational Employment Statistics](#)
- ✦ [Geographic Profile](#)

Prices & Living Conditions

- ✦ [Consumer Price Index](#)
- ✦ [Consumer Expenditure Survey](#)

Compensation & Working Conditions

- ✦ [National Compensation Survey](#)
- ✦ [Employment Cost Index](#)
- ✦ [Injuries, Illnesses, and Fatalities](#)

RECOMMEND THIS PAGE USING:  Facebook  Twitter  LinkedIn

TOOLS

- [Areas at a Glance](#)
- [Industries at a Glance](#)
- [Economic Releases](#)
- [Databases & Tables](#)
- [Maps](#)

CALCULATORS

- [Inflation](#)
- [Location Quotient](#)
- [Injury And Illness](#)

HELP

- [Help & Tutorials](#)
- [FAQs](#)
- [Glossary](#)
- [About BLS](#)
- [Contact Us](#)

INFO

- [What's New](#)
- [Careers @ BLS](#)
- [Find It! DOL](#)
- [Join our Mailing Lists](#)
- [Linking & Copyright Info](#)

RESOURCES

- [Inspector General \(OIG\)](#)
- [Budget and Performance](#)
- [No Fear Act](#)
- [USA.gov](#)
- [Benefits.gov](#)
- [Disability.gov](#)

[Freedom of Information Act](#) | [Privacy & Security Statement](#) | [Disclaimers](#) | [Customer Survey](#) | [Important Web Site Notices](#)

U.S. Bureau of Labor Statistics | Southeast Information Office, Suite 7T50, 61 Forsyth St., S.W., Atlanta, GA 30303
www.bls.gov/regions/southeast | Telephone: 1-404-893-4222 | [Contact Southeast Region](#)

EXHIBIT 7

Bureau of Economic Analysis

Gross domestic product (GDP) by metropolitan area (millions of current dollars)

Levels

Fips	Area	IndCode	Industry	2015
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>1</u>	All industry total	339,203
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>2</u>	Private industries	310,231
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>3</u>	Agriculture, forestry, fishing, and hunting	624
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>4</u>	Farms	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>5</u>	Forestry, fishing, and related activities	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>6</u>	Mining	(D)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>7</u>	Oil and gas extraction	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>8</u>	Mining, except oil and gas	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>9</u>	Support activities for mining	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>10</u>	Utilities	4,893
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>11</u>	Construction	(D)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>12</u>	Manufacturing	26,847
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>13</u>	Durable goods manufacturing	12,608
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>14</u>	Wood products manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>15</u>	Nonmetallic mineral products manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>16</u>	Primary metals manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>17</u>	Fabricated metal products	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>18</u>	Machinery manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>19</u>	Computer and electronic products manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>20</u>	Electrical equipment, appliance, and components manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>21</u>	Motor vehicles, bodies and trailers, and parts manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>22</u>	Other transportation equipment manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>23</u>	Furniture and related products manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>24</u>	Miscellaneous manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>25</u>	Nondurable goods manufacturing	14,239
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>26</u>	Food and beverage and tobacco products manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>27</u>	Textile mills and textile product mills	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>28</u>	Apparel and leather and allied products manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>29</u>	Paper products manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>30</u>	Printing and related support activities	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>31</u>	Petroleum and coal products manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>32</u>	Chemical products manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>33</u>	Plastics and rubber products manufacturing	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>34</u>	Wholesale trade	31,170
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>35</u>	Retail trade	19,607
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>36</u>	Transportation and warehousing	15,607
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>37</u>	Air transportation	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>38</u>	Rail transportation	(NA)

Bureau of Economic Analysis

Gross domestic product (GDP) by metropolitan area (millions of current dollars)

Levels

Fips	Area	IndCode	Industry	2015
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>39</u>	Water transportation	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>40</u>	Truck transportation	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>41</u>	Transit and ground passenger transportation	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>42</u>	Pipeline transportation	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>43</u>	Other transportation and support activities	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>44</u>	Warehousing and storage	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>45</u>	Information	27,150
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>46</u>	Publishing industries, except Internet (includes software)	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>47</u>	Motion picture and sound recording industries	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>48</u>	Broadcasting and telecommunications	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>49</u>	Data processing, internet publishing, and other information services	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>50</u>	Finance, insurance, real estate, rental, and leasing	76,787
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>51</u>	Finance and insurance	29,234
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>52</u>	Federal Reserve banks, credit intermediation, and related services	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>53</u>	Securities, commodity contracts, and investments	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>54</u>	Insurance carriers and related activities	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>55</u>	Funds, trusts, and other financial vehicles	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>56</u>	Real estate and rental and leasing	47,553
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>57</u>	Real estate	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>58</u>	Rental and leasing services and lessors of intangible assets	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>59</u>	Professional and business services	52,705
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>60</u>	Professional, scientific, and technical services	29,188
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>64</u>	Management of companies and enterprises	8,944
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>65</u>	Administrative and waste management services	14,573
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>66</u>	Administrative and support services	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>67</u>	Waste management and remediation services	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>68</u>	Educational services, health care, and social assistance	23,710
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>69</u>	Educational services	4,225
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>70</u>	Health care and social assistance	19,485
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>71</u>	Ambulatory health care services	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>72</u>	Hospitals and nursing and residential care facilities	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>73</u>	Social assistance	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>74</u>	Arts, entertainment, recreation, accommodation, and food services	11,369
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>75</u>	Arts, entertainment, and recreation	2,342
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>76</u>	Performing arts, spectator sports, museums, and related activities	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>77</u>	Amusements, gambling, and recreation industries	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>78</u>	Accommodation and food services	9,027
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>79</u>	Accommodation	(NA)

Bureau of Economic Analysis

Gross domestic product (GDP) by metropolitan area (millions of current dollars)

Levels

Fips	Area	IndCode	Industry	2015
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>80</u>	Food services and drinking places	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>81</u>	Other services, except government	6,440
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>82</u>	Government	28,972
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>83</u>	Federal civilian	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>84</u>	Federal military	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>85</u>	State and local	(NA)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	86	Addenda:	
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>86</u>	Natural resources and mining	(D)
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>87</u>	Trade	50,776
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>88</u>	Transportation and utilities	20,500
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>89</u>	Private goods-producing industries	40,792
12060	Atlanta-Sandy Springs-Roswell, GA (Metropolitan Statistical Area)	<u>90</u>	Private services-providing industries	269,439

Legend / Footnotes:

Note-- NAICS Industry detail is based on the 2007 North American Industry Classification System (NAICS).

(D) Not shown in order to avoid the disclosure of confidential information; estimates are included in higher level totals.

(NA) Not available.

Note-- Per capita real GDP statistics for 2001-2015 reflect Census Bureau midyear population estimates available as of March 2016.

Last updated: September 20, 2016.

EXHIBIT 8



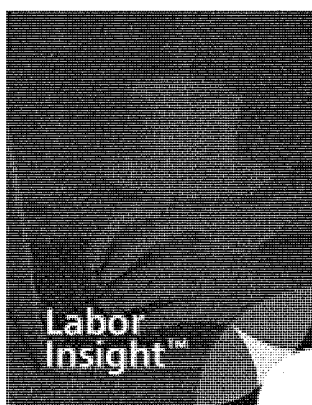




 Share

Labor Insight™

Sophisticated, real-time labor market information to guide decision making



Real-Time Insight Into the Job Market

Our analytical product allows users to understand and adapt to the labor market in real time. Every day, Burning Glass collects millions of online job postings from close to 40,000 sources and applies our patented technology to mine and code detailed data from each posting describing the specific skills, education, experience, and work activities required for the job – going well beyond the occupation and industry codes offered in other sources.

Comprehensive Dashboard

The easy-to-use Labor Insight dashboard allows detailed analysis of hiring activity by industry, occupation, education, and skills. Labor Insight is used by:

- Educators, to understand the needs of employers and align programs with the job market
- Researchers, to gain real-time insight into labor trends
- Workforce and economic development agencies, to find out more about the skills in demand, how that matches up with the local workforce, and where to allocate job training resources



“Tools like Burning Glass help us tell the story. Everybody, at the highest level, comes to us for that data. It’s so baked into our system now that we don’t even question it. We will always have demand now that we can show what it can do.”

Alan Spell

MERIC Research Manager, Missouri Department of Economic Development




Data in Action: Case Studies

Missouri: Informing State Policy Challenges

Northeastern University: Rapid Growth Guided by Real-Time Jobs Data

Lone Star College: Keeping Pace With a Changing Local Job Market

University of Maryland, Baltimore County: Identifying Where the Jobs Are



“With real-time, labor-time market data, we can conduct a scan of any occupation. We know who is hiring and what competencies and technical skills they need. We are making sure our program choices and curriculum remain current so that our students are trained and ready for jobs employers need to fill.”

Linda L. Head
Associate Vice Chancellor, Lone Star College

Power Users

Colleges Drill Down on Job Listing Terms

This Wall Street Journal story profiles colleges that are using real-time labor data in their decision making.

Job Trends, Massachusetts Biotechnology Education Foundation

MassBioEd is a nonprofit devoted to growing education capacity in the life sciences. Among other projects, the organization produces regular reports on the job market for biotechnology using Labor Insight.

How Community Colleges Use Job-Market Data to Develop New Programs

The Chronicle of Higher Education examines how community colleges, particularly the Kentucky Community and Technical College system, are using job posting data to deal with a changing marketplace.

We have a 21st century economy. Why do we have a 20th century labor market?

Contact our sales team to find out more about how Burning Glass products use big data to close the skills gap by helping supply and demand meet.

Get in Touch

Company

- [Home](#)
- [About Us](#)
- [Contact Us](#)
- [Blog](#)
- [Privacy](#)

Products

- [Labor insight™ Real-Time Market Data](#)
- [LENS™ Resume Parsing | Talent Matching](#)
- [FOCUS™ Career Solutions](#)
- [PRISM™ Recruitment Workflow](#)
- [NOVA™ Real-Time Job Feed](#)
- [JobPulse™ Analytics Dashboard](#)

Sectors

- [Workforce Agencies](#)
- [HR/Recruitment](#)
- [Job Market Data](#)
- [Higher Education](#)

General Inquiries

- [One Lewis Wharf](#)
- [Boston, MA USA 02110](#)
- [+1 \(617\) 227 4800](#)
- [info@burning-glass.com](#)



EXHIBIT 9



HOT SPOTS

8 Reasons This City Is a Business Powerhouse

The business-boosting aspects of Atlanta could make it the best city for any company to call home.



BY RYAN JENKINS

@theRyanJenks



CREDIT: Getty Images

A perfect storm of low cost and reduced regulation with a diverse and highly skilled labor pool is forming over Georgia's capital and largest city, Atlanta. As an Atlanta entrepreneur myself, I have witnessed first-hand Atlanta's quiet rise to a world-class business powerhouse.

Many premier companies already call Atlanta home. In fact, Atlanta has the third largest concentration of Fortune 500 companies in the country, including Coca-Cola, Delta, Home

Depot, UPS, Chick-fil-a, and Porsche. Recently Athena Health, Carter's, Pandora, and MailChimp have all set up shop in Atlanta. Atlanta is also one of the fastest film and TV production cities in the country with more than 1,120 projects filmed in Atlanta since 2007 including *The Walking Dead*, *Captain America: Civil War*, and *X-Men: Apocalypse*.

As more momentum builds in the "heart of the southeast," here are eight reasons companies and entrepreneurs should consider calling Atlanta home.

1. Business Friendly

In 2014, Business Facilities Magazine ranked Atlanta #1 for the city with the lowest cost of doing business. Atlanta and the state of Georgia offer a variety of incentives for businesses to relocate, including assistance with site selection, as well as bonds, loans, and other incentives such as grants, conduit loans, and state tax credits.

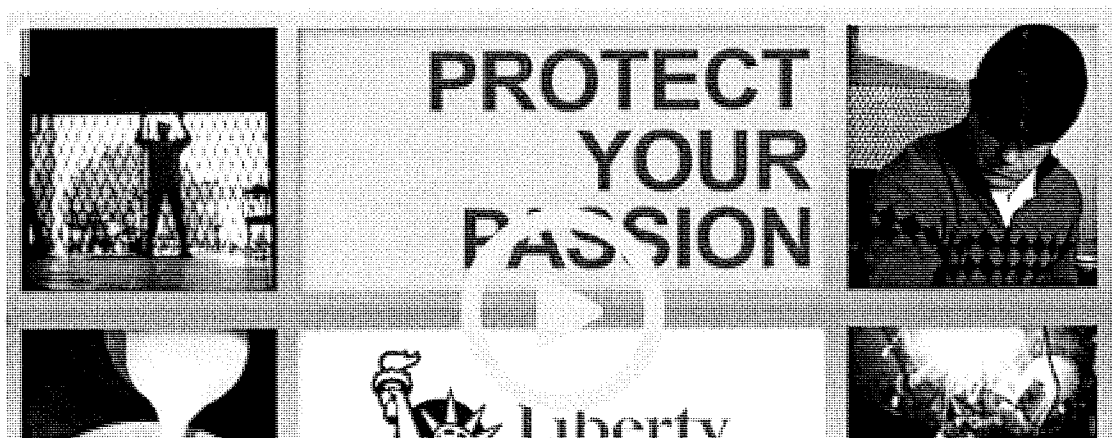
Growing companies are attracted to Atlanta for the strong economic climate and the strong array of industries ranging from life sciences and financial technology to health care and manufacturing. Lee Echols, Vice President of Marketing and Communications at Northside Hospital in Atlanta, says, "Atlanta's diversity of industries is a significant advantage. While we feel economic effects like any other area, Atlanta's broad range of businesses somewhat protects us when a single industry dips."

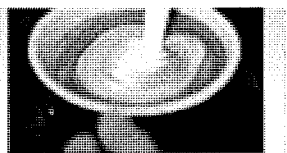
2. Enjoyable Living

Temperate weather (Atlanta averages 217 sunny days a year), award-winning restaurants (Travel & Leisure in 2015 named Atlanta #4 of America's Best Cities for Foodies), and sports venues (Atlanta was recently awarded the 2019 Super Bowl, the 2018 College Football Playoff National Championship, and the 2020 NCAA Men's Final Four) all contribute to an enjoyable living in Atlanta. However, the cost of living is probably the stand-out feature of Atlanta.

Despite the fact that the Atlanta region is the 9th largest metro area in the nation, with a population of 5.7 million, the cost of living for major expenses like housing, clothing, food and gasoline are below the U.S. average. Locating in Atlanta offers a high standard of living for employees. Atlanta also has the highest percentage of overall urban tree canopy (47.9%) in the nation making it a beautifully green city.

[close X]





NEXT
ARTICLE

Advertisement

[Click Here to Learn More](#)

Klaus Zellmer, CEO of Porsche North America, recently said, "As a global company and brand, Porsche needed a home base that could really support our growth and the livelihood of our employees. We found such qualities in Atlanta."

3. Future Focused

Atlanta ranked #7 on the 2014/2015 Global Cities of the Future list--the #2 U.S. city on the list.

Atlanta is home to AT&T Mobility's Smart Cities initiative, which is working with the mayor's office and the Georgia Institute of Technology to take advantage of the Internet of Things and integrating smart technology in the region to support infrastructure, manage traffic, and create a better quality of life in Atlanta.

AT&T recently released GigaPower which offers speeds of 1 gigabit per second to homes, apartments, and small businesses in more than 20 Atlanta communities. And in 2015, Google announced that Atlanta was one of the select cities in which it is rolling out Google Fiber, its high-speed Internet service.

4. Accessible Airport

More than 250,000 passengers a day travel through Hartsfield-Jackson Atlanta International Airport (ATL) making it the busiest airport in the world. In 2015--despite the busyness--the Air Transport Research Society named ATL the world's most efficient airport for the 12th consecutive year.

80 percent of the entire U.S. population lives within a direct 2-hour flight from Atlanta. ATL boasts the most direct non-stop domestic flights and now thanks to its 1.2 million-square-foot, gold LEED-certified international terminal, offers non-stop service to more than 225 destinations worldwide.

To remain the "world's most accessible city" and the leader in the aviation industry for decades to come, ATL will soon embark on a \$6 billion capital improvement plan.

5. Millennial Magnet

According to Money, Atlanta is the #2 city for Millennials and currently houses 1.4 million Millennials. "We are just getting started, marketing and attracting [Millennials]. We have to be intentional about attracting [Millennial] talent," says Kate Atwood, Vice President of ChooseATL, a Millennial talent recruitment effort coordinated by the Metro Atlanta Chamber with a goal to make Atlanta a top-tier global market in the next 5-10 years.

"Our culture in Atlanta is going to be radically transformed by Millennials," says Atlanta native and popular consumer expert and host of a nationally syndicated show, Clark Howard.

NEXT
ARTICLE

6. Talent Rich

Since 2011, more than 467,000 private-sector jobs have been added in Atlanta, keeping the unemployment rate at just 5.5 percent. Atlanta's abundant and diverse labor pool keeps the talent pipeline well-primed with approximately 275,000 college students and 50,000 technical college students that are job-ready.

In 2015, the Georgia Institute of Technology was named the top public university producing the best startup talent. Atlanta also ranks third in the U.S. for STEM employment growth.

7. Strong Startup Scene

"With the recent proliferation of tech hubs such as Atlanta Tech Village, ATDC, Switchyards, and Tech Square Labs, I expect to see a massive uptick in the number of iconic technology companies coming out of Atlanta in the coming years." says Craig Hyde, CEO of Rigor--an award-winning digital performance management startup based in the Atlanta Tech Village.

Thirty-three percent of Atlanta's jobs come from startups. Atlanta-based companies attracted more than \$500 million in venture capital in 2015. Fueling Atlanta's rise to a top five tech startup center in the U.S. is the Atlanta Tech Village which is the largest tech entrepreneurship center in the southeast and a top ten center in the nation.

YikYak, the pseudo-anonymous social media app that ranks #1 among Millennials, recently graduated from the Atlanta Tech Village after launching three years ago. Yik Yak's reported value of \$400 million makes it one of the most successful startups in the country. "We wouldn't be at the point we are today if we hadn't been based in Atlanta," says YikYak co-founder and COO, Brooks Buffington. "[Atlanta's] less noise has allowed us to spread our wings and not be trapped in a bubble."

8. Growing Fast

The quality of life and lower costs have contributed to metro Atlanta growing by more than 1.1 million people since 2000--a 26 percent increase. Mike Carnathan, manager of the research and analytics division of the Atlanta Regional Commission, says that Atlanta expects to add roughly 100,000 new residents each year through 2040, adding roughly 2.5 million people to the area's population.

In the words of ChooseATL, "Choose Atlanta, it will surprise you."

The opinions expressed here by Inc.com columnists are their own, not those of Inc.com.

PUBLISHED ON: JUN 20, 2016

ADVERTISEMENT

EXHIBIT 10



http://onforb.es/1jL1QRl

Low Prices on Toyota - Shop Our Inventory and Save

Movemasters, Inc - Denver's Most Reputable Movers

Commercial Movers

Relocating Your Business?

Belize Beach Resort - Caribbean Oceanfront Property

Dielman Moving & Storage

Local Movers St. Louis Storage and Junk Removal Go to dielmanmoving.com



Kathryn Dill Forbes Staff

The workforce, the workplace, and the future of both.

LEADERSHIP 5/23/2014 @ 12:15PM | 40,794 views

The Top 10 Cities For Relocation

The Top 10 Cities For Relocation

Those who work in chillier climes may have spent the never ending winter months dreaming of a fresh start in Miami or southern California, but a new study shows it's not just blizzard blues that lead people to reimagine their geography.

A survey conducted by job-search site [TheLadders](#) found that 35% of job seekers are hunting not just for a new position, but for a new city as well —and a lot of them are choosing the Big Apple over the Sunshine State.

“The reality of the job market is that the right job isn’t always available within a commutable distance,” said Shankar Mishra, Vice President of Data Science and Analytics, in a company statement. “This prompted us to investigate just how often the job seekers in our 6-million-member database apply for jobs outside their current location.”

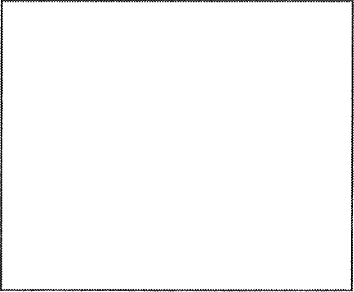
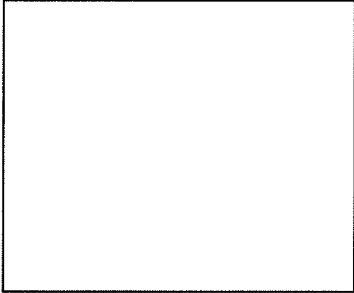
More than one third of applications received by companies nationwide were from job seekers outside their “DMA,” or “Designated Market Area.”

No surprises: Those who live in big cities want to stay put, while the data showed that those who lived in cities with smaller populations sent the greatest number of applications to companies in other cities.

Those on the job hunt in the 10 most populous DMAs—New York, Los Angeles, Chicago, etc.—sent just 22% of applications out of town, while those in the 11th through 25th most populous DMAs—including Phoenix, Seattle, and Detroit—sent 43% of applications to companies elsewhere.

In pictures: The Top 10 Cities For Relocation

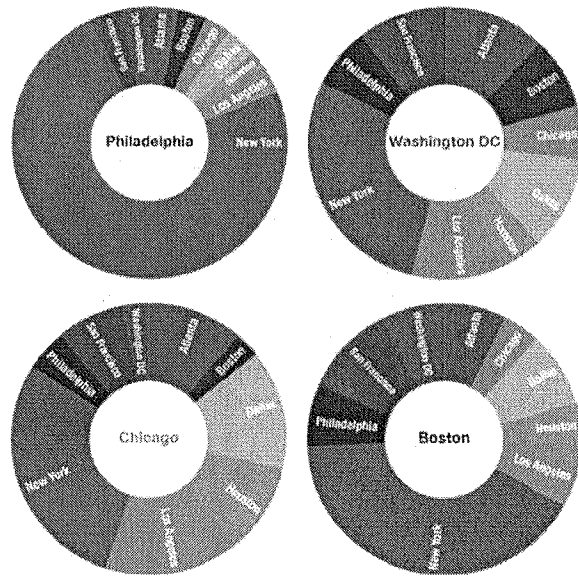
Applicants in DMAs ranked 51st or above sent more than 70% of their applications to companies in cities other than their own.



Which cities are applicants fleeing, and to where? Large numbers of people from every geography depart for New York, with around three quarters of those leaving Philadelphia and nearly half of those leaving Boston relocating to the Empire State. Many of those leaving Chicago head west to Los Angeles, and Atlanta welcomes a large collection of those bound south from Washington, D.C.

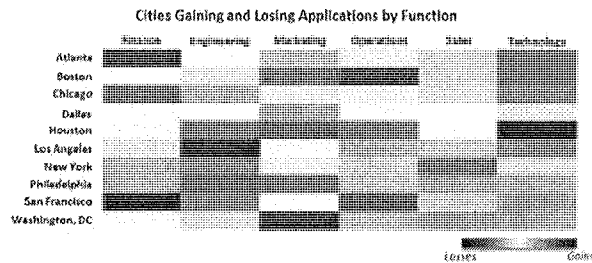
Dallas grabs a healthy slice of transfers from all four cities.

Where City Dwellers Send Applications Out of Town



Graphic courtesy of TheLadders.

The data also explores professional moves by industry. New York gains those looking for work in finance, marketing, and technology, but loses job seekers focused on engineering, operations, and sales. Houston gains in engineering and operations, but loses big on tech jobs. San Francisco sees the biggest gains in those looking for engineering jobs, followed by technology, but loses finance and operations professionals.



Graphic courtesy of TheLadders.

And for those considering a move but wondering if the current address on their resume could knock them out of the running, there's good news: 11.3% of applicants from other locations received a positive ranking from recruiters, just over a point below the 12.7% national average.

The Top 10 Cities For Relocation

1. New York

2. Los Angeles
3. San Francisco
4. Dallas
5. Atlanta
6. Houston
7. Philadelphia
8. Chicago
9. Boston
10. Washington, D.C.

In pictures: The Top 10 Cities For Relocation

Follow me on Twitter @KathrynDill.

RECOMMENDED BY FORBES

[Best Cities And Neighborhoods For Millennials](#)

[The Happiest Cities For The Class Of 2014](#)

[The Top Cities For Finding Employment Right Now](#)

[The Top 10 Cities For Employee Recognition](#)

[The Richest Person In Every State](#)

[Next Billion-Dollar Startups 2016](#)

[The Most Expensive Home Listing in Every State 2016](#)

[The 20 Most Prestigious Internships For 2017](#)

This article is available online at: <http://onforb.es/1JL1QR1>

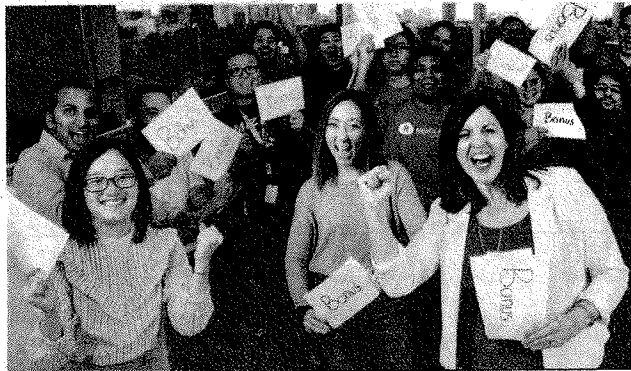
2016 Forbes.com LLC™ All Rights Reserved

EXHIBIT 11

BONUS TIME

Survey finds businesses do better to tie bonuses to team performance.

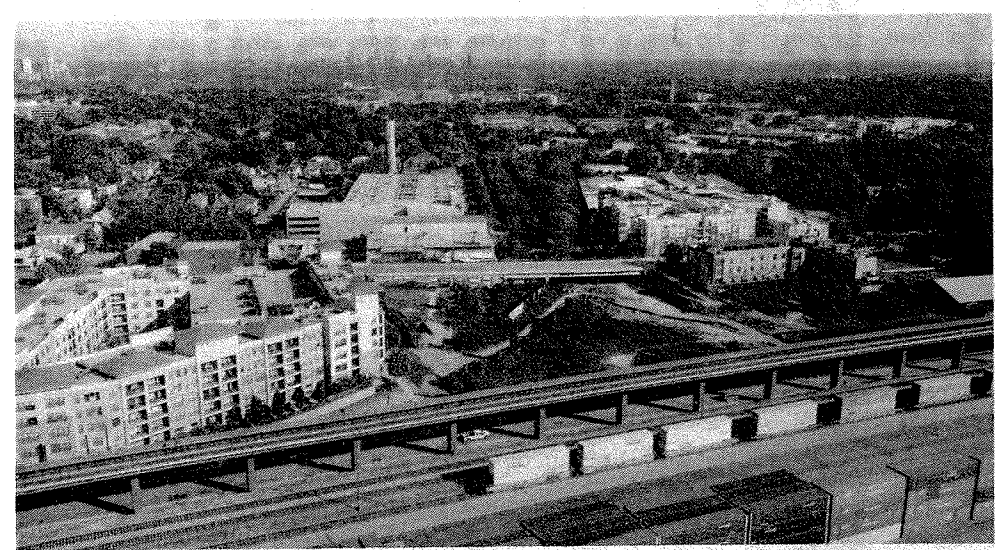
STRATEGIES • 53A-57A



Top Private Companies

23A, 25A

E



BYRON E. SMALL

Issue was the ability to allow future transit through Hulsey Yard (bottom of photo).

Deal clears path for 80M Beltline project

BY MY WENK AND DOUGLAS SAMS
kw@bizjournals.com; dsams@bizjournals.com

An agreement has been reached to allow a big new mixed-use project to proceed on the Atlanta Beltline while preserving future transit options along a rapidly developing area of the Eastside Trail. Discussions have been ongoing for weeks on a proposed \$80 million mixed-use project at 670 DeKalb Ave. in Inman Park. American Properties and Vantage Property Partners are planning a 4.4-acre

development that would include about 350 apartment units and 25,000 square feet of retail and loft office space.

An extension of the Eastside Trail that's now under construction runs through the project site. In recent weeks, community activists were up in arms because they believed the proposed alignment of the Eastside Trail would prohibit future transit under DeKalb Avenue and through Hulsey

CONTINUED ON PAGE 27A



BYRON E. SMALL

Georgia State will seek licensing deals, says GSU's James Weyhenmeyer.

GEORGIA STATE BULKS UP ITS BIOMEDICAL MUSCLE

BY URVAKSH KARKARIA AND ELLIE HENSLEY
ukarkaria@bizjournals.com, ehensley@bizjournals.com

Georgia State University is planning a \$35 million biomedical research center that would focus on treating and preventing deadly epidemics such as Ebola and Zika.

The nearly 55,000-square-foot building – part of the university's downtown research campus – will house a Biosafety Level (BSL) 3/4 research facility equipped to handle the most dangerous viruses.

It would be the only university-based Level BSL-4 research facility in the Southeast and one of 13 operational or planned facilities around the country, noted James Weyhenmeyer, Georgia State's vice president of research and economic development.

CONTINUED ON PAGE 27A

COVER STORY

A SOLUTION FOR OUR



"We will be doing research to better understand the replication, transmission and infection by deadly pathogens," Weyhenmeyer said.

The expansion requires approval from the **University System of Georgia** Board of Regents.

The proposed infectious disease research center will be part of GSU's Institute for Biomedical Sciences, which focuses on understanding the underlying causes of human diseases such as cancer, immunological disorders, inflammatory diseases, cardiovascular disease and metabolic diseases. A second research building could be considered on the property.

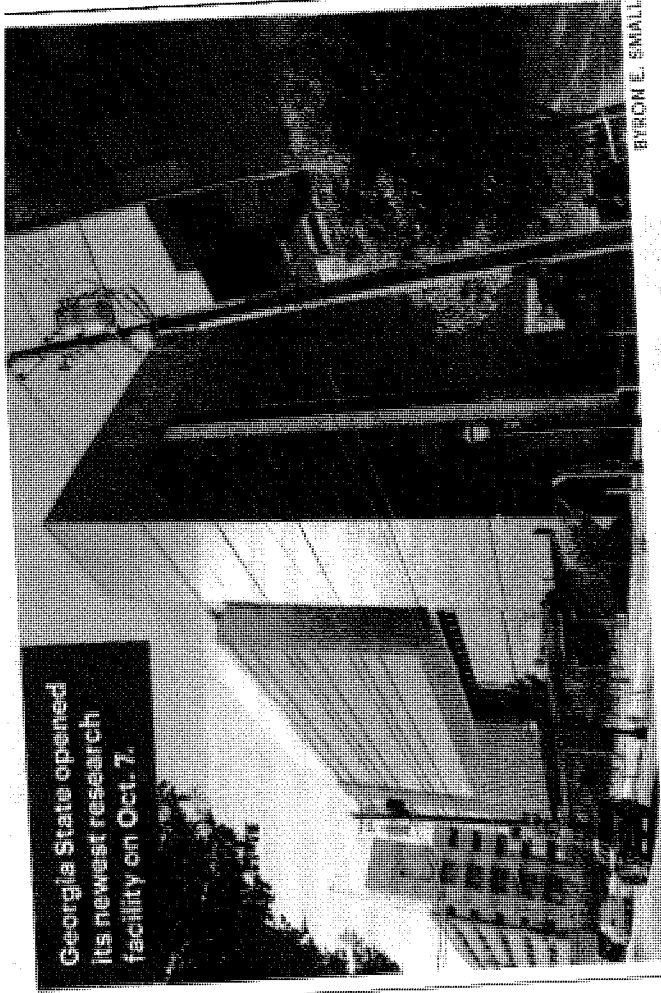
At the new center, scientists would study how viruses evolve and grow based on the environment. The goal: to develop drugs and treatments to treat infectious disease and vaccines to prevent their spread.

"We would look for licensing opportunities with biotech and Big Pharma to bring the discoveries to market," Weyhenmeyer said.

The specialized building would include a "suit lab" – essentially air-locked clean rooms – where researchers wear pressurized spacesuits and are tethered to oxygen lines to avoid contamination and the spread of deadly viruses. The center will be equipped to conduct animal studies needed to take drugs or vaccines to market.

"The goal for this building is to focus on understanding the mechanisms of why we have these infectious diseases and identifying the targets for controlling

Georgia State opened its newest research facility on Oct. 7.



BYRON E. SMALL

deadly pathogens and how to deal with such attacks, Weyhenmeyer said.

GSU's share of funding from the **National Institutes of Health** (NIH), the primarily federal financier of university biomedical research, is growing.

The NIH accounted for about \$50 million of the more than \$122 million in research funding GSU received last year. The NIH share has doubled in the past four years.

"Our biggest source of research dollars by far is the NIH," Weyhenmeyer said.

GSU has become more competitive in landing NIH grants as it's bulked up its pool of researchers and scientists.

The school's focus on biomedical research began in 2010 with the recruitment of Li to launch the Center for Inflammation, Immunity and Infection. Since

150 researchers. On Oct. 7, GSU opened the \$45 million, five-story Research Science Center.

It's already paying dividends. At GSU, biomedical research draws the most federal research dollars.

GSU's focus on biomedical research is driven by addressing a critical unmet demand – and following the money attached to it.

The urgent need to treat and prevent health conditions that affect wide swaths of the global population is driving the pace of biomedical research, GSU Research Administrator **Kelly Stout** said.

"Now, we have a lot more tools at our fingertips to study health problems, look at them more in much more detail, and come up with potential diagnoses and treatments," Stout said. "This opens up the horizons of what we can do in health-related research."

That demand is drawing capital. The NIH provides \$32 billion annually in research funding.

"If our researchers are competitive, it's a great pool of money," Weyhenmeyer said. "Part of the reason to (target biomedical research is) the dynamics of federal funding at the moment."

GSU is building out its commercialization business – licensing potential drugs, vaccines and treatments its scientists discover to biotech and Big Pharma who would take the discoveries to clinical trial and eventually to store shelves.

"That's a space that we are now getting into and in a much more significant way," Weyhenmeyer said. "We are still very early in that game."

EXHIBIT 12



Shaping Infinity

BEATA D. KOCHUT
Research Analyst
and
JEFFREY M. HUMPHREYS
Director
Selig Center for Economic Growth



THE GEORGIA LIFE SCIENCES
INDUSTRY ANALYSIS 2012

Shaping Infinity

SPONSOR: 
The University of Georgia

Contents

Life Sciences Industry Overview	1
Economic Impact	7
Indicators Overview	16
Funding	20
Special Section: Industry Insight	23
2012 Life Sciences Questionnaire	31
Appendix	
List of Companies	35

For more information:

Selig Center for Economic Growth
www.selig.uga.edu

Georgia Bio
www.gabio.org

Major contributor to *Shaping Infinity*
Lorena Akioka, Editor/Graphic Designer
Winner: 2012 International Benjamin Franklin Award
in Graphic Design for the 2011 *Shaping Infinity*.

From the President of Georgia Bio

Georgia Bio (GaBio) welcomes you to the 2012 *Shaping Infinity*, the Georgia Life Sciences Industry Analysis. This year's report, the sixth in a series, demonstrates the enormous significance of life sciences innovation to Georgia's economic growth. One out of every 40 jobs in Georgia is tied to the life sciences industry. During the Great Recession, employment was stable, helping to offset the decline in jobs across all other industry sectors.

The life sciences industry and university research, plus the U.S. Centers for Disease Control and Prevention, have a \$20 billion annual economic impact on Georgia and employ more than 94,000 people. The industry's impact alone is nearly \$17 billion, employing more than 65,000 people in high-paying, rewarding careers. From 2007 to 2010, employment in Georgia's life sciences industry actually increased slightly, a remarkable achievement considering that total statewide employment for all industries declined by 8 percent. Georgia's life sciences industry pays nearly \$5.6 billion in salaries and more than \$550 million a year in state and local taxes.

The Georgia Life Sciences Industry Analysis 2012 was produced by the University of Georgia's Selig Center for Economic Growth in the Terry College of Business. Selig Center Director Jeffrey Humphreys, Ph.D., conducted the economic impact study. "The fundamental finding of this study," Dr. Humphreys said, "is that Georgia's life sciences companies contribute substantial economic activity to Georgia."

In addition, *Shaping Infinity* includes commentary from industry and government leaders. Georgia Department of Economic Development Commissioner **Chris Cummiskey** writes about the addition of Baxter International to the state's life sciences landscape. Others featured are **Greg Duncan**, President of UCB's North American Operations; and **Charles Wilmer**, M.D., Piedmont Heart Institute's Board Chairman of Innovation.

GaBio is the private, non-profit association representing pharmaceutical, biotechnology and medical devices companies, medical centers, universities, and other life sciences-related organizations in Georgia.

We are proud to work with the Selig Center and this year's sponsor—The University of Georgia—to bring you this analysis of the significance of our state's life sciences industry, a source of high-paying jobs and the only sector in Georgia whose professionals are dedicated to improving the health and well being of people, animals, and the environment.

Charles Craig, President
Georgia Bio
www.gabio.org

Executive Summary

In good as well as tough economic times, the companies that comprise Georgia's life sciences industry (as a group) are dependable sources of high-paying jobs. From 2007 to 2010, the number of workers employed in Georgia's life sciences industry held relatively steady, increasing by 1.5 percent. Although small, even a 1.5 percent gain in life sciences jobs is remarkable, considering that total statewide employment for all industries dropped by 7.9 percent. Although Georgia's life sciences industry added jobs as a group, one vital subsector—electro-medical apparatus manufacturing—lost nearly two out of every three jobs. Jobs were also lost in biotechnology and pharmaceutical manufacturing. From 2007 to 2010, the number of establishments in Georgia's life sciences core increased by 17.9 percent. In contrast, the state's economy lost 1.4 percent of establishments across all industries. Similarly, total wages paid by the life sciences core rose by 4.4 percent compared to a 4.2 percent drop for all the industries in the state.

The analysis shows that sustained efforts to grow and foster the development of Georgia's life sciences proved their worth during the Great Recession and during the sub-par economic recovery that has persisted in its wake. Recent developments indicate that the prospects for Georgia's life sciences cluster are improving. The announcement that Baxter International will locate a new biopharmaceutical manufacturing facility that will employ 1,500 workers demonstrates that life sciences will continue to be a force behind the growth of Georgia's economy. The Baxter project alone will expand direct employment in Georgia's core life sciences group of companies by about 10 percent.

Georgia's life sciences industry pays extremely well, with the average annual salary of \$64,473 in 2010, which is 47 percent higher than the statewide average for all industries of \$43,899. Indeed, all life sciences subsectors pay better than the average for all industries. Pharmaceutical and medicine manufacturing pays the highest at \$94,363 per year. Electromedical apparatus manufacturing was second at \$91,803 per year, followed by biotech R&D at \$72,789 annually. The lowest paying

subsector was blood and organ banks—\$44,477 per year.

Economic Impact Highlights

Given the high salaries in many life sciences sectors, it is not surprising that life sciences firms generate substantial annual economic impacts for the people who live, work, and do business in Georgia. The statewide economic impacts of the life sciences industries in 2010 were:

- 18,025 jobs in life sciences companies;
- 65,337 jobs in all industries (including life sciences);
- \$16.7 billion in output (sales);
- \$6.9 billion in state GDP;
- \$3.8 billion in labor income (earnings); and
- \$417 million in tax revenues for state and local governments.

In addition, life sciences research at the state's colleges and universities generated 14,282 jobs (on- and off-campus); \$1.6 billion in output (sales); \$1 billion in state GDP; \$700 million in income (earnings); and \$73 million in tax revenues for state and local governments.

The Atlanta-based CDC contributed substantially to the state's economy by generating 7,551 jobs (and a total job impact of 13,950); \$1.7 billion in output (sales); \$1.4 billion in state GDP; \$1.1 billion in income (earnings); and \$66 million in tax revenues for state and local governments.

In total, life sciences companies, academic R&D, and the CDC yielded:

- 33,359 direct jobs (0.9 percent of all jobs in Georgia);
- 94,106 total jobs (2.5 percent of all jobs in Georgia);
- \$20 billion in output (sales);
- \$9.3 billion in state GDP (2.3 percent of Georgia's GDP);
- \$5.6 billion in income (earnings); and
- \$557 million in tax revenues for state and local governments.

On average, for every direct job created by life sciences, an additional 1.8 jobs are created in other industries. In other

words, one job out of every 40 in the state owes its existence to either the life sciences industry, or to life sciences research and development, or the presence of the CDC.

Degrees Granted

The above-average job growth and high salaries in life sciences occupations have attracted the attention of college students, too. Indeed, a rising proportion of life sciences degrees granted by the University System of Georgia shows growing interest in these professions. In 2011, for instance, 16.5 percent of degrees granted by USG institutions were in life sciences professions compared to 15.5 percent in 2007. That higher proportion reflects faster growth in the number of life sciences degrees granted (29 percent) than in the overall number of degrees granted (21 percent). From 2007 to 2011, life sciences engineering saw the fastest growth (up 64 percent), but health professions accounted for the largest increase in the number of life sciences degrees granted.

Patents

Patent activity is a good measure of innovation and the potential for growth in technology-based industries. The number of all utility patents issued to Georgians increased by 47.5 percent between 2007 and 2011, which exceeds the 36.6 percent gain posted by the nation as a whole. The number of patents in life sciences-related fields increased at a much faster pace than the overall number of patents, but the increase in Georgia was slightly lower than for the U.S.—a 49.7 percent gain in Georgia versus 51.5 percent for the nation. Among academic institutions, Emory University, The University of Georgia, and the Georgia Institute of Technology have produced the largest numbers of patents in the life sciences-related fields.

The average time from application to patent grant lengthened from two years in the 1980s to three years in the 2000s. But, towards the end of the last decade, the time lag between patent application and grant dropped very sharply to 1.5 years, and that resulted in a jump in the number of patents granted.

Meanwhile, life sciences-related patents have become more complex. For example, for patents applied for between 1974 and 1997, the average number of claims was 14.7 per patent compared to 21.8 claims per patent for patents applied for between 1998 and 2008.

R&D Activity

Compared to other states, Georgia seriously lags when it comes to R&D activity. That's alarming given that R&D based industries will be major drivers of global economic growth. The percentage of Georgia's GDP attributed to R&D is about half the national average, which is a critical weakness that Georgia must address. Academic R&D exceeds the U.S. average, however, and R&D expenditures in life sciences comprise the largest portion of Georgia's academic R&D. Hence, Georgia ranks 16 with respect to expenditures on life sciences R&D, and ranks fifth in academic research expenditures in bioengineering and biomedical engineering.

Funding

Obviously, R&D and innovation take money, so Georgia needs to further develop its venture capital markets. In 2011, the state ranked 11 nationally in terms of venture capital investment, or two places higher than where it was in 2010. But about 85 percent of the venture capital invested in Georgia companies comes from venture firms headquartered elsewhere. About one fourth of the venture capital was invested in life sciences firms.

Life sciences venture capital investment in Georgia was \$36.2 million in 2011, and that was a drastic drop from the \$80.8 million invested in 2010. In 2009 and 2008, life sciences venture capital in Georgia was \$62 million and \$53.9 million, respectively.

Georgia does well when it comes to entrepreneurial activity. But to continue to do so, Georgia needs an adequate supply of venture capital to fuel the growth of successful startups. All too often, Georgia-bred high tech companies leave just as they

are on the verge of achieving commercial success. When that happens, Georgia misses out on the big payoff in terms of jobs generated by our entrepreneurial talent.

Clinical Trials

The number of clinical trials is an important indicator of the strength of the life sciences industry. From 2008 to 2011, the number of clinical trial studies received for investigation in Georgia dropped by 18.6 percent, which was steeper than the 13.7 percent drop experienced nationally. Despite this setback, the number of trials per million residents was still higher in Georgia than in the nation as a whole. In 2012, there are 2,886 clinical trial studies active in Georgia. Phase III trials comprise the largest group—45 percent. Phase II trials account for 34 percent of the total.

Survey

In 2012, the Selig Center identified 363 life sciences companies that are active in Georgia. Data for 110 (31 percent) companies were obtained from completed 2012 questionnaires and data for an additional 29 non-responding companies were obtained from previous surveys. Thus, responses were gathered from 139 (39 percent) of life sciences firms included on the 2012 list. Data for the remaining 224 firms were gathered, when available, from publicly available sources.

Geographically, life sciences firms are clustered in and around Atlanta, Athens, and Augusta. Atlanta is the prime location for pharmaceutical firms, biotechnology and bioinfor-

matics companies, and medical devices and health IT firms. Athens is home to many biotechnology and bioinformatics companies, too. Augusta is a hub for diagnostic firms as well as agricultural life sciences firms. Biofuel companies are located in rural areas.

Georgia's life sciences industry is still relatively young, but 57 percent of the life sciences companies for which data was available have been in business over ten years. In 2012, over half of the companies within the largest groups—diagnostics, agricultural, devices, and biotechnology—have been in operation for a decade or more. Only 11 percent of companies have been active for less than three years, with the youngest firms concentrated in pharmaceuticals, biologics, biofuels, and R&D.

Over half of the companies for which employment data are available employed one to ten staffers. Biotechnology, biologics, and R&D firms tend to fall within the smallest employment range. Diagnostics and health IT companies tend to be somewhat larger. Georgia's largest life sciences firms—those with more than 100 employees—specialize in diagnostics, medical devices, and ACEI.



The principal author acknowledges the Selig Center's data analyst Stephen Kuzniak for his help with compiling the list of over 300 companies in the Appendix.

Life Sciences Industry Overview

The life sciences industry uses modern biological techniques and supporting technologies with a goal to improve human and animal health, address threats to the environment, improve crop production, contain emerging and existing diseases, and improve currently used manufacturing technologies. These fields also utilize a specialized workforce, manufacturing procedures and facilities, and often require targeted funding.

This broad definition encompasses biotechnology, medical devices, pharmaceuticals, diagnostics, as well as the agricultural, biofuels, and bioenergy sectors, as they all are a part of the state's life sciences base that reaches from the high tech labs at the leading universities to manufacturing facilities scattered around the state.

The 2010 annual data from the Bureau of Labor Statistics offers an opportunity to assess how the life sciences industry in Georgia weathered the economic storm brought about by the 2007-2009 recession. Although the recession technically ended in 2009, 2010 turned out to be a challenging year for many industries in Georgia.

As a whole, Georgia's life sciences industry weathered the recession much better than the state's economy as a whole. The industry recorded a 1.5 percent jump in the number of jobs, led by employment increases in medical devices manufacturing. At the same time, the state's employment dropped by 7.9 percent. Job losses in some of the life sciences sectors—most importantly, biotechnology—were more severe than the 2007-2010 average for the state, however. Although not exceeding the state average in losses, jobs were also lost in pharmaceutical manufacturing.

The number of life sciences establishments increased by 17.9 percent during this period, even as the state lost 1.4 percent of its establishments overall. Total wages paid by the life sciences industry jumped by 4.4 percent, compared to the average 4.2 percent drop in wages in the state's economy as a whole. Diagnostic imaging centers, however, were the only life sciences sector that lost jobs, companies, and wages.

Pharmaceuticals

Pharmaceutical and medicine manufacturing provided 20.4 percent of life sciences jobs in 2010. As a whole, this segment lost 5.3 percent or 173 jobs between 2007 and 2010. Most of the jobs were lost in pharmaceutical preparations manufacturing (the largest group), which dropped 13.6 percent, or 326 jobs since 2007. Some of these losses were offset by other pharmaceutical manufacturing, especially medicinal and botanical manufacturing as well as in-vitro diagnostic substances manufacturing, which together added 153 jobs between 2007 and 2010. Still, pharmaceutical manufacturing had more establishments in 2010 than in 2007.

Overall, this sector paid well, with an average annual salary that jumped from \$89,672 in 2007 to \$94,363 in 2010 (5.2 percent). Ironically, the sharpest increase (over 12 percent) was recorded in the job-losing pharmaceutical preparations manufacturing segment.

Devices Manufacturing

Medical devices manufacturing, which provided 23 percent of the state's life sciences industry jobs, increased employment by 7.2 percent between 2007 and 2010. The number of

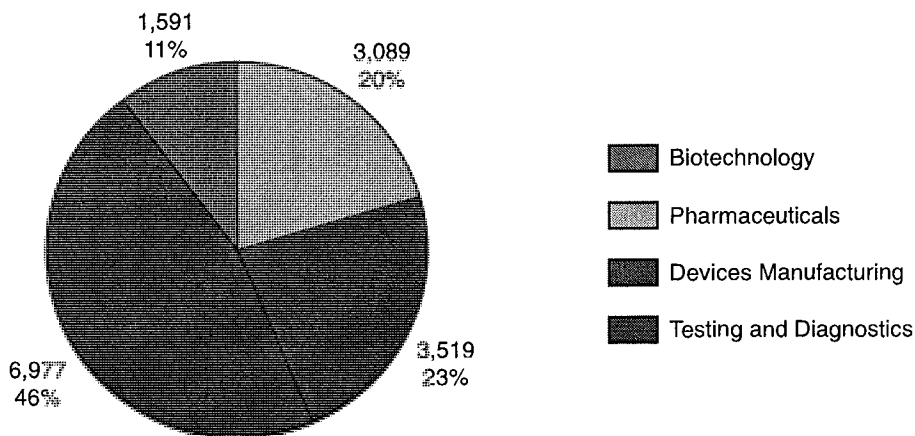
Table 1
The Life Sciences Industry in Georgia, 2010

	Establishments		Employment		Total Wages*	
	Number	2007-2010 Change	Number	2007-2010 Change	Amount (\$)	2007-2010 Change
Pharmaceutical, medicine mfg.	54	10.2	3,089	-5.3	291,503	-0.3
Devices manufacturing						
Electromedical apparatus mfg.	22	175.0	83	-65.7	7,612	-49.8
Surgical, medical instrument mfg.	28	154.5	1,107	48.6	71,608	35.3
Surgical appliance, supplies mfg.	62	17.0	2,329	1.4	147,084	-0.6
Irradiation apparatus mfg.	10	42.9	NA	0.0	NA	0.0
Devices manufacturing total	122	54.4	3,519	7.2	226,304	4.8
R&D in biotechnology	129	26.5	1,591	-8.4	115,770	-0.6
Testing and diagnostics						
Medical laboratories	289	20.4	4,159	7.7	215,100	20.2
Diagnostic imaging centers	186	-3.1	1,338	-4.3	63,946	-8.0
Blood and organ banks	32	18.5	1,480	4.7	65,822	3.7
Testing and diagnostics total	507	10.5	6,977	4.5	344,868	10.6
Core life sciences industry total	812	17.9	15,176	1.5	978,445	4.4
Georgia, all industries	266,436	-1.4	3,753,934	-7.9	164,794	-4.2

NA Not available.
*Industry detail in thousands of dollars; Georgia total in millions.

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, May 2012.

Employment in Georgia's Life Sciences Industry, 2010
By Sector, with Percent of Total



Source: Selig Center for Economic Growth, based on Bureau of Labor Statistics, Quarterly Census of Employment and Wages, May 2012.

Table 2
The Life Sciences Industry in Georgia,
Average Annual Wages, 2010

	Average Annual Wages*	
	Amount (\$)	2007-2010 Change
Pharmaceutical, medicine manufacturing	94,363	5.2
Devices manufacturing		
Electromedical apparatus	91,803	46.5
Surgical, medical instruments	64,677	-8.9
Surgical appliance, supplies	63,160	-2.0
Irradiation apparatus	ND	NA
Devices manufacturing average	64,309	-2.3
R&D in biotechnology	72,789	8.5
Testing and diagnostics		
Medical laboratories	51,715	11.6
Diagnostic imaging centers	47,780	-3.9
Blood and organ banks	44,477	-0.9
Testing and diagnostics average	49,429	5.8
Core life sciences industry average	64,473	2.9
Georgia, all industries	43,899	4.1

*In addition to salaries, wages include bonuses, stock options, severance pay, profit distributions, cash value of meals and lodging, tips and other gratuities. With few exceptions, all employees of covered firms are reported, including corporation officials, executives, supervisory personnel, production and sales workers, and clerical workers.

NA Not available.

ND Not disclosed.

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, May 2012.

establishments increased by more than half, but total wages, not including suppressed data for irradiation apparatus manufacturing, increased more slowly (4.8 percent).

Average annual salaries jumped by half in the tiny electro-medical apparatus manufacturing sector, and, at \$91,803, was the highest among the medical devices sectors for which 2010 data are available. The annual salary in the medical devices and supplies manufacturing companies averaged \$64,309.

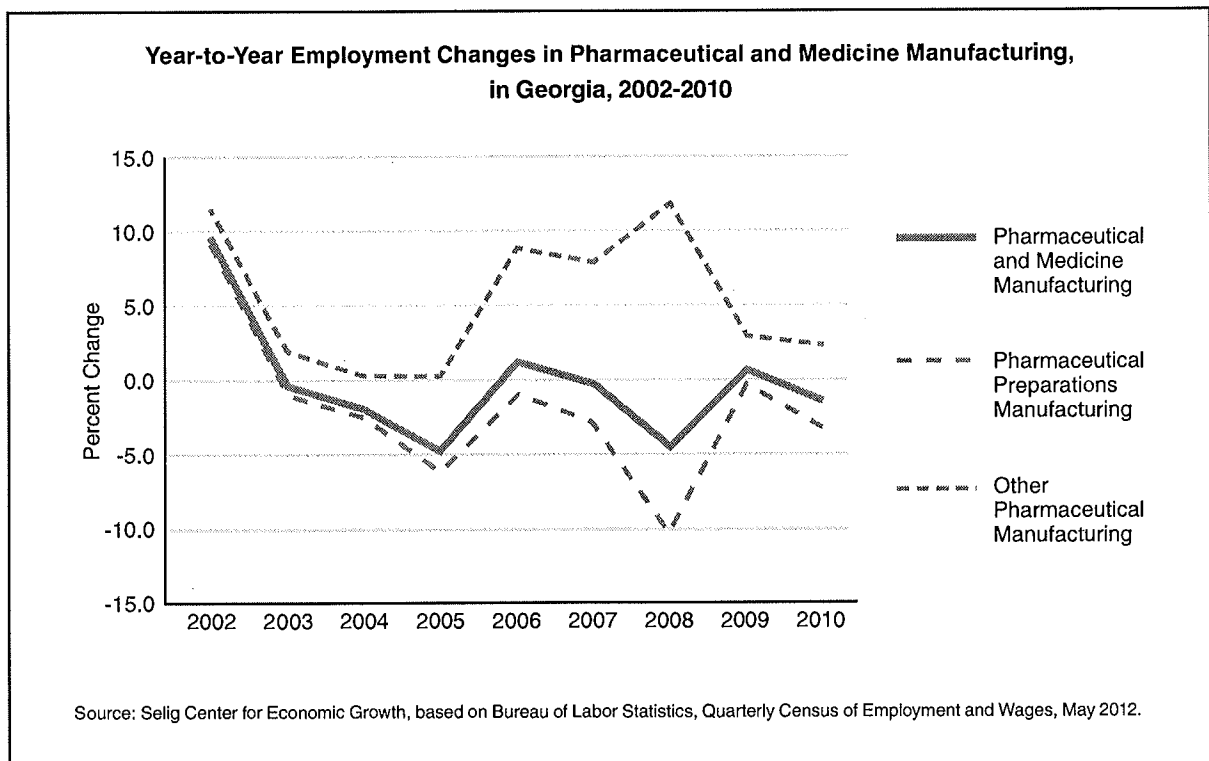
Biotechnology

With an employment of 1,591, biotechnology accounted for 10.5 percent of life sciences jobs in Georgia in 2010. Although the industry lost 145 jobs (8.4 percent) during the recession, the number of biotechnology establishments increased by 26.5 percent. Total wages paid by this sector remained virtually

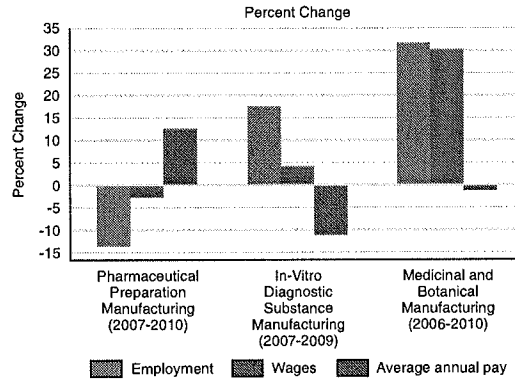
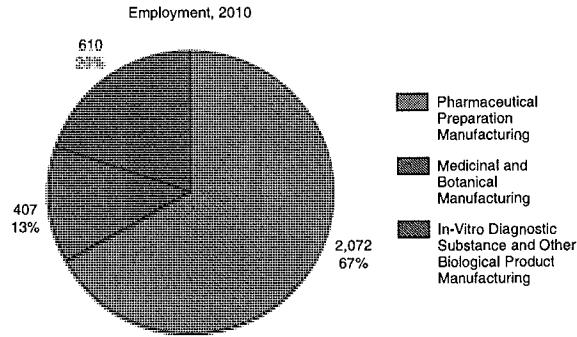
unchanged. On average, a job in biotechnology paid \$72,789 in 2010, one of the highest in life sciences.

Testing and Diagnostics

Medical and diagnostic labs, and blood and organ banks accounted for 6,977 or 46 percent of life sciences jobs in Georgia. As a whole, this group increased employment in Georgia by 4.5 percent between 2007 and 2010. The largest increase (297 jobs, or 7.7 percent) was reported in medical laboratories employment. Blood and organ banks added 66 jobs, or 4.7 percent, while employment in diagnostic imaging centers dropped by 4.3 percent (60 jobs). The number of testing and diagnostics laboratories increased by over 10 percent, led by growth in medical laboratories, which also reported the steepest (11.6 percent) increase in average annual salaries.

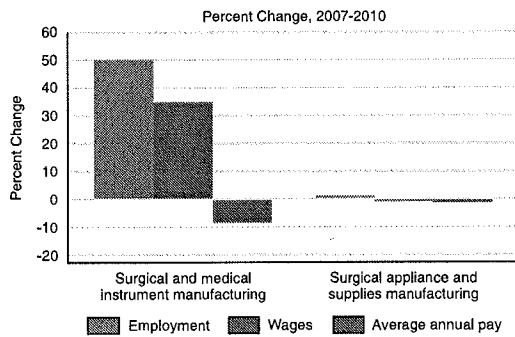
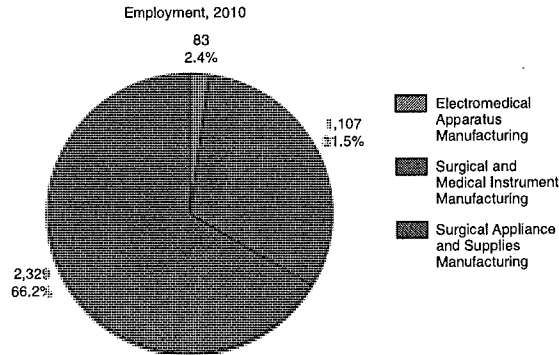


Pharmaceutical and Medicine Manufacturing Employment, Wages, and Average Annual Pay in Georgia, With Industry Detail



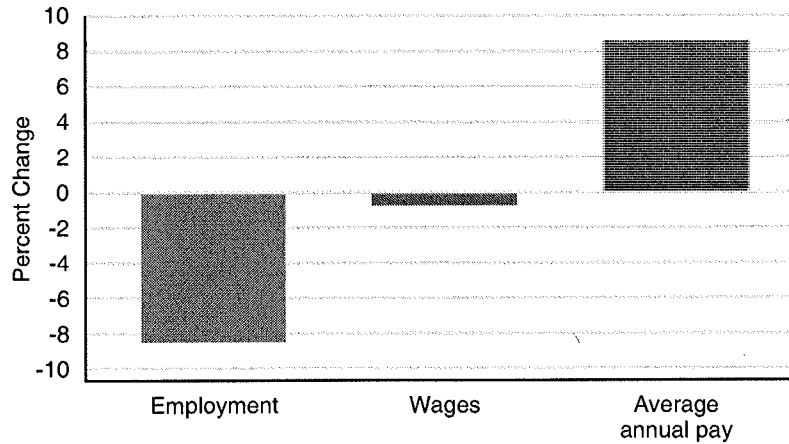
Source: Selig Center for Economic Growth, based on Bureau of Labor Statistics, Quarterly Census of Employment and Wages, May 2012.

Devices Manufacturing Employment, Wages, and Average Annual Pay in Georgia, With Industry Detail



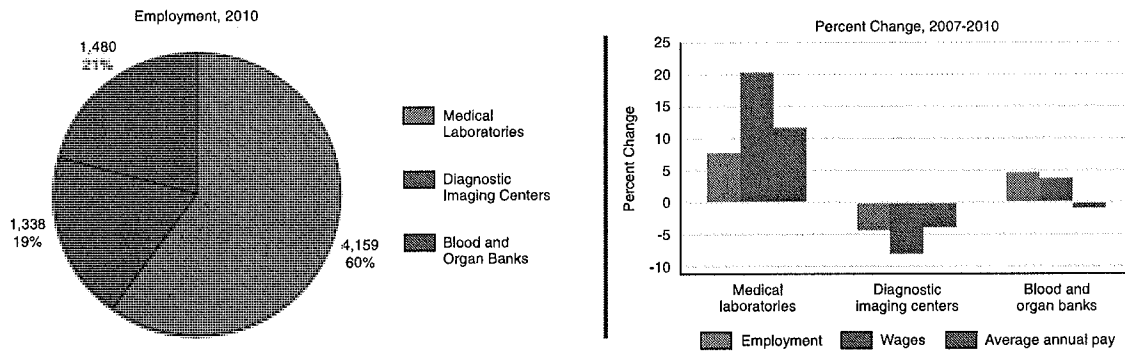
Source: Selig Center for Economic Growth, based on Bureau of Labor Statistics, Quarterly Census of Employment and Wages, May 2012.

Changes in Biotechnology's Employment, Wages, and Average Pay in Georgia, 2007-2010



Source: Selig Center for Economic Growth, based on Bureau of Labor Statistics, Quarterly Census of Employment and Wages, May 2012.

Testing and Diagnostics Employment, Wages, and Average Annual Pay in Georgia, With Industry Detail



Source: Selig Center for Economic Growth, based on Bureau of Labor Statistics, Quarterly Census of Employment and Wages, May 2012.

Economic Impact

Georgia's life sciences industry is both a pillar of and a driver of the state's economy that translates into jobs, higher incomes, greater production of goods and services, and higher revenue collections for state and local government. The life sciences industry also proved to be a very dependable source of employment during the recession, helping to cushion the state's overall economy against severe job losses in many other economic sectors.

The statewide economic impacts of the life sciences industry in 2010 were:

- 18,025 jobs in life sciences companies;
- 65,337 jobs in all industries (including life sciences);
- \$16.7 billion in output (sales);
- \$6.9 billion in state GDP;
- \$3.8 billion in labor income (earnings); and
- \$417 million in tax revenues for state and local governments.

In addition, life sciences research at the state's colleges and universities generated:

- 14,282 jobs (on- and off-campus);
- \$1.6 billion in output (sales);
- \$977 million in state GDP;
- \$700 million in income (earnings); and
- \$73 million in tax revenues for state and local governments.

Moreover, the Atlanta-based CDC generated 7,551 jobs; 14,487 total jobs impact; \$1.7 billion in output (sales); \$1.4 billion in state GDP; \$1.1 billion in income (earnings); and \$66 million in tax revenues for state and local governments.

In total, the economic impact of life sciences on Georgia's economy in 2010 amounted to 33,359 direct jobs (0.9 percent of all jobs in Georgia); 94,106 total jobs (2.5 percent of all jobs in Georgia); \$20 billion in output (sales); \$9.3 billion in state GDP (2.3 percent of Georgia's GDP); \$5.6 billion in income (earnings); and \$557 million in tax revenues for state and local governments. On average, for every direct job created by the life sciences, an additional 1.8 jobs are created in other industries. So, one job out of every 40 in the state owes its existence to either the life sciences industry, or to life sciences research and development, or to the presence of the CDC in Atlanta.

The economic impact of Georgia's life sciences industry probably is most easily understood in terms of its effects on employment. In 2010, Georgia's life sciences supported 65,337 full- and part-time jobs. Of the 2010 total employment impact, 18,025 jobs represent direct employment in life sciences industries or the direct economic impact; 47,312 jobs constitute the indirect and induced effect of direct employment (spending), or the multiplier (re-spending) impact. Dividing the 2010 total job impact (65,337 jobs) by the direct job impact (18,025 jobs) yields an average multiplier value of 3.6. On average, for every job created directly by the life sciences, there are an additional 2.6 jobs that exist because of spending related to core life science categories. The high employment multiplier reflects both above-average salaries in many life sciences occupations as well as a relatively high degree of interaction between the life sciences and the state's overall economy.

The core life sciences group accounts for 72 percent of the total employment impact of life sciences industries, or 47,270 of the 65,337 jobs. Within this core, medical labs have the largest direct employment impact (4,159), but due to its very high employment multiplier (6.2), the pharmaceuticals and medicine manufacturing sector generates the largest total employment impact (19,191 jobs).

The agricultural life sciences group accounts for 28 percent of the total employment impact, or 18,067 of the 65,337 jobs. Within this group, other basic organic chemical manufacturing has the largest direct employment impact, but multiplier effects are higher in several other industries.

In addition to the employment impacts of the life science industries themselves, academic research and development generates a substantial employment impact. In 2010, the direct and total employment impacts of life sciences academic research and development were 7,783 jobs and 14,282 jobs, respectively. The job multiplier for academic R&D is 1.8, which is half the average multiplier of 3.6 for the state's life sciences industries, reflecting a lesser degree of interaction with the local economy (as well as lower salaries) than is true of the life sciences industry as a whole.

Altogether, the total employment impact of the life sciences sectors (65,337 jobs), academic research and develop-

ment (14,282 jobs), and the CDC (14,487 jobs) equals 94,106 jobs, or 2.5 percent of the state's total employment in 2010. The combined direct employment impact of the life sciences industries (18,025 jobs), academic research and development (7,783 jobs), and the CDC (7,551 jobs) equals 33,359 jobs, or 0.9 percent of total statewide employment. That's one out of every 113 jobs that existed in Georgia in 2010.

Measured in the simplest and broadest possible terms, the total output impact of Georgia's life sciences industry was \$16.7 billion in 2010. Of this, \$10.5 billion is direct spending by the companies that comprise the industry, while \$6.2 billion represents the indirect and induced effects of re-spending or multiplier effect (the difference between output impact and direct spending). The average output multiplier is 1.6, obtained by dividing the total output impact (\$16.7 billion) by direct spending (\$10.5 billion). On average, therefore, every dollar of direct spending by life sciences companies generates an additional 60 cents for Georgia's economy. Thus, the life sciences industry's output impact is 1.6 times greater than initial direct spending. Output multipliers that exceed 1.5 are considered to be relatively strong: all of Georgia's core life sciences sectors have output multipliers that are 1.5 or higher.

The core life sciences fields generate an output impact of \$9.9 billion, or 59 percent of the \$16.7 billion total output impact. Pharmaceutical and medicine manufacturing accounts for a major portion—\$5.6 billion, or 57 percent—of the output impact. Agricultural life sciences sectors generate an output impact of \$6.8 billion, or 41 percent of the total output impact.

According to the National Science Foundation, direct spending for academic life sciences R&D was \$773 million in FY 2010, which includes \$39 million in expenditures in bioengineering/biomedical engineering. Academic R&D spending therefore generated a total output impact of \$1.6 billion. The output multiplier was very strong—2.1. The total output impact of the CDC was \$1.7 billion in 2010, and the output multiplier was a hefty 1.9.

In total, the output impact of the life sciences industry (\$16.7 billion), academic research and development (\$1.6 billion), and the CDC (\$1.7 billion) was \$20 billion, which is larger than the output impact generated by the University System of Georgia (\$12.6 billion in 2010), but smaller than that of Georgia's forestry industry (\$23.6 billion).

State GDP (value added) impacts exclude expenditures related to foreign and domestic trade. Consequently, they pro-

vide a much more accurate measure of the actual economic benefits flowing to businesses and households in Georgia than the more inclusive output impacts. In 2010, the state GDP impact for Georgia's life sciences industry was \$6.9 billion. In addition to that amount, \$773 million in academic spending for life sciences R&D generated \$977 million, and the CDC generated \$1.4 billion in state GDP. Altogether, this amounted to \$9.3 billion, or approximately 2.3 percent of Georgia's 2010 state GDP.

The life sciences industry generated \$3.8 billion in labor income impacts, and life sciences academic R&D generated \$700 million in labor income. In addition, the CDC contributed another \$1.1 billion in labor income to the state's economy in 2010, and thus the three groups' combined economic impact on labor income was \$5.6 billion.

The impact of Georgia's life sciences industry on tax collections by state and local governments was \$417 million. In addition to this amount, life sciences academic R&D and the CDC generated tax collections of \$73 million and \$66 million, respectively.

The distribution of the employment impacts generated by the core life sciences group shows that the impacts are heavily concentrated in three sectors of Georgia's economy: services (67.4 percent); manufacturing (15.5 percent); and trade (12.2 percent) account for high percentages of the total employment impact attributable to life sciences' spending. Services (49.1 percent), manufacturing (16.7 percent), trade (14.4 percent), and TIPU (11 percent) primarily account for most of the employment impact attributable to spending by agricultural life sciences companies.

Direct employment in the life sciences industry was essentially the same in 2010 as it was in 2007: 18,025 jobs in 2010 versus 17,941 jobs in 2007. On the surface, this finding may not be too encouraging, but retaining all of the industry's direct jobs is quite impressive given the heavy job losses experienced by most of the state's major industries during the Great Recession. That's not to say that the economic activity in life sciences is recession proof—some industries within the life sciences group of companies shrank sharply, but as a group, life sciences companies added small numbers of jobs even as most industries were retrenching. The recent announcement that Baxter International will locate a new biopharmaceutical

(continued on page 14)

Table 3
Employment Impact of the Life Sciences Industry
on Georgia's Economy in 2010

Industry Sector	NAICS Code	Direct Employment (jobs)	Total Employment Impact (jobs)	Employment Multiplier
Core Life Sciences				
Pharmaceutical and medicine manufacturing	325400	3,089	19,191	6.2
Electromedical apparatus manufacturing	334510	83	270	3.3
Irradiation apparatus manufacturing	334517	154	443	2.9
Surgical and medical instrument manufacturing	339112	1,107	2,975	2.7
Surgical appliance and supplies manufacturing	339113	2,329	5,767	2.5
Research and development	541710	1,591	3,695	2.3
Medical laboratories	621511	4,159	8,900	2.1
Diagnostic imaging centers	621512	1,338	2,863	2.1
Blood and organ banks	621991	1,480	3,167	2.1
Total core sectors		15,330	47,270	3.1
Agricultural Life Sciences				
Wet corn milling	311221	0	0	0
Soybean processing	311222	184	2,091	11.4
Other oilseed processing	311223	325	3,693	11.4
Ethyl alcohol manufacturing	325193	206	1,026	5.0
Other basic organic chemical manufacturing	325199	767	3,818	5.0
Cellulosic organic fiber manufacturing	325221	193	536	2.8
Nitrogenous fertilizer manufacturing	325311	243	1,814	7.5
Phosphatic fertilizer manufacturing	325312	0	0	0
Fertilizer, mixing only	325314	200	1,493	7.5
Pesticide and other ag. chemicals	325320	577	3,596	6.2
Total agricultural life sciences sectors		2,695	18,067	6.7
Grand total, life sciences industry		18,025	65,337	3.6

Notes:

The U.S. Bureau of Labor Statistics provided estimates of direct employment, but to preserve confidentiality, direct employment for irradiation apparatus manufacturing, soybean processing, other oilseed processing, ethyl alcohol manufacturing, and cellulosic organic fiber manufacturing were not disclosed. The reported values for these industries were imputed by the Selig Center based on the number of establishments (which was disclosed), data disclosed at other levels of industrial aggregation, and national averages regarding employment per establishment.

Employment includes both full-time and part-time jobs. The Selig Center estimated total employment impacts using the IMPLAN V3 Software System, provided by the Minnesota IMPLAN Group. The region was defined as the state of Georgia.

Source: Selig Center for Economic Growth, Terry College of Business, University of Georgia.

Table 4
Direct Spending, Output, State GDP, and Labor Income Impact of
the Life Sciences Industry on Georgia's Economy in 2010
(2010 dollars)

Industry Sector	Direct Spending	Total Output Impact	Total State GDP Impact	Total Labor Income Impact	Output Multiplier
Core Life Sciences					
Pharmaceutical & medicine mfg.	3,485,829,536	5,642,630,615	2,621,673,745	1,332,779,561	1.62
Electromedical apparatus mfg.	35,935,480	62,016,431	28,643,605	17,503,355	1.73
Irradiation apparatus mfg.	60,961,684	102,459,680	41,952,568	26,161,622	1.68
Surgical & med. instrument mfg.	340,881,600	582,638,940	320,335,780	178,322,210	1.71
Surgical appliance & supplies mfg.	750,259,392	1,200,194,399	733,797,050	350,516,129	1.60
Research & development	216,417,264	469,637,442	273,751,216	204,891,355	2.17
Medical laboratories	536,711,104	1,078,960,784	647,492,037	439,517,143	2.01
Diagnostic imaging centers	172,666,384	347,114,585	208,305,750	141,397,919	2.01
Blood & organ banks	190,991,216	383,953,343	230,413,130	155,948,270	2.01
Total core sectors	5,790,653,660	9,869,606,219	5,106,364,881	2,847,037,564	1.70
Agricultural Life Sciences					
Wet corn milling	0	0	0	0	0
Soybean processing	748,732,352	1,002,554,449	186,216,899	103,153,986	1.34
Other oilseed processing	1,322,489,216	1,770,816,307	328,915,726	182,201,337	1.34
Ethyl alcohol mfg.	248,674,336	364,892,042	105,321,602	63,899,810	1.47
Other basic organic chem. mfg.	925,889,408	1,358,602,909	392,144,030	237,918,230	1.47
Cellulosic organic fiber mfg.	98,753,656	147,257,577	44,896,955	30,710,716	1.49
Nitrogenous fertilizer mfg.	317,983,104	551,958,849	170,878,296	96,364,830	1.74
Phosphatic fertilizer mfg.	0	0	0	0	0
Fertilizer, mixing only	261,714,480	454,287,091	140,640,561	79,312,610	1.74
Pesticide & other ag. chemicals	761,709,952	1,197,875,257	412,005,043	199,444,451	1.57
Total ag. life sciences sectors	4,685,946,504	6,848,244,481	1,781,019,112	993,005,970	1.46
Grand total, life sciences industry	10,476,600,164	16,717,850,700	6,887,383,993	3,840,043,534	1.60

Notes: Impacts were estimated by the IMPLAN V3 Software System based on the estimates of direct employment reported in Table 3. The region was defined as the state of Georgia. Output refers to the value of total production (business sales or gross receipts) including domestic and foreign trade. State GDP, or value added, includes employee compensation, proprietary income, other property income, and indirect business taxes. Labor income includes both the total payroll costs (including fringe benefits) of workers who are paid by employers and payments received by self-employed individuals.

Source: Selig Center for Economic Growth, Terry College of Business, University of Georgia.

Table 5
Impact of Georgia's Life Sciences Industry on Tax Collections
by State and Local Government in 2010
(2010 dollars)

Industry Sector	Total State and Local Tax Impact
Core Life Sciences	
Pharmaceutical and medicine manufacturing	144,562,477
Electromedical apparatus manufacturing	1,737,998
Irradiation apparatus manufacturing	2,604,584
Surgical and medical instrument manufacturing	17,074,743
Surgical appliance and supplies manufacturing	30,957,605
Research and development	16,191,572
Medical laboratories	38,848,572
Diagnostic imaging centers	12,498,051
Blood and organ banks	13,824,450
Total core sectors	278,300,051
Agricultural Life Sciences	
Wet corn milling	0
Soybean processing	14,931,784
Other oilseed processing	26,374,077
Ethyl alcohol manufacturing	9,387,512
Other basic organic chemical manufacturing	34,952,534
Cellulosic organic fiber manufacturing	3,200,227
Nitrogenous fertilizer manufacturing	13,415,708
Phosphatic fertilizer manufacturing	0
Fertilizer, mixing only	11,041,735
Pesticide and other ag. chemicals	25,721,426
Total agricultural life sciences sectors	139,025,002
Grand total, life sciences industry	417,325,053

Notes: Tax impacts were estimated by the IMPLAN V3 Software System, based on the estimates of direct employment reported in Table 3. The region was defined as the state of Georgia.

Source: Selig Center for Economic Growth, Terry College of Business, University of Georgia.

Table 6
Economic Impact of Georgia's Core Life Sciences Group
by Impacted Sector in 2010
(2010 dollars)

Impacted Sector	Total Output Impact	Total Employment Impact	Distribution of Jobs
Agriculture	11,226,733	97	0.2
Mining	1,315,816	6	0.0
Construction	48,541,215	441	0.9
Manufacturing	4,871,943,972	7,347	15.5
Transportation, Information, Public Utilities	229,751,636	1,378	2.9
Trade	583,626,936	5,762	12.2
Services	4,055,923,362	31,842	67.4
Government	67,276,549	397	0.8
Total, All Sectors	9,869,606,220	47,270	100.0

Notes: Excludes impacts generated by agricultural life sciences industries, which are reported in Table 7. Output refers to the value of total production (business sales or gross receipts) including domestic and foreign trade. Employment includes both full-time and part-time jobs.

Source: Selig Center for Economic Growth, Terry College of Business, University of Georgia.

Table 7
Economic Impact of Georgia's Agricultural Life Sciences Group
by Impacted Sector in 2010
(2010 dollars)

Impacted Sector	Total Output Impact	Total Employment Impact	Distribution of Jobs
Agriculture	72,811,304	891	4.9
Mining	4,192,219	22	0.1
Construction	44,055,469	398	2.2
Manufacturing	4,827,127,718	3,016	16.7
Transportation, Information, Public Utilities	416,868,950	1,996	11.0
Trade	298,127,978	2,603	14.4
Services	1,132,383,860	8,869	49.1
Government	52,676,982	272	1.5
Total, All Sectors	6,848,244,480	18,067	100.0

Notes: See Table 6. Output and employment impacts were estimated by the IMPLAN V3 Software System..

Source: Selig Center for Economic Growth, Terry College of Business, University of Georgia.

Table 8
Economic Impacts of the
Life Sciences Industry, Academic R&D, and the CDC
on Georgia's Economy in 2010

Impacted Category	Economic Impacts		Combined Impacts of Life Sciences Industry, R&D, and CDC
	R&D	CDC	
Direct employment (jobs)	7,783	7,551	33,359
Total employment impact (jobs)	14,282	14,487	94,106
Direct spending	772,957,000	879,202,752	12,128,759,916
Total output impact	1,614,551,985	1,690,801,576	20,023,204,261
Total state GDP impact	976,751,357	1,387,868,022	9,252,003,372
Total labor income impact	700,131,833	1,076,350,252	5,616,525,619
Total state & local government tax impact	73,298,050	66,400,676	557,023,779

Notes:

Direct spending for academic R&D obtained from Ronda Britt, Survey Manager, Higher Education R&D Survey, National Science Foundation. The total includes estimates for academic R&D expenditures in Life Sciences (\$733,753,000) plus academic R&D expenditures in bioengineering/biomedical engineering (\$39,204,000).

Direct employment for the CDC was estimated from information reported on the CDC's website. For 2009, the CDC reported a total of 10,488 government employees, of which 72 percent (7,551) are located at the Atlanta headquarters.

Employment includes both full-time and part-time jobs. Output refers to the value of total production (business sales or gross receipts) including domestic and foreign trade. State GDP, or value added, includes employee compensation, proprietary income, other property income, and indirect business taxes. Labor income includes both the total payroll costs (including fringe benefits) of workers who are paid by employers and payments received by self-employed individuals.

Source: Selig Center for Economic Growth, Terry College of Business, University of Georgia.

(continued from page 8)

manufacturing facility near I-20 east of Atlanta will help to ensure that life sciences will be an important force powering the recovery.

Although direct employment the life sciences held steady, the Selig Center's estimates show that direct spending associated with Georgia's life sciences companies rose by 11 percent between 2007 and 2010. Since inflation was very modest during this period, Georgia's life sciences companies produced significantly more output using the same number of employees.

Comparing the 2007 and 2010 total impact estimates (which include both indirect and induced impacts) show that there were increases in the overall economic impacts of the life sciences companies whether measured in terms of employment, output, GDP, or labor income. For example, between 2007 and 2010, the total output impact of Georgia's life sci-

ences companies rose by 4 percent. More encouragingly, the economic impact measured in terms of Georgia's GDP was 11 percent higher in 2010 than in 2007. The substantial increase in production, but not in terms of jobs within the life sciences industries themselves, suggests that productivity gains were significant for these industries.

Finally, the Selig Center's previous impact estimates for academic research and development—reported in the 2011 edition of *Shaping Infinity*—should not be compared directly to these new estimates because the earlier numbers exclude impacts arising from spending for bioengineering/biomedical engineering. After adjustment, it appears that total direct spending was about 12 percent higher in 2010 than it was in 2006; the output impact was about 18 percent higher; and the impact on GDP was about 16 percent higher. The employment impact was about 8 percent lower, however.

Baxter International

In April, the Georgia Department of Economic Development and Governor Nathan Deal announced that Baxter International will locate a new biopharmaceutical manufacturing facility near I-20 east of Atlanta. According to the official press release, the new facility will employ approximately 1,500 people when fully operational in 2018. Total investment by the company will exceed \$1 billion. Baxter International also will open several plasma centers, but the approximate number of jobs at these centers was not announced. Nonetheless, based on information from many sources, the Selig Center estimates that about 300 people will work at the plasma centers. In all, the new biopharmaceutical manufacturing facility and the new plasma centers will create 1,800 direct jobs in Georgia's core life sciences industry by 2018. Thus, the Baxter project's direct employment equals 10 percent of the 18,025 direct jobs that currently exist in Georgia's life sciences industry. This mega project should ensure that life sciences industry will continue to power Georgia's economy.

Baxter International's economic impact will be substantial, as Table 9 shows. Although the impact estimates are for 2018, all dollar amounts are expressed in 2012 dollars.

Due to high salaries and significant interactions with the local economy, multiplier effects are extremely high in plasma manufacturing. The analysis therefore indicates that 1,500 direct jobs in plasma manufacturing will create a total economic impact on statewide employment of 7,886 jobs. Indeed, for every job created directly at Baxter International's new facility, an additional 4.3 jobs will be created in Georgia because of spending related to that direct job. The annual (recurring) economic impact of the new facility on Georgia's economy will be \$2.1 billion in output, \$927 million in state GDP, and \$547 in labor income. In addition to the impacts generated by the manufacturing facility, the annual economic impact of the new plasma centers will be \$83 million in output, \$49 million in state GDP, \$34 million in labor income, and 652 jobs. The Selig Center did not estimate the one-time impact of over \$1 billion in new investment by Baxter International, but it will be substantial and will be especially helpful to the state's beleaguered construction industry.

Table 9
Potential Annual Economic Impacts of the Baxter International Facility
(in 2012 dollars)

Category	Total Manufacturing and Plasma	Biopharm Manufacturing Facility	Plasma Centers
Direct employment (jobs)	1,800	1,500	300
Total employment impact (jobs)	8,538	7,886	652
Direct spending	1,212,288,000	1,171,385,000	40,903,000
Total output impact	2,147,954,000	2,064,834,000	83,120,000
Total state GDP impact	976,682,000	927,241,000	49,441,000
Total labor income impact	580,387,000	546,743,000	33,644,000
Total state & local government tax impact	62,574,000	59,602,000	2,972,000

Notes: Direct employment estimates, obtained from the Georgia Department of Economic Development, reflect employment in 2018 when Baxter International's new facility is projected to be fully operational. The total state and local government tax impact is not reduced to reflect special incentives granted by state and local governments to land the Baxter project. Thus, the actual amount of revenue collected will be lower than the amounts reported. The impact estimates include only the annual (recurring) economic impact of the operations of the manufacturing facility and the plasma centers, and do not include one-time impacts associated with initial capital investment (spending) by Baxter International.

Indicators Overview

Labor Force

When measured by employment, none of the life sciences sectors covered in this study was larger in relation to other industries in Georgia than the U.S. average, but several strong-points emerge on the local level. Compared to the national average, medical laboratories provide a relatively large share of jobs in Atlanta. A large portion of jobs in Athens is provided by diagnostic imaging centers and biotechnology firms. In

Brunswick and Gainesville, relatively large numbers of workers have jobs in medical and diagnostic labs, and medicine manufacturing, respectively.

The life sciences industry needs specialized and qualified labor, ranging from research scientists to manufacturing workers. In several previous annual surveys conducted by the Selig Center, industry executives voiced their concern over the difficulty of finding qualified managers and technicians.

Table 10
Life Sciences Occupations in Georgia,
Employment and Pay, 2011

	Employment		Location Quotient*	Average Annual Wages	
	Number	Relative Standard Error (%)		Dollars	Relative Standard Error (%)
Food scientists; technologists	640	21.1	1.80	51,240	1.8
Soil and plant scientists	90	28.8	0.26	71,290	2.6
Biochemists; biophysicists	610	3.2	0.83	52,240	12.8
Microbiologists	660	0.2	1.26	86,920	1.7
Biological scientists, all other	700	2.7	0.76	69,870	1.5
Conservation scientists	200	4.9	0.36	67,930	1.8
Foresters	230	22.2	0.88	58,630	3.0
Epidemiologists	130	0.0	0.95	59,620	1.4
Medical scientists, exc. epidemiologists	640	11.8	0.23	76,230	4.1
Chemists	1,360	5.5	0.58	73,460	2.6
Environmental scientists, specialists, incl. health	1,720	6.6	0.70	57,670	3.5
Hydrologists	70	14.0	0.33	87,520	3.9
Agricultural and food science techs	470	19.2	0.93	31,300	1.6
Biological technicians	810	4.3	0.38	40,310	2.0
Chemical technicians	1,430	6.5	0.81	43,820	3.0
Environmental science, protection technicians, incl. health	540	10.3	0.61	41,710	2.1
Forensic science technicians	250	0.2	0.68	40,870	1.0
Forest and conservation technicians	270	7.9	0.30	41,490	1.0
All occupations	3,779,250	0.3	1.0	42,590	0.4

The location quotient is the ratio of the area concentration of occupational employment to the national average concentration. A location quotient greater than one indicates the occupation has a higher share of employment than average, and a location quotient less than one indicates the occupation is less prevalent in the area than average.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Occupational Employment Statistics, 2011.

In the most recent survey, conducted in 2011, the executives were satisfied with the supply of technicians, but the shortage of specialized managers was still apparent.

At the state level, compared to the U.S. average, Georgia is noted for a relatively large group of food scientists and microbiologists in its labor force. The relatively small number of biological technicians and medical scientists may signal potential shortages, however.

On a more local level, with its high number of diagnostic imaging centers, biotechnology firms, and healthcare establishments, Athens emerges as the metropolitan area with the most microbiologists, agricultural and food science technicians, and conservation scientists. The concentrations of professionals in these occupations exceed both the U.S. and metropolitan area averages, which is significant, since professionals in life sciences occupations tend to concentrate in metro areas.

The concentration of medical scientists and chemical technicians in Augusta also exceeds both U.S. and metro-

politan area averages. In Augusta, jobs provided by hospitals comprise a relatively large portion of the economy. In Albany, hospitals also play a larger role in the local economy than in the U.S. on average. The area also reports many environmental scientists in its labor force.

An analysis of life sciences degrees granted by institutions in the University System of Georgia shows the numbers increased from 15.5 percent of the overall total in 2007 to 16.5 percent in 2011. The new degrees granted in health professions contributed to the almost 30 percent increase in that field. The number of degrees in bioengineering, biomedical engineering, and natural resources and conservation increased at the fastest pace. The number of degrees granted in all of the life sciences-related fields increased faster than the system average.

According to data from the National Science Foundation, 24 percent of all science and engineering doctorates awarded in Georgia in 2008 were granted in life sciences, a percentage slightly below the 27 percent U.S. average.

Table 11
Life Sciences Degrees Conferred by
University System of Georgia Institutions, 2011

	Degrees Conferred, 2011			2007-2011 Percent Change		
	Undergrad	Graduate/ Professional	Total	Undergrad	Graduate/ Professional	Total
Agriculture, ag. operations and related sciences	338	107	445	30.5	16.3	26.8
Natural resources, conservation	180	69	249	60.7	4.5	39.9
Biological, biomedical sciences	1,765	260	2,025	22.6	17.6	21.9
Health professions and related programs	4,413	1,580	5,993	26.2	34.9	28.4
Life sciences engineering total	218	98	316	78.7	38.0	63.7
Bioengineering, biomed engineering	155	44	199	70.3	18.9	55.5
Other life sciences engineering*	63	54	117	103.2	58.8	80.0
Life sciences totals	6,914	2,114	9,028	28.3	30.4	28.8
System totals	40,867	13,988	54,855	19.6	25.5	21.1

*Includes environmental health, agricultural, biochemical, and bio-systems engineering.

Source: University System of Georgia, Degrees and Awards Conferred, FY 2007-2011.

Patents

The number of granted patents is a useful measure of economic activity and innovation. The number of all utility patents issued to Georgians increased by 47.5 percent between 2007 and 2011, compared to 36.6 percent for the U.S. as a whole. The number of patents in life sciences-related fields increased at a much faster pace, but the increase in Georgia was slightly lower than in the U.S. as a whole (49.7 percent in Georgia compared to 51.5 percent in the U.S.).

The number of Georgia patents granted in the life sciences climbed from 177 in 2007 to 265 in 2011, and constituted

12.2 percent of all patents granted in Georgia during that period. In the U.S. as a whole, 15.4 percent of all patents granted during that time were related to life sciences.

Firms and universities are the main originators of life sciences patents in Georgia. Between 1990 and 2010, 60 percent of life sciences patents were granted to Georgia firms, added to by 30 percent of patents granted to Georgia's universities. Among academic institutions, Emory University, The University of Georgia, and Georgia Institute of Technology have produced the largest numbers of patents in life sciences-related fields.

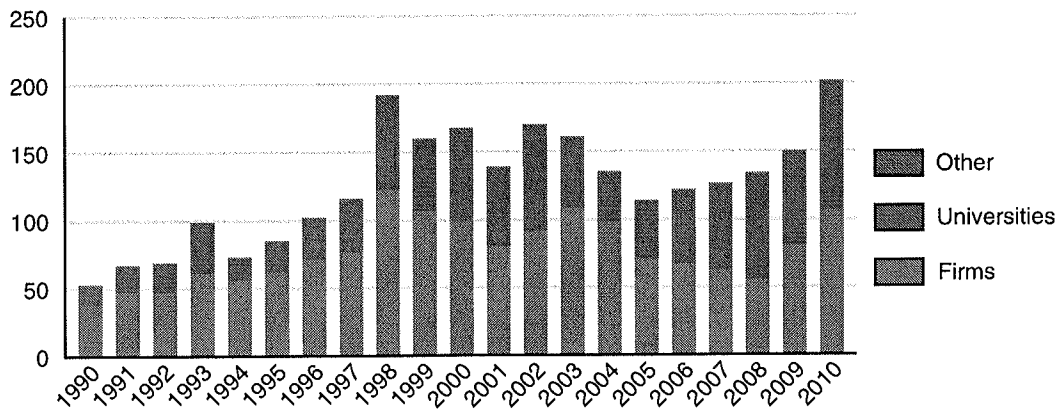
Table 12
Patents Granted in Life Sciences-Related Fields in Georgia, 2007-2011

Year	Number	Year-to-Year Change		Percent of All Patents	
		Georgia	U.S.	Georgia	U.S.
2007	177			13.5	14.9
2008	153	-13.6	-8.4	11.4	14.0
2009	154	0.7	9.9	10.9	14.5
2010	218	41.6	44.3	11.4	16.0
2011	265	21.6	4.4	13.7	16.6
Total	967	49.7*	51.5*	12.2**	15.4**

*2007-2011 percent change. **2007-2011 average.

Source: Based on The United States Patent and Trademark Office, General Patent Statistics Reports.

Number of Life Sciences Patents in Georgia, By Year Granted



Source: Based on Lynne G. Zuker and Michael R. Darby, COMETS Data Description, release 1.0, UCLA Center for International Science, Technology, and Cultural Policy, Los Angeles, CA, July 1, 2011.

R&D Activity

Georgia is ninth ranked among the states in population and labor force size, and the state's GDP ranks 11 in the nation. Historically, Georgia fared well, compared to the U.S. average, in terms of the number of high-tech businesses, high-tech business formations, and high-tech employment.

Compared to other states, Georgia underperforms in the portion of the state's GDP attributed to research and development, generating only about half of the U.S. average. Business R&D also falls at about the half of the U.S. average. Academic R&D does slightly better, however.

But this is only part of the story. In terms of absolute value, Georgia's R&D performance increased by 87.1 percent between 2000 and 2008 (most recent data available), compared to the 52.1 percent increase for the U.S. as a whole.

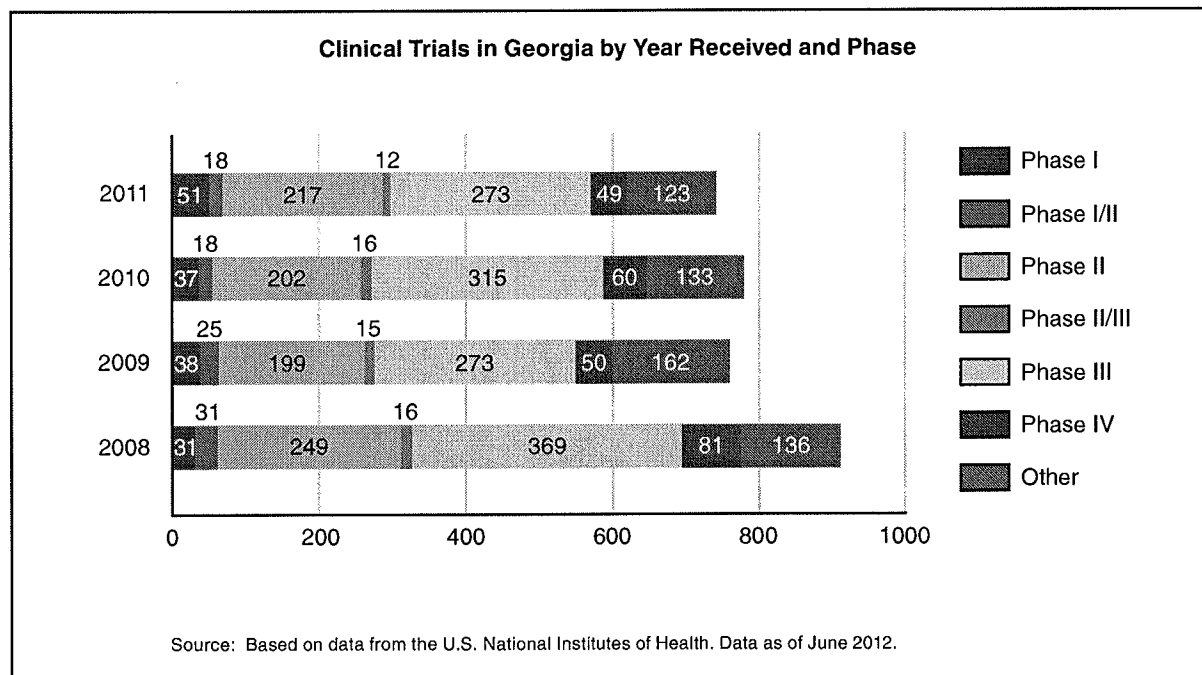
At 45 percent, R&D spending in life sciences constituted the largest portion of Georgia's academic R&D expenditures, but this was well under the 57 percent U.S. average. The 2010 expenditures in life sciences R&D ranked 16 among the states.

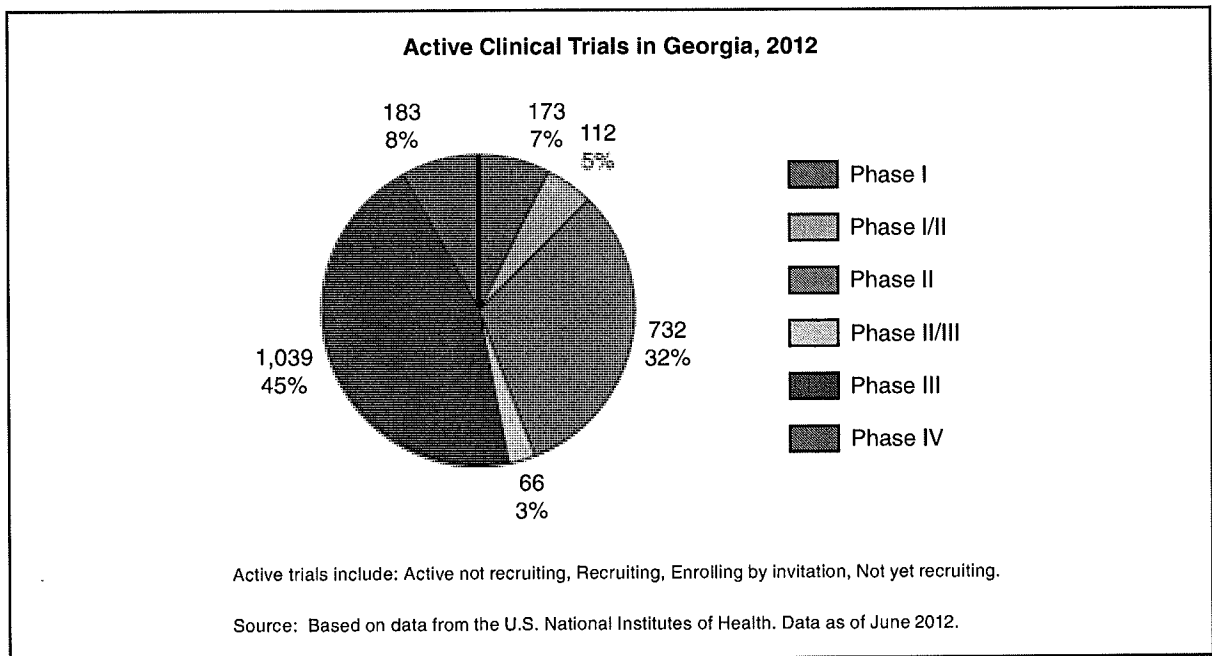
Academic research expenditures in bioengineering and biomedical engineering are fifth highest in the nation, however.

Clinical Trials

Clinical trials involve intensive R&D activity that utilizes a multifaceted array of skilled professionals and specialized infrastructure; therefore, the number of clinical trials performed in the state is an important indicator of the strength of life sciences industry. The number of clinical trial studies received for investigation in Georgia dropped from 913 in 2008 to 743 in 2011. The 18.6 percent drop was steeper than the 13.7 percent drop in the U.S. average, even though Georgia received more trials on a per-million residents basis.

In 2012, there are 2,886 clinical trial studies active in Georgia. Out of the 2,311 trials for which the trial phase data are available, Phase III trials comprised the largest group (45 percent), followed by Phase II trials, which made up 34 percent of the total.





Funding

Venture capital plays an important role in bringing young and promising companies' products to market. It also serves as an important indicator of the quality and strength of innovation-based industries. In 2010, Georgia ranked 13 in the nation with venture capital investment and then jumped two spots to rank 11 in 2011.

Funding has seesawed recently. Nearly a quarter of the 2010's \$80.8 million in VC was invested in life sciences firms (\$69.2 million in medical devices and \$11.6 million in biotechnology). A year later, the amount of capital invested in Georgia's life sciences companies dropped to \$36.2 million. In the first quarter of 2012, \$10.5 million was invested, far better than the estimated \$5.5 million invested in the first quarter of 2011.

According to the most recent report from the National Venture Capital Association, 15 percent of Georgia's total VC investment in 2010 came from VC firms headquartered here. In comparison, California, ranked first in VC investment, received 51 percent of VC investment from firms headquartered in that state. Second ranked Massachusetts drew 37 percent of its venture capital investment from VC firms headquartered

in-state. Georgia's neighbor North Carolina (rank 8) had 11 percent of its VC investment come from in state. On average, 20.5 percent of VC funding in the top-ranked states was raised in state.

Nationally, biotechnology firms typically receive more venture capital investment than devices firms do, but in Georgia the opposite is true. Since 2009, Georgia's medical devices firms attracted from 76 to 99 percent of the total life sciences VC investment. While venture capital investment in biotechnology plummeted from over \$40 million in 2008, to \$15 million in 2009 and \$11.5 million in 2010, medical devices investment rose from \$13.2 million in 2008 to \$47 million in 2009 and \$69 million in 2010. In 2011, however, funding for these two branches of the industry dropped, with only \$35.9 million raised, almost all of it by medical devices companies.

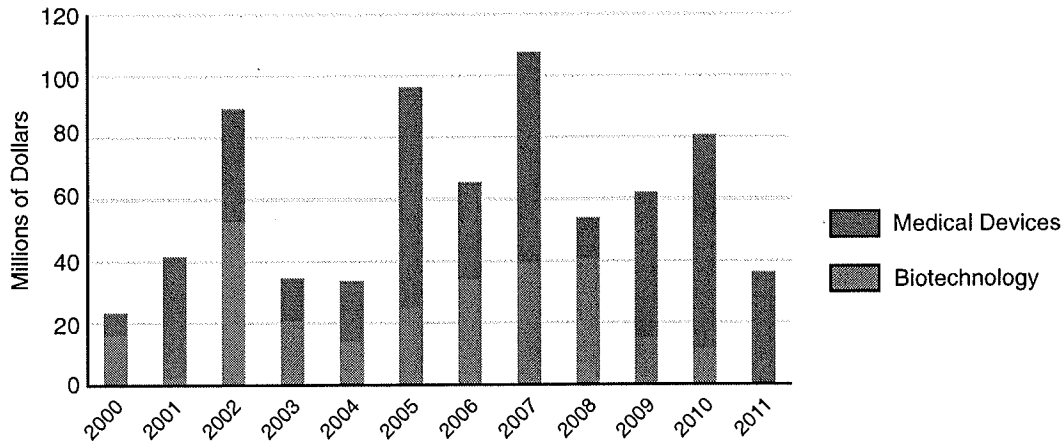
Life sciences firms reported an average of 10 deals per year between 2000 and 2012, with 81 deals reported by medical devices firms and 53 by biotechnology firms. Most capital invested in biotechnology since 2004 was for early stage development, while in medical devices, expansion and later stages garnered the most money. On the other hand, medical devices received more seed and startup funds between 2008 and 2011.

Table 13
Venture Capital Investments in Georgia, 2000-2011

Year	Biotechnology		Medical Devices		Life Sciences Total	
	Deals	Amount (\$)	Deals	Amount (\$)	Deals	Amount (\$)
2000	2	16,000,000	4	7,305,000	6	23,305,000
2001	2	2,200,000	6	39,295,000	8	41,495,000
2002	3	52,841,000	5	36,700,000	8	89,541,000
2003	2	20,546,000	1	13,999,900	3	34,545,900
2004	3	13,860,000	8	19,697,900	11	33,557,900
2005	10	24,909,000	7	71,474,800	17	96,383,800
2006	6	33,985,200	8	31,631,900	14	65,617,100
2007	4	39,307,000	11	68,433,700	15	107,740,700
2008	13	40,662,200	10	13,215,600	23	53,877,800
2009	4	15,002,000	7	47,050,900	11	62,052,900
2010	2	11,552,000	5	69,246,000	7	80,798,000
2011	2	329,000	7	35,859,800	9	36,188,800
2012 Q1			2	10,500,000	2	10,500,000

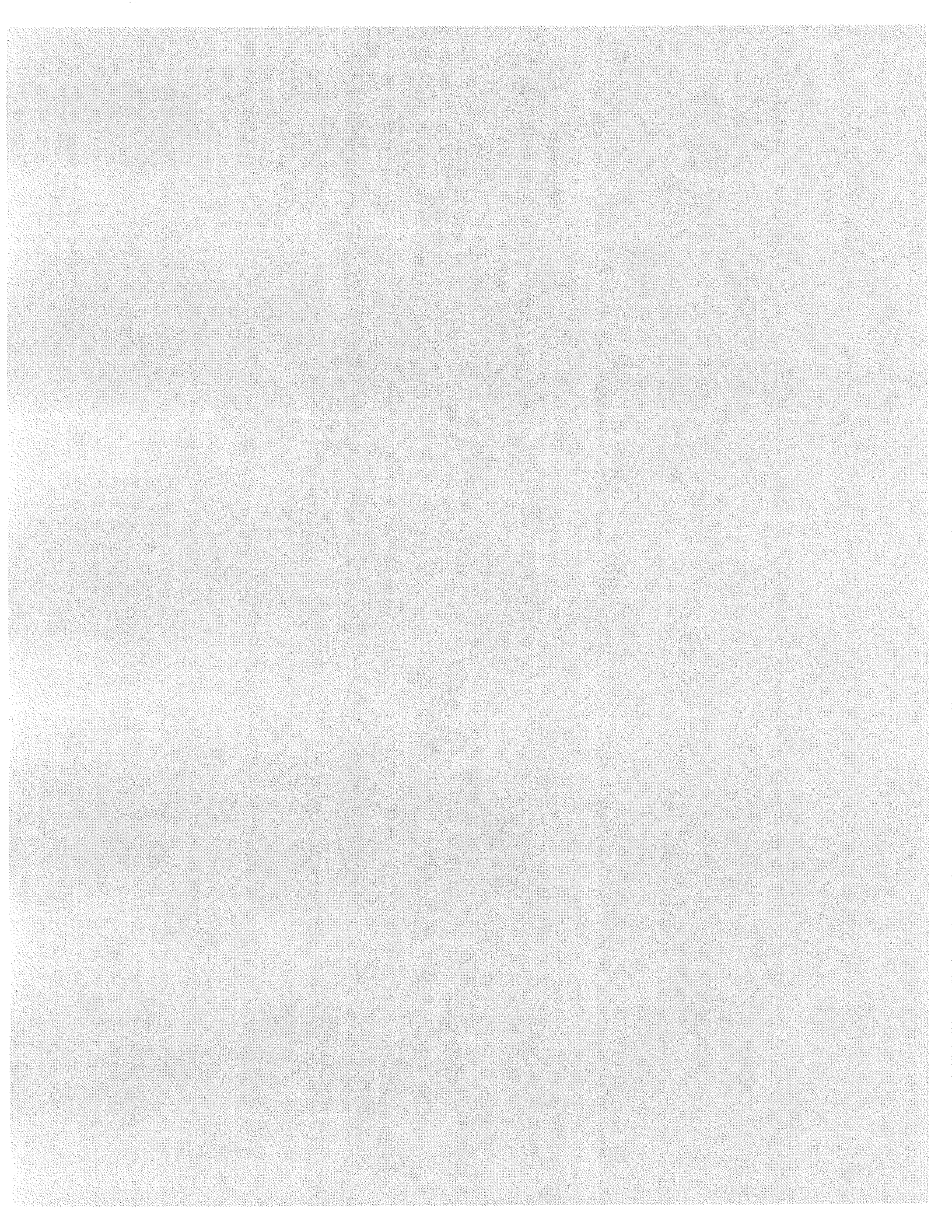
Source: PricewaterhouseCoopers/National Venture Capital Association, Money Tree Report, Thomson Reuters, June 2012.

Venture Capital Investment in Georgia's Life Sciences Companies



Source: Based on PricewaterhouseCoopers/National Venture Capital Association, Money Tree Report, Thomson Reuters, June 2012.

(continued on page 30)





Industry Insight

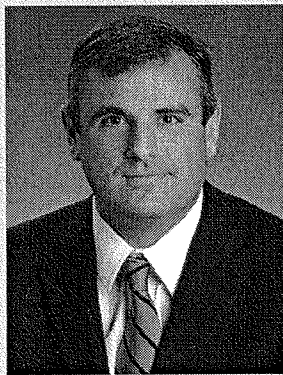
Special Articles Contributed by University and Industry Leaders



Industry Insight

Baxter International: Preparing for Success in Georgia

Chris Cumiskey
Commissioner
Georgia Department of Economic Development



For almost two decades, growing its biosciences industry has been a priority for Georgia. Even before the Commission for a New Georgia targeted the biosciences as a growth industry in 2004, the state was actively recruiting biosciences companies and building the infrastructure that would support it, most notably through the Georgia Research Alliance (GRA). During the last few years, we've significantly raised our profile by aggressively marketing the biosciences resources embodied in our universities and in groups like Georgia Bio, the Global Center for Medical Innovation, the Georgia Center of Innovation for Life Sciences, the Bioscience Leadership Council, and the Georgia Bioscience Commercialization Center. Through years of planning and with the assistance of these organizations and institutions and others like them, the state was honored to host the BIO International Convention in 2009 and continues to be a premiere sponsor at the industry's annual gathering. It is a testament to this collaborative, closely connected community that some of the top names in the industry have called Georgia home over the years: Merial, Dendreon, Sanofi-Aventis, Kimberly-Clark, CIBA Vision, Monsanto, UCB, Quintiles, and many more.

Baxter International's announcement in the spring of 2012 that it will locate a major pharmaceutical plant in Georgia is a watershed event in the development of our biosciences industry. The fact that this industry leader and household name chose Georgia following a global search for the site that best suited its business goals provides the most compelling case possible for other life sciences companies seeking a competi-

tive edge. We believe, simply, that Baxter's decision to invest over \$1 billion in the state and create over 1,500 jobs heralds a new era in Georgia's biosciences industry, one characterized by an increased cluster of companies in this field that will match or exceed the richness of our university resources for it.

Becoming known as a hub for biosciences is a goal sought by many states but achieved by very few. North Carolina, Massachusetts, and California have done an excellent job in marketing their assets. With Baxter's recent location in the state, our world-class research universities, 300 biosciences companies, educated workforce, Quick Start training program, and a logistics infrastructure that is unsurpassed, Georgia is uniquely poised to join this group. Atlanta is third in research facility space among all U.S. biosciences clusters. Our universities—Georgia Tech, UGA, Georgia Health Sciences University, Georgia State, Emory, Morehouse, and Mercer—are second to none, and the research coming out of them is groundbreaking. Emtriva, the world's most promising HIV/AIDS drug, was created here, and advances in neuroscience, cardiovascular medicine, immunology, veterinary medicine, regenerative science, diabetes, and many more areas of specialization are being made every day. The GRA's 44 world-renowned Eminent Scholars attract millions in federal and private dollars.

We are very proud of the work that these universities and biosciences companies are doing to save lives and improve the health and quality of life for people around the world. And we are proud that Baxter is now among them.

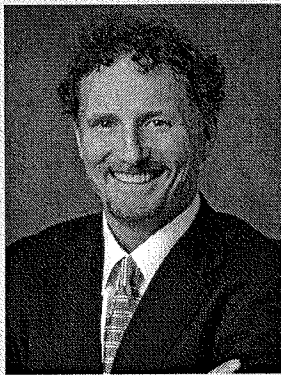
Baxter's arrival in Georgia also signals progress in the development of our workforce pipeline. Georgia already ranks among the top 15 states for overall bio-related occupational employment, and is one of the fastest growing in this field. We expect this pace to accelerate with the state-of-the-art biotech training center that Georgia Quick Start will build and operate to assist Baxter with its workforce requirements. This center will also build capacity and curricula within the Technical College System of Georgia to maintain a long-term pipeline of highly skilled employees who are well trained in bio-manufacturing operations. Because the biosciences industry pays higher-than-average wages for its workers, their families benefit from an enhanced quality of life, and our economy from increased activity.

Baxter's location in Georgia is good news for its clients, the company, its future employees and the state. We welcome this global leader to Georgia's fertile biosciences community and stand ready to help them both thrive.

Industry Insight

Medical Innovations and Partnerships That Make A Difference

Greg Duncan
Executive Vice President and
President - North American Operations
UCB, Inc.



At UCB, everything we do starts with a simple question: “How will this make a difference to the lives of people living with severe diseases?” We have a passionate, long-term commitment to discovering and developing innovative medicines that transform the lives of people living with severe diseases of the immune system and the central nervous system.

With a team of more than 8,500 employees and operations in over 40 countries, we are a Belgium-based, global biopharmaceutical company investing nearly 25 percent of revenue in cutting-edge scientific research to meet unmet patient needs. For many customers, we are known as “The Epilepsy Company,” having firmly established our leadership with two key drugs to treat this complex disease. We continue to advance our leadership positions in the areas of rheumatoid arthritis, Crohn’s disease, Parkinson’s diseases, and Restless Legs Syndrome with recently introduced treatments.

UCB established our first operations in Atlanta in 1995 with just 40 employees, not unlike many biotechnology companies. Today, we have grown to more than 400 people on our nearly 50-acre, Smyrna, Georgia campus. The site is home to the headquarters for our North America operations, which accounts for approximately 40 percent of UCB’s \$4 billion global business. While other companies in the industry are downsizing, we are expanding and adding key operations jobs to support the launch of several drugs, including Cimzia®, Vimpat® and Neupro®. UCB’s economic footprint in Georgia—representing the impact of our presence on the state—has grown to more than \$75 million.

Initially, UCB chose Atlanta as the location for our North American headquarters because it would be close to the chemicals facility the company owned in Augusta. The company

was beginning its evolution into a biopharmaceutical company and the city offered the opportunity to flourish both in the highly competitive North American pharmaceutical market as well as allowing us to continue our growth globally. Today we value the international transportation hub that Atlanta has become with direct access to Brussels.

We also value the great strides BIO, and state and local government leaders have made to attract the biotech industry to the state. The bill recently signed by Governor Nathan Deal allowing the State Employees' Pension Fund to invest in varied investment vehicles and the establishment of the Georgia Biosciences Commercialization Center will serve to enhance the environment and fuel the success of many more biotech companies and the overall growth of the industry.

In addition to Georgia's world-class health institutions, like the Centers for Disease Control and Prevention, as a biopharmaceutical company we see Georgia's world-class institutes of higher education as one of the strongest advantages the state has to offer. These academic research centers are originating groundbreaking biologic and genetics-based research that is enabling biopharmaceutical companies to develop working therapies from existing science quickly and efficiently.

As a result, UCB has redefined the way we work with academic research centers. The days are long past when companies like UCB conducted virtually all of their R&D—from basic research to full-scale development—in house. Today, UCB's core R&D model embraces strategic collaborations for sharing resources and knowledge while managing the risk associated with drug development. And we have one of the most robust pipelines in the industry to show for it. A recent analysis from Credit Suisse ranked UCB's pipeline and current portfolio highly in terms of good value for R&D investment.

These new, smarter partnerships are accelerating promising early stage science and delivering further innovation and science for the benefit of people suffering from chronic illnesses. Georgia is poised with its cutting edge academic research institutions and its life sciences community to nurture innovation that will not only result in economic growth but also improve the lives of patients and their families.

UCB's vision is to become the next generation biopharmaceutical leader based on the unique blending of innovation, entrepreneurship and experience. Our goal is to continue to bring breakthrough innovation and new medicines that will improve the lives of 1.7 million people coping with severe immunologic and central nervous system diseases by 2015. We are proud to call Atlanta our North American home and to be part of the efforts to further develop the state as a leader in the life sciences and biotech industry.

Industry Insight

Piedmont Heart Institute Exemplifies Breadth of Clinical Research in Georgia

*Charles Wilmer, M.D.
Board Chairman, Innovation Center
Piedmont Heart Institute*



The Piedmont Heart Institute (PHI) was formed in July 2008 and has grown into a multifaceted cardiovascular institute. There are 100 physicians, including cardiologists, thoracic, and cardiovascular surgeons, who all have a dream of improving patient care through innovation. Why is this important?

The number one reason for admission to a hospital for patients over 65 is congestive heart failure. In order to combat this, we devised a system of treatment to standardize care. Some patients fail medical therapy and will not live long enough to have a cardiac transplant. PHI innovated with mechanical supports, including a ventricular assist device (VAD), to help the heart pump blood as a way of improving its function. Dr. David Dean has placed 59 VAD pumps in offering this life saving therapy.

More than 50 million people have uncontrolled high blood pressure (blood pressure greater than 140/90). Many of these patients will require three or more medications for proper blood pressure control. PHI has joined an international research team to study the use of a catheter to ablate the nerves in the renal arteries. This will help reduce the blood pressure and allow medications to be reduced or stopped. This innovation may change the future of hypertension treatment for years to come. Patients from throughout the Southeast can enroll in this study.

There are other patients who have complex coronary disease. PHI has developed two innovations to help those patients with difficult heart blockages in their arteries. These patients are facing more and more medications or open heart surgery.

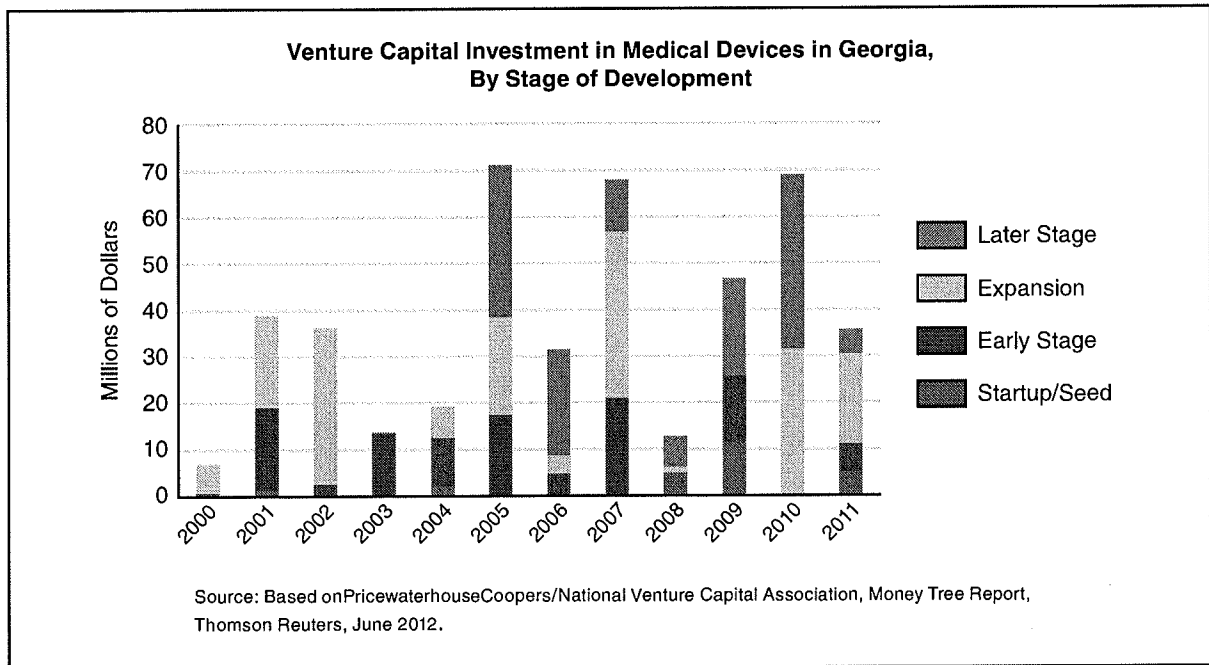
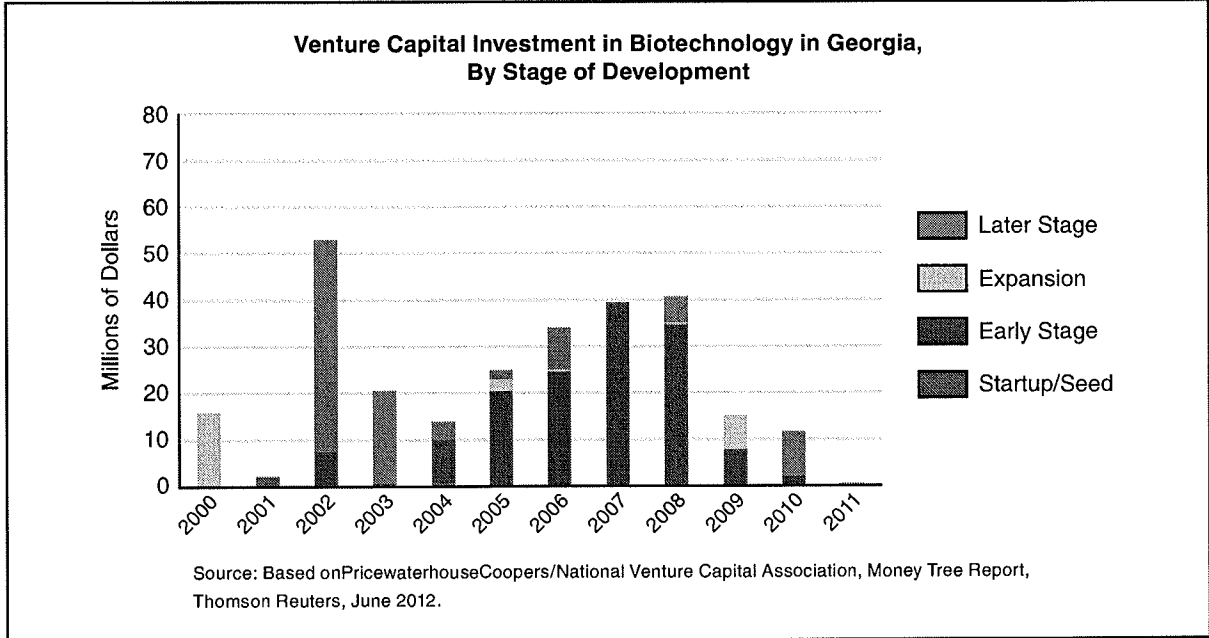
PHI is number one in the U.S. in an international clinical trial, under the direction of Dr. David Kandzari, to study placing drug-eluting stents in the left main artery versus open-heart surgery. We may be able to prove that it is safer to offer stents to some of these patients who otherwise are destined for surgery.

Some patients live with one blocked artery that doctors are unable to open. These patients continue to have chest pain despite medication. Traditionally, these chronic total occlusions (CTOs) are too difficult to open and are associated with a high failure rate. Through innovation, the doctors at PHI have developed a way to open these arteries to provide relief in a safe way. We are now the number one CTO center in the United States.

A new frontier in heart care revolves around the valves of the heart. PHI has received a \$20 million grant from the Bernie Marcus Foundation to build a National Valve Center. We are now repairing heart valves rather than replacing them. In the CoreValve trial, under the direction of Dr. Vivek Rajagopal, we are part of an international study to place a new aortic valve through the artery in the leg or upper extremity into the heart, to treat severe aortic stenosis (blockage of the aortic valve). These are patients who are felt to be at high risk for surgical repair. We are finding this less invasive approach to aortic valve replacement has been well tolerated so far.

These innovations, in addition to the research we are performing in patients with arrhythmias, such as atrial fibrillation, have catapulted the Piedmont Heart Institute to the level of a national heart center. We are proud to be part of Georgia's leaders in innovation. Stay tuned for the results of these exciting trials.

(continued from page 21)



2012 Life Sciences Questionnaire

The Selig Center identified 363 of the life sciences companies currently active in Georgia. For logistical reasons, only a small portion of the medical and diagnostic laboratories was included in the survey. The 2012 questionnaire was answered by 110 (30.6 percent) of the 363 companies. The information about 29 companies that answered last year's survey, but failed to respond this year, was also tabulated. Counted together, survey responses were gathered from 139 (38.6 percent) life sciences firms included on the 2012 list. Data for the remaining 224 firms was gathered, when available, from publicly accessible sources.

The greater Atlanta metro area houses over half of the life sciences firms included in the 2012 list, and is the center of the life sciences industry in Georgia. Medical devices and pharmaceutical firms are the largest groups among life sciences firms in the Atlanta area, with concentrations—in equal proportions—in Atlanta and Alpharetta. Norcross and Kennesaw house large numbers of medical devices firms.

Outside of Atlanta, Athens and Augusta report sizable life sciences industry concentrations. While biotechnology

and pharmaceutical firms concentrate in Athens, Augusta is a center for diagnostics and medical device firms. Smaller concentrations of life sciences firms are located in Gainesville (pharmaceutical products) and Camilla (agricultural, biofuel, and environmental products).

Over half (56.9 percent) of the 295 life sciences companies—diagnostic, agricultural, devices, and biotechnology companies, in particular—for which data are available have been in business for over ten years. Only 10.9 percent of companies have been active in Georgia for less than three years.

Over 50 percent of the 328 companies for which employment data are available had between one to ten employees. Many biotechnology, biologics, and R&D firms fall within this range. Diagnostics and health IT companies tend to be larger, with most of them reporting a staff size of between 21 to 50 workers. Medical devices, pharmaceutical, and ag/chemical/environmental companies typically were small, but about 20 percent of these firms had 21 to 50 employees, and a few had staffs of 100 or more. ❖

Table 14
Georgia's Life Sciences Industry Concentrations

Location	Number of Firms	Main Product Concentrations
Atlanta	85	Pharm, Dev
Alpharetta	26	Dev, Pharm
Athens	26	Pharm, Biotech
Norcross	24	Dev
Marietta	16	Pharm, Dev
Kennesaw	15	Dev
Augusta	14	Dev, Diag, Ag

Source: Selig Center for Economic Growth, University of Georgia, 2012.

Table 15
Life Sciences Companies in Georgia, by Primary Focus, 2012

Focus	Number of Companies
Medical devices (manufacturing, development, sales)	105
Pharmaceuticals (manufacturing, development, sales)	87
Diagnostics/Testing/Blood and Organ Banks	37
Biotechnology	23
Agricultural (manufacturing, development, sales)	15
Biologics (manufacturing, development, sales)	15
Health IT	14
Research and development/Platform technology	12
Medical and lab equipment	12
Biofuels	10
Chemical (manufacturing, development, sales)	9
Services/Marketing/Sales	8
Industrial	7
Environmental	5
Nanotechnology	2
Total	361

Source: Selig Center for Economic Growth, University of Georgia, 2012.

Table 16
Life Sciences Companies by Years of Business in Georgia, 2012

	Under 1	1-3	3-5	5-10	Over 10	Total
Devices/Medical and Lab Equipment	2	3	17	20	62	104
Pharmaceuticals	1	10	8	14	32	65
Agricultural/Chemical/Environmental/Industrial		2		7	23	32
Biotechnology		2	4	3	10	19
Biologics		2	1	2	7	12
Diagnostics/Testing/Other Labs		2		4	21	27
Research and Development		2	2	2	5	11
Health IT				6	3	9
Biofuel	1	3		2	2	8
Sales/Services		2	1	1	3	7
Nanotechnology				1		1
Total	4	28	33	62	168	295

Data tabulated for 295 companies for which employment data were collected.

Source: Selig Center for Economic Growth, University of Georgia, 2012.

Table 17
Life Sciences Companies by Employment Size in Georgia, 2012

	1-10	11-20	21-50	51-100	101-250	Over 250	Total Firms
Devices/Medical and Lab Equipment	52	10	19	9	10	8	108
Pharmaceuticals	39	12	16	5	6	0	78
Agricultural/Chemical/Environmental/Industrial	12	7	7	4	5	0	36
Biotechnology	20	1	1	0	0	0	22
Biologics	11	1	2	0	1	0	15
Diagnostics/Testing/Other Labs	9	2	14	1	7	0	33
Research and Development	7	2	1	0	0	0	10
Health IT	2	1	4	1	0	1	9
Biofuel	7	0	0	1	0	0	8
Sales/Services	6	2	0	0	0	0	7
Nanotechnology	2	0	0	0	0	0	2
Total	167	38	64	21	29	9	328

Data tabulated for 328 companies for which employment data were collected.

Source: Selig Center for Economic Growth, University of Georgia, 2012.

Appendix

LIST OF COMPANIES

Company	Location	Product/Focus
1st America Prescription Drugs	Valdosta	PHARM/DEV
1st American Infusion Services, LLC	Valdosta	PHARM/MEDEQ
3dmd, LLC	Atlanta	HI
A & L Shielding, Inc.	Rome	DEV
Abare Enterprises, Inc.	Forsyth	DEV
ABC Compounding Co., Inc.	Atlanta	AGR/CHEM
Abeome, Inc.	Athens	BIOTECH/R&D
Accellent, Inc.	Trenton	DEV/IND
Access Product Marketing, LLC/Can-Am Care	Alpharetta	PHARM/DEV
Accuitive Medical Ventures (AMV)	Duluth	V C
Acella Pharmaceuticals, LLC	Alpharetta	PHARM
Adaptive Mobility Systems, Inc.	Norcross	DEV
Adenopaint, LLC	Atlanta	DEV
Aderans Research Institute	Marietta	PHARM
Advanced Applications Inst./National Diagnostics	Atlanta	PHARM/DIAG
Advanced Bio-Technologies	Suwanee	PHARM
Advanced Herbaceuticals, LLC	Atlanta	PHARM
Advanced Technology Pharmaceuticals Corporation	Dacula	AGR/CHEM
Agra-Med International, LLC	Cleveland	AGR/BIOL
Agri Biofuels, Inc.	Camilla	BIOFUEL
Agrinostics, Inc.	Watkinsville	PHARM
Ajay North America, LLC	Powder Springs	CHEM
AKESOgen	Norcross	RES/DIAG
Alaven Pharmaceutical, LLC/Meda Pharmaceuticals	Marietta	PHARM
Alcon (formerly CIBA Vision Corp.)	Duluth	DEV
Algae Bioenergy Solutions	Martinez	BIOFUEL
Alimera Sciences, Inc.	Alpharetta	PHARM
Allergan, Inc.	Atlanta	PHARM
Alliance Bio-Medical	Duluth	R&D/PHARM/RES
Alpha Omega Co. USA, Inc.	Alpharetta	DEV/MED EQ
Alternative Cellular	Marietta	BIOL
Altiris Therapeutics	Atlanta	PHARM
Ambit Corporation	Gainesville	DEV
Amendia, Inc.	Marietta	DEV/BIOL/HI
American Biosurgical, LLC	Norcross	DEV
Analytical Development, Inc.	Lawrenceville	LABEQ/DEV
Angiodynamics	Manchester	DEV

Company	Location	Product/Focus
Angionics	Athens	PHARM
Any Test, Inc.	Kennesaw	DIAG
Apeliotus Technologies, Inc.	Atlanta	DEV
APICA Cardiovascular, Inc.	Atlanta	DEV
Applied PhytoGenetics, Inc. (APGEN)	Athens	IND/AGR
AptoTec	Athens	PHARM
Aqua Solutions, Inc.	Jasper	AGR
Arbor Pharmaceuticals, Inc.	Atlanta	PHARM
Archaea Solutions	Tyrone	DIAG
Argent Diagnostics, Inc.	Athens	R&D/BIOTECH/DIAG
Aruna Biomedical	Athens	R&D
Athens Research and Technology, Inc.	Athens	BIOL
Atlanta Biologicals, Inc.	Lawrenceville	BIOL
Atlanta Center for Medical Research	Atlanta	PHARM/R&D
Atlanta Health Care Services	Atlanta	DEV
Atlanta Pathology Professional Association	Atlanta	DIAG
Atlanta Research Laboratory Supplies, Inc.	Atlanta	DEV/IND/AGR/R&D
Attain Med, Inc.	Atlanta	PHARM/DEV
Augusta Laboratory, Inc.	Augusta	DIAG
AuraZyme Pharmaceuticals, Inc.	Kennesaw	R&D/DEV
Axion Biosystems	Atlanta	R&D
Axona/Axotect	Atlanta	BIOTECH
Bard Medical Division (C.R. Bard)	Covington	DEV
Bard Urological Division (C.R. Bard)	Covington	DEV
Bayer Cropscience, LP/Woodbine Formulation Plant	Woodbine	AGR
Becton, Dickinson - Lee Laboratories	Grayson	DEV/BIOTECH/BIOL
Best Vascular/Novoste Corporation	Norcross	DEV
Beximco Pharmaceuticals USA	Suwanee	PHARM
Bimeco Group	Peachtree City	DEV/SALES
Bioanue Laboratories, Inc.	Rochelle	AGR
BioAutomaton Systems, Inc. (BSI)	Atlanta	R&D
Biocide Labs, LLC	Cumming	SERV
Biofisica, Inc.	Duluth	DEV
BioMed Design, LLC	Dunwoody	DEV
Biomedical Consultant Group, Inc.	Albany	R&D
Bioniche Animal Health USA, Inc.	Athens	BIOL/AGR/BIOTECH
Bio-Plus, Inc.	Madison	AGR/BIOFUEL
Bioprogess Technology International	Atlanta	R&D/BIOTECH
Biosystems America, Inc.	Cumming	PHARM/DIAG/BIOL
Biotest Pharmaceuticals	Athens	PHARM
Black & Black Surgical, Inc.	Tucker	DEV
Body Surface Translations, Inc.	Athens	DEV

Company	Location	Product/Focus
Bracy Analytics, Inc.	Marietta	RES/SALES/HI
Braegen Pharmaceuticals Company	Atlanta	PHARM
Brasseler USA, Inc.	Savannah	DEV
Brettech Alternative Fuel, Inc.	Tifton	BIOFUEL
Bristol-Myers Squibb	Atlanta	PHARM
Bruder Healthcare Company	Alpharetta	DEV
Burdox, Inc.	Griffin	DEV
C A P S Pharmacy	Norcross	PHARM
C. H. Martin Company	Atlanta	DEV
C2 Biofuels, Inc.	Atlanta	BIOFUEL
Caire Inc./Chart Biomedical Group	Ball Ground	DEV
Cannopi Pharma, LLC	Alpharetta	PHARM
Cardiac Regeneration Technologies, LLC	Woodstock	R&D
Cardio Analysis	Savannah	DIAG/DEV
CardioMEMS, Inc.	Atlanta	DEV/IND
Carlyle Health Element	Decatur	IND/CHEM
Carticept Medical, Inc.	Alpharetta	DEV
Celgenomics, LLC	Martinez	BIOTECH/R&D
Cell Constructs	Atlanta	R&D/DEV
Celtaxsys, Inc.	Atlanta	R&D
Century Systems, Inc.	Atlanta	PHARM
Cerebral Vascular Applications, Inc.	Duluth	DEV
ChemoCore, Inc.	Atlanta	PHARM
Chemtronics, Inc.	Kennesaw	CHEM
CIS Biotech, Inc.	Decatur	R&D
Claro Chemical Corporation	Alpharetta	NANOTECH
Clinical Laboratory Services	Winder	DIAG
Clinisys Associates, LLC	Atlanta	BIOL
CorMatrix Cardiovascular	Alpharetta	DEV
Covidien/Kendall Healthcare	Augusta	DEV
CryoLife, Inc.	Kennesaw	DEV
CSI Laboratories	Alpharetta	DIAG
Cyan Bio, Inc.	Athens	BIOL
D S M Nutritional Products, LLC	Pendergrass	PHARM
Danimer Scientific, LLC	Bainbridge	IND
Datta ImmunoChem.Inc (DIC)	Evans	BIOTECH
Dendreon	Union City	PHARM
Deobiosciences, Inc.	Lilburn	BIOTECH/R&D
Digital Vision	Atlanta	HI
Dornier MedTech America	Kennesaw	DEV
Dynamic Adsorbents, Inc.	Norcross	CHEM
Eckert&Ziegler Analytics, Inc.	Atlanta	LABEQ/DEV

Company	Location	Product/Focus
ECO Solutions, LLC	Chatsworth	ENV
Effcon Laboratories, Inc.	Marietta	PHARM/R&D/DEV
Effigene Pharmaceuticals	Atlanta	PHARM
EKA Chemicals, Inc.	Augusta	CHEM
Elan Pharmaceuticals/Alkermes	Gainesville	PHARM
Elanco/Augusta Elanco Technology Center	Augusta	BIOL
Elekta Holdings, U. S., Inc.	Norcross	DEV
Encompass Pharmaceutical Services, Inc.	Norcross	SERV
EnerGaia, Inc.	Atlanta	AGR/IND
Enterpriseone Pharmaceutical	Marietta	BIOL
Envisionier Medical Technologies	Woodstock	DIAG/DEV/R&D
Enzymatic Deinking Technologies, LLC (EDT)	Norcross	IND/CHEM
EPD Pharma Solutions	Alpharetta	PHARM/R&D
Equinox Chemicals, LLC	Albany	CHEM/SALES
ERBE USA, Inc.	Marietta	DEV
Ethicon	Cornelia	DEV
Evirx, LLC	Athens	HI
Exelan Pharmaceuticals, Inc.	Peachtree City	PHARM
Expression Therapeutics, LLC	Tucker	PHARM/BIOTECH
ExtRx Corporation	Roswell	SERV/PHARM
Facet Technologies, LLC (Div. of Matria Healthcare)	Kennesaw	DEV
Femasys	Suwanee	DEV/MEDEQ
First United Ethanol	Camilla	BIOFUEL
FOB Synthesis, Inc.	Kennesaw	PHARM/R&D
Fortec Medical	Norcross	DEV
Freedom Pines Biorefinery/LanzaTech	Soperton	BIOFUEL/R&D
Gallegos Bio-Pharma Consultants, LLC	Kennesaw	BIOTECH/PHARM
GE Healthcare	Atlanta	PHARM
Gene Probe, Inc.	Atlanta	BIOINF
GeneCure Biotechnologies	Norcross	BIOTECH
Genentech	Atlanta	PHARM
Genesis Biosciences	Lawrenceville	BIOL
Georgia Alternative Fuels, LLC	Dublin	BIOFUEL
Georgia Biomass/RWE Innology	Savannah	BIOFUEL
GeoVax, Inc.	Smyrna	PHARM/BIOTECH/R&D
GF Health Products, Inc.	Atlanta	MEDEQ
Given Imaging, Inc.	Duluth	DEV
GLASS HORSE PROJECT, LLC	Athens	HI
Glaxosmithkline, LLC	Columbus	PHARM
Global Plasma Solutions	Savannah	BIOL
Global Resources International	Flowery Branch	DEV
Glycoscientific	Athens	R&D/SERV

Company	Location	Product/Focus
Glycosensors and Diagnostics, LLC	Athens	R&D/BIOTECH/PHARM
Grace Labs, LLC	Atlanta	DIAG
Guided Therapeutics	Norcross	DEV
Gulmay Medical, Inc.	Suwanee	DEV/IND
Halscion, Inc.	Suwanee	DEV
Health Discovery Corporation	Savannah	DIAG/R&D
HealthByConnect	Kennesaw	HI
Healthtronics Laboratory Solutions	Augusta	DIAG
Histology Services Company	Stone Mountain	DIAG
Howmedica/Gasperini & Associates	Macon	DEV
ICON Interventional Systems®	Atlanta	DEV/DIAG
Iconic Therapeutics, Inc.	Atlanta	BIOL
Imiren Pharmaceuticals, Inc.	Forest Park	PHARM/BIOL
Immucor, Inc.	Norcross	DIAG/BIOL
Inhibikase Therapeutics, Inc.	Atlanta	PHARM/R&D
Inhibitex, Inc./BristolMyerSquibb	Alpharetta	PHARM
Innogenetics, Inc.	Alpharetta	BIOTECH/DEV
Innovation Factory	Duluth	DEV
Innovative Medical Robotics	Atlanta	DEV
Insectigen	Athens	AGR
Integrated Science Systems	Augusta	DEV/MEDEQ
International Plant Nutrition	Norcross	AGR
InVasc Therapeutics, Inc.	Tucker	PHARM
Ketal Biomedical, Inc.	Atlanta	PHARM
Kiel Laboratories, Inc.	Gainesville	PHARM
KPS Technologies	Atlanta	CHEM/R&D
Laboratory Corporation of America	Columbus	DIAG
Lazarus Enterprises, Inc.	Cartersville	PHARM
Lee Laboratories/BD	Grayson	DIAG/DEV
Level Four Orthotics	Austell	DEV
Libertas Pharma, Inc.	Lawrenceville	PHARM
Life Alarm Services, Inc.	Augusta	MEDEQ
Life Science Partner	Atlanta	SERV
Logos Nutritionals/Preventive Therapeutics, Inc.	Snellville	PHARM
Lucky Seven Botanica Corporation	Lithonia	PHARM
LumaMed	Johns Creek	DEV
Luminomics, Inc.	Augusta	RES/PHARM/SALES
Lynrose Labs, LLC	Suwanee	PHARM
Mab Technologies	Stone Mountain	BIOTECH
Magnesium Direct, Inc.	Alpharetta	PHARM
Matrix Surgical Holdings, LLC	Atlanta	DEV
McKesson Information Solutions, LLC	Alpharetta	HI/SERV

Company	Location	Product/Focus
MD Innovate, Inc.	Decatur	DEV/DIAG/MEDEQ
Mddatacor, Inc.	Alpharetta	DEV
Medical Device Development Group, LLC	Gainesville	DEV
Medical Edge Technologies, Inc.	Atlanta	SERV
Medical Neurogenetics, LLC	Atlanta	DIAG
Medical Specialty Innovations	Alpharetta	LABEQ
Meditech	Atlanta	HI
MedQuest Associates	Alpharetta	DIAG
Medshape Solutions, Inc.	Atlanta	DEV/R&D
Medtronic, Inc.	Atlanta	DEV
Meredian, Inc.	Bainbridge	IND
Merial Limited	Duluth	BIOL/AGR
Merial Select	Gainesville	PHARM/BIOL/AGR
Metabolic Testing Services, Inc.	Atlanta	DIAG/RES
Metaclipse	Atlanta	PHARM/BIOTECH
Metamatrix, Inc.	Duluth	CLINICAL LAB
Metro Vascular, PC	Decatur	DIAG
Micro-Macro International, Inc.	Athens	R&D
Microtek Medical Holdings, Inc.	Alpharetta	DEV
Middle Georgia Biofuels, Inc.	Dublin	BIOFUEL
Mikart, Inc.	Atlanta	PHARM
Millennium Cryogenics, Inc.	Athens	BIOTECH/BOB
MiMedx Group, Inc.	Kennesaw	DEV/BIOMATERIALS
Molecular Therapeutics, LLC	Athens	PHARM
Mölnlycke Health Care U.S.	Norcross	DEV
Monsanto Company	Tifton	CHEM
Myelotec	Roswell	DEV
Nanli Laser Supply, LLC	Atlanta	DEV
Nanomist Systems, LLC	Macon	DEV
National Diagnostics, Inc.	Atlanta	DIAG
NDC Health Corporation/McKesson	Atlanta	HI
NEBA Health (formerly Lexicor Medical Technologies)	Augusta	DEV/DIAG
Neural Signals, Inc.	Duluth	R&D
NeuroMatrix Group/Southern Neurophysiology, LLC	Alpharetta	DIAG
NeuroOP	Atlanta	PHARM
NeuroTrials Research, Inc.	Atlanta	PHARM/DEV/R&D
Newton Laboratories, Inc.	Conyers	PHARM
Noramco, Inc.	Athens	PHARM/DEV/CHEM
North American Bioproducts	Duluth	IND
Nuvison Pharmaceuticals, LLC	Atlanta	PHARM
Octogen Pharmacal Co Inc/Pharmacal	Cumming	PHARM
Omega Bio-Tek, Inc.	Norcross	LABEQ/R&D

Company	Location	Product/Focus
Omni International, Inc.	Kennesaw	LABEQ
Oncose, Inc.	Athens	PHARM
Oncovaxine, LLC	Atlanta	BIOTECH
OpenCell Technologies, Inc.	Atlanta	R&D
Opti Medical Systems	Roswell	DEV
Opti-Medical (formerly Roche Diagnostics)	Roswell	LABEQ
Osmotica Pharmaceutical Corporation	Marietta	PHARM
P3 Laboratories	Winder	R&D
Pajunk Medical Systems, LP	Tucker	DEV
Pathens, Inc.	Athens	BIOTECH
Pathogen Control Associates	Norcross	ENV/DIAG
Peat Fuel Company	Ludowici	BIOFUEL
Petnet Solutions, Inc.	Atlanta	DIAG
Petnet Solutions, Inc./Siemens	Atlanta	PHARM/NUCMED
Pfeiffer Pharmaceuticals	Atlanta	PHARM
Pfizer	Marietta	AGR
Planteco Environmental Consultants	Athens	ENV
Plasma Surgical, Inc.	Roswell	DEV
Porex Porous Products Group/Porex Technologies	Fairburn	DEV
Prayon, Inc.	Augusta	AGR
Prentiss/ENIVCIO, LLC	Sandersville	CHEM/IND/AGR
Prizm Medical, Inc.	Oakwood	MEDEQ
Pti Royston, LLC	Royston	DEV
Pyramid Plasmas, LLC	Lawrenceville	BIOL
Q Care International, LLC	Marietta	DEV
Quality Assurance Service Corporation	Augusta	DIAG
Quest Diagnostics	Tucker	DIAG
Quintiles Laboratories Limited	Marietta	DIAG
Rad Source Technologies, Inc.	Suwanee	DEV
RayBiotech, Inc.	Norcross	DIAG/R&D/BIOTECH
Reach Health, Inc.	Alpharetta	HI/DEV
Recombinant Peptide Technologies, LLC (rPeptide)	Bogart	BIOTECH
Reddy Chemtech, Inc.	Kennesaw	CHEM/R&D
Relax-A-Cizor Products, Inc.	Atlanta	DEV
Remel, Inc./Thermo Fisher	Norcross	DIAG/DEV
Renovo Research	Atlanta	R&D/PHARM
Research Think Tank, Inc.	Buford	DIAG
Respironics Inc (Philips)	Kennesaw	DEV
Retinalabs	Atlanta	DEV
Revogenex, Inc.	Winder	PHARM
RFD Technology	Atlanta	DEV
RFS Pharma	Tucker	R&D/PHARM

Company	Location	Product/Focus
Rhodia Inc/Solvay	Winder	IND
Ripple Management, Inc.	Atlanta	SERV
Rx Specialty Services, Inc.	Ellijay	PHARM
S S S Company	Atlanta	PHARM
Salutria Pharmaceuticals, LLC	Alpharetta	PHARM
Sanguine Corportion	Roswell	DEV
Sanofi-Aventis/Genzyme	Forest Park	PHARM
Sanuwave Services, LLC	Alpharetta	DEV
Schering-Plough/Merck	Suwanee	PHARM/SALES
Scientific Adsorbents (Div. of Apyron Technologies, Inc.)	Atlanta	IND
Sebacia, Inc.	Duluth	DEV
Sebia, Inc.	Norcross	DEV/LABEQ
Sector Electronics, LLC	Marietta	DEV
Sero-Immuno Diagnostics	Tucker	DIAG
Siemens Healthcare Diagnostics	Atlanta	DIAG/BIOL/DEV
Siemens Medical Solutions USA, Inc., Ultrasound Div.	Alpharetta	DEV
Sigvaris, Inc.	Peachtree City	DEV
Skalar	Buford	LABEQ/SALES
Sleepmed, Inc.	Jonesboro	DIAG
Sleepmed, Inc.	Kennesaw	DIAG
Smisson Cartledge Biomedical	Macon	DEV
Snowden Pencer, Inc.	Tucker	DEV
SoloHealth	Duluth	HI/DEV/R&D/SALES
Solstas Lab Partners (formerly Doctors Laboratory)	Valdosta	DIAG
Southeast Regional Research Group, Inc.	Columbus	RES/SALES/PHARM
SpectroPath, Inc.	Atlanta	DEV/R&D
Spheringenics, Inc.	Atlanta	BIOTECH
Splash Medical Devices, LLC	Atlanta	DEV
Sterimed, Inc.	Cartersville	DEV/MEDEQ
Stradis Medical, LLC	Lawrenceville	DEV
Stryker CMF/Porex Surgical, Inc.	Newnan	DEV
Sub-Micro	Atlanta	BIOTECH
Summit Industries, Inc.	Marietta	PHARM/AGR
Sunbelt Medical Services, Inc.	Sardis	SALES
Super Nova Manufacturing	Camilla	ENV/MED EQ
Surgical Biologics, LLC	Kennesaw	DEV
Synageva Biopharma (formerly Avigenics)	Athens	BIOTECH/PHARM
Syntermed, Inc.	Atlanta	HI
TAP Pharmaceuticals (Takeda Pharmaceuticals Intl.)	Atlanta	PHARM
Technical Products, Inc. of Georgia, USA	Lawrenceville	DEV
Technical Services Group, Inc.	Lawrenceville	IND/DEV
Technology Resource International Corporation (TRI)	Alpharetta	DEV

Company	Location	Product/Focus
The Nutrasweet Company	Augusta	AGR
Theragenics Corporation	Buford	DEV/PHARM
Thione International, Inc.	Atlanta	PHARM
Throwleigh Technologies, LLC	Milton	DEV
Tiber Laboratories, LLC	Suwanee	PHARM
Tissue Regeneration Technologies, LLC	Woodstock	R&D/DEV
Titermax USA, Inc.	Norcross	BIOL
Transfusion & Transplantation Technologies, Inc.	Atlanta	DEV/DIAG
Triad Isotopes	Norcross	NUCMED
Trs Labs, Inc.	Athens	PHARM/DIAG
UCB, Inc.	Smyrna	PHARM
Unisplint Corporation	Norcross	MEDEQ
United Medical Enterprise, Inc.	Augusta	MEDEQ
Velocity Medical Solutions, LLC	Atlanta	HI
VersaPharm, Inc.	Marietta	PHARM
Viacyte/BresaGen, Inc./Novocell, Inc.	Athens	BIOTECH
Vigilant Biosciences, Inc.	Norcross	DEV/LABEQ
Visioneering Technologies, Inc.	Alpharetta	DEV
Vitalabs, Inc.	Jonesboro	PHARM
Vitamin Derivatives, Inc.	Winterville	AGR
Vivebio, LLC	Lawrenceville	BIOTECH/BIOL
Vivonetics, Inc.	Atlanta	NANOTECH
Waters Agricultural Labs	Camilla	AGR
Wellpharm, LLC	Canton	PHARM
Wetland & Ecological Consultants	Woodstock	ENV
Wingo, Inc.	Cleveland	BIOL
Wuxi Apptec, Inc./Viro-Med Laboratories, Inc.	Marietta	DIAG/BIOL
Xytex Cryo International, Ltd.	Augusta	BOB
Z Technologies, LLC	Atlanta	DEV
Zenda Technologies	Roswell	BIOTECH
Zirus, Inc.	Atlanta	BIOTECH/PHARM

The list of companies was compiled based on publicly available sources. Company status was verified against the Georgia Secretary of State's Corporations Division database; and addresses were verified by mailing the 2012 life sciences questionnaire to the address listed for each company. While every effort was made to identify most of the companies that comprise the life sciences industry, some important firms may have been omitted inadvertently.

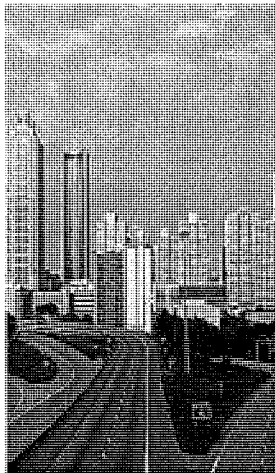
AGR	Agricultural, food, nutrition (human and animal)
BIOFUEL	Biofuels, bioenergy
BIOL	Biologics
BIOPHARM	Biopharmaceuticals
BIOTECH	Biotechnology
BOB	Blood and Organ Banks
CHEM	Chemical
DEV	Medical devices and technology
DIAG	Diagnostics
ENV	Environmental
HI	Health Informatics
IND	Industrial
LABEQ	Laboratory equipment and supplies
MEDEQ	Medical equipment and supplies
NUC MED	Nuclear medicine
PHARM	Pharmaceutical, biopharmaceutical, therapeutics (including veterinary)
RES	Research
R&D	Research and development, platform technology, product discovery
SERV	Services
VC	Venture capital

EXHIBIT 13

[HOME](#)[INDUSTRY OVERVIEW](#)[ATPC OVERVIEW](#)[GEORGIA IMPACT](#)[MEMBERS](#)[TRANSACTION ALLEY](#)[NEWS ROOM](#)[CONTACT US](#)

Follow @transactalley

Georgia Impact



Global Economic Impact

The global payment processing (merchant acquiring) industry generates \$50 billion, with projected growth to \$65 billion by 2015. Alternative payment methods like mobile could add another \$6 billion by 2015. Future growth will be driven by U.S. and European product innovation and consumer demand in countries with low credit card penetration.

Georgia's Leadership

More than 60 percent of industry companies are based in Atlanta and 70 percent of all U.S. payments processed run through Georgia. These companies are all moving aggressively into global markets, especially as usage of cash and checks continues to decline.

Georgia's national leadership in business and higher learning indicators provides a rich universe to ensure future Financial Services growth with the right support from Washington and our state capitol. Consider this:

- Georgia ranks first in the U.S for entrepreneurship (Kauffman Index of Entrepreneurial Activity) and has had the largest increase of any state in the last decade, providing a healthy marketplace for financial services.
- The Atlanta region ranked fifth in total research and development expenditures in 2011. (\$1.49 billion) – a 46 percent increase compared to five years ago.
- Atlanta tied for third in the number of engineering/engineering technologies bachelor's degrees awarded in 2011, behind L.A and New York (tied w/Boston).
- Atlanta ranked eighth with 277,831 total students enrolled and seventh for total undergrad enrollment with 228,155 students

Industry Comparison

Payment processing currently equals the entire U.S. movie industry (worldwide annual sales) and is dominated by Atlanta, just as Los Angeles dominates films.

- 85+ billion of 135 billion global payments were processed in Georgia (2012)
- More than 15 million global card-enabled merchants rely upon Georgia companies
- The industry employees 40,000 people in Georgia and 105,000 people globally

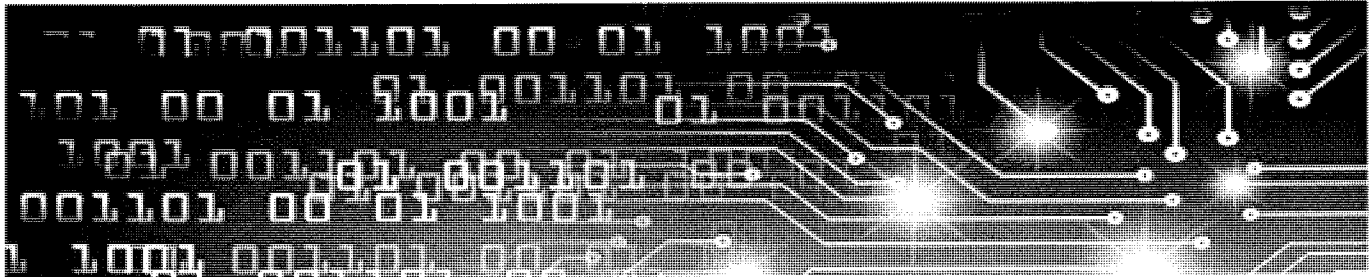
Compared to other industries in the state:

- Transaction Processors: annual revenue exceeds \$30 billion
- Film industry: \$3.1 billion, a 29 percent increase
- Life Sciences Industry: \$17 billion with more than 65,000 employees



© 2015 by ATPC

EXHIBIT 14



One of Georgia's most important and fastest growing industries is financial technology, or FinTech. More than 70% of all credit card swipes, debit card payments, and gift card purchases go through Georgia-based companies, earning our region the nickname Transaction Alley.

The industry is so important to the region that the Metro Atlanta Chamber (MAC), American Transaction Processors Coalition (ATPC), and the Technology Association of Georgia (TAG) were commissioned to launch a FinTech Task Force to not only support the existing ecosystem, but also to attract and grow new jobs and investment, ensure a skilled workforce is ready for decades to come, and promote continued innovation that will help shape the future of the industry.

WHY ATLANTA

- International access from the world's most traveled airport – Hartsfield-Jackson Atlanta International Airport.
- Global representation with 81 consular & trade offices, 34 bi-national chambers of commerce.
- #3 city with the most FORTUNE 500 Headquarters.
- Technology powerhouse with approximately 14,000 technology establishments employing nearly 189,000 workers.
- Entrepreneurial hub for more than 1,000 tech startups.
- Georgia named #1 State for Doing Business by Area Development and #1 State for Business Climate by Site Selection Magazine.

FINTECH HUB

- Georgia FinTech companies generate annual revenues of more than \$72 billion, placing third in the nation.
- Georgia companies employ more than 10,000 network and computer system engineers.
- Roughly 100 FinTech companies are headquartered or have a significant presence in Georgia. Six of the ten largest U.S. payment processing firms are Georgia-based.
- Georgia FinTech organizations employ more than 30,000 professionals in the state and over 130,000 globally.
- Georgia FinTech companies process over 118 billion transactions per year representing over \$2 trillion of purchase volume each year, supporting nearly 4 million merchants.

Source: Technology Association of Georgia

FINTECH ECOSYSTEM: INTERCONNECTED PILLARS

STRENGTH IN HIGHER EDUCATION & INDUSTRY ASSOCIATIONS

- Metro Atlanta is home to 70 colleges and universities with more than 275,000 students enrolled.
- Georgia Tech's graduate program in Computer Engineering is ranked 6th nationally.
- Georgia Tech has top tier Quantitative & Computational Finance and Business Analytics programs.
- Kennesaw State University offers a PhD in Analytics & Data Science, four Master of Science Applied Statistics, and online certificates in Applied Statistics.
- Atlanta-based **American Transaction Processors Coalition (ATPC)** represents the more than 70 Georgia-based companies that develop the products and provide resources supporting the financial service industry's technology needs.
- The **Metro Atlanta Chamber**, **ATPC** and the **Technology Association of Georgia (TAG)** recently launched the Fintech Atlanta Task Force to help develop Atlanta as the recognized Global Center for Financial Technology. Its priorities are to recruit, retain and expand businesses and jobs across the state.
- As the largest statewide technology association of its kind with 30,000 members, TAG has numerous financial industry cluster societies including the **FinTech Society** and the **Information Security Society**.

STRENGTH IN FINTECH: "TRANSACTION ALLEY"

- **70 percent of all U.S. payments** are processed through Georgia
- Payment processing companies employ nearly 40,000 workers in metro Atlanta with more than 250,000 people working in finance-related occupations, according to the American Transaction Processors Coalition. There are an additional 105,000 people around the world on the payroll of these Georgia companies, giving to the nickname "Transaction Alley."
- Georgia has been a payments and banking hub for decades, and the state is home to some of largest financial technology firms in the world, including:

- | | | |
|-----------------------------------|-------------------|---------------|
| • Intercontinental Exchange (ICE) | • First Data | • Worldpay US |
| • Ingenico | • Global Payments | • InComm |
| • Sage Software | • Fiserv | • Equifax |
| • LexisNexis | • NCR | • Elavon |
| • Cardlytics | • TSYS | • Paymetric |
| | • FIS | • SunGard |

Many of these companies have experienced significant growth in the last several years, expanding operations and adding thousands of jobs.

COMPANIES MAKING A MARK IN FINTECH:



Kabbage has funded over 50,000 SMBs around the world to the tune of \$1 billion since 2011. Kabbage offers a fully automated, online lending platform designed to support continuous customer data monitoring.



FirstData's SourceConnect SM technology enables an NFC-enabled mobile device into a secure wallet. Smart phones can handle everything from credit to debit card-based mobile payments to loyalty programs and coupons.



Groundfloor is a peer-to-peer micro-lending platform for funding U.S. real estate deals, open to non-accredited investors, with short-term secured loans backed by real estate. GroundFloor recently raised \$5M in Series A funding and became the nation's first business to gain federal approval for multi-state crowdfunding, building on an innovative Georgia state law.



The largest Bitcoin payment processor in the world, serving more than 60,000 merchants on six continents.

GROWING THE NEXT FINTECH COMPANIES

- Georgia Tech's ATDC FinTech Accelerator program, sponsored by Worldpay, works with twenty of early stage FinTech companies to help them with connections to coaching, capital, customers, and campus resources and talent. – Source: ATDC
- TAG's FinTech Georgia Annual Conference in February attracts thought leaders from around the country each year,
- The Georgia Department of Economic Development launched a Center of Innovation for Information Technology as a key resource for helping Georgia's information technology companies grow and compete globally. The center provides business & technology development assistance and access to top-notch research at Georgia colleges and universities.



Grant Wainscott
Director of Technology
Industry Expansion
404.586.8462
gwainscott@macoc.com



David Hartnett
Senior Vice President
Economic Development
404.586.8443
dhartnett@macoc.com

EXHIBIT 15



LOG IN

JOIN MAC

- ABOUT US
- WHAT WE DO
- NEWSROOM
- LIFE IN ATLANTA
- MEMBERS
- CALENDAR
- CONTACT

Payment Processing

Economic Development

Atlanta is a top payment processing market.

Georgia is 3rd in the nation, just behind New York and California in FinTech revenue. Georgia FinTech companies have produced more than \$83 billion of shareholder value since 1995 and revenues are more than \$34 billion annually.

Relocating & Expanding your Business

Starting your Business

Wages in Atlanta's financial and IT industry are lower than competitive markets. Here, there is a convergence of three key sectors: finance, IT, and software, all of which have a strong presence in Atlanta, along with an abundant IT, software and financial labor force.

Growing Your Business

Bioscience & Health IT

Atlanta's Payment Processing Sector (Georgia Power 2011)

Supply Chain & Advanced Manufacturing

Metro Atlanta's payment processing employs nearly 40,000 workers

Global Commerce

More than 250,000 people work in finance-related occupations

Clean Tech

80,000+ work in IT-related occupations in metro Atlanta

Innovation & Entrepreneurship

Newly-located Fortune 500 headquarters such as First Data and NCR

Sports

Wages in Atlanta's financial and IT industry are lower than competitive markets.

Resources | Atlanta Data

Convergence of three key sectors: finance, IT, and software, all of which have a strong presence in Atlanta (Georgia Power 2011).

Mobility

Abundant IT, software and financial labor force and competitive wages compared to competitive markets (Georgia Power)

Technology

Georgia's FinTech Ecosystem (Georgia Power 2011)

Internet Security

Trade Payment

Payment Processing

Electronic Billing & Presentment

Software

Retail Banking Solutions

Resources

Capital Markets

Business in Atlanta

Identity/Analytics/Risk

Workforce Development

Prepaid/Loyalty & Points

Gateways/Alternative Payments

Card Processing/POS

Our Partners

Top ranked programs supporting FinTech:

Goizuetta Business School- Emory University

Georgia Tech College of Management

Why MAC As Your Partner

Terry College of Business- University of Georgia

Top Payment Processing Employers:

ADP, Inc.

Fiserv, Inc.

LexisNexis RIAG

Macy's Systems & Technology

RBS WorldPay

First Data Corp.

GE Money

Elavon

Global Payments, Inc.

S1 Corp.

TSYS | Total Systems Services, Inc.

Fidelity National information Svcs.

YOUR PAYMENT PROCESSING EXPERTS

David Hartnett

CHIEF ECONOMIC DEVELOPMENT OFFICER

Metro Atlanta Chamber 

[Privacy Policy](#) [Sitemap](#) [Resources](#)

235 Andrew Young International Blvd. NW • Atlanta, Georgia 30303 • (404) 880-9000

Copyright © 2016 Metro Atlanta Chamber. All Rights Reserved.

EXHIBIT 16



Login

Featured | February 2016

Georgia's FinTech Community Touts Growth, Influence



The thriving center of Georgia's FinTech activity, Atlanta's "Transaction Alley," as it's known in the payments industry, is no longer a well-kept secret. The Technology Association of Georgia's 2016 FinTech Symposium placed the peach state front and center recently with the release of primary research and an event packed with industry insiders, presentations and panels on topics including Acquiring, Innovation, Commercial Payments, Regulation, Mobile Payments and more.

Impressive Numbers

Those of us in the payments industry should take notice of the important role played by Georgia in the payments space since the state's global FinTech networks process nearly two-thirds of all payment card transactions, according to the recently released TAG FinTech Society's State of Georgia's FinTech Ecosystem 2016 report.

Other statistics cited include:

- 118 billion worldwide payment transactions pass through Georgia-based FinTech company computer systems
- 3.9 million merchants serviced by Georgia FinTech companies
- 36 billion payment transactions by Georgia-based companies

\$2 trillion worth of transactions represented by the 118 billion transactions through the Georgia FinTech marketplace

Consumer-Focused

Georgia payments professionals know that the same issues relevant to Wall Street and Main Street are key drivers for them as well. Balancing innovation with security, regulation, early-stage company development, disruption and disintermediation are common themes. But perhaps the most important topic on everyone's mind is still how to engage with the end-consumer and deliver a frictionless customer experience.

So whether you have plans to visit Atlanta in the future you're probably still connected with the Georgia FinTech community. Because odds are, almost all of us will – at least figuratively – venture down "Transaction Alley" sometime soon.

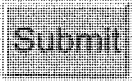
Interested in learning more?

- [State of Georgia's FinTech Ecosystem 2016 Report](#)

Want to Know More?

We stay up on all the latest trends. Let us point you in the right direction.

COMMENTS



Stay connected to the Payments News Hub

A one-stop resource for white papers, featured content and industry insights

Sign Up

Quick Links

- Home
- TSYS Worldwide
- Payments Hub
- Investor Relations
- News & Media
- Client Login

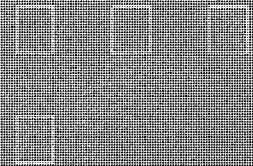
Solutions & Services

- Issuing Services
- Acquiring Services
- Prepaid Services
- Merchant Solutions

Corporate

- About Us
- Careers
- Contact Us
- Legal
- Privacy Policy
- TSYS E-Store

Connect





©2016 Total System Services, Inc. All rights reserved worldwide.

EXHIBIT 17

STATE OF GEORGIA'S FINTECH ECOSYSTEM 2016

DRIVEN BY INNOVATION, PROVEN BY PERFORMANCE



Executive Overview

In 2012 the Technology Association of Georgia's FinTech Society issued a white paper documenting the impact of Georgia's FinTech ecosystem on the state's economy and its leading role in global financial operations. The report's findings have been widely quoted, and succeeded in raising Georgia FinTech's stature on the national stage. For example, our research found that nearly two-thirds of payment card transactions pass through the global networks of Georgia FinTech organizations.

Our new report updates these popular industry metrics, but further endeavors to document the scope of Georgia's FinTech industry, its culture of innovation, its key strengths, and opportunities to extend its leadership position. We explore the imperatives of talent development, the availability of venture capital, and the role state and local governments can play in fostering a healthy ecosystem.

To achieve this ambitious goal we collaborated with Georgia Tech's Scheller College of Business, whose perspectives and resources were invaluable. In an opening article, Professor Sudheer Chava shares his thoughts on how technology is disrupting the traditional financial services industry, some of the angles being pursued by Georgia's innovative young FinTech firms and the future of FinTech in Georgia. Our methodology includes one-on-one executive interviews with two dozen industry leaders, quantitative analysis of publicly available data, and a detailed online survey of over 100 area FinTech professionals. Our findings confirm several existing beliefs about Georgia's strengths while identifying less recognized ways in which our sector distinguishes itself. Please note that our research is not intended as equity analysis- we appreciate the assistance of Wayne Johnson, Managing Director of Raymond James & Associates, whose extensive research of the payments industry already addresses this angle quite well.

Throughout these pages you will find quotes from our executive interviews, results from our primary research, and profiles of a sampling of key contributors to Georgia's thriving FinTech ecosystem. We hope you'll find it as thought provoking and enjoyable to read as it was for us to create.

Glen Sarvady is Founding Principal of payments strategy firm 154 Advisors and a TAG FinTech Society board member. Glen is a 20-year veteran of Atlanta FinTech, including leadership roles at CheckFree and McKinsey & Company.

Don Campbell is Managing Principal of RightCourse, a management consulting firm focused on the intersection of business and technology. He has held numerable senior executive roles at FinTech, software and managed hosting organizations.

The View from Georgia Tech: Finance *Is* Technology

Finance is the lifeblood that greases the economy. Financial intermediaries such as banks accept small deposits that can be withdrawn at any time and transform them into long-term, illiquid and risky assets such as mortgages, loans to consumers and firms. Financial intermediaries provide liquidity and efficient payment services to consumers and firms. They make use of credit scoring and underwriting technologies to differentiate between good credit and bad credit and to monitor the borrower's performance after a loan is made. Financial intermediation is always about developing efficient technology to reduce friction in order to help the economy grow. In fact, Finance is technology.

It is no wonder that cataclysmic changes occurring in the world of finance now are driven by digital innovation and regulation in the aftermath of the great recession. Digital innovation is disrupting traditional financial intermediation and is changing every function and service that financial intermediaries provide right from lending to payment services to wealth management. Technological changes driven by big data, better analytics and algorithms, and cheaper cloud processing are reducing the cost of offering these intermediation services and lowering the entry barriers. New competitors are trying to deconstruct and synthesize the expertise, knowledge and intuition of traditional financial intermediaries in order to recreate them as algorithmic competency driven by big data and smarter analytics. Another significant factor driving the change is the demographic trends that are shaped by Millennials and their willingness to adopt new technologies. This secular shift of the bargaining power to the consumers is leading to the socialization of finance and has given rise to network effects that are further accelerating financial disintermediation.

As documented later in the report, Georgia is at the forefront of these new innovations that are driving the transformation of the financial intermediation as we know it. Innovation in Georgia driven by FinTech disruptors is not just limited to the payment space that Georgia has known for a long time. Innovation and disruption led by firms in Georgia spans every part of the financial intermediation sector. For example, Groundfloor is driving innovation in crowdfunding real estate and opening real estate investing to even small non-accredited investors. Kabbage is a leader in emerging small business finance where borrowers can apply and receive a credit decision in as little as seven minutes. Prime Revenue is a leader in supplier finance optimizing the financial supply chain for thousands of companies across the world. Local company BitPay is an innovator in payment processing and facilitates bitcoin payments for over 60,000 businesses worldwide. It is not only startups and small companies that are driving innovation in Georgia; large, established companies headquartered in Georgia are innovating just as quickly. For example, Equifax recently put in place a new Hadoop based data analytics environment called Cambrian to source and integrate structured and unstructured data, and to proactively deliver actionable insights in minutes whereas the previous process took weeks to deliver.



SUDHEER CHAVA

Professor of Finance

*Director, Quantitative and
Computational Finance (QCF)
Program*

*Scheller College of Business
Georgia Tech*



One challenge that all companies face is making better use of data. Data often sits in silos, and data scientists capable of analyzing the data may not have the domain knowledge or communicate in the same language as the business leaders making the decisions. Data, whether structured or unstructured, small or big, inside or outside the company, can be very valuable both for competitive reasons and decision making. Often one company's unloved data may be a goldmine when combined with other data. Most FinTech startups, and even large mature companies, have not yet scratched the surface in monetizing data and are a long way from realizing its full potential and value.

In spite of the many successful Georgia FinTech companies, one big challenge and shortcoming in Georgia as compared to Silicon Valley or New York is the limited venture ecosystem. The venture ecosystem includes not only angel funding for startups but also sufficient venture capital and extensive mentoring that can help scale up the startups. Similarly, private equity that can help scale up or exit the business needs to be deepened and improved. Smart regulation and civic partnership between industry and government has benefited the business environment in Georgia and can be a bigger catalyst going forward. Also, regulation in the aftermath of the great recession has helped FinTech disruptors so far. More regulation and scrutiny is coming to FinTech, and companies that proactively embrace these heightened expectations from regulators will be the success stories of the future.

Overall, the future looks bright for Georgia's FinTech ecosystem. Talent is key to any business and Georgia is blessed with many experienced people across the finance value chain. In addition, Georgia is home to many top notch educational institutions providing a constant supply of bright and motivated workers. As part of Georgia Tech, a world-renowned technical research university, Scheller College of Business is at the intersection of business and technology. Tech is a driving force for business and Scheller aims to educate the next generation of business leaders with a strong foundation of quantitative and technical skills and a solid, practical understanding of finance theory to lead innovation in FinTech. Close industry-academia partnerships through experiential learning and other collaborations further help in educating tomorrow's leaders. The low cost of living, a convenient airport, southern hospitality and overall great quality of life, continue to attract smart people. Georgia is perfectly positioned to define and benefit from FinTech's bright future.

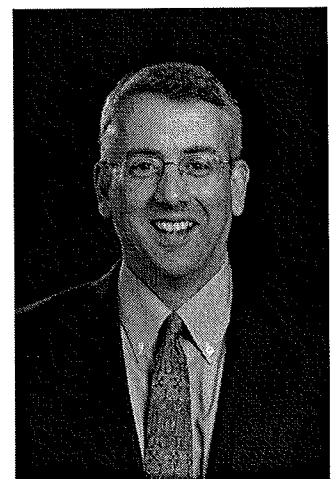
FinTech: The View From The Investment Community

The Transaction Processing industry is thriving in Georgia. This state is host to approximately 100 highly specialized, mission critical firms, collectively known as FinTech providers, which sell service and software to financial institutions worldwide. These Georgia based FinTech companies enable or touch 70% of all payment card transactions in the continental United States. The FinTech subsector of The Transaction Processing industry is the cornerstone of the modern economy; moving and tracking trillions of dollars electronically, on demand, around the world, billions of time a year.

Investors have noticed these outsourced service companies operate leverageable business models that expand profitability from processing incremental transaction volume over a fixed-cost infrastructure. The financial metrics of The FinTech vertical are attractive, with companies often generating 80% or higher recurring revenue, strong free cash flow, low capital expenditures, top-line growth of 6-8%, and EPS growth of 10-15% on 20% operating margins. Many transaction processing companies manage a cash heavy and debt-light balance sheet.

For example: One of the biggest developments within the transaction processing industry occurred after the third quarter ended, with Atlanta based Global Payments' announcement of its intended acquisition of Heartland Payments. While consolidation within the transaction processing industry is not uncommon, Global's December 15 announcement of its intention to acquire Heartland for \$100 per share in a cash and stock deal worth approximately \$4.3 billion (enterprise value) would combine two top-10 domestic merchant acquirers. The transaction significantly expands Global Payments' U.S. direct small and medium-sized enterprise (SME) distribution and merchant base, given the very limited overlap in vertical coverage between the two companies and Heartland's expertise in the direct sales model. We note that the \$100 per share deal price represents 30x current consensus 2016 EPS for Heartland, which is at the upper end of the transaction processing M&A envelope of 25-30x, and since only 65% of Heartland's business is merchant acquiring, we strongly suspect that other bidders were involved. The deal is currently anticipated to close in GPN's F4Q15 (quarter ending May 31, 2016) and, like many M&A transactions, two to three years may be required for the economic benefits to truly start to flow through the financial statements.

One of the longer-term tailwinds of the transaction processing sector, and the merchant acquiring business in particular, is the conversion of cash/check based payment forms to electronic form factors at the point-of-sale (POS). Market share gains by electronic form factors at the expense of traditional mediums still represent a meaningful growth opportunity for payment card service providers in the U.S. and overseas. If the remaining cash and check transaction volume at the retail point of sale in the U.S. is converted to a credit card payment, we project a 50% increase, or \$6-7 billion incremental greenfield service revenue opportunity. In the U.S. last year, we estimate there were approximately 50 billion cash and 13 billion check



WAYNE JOHNSON
Raymond James



transactions representing \$1.50 trillion and \$1.16 trillion of consumer payments value, respectively. We size the worldwide payment card processing service revenue market opportunity at \$39 billion, growing at a 12% CAGR to \$69 billion by 2018. Domestically, we believe the payment card processing service revenue market opportunity is \$11 billion, which could expand at a 7% CAGR to \$15 billion by the same year. Traditional merchant acquirers, payment card networks, and the expanding list of new alternative service providers such as Apple, Amazon, PayPal, and bitcoin could be important sources for influencing the global transition to electronic payments, in our opinion.

Furthermore, payment card processors enjoy a large and growing worldwide e-commerce market opportunity. Industry sources indicate global e-commerce sales were over \$1.3 trillion in 2014 (of which the U.S. accounted for approximately one-quarter), with the potential to grow at a 19% CAGR to \$2.2 trillion by 2017. Assuming payment card processors generate a ~2% service fee for every \$100 of e-commerce sales, the worldwide e-commerce payment service revenue opportunity could exceed \$44 billion by 2016. We believe one of the biggest future drivers of e-commerce growth will be the global adoption of Internet enabled smartphones, particularly in large populous regions that lack modern payments infrastructure. Visa estimates approximately \$11 trillion of global (ex-Western Europe) personal consumption expenditure (PCE) remains paper-based, with more than half generated in developing markets (~\$6 trillion, or 62% of those regions' PCE). Gartner estimates that worldwide mobile payment transaction volume will reach \$721 billion by 2017, compared to \$163.1 billion in 2012, representing an average annual growth rate of 35%. In addition, Gartner projects total mobile payment users to more than double during this same period, rising from 200.8 million in 2012 to over 450 million users in 2017.

Note: Gartner's definition of mobile payments includes in-store near field communication (NFC) transactions, P2P money transfers, as well as merchandise purchases and bill payments made on mobile devices.

State of Georgia's FinTech Ecosystem 2016

Driven by Innovation, Proven by Performance

Georgia's financial technology industry is ready for its close-up. For years, the sector's leading companies were content to play a behind the scenes role creating and running the critical infrastructure that enables much of the world's financial services, particularly payments. Since the financial crisis, however, several of these companies have recognized the value of taking more visible positions in advocacy on topics such as legislation and data security, engaging in public/private partnerships, etc.

The Georgia FinTech sector encompasses about 100 companies ranging from Fortune 500 bellwethers to early stage start ups. There are firms whose time in the state dates to the 1800s (Equifax), several that moved to Georgia at varying stages of their evolution (NCR, CheckFree, Groundfloor), one that left Georgia only to return (First Data), and one that recently undertook a national search for a headquarters location before determining it already had the ideal locale (Worldpay).

It's worth noting that FinTech is a malleable term that lends itself to an array of definitions. Broadly stated, the sector reflects the intersection of financial services and enabling technologies. Banks are among the primary customers of FinTech firms, and most employ their own FinTech staffs. For the purposes of this analysis we have generally excluded financial institutions from our figures (e.g. headcount, real estate occupancy); however we have incorporated the essential insights of executives from SunTrust and Georgia Credit Union Affiliates.

GEORGIA FINTECH BY THE NUMBERS

Card processing firms- in what is increasingly known as Atlanta's "Transaction Alley"- remain the most visible hub of Georgia's FinTech activity. Well over half of the \$5.3 trillion in annual US card spending runs across the rails of Georgia-based firms, with three of the top five and six of the top ten of these processors headquartered in Metro Atlanta. These are firms like First Data, Global Payments, TSYS,

Georgia-based FinTech Statistics

Georgia FinTech companies	90+ ²
Worldwide payment transaction that pass through the computer systems of Georgia based FinTech companies (estimated)	118 Bil. ¹
Payment transactions by Georgia-based companies	36 Bil. ²
Value of U.S. purchase volume by Georgia FinTech companies	\$2 Tril. ¹
Merchants serviced by Georgia FinTech companies	3.9 Mil. ²
Number of Georgia-based employees working in the FinTech sector (2014) (estimated)	30,000+ ²
Revenue of top 50 Georgia-based FinTech companies (2014) <small>Includes revenues of public companies and estimates on some private companies. Also includes revenues of some out-of-state organizations that have a large presence in Georgia (estimated)</small>	\$72 Bil. ²

1. Nilson Report (2014) 2. TAG FinTech Society in coordination with Georgia Tech and Raymond James;
Copyright: Technology Association of Georgia, Georgia Institute of Technology and Raymond James, 2016

Worldpay and Elavon that issue debit/credit cards on behalf of banks, service the merchants that accept card payments, and route the transactions to and from payment networks like Visa and MasterCard. Two large and fast-growing Georgia companies compete in the closely related payment card space. InComm focuses on branded gift and prepaid cards marketed directly to consumers at outlets such as convenience stores; FleetCor specializes in customized card solutions for the fleet truck market.

The card processing business is characterized by small unit prices spread across a very large number of transactions. This adds up to big money- merchants paid \$71.4 billion in card processing fees in 2014, according to the Nilson Report.

Our analysis of the top 50 Georgia-based FinTech companies shows average annual growth between 2012 and 2014 in revenue, EBITDA and headcount of 14%, 21% and 19%, respectively. Clearly this growth is fueled in part by acquisition; nonetheless, it is indicative of a thriving market.

More than 30,000 Georgians are employed in the FinTech sector. Real estate firm Savills Studley calculates that FinTech firms occupy nearly 8 million square feet of office space in the state, representing roughly 8 percent of the total market. And according to a lengthy NPR feature aired in September, over \$500 million was invested in Atlanta tech companies in 2014.

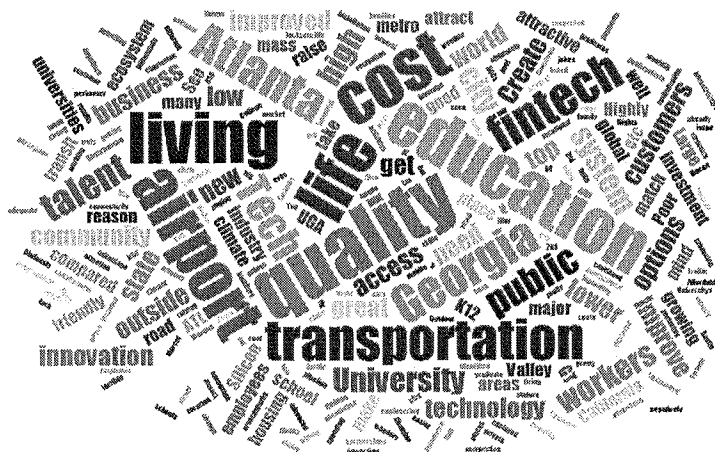
For a less conventional measure of Georgia's outsized role in the FinTech space consider conference attendance. In the four years since its launch Money 20/20 has quickly established itself as the preeminent payments industry event, drawing over 10,000 professionals to Las Vegas this past fall. Georgia trails only California and New York in attendees- and given those states' far larger populations to draw from, Georgia's presence is clearly disproportionate.

MARKET ATTRIBUTES OF A SUCCESSFUL ECOSYSTEM

The roots of Georgia's critical mass in payments can be traced to 1987 state legislation that lifted caps on credit card interest rates and annual fees of 18% and \$12, respectively. Georgia bankers argued that allowing market forces to prevail would spur job creation- and the results in this case certainly bear them out. Although other states eventually followed suit and market forces have since rendered annual fee limits largely irrelevant, our state's head start generated momentum from which Georgia benefits to this day.

Sure enough, our comprehensive online survey of over 100 area professionals conducted by TAG FinTech and the Scheller College of Business revealed proximity to a critical mass of FinTech companies and talent to be a key Georgia differentiator. The only factor that rated higher is another benefit from civic infrastructure decisions- Hartsfield Jackson International Airport. Convenient access to customers and

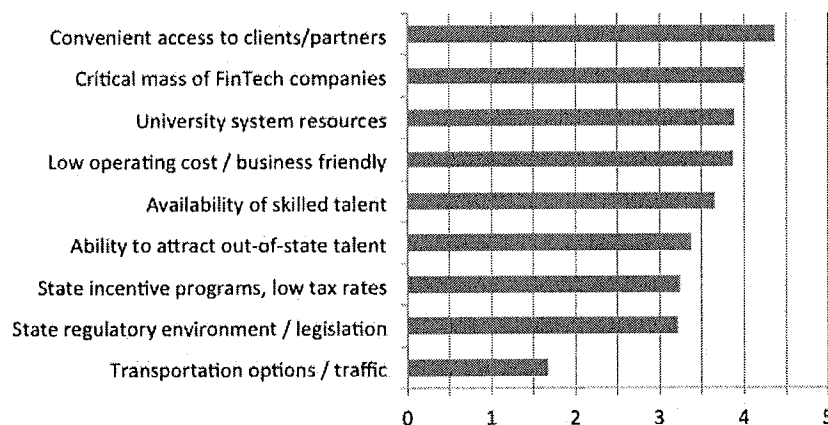
WHAT DO FINTECH PROFESSIONALS VALUE ABOUT GEORGIA'S ECOSYSTEM?



business partners is the #1 attribute of a successful business environment, according to our survey. Atlanta punches this ticket, on both a local and global level.

Another of Georgia's greatest strengths is its diverse business base- a feature that paradoxically can at times cause the state to be overlooked. As a serial entrepreneur we interviewed observed, "Think about other cities around the country and how their economies tend to be dominated by a single industry. Our situation is not as common as you'd think- the big benefit is that it sets up a diverse risk profile." A CEO who relocated his early-stage company here commented, "Atlanta is the epicenter of what we do, at the intersection of real estate, financial services and financial technology." Such cross-pollination can best be achieved in a diverse business climate. Another executive observed that "Atlanta offers a more real world climate, where the rubber meets the road," reinforcing that notion. Yet another added, "no one company is going to solve every use case," so collaboration is key. Given such dynamics, Georgia is perfectly positioned.

Factors Enhancing Georgia's Business Value as the Epicenter for FinTech Companies



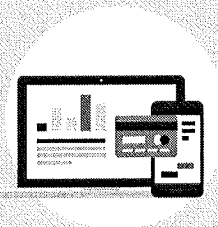
Note: Respondents were asked to rank each factor from 1 (least) to 5 (most important)
Source: TAG FinTech/Scheller College of Business, 2015, survey of industry professionals

EMERGING TRENDS IN PRODUCT INVESTMENT

Georgia FinTech professionals see the balance of power shifting across the ecosystem. "Disruption" and "disintermediation" are buzzwords often heard in the space, and our survey results bear the marks of their impact. Financial institutions and card processors are viewed as wielding diminishing power, with consumers and disruptive startups gaining influence. Shifts in customer loyalty are considered the driving factor behind FinTech's evolution over the near and medium term. This can have confounding effects, as most consumers spend little if any time thinking about enabling technologies- they simply expect their transactions to work seamlessly and invisibly, regardless of channel. It's a bit like the old "dial tone" reliability paradigm- although interestingly consumers eventually proved willing to trade some of that reliability for the convenience of mobility. For this reason one senior bank executive posed an interesting corollary: "It's whoever holds the customer's ear that holds the power."

Not surprisingly then, delivering an enhanced service experience- whether as an offensive or defensive maneuver- is the focal point of most planned product initiatives. Data security and data analytics projects also top the list- these can be seen as targeting the same goal, as analytics should enable better consumer experience, while a security breach is the fastest path to losing customer loyalty.

“Atlanta is the epicenter of what we do, at the intersection of real estate, financial services and financial technology.”



GEORGIA FINTECH INNOVATION: KABBAGE

Kabbage has funded over 50,000 SMBs around the world to the tune of \$1 billion since 2011. Kabbage offers a fully automated, online lending platform designed to support continuous customer data monitoring. The average time to complete application and get access to funds is 7 minutes. 95% of customers have had a 100% automated lending experience. Some of Kabbage's tools include:

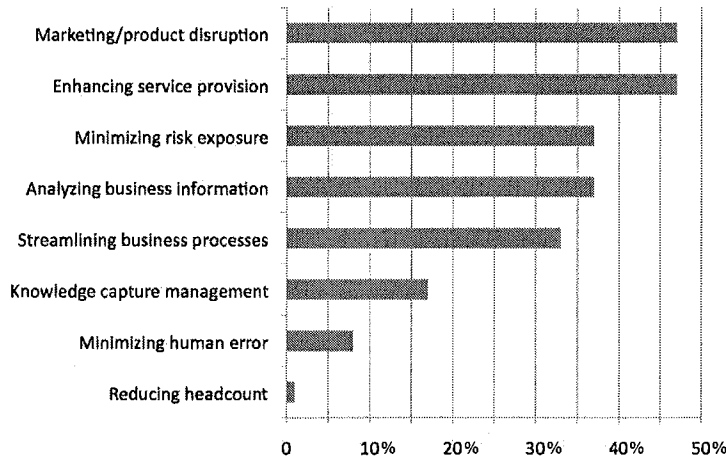
Social Klimbing – technology generates a Kabbage score for customers, used like a social media credit score.

Predictive Payments reduces delinquency risk while promoting a better collections experience for customers.

Karrot™ – data and technology platform that provides personal, consumer loans up to \$35,000 through real time income verification.

Kabbage Card – SMBs can access their funds at the point of sale using a purchasing card tied to their Kabbage account, giving Kabbage customers unmatched accessibility.

Key Drivers of Technology Investment through 2018



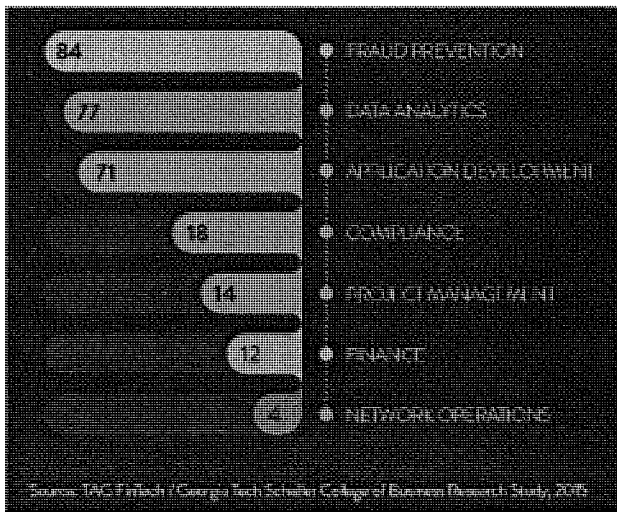
Note: Respondents were asked to identify their top three motivators
 Source: TAG FinTech/Scheller College of Business 2015 survey of industry professionals

Equally interesting is what doesn't make the list- virtually no one prioritized workforce reduction initiatives. The FinTech industry is clearly in growth mode. Our executive interviews yielded some interesting verbatims that shed further light on product direction. "Speed is everything in the financial chain right now. Those people who deliver speed with trust will win." Separately, however, came the caution, "Just because you're a disruptor doesn't mean you're going to make money or be sustainable."

DEVELOPING TALENT- AND THE ABILITY TO ATTRACT AND RETAIN IT

As noted above, the existing talent pool is viewed as a key strength of Georgia's existing FinTech ecosystem. Nonetheless opportunities exist to better educate the next generation as well as to address shifting demands for expertise in the marketplace. Several of our executive interviewees lauded Georgia's strong secondary education backbone- not just at Georgia Tech, but many noted impressive strides made at Kennesaw State, Georgia State, and even the complementary design skills of SCAD graduates.

FinTech job functions on which Georgia universities should place greatest emphasis



"Speed is everything in the financial chain right now. Those people who deliver speed with trust will win."

Executives identified talent gaps in data analytics and data security- perhaps not coincidentally overlapping with areas of emphasis for new initiatives. However, the consensus holds that these are national shortages and are not unique to Georgia. In fact, they offer an opportunity for Georgia's university system to further separate itself from the pack- not necessarily through full majors/degrees, but certificate programs and the introduction of new courses. "College curriculums need to be able to shift quickly enough to meet changing market demands, not 2-3 year lead times."

On a related note, a 2014 TAG FinTech report on Big Data found that FinTech business models will evolve as organizations improve their ability to monetize data. If Georgia universities can establish themselves as the go-to source for data analytics talent (Georgia Tech's Quantitative and Computational Finance program is an excellent start in this direction), the meshing with the state's data-rich transaction processing companies makes for a powerful combination.

One entrepreneur suggested that universities set up a mechanism for start-ups to share interns. "Small businesses often don't have enough work to keep one busy for the required time. This approach could relieve the administrative burden on a single company, and fuel the next generation of entrepreneurs." In a similar vein, an Innovation Leader at a large company said, "All companies should be using coop students because they have such a fresh way of thinking... Hiring people right out of college with no clue is good because they don't see the typical constraints."

We also heard a recurring theme that innate skills should take precedence over domain expertise in most recruiting scenarios. "Most people we hire don't know trading- we can teach them the business," said an executive who had no prior experience in his firm's core business when he joined. One pointed to a software company taking the interesting approach of hiring plumbers for their problem-solving skills- "they can teach them to code."

Executives see a critical role for the university system in tailoring degree programs to meet talent needs as well as in providing startup support. An opportunity exists to create greater awareness of the resources already made available by these institutions. Smaller companies in the greatest need of assistance are also looking for a more rapid-response model. However, one entrepreneur highlighted a need to "make it easier to work with professors, reducing the administrative burden of finding the right people, arranging the engagement, compressing cycle times, etc."

Although some mentioned the need to keep our homegrown talent local, at least one executive isn't overly concerned about training graduates who head elsewhere. "It's not necessarily a bad thing to go out and experience New York, San Francisco or London- we still build our reputation (as a source of talent), and these same folks may come back later" for factors such as a favorable cost of living.

VENTURE CAPITAL- A HEALTHY DEBATE

One topic that continues to generate a healthy divergence of opinion is access to startup capital. While some entrepreneurs lament the shortage of Atlanta-based, FinTech-focused venture capital firms (TTV Capital being a notable exception), others point out that "money will always find good projects" and "it's not like the out-of-town VCs don't know Atlanta exists- they're in my office all the time to talk about ideas."

.....
"It's not like the out-of-town VCs don't know Atlanta exists- they're in my office all the time to talk about ideas."
.....

GEORGIA FINTECH INNOVATION: SUNTRUST LIGHTSTREAM

LightStream, a division of SunTrust Bank acquired in 2012, offers a unique lending solution allowing customers with strong credit to borrow funds for purchases that had previously required collateral, or that fell into categories where few loan options existed. With fixed competitive rates and flexible terms, a LightStream loan for \$5,000 to \$100,000 can be delivered directly to a borrower's bank account, often as soon as the same day- supported by a fully online application and approval process. A LightStream loan can be used for a wide range of uses including car loans, refinance loans, home improvement, timeshare financing, boat loans, jewelry financing, adoption financing, horse loans, and more.

GEORGIA FINTECH INNOVATION: FIRST DATA SOURCE CONNECT

First Data SourceConnectSM enables an NFC-enabled mobile device into a secure wallet. Tech savvy consumers are looking to maximize the capabilities of their advanced mobile device to make everyday tasks, including payments, more convenient. Smart phones can handle everything from credit and debit card-based mobile payments to loyalty programs and coupons. Features include:

- "Wave and go" mobile credit card processing
- Solutions that seamlessly integrate mobile wallet applications with an extensive suite of marketing and loyalty solutions
- First Data PayEdge[®] Solution that offers merchants a cloud-based mobile payment solution which is ACH-based and facilitates secure, low-cost payments for merchants
- Loyalty card information stored on customers' phones that helps you build new, targeted, and effective loyalty initiatives
- Direct promotions sent to consumers on the same mobile device they use to activate accounts and make payment method decisions

Another key consideration is the need for startups to collaborate with the state's FinTech infrastructure providers to commercialize new ideas. Given payment complexity, "if you don't engage with Georgia you're going to hit a wall on the last mile of execution," said one industry veteran. "There's a 'threshold of reality'; you need to deal with the infrastructure, so disruptors must break through in collaboration with established players."

In addition to venture capital, one veteran of multiple startups noted, "Georgia doesn't have any banks that are technology industry oriented. They're all real estate oriented- that's a huge disadvantage. Atlanta needs decision makers

.....
"If you don't engage with Georgia you're going to hit a wall on the last mile of execution."
.....

Incubators: A Valuable Tool for Early Stage Success

Nationally, 90% of technology startups fail. Access to mentors and key infrastructure resources at critical junctures can greatly improve the probability of success. Georgia is home to one of the earliest public/private responses to this challenge, with newer entrants now adding to the community.

The Advanced Technology Development Center (ATDC) is a startup incubator at Georgia Tech that helps Georgia-based technology entrepreneurs launch and build successful companies. The ATDC opened its doors in 1981 and works with more than 325 companies per year. ATDC increases an entrepreneur's likelihood of success by orchestrating connections to coaching, capital, customers, and campus resources and talent. More than 90% of the ATDC's Signature graduates are successful five years after completing the program. ATDC now credits more than 170 new ventures.

ATDC companies have:

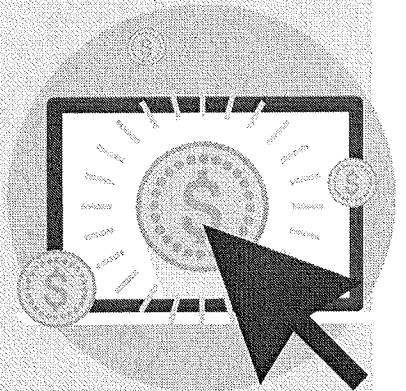
- Attracted \$2.5 billion in investment.
- Generated over \$1.3 billion in revenue.
- Created more than 5,500 jobs.

In 2015 Worldpay U.S., a leader in global payments processing technology, provided a \$1 million gift to Georgia Tech to fund a FinTech accelerator program at ATDC. As part of its Premier Sponsor role, Worldpay further committed to contribute the time and expertise of its senior management. This combined with recent office moves by Worldpay and NCR to Atlanta's Midtown corridor near Georgia Tech will reinforce the power of proximity among FinTech's leading thinkers.

Recent success stories among ATDC Companies include:

- **First Performance Global:** mobile application aimed at the prevention and reduction of card-related fraud. Its mission is "to empower a financial institution's customers with a simple self-service tool providing," the ability to control how and where credit and debit cards are used, regardless of payment channel.
- **Verifacto:** a technology company focused on improving the ways auto lenders and borrowers connect to information. Verifacto organizes and delivers information obtained from lenders, borrowers and insurers, making it accessible and useful to our clients and their customers.

In 2013, Atlanta Tech Village opened a 103,000 square foot facility as a "community of innovation" for technology and technology-related companies "that have a unique set of needs in their quest to change the world." While designed as a private sector enterprise, Tech Village espouses the same vision as the ATDC that good things happen when innovators operate in close quarters and share ideas and inspiration. They are joined by area catalysts such as Flashpoint, Switchyards, Strongbox West, Opportunity Hub and the newly opened Alpharetta Technology Commission's Innovation Center- each offering co-located space and varying degrees of networking, programming and partner events.



inside local banks who understand technology well enough to be confident in the new business models proposed by local entrepreneurs.“

Another interesting perspective, which does not reflect a consensus: “It’s never been easier to start a business in Atlanta, but it’s as hard as ever to scale one. Scaling requires a totally different infrastructure. Atlanta’s weakness is not at the start-up level or at the top- it’s in the middle.”

A more representative line of reasoning is that “Venture capital is easier to get in Silicon Valley, but raising venture capital isn’t a business – it’s just an enabler. Studies have proven that raising VC doesn’t make a better business.” Or put even more succinctly, “Maybe we don’t need to be the Disneyland of funding.”

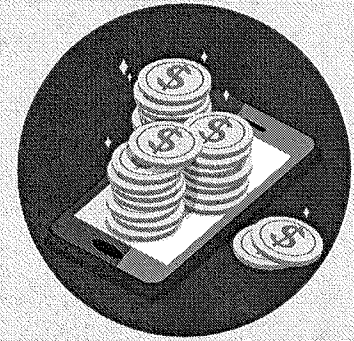
Government’s Role

In addition to maintaining a solid educational system, state and local government play a key role in advancing FinTech through its legislative agenda. After all, as noted earlier the foundation for Georgia’s early momentum in FinTech can be traced to a 1987 law that lifted caps on credit card interest rates. Georgia Secretary of State Brian Kemp received kudos from several interviewees for his forward thinking approach. Groundfloor relocated from North Carolina early in its corporate life because Georgia was among the few states where it could pursue its envisioned business model. As CEO Brian Dally explains, “He (Kemp) is a real visionary in this area. He put together a set of regulations promulgating an exemption from state Blue Sky securities laws...this was about liberalizing capital markets to drive economic growth. Now, a small business can sell shares to friends, family, customers,” without as much “lawyering” involved. When implemented with appropriate investor protections, these are the types of initiatives that could spur the same kind of growth as Georgia’s 1987 card innovation.

The increasing regulatory burden facing the financial services industry since the Great Recession is a well-documented and continued source of frustration for firms at all stages of the ecosystem. “Regulations used to restrict what banks could do, but they could still choose how to do it. The new era of regulations do just the opposite,” laments an industry veteran. The need to build awareness for the impact of such laws served as one of the catalysts for Georgia’s largest FinTech companies choosing to adopt a more visible profile. The American Transaction Processing Coalition, based in Atlanta, was created to promote FinTech companies’ interests in the legislative arena.

During our executive interviews we heard a couple of “outside the box” ideas that deserve further exploration:

- Design a state tax incentive program based on the percentage of local procurement conducted by companies- if designed correctly, this could deliver a significant cascading benefit to state economic activity on a “pay for performance” basis that is arguably more equitable than lump-sum grants.
- Treat programming as a foreign language- If we are serious about coding being an essential skill for the next generation of Georgians, why not place it on a par with Spanish, Chinese, and other building blocks of communication essential to compete on a global stage?



TSYS 2015 U.S. CONSUMER PAYMENT CHOICE STUDY

TSYS’ fifth annual online survey of more than 1,000 U.S. consumers added findings on mobile app usage to its research. The study found that mobile applications provided by financial institutions are highly adopted and frequently used. Fifty percent of survey respondents said that they have installed a mobile app from their bank. Of those respondents, with 70% reporting that they use the app a few times a month or more.

The study also uncovered drivers of consumer behavior and information preferences for payment and communication methods. Other key findings included:

- Although debit continues to be the most preferred payment type among U.S. consumers, it has declined during the last two years. Forty-one percent of consumers prefer debit cards, down from 43% in 2014 and 49% in 2013. Credit card preference held steady at 35%.
- Loyalty and rewards are important in driving consumer behavior and affecting payment preference. 55% of respondents chose rewards as the most attractive feature of their preferred credit card.
- When interacting with their financial services provider, email is the most preferred channel of communication among consumers. 46% reported preferring email communication from their bank regarding purchase transactions.
- When asked about the frequency of getting marketing and special offers, 43% of respondents reported that they would prefer to receive these communications once a month.

Georgia's Transaction Alley is Prospering, But Challenges Loom: *Public/Private Collaboration Key to Success*

Georgia's Financial Technology ("FinTech") industry, headquartered in Atlanta's "Transaction Alley" is experiencing an explosion in popularity and economic growth. The industry is poised for continued expansion as payment processing is increasingly global and digitized. Several factors loom that threaten FinTech's future and Transaction Alley's dominance of the industry, requiring vigilance, collaboration and support from numerous quarters. Yet steps are being taken to ensure that our dominance continues.

Recent Transaction Alley company investments and expansion efforts have caught the eye of investors, media and elected officials. Companies like InComm and Worldpay demonstrated their commitment to the state with recent announcements as part of the #ReUpGA campaign (an ATPC-led economic development initiative). InComm announced 270 new jobs and a \$20 million infrastructure investment in December 2015. And Worldpay committed to hire more than 600 employees and invest \$10 million in facilities and equipment during summer 2015, as part of their headquarter relocation to Atlantic Station, and the City of Atlanta. They also donated \$1 million, and senior leadership time to launch (and fund for three years) the Advanced Technology Development Center's FinTech Accelerator. This new program will grow companies leveraging FinTech technology; bringing increased innovation, visibility and outside investment.

These are but a few of Transaction Alley company actions taken to grow the FinTech industry that employs more than 40,000 Georgians in order to process 70-plus percent of every American credit, debit and gift card swipe. These companies might be invisible to most people, but we all rely on their technology to buy groceries, gas, and pay for necessities like health care, electricity and company payrolls. Yet FinTech companies are grappling with three primary threats that could stifle the industry – and negatively impact consumers' daily lives. First, more than 19 federal agencies regulate the FinTech industry, creating a complex, often-contradictory and onerous regulatory environment. For instance, the Consumer Financial Protection Bureau recently drafted a proposed rule on the use of prepaid cards, and provided the industry less than 90 days to review its nearly 1,000 pages, and provide meaningful feedback.

Second, Transaction Alley faces competition from other smaller but significant FinTech clusters across the U.S. And other countries are investing to grow their own FinTech and payments industries to get a share of the global processing market which is growing by seven to nine percent annually, with an estimated value of \$70-plus billion. Finally, numerous other factors have the potential to negatively impact the FinTech industry, with many falling into a "resources" category. FinTech relies upon innovation and talent to create the coding embedded in hardware and apps that meet the demands of consumers who are increasingly the point of sale due to smart phones, tablets and all manner of digital payments. Georgia technology companies currently face a talent gap, with financial technology job postings increasing by 49 percent from 2007 to 2013, according to the Atlanta Regional Commission. The Technology Association of Georgia (TAG) reports that venture capitalists invested \$495.9 million in Georgia last year, "which was the most venture investment in the state in more than a decade." Yet this growth did not match national rates, with our state's total haul to one percent.

These challenges have no silver bullet solution. But collaboration, investment and planning give us a great chance at continued success. The Metro Atlanta Chamber, ATPC and TAG recently joined forces to launch the FinTech Task Force, which is a critical step in aligning around needs, and coordinating promotional and lobbying efforts. In general, we also need the state to continue recent workforce and infrastructure tax credits and incentives. We applaud the state for their new focus on examining and exploring such incentives on the Fintech front. But we must also look to fresh ideas and partnerships to attract entrepreneurs and investment capitol to the state.

The industry has done a lot recently to elevate its relevance, and elected officials and other regional influencers are noticing. But failure to build upon and solidify their support could lead to a catastrophic shrinking of the industry as we fail to keep pace with other regions and countries around the world, or are regulated out of business.

By H. West Richards
Executive Director of the
American Transaction
Processors Coalition

The American Transaction Processors Coalition represents the more than 90 Georgia-based companies that develop the products and provide resources supporting the financial service industry's technology needs through proactive public relations and government affairs activities.

What barriers to innovation do Georgia FinTech professionals encounter?



Source: TAG FinTech/Scheller College of Business, 2015, survey of industry professionals

THE NATURE OF INNOVATION

The subject of innovation is multi-faceted and critical enough to warrant its own paper. Although space constraints permit only a high-level overview here, it is clearly a top-of-mind topic for Georgia FinTech executives. We're seeing this play out in the formation of "innovation clusters" as evidenced by the moves of Worldpay and NCR to Midtown Atlanta. As one executive opined, "When there's distance you tend to treat others as competitors. When you are close, it forces you to understand them and find opportunities."

Georgia's culture of innovation is at times overlooked because the FinTech ecosystem was largely founded on a base of established firms. While Georgia may not (yet) be home to household apps like Uber, several of the platforms powering next generation apps are very much present here. "It's the innovations consumers can see that get the press, but making things run faster behind the scenes is an essential innovation too," an executive pointed out- this an area where Georgia excels given its Transaction Alley role. By definition, a successful payment experience is seamless and virtually invisible- which doesn't generate the same whiz-bang effect. Still, this shortchanges the market-redefining innovations of Georgia startups like Cardlytics, Kabbage, Groundfloor, GreenSky, BitPay and Acculynk.

Several executives noted that Georgia needs to do a better job celebrating its spinoffs- as Dell and Hewlett Packard have done over time- since such ongoing regeneration is the lifeblood of a thriving ecosystem. According to Kabbage founder and CEO Rob Frohwein, one of his goals is to spin off at least five employees who go on to form their own VC firms or successful startups- a spirit he likens to Internet Security Systems, a late 90s Georgia FinTech success story.

GEORGIA FINTECH INNOVATION: CAN CAPITAL

Since 1998, CAN Capital has helped small and medium-sized businesses improve cash flow by providing business loans, TrakLoan and Merchant Cash Advance. The company's cutting-edge technology, quick application and approval processes, and customer-focused delivery have kept the company at the forefront of the small business funding industry.

TrakLoan is a "cash-flow friendly" way to access working capital and works particularly well for businesses whose owners value having the amount they remit fluctuate with their daily payment card receivables. Instead of sending a large amount once a month, a flat percentage of the business's credit and debit card sales are automatically remitted daily. A larger amount is sent on busy sales days than on slow days. The process stops automatically when the loan is repaid.

Merchant Cash Advance is a type of funding that is not a loan. It is a purchase of a fixed dollar amount of a business's future credit and debit card receivables. The Merchant Cash Advance provider purchases a specified dollar amount of the business' future debit and credit card sales at a discount. The business, instead of paying one large fixed monthly payment until a set maturity date like a loan, remits a fixed percentage of its daily debit and credit card revenue automatically until the specified amount of purchased receivables is remitted in full to the MCA provider.

CAN Capital's Daily Remittance Platform™ and proprietary risk models offer insight into the strength and day-to-day operations of small businesses. The company forecasts based on the strength of small businesses, with a unique approach proven to be highly predictive of actual risk. This means higher approval rates and a broader range of small business financial options for customers.

.....
"When there's distance you tend to treat others as competitors. When you are close, it forces you to understand them and find opportunities."
.....

Here are a few more notable quotes about the nature of innovation from our executive discussions:

- “Going to Silicon Valley is much more about getting closer to the VC than tapping the innovation culture. You can innovate anywhere.”
- “I used to seek 3 – 5 years’ experience (for most tech recruiting), but I am changing on that. Of course, it depends on the position... to help disruptors disrupt, you need to hire from the disruptor generation.”
- “At UGA, they have a neat innovation course comprised of students from a number of different majors who come together to solve a specific problem presented by a company.”
- Regarding the lessons to be learned from Bitcoin: “They didn’t come from a FinTech mindset. They came from a political mindset; from a geographic mindset... If we teach about Bitcoin, we’ve failed. If we teach about the mindset that led them to that, we’ve succeeded.”
- “There are two mindsets that are so different (about innovation). Somebody in technology can code something very quickly.... But they don’t realize that if you change something in payments, you have to change the whole network which might affect a network of six million merchant POS terminals. People in FinTech understand this.”

CONCLUSION

Thanks to its favorable economic profile and impressive growth prospects, FinTech has established itself as one of the country’s leading industry sectors and is poised to remain so for some time. Georgia’s long history in the space- its critical mass of nearly 100 companies, its extensive talent pool, low-cost business environment, forward-thinking public/private engagement- ideally position our state to extend its leading role at the forefront of this mission critical and lucrative industry. The more than 30,000 high-paying FinTech jobs already in Georgia provide ample evidence of the benefits of the FinTech community’s efforts to date. It’s important to note, however, that much of Georgia’s “secret sauce” could conceivably be replicated in other regions- particularly if leading FinTech companies or promising startups were lured outside the state.

The building blocks of Georgia’s FinTech ecosystem are firmly in place- for both established multi-national firms and early stage start-ups, with both showing compelling examples of innovation. “If you don’t engage with Georgia (FinTech companies) you’re going to hit a wall on the last mile of execution.”

.....
“It’s the innovations
consumers can see
that get the press, but
making things run faster
behind the scenes is an
essential innovation too.”
.....

GEORGIA FINTECH INNOVATION: GROUND FLOOR

Founded in 2013, Groundfloor is a peer-to-peer micro-lending platform for funding U.S. real estate deals, open to non-accredited investors, opening the door to short-term secured loans backed by real estate and starting with as little as \$10. Typical recent loans have returned 12 percent annually on a six- to 12-month term.

The young company had a busy autumn- in December 2015 it completed \$5 million in Series A funding. And in September Groundfloor became the nation’s first business to gain federal approval for multi-state crowdfunding, building on an innovative Georgia state law.

Groundfloor also recently introduced the following features:

Automated Investing: Allows investors to select the amount they want to invest each month, the recurring date to initiate the funds transfer and the percentage allocated to each loan grade on Groundfloor. Investors are able to view a dashboard of their automatic investments and simply add, modify or delete to tailor their portfolio.

Quick Loan Comparison and In-Depth Analysis: With new loans being added regularly, investors can take advantage of a loan comparison tool that stacks loans side by side for quick review. Investors can use the tool to shortcut the manual process of reviewing and selecting loans one by one. Paired with a new in-depth analysis view, investors can assess and diversify their investments with more control. Every loan detail page displays a standardized dashboard of loan grading factors, including underlying data sources for enthusiasts wishing to dig into the details.

Georgia FinTech Companies- Thinking Globally, Acting Globally

Elizabeth McQuerry
Partner, Glenbrook Partners

With so much of the nation's card processing sector located here and nine of ten Georgia FinTech companies being headquartered in the United States, it's no surprise the typical firm is heavily focused on U.S. market dynamics - with clear exceptions in multi-nationals like First Data and Global Payments.

Nonetheless, the global market is keenly present in the thinking of companies in Georgia. A quick look at some of the ways the global market factors into Georgia business provides more context.

- Acculynk, a payments authentication company, developed a method to authenticate debit cards online that was adopted by RuPay, the national debit card network in India
- BitPay, the largest Bitcoin payments processor, has two-thirds of its merchant clients located outside the U.S., helping them to accept payments in just over 90 countries
- FIS, a conglomerate focused on banking and payments technology, has clients in over 130 countries and is one of the leading companies enabling banks around the world to move their retail payments processing to real time
- Kabbage, the online lending provider, launched its innovative platform in the United Kingdom only four years after its founding here. Merchant-funded rewards provider Cardlytics followed a similar trajectory into the UK.
- Worldpay, a global leader in payments processing with US headquarters in Atlanta, has a core focus of enabling merchants to sell to customers around the world by accepting a broad range of payments, including local payment methods sometimes called alternative payments.

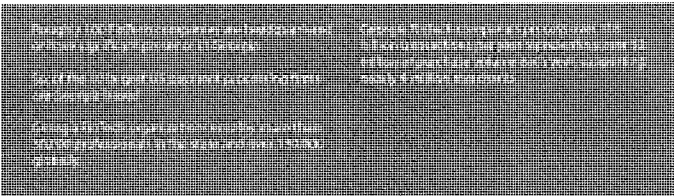
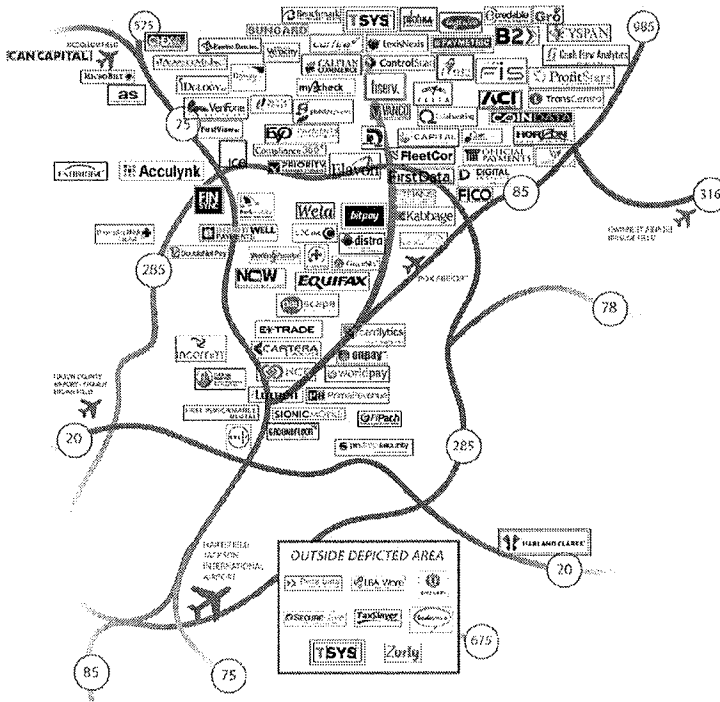
Looking forward, several Georgia companies are focused on emerging niches - the markets for which will certainly grow much larger once electronic payment products become more commonplace globally. Examples here include big data analytics, development of alternative credit scoring techniques, loyalty and affinity programs, as well as SME payments enablement.

Several FinTech companies operating in Georgia are already looking into developing markets outside the U.S. One-fifth of companies responding to TAG FinTech's survey plan expansions into global markets, with India and Mexico specifically called out. This is a prudent strategy, particularly for established players - while the US market for payment services is strong as mature card-based products continue to deliver mid single digit topline growth, according to numerous sources, growth rates in emerging markets (notably India and Latin America) exceed those of the US, Canada and Western Europe.

Respondents ranked diverse regions highly when asked where they intend to pursue growth. The most frequent responses - in descending order - were Southeast Asia, Western Europe, Eastern Europe, South America and Central America.

When asked which global region would represent the highest growth for their companies, survey respondents ranked diverse regions highly - that is, different companies are looking to different global regions for growth. Where are FinTech companies operating in Georgia looking to? In descending order - Southeast Asia, Western Europe, Eastern Europe, South America and Central America - received the most responses.

A Constantly Changing and Necessarily Incomplete View of Georgia's FinTech Players



Georgia Financial Technology

- | | | | |
|--|--|--|---|
| <ul style="list-style-type: none"> Card Processing/POS B2 Payments USA Inc Calpan Commerce Capital Payments, LLC Elavon EVU Payments International First Data First Performance Global FIS Fiserv FleetGor Global Payments Ingenico NCB Patientco Payments Advisors PlatUSA Payment Data Privacy Payment Systems SwiftPay MD TSYS Vance Payment Solutions Veracly Payment Solutions Verifone Vista Corporation Worldpay Retail Banking Solutions ACI Worldwide Benchmark Technology Group Chexor Finerix Corporation DSBE Geo Solutions Heland Clark ProfitStars (Clark Henry) Q2obanking TurkLoyr Visit | <ul style="list-style-type: none"> Trade/Payment ACI Worldwide Advance Me Capital Payments, LLC DoubleNet Pay ENTRADE RINTEC FINANS GreenSky Credit Heland Clark Instage LBA Wire NOVAaccount OnPay Paymentic PrimoFinance Frontier Web Capital Split TransCentra Zurly Prepaid/Loyalty & Points BigHaul Payments Cardifyx Carusa Commerce CoinData Concord CoFFee from SK C&C Directo FirstView IncComm Stone Mobile Thanks Again TSYS | <ul style="list-style-type: none"> Capital Markets Cash Flow Analytics Data Data FPath Fabridge INFINITI EXOR IAS Intercontinental Exchange Lucent Research Wise Electronic Billing & Presentment Digital Insight FirstView Fiserv Official Payments Identity/Analytics/Risk Compliance 360 Comstock Cypron eCredit Equifax FactorTrust FXCD IDology Itumen L2C Loislexis Micobank FinTrig Security StarCard VeriRemate | <ul style="list-style-type: none"> Gateways/Alternative Payments Acculynk BitPay Confirmitus SK C&C First Data MyCheck, Inc. OmniPay Parabank SecureGate Storingunder FinTech Map Sponsors TSYS Hubel, August & Wynne, LLP |
|--|--|--|---|

Thanks to our sponsors



For an updated online version of this map, visit www.tagonline.org/wheregeorgialeads/fintech/

Contact Details:
 Technology Association of Georgia, Inc.
 75 Fifth Street NW, Suite 625
 Atlanta, GA 30308
 404.817.3333 – Phone
 404.817.6677 – Fax
 Website: www.tagonline.org
 Community Website: www.TAGthink.com
 TAG-Ed Collaborative: www.tagedonline.org

About TAG FinTech



TAG FinTech is the TAG society focused on building an interactive and healthy business environment for Georgia-based payment processing and related financial technology organizations. Launched in 2010, TAG FinTech today represents about 100 organizations comprising eight sub-market sectors that include both very large and established organizations and smaller start-up organizations.

About Georgia Tech's Scheller College of Business



Georgia Tech's Scheller College of Business is located in a state-of-the-art building in Technology Square, the core of the Atlanta's high-tech business community. The College offers an internationally recognized business education, including full-time, evening and Executive MBA options as well as undergraduate and PhD programs, to approximately 2,000 degree-seeking students each year. Scheller College collaborates across Georgia Tech to offer joint MS degrees in Quantitative and Computational Finance and Business Analytics. Custom and open enrollment programs for executives and professionals are offered through the Huang Executive Education Center, located within the College. Scheller College of Business is leading business for the 21st century.

About the Technology Association of Georgia (TAG)



TAG is the leading technology industry association in the state, serving more than 26,000 members through regional chapters in Metro Atlanta, Athens, Augusta, Columbus, Macon/Middle Georgia and Savannah. TAG's mission is to educate, promote, and unite Georgia's technology community to foster an innovative and connected marketplace that stimulates and enhances a tech-based economy. The association provides networking and educational programs; celebrates Georgia's technology leaders and about 100 companies; and advocates for legislative action that enhances the state's economic climate for technology.

TAG hosts over 200 events each year and serves as an umbrella organization for 34 professional societies. Additionally, the TAG Education Collaborative (TAG's charitable arm) focuses on helping science, technology, engineering and math (STEM) education initiatives thrive.

For more information visit the TAG website at www.tagonline.org or TAG's community website at www.hubga.com.

.....
Contact Details:

Technology Association of Georgia, Inc.
75 Fifth Street NW, Suite 625
Atlanta, GA 30308
404.817.3333 – Phone
404.817.6677 – Fax
Website: www.tagonline.org
Community Website: www.TAGthink.com
TAG-Ed Collaborative: www.tagedonline.org
.....

SPONSORS



PORTER KEADLE MOORE is an Atlanta-based advisory firm that helps fintech companies reduce risk and increase long-term value. Through evaluating the effectiveness of organizations' risk management systems in a way that's meaningful to management and stakeholders, we help our clients demonstrate what makes them attractive business partners and ultimately help drive growth.



TSYS® is a leading global payments company of three businesses, issuer processing, merchant acquiring and prepaid program management that together create a unique platform with scale and distribution for today's global commerce.



FIS is a global leader in financial services technology, with a focus on retail and institutional banking, payments, asset and wealth management, risk and compliance, consulting and outsourcing solutions.



RSM US LLP is the leading provider of audit, tax and consulting services focused on the middle market, with more than 8,000 people in 80 offices nationwide.



SAVILLS STUDLEY is a leading global real estate advisor specializing in tenant representation and is dedicated to a conflict-free approach.



RAYMOND JAMES has built the market-leading FinTech investment banking practice for clients seeking industry expertise, senior banker attention to their transaction and expert execution capabilities. Raymond James & Associates, Inc. member New York Stock Exchange/SIPC.



AMERICAN TRANSACTION PROCESSORS COALITION (ATPC) was created to protect, promote and preserve the interests of this critical Georgia industry through proactive public relations and government affairs activities.

EXHIBIT 18

[Submit Query](#) [Search the site](#)

[Board of Directors](#) | [About](#) | [Contact](#) | [Update Profile](#)



- HOME
- CHAPTERS & SOCIETIES
- EVENTS
- TRAINING
- RESOURCES
- JOB BOARD
- NEWS & PRESS
- MEMBERSHIP

NEWS & PRESS

FOR IMMEDIATE RELEASE

TAG Names Top 40 Innovative Technology Companies in Georgia

Companies to Showcase Their Innovations at the Georgia Technology Summit

ATLANTA (March 10, 2015) - The Technology Association of Georgia (TAG) today announced the Top 40 Innovative Technology Companies in Georgia. TAG'S Top 40 Awards recognize Georgia-based technology companies for their innovation, financial impact, and their efforts at spreading awareness of the state's technology initiatives throughout the U.S. and globally.

The 2015 Top 40 Innovative Technology Companies are:

- Aetho - Savannah Georgia
- Agilysys - Alpharetta, Georgia
- AnswerRocket - Atlanta, Georgia
- Bastille - Atlanta, Georgia
- Bioscape Digital - Atlanta, Georgia
- Bitpay - Atlanta, Georgia
- Bluefin Payment Systems - Atlanta, Georgia
- Clean Hands Safe Hands - Atlanta, Georgia
- ENGAGE.cx - Atlanta, Georgia
- eVestment - Marietta, Georgia
- Experience - Atlanta, Georgia
- Fiserv - Norcross, Georgia
- GE Distributed Power - Atlanta, Georgia
- Greenway Health - Carrollton, Georgia
- HiLumz USA LLC - Cumming, Georgia
- HireIQ Solutions, Inc. - Alpharetta, Georgia
- Impact Cryotherapy, Inc. - Lawrenceville, Georgia
- Invoiceware International - Atlanta, Georgia
- Ionic Security - Atlanta, Georgia
- LBA Ware - Macon, Georgia
- LogFire, Inc. - Atlanta, Georgia
- Mobile Health Engagement Strategies - Roswell, Georgia
- NexDefense - Atlanta, Georgia
- Noble Systems Corporation - Atlanta, Georgia
- Novelis - Atlanta, Georgia
- Numerex - Atlanta, Georgia
- nuVizz, Inc. - Atlanta, Georgia
- OutSystems - Atlanta, Georgia
- Parkmobile, LLC - Atlanta, Georgia
- Pointivo - Atlanta, Georgia
- PrimeRevenue, Inc. - Atlanta, Georgia
- QSpex - Atlanta, Georgia
- ReST - Atlanta, Georgia
- RightPatient® - Atlanta, Georgia
- RouteMatch Software, Inc. - Atlanta, Georgia
- SalesLoft - Atlanta, Georgia
- Scientific Games - Alpharetta, Georgia
- Sharecare - Atlanta, Georgia
- Streamline Health, Inc. - Atlanta, Georgia

EMAIL SIGN UP



TWITTER FEED

Tweets by @TAGthink

TAG @TAGthink
 Michele Madison has stepped up as chair for the @TAG_Health society #hubmagazine >> [ow.ly/UhE0305mR1x](#)

1m

TAG @TAGthink
 Lanthem launched its PayClock Online mobile app to meet overtime requirements #hubmagazine >> [ow.ly/V6ch305mQvH](#)

31m

TAG @TAGthink
 EasyVote Software Selected by Cameron County, Texas to Manage Growing Poll Workforce Prior to Elections #hubmagazine [ow.ly/tjE0305mPNW](#)

1h

[Embed](#) [View on Twitter](#)

- Terminus - Atlanta, Georgia
- Wahoo Fitness - Atlanta, Georgia

"The 2015 Top 40 finalists are an elite group of innovators who represent the very best of Georgia's Technology community," said Tino Mantella, president & CEO of TAG. "The 2015 Top 40 finalists are shining examples of what makes our State such a hotbed for technology and we applaud them for standing out as leaders in Georgia's technology community."

This year's Top 40 were selected from among over 120 applications submitted by companies from across Georgia. Companies selected for the "Top 40" will be showcased in an exhibition at The 2015 Georgia Technology Summit.

"Our eleventh year of the Top 40 was an overwhelming success, based on the number of truly innovative companies that participated in the competition," said Dennis Zakas, a partner and founder of Zakas & Leonard, LLP, Chair of Group Office Buys, LLC, and chairperson of the Top 40 Selection Committee. "The Top 40 winners demonstrate the depth and breadth of Georgia's technology community."

For more information about TAG and the Georgia Technology Summit and to register for the event, visit: <http://www.tagonline.org/events/georgia-technology-summit> .

Follow the conversation on Twitter through #TAGGTS.

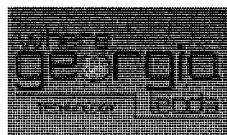
About The Technology Association of Georgia (TAG)

TAG is the leading technology industry association in the state, serving more than 22,000 members through regional chapters in Metro Atlanta, Athens, Augusta, Columbus, Macon/Middle Georgia and Savannah. TAG's mission is to educate, promote, and unite Georgia's technology community to foster an innovative and connected marketplace that stimulates and enhances a tech-based economy. The association provides networking and educational programs; celebrates Georgia's technology leaders and companies; and advocates for legislative action that enhances the state's economic climate for technology.

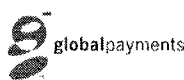
TAG hosts over 200 events each year and serves as an umbrella organization for **34 professional societies**. Additionally, the **TAG Education Collaborative** (TAG's charitable arm) focuses on helping science, technology, engineering and math (STEM) education initiatives thrive.

For more information visit the TAG website at www.tagonline.org.

To learn about the TAG-Ed Collaborative visit <http://www.tagedonline.org/>.

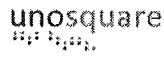


TAG TITANIUM SPONSORS

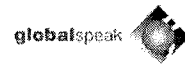
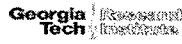


TAG PLATINUM SPONSORS





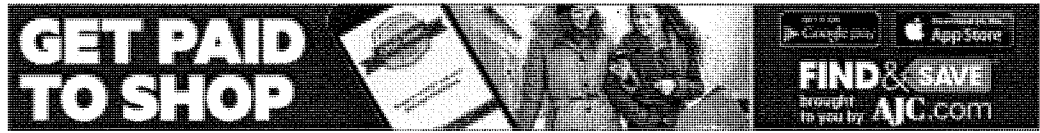
TAG GOLD SPONSORS



© 2016 Technology Association of Georgia - all rights reserved

Sitemap | Privacy Policy

EXHIBIT 19



Atlanta makes the latest list of tech hubs (number four?)



Michael Kanell - The Atlanta Journal-Constitution

Updated 10:09 a.m. Saturday, June 11, 2016 | Filed in Business and Money news

We're a tech hub! No, we're just wannabes! We're a tech hub, really! We are! We are!!

I mean, aren't we?

It does seem as if there's a continual question about metro Atlanta's status as a hot hub of millennial-powered, Georgia Tech cultivated technology. And trotted out today, from InfoWorld, another in a series of sometimes encouraging but often-conflicting lists of the nation's best spots for growth and technology.

On one of those perennial Top Ten lists, Atlanta places fourth, says InfoWorld. The online magazine sums it up thusly:

"With great salary potential, steady employment levels and a slow-growing, affordable housing market, Atlanta's a great choice for tech professionals."

According to InfoWorld, Atlanta has 3.0 tech jobs for every 1,000 positions. Moreover, Atlanta's average housing price is the very-affordable-to-well-paid-engineers amount of \$276,650.

And the average tech salary in Atlanta is \$91,995. (That is, as it happens, slightly higher than Denver's average tech salary, and InfoWorld placed Denver at number one. Go figure.)

So today's word is, yes. We are indeed one of the nation's premier tech hubs.

The top ten, as per InfoWorld:

- Denver
- Framingham, Ma.
- Oakland
- Atlanta
- Boston
- Austin
- Santa Ana, Cal.
- Baltimore

— Durham, N.C.

— Boulder, Co.

Encouraging? Helpful? Valid? (Baltimore? Really?). Of course, we'll likely get another survey next week with a different take.

Maybe it's just some kind of insecurity. After all, there sure are a lot of techies here, doing all sorts of Big Data stuff and mobile apps and cyber-security, not to mention fin-tech.

But are there enough for us to claim hub-hood?

Seems like it's a question we'll keep asking until we don't even bother on account of we have become so undeniably hubalicious.



VIEW COMMENTS 0

SIGN UP FOR E-NEWSLETTERS

Want more news?

Sign up for free e-newsletters to get more of AJC delivered to your inbox.

PROMOTED STORIES

Sponsored Links by Taboola

Government Gives Homeowners Who Owe Less Than \$300-625k A Once In A Lifetime Mortgage Bailout

LowerMyBills - Ad

Kerry Washington's \$3 Million Home Is Beyond Stunning

Lonny - Ad

This Strategy Game Will Change The Way You Think

Sparta - Free Online Game - Ad

I'm a Woman Who Joined Dollar Shave Club. Here's What Happened...

Dollar Shave Club - Ad

Cable TV Is Dying in 2016. Here's What Comes Next

The Motley Fool - Ad

Get to Know Magnolia Home by Joanna Gaines | American Signature Furniture

American Signature Furniture - Ad

hypepotamus

EVENTS

NEWS

COMPANIES

PEOPLE

JOB

COMMUNITY

NEWSLETTER

Search this website ...

OCTOBER 21, 2016

ATL Named 6th Fastest Growing Market for Tech Talent

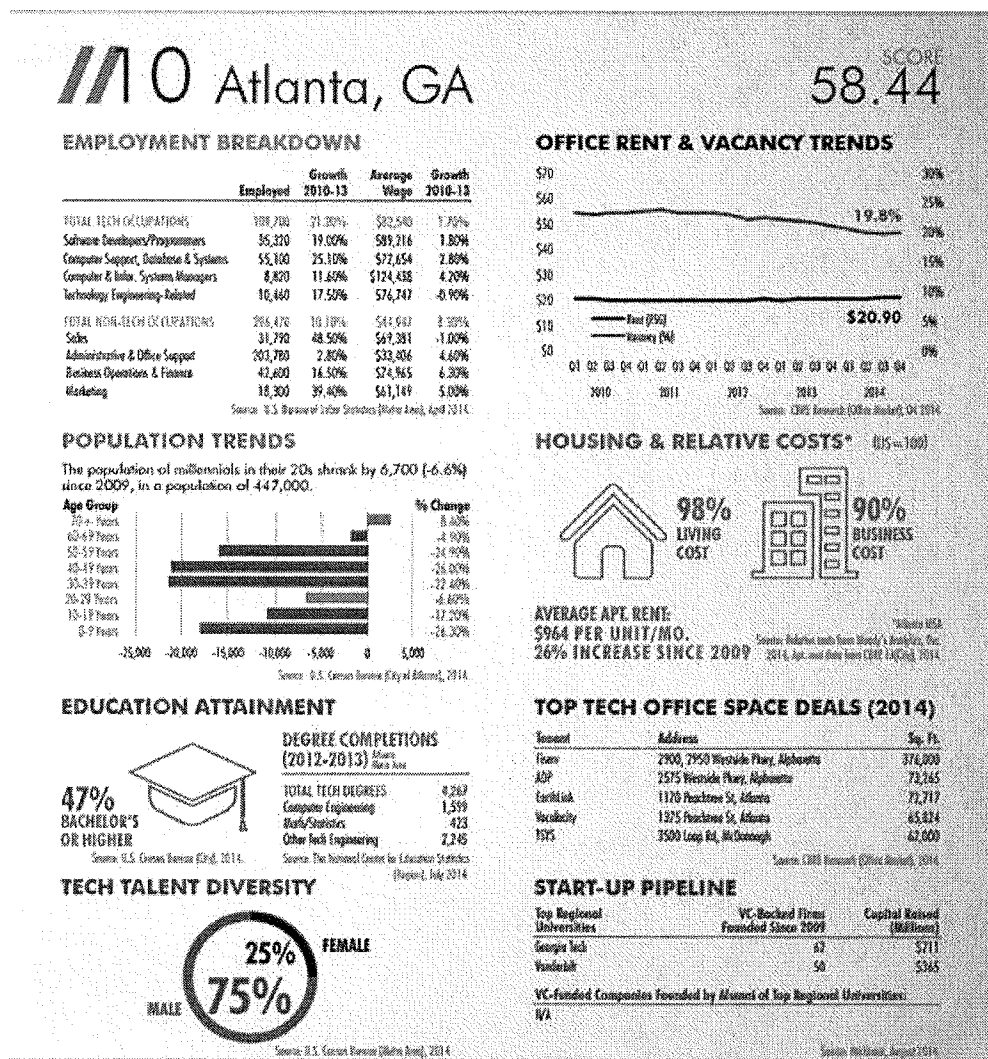
APRIL 15, 2015 BY TRICIA WHITLOCK



Share this:     

Atlanta is on the up-and-up according to a new CBRE Research report, "Scoring Tech Talent," which ranks 50 U.S. markets according to their ability to attract and grow tech talent.

- With a 21 percent growth in tech talent since 2010, Atlanta ranks as one of the nation's **top 10 "momentum markets" for tech-driven demand.**
- Atlanta ranks as **number 10 on the overall tech talent list**, and has the lowest apartment rents, cost of living, occupancy costs and overall cost of doing business, when compared with the other cities in the top 10 (Silicon Valley, Washington, D.C., San Francisco, San Francisco Peninsula, New York, Seattle, Boston, Baltimore and Austin).
- Atlanta's talent growth rate from 2010-2013 was 21.2 percent, making it the **sixth fastest growing market** out of the top 10.
- With Atlanta's **educational attainment rate of 46.8 percent**, a figure measuring the amount of individuals at least 25 years old with a bachelor's degree or higher, and the **lowest overall cost of living and cost of doing business**, the city's tech attraction momentum is expected to continue upward.



“ For the past two years, the high-tech industry has not only spurred the economy as a whole, but it has been the top driver of commercial office activity, influencing rents and vacancy in major markets across the U.S., including Atlanta. Over half of my tech clients are projecting headcount growth over the next 12-24 months. I'm seeing just as much, if not more, organic growth from Atlanta based technology companies, as we are seeing from out-of-town tech companies opening offices here. Given Atlanta's unique combination of a low cost of doing business, incredible educational institutions, density of Fortune 1000 companies, increase of venture capital activity over the last two years, and the pace of talent growth in the tech sector, Atlanta has all of ingredients to continue being one of the fastest growing tech hubs in the U.S. – *Christian Devlin, who leads CBRE's Tech and Media Practice in Atlanta*

[Photo Credit]

Share this:     

Related Posts



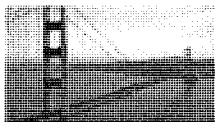
Atlanta Outpaces Nation in Tech Talent Growth



Atlanta Ranks in Top 30 Tech Momentum Markets



GA's Ranking Rundown | #1 Women-Owned Firms, Nerdiest City, Best State For Biz



90 Days in Atlanta's Tech Community: A San Franciscan's Perspective



Top 10 Reasons Why Entrepreneurs Should Choose ATL

FILED UNDER: NEWS

TAGGED WITH: ATLANTA, CBRE, CHRISTIAN DEVLIN, RANKING

EXHIBIT 20

79°



SUBSCRIBE NOW
AS LOW AS 99¢



STRAIGHT NO CHASER
NOVEMBER 19
ATLANTA
THE FOX THEATRE



Atlanta's explosive film and TV growth, by the numbers

Tiffany Stevens - For the AJC

Updated 4:24 p.m Friday, Aug. 21, 2015 | Filed in Atlanta Life



This is how big the film and TV industry is in Georgia:

Since 2008, Atlanta has played backdrop to **more than 140 films and TV shows** (and counting), according to the Georgia Department of Economic Development.

In fiscal year 2015, production companies spent **\$1.7 billion on 248 projects**, an increase from the **\$1.3 billion spent** in fiscal year 2014 which was already a more than **500 percent increase** from 2008.

And in a Film L.A. survey of primary filming locations conducted last year, Georgia was the **third U.S. state** to top the list, coming in at **No. 5** behind only California and New York and two international locations.

"It's really nice to be prepared to take advantage of the opportunities presented to you. You have to be ready," **said Craig Miller**, chair of the Georgia Film, Music and Digital Entertainment Advisory Commission. "And now, Atlanta is ready."

The story of the exploding production industry is one about taxes and legislation and politicking.

But it's actually pretty simple, to hear some state officials tell it: In 2004, "Ray," a biopic of the beloved Georgia musician starring Jamie Foxx, filmed in Louisiana — a deal usurped (an Atlanta production office had already opened) by that state's tax credits.

Then, in 2008, came a real counter-offer: Georgia began offering **20 percent tax credits** to productions with at least a \$500,000 production budget. If producers showed the Georgia logo at the end of the credits, the state would up its offer to **30 percent**.

Programs like Georgia's are not new, and they're not without controversy. Any money divvied out in tax credits is revenue the state is sacrificing, and critics say there may not be an even return. Critics charge that the credits, which have faced fraud allegations elsewhere, amount to a too-pricey giveaway in the state, returning mostly low-wage local jobs.

They argue that the industry's explosive growth is directly tied to the credits themselves, and would end just as quickly if the program did.

"Whatever sacrifice we make in revenue on the tax credit, we more than make up for through the multiplier effect of economic development," Gov. Nathan Deal said in 2013.

The state did recently claim the production spending in fiscal year 2015 amounted a **\$6 billion** economic impact. The AJC's Politifact team rated this as "half true": Georgia's economic multiplier was far too high, experts said, though more realistic production spending still added up to a **\$3.1 billion** economic impact for the year.

Forty-two movies **filmed throughout Georgia in July**, Miller said. The state is attractive for its diversity, he said. Productions can find coastlines, leafy neighborhoods, farmland and a sprawl of skyscrapers and interstates, all reachable within hours. "X Men: First Class" actually filmed one of its final scenes, set in Cuba, on Jekyll Island.

Plus: Atlanta has a giant airport.

On one recent day, for example, Hartsfield-Jackson had **27 flights** departing to Los Angeles. Delta alone offered 8 flights to the nation's movie capital.

In Miller's eyes, this type of transportation is invaluable.

"Big players in the movie industry need to get back to L.A. quickly," he said. "Nobody else can offer the amount of direct transportation that Atlanta can."

The city is the star of the state's boom, attracting high-profile projects such as "The Walking Dead," the Marvel films, and "The Hunger Games" franchise.

The city's Office of Entertainment estimates that 75 percent of filming takes place in the city, meaning it keeps 75 percent of the 77,900 jobs and \$3.8 billion in wages the Motion Picture Association of America (MPAA) attributes to the new business.

Atlanta's historic Swan House, which is one of the most visible local landmarks used on screen (throughout the "Hunger Games" films) never used to receive requests for filming — and now gets them **two or three times a month**.

"Flight," starring Denzel Washington, was reportedly written for Oklahoma and then relocated to Georgia.

As Lee Thomas, deputy commissioner of Georgia Department of Economic Development, **previously told the AJC**: "It's funny because now no matter what the script says, they'll say, 'We'll make it work.'"

Click here for an immersive, interactive look at filming locations around Atlanta

Adam Carlson and William McFadden contributed to this story

[VIEW COMMENTS](#) 0

SIGN UP FOR E-NEWSLETTERS

Want more news?

Sign up for free e-newsletters to get more of AJC delivered to your inbox.

PROMOTED STORIES

Sponsored Links by Taboola

25+ Moments Captured When It All Went Wrong

Auto Overload - Ad

Does This Card Put Anything You Could Want in One Package?

Credit Cards by Offers.com - Ad

Angelina Jolie Pitt Steps Out in The Next Must Have Loafer

Vogue | Everlane - Ad

These \$10 Boots Will Blow Your Mind

ShoeDazzle - Ad

EXHIBIT 21

SELECT A CITY ▾

INDUSTRIES & TOPICS

LIMITED TIME OFFER
Subscribe Now

SIGN IN
Your Account ▾
WELCOME
Your Account ▾

🏠 NEWS LISTS & AWARDS PEOPLE & COMPANIES EVENTS MORE... 🔍

FOR THE EXCLUSIVE USE OF MOROBERTS@KTSLAW.COM

From the Atlanta Business Chronicle:

<http://www.bizjournals.com/atlanta/news/2015/08/05/tyler-perrys-new-studio-could-create-up-to-8-300.html>

Tyler Perry's new studio could create up to 8,300 jobs

Aug 5, 2015, 12:20pm EDT

Tyler Perry's new studio at Fort McPherson could create up to 8,300 jobs, according to filministrynetwork.biz.

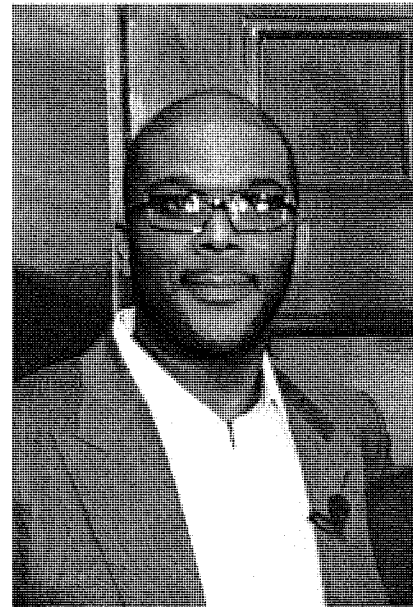
However, it is likely that only a fraction of these jobs will be permanent jobs, and the rest will be temporary positions or contract work.

Once completed, the studio could produce about 10 to 20 movies at once, and each production could hire 200 to 300 crew members. But as is the nature of film work, once each movie wraps, its crew members will be looking for their next projects.

Perry's plans to develop 330 acres of the fort into sound stages and production support space were approved by the McPherson Implementing Local Redevelopment Authority (MILRA) on June 26.

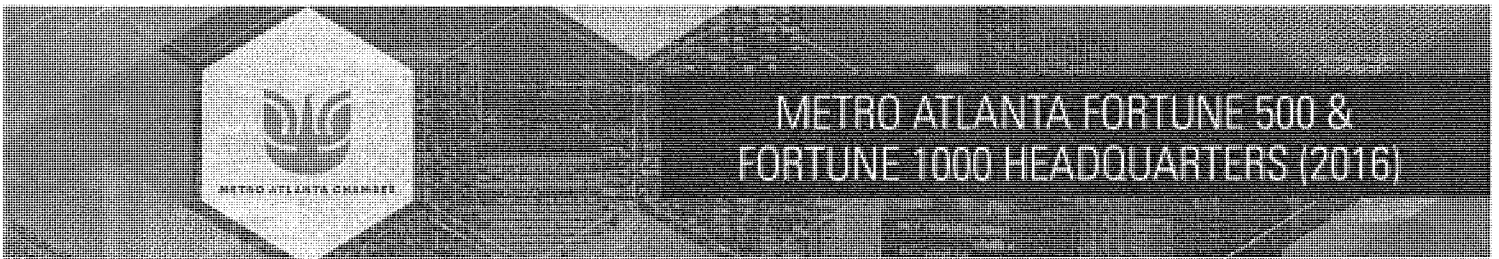
Perry will purchase the land for \$30 million.

Ellie Hensley
Staff Writer
Atlanta Business Chronicle



Tyler Perry's new studio at Fort McPherson could create up to 8,300 jobs, according to filministrynetwork.biz. However, it is likely that only a fraction of these jobs will be permanent jobs, and the rest will be temporary positions or contract work.

















EXHIBIT 22



- Twenty-five metro Atlanta headquartered companies are among America's largest corporations qualifying as the 2016 FORTUNE 1000, of which 16 metro Atlanta headquartered companies rank among the 2016 FORTUNE 500.
- Metro Atlanta's headquartered FORTUNE 1000 companies generated aggregate revenues of \$371.2 billion in the last fiscal year (2015).

- One metro Atlanta-based company was new to qualify as a FORTUNE 500 in 2016. Veritiv Corporation, a business-to-business distributor of print, publishing, packaging and facility solutions, generated \$8.7 billion in revenue in 2015. The company was established in 2014 as result of the merger of International Paper Company's xpedx business and Unisource Worldwide.

METRO ATLANTA HEADQUARTERED FORTUNE 500 COMPANIES – 16*
(Revenue in millions; last fiscal year)

- | | | | |
|--|---|--|--|
| 
1. THE HOME DEPOT
▲ Revenue: \$88,519
▲ Rank: 28 | 
2. UNITED PARCEL SERVICE (UPS)
▲ Revenue: \$58,363
▲ Rank: 48 | 
3. THE COCA-COLA COMPANY
▼ Revenue: \$44,294
▲ Rank: 62 | 
4. DELTA AIR LINES, INC.
▲ Revenue: \$40,704
▲ Rank: 68 |
| 
5. THE SOUTHERN COMPANY
▼ Revenue: \$17,489
▲ Rank: 162 | 
6. GENUINE PARTS COMPANY
▼ Revenue: \$15,280
▲ Rank: 183 | 
7. FIRST DATA CORPORATION
▲ Revenue: \$11,451
▲ Rank: 249 | 
8. HD SUPPLY HOLDINGS, INC.
▼ Revenue: \$8,779
▼ Rank: 320 |
| 
9. VERITIV¹
Revenue: \$8,718
Rank: 323 | 
10. SUNTRUST BANKS, INC.
▼ Revenue: \$8,533
▼ Rank: 329 | 
11. AGCO CORPORATION
▼ Revenue: \$7,467
▼ Rank: 360 | 
12. ASBURY AUTOMOTIVE GROUP, INC.
▲ Revenue: \$6,588
▲ Rank: 393 |
| 
13. COCA-COLA EUROPEAN PARTNERS
▼ Revenue: \$6,540
▼ Rank: 397 | 
14. NCR CORPORATION
▼ Revenue: \$6,373
▲ Rank: 409 | 
15. PULTEGROUP, INC.
▲ Revenue: \$5,982
▲ Rank: 433 | 
16. NEWELL BRANDS
▲ Revenue: \$5,972
▲ Rank: 434 |

GEORGIA HEADQUARTERED
FORTUNE 500 COMPANIES – 2
(outside of metro Atlanta)



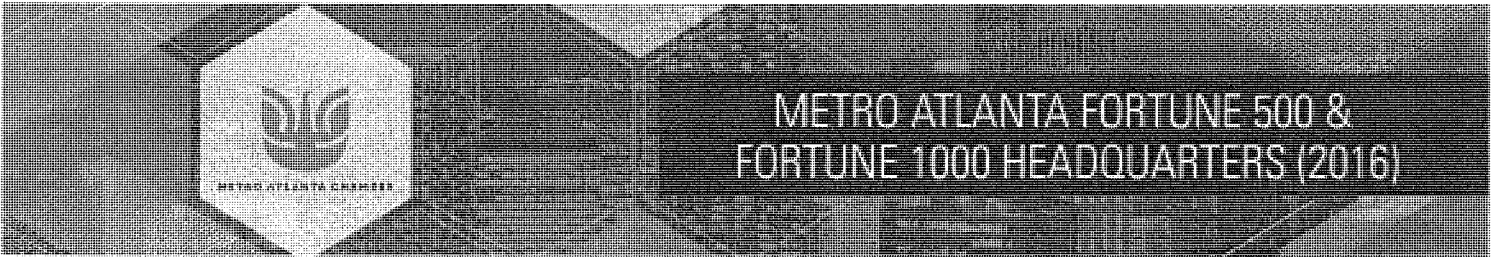
- AFLAC INCORPORATED**
 ▼ Revenue: \$20,872
 ▼ Rank: 135



- MOHAWK INDUSTRIES, INC.**
 ▲ Revenue: \$8,072
 ▲ Rank: 338

Source: 2016 FORTUNE 500/1000, Fortune magazine, June 6, 2016
 * 13 represents the number of FORTUNE 500 Headquarters with a city of "Atlanta" address as reported for the 2016 FORTUNE 500; 16 represents the number of FORTUNE 500 Headquarters located within the entire metro Atlanta area (29-county MSA) | ▲ ▼ higher or lower revenue or rank compared to 2015 FORTUNE standing | ¹ newly qualified company on the 2016 FORTUNE 500 list





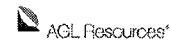
METRO ATLANTA HEADQUARTERED FORTUNE 1000 COMPANIES — 9
(Revenue in millions; last fiscal year)



1. INTERCONTINENTAL EXCHANGE
▲ Revenue: \$4,682
▲ Rank: 529



2. GRAPHIC PACKAGING HOLDING COMPANY
▼ Revenue: \$4,160
▲ Rank: 577



3. AGL RESOURCES INC.
▼ Revenue: \$3,941
▼ Rank: 600



4. AXIALL CORPORATION
▼ Revenue: \$3,787
▼ Rank: 613



5. AARON'S, INC.
▲ Revenue: \$3,180
▲ Rank: 689



6. CARTER'S, INC.
▲ Revenue: \$3,014
▲ Rank: 726



7. GLOBAL PAYMENTS INC.
▲ Revenue: \$2,774
▲ Rank: 777



8. ACUITY BRANDS, INC.
▲ Revenue: \$2,707
▲ Rank: 789



9. EQUIFAX, INC.
▲ Revenue: 2,664
▲ Rank: 801

GEORGIA HEADQUARTERED FORTUNE 1000 COMPANIES — 2
(outside of metro Atlanta)



- FLOWERS FOODS, INC.
▲ Revenue: \$3,779
▲ Rank: 615



- TOTAL SYSTEM SERVICES, INC. (TSYS)
▲ Revenue: \$2,780
▲ Rank: 776

Source: 2016 FORTUNE 500/1000, Fortune magazine, June 6, 2016
* 13 represents the number of FORTUNE 500 Headquarters with a city of "Atlanta" address as reported for the 2016 FORTUNE 500; 16 represents the number of FORTUNE 500 Headquarters located within the entire metro Atlanta area (29-county MSA) ▲ ▼ higher or lower revenue or rank compared to 2015 FORTUNE standing





METRO ATLANTA FORTUNE 500 & FORTUNE 1000 HEADQUARTERS (2016)

CITIES WITH THE MOST FORTUNE 500 HEADQUARTERS¹

RANK	CITY	#HQ
1	New York, NY	47
2	Houston, TX	22
3	ATLANTA, GA	13*
4 (TIE)	Chicago, IL Dallas, TX	9
5	St. Louis, MO	7
6 (TIE)	Cincinnati, OH Milwaukee, WI Minneapolis, MN Richmond, VA San Francisco, CA	6
7 (TIE)	Charlotte, NC Irving, TX Omaha, NE Pittsburgh, PA San Antonio, TX Seattle, WA	5

¹ Rank represents the number of FORTUNE 500 headquarters in a city as published by FORTUNE according to financial statements and company submissions (follows FORTUNE's previous methodology of their city ranking). * There are 13 FORTUNE 500 Headquarters with a city of Atlanta mailing address as published on the 2016 FORTUNE 500 list. There are 16 FORTUNE 500 Headquarters located within the entire metro Atlanta area (29-county MSA) Source: Metro Atlanta Chamber/Georgia Power analysis of 2016 FORTUNE 500 list as published in FORTUNE magazine, June 15, 2016, print edition



EXHIBIT 23



Atlanta Regional Council for Higher Education

Bringing together Atlanta-area colleges and universities.

[Advanced Search](#)

[About ARCHE](#) | [Members](#) | [Partners](#) | [Collaboration](#) | [Sustainability](#) | [Reports](#) | [Degrees](#) | [News](#) | [Contact](#)

[ARCHE research, directories and archives](#)

Fast Facts About Higher Ed in the Atlanta Region

Atlanta: A Powerhouse of Higher Education

The Atlanta region enjoys a concentration of colleges and universities matched by few U.S. metropolitan areas, landing in the top tier across more than 20 measures of higher education. And Atlanta-area colleges and universities offer an extraordinary mix of missions and campus settings – from downtown campuses to tree-lined quads, from internationally renowned research institutions to small liberal arts colleges, from comprehensive universities to specialized schools of art, theology, technology and medicine.

That's good news for Atlanta. A highly educated population means a better pool of workforce talent, higher incomes and a broader tax base. A wealth of degree programs means something for everyone, from entering freshmen to adults seeking advanced degrees. And campuses across the region bring arts and entertainment, commerce, research and community service to their neighborhoods.

Key Facts About Higher Ed in the Atlanta Region

- 57 colleges and universities
- Almost 1,800 distinct programs of study at the associate's, bachelor's, master's, doctorate and professional levels
- More than 250,000 students enrolled each year
- 7th in student enrollment among America's largest urban areas¹
- 6th in annual college graduates (at the bachelor's level or higher)¹
- Among the top 7 urban centers in number of degrees awarded in fields including engineering, computer sciences, math, physical, biological sciences, health professions, business, arts and theology¹

Economic Impact

Colleges and universities in the Atlanta region:

- are a significant sector of the economy, generating a \$10.8 billion impact on the state – 3.2 percent of Georgia's annual gross product – from spending by institutions, employees, students and visitors, plus the impact of capital expenditures.²
- create 130,000 jobs across all industries in Georgia²
- yield \$3 billion in state and local taxes paid by Georgians who graduated from or are employed by the region's colleges and universities.²
- draw 5.7 million visits annually – 1.5 million of them overnight – for campus tours, commencement, alumni events, arts and culture, athletic events and conferences.²

Research Center

Only five U.S. metro areas totaled higher ed research spending of \$1 billion or more in 2005. Atlanta was one of them.¹

Three local institutions – Georgia Tech, Emory and UGA – ranked among the top 50 U.S. universities for research and development spending in FY 2005, according to the National Science Foundation.³

Together, 11 ARCHE members accounted for \$1.2 billion in FY2005 R&D spending.³

Smart Place

Atlanta is a national leader in attracting college-educated 25-34 year olds, according to the Metro Atlanta Chamber of Commerce.⁴

In the city of Atlanta, 39.9 percent of adults hold at least a bachelor's degree⁵, and in metro-Atlanta the figure is 33.3 percent⁶. The U.S. level is 27.0 percent⁷.

A Census Bureau analysis ranked the city of Atlanta 6th among cities nationally in the percent of people 25 and older who have completed bachelor's degrees.⁸

Sources

1. [Higher Education in America's Metropolitan Areas: A Statistical Profile](#), ARCHE
2. [How the Atlanta Region's Colleges and Universities Are Enriching Georgia](#), ARCHE
3. [Industrial Funding of Academic R&D Rebounds in FY 2005](#), National Science Foundation
4. [The Young and Restless: How Atlanta Competes for Talent](#), MACOC
5. [U.S. Census Bureau American Community Survey, 2006 \(City\)](#)

Fast Facts About Higher Education in the Atlanta Region

- 6. [U.S. Census Bureau American Community Survey, 2006 \(MSA\)](#)
- 7. [U.S. Census Bureau American Community Survey, 2006 \(U.S.\)](#)
- 8. [U.S. Census Bureau American Community Survey, 2004](#)


The Atlanta Regional Council for Higher Education (ARCHE) brings together 19 of the Atlanta region's public and private colleges and universities. ARCHE builds awareness of the size, scope, impact and value of higher education and helps its members share strengths through cooperative programs. Founded in 1938, ARCHE's membership also includes six affiliated libraries and 13 corporate and nonprofit community partners.

© Atlanta Regional Council for Higher Education

133 Peachtree St., Suite 4925 | Atlanta, Georgia 30303 | tel: 404.651.2668 | fax: 404.880.9816 · [Legal / Privacy](#) | [Login](#)

EXHIBIT 24

Atlanta (http://www.knowatlanta.com/)



(http://www.myvirtuallibrary.com/Atlanta/knowfall2016-2vp/2016100401/) REQUEST A MAGAZINE 152 Plus Pages on ATL **CLICK TO REQUEST** (http://www.knowatlanta.com/magazine/)

Airport (http://www.knowatlanta.com/category/atlanta-airport-hartsfield-jackson-interntional/)

Get to KNOW Atlanta (http://www.knowatlanta.com/category/uncategorized/about-atlanta/)

Hartsfield-Jackson Atlanta International Airport



Your Gateway to the World

One of our area's greatest assets is Hartsfield-Jackson Atlanta International Airport – the world's busiest and most efficient airport and the largest employer in Georgia. On average, about 260,000 passengers fly through Atlanta each day and the airport in 2015 welcomed its 100 millionth passenger in one year (http://www.knowatlanta.com/blog/4496/), directly impacting metro Atlanta's economy by about \$32.5 billion and the state by about \$68.3 billion. It was also recently named the No. 1 U.S. airport by TripAdvisor (http://www.tripadvisor.com/Airport-g60898-qATL-Atlanta_Georgia.html).

"Hartsfield-Jackson is a key part of what makes Atlanta the leading city in the Southeast," says Atlanta Mayor Kasim Reed. "Our airport is a global transport and economic center that will see continued growth in the next several years as we secure new business opportunities, as well as new developments near the airport like Porsche's new North American headquarters and on-site test track.

"As we work to start new international routes to destinations not already available from Atlanta, we'll also stimulate new international air cargo and passenger growth. Atlanta is already a diverse city with tens of thousands of people from all over the world choosing to live here, and this growth in our international transportation will strengthen our connections with cities and countries around the world, which will strengthen our city's culture in turn."

In addition to being the global headquarters for Delta Air Lines, Hartsfield-Jackson's Maynard H. Jackson Jr. International Terminal, which opened in 2012, is the Southeast's gateway to the world. The \$1.4 billion, 1.2 million-square-foot terminal includes eight security checkpoints and five recheck lanes for domestic connecting passengers, exclusive retailers and restaurants – and for a small fee, passengers can seek refuge in the airport lounge. The international terminal has also been awarded gold LEED status and numerous art installations line the terminal's hallways making it a welcoming site for visitors.

AIRPORT LOGISTICS


To access the domestic terminal by car, follow Interstates 85 or 285 and exit onto a network of roads that lead to the North and South Domestic Terminals, baggage claim and airport parking.

EDUCATION


VIEW ALL (http://www.knowatlanta.com/category/education/)

Easing the Transition to a New School
(http://www.knowatlanta.com/education/easing-transition-atlanta-private-schools/) Parents, Counselors and Headmasters Talk About Relocating Students
Upon moving to a new city, transferring to a new school can be a major challenge for kids. But metro Atlanta private schools... Read More (http://www.knowatlanta.com/education/easing-transition-atlanta-private-schools/)

Higher Ed Makes Atlanta Move Worth It
(http://www.knowatlanta.com/education/colleges-universities/atlanta-higher-ed-student-stories/) Inside the programs and degrees drawing out-of-state students to Atlanta
Deciding which Atlanta higher education programs to sign up for can be challenging, especially if you plan to move to the metro... Read More (http://www.knowatlanta.com/education/colleges-universities/atlanta-higher-ed-student-stories/)

 View Our Education Guide Online (http://www.knowatlanta.com/education/education-guide/)

THE NOT-SO-LITTLE UNIVERSITY THAT IS CHANGING THE WORLD. LIFE OFFERS UNDERGRADUATE, GRADUATE, AND DOCTOR OF CHIROPRACTIC DEGREES



FIND A HOME

VIEW ALL (http://www.knowatlanta.com/category/find-a-home/)

Top 5 Reasons To Find an Atlanta Realtor
(http://www.knowatlanta.com/find-a-home/top-5-reasons-find-atlanta-realtor/) Emily Dickinson once wrote, "Where thou art, that is home." Trying to tell this to a prospective home owner, however, will... Read More (http://www.knowatlanta.com/find-a-home/top-5-reasons-find-atlanta-realtor/)

The airport is the final stop on MARTA's Gold and Red lines. The airport MARTA station is connected to the domestic terminal and offers a Delta curbside check-in station.

Hartsfield-Jackson includes a domestic and an international building — housing seven concourses (T, A, B, C, D, E and F). Travelers can then access the concourses and gates via The Plane Train, a speedy underground train that travels a 3.5-mile track.

HARTSFIELD-JACKSON AT A GLANCE
([http://www.knowatlanta.com/wp-](http://www.knowatlanta.com/wp-content/uploads/2015/07/your_gateway_to_the_world1.jpg)



content/uploads/2015/07/your_gateway_to_the_world1.jpg)

- Employs 63,000+
- 2,500+ average daily flights
- Nonstop service to 60+ international destinations in 45+ countries
- 80 percent of U.S. population within 2-hour flight of Atlanta
- 308 total concessions
- 33,350 parking spaces
- 260,000 daily passengers
- 5 runways
- 2 terminals
- 7 concourses
- 40 international gates
- 57 security lanes
- 167 domestic gates
- 2014: 96.2 million passengers
- 2014: 868,359 flights

While many airlines have merged and consolidated their operations, they continue to operate flights out of Hartsfield-Jackson. Each month, millions of travelers fly in and out of Hartsfield-Jackson. Check out the most recent passenger stats from October 2015:

Delta Air Lines: 6.7 million passengers
Southwest Airlines: 840,104 passengers
American Airlines: 191,715 passengers



(http://www.knowatlanta.com/wp-content/uploads/2015/07/your_gateway_to_the_world-3.jpg)

Energy Efficiency in Your New Home
(<http://www.knowatlanta.com/find-a-home/cable-and-utilities/energy-efficiency-new-home/>)

Plus: Top 10 ways to save energy from SCANA
Building homes with energy efficiency in mind has become a top priority for developers and builders in the metro Atlanta new home... Read More (<http://www.knowatlanta.com/find-a-home/cable-and-utilities/energy-efficiency-new-home/>)





(<http://www.knowatlanta.com/ask-the-expert/>)

(<http://www.knowatlanta.com/ask-the-expert/>)



GOT QUESTIONS? ASK THE EXPERT!

(<http://www.knowatlanta.com/ask-the-expert/>)

(<http://www.knowatlanta.com/ask-the-expert/>)

SUBMIT YOUR QUESTION ([HTTP://WWW.KNOWATLANTA.COM/ASK-THE-EXPERT/](http://www.knowatlanta.com/ask-the-expert/))

Atlanta

FEATURED ARTICLES

Atlanta: Producing New Job Possibilities
(<http://www.knowatlanta.com/feature-stories-on-atlanta-atlanta-producing-new-job-possibilities/>)

Energy Efficiency In Your New Home
(<http://www.knowatlanta.com/find-a-home/cable-and-utilities/energy-efficiency-new-home/>)

City Spotlight: Lilburn
(<http://www.knowatlanta.com/feature-stories-on-atlanta-city-spotlight-moving-to-lilburn/>)

Top 10 Things to Do in Atlanta for Fall 2016
(<http://www.knowatlanta.com/uncategorized/events/top-10-things-atlanta-fall-2016/>)

Easing the Transition to a New School
(<http://www.knowatlanta.com/education/easing-transition-atlanta-private-schools/>)

Higher Ed Makes Atlanta Move Worth It
(<http://www.knowatlanta.com/education/colleges-universities-atlanta-higher-ed-student-stories/>)

POPULAR CATEGORIES

Airport
(<http://www.knowatlanta.com/category/atlanta-airport-hartsfield-jackson-interntional/>)

City Focus
(<http://www.knowatlanta.com/category/city-focus/>)

Education
(<http://www.knowatlanta.com/category/education/>)

Find a Home
(<http://www.knowatlanta.com/category/find-a-home/>)

Health Care
(<http://www.knowatlanta.com/category/health-care/>)

Jobs
(<http://www.knowatlanta.com/category/jobs/>)

KNOWAtlanta Blog
(<http://www.knowatlanta.com/blog>)

(/)

9040 Roswell Road
Suite 210
Atlanta, GA 30350
(770) 650-1102

<http://www.myvirtualpaper.com/go/KNOW-atlanta/knowfall2016-2016100401/>
REQUEST A MAGAZINE
 152 Plus Pages on ATL
CLICK TO REQUEST
<http://www.knowatlanta.com/request-magazine/>

Follow Us



(<https://www.facebook.com/knowatlanta>)



(<https://twitter.com/knowatlanta>)



(<https://www.instagram.com/knowatlanta>)

@knowatlanta (<http://twitter.com/knowatlanta>) quotes #TrinityLearn (<http://twitter.com/search?q=%23TrinityLearn>)'s @marshamac74 (<http://twitter.com/marshamac74>) "STEAM empowers students to seek solutions through... t.co/CkN2fOYdJA (<https://t.co/CkN2fOYdJA>)

Retweeted by KNOWAtlanta Magazine

I spy @GreaterAtlantaC (<http://twitter.com/GreaterAtlantaC>) @MVPSchool (<http://twitter.com/MVPSchool>) @PaceAcademy (<http://twitter.com/PaceAcademy>) @trinityatl (<http://twitter.com/trinityatl>) in @KnowAtlanta (<http://twitter.com/KNOWAtlanta>) Preparing Atlanta's Students for Tomorrow t.co/M08N5oNKmw (<https://t.co/M08N5oNKmw>)

Retweeted by KNOWAtlanta Magazine

Get your piece of the action in Georgia's \$6B #film
(<http://twitter.com/search?q=%23film>) and TV
Industry: t.co/4uQJY9AUIX
(<https://t.co/4uQJY9AUIX>) @GAFilmAcademy
(<http://twitter.com/GAFilmAcademy>) #ATL
(<http://twitter.com/search?q=%23ATL>)
t.co/2rnLzOMOR9 (<https://t.co/2rnLzOMOR9>)

@knowatlanta 
([https://twitter.com/intent/follow?
screen_name=knowatlanta](https://twitter.com/intent/follow?screen_name=knowatlanta))

© Copyright 2016 New South Publishing, Inc. All Rights Reserved. [Terms & Conditions](#) - [Privacy](#) () - [About Us](#) ()

EXHIBIT 25



[MULTICHANNEL MERCHANT](#) » [MCM](#) » [WHERE TO WAREHOUSE: THE TOP 10 FOR 2009](#)

Where to Warehouse: The Top 10 for 2009

Feb 24, 2009 9:01 PM By [Patrick Barnard](#)

Where's the best location for a distribution center? That would be Henderson, KY, according to [Chicago Consulting](#). The consultancy, which helps companies design and engineer their supply chains, has released its 12th annual 10 Best Warehouse Networks for 2009.

The study lists the best towns and cities in the U.S. for locating DCs, outlining ten hypothetical networks—a single DC location, and so on, with the last network consisting of 10 DCs. It details the best location for each DC within each network—purely in terms of distance to population. It does not take into account things like transportation infrastructure; real estate costs; local and state taxes; available labor and other factors that play an important role in deciding where to locate a DC.

"There's fundamentally only one criteria—which is distance—which translates into the amount of time it takes to get to customers," explains Terry Harris, managing partner at Chicago Consulting. "We use a very sophisticated optimizing tool that we use in our routine consulting work which we have applied in this generic sense to the U.S. population."

"This is not a tool that accounts for the road network, land values, labor rates, utility costs or anything of that nature," he adds. "But it does account for the most important issue in designing a network from a service perspective, which is the amount of time it takes to get to market."

Not only is it purely geographical in nature, the study is based on a "generic" company's customer pattern. "When designing an individual company's network, it's always better to use their specific pattern," Harris acknowledges.

Henderson, KY, is the best place to locate one warehouse because it provides the shortest distance to the U.S. population and, therefore, the lowest outbound distance, and takes the least amount of time.

"Some shipments from Henderson would travel 100 miles, some 200 miles and still others over 1,000 miles, but the average from Henderson is the lowest possible—804 miles or 2.27 days," Harris says.

This year Henderson, KY, beat out Bloomington, IN, as the best location for a single DC.

"The switch from Bloomington to Henderson was driven by higher than average growth rates in the Southeast—Florida, Georgia, North and South Carolina," Harris says. Among other minor changes, Palmdale, CA, changed to Bakersfield, CA, in networks two through five.

Harris says Chicago Consulting uses U.S. Census Bureau statistics—combined with other population indexes that measure population in the in-between years—in order to develop the study. "There's actually many sources for population statistics—there's the states, there's third parties and the Census Bureau also does its own projections," he explains.

To view the list click [here](#)

Partner Content Links

Understanding Ecommerce in China: Interactive Market Demographic from Digital River - Digital River
By the end of 2015, the Chinese ecommerce market is expected to be worth \$540 billion. That makes it the

Managing Your Commerce Business Infrastructure: Reducing the Risk in the Direct-to-Consumer Channel - Digital River
A successful ecommerce channel requires careful management of one's commerce business infrastructure,

Digital River Makes It Easier To Do Business Globally - Digital River
When Digital River takes on the role of Merchant of Record, your company no longer needs to create its own

Insights Into Global Ecommerce Risks: A Digital River On-Demand Webinar Featuring Forrester Consulting - Digital River
Interested in learning how to expand your ecommerce channel into new markets? Listen to this highly engaging

Accelerate Global Growth While Reducing Risk: A Forrester Consulting Thought Leadership Paper Commissioned by Digital River - Digital River
Digital River recently commissioned Forrester Consulting to conduct a survey to learn what keeps finance

[View More](#)

Vendor Source Directory



2017 Top CPPs



2016 Top 3PLs



Blog & Opinions

[10 Ways to Use Online Reviews to Make Your Job Easier](#)

by [Jordan Garner](#)

Posted 20 hours ago



[Adapting the 4 Most Common Digital Marketing Practices for Mobile Apps](#)

by [Polly Alluf](#)

Posted 2 days ago



[The 3 Rules of Augmented Reality](#)

by [Paul Mandeville](#)



Latest Research

Improving the Delivery Experience with Transparent Customer Communication

Making Omnichannel Fulfillment a Less Daunting Task

What Warehouse Technology System Is Right for You?

[MORE >](#)

Webinars

Google Your Way to Better Digital Marketing Campaigns

[MORE >](#)

Latest Whitepapers

Get With The Flow. How Payment Processing Affects Cash Flow.

Why a Unified Commerce Platform is a MUST for Business Growth

Top Omni-channel Commerce Problems & How to Solve Them

[MORE >](#)



About Us

- Advertising/Marketing Services
- About Us
- Contact Us
- Privacy Statement

Topics

- Ecommerce
- Marketing
- Operations & Fulfillment
- Data & Analytics
- Executive
- Technology

Events

- Operations Summit
- Growing Global
- Webinars

Resources

- Jobs
- Research
- ELetters
- Executive Summaries
- White Papers

Related Sites

- Chief Marketer
- Promo
- Direct
- DM Confidential
- Event Marketer
- LeadsCon
- LeadsCouncil
- PR News

Join Us

- Subscribe to eNewsletters

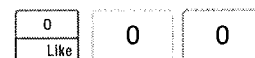
EXHIBIT 26

[Log in / Register](#)[HOME](#) [NEWS](#) [BLOGS](#) [TRADE SHOW DATA](#) [RESEARCH REPORTS](#) [ADVERTISE](#) [#EXPOCHAT](#) [SUBSCRIBE](#) [CONTACT US](#)

Material Handling Brings New Show to Atlanta in 2012

August 18, 2010

When the Material Handling Industry of America decided to bring its new biennial trade show - MODEX - to Atlanta in 2012, it wasn't just because of the city's famed southern hospitality. It also was a strategic move the association had been considering for a while because of the Panama Canal expansion that is scheduled to be completed in 2014 and the expected major impact that will occur within the material handling sector as a result.



"We see the expansion of the Panama Canal to be a major supply chain game-changer and have positioned MODEX 2012 as the event that can help exhibitors and attendees capitalize on the new dynamics," said John Nosfinger, CEO for MHIA. "Over 40 percent of North American manufacturing and distribution locations are now within a 500 mile radius of Atlanta."

He added, "Georgia and the Southeast are also home to extensive intermodal and logistics hubs that drive supply chains now and will continue to in the future. Currently, 90 percent of the global top 35 3PLs have operations in Georgia and more than 48 of the largest retailers have distribution centers."

William Pate, president and CEO of the Atlanta Convention & Visitors Bureau, said the new show is a perfect fit for the city's strategy to target specific industry sectors. "What we've been doing is to really focus on industry sectors that have been growing," he added. MODEX is signed on for 2012 and 2014 and holding dates for 2016 and 2018, Pate said.

MODEX is estimated to attract 20,000 attendees, 500 exhibitors and have a 150,000 square foot showfloor. Nosfinger said MHIA is in talks with several other entities for possible collocations and his organization hopes to have many of them on board when the show launches Feb. 6-9, 2012, at the Georgia World Congress Center.

MHIA had been mulling over launching a new show for a few years, he added, and considered not only Atlanta, but also other locales such as Orlando and Las Vegas. However, Nosfinger said, "At the end of the day, all markers pointed to Atlanta for us."

The Material Handling Industry of America's ProMat trade show

Pate said that the show and Atlanta were a good fit, adding, "The announcement of MODEX is the delivery of Atlanta's strategy to attract meetings from segments that are showing expansive growth. Atlanta is an important hub for logistics and supply chain industries and, therefore, a natural fit to be the hub for tradeshows in this segment."

MODEX is just one of five major associations within the supply chain industry that will hold its meeting in Atlanta in 2011 and 2012, collectively bringing more than 33,000 industry professionals to the city for their business, according to ACVB officials.

In addition to MODEX, the Warehousing Education & Research Council; the Council of Supply Chain Management Professionals; International Air Cargo Association; and the National Industrial Transportation League and Intermodal Association of North America will all convene in Atlanta.

"We've been watching the economy and catching the areas that are growing or expanding," Pate said. Other areas of focus for new business include alternative energy, medical and financial, he added.

Shows on the Move

Copyright © 2014 TSNN

Add new comment

****Name**

****Email (will not be published)**

Website

Comment



Type the characters you see in the picture; if you can't read them, submit the form and a new image will be generated. Not case sensitive. Switch to audio verification.

***Word verifi**

Save **Preview**

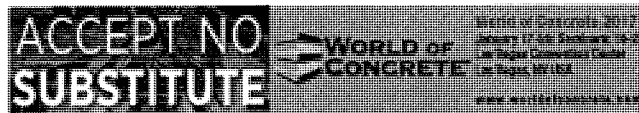



EXHIBIT 27

State of Georgia Economic Impact



An economic powerhouse, Georgia's deepwater ports foster growth statewide. They drive development and opportunity across a range of industries, reaching every corner of every county.

Use this tool to find the volume and impact of imports and exports in Georgia by county and commodity.


[See the State Economic Impact >](#)

📍 Counties: [see all](#)

Fulton County	Go
-------------------------------	--------------------


📦 Commodities: [see all](#)

Find A Commodity	Go
----------------------------------	--------------------



Ports of Savannah and Brunswick include private terminals. Trade volumes are sourced from PIERS and the U.S. Commerce Department, and the counties are based on the location of the company on the bill of lading and are not necessarily the origin/destination of the cargo.

Copyright 2009-2013 by Georgia Ports Authority
[Site Map](#) | [Privacy Statement](#) | [Terms & Conditions](#) | [Login](#)
Website by [Realm Advertising](#)




 **State of Georgia Economic Impact**



MORE IMPACT

State of Georgia / Region 3

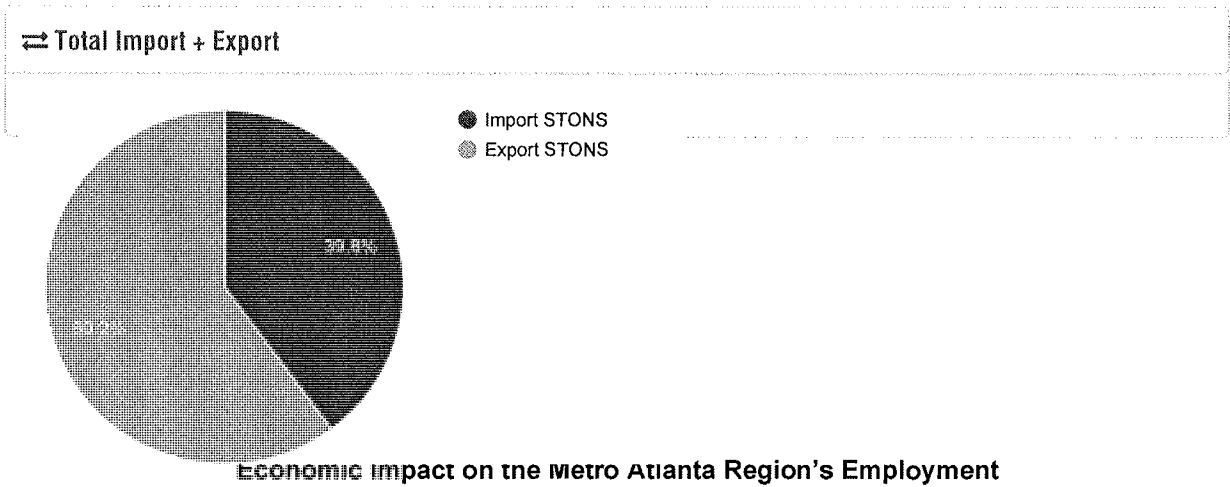
METRO ATLANTA REGION

 Overview  By County 10  By Commodity 925

↔ Total Import	
TEUs	113,009.8
Short Tons	960,644.2

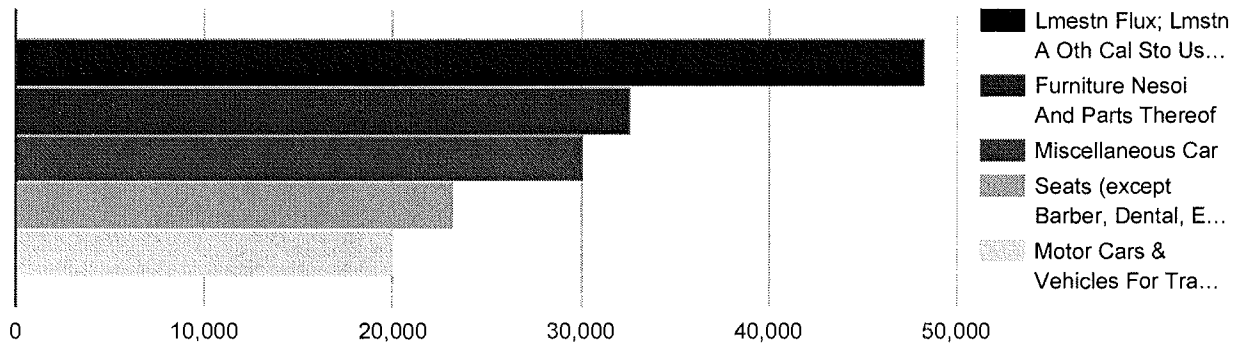
↔ Total Export	
TEUs	113,752.5
Short Tons	1,454,372.1

↔ Total Import + Export	
TEUs	226,762.3
Short Tons	2,415,016.3

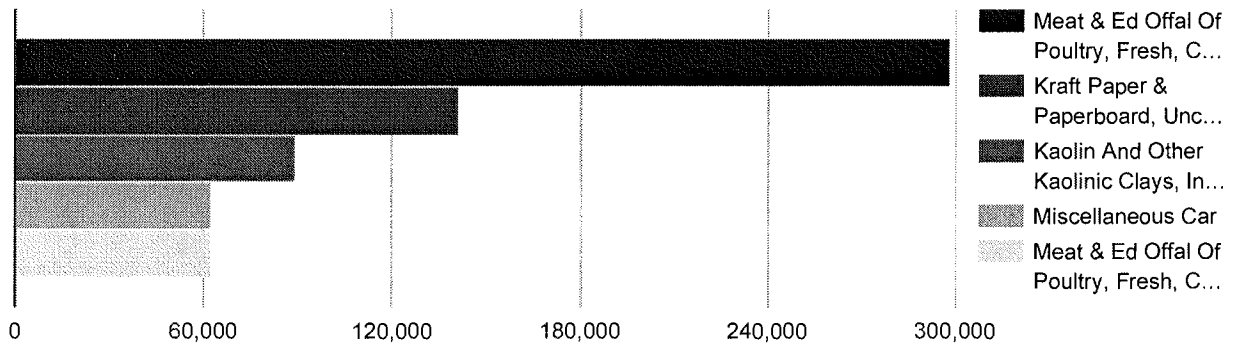


167,394

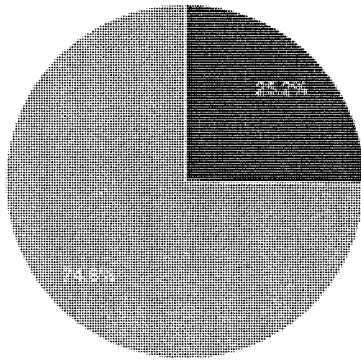
➔ Top 5 Imports



➔ Top 5 Exports



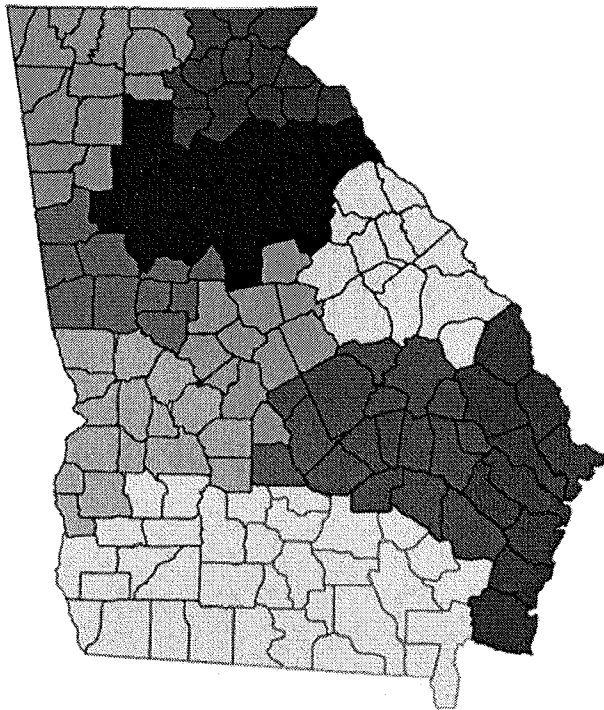
Percent of State



- Region STONS
- State STONS

 Counties: see all

 Commodities: see all



Use the map to select a region. 

Website by Realm Advertising

EXHIBIT 28

From the Atlanta Business Chronicle:

<http://www.bizjournals.com/atlanta/news/2016/10/02/brookings-institute-names-atlanta-a-knowledge.html>

Brookings Institute names Atlanta a 'Knowledge Capital'

Oct 2, 2016, 6:50pm EDT Updated: Oct 3, 2016, 8:52am EDT

Metro Atlanta is one of the top 19 "Knowledge Capitals" of the U.S. and Europe, according to a report by the Brookings Institute.

The liberal global public policy research organization's Metropolitan Policy Program listed mid-sized population centers showing strong economic output and innovative advances, that are also teeming with respected universities, talented graduates, venture capital and global patents.



ISTOCK

That means Atlanta is a leading global city when it comes to innovation, academia, worldwide connectivity and a "significant stock of human capital," the recent report states.

"Knowledge Capitals are the world's leading knowledge creation centers. They compete in the highest value-added segments of the economy, relying on their significant stock of human capital, innovative universities and entrepreneurs, and relatively sound infrastructure connectivity," the report said.

It said that knowledge capital residents are "supremely well-educated," with 41 percent of the 15-and-over population receiving college degrees. Many are graduates of elite research universities. Universities in this group boast the largest share of highly cited scientific publications. Of the 100 most scientifically impactful universities in the world, 20 are located in these cities, the report said.

"Scientific research tends to translate to new inventions in these regions, which have the highest average rates of patenting in the world. With only about 1 percent of the world's population, Knowledge Capitals generated 16 percent of global patents between 2008 and 2012; shares were even higher in information technology (22 percent) and life sciences (19 percent)," according to the Brookings Institute report.

The report marks the first time Brookings has switched up its rankings of global cities as a whole and instead classified cities in specific categories — a strategy that is similar to weight classes in boxing, one of the study's authors, Joseph Parilla, explained in a story in Atlanta Business Chronicle sister publication Philadelphia Business Journal. Philly is another knowledge capital.

"What we're trying to accomplish with this report is take a look across a wide diversity of large cities and get away from this binary of 'Am I a global city or am I not?' and acknowledge that the pervasiveness of globalization and technology exchange has created a network of cities that serve as the the hub of the global economy," he said.

The "Knowledge Capital" category is one of seven types of "global cities" the report also identified along with Global Giants, Asian Anchors, Emerging Gateways, Factory China, American Middleweights and International Middleweights.

The methodology was based on 35 factors relating to economies, industries and competitiveness including trade industries, innovation, talent and infrastructure. Economic indicators included in the study for metro Atlanta are its population, 5.71 million, nominal GDP of \$310.822 billion and nominal GDP per capita of \$54,427.

The metro areas of Atlanta and Philadelphia were grouped with fellow metro areas named knowledge capitals including Austin, Baltimore, Boston, Chicago, Dallas, Denver, Hartford, Houston, Minneapolis, Portland, San Diego, San Francisco, San Jose, Seattle, Stockholm, Washington D.C. and Zurich.

Jessica Saunders

Managing Editor

Atlanta Business Chronicle



EXHIBIT 29

Metro Atlanta's Future: Educate. Innovate. Collaborate.

Higher education sparks jobs, creativity, and entrepreneurship in **metro Atlanta**.

Metro Atlanta's growth and prosperity means vitality and new opportunities for every business. Metro Atlanta's growth and prosperity makes us the premier place to work, live, play and learn, enriching our lives at every level. Working together, we make a tremendous difference in Atlanta, and continue to build our legacy for generations to come.

Atlanta is the hometown of AT&T Mobility and we're thrilled to launch the newest AT&T Foundry here at Georgia Tech. With its great mix of FORTUNE 500 companies, world-class research institutions, and a strong workforce, Atlanta can truly become one of the world's premier locations for innovation.

- Ralph de la Vega, President & CEO, AT&T Mobility

Metro Atlanta is a National Leader in Higher Education

Metro Atlanta's **higher education** system is a **vital component** to the **economic success** of the region. With **over 275,000 students** enrolled in **66 institutions**, our colleges and universities **fuel our businesses** with talent, discovery and innovation. The research undertaken by Human Capital Research Corporation in 2013 confirms Metro Atlanta's **top ten** position for all key indicators for higher education. Importantly, in five short years, our higher education system has grown research and development expenditures by 46%. Metro Atlanta **leads the nation** in growth in enrollment of African American students and in continuing education opportunities. The region **excels** at graduating engineers with the third highest number of bachelors degrees awarded in the nation. Our strength in engineering, coupled with being the 4th fastest-growing metro for technology degrees awarded and the establishment of Atlanta as the nation's leading digital media super-hub, sets the metro Atlanta region as a **national leader for innovation**.

#1

metro for Industrial/ Manufacturing/ Operations Engineering Bachelors Degrees Awarded

#3

metro for total Bachelors Degrees Awarded

#5

metro for Mechanical Engineering Bachelors Degrees Awarded

Savannah College of Art and Design named one of **'America's Best Colleges for Entrepreneurs'** (Forbes Small Business magazine)

#4

Top 5 metro for Entrepreneurial Activity (Kauffman Foundation "Index of Entrepreneurial Activity," April 2013)

#6

metro for total Physical Sciences Degrees Awarded (Bachelors and Higher)

Metro Atlanta is a digital media super-hub with nearly twice the number of digital media career opportunities per capita as other U.S. cities.

#7

metro for total Math and Statistics Degrees Awarded (Bachelors and Higher)

Savannah College of Art and Design named one of the **World's Best Design Schools** (BusinessWeek)

3rd

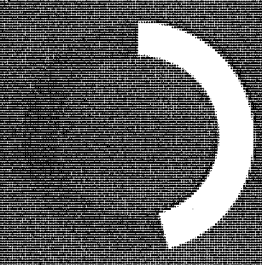
highest growth in Bachelors Degrees Awarded to International Students

#3

animation program in North America - Savannah College of Art and Design (3D World magazine)

#7

metro for total Biological and Biomedical Sciences Degrees Awarded (Bachelors and Higher)



46% growth in R&D Expenditures 2006 - 2011

#1

Atlanta is the #1 city for Young Entrepreneurs (Under30CEO, March 2013)

#6

metro for total Mechanical Engineering Degrees Awarded

#1

Atlanta is the #1 city for New College Graduates in 2013 (Forbes & Rent.com March 2013)

#2

metro for Biomedical/ Bio Engineering Bachelors Degrees Awarded

#9

metro for total Pharmaceutical Science and Pharmacology Degrees Awarded (Bachelors and Higher)

#6

metro for Bachelors Degrees Awarded to International Students

#7

metro for total Business & Economics Degrees Awarded (Bachelors and Higher)

#5

metro for in Bachelors Degrees Awarded Computer and Information Sciences

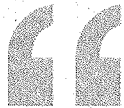
+
The Bioscience industry and university research, plus the U.S. Centers for Disease Control and Prevention, have a \$20 billion annual economic impact on Georgia and employ more than 94,000 people (2012 Shaping Infinity Report)

#2

VentureLab at Georgia Tech ranks #2 University Business Incubator in the World (2012 Inc, July 2013)

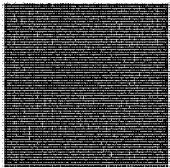
Advanced Technology Development Center (ATDC) is **"one of 12 business incubators changing the world"** (Forbes, April 2013)

Atlanta Leads the Nation in Growth in Enrollment of African American Students



“The diverse talent that’s coming out of metro Atlanta’s colleges and universities is what helps us stay competitive and an industry leader. They are smart, well-trained and provide top-notch talent for leadership roles across the company.”

- Paul Bowers, President and CEO, Georgia Power



GEORGIA POWER PREPARES AND SUPPORTS SPELMAN’S FUTURE ENGINEERS

Spelman College is a top producer of African-American female graduates who earn doctoral degrees in science and engineering. The College continues to achieve this accomplishment, in part, through corporation collaborations with partners such as Georgia Power. This partnership works to ensure the successful matriculation of our students in these disciplines through mentoring and scholarship support.

“Women continue to be underrepresented in all fields of engineering,” said Leslie Sibert, vice president of distribution at the Georgia Power and co-founder of the Spelman College Georgia Power mentoring program. “That’s why it is so critical to have role models and mentoring opportunities so that we can improve the retention of women in the field of engineering.”

The Georgia Power mentoring program at Spelman annually targets five students and prepares them for their transition to an engineering school and into the work force. Mentoring begins each fall with an introductory reception, the first of four formal programs for the mentors and mentees who stay paired for the entire school year.

“[Georgia Power] piloted a professional mentoring program at Georgia Tech and found it to be very successful. In 2008, Spelman students were added to the program,” explained Sibert. “When we do events for the mentors and mentees, it allows all the professional women participating to network with both female students from Spelman and Georgia Tech.” Often powerful and life-changing, many of the relationships continue beyond the school year, according to Sibert.

In addition to the mentoring program, Georgia Power provides scholarship support to engineering students at Spelman. Through this partnership, five educational scholarships at \$5,000 each are awarded to talented students pursuing degrees in engineering. Each recipient has academic promise

and a demonstrated financial need. Recently, Georgia Power announced an additional gift of \$25,000 to continue this support.

“It is my primary responsibility to ensure our engineering students not only excel academically, but are properly exposed to the industry, and prepared for advanced technical careers upon graduation,” explained Retina Burton, coordinator for the Dual-Degree Engineering Program at Spelman. “There are three areas in which corporations can have a great impact on our students, one of which is mentoring. The other two areas are scholarship and technical development. Georgia Power has addressed all three areas through their corporate scholarship support and mentoring program.”

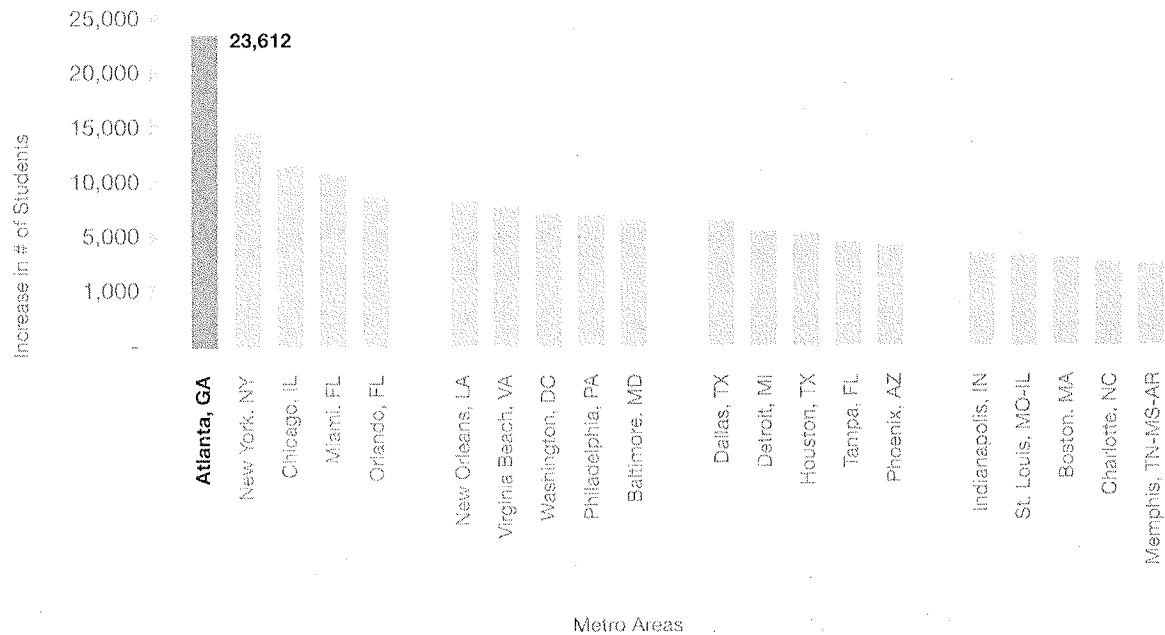
Fallon Clark, a junior who participated in the program during her first year at Spelman, said she gained invaluable experience. “It was an amazing experience to work with so many talented women engineers,” said Clark. “Participating in this program and learning from my mentor Kelsey Rooks let me know that I can achieve any goal that I set my mind to.”

“Fallon Clark was my mentee in the Women in Engineering mentoring program at Georgia Power. I got involved with the program because it’s so important to me to encourage young women to excel in an engineering/technical career,” said Kelsey Rooks, distribution engineer, at Georgia Power. “My goal was to prepare Fallon for the transition from the academic environment to a professional role in the technical arena. From building this relationship, I want my mentee to feel that she can contact me once she enters the workforce to provide continued guidance and encouragement.”

- Original story by Lorraine Robertson

Growth in Enrollment of African American Students (Full Time Enrollment)

Fall 2005 - Fall 2010



#1



Spelman College is No. 1 nationally for Historically Black Colleges and Universities

(U.S. News & World Report, Sept. 2013)

#2



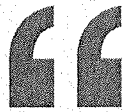
Morehouse College is No. 2 nationally for Historically Black Colleges and Universities

(U.S. News & World Report, Sept. 2013)



Photo © Emory University

Atlanta's University Research and Development Expenditures Rank Fifth in the Nation



“By driving the state's strategy to attract top scientific talent and commercialize university research, the Georgia Research Alliance (GRA) plays a distinct role in Georgia's overall economic development vision. To date, GRA has helped launch more than 300 companies, created more than 6,000 highly skilled science and technology jobs, and strengthened the overall university start-up ecosystem in Georgia.”

- Michael Cassidy, President and CEO, Georgia Research Alliance



INNOVATIVE RESEARCH AND EYE-TRACKING TECHNOLOGIES LEAD TO EARLIER DIAGNOSES FOR AUTISM IN CHILDREN

Ami Klin, Ph.D., and his team's groundbreaking research helps diagnose autism earlier in young children and provides much-needed support and medical services to those who need it most. Klin is Director of the Marcus Autism Center at Children's Healthcare of Atlanta and Professor and Division Chief, division of autism and related disorders in Emory University's Department of Pediatrics.

Klin and his team developed eye-tracking technologies to screen children for signs of autism, using concealed cameras to zoom in on children's eyes and monitor the movement of their pupils to track what objects or people they are watching on the TV screen.

This technology is helping researchers understand how autism unfolds during early childhood development and allows them to detect markers of autism as early as infancy, which can lead to earlier interventions and treatments when the condition is most malleable.

This research comes at a critical moment: autism is the fastest growing developmental disability in the U.S., affecting one in 110 children nationally—and one in 98 in Georgia. Autism is now more common than childhood diabetes, or all childhood cancers put together, according to the Marcus Autism Center.

“Treating a child with autism costs about \$80,000 a year,” Klin says, and “some estimate that autism costs the U.S. about \$140 billion annually.”

Klin is a recognized leader in autism research. A Georgia Research Alliance (GRA) Eminent

Scholar and Emory professor of pediatrics, he was recruited to Atlanta by philanthropist and Home Depot co-founder Bernie Marcus in 2011 after 20 years at Yale. He brought his 18-person research team and their families here, too, because he believed in the vision that he and Marcus shared for growing a national medical center for autism research and services.

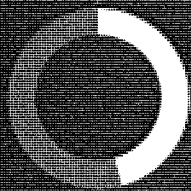
In 2012, Emory received an \$8.3 million award from the National Institutes of Health (NIH) to create an NIH Autism Center of Excellence — a collaborative research effort among Marcus Autism Center, the Department of Pediatrics in Emory University School of Medicine, and Yerkes National Primate Research Center. Research partners include the Centers for Disease Control and Prevention (CDC), Georgia Tech, the Rollins School of Public Health, and the NIH-sponsored Atlanta Clinical and Translational Science Institute.

The research at Marcus Autism Center is leading to earlier diagnoses for children: five years ago, the youngest age for diagnosis was around three years old. Now, researchers can diagnose autism at 18 months of age, and can even detect signs of risk in infants.

The Marcus Autism Center provides diagnosis, family education, behavioral therapy, and support services to children and families with autism. The Center conducts research on autism spectrum disorders (ASDs), with the goal of determining the disorders' causes and the best treatments for them. Its chief academic partner is Emory School of Medicine.

- Original story by Mary Loftus

2011 Research and Development Expenditures



46% growth
in R&D Expenditures

2006 - 2011

UGA ranks 2nd among all universities for most licenses and options executed.

(Association of University Technology Managers Licensing Survey, 2011)

#2

WHAT IF A VIRUS THAT INVADES A CELL COULD BE KEPT FROM REPLICATING ITSELF?

That simple question is at the heart of research being conducted by Ralph Tripp, a renowned viral immunologist and GRA Eminent Scholar at the University of Georgia. And the answer has profound implications on developing new ways to fight disease and illness.

Tripp and his research team have broken new ground in understanding how cells in the body can silence genes to inhibit the signaling required to replicate a virus – a process known as RNA interference (RNAi). Based on that new knowledge, Tripp has now developed several drugs to treat respiratory viruses such as respiratory syncytial virus (RSV), which poses a significant threat to the very young and elderly.

This autumn, one of Tripp's drugs targeting RSV will enter the final phase of human testing required to be authorized by the Food and Drug Administration. If approved, it would be the first of its kind to target a specific virus – and would help save thousands of lives each year in the U.S. alone.

But that new drug treatment is only the beginning of what Tripp's research could lead to.

For the first time, Tripp and his research team have shown that the RNAi gene silencing process they're exploring could also be a tool to develop a new class of vaccines.

In a study published in the December 2009 issue of the *Journal of Virology*, Tripp and UGA doctoral student Wenliang Zhang showed that administering a "small interference RNA" (siRNA) drug in mice prevented RSV infection – it actually provoked a vaccine-like immune response to infection.

"This is the first study of its kind to show that siRNA can be used to improve the immune system's memory response to an infectious agent," Tripp says. "We were able to reduce the replication of the virus enough to prevent the development of disease, yet still induce potent immunity later on."

Preliminary data from Tripp's research shows that a similar approach would likely have the same effect on other diseases. So he's embarked on new efforts to develop synthetic anti-viral drugs that act like vaccines for influenza and a variety of other significant human viruses.

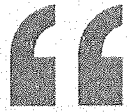
- Original story by the Georgia Research Alliance



Emory University ranks fifth nationally for licensing revenue per dollar spent on research.

(Chronicle of Higher Education, Aug. 2013)

Atlanta Excels at Graduating Engineers



“We are growing our company in Atlanta because of the access to engineering talent. We know the pipeline is rich, and the talent is passionate. We are looking for people that are able to take the complex and turn it into simple – that’s what we do for a living.”

- Alan Dabbieri, Chairman, AirWatch



IMPROVED HEARING ANTICIPATED FOR IMPLANT RECIPIENTS

The cochlear implant is widely considered to be the most successful neural prosthetic on the market. The implant, which helps deaf individuals perceive sound, translates auditory information into electrical signals that go directly to the brain, bypassing cells that don’t serve this function as they should because they are damaged.

Despite their prevalence, cochlear implants have a long way to go before their performance is comparable to that of the intact human ear. Led by Pamela Bhatti, an assistant professor in the School of Electrical and Computer Engineering, a team of researchers at the Georgia Institute of Technology has developed a new type of interface between the device and the brain that could dramatically improve the sound quality of the next generation of implants.

A normal ear processes sound the way a Rube Goldberg machine flips a light switch – via a perfectly-timed chain reaction involving a number of pieces and parts. First, sound travels down the canal of the outer ear, striking the eardrum and causing it to vibrate. The vibration of the eardrum causes small bones in the middle ear to vibrate, which in turn, creates movement in the fluid of the inner ear, or cochlea. This causes movement in tiny structures called hair cells, which translate the movement into electrical signals that travel to the brain via the auditory nerve.

As an electrical engineer, Bhatti sees the current electrode configuration as a significant barrier to clear sound transmission in the current device.

“In an intact ear, the hair cells are plentiful, and are in close contact with the nerves that transmit sound information to the brain,” says Bhatti. “The challenge with the implant is getting efficient coupling between the electrodes and the nerves.”

Contemporary implants contain between 12 and 22 wire electrodes, each of which conveys a signal for a different pitch. The idea is the more electrodes, the clearer the message.

So why not add more wire electrodes to the current design and call it a day?

Much like house-hunting in New York City, the problem comes down to a serious lack of available real estate. At its widest, the cochlea is 2 millimeters in diameter, or about the thickness of a nickel. As it coils, it tapers down to a mere 200 micrometers, about the width of a human hair.

“While we’d like to be able to increase the number of electrodes, the space issue is a major challenge from an engineering perspective,” says Bhatti.

With funding from the National Science Foundation, Bhatti and her team have developed a new, thin-film, electrode array that is up to three times more sensitive than traditional wire electrodes, without adding bulk. Unlike wire electrodes, the new array is also flexible, meaning it can get closer to the inner wall of the cochlea. The researchers believe this will create better coupling between the array and the nervous system, leading to a crisper signal.

According to Bhatti, one of the biggest challenges is actually implanting the device into the spiral-shaped cochlea.

“We could have created the best array in the world, but it wouldn’t have mattered if the surgeon couldn’t get it in the right spot,” says Bhatti.

To combat this problem, the team has invented an insertion method that protects the array and serves as a guide for surgeons to ensure proper placement. The research is being done in collaboration with Georgia Regents University.

Before it’s approved for use in humans, it will need to undergo rigorous testing to ensure that it is both safe and effective.

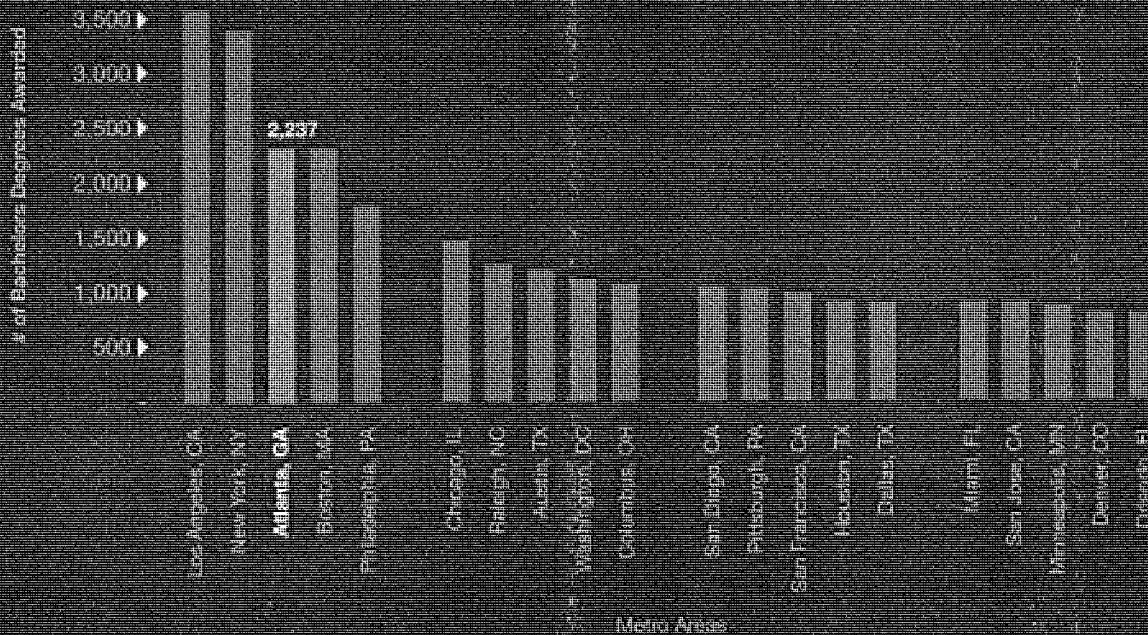
The most important thing, according to Bhatti, is not to lose sight of the big picture.

“We are always designing with the end-user in mind,” says Bhatti. “The human component is the most important one to consider when we translate science into practice.”

- Original story by Valerie Thompson, Ph.D.

Engineering and Engineering Technologies Bachelors Degrees Awarded

2011



#1 Georgia Tech is No. 1 in the nation in engineering degrees awarded to all minority students, No. 1 for engineering degrees to women, and No. 1 for graduate engineering degrees to Hispanics

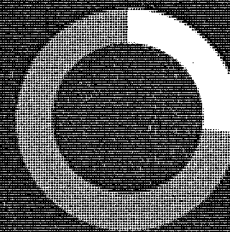
#1 metro for Industrial/Manufacturing/Operations Engineering Bachelors Degrees Awarded

#2 metro for Biomedical/Bio Engineering Bachelors Degrees Awarded

#5 metro for Mechanical Engineering Bachelors Degrees Awarded

#6 metro for Chemical Engineering Bachelors Degrees Awarded

metro for **#2** Aerospace/Aeronautical/Astronautical Engineering Bachelors Degrees Awarded



27% growth in Total Engineering Bachelors Degrees Awarded (2006-2011)

#9 metro for Electrical Engineering Bachelors Degrees Awarded

Georgia Tech's undergraduate and graduate engineering colleges rank in the top five, according to U.S. News & World Report

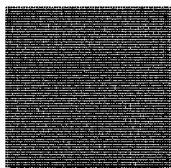
#9 metro for Electrical Engineering Bachelors Degrees Awarded

Technology Graduates Spur Atlanta's Growing Tech Community



“Technology is core to what we do at GE Energy, and having unlimited access to an educated workforce as we grow is key. One of the most important factors to our success is a highly-skilled, well trained workforce in the technology field.”

- Dan Janki, President and CEO, GE Energy Management



ROBOT THERAPY COULD HELP KIDS WITH DISABILITIES

Children with cerebral palsy face many challenges, especially as they develop motor skills and muscle control needed to interact with their environments.

Robots might just be the answer to help these children with their disability.

“Children with cerebral palsy don't have very much control over their movements,” Chen said. “Even though they see and understand, they can't easily repeat modeled movements. So, we decided to use a robot as a playmate and at the same time ask the robot to become an evaluation tool.”

Georgia State University's Yu-Ping Chen, assistant professor of physical therapy, with Ayanna Howard, a professor of robotics at Georgia Institute of Technology, are exploring how specially designed robots made for children can help improve their motor skills and muscle control.

Cerebral palsy is an umbrella term for brain lesions resulting from injury or illness, whether they occurred before or after birth. The severity of the lesions varies from individual to individual, as well as the impact of the diagnosis on their lives.

Many people living with cerebral palsy have been helped by assistive robots, called “contact robots,” but these robots are designed for adults, not children.

Chen and Howard want to design a robot that is scaled down for children and resembles a toy so a child will fully interact with it.

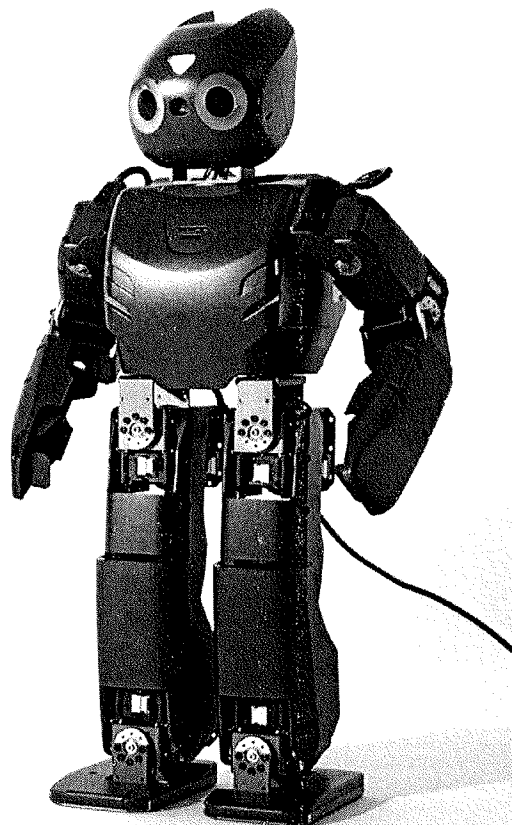
The researchers will also program the robot to record data, placing video cameras in the robot's eyes to record the range and speed of the child's movements in order to evaluate the child's therapy.

With the ability to tailor therapy through programming the robot and the means to collect data, therapists will be able to create personalized therapy for children with cerebral palsy.

The research is funded by the National Science Foundation.

Chen has previously worked on a project with children living with cerebral palsy, examining the effects of music therapy under a grant funded by the Grammy Foundation.

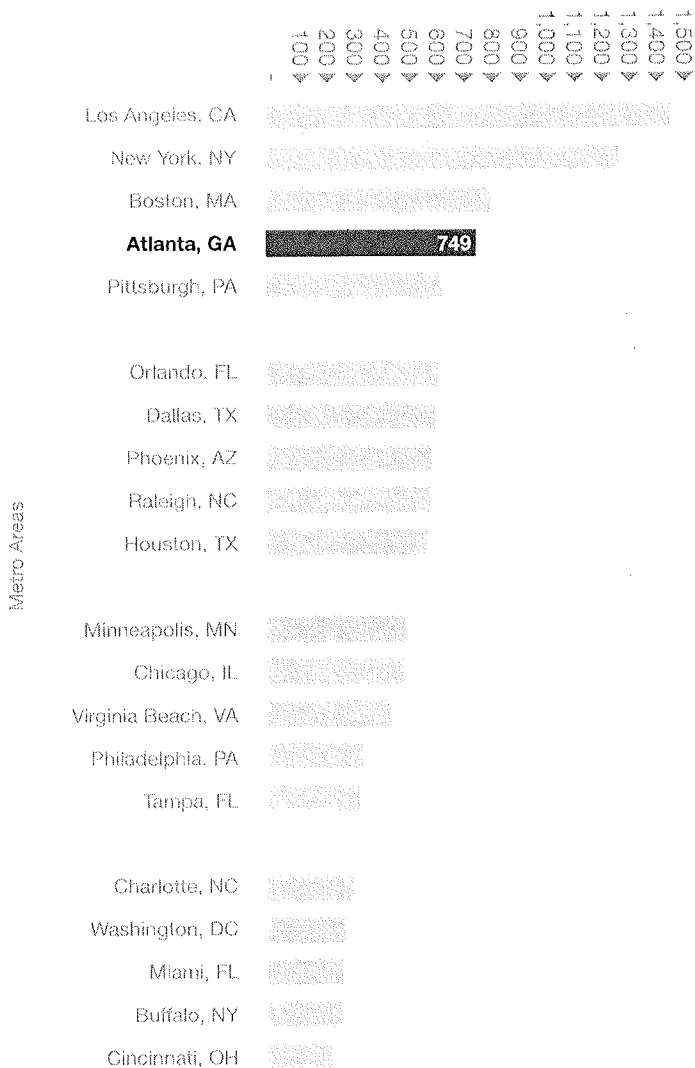
- Original story by Angela Go.



The Darwin robot

Growth in Technology Cluster Degrees Awarded 2006-2011

Increase in Total # of Degrees Awarded (Bachelor's & Higher)



With more than 100,000 technology workers in Georgia, and technology superstars such as AT&T Mobility, NCR, IBM, Wipro, AirWatch, Turner Networks, GE Energy and others, Atlanta has a leading edge in software, internet security, transaction processing, digital content, mobility, wireless applications and services, smart grid technologies and more.



SCAD STUDENTS BRING NEW THINKING TO ATLANTA COMPANIES

Across Metro Atlanta, the common cry is, "Innovate!" The challenge is where to find that new thinking. How can entrepreneurs and companies get beyond old ideas and see products, services, and customers with new eyes? At the Savannah College of Art and Design (SCAD), the answer is simple: Students.

What SCAD students love is a challenge. That's why so many Fortune 100 companies have been bringing their thorniest design challenges to SCAD, through the university's Collaborative Learning Center, or CLC. Many of these companies and partners are based right here in Atlanta, such as Coca-Cola, AT&T, and Chick-fil-A.

Here's how it works:

The corporate partner brings a defined business challenge – in the form of a creative brief – to the CLC. For example, Chick-fil-A recently approached SCAD to help research and develop a new outdoor environment design for their restaurants. The CLC then helps identify which SCAD faculty and students are best suited to address that need. After 10 weeks of ideation, research, fieldwork, and prototyping, SCAD students present their ideas in a final client presentation to company executives and representatives.

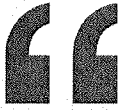
Typically, the results of CLC projects are kept confidential, but the real endgame is no secret: it's a win-win for all. Companies get the new thinking they so desperately need, and students earn course credit while gaining priceless real-world experience on real-world projects. And many CLC partners end up hiring SCAD students as interns, designers, brand managers.

Other recent SCAD CLC projects include students working with bmobile to develop a line of branded mobile phone products and interface designs; students working with Chick-fil-A to research, develop, and design concepts for team member apparel that reflect the premium fast-service brand; and students working with Coca-Cola to research and develop new cross-promotional marketing concepts.

Other Atlanta-based SCAD partners include the Alliance Theater, BET, Fox Theatre, and the Centers for Disease Control, as well as national partners Microsoft, FOX Sports, Reebok, Fisher-Price, Whole Foods, General Electric, Hershey's, Hewlett-Packard, and others. In the last five years, more than 1,000 SCAD students have worked with 130 companies and community partners – including several Fortune 100 companies.

- Original story by John Paul Rowen

Atlanta Leads the Nation in Continuing Education Opportunities



“Metro Atlanta colleges and universities give us the opportunity to continue to educate our employees and spark creativity. The more we can enhance the learning opportunities for our employees the stronger we are as a company. Continuing education gives us the ability to use and enhance our inhouse talent.” - Bill Linginfelter, Area President, Georgia/South Carolina, Regions Bank

GEORGIA STATE UNIVERSITY GRADUATE BEGINS SECOND CAREER WITH NEW DEGREE

Ten years ago, with her children grown and her home in Atlanta well established, Donna Brazzell decided she wanted to re-enter the working world. She had a bachelor's degree in chemistry, but that field didn't fit her anymore.

Browsing through a Georgia State course catalog, Donna realized just how many options were open to her – some of which, such as a degree in public administration and non-profit management, hadn't even really existed when she went to school the first time around. “I started off in the certificate program because I hadn't been back in school for 25 years and I wasn't real sure about things,” she says, “but once I was in there, I knew I loved it. And within a couple months I'd switched over to the graduate program.”

The classes were challenging, and the work wasn't easy. But thanks to a classroom atmosphere that emphasized the sharing of ideas over rote learning, she says she was never bored. “Many of my classmates were working at Atlanta nonprofits.

Their practical experience, merged with the professors' theory- and knowledge-based teaching, led to some phenomenal class discussions.”

After earning her master's in 2005, Donna wasted no time in putting her degree to use. She worked for the American Lung Association for a couple years and has been the executive director of the DeKalb Library Foundation for the last six. “I really enjoy my job every single day,” she says. “And I have used almost every single thing that I learned while I was in school. I know I couldn't do my job today without all the knowledge and the experience that I got in class and learning from other people.”

“This place has given me so much,” she says. “It's really reshaped my whole future. I've gotten a second career – it's exciting, I'm on a new adventure, learning new things and growing, and that's a real gift to me.”

- Original story by Doug Gillett

Growth in Age 35 and Older Students (Full Time Enrollment)

2005-2010



Metro Areas

METRO ATLANTA: INNOVATION. ACCESS. GROWTH POTENTIAL.



GLOBAL ACCESS

People and products can easily connect to the world from Atlanta. Hartsfield-Jackson Atlanta International Airport, the world's most-traveled airport for 15 consecutive years, offers nonstop flights to more than 70 international destinations in 45 countries, as well as to 160 domestic destinations. With 14 all-cargo carriers and the Georgia Foreign Trade Zone, Atlanta's airport connects products to the global marketplace.

STRATEGIC LOCATION

The area's transportation infrastructure of air, rail, road and ocean makes Atlanta a strategic location. More than 80% of the U.S. population is within a two-hour flight of Atlanta. Trucks can reach more than 80% of U.S. markets within two delivery days from Atlanta. Over 40% of North American manufacturing and distribution locations are within a 500 mile radius of Atlanta.



QUALITY OF LIFE

Metro Atlanta is a great place for all ages to live. Moderate climate enables year-round outdoor activities. Housing, consumer goods and services are relatively less expensive than in other major metro areas. A strong network of quality hospitals and physicians offers expertise and resources for Atlantans to live well.



BUSINESS CAPITAL OF THE SOUTHEAST

Metro Atlanta thrives as a regional business hub with a pro-business, cost-effective environment. As the 10th-largest economy of all metro areas in the U.S. and the largest economy in the Southeast region, metro Atlanta is home to a critical mass of companies. Atlanta offers the lowest relative business location costs of the top 10 largest U.S. metros, as well as tax incentive programs for job creation and investment, and a business-friendly community with engaged community leaders.

INTERNATIONAL CONNECTIONS

Metro Atlanta is home to approximately 2,700 foreign-owned business operations, employing approximately 130,000 people. And, 65 countries are represented in metro Atlanta with 67 full & honorary consulates and trade offices, and 48 bi-national chambers of commerce.



INNOVATION & ENTREPRENEURSHIP

The higher education system in metro Atlanta seeds the regional innovation and entrepreneurial community. From 2007-2011, universities and colleges filed more than 3400 invention disclosures, executed more than 1100 license and option agreements and received over 500 U.S. patents.



TALENT & EDUCATION

Atlanta offers a diverse workforce with the education, work ethic and skills for businesses. With 66 colleges and universities enrolling more than 275,000 students each year and 7 technical colleges enrolling more than 60,000 students each year, Atlanta offers a pipeline of talent.



Metro Atlanta Chamber 

BUSINESS HIGHER EDUCATION COUNCIL

The Business Higher Education Council works to help commercialize research from local Universities and Colleges and supports the Atlanta startup community. The initiative also supports existing businesses to grow through research, technology transfer, internships, access to skilled talent and opportunities to access more funding. For more information, please visit MetroAtlantaChamber.com




All data in this study is derived from the Integrated Post-Secondary Education Data System (IPEDS) Survey. The years of the survey are Fiscal 2011 and Fiscal 2006. In the usage of Fall Cohort data, this refers to Fall 2010 and Fall 2005. This study uses the 2010 Core Based Statistical Area (CBSA) delineations which are commensurate with the 2010 U.S Census. The CBSA rankings are based on the aggregate populations of the nation's 100 largest CBSAs. Due to the use of more recent data and the re-drawing of CBSA boundaries since the publication of previous Atlanta Regional Council for Higher Education (ARCHE) MSA studies, information provided in this study is not directly comparable to previous studies conducted.

EXHIBIT 30

COLLEGENavigator



- » **Refine your search** with *More Search Options* to select additional search criteria.
- » **Build a list of schools** using *My Favorites* for side-by-side comparisons.
- » **Pinpoint school locations** with an *interactive map*.
- » **Export search results** into a *spreadsheet*.
- » **Save your session** including search options and favorites.
- » **Add College Navigator** to your browser search bar.

College Affordability and Transparency Center 
 Browse lists of institutions with the highest and lowest tuition & fees and net price. [» GO](#)

ADDITIONAL RESOURCES

Preparing for your Education
 Find out what you need to do to prepare for education beyond high school. [» GO](#)

Financial Aid
 Apply for Federal Student Aid on FAFSA. [» GO](#)

Postsecondary Education Outcome Measures: ED, DOD, and VA
 ED, DOD, and VA have identified a set of potential education outcome measures for Veterans and service members. [» GO](#)

Careers
 Deciding on a career? Consult the *bls.gov* Occupational Outlook Handbook. [» GO](#)

Explore the Institute of Education Sciences

- IES**
- Home
 - About
 - Office of Director
 - Deputy Director for Administration and Policy
 - Deputy Director for Science
 - Standards and Review Office
 - Publications
 - Data
 - Funding
 - News

- IES Centers**
- NCEE
 - NCER
 - NCES
 - Home
 - About
 - Programs
 - Publications
 - Data
 - School Search
 - News
 - Kids' Zone
 - NCSE

IES Policies and Standards

- Public Access Policy
- Privacy and Security Policies
- NCES Statistical Standards
- Peer Review Process
- ED Data Inventory
- Fed Stats
- Contact Us

U.S. Department of Education

Additional Resources

- ERIC
- Sitemap
- Organizational Chart

EXHIBIT 31

Search



LOG IN

JOIN MAC

ABOUT US

WHAT WE DO

NEWSROOM

LIFE IN ATLANTA

MEMBERS

CALENDAR

CONTACT

Atl Newsroom

News

Jobs

MAC Membership

Around Atlanta

Bioscience & Health IT

Education

Business Higher Ed

Clean Technology

Environment & Sustainability

International Business

Legislative Issues

Partners

Sports

Supply Chain

Technology

Transportation

Workforce

Images

Higher Education Report shows Metro Atlanta is a national leader in several higher education indicators

by Ada Hatzios | Nov 08, 2013

Metro Atlanta leads the nation in college enrollment growth of African-American students and in continuing higher education opportunities

ATLANTA – The Business Higher Education Council (BHE), led by the Metro Atlanta Chamber (MAC), issued a higher education research study that shows Atlanta ranking among the top 10 metropolitan areas in the United States for key higher education indicators related to student enrollment, research and development, number of graduates and types of degree programs.

“The report gives us confirmation that metro Atlanta has an exemplary higher education system,” said Mark Becker, president of Georgia State University and co-chair of the Business Higher Education Council. “We are educating the best and brightest students and providing companies with the best possible talent and research to create jobs and grow companies. Metro Atlanta has the people, companies and innovation to drive the businesses of today and grow companies of tomorrow.”

Significantly, metro Atlanta leads the nation in growth of enrollment of African-American students and in continuing education opportunities. Out of the top 100 U.S. metropolitan areas, Atlanta has had the highest growth in the number of African-American students enrolled full-time. Additionally, Atlanta has had the highest growth in the number of African-American college graduates.

The report also reveals some encouraging findings regarding research expenditures and the increase in full-time enrollment. In five short years, the region’s higher education system has grown research and development expenditures by 46 percent. The study also determined the most popular degree programs, ranked by number of graduates: business & economics; technology-related; engineering & engineering technologies; biology & biomedical sciences; communications & communications technologies; and computer & information sciences.

The study looked at the enrollment numbers from a period of Fall 2005 to Fall 2010, and numbers from degrees conferred from 2006 to 2011. Atlanta had the fourth highest change in total full-time equivalent student enrollment – behind New York, Los Angeles and Chicago – with an increase of nearly 78,000 students from 2006 to 2011.

The Atlanta region ranks, among America’s 50 largest metro areas:

#1 metro for growth in African-American full-time enrollment (increase of 23,612)

#1 metro for growth in full-time students enrolled, age 35 and older (increase of 6,994)

#2 for total African-American full-time enrollment (65,933).

#5 in university research expenditures (\$1.49 billion) – after NY, Boston, LA, Baltimore

#7 for total degrees conferred (42,126, bachelor’s level or higher)

#7 for total bachelor’s degrees conferred (27,728)

#7 for total undergrad full-time equivalent enrollment (228,155)

#8 in total full-time equivalent college students enrolled (277,831) – ahead of Dallas, San Francisco and Houston

The metro Atlanta region also excels at graduating engineers with the third highest number of bachelor’s degrees awarded in the nation.

“Our strength in engineering, coupled with being the 4th fastest-growing metro for technology degrees awarded, sets the metro Atlanta region as a national leader for innovation,” said Katie Kirkpatrick, senior

Videos

RSS Feeds

vice president of BHE.

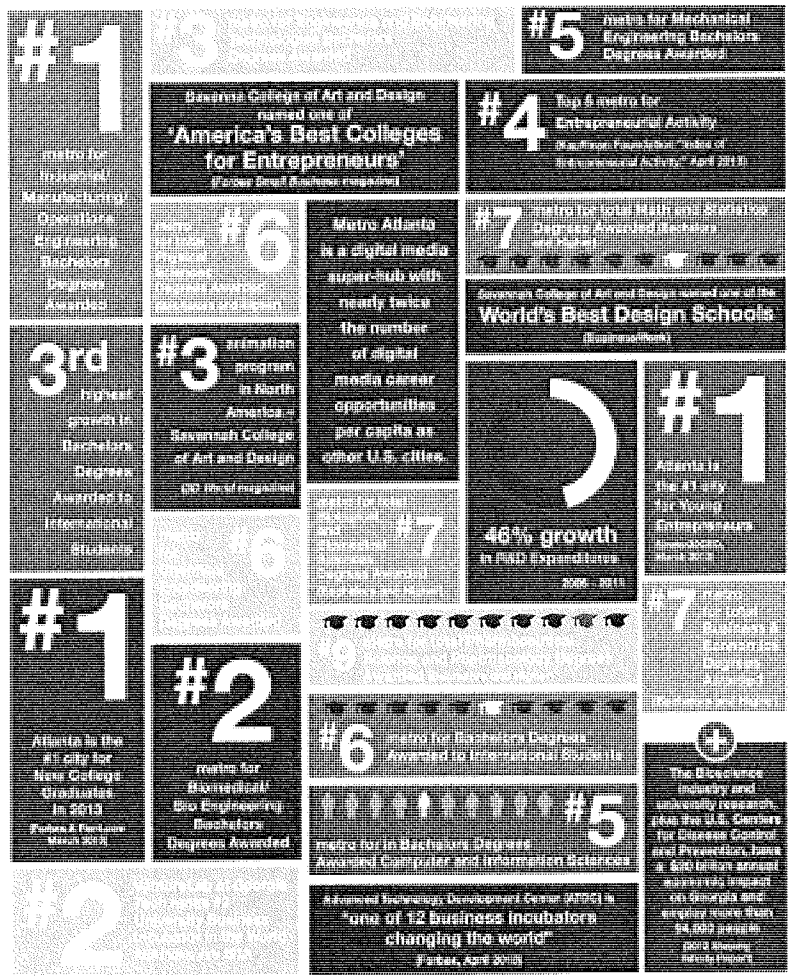
"Atlanta's vision to serve as a world-class model of university and industry collaboration will help us become one of the world's highest-ranked cities for higher education," said John Brock, chairman and CEO of Coca-Cola Enterprises and co-chair of the BHE Council. "With its abundance of high-growth and established FORTUNE 1000 companies and its vast academic and entrepreneurial ecosystem, Atlanta provides young professionals a unique opportunity for education and employment after graduation."

The BHE Council commissioned Human Capital Research Corporation (HCRC), a privately-held educational consultancy located in Evanston, Illinois, to review and analyze the data from the Integrated Post-Secondary Education Data System (IPEDS) Survey, which is the primary source for data on colleges, universities, technical and vocational post-secondary institutions in the U.S. The data is collected by the National Center for Education Statistics (NCES), which is the federal entity related to education data.

The study findings can be accessed at: <http://bit.ly/1gDb5AX>

About the study

The years of the survey under study are Fiscal 2011 and Fiscal 2006. In the usage of enrollment data for full-time graduate and undergraduate students, this refers to Fall 2010 and Fall 2005. The study includes 66 colleges and universities in the 29-county Atlanta Metropolitan Statistical Area (MSA). The schools are both public and private, profit and not-for-profit schools, and all of the 66 schools participate in the Title IV federal student aid programs. Schools that are solely online enterprises have been removed. For the purposes of this study, three schools with significant Atlanta activity and an Atlanta campus were included even though they are based outside the Metropolitan Atlanta MSA: University of Georgia (UGA), Mercer University, and Savannah College of Art and Design (SCAD). The study does not include all of Mercer or SCAD data; the data reflects estimates of the Atlanta activity for graduates and degrees awarded at their Atlanta campuses. All of UGA's statistics are included.



###

About the Business Higher Education Council – The Business Higher Education Council was created in 2012 by the Metro Atlanta Chamber as an initiative to jump-start our region's economy and drive innovation through university and industry collaboration. The Council works to help commercialize research from local universities and colleges and supports the Atlanta startup community that results from

the higher education system. The initiative also supports existing businesses to grow through research, technology transfer, internships, access to skilled talent and opportunities to access more funding.

About the Metro Atlanta Chamber – Everything we do at the Metro Atlanta Chamber is about building our economy and creating prosperity to help Atlanta thrive. Our board is made up of Atlanta's top business leaders. Our professional staff serves 4,000 member companies that employ nearly 1 million workers. We focus on helping small businesses and mid-size companies grow, helping entrepreneurs get started, and recruiting companies nationally and internationally in our key industries: bioscience, clean technology, health IT, mobility, supply chain and advanced manufacturing, and technology. In public policy, we tackle critical issues to support infrastructure and quality of life. For members, we offer 150+ events and activities each year. In sports, MAC's Atlanta Sports Council has helped drive almost \$2 billion in economic impact through sporting events over the last 10 years. Our website is www.metroatlantachamber.com

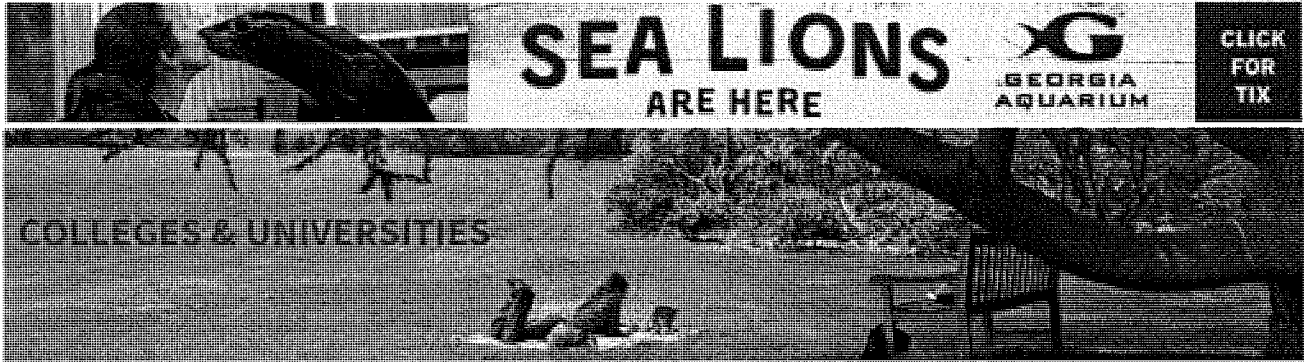
Metro Atlanta Chamber 

[Privacy Policy](#) [Sitemap](#) [Resources](#)

235 Andrew Young International Blvd. NW • Atlanta, Georgia 30303 • (404) 880-9000

Copyright © 2016 Metro Atlanta Chamber. All Rights Reserved.

EXHIBIT 32



Things To Do In Atlanta This Weekend October 21 through October 23

What's Hot on the BeltLine's Westside Trails

9 Spooktacular Events for Kids in Atlanta

[VIEW ALL MEET THE BLOGGERS ARTICLES](#)

[Grant Park Halloween Lantern Parade](#)
10/21/2016

[Sips Under The Sea - Masquerade](#)
10/21/2016

[Taste Of Atlanta](#)
10/21/2016 - 10/23/2016

[Atlanta Streets Alive - Harvest On The Square](#)
10/23/2016

SEE MORE EVENTS

Atlanta colleges and universities are numerous, spanning from historically black colleges, technical colleges, top research institutions and schools of art, medicine and theology. The region ranks in the top 10 among U.S. metros in students enrolled, research spending and degrees earned.

Collaboration brings these institutions together as one big campus. They work together in research. They share library resources. They offer joint degrees and even allow students to take a course at another institution.

Hundreds of thousands of students go to college in Atlanta - and millions more visit to take a tour, attend a conference, cheer on their team or enjoy the arts.

DID YOU KNOW:

- There are 57 colleges and universities in the Atlanta region.
- Atlanta is 7th in student enrollment among America's largest urban areas and 6th in annual college graduates (at the bachelor's level or higher).
- Atlanta is among the top seven urban centers in number of degrees awarded in fields including engineering, computer sciences, math, physical, biological sciences, health professions, business, arts and theology.
- Colleges and universities in the Atlanta region create 130,000 jobs across all industries in Georgia.
- Atlanta is a national leader in attracting college-educated 25 to 34 year olds, according to the Metro Atlanta Chamber of Commerce.

20 COLLEGES & UNIVERSITIES

[VIEW 10](#) [20](#) PER PAGE

[1](#) [2](#)
NEW SEARCH

[LIST VIEW](#) [MAP VIEW](#)

AGNES SCOTT COLLEGE

Area: Emory \ Decatur \ Stone Mountain

Agnes Scott College educates women to think deeply, live honorably and engage the intellectual and social challenges of their times. Students are...

[MORE DETAILS](#)



BRENAIL UNIVERSITY

Area: Near Metro Atlanta

Founded in 1878, independent Brenau University provides liberal arts graduate and undergraduate education to more than 2,500 students through its...

[MORE DETAILS](#)

CLARK ATLANTA UNIVERSITY

Area: Downtown

At Clark Atlanta University, we offer a superior learning environment that produces recognized leaders in their chosen professions who are empowered...

[MORE DETAILS](#)

CLAYTON STATE UNIVERSITY

Area: Airport

A unit of the University System of Georgia, Clayton State University is an outstanding comprehensive metropolitan university located in Morrow, Ga.,...

[MORE DETAILS](#)

COLUMBIA THEOLOGICAL SEMINARY

Area: Emory \ Decatur \ Stone Mountain

As a theological institution of the Presbyterian Church (USA), Columbia's mission is to prepare imaginative, resilient leaders for Christ's church....

[MORE DETAILS](#)

EMORY UNIVERSITY

Area: Emory \ Decatur \ Stone Mountain

Emory University is an internationally recognized research university distinguished by its outstanding undergraduate, graduate and professional...

[MORE DETAILS](#)

GEORGIA GWINNETT COLLEGE

Area: Near Metro Atlanta

[MORE DETAILS](#)

GEORGIA INSTITUTE OF TECHNOLOGY

Area: Midtown

A top-10 public university, the Georgia Institute of Technology is distinguished by its world-class academics that emphasize science and technology...

[MORE DETAILS](#)

GEORGIA STATE UNIVERSITY

Area: Downtown

Located in the heart of downtown Atlanta, Georgia State University is one of the leading research institutions in an urban setting. The university is...

[MORE DETAILS](#)

INTERDENOMINATIONAL THEOLOGICAL CENTER

Area: Downtown

The Interdenominational Theological Center (ITC) is the world's premier resource for church scholarship, theological study, research and training for...

[MORE DETAILS](#)



EXHIBIT 33

FOR THE EXCLUSIVE USE OF SCAHOON@KTSLAW.COM

From the Atlanta Business Chronicle:

<http://www.bizjournals.com/atlanta/news/2016/10/03/which-atlanta-neighborhood-is-ranked-one-five.html>

Which Atlanta neighborhood is ranked one of five "Great Places" in the country?

Oct 3, 2016, 12:31pm EDT Updated: Oct 4, 2016, 4:13pm EDT

Atlantans love Midtown for Piedmont Park, The Fox Theatre, its mile of popular restaurants and place on the Atlanta Beltline, and now it is being recognized as one of the top neighborhoods in the country.

The American Planning Association (APA) named Midtown Atlanta one of five "Great Places" in 2016.

The APA judges neighborhoods based on character, composition and planning that drives economic growth and fosters community ties. Midtown rose to the top of the organization's ranks because of its planning initiatives, colorful history, vibrant arts and cultural scene, connected street grid and investments in walkability.

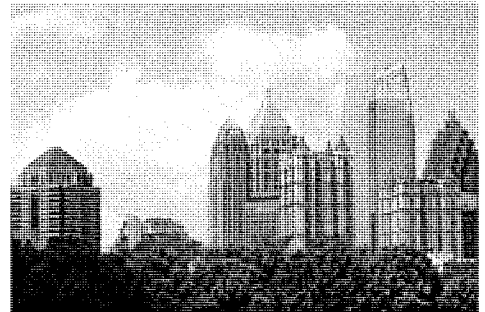
About 82 percent of those who live and work in Midtown say they feel a strong sense of community, according to the Midtown Alliance.

And the hip in-town neighborhood is growing like gangbusters. Currently 20 construction projects are underway in the area's 1.2 square mile business districts, and 20 more projects have been proposed. More than 8,000 jobs have been announced in Midtown in the past 18 months, and more than 5,500 residential units have been recently added or are under construction.

"We are excited about this shared win for the City of Atlanta and partners working every day to make Midtown successful," said Midtown Alliance CEO Kevin Green. "This recognition is a testament to the strength of visionary planning, committed partners and solid execution over the last two decades. "Midtown today is a great example of the big things that can happen when the right people and organizations come together with a shared resolve."

On Oct. 4, Atlanta Mayor Kasim Reed, Green, Atlanta City Councilman Kwanza Hall and others will recognize the designation in 10th Street Park.

"The city of Atlanta is honored to be recognized by the American Planning Association," said Reed in a statement. "Midtown Atlanta is home to world-class companies, and is marked by its cultural attractions, higher education institutions and noteworthy architecture. This award is not just a win for the City of Atlanta and its partners, but also for the 65,000 daytime workers, 15,000 residents and more than 6 million annual visitors of this thriving community."



JACQUES COURET

Atlantans love Midtown for Piedmont Park, The Fox Theatre, its mile of popular restaurants and place on the Atlanta Beltline, and now it is being recognized as one of the top neighborhoods in the country.

The other neighborhoods recognized were Santa Ana, Calif.; Old Louisville, Ky.; Nob Hill in Albuquerque, N.M.; and Downtown Warren, R.I.

Ellie Hensley
Staff Writer
Atlanta Business Chronicle

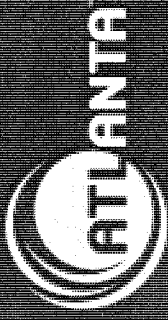


EXHIBIT 34

2014 | ANNUAL
REPORT

2015

BUSINESS AND
FINANCIAL PLAN



ACVB Mission

To sell and market metro Atlanta and Georgia globally as the premier conventions, meetings and tourism destination in the regional, national and international marketplace and favorably impact the Atlanta economy through conventions and tourism.

ACVB Vision

To be the best and most hospitable city with which to do business.

About ACVB

- > ACVB founded 1913.
- > Markets Atlanta to tourists, convention attendees, meeting planners and business travelers.
- > Promote entire destination:
 - Hotels
 - Restaurants
 - Attractions, etc.
- > 94,100 hotel rooms in metro Atlanta
- > Bed tax collected on City of Atlanta accommodations (22,400 rooms), primarily in:
 - Downtown
 - Midtown
 - Buckhead



A Letter from Our President

Atlanta's hospitality industry continued to shatter records in 2014. Hotel occupancy levels in the city of Atlanta rose over 70 percent for the first time in our city's history. Growth in hotel occupancy across the metro area was up 8.1 percent year-over-year, ranking Atlanta No. 1 among the top 25 destinations in the U.S., another city first.

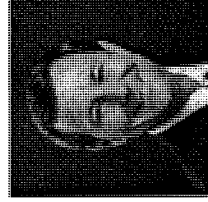
ACVB's sales team also finished the year strong at 102 percent of room night goal and 105 percent of lead goal. Group sales leads were also up 12 percent over goal and the sales team continues to convert these opportunities into booked business. In 2014, we secured 15 pieces of business that were either brand new to Atlanta or have not been back to the city in more than five years.

Last year, we also celebrated tremendous growth within the destination. More than \$1.5 billion in new hospitality development opened in Atlanta. This trend continues with several new hotel projects announced for 2015 and beyond, including the potential for a new convention center hotel by 2019. Another \$2.5 billion in hospitality projects are on the horizon for the next five years.

A world-class destination needs a world-class website. In 2014, we re-launched Atlanta.net with a responsive design to ensure our visitors would get content when they want it, where they want it. The newly redesigned site incorporates engaging custom editorial content including a reimagined list of Atlanta's "50 Fun Things" to see and do, an exploration of the city's intown neighborhoods and original feature articles on the ATL Insider blog that showcase exciting happenings throughout Atlanta from a local's perspective.

Looking ahead, our convention business remains healthy. This year, we will host 18 major citywide conventions. Our booking pace over the next eight years remains strong. We'll also host the 2015 Trade Show News Network Awards, elevating Atlanta's visibility among decision makers for the top 250 trade shows in the U.S.

The record-breaking success of our destination is due to the hard work and talent of the ACVB staff and the entire hospitality community. The collaborative spirit of our people is what draws meeting planners, visitors and conventioners to Atlanta and our Southern hospitality is what keeps them coming back, year after year.



William Pate
President and CEO
Atlanta Convention & Visitors Bureau

A Letter from Our Chairman

I am honored to serve as chairman of the board for the Atlanta Convention & Visitors Bureau in 2015. I've been involved with Atlanta's hospitality community for decades, serving in several different capacities, and I couldn't be more proud to serve in this role.

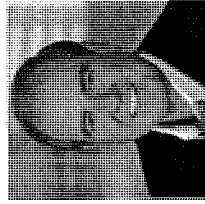
I've served on the board since 1998, but my first interaction with ACVB came in 1986 when my team at McCann-Erickson handled advertising for the organization (does anyone remember the years of SummerSpree?). It's exciting to see just how much Atlanta has grown over the past 30 years.

Our hospitality industry has also flourished, even during times of downturn. As a major economic driver for Atlanta, the industry has

contributed to the city's recovery from the Great Recession and fueled the fire during times of prosperity. Today, Atlanta is a world-class destination that competes on a global playing field.

Last year was one of our best in history for Atlanta's hospitality industry. Our city is on a roll. We've got a momentum that can't be matched and the ACVB staff and members of our hospitality community are a driving force behind it.

As I assume the role as chairman of the ACVB Board of Directors, I look forward to working with the board, the leadership and staff of ACVB to continue our success in 2015 and beyond.



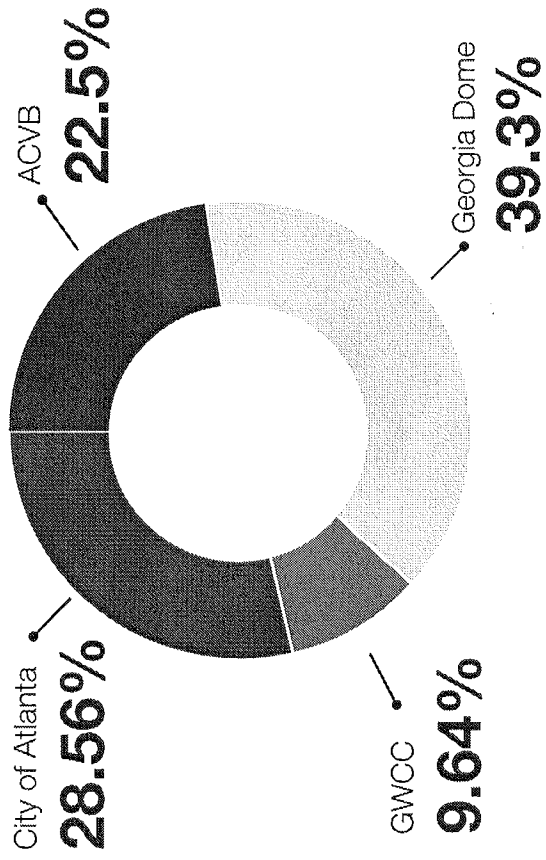
Daryl Evans
*Chairman of the Board of Directors and Executive Committee
Atlanta Convention & Visitors Bureau
SVP Mobile, Media and Advertising Strategy
MediaLink*

Bed Tax Background

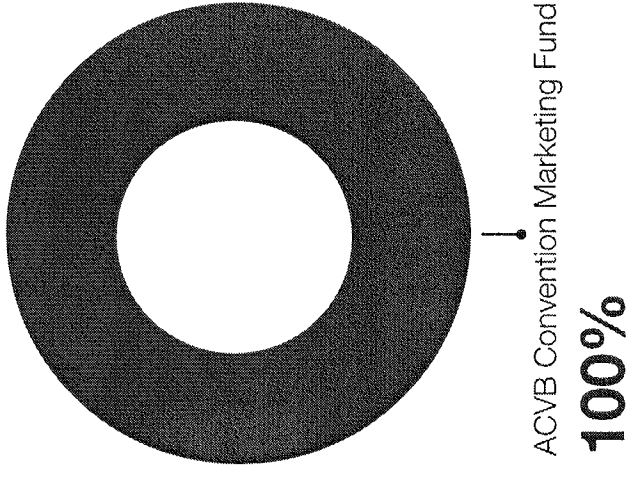
> Current contract dated 1984 with expiration in 2017, major amendments in 1992 and 2011

> Contract is between ACVB and GWCCA

First 7%



Last 1%



Impact of Meetings, Events and Tourism

\$13 Billion

2013 DOMESTIC VISITOR EXPENDITURES

20%
DINING

13%
AIRFARE

23%
GROUND TRANSPORTATION

20%
LODGING

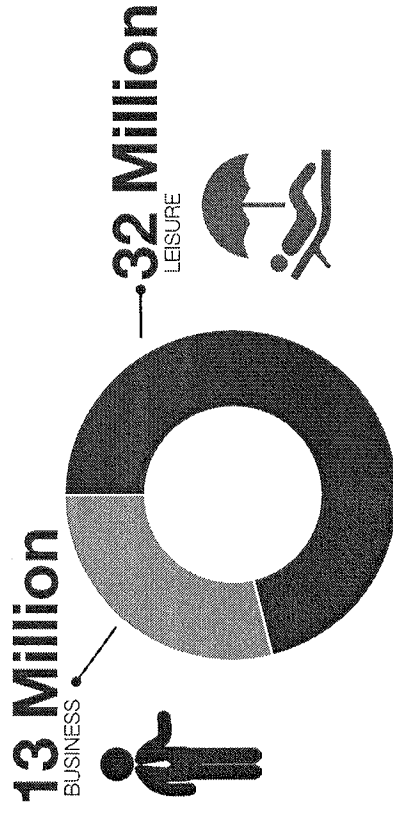
13%
SHOPPING/RETAIL

8%
ENTERTAINMENT/RECREATION

3%
MISCELLANEOUS

45 Million

DOMESTIC VISITORS IN 2013



240,000

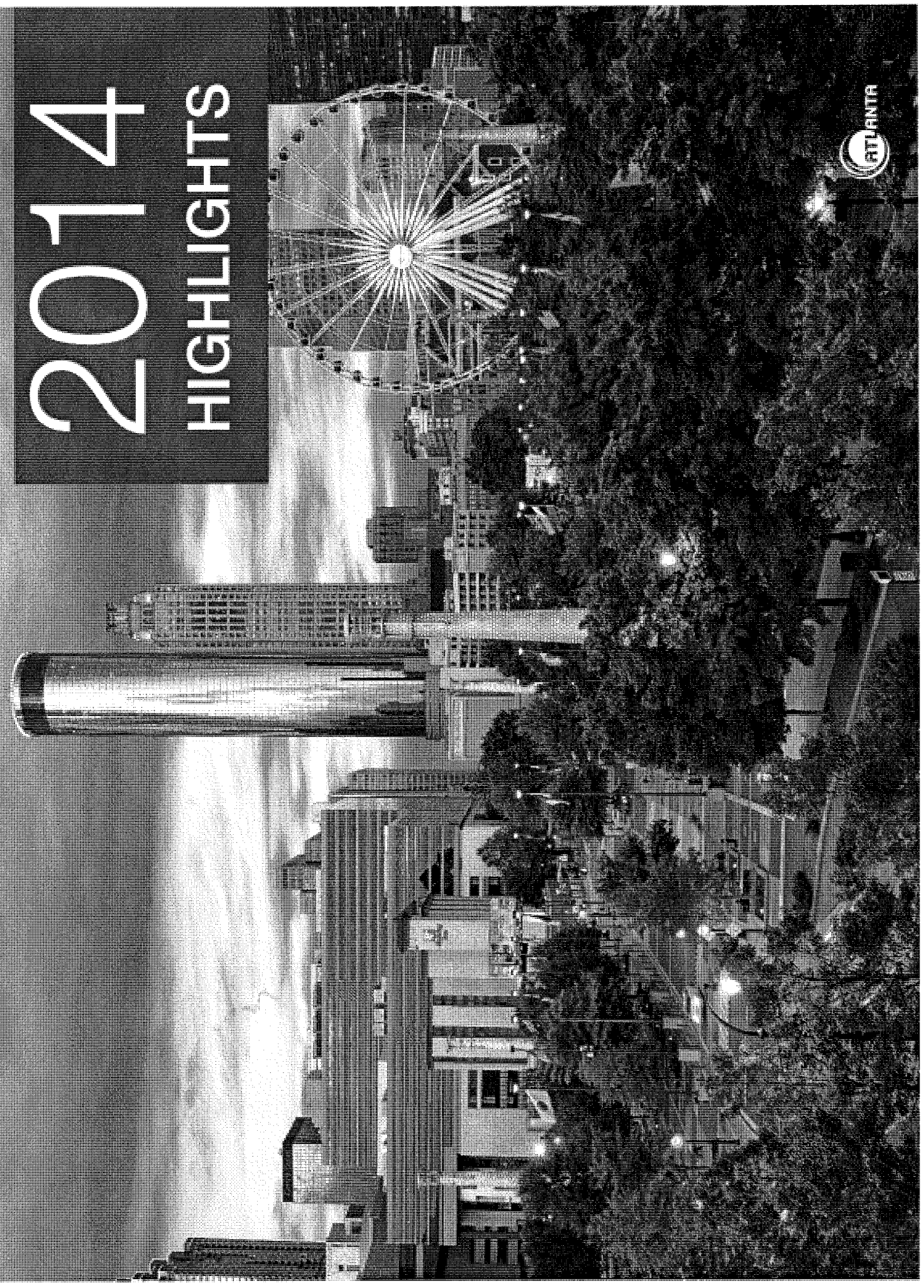
Atlanta residents are employed in the Leisure and Hospitality Industry

\$1.5 Billion

in new hospitality development opened in 2014



2014 HIGHLIGHTS

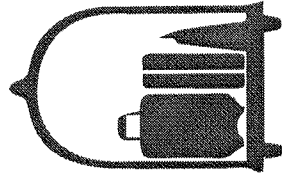


OCCUPANCY LEVELS



70.7%

in City of Atlanta reached a historic high at



HOTEL OCCUPANCY
IN THE METRO ATLANTA AREA ENDED THE YEAR UP

over last year, ranking us **NO. 1** in growth among the top 25 destinations in the U.S.

8.1%



FINISHED 2014 AT

102% & 105%

of room night goal

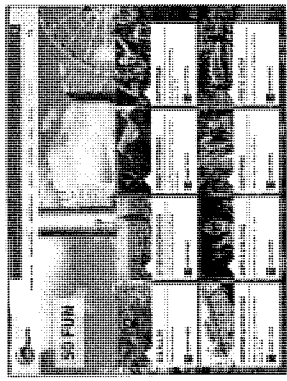
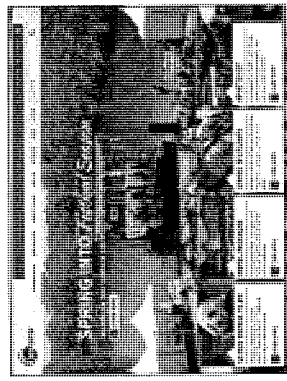
of lead goal



Announced record of
45 Million
DOMESTIC AT 2014 ANNUAL VISITORS MEETING



DO NOT DISTURB



Launched a brand new **Atlanta.net** with a responsive design and original editorial content

2014 ACVB AWARDS

- Platinum Award Award - All Files Meeting Planner (Web)
- Service Award Award - IMA/ATL Meeting Planner Advertising Campaign
- Event Top 50 Choice for Meetings and Events - Atlanta ranked No. 4
- Meetings & Conventions Gold Service Award - 22nd consecutive year
- Smart Meetings Magazine Platinum Choice Award - 4th consecutive year
- Successful Meetings Principle Award - 23rd consecutive year
- PRSA Georgia Phoenix Awards - Atlanta's Groundbreaking Year! Media Relations Campaign
- Webward Competition: Outstanding Achievement in Web Development - Atlanta not ranked



Sales Highlights

HOSTED
21
major citywide
conventions

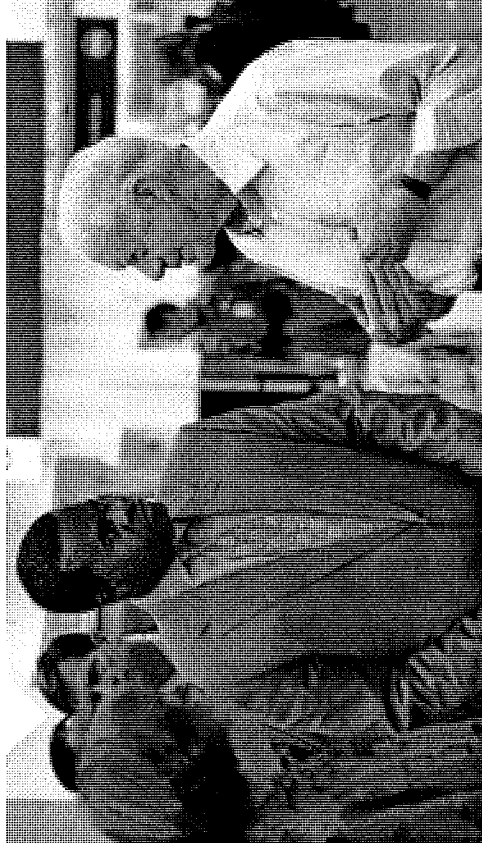


GROUP SALES LEAD VOLUME UP
OVER GOAL

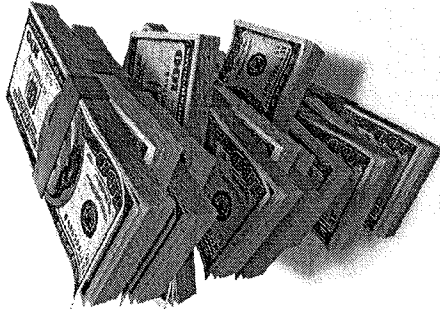
12%

MAINTAINED
TAP REPORT PACE AT

109%



15 NEW BUSINESS
OPPORTUNITIES BOOKED
(not in Atlanta for >5 years) representing
190,240 ROOM
NIGHTS



19 NEW BUSINESS
OPPORTUNITIES
from hosting ASAE in 2013, representing
300,000 ROOM
NIGHTS

Attendees at citywide
EVENTS GENERATED



\$1.17
BILLION
IN DIRECT SPENDING

ACVB HOSTED

827



conventions, meetings
and events in 2014

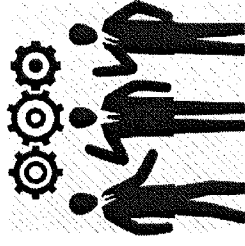
Convention Services

86% of groups reported attendance in Atlanta
MATCHED or EXCEEDED EXPECTATIONS



HOSTED

102 CUSTOMER
PLANNING TRIPS
to Atlanta



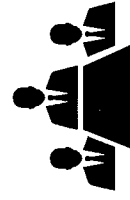
415



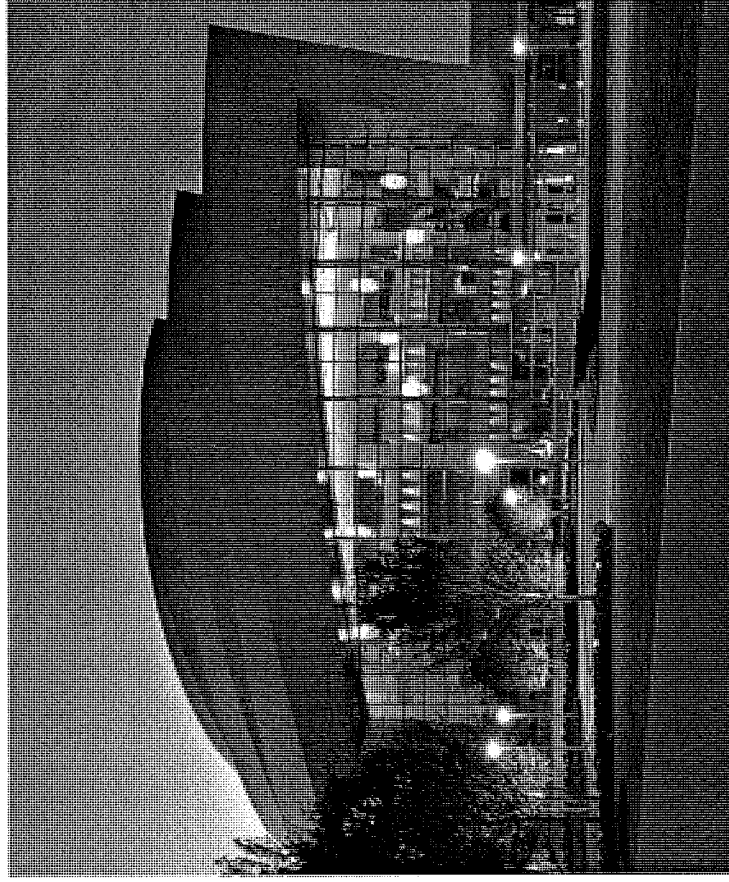
HOSTED MORE THAN
FAITH-BASED EVENT PLANNERS

for Rejuvenate Marketplace, exceeding attendance expectations

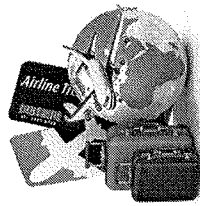
37 MEETING PLANNERS
representing definite convention business in
Atlanta for 2015-2017 attended inaugural
UpNext Event, which promotes ACVB services
and member companies to existing clients.



CS TEAM TRAVELED TO
14 MAJOR CUSTOMER EVENTS
to promote Atlanta for their 2015 shows.



International Tourism



HOSTED

46 FAM trips drawing
INTERNATIONAL 470
attendees from 19 countries

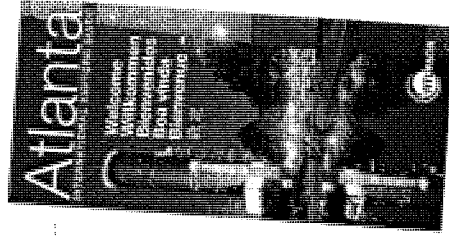


Updated international content on
ATLANTA.NET;
translated in 4 languages

Attended

11 TRADE SHOWS
9 SALES MISSIONS

to promote Atlanta to international tour operators

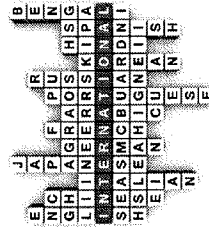


Launched new international

visitor brochure,
INCORPORATING 6 LANGUAGES

Worked with marketing department to develop

5 IN-LANGUAGE
PROMOTIONAL VIDEOS



As part of Rhythms of the South partnership,
ACVB PARTICIPATED IN THREE
MAJOR U.K. MEDIA PROGRAMS
with The Guardian, National Geographic, and MSN



Membership

Hosted six Connect events, five member orientation meetings and three industry briefing events, drawing

1,986
ATTENDEES

Secured
140 NEW MEMBERS

100%

increase in votes over 2013
for Battle of the Bottles
Cocktail Contest

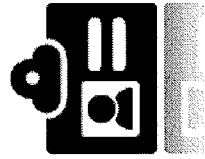
ACVB 101ST
ANNUAL MEETING
drew **866** attendees

Inducted four new members into the

**ATLANTA HOSPITALITY
HALL OF FAME**

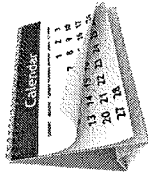
508 attendees

84%
membership
retention rate



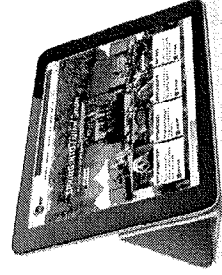
Marketing

Released
**FOUR-YEAR
STRATEGIC
PLAN**



INCREASED WEB TRAFFIC

6.1%



Increased social media reach by

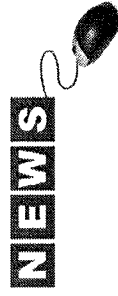
243.8%



SUCCESSFULLY EXECUTED
FOUR CONSUMER

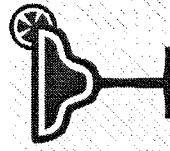
**CO-OP
CAMPAIGNS** 

INCREASED
eNewsletter
IMPRESSIONS



6.3%

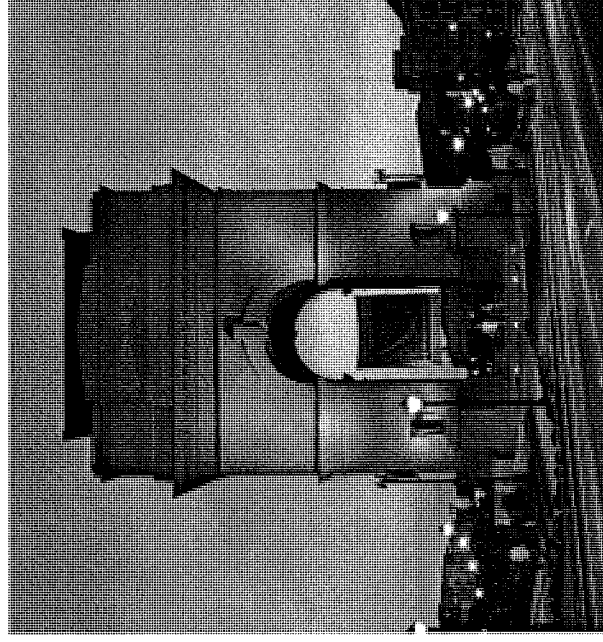
INCREASED
LEISURE
CAMPAIGN
IMPRESSIONS



351%

INCREASED
GROUP
CAMPAIGN
IMPRESSIONS

78.5%



Public Relations

**ONE OF ONLY NINE
U.S. DESTINATIONS**
named to New York Times list of
"52 Places to Go in 2014"



**NAMED "BEST RE-EMERGING
BUSINESS DESTINATION"**
by Entrepreneur Magazine

**EARNED
No. 5 BEST
CONVENTION CITY**
from USA Today readers



Hosted
126 VISITING MEDIA
IN ATLANTA

Directly influenced
**79 CONSUMER
STORIES AND
73 CONVENTION
TRADE STORIES**
on Atlanta

Began implementation of
3 YEAR
INTERNATIONAL PR PLAN

2015

BUSINESS AND FINANCIAL PLAN



2015 Goals

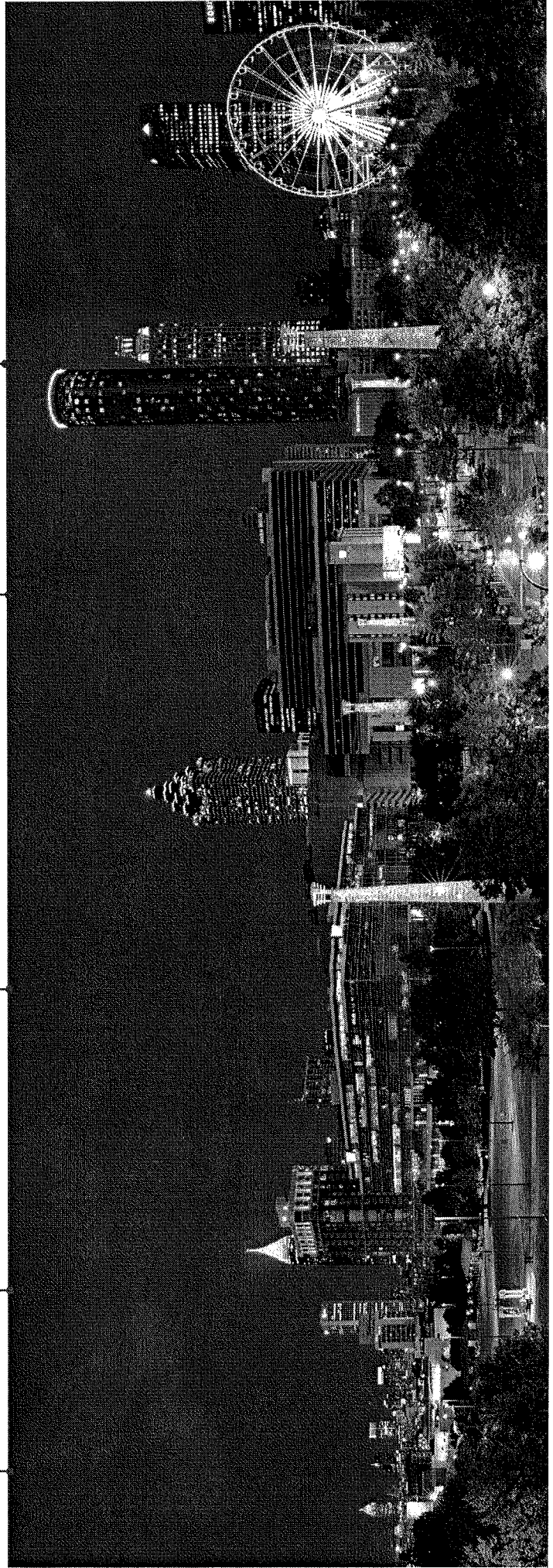
○ Increase room night booking and maximize 1% Convention Marketing Fund

○ Increase visibility of Atlanta as one of the top U.S. meeting and travel destinations

○ Achieve 100% attendance goal for major citywide conventions

○ Maintain Atlanta.net as the premier hospitality online marketing platform

○ Continue to position ACVB as an industry expert nationally and as the singular voice of hospitality in Atlanta



2015 Goals (continued)

Increase room night bookings and maximize 1% Convention Marketing Fund

NEW OR SIGNIFICANT RAMP UP IN FOCUS

- > Maximize opportunity with hosting TSNN (Trade Show News Network) Awards in Atlanta
 - Fifty of top U.S. trade shows are recognized for their significant growth in exhibit space and attendance
 - High visibility to the top 250 trade shows in the U.S.
- > Promote a “Future Vision” of Atlanta during our Update presentations throughout the year
 - Continue D.C. and Chicago Updates
 - New Updates presentations in Northeast and West Coast markets
 - Conduct market updates to major hotel brand national sales offices
- > Identify opportunities within the emerging “independent show organizer” (for-profit) market
- > Full integration of online bid books
- > Further integration of GWCC and ACVB CRM systems for real-time data and revenue optimization
- > Revamp sales programs to maximize exposure
- > Optimize enhanced ASAE partnership directed at key decision makers

- > Further optimization of in-house sales efforts and small meetings
- > Investigate opportunities with Delta on HUB city partnership focusing on the meetings and convention market
- > Launch new, scalable and compelling mini-sites to reach all non-citywide groups

CONTINUE OR ENHANCE FOCUS FROM PRIOR YEAR

- > Host four meeting planner FAM tours, totaling 100 participants
- > Attend one major prospect’s event per quarter
- > Quarterly regional sales calls by each manager
- > Identify 25 trade shows not considering Atlanta and attend their conventions.
- > Continue efforts in the medical, manufacturing, construction, financial, energy and education industries to support the sales team’s emerging industries strategy
- > Host 25 FAM trips for international tour operators
- > Participate in 70 industry events and trade shows to highlight Atlanta as a premier meeting and convention destination
- > Further enhance our partnership with the major third party partners and monitor production quarterly
- > Continue to optimize Atlanta’s destination advertising campaign targeted to meeting planners to achieve maximum reach and impact



2015 Goals (continued)

Increase visibility of Atlanta as one of the top U.S. meeting and travel destinations

NEW OR SIGNIFICANT RAMP UP IN FOCUS

- > Provide sales department with enhanced collateral and tools including print pieces and trade show booths
- > Maximize regional partnerships/alliances focusing on international visitation.
- > Expand leisure marketing of the I AM ATL destination awareness campaign and evolve the meeting planner campaign
- > Launch a social media influencer FAM/conference
- > Redesign layout and upgrade content of Atlanta Now visitor magazine with JV partner

CONTINUE OR ENHANCE FOCUS FROM PRIOR YEAR

- > Enhance the media buying strategy to more effectively span digital and social channels to reach the target audiences
- > Extend partnership approach with EventSphere to other housing companies to influence attendance of midsize groups
- > Continue integration of brand messaging across all communication channels
- > Integrate storytelling approach to evolve brand creative and messaging for richer destination experiences

- > Leverage new and emerging product, existing assets, industry research and current news to drive continuous editorial destination coverage
- > Continue with refreshed summer, Halloween and holiday co-op campaigns.
- > Curate weekend getaway experience packages for target audience

Maintain atlanta.net as the premier hospitality online marketing platform

NEW OR SIGNIFICANT RAMP UP IN FOCUS

- > Design and execute for mobile first to reflect significant behavioral shift online from desktops to mobile devices
- > Significantly expand use of video and strong visuals to drive traffic
- > Train sales and convention services departments to leverage new online resources and increase relevancy and visibility of AtlantaMeetings.com

CONTINUE OR ENHANCE FOCUS FROM PRIOR YEAR

- > Optimize new responsive design website with curated mobile content
- > Continue positioning atlanta.net assets (web, mobile web, social) as the definitive source for information on what to see and do in Atlanta
- > Ongoing refinement of successful search engine optimization (SEO) strategy to drive qualified traffic to the key content categories



2015 Goals (continued)

- > Ongoing refinement eCRM (includes social) program to maximize user engagement while growing user base
- > Optimize ad model to leverage growth of mobile and provide additional revenue opportunities

Position ACVB as an industry expert nationally and as the singular voice of hospitality in Atlanta

NEW OR SIGNIFICANT RAMP UP IN FOCUS

- > Implementation of recommendations for revamping entire membership strategy and structure
- > In-depth review of company-wide CRM software and benchmark against other industry options; Implement changes/updates where required

CONTINUE OR ENHANCE FOCUS FROM PRIOR YEAR

- > Continue focus on cabinet alignment against industry priorities and initiatives
- > Engage public and private sector by serving on boards, speaking engagements and utilizing Atlanta executives in ACVB sales efforts
- > Maintain relationships with city and state administrations
- > Maintain leadership positions on hospitality industry boards
- > Highlight industry expertise through guest columns and editorials



2015 Financials

- > Total revenue flat
- > Public sector revenue up 3.5 percent over 2014 forecasted year-end (2014 up 8 percent over 2013)
- > Payroll and related expenses, for ACVB only, up 5 percent
- > 2.5 percent performance-based merit increase pool
- > Annual increase in employee benefits of 6 percent (renewals on group insurance plans)
- > Operating expenses, direct promotional expenses and expenses for capital assets are relatively flat

Total Public Sector Revenue		
	2015 Budget	2014 Forecast
Georgia World Congress Center - Atlanta	\$12,032,000	\$11,590,400
Georgia World Congress Center - Fulton Co.	\$27,000	\$35,285
Atlanta Convention Marketing Fund - 80%	\$6,111,492	\$5,887,187
Atlanta Convention Marketing Fund - 20%	\$1,527,873	\$1,471,797
City of East Point		\$625,000
Total Public Sector Revenue	\$19,698,365	\$19,609,669

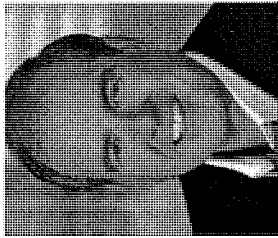
Total Expense		
	2015 Budget	2014 Forecast
Direct Promotional Expense	\$11,827,042	\$12,350,952
Expense Against Capital Assets	\$1,575,000	\$1,541,500
Other Operating Expense	\$973,510	\$910,000
Payroll and Related Expense	\$6,742,222	\$8,331,500
Transfer to ACMF Reserve	\$6,111,492	\$5,887,187
Total Expense	\$29,229,266	\$29,021,169

Total Private Sector Revenue		
	2015 Budget	2014 Forecast
Annual Meeting/HOF/HBN	\$100,000	\$168,500
Contributed Services	\$3,700,000	\$3,345,000
Co-op Cash Support	\$1,320,000	\$1,300,500
Grants/Sponsorships	\$15,000	\$11,750
Internet Revenue	\$1,716,603	\$1,720,000
Membership Dues	\$1,375,000	\$1,475,000
Membership Services	\$20,000	\$19,000
Other Revenue	\$221,000	\$385,000
Publication ad Revenue	\$1,325,000	\$1,390,000
Total Private Sector Revenue	\$9,792,603	\$9,814,750

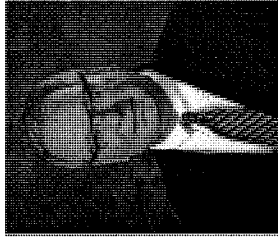
Total Budget By Corporate Entity		
	2015 Budget	2015 Expense
Atlanta Convention & Visitors Bureau, Inc.	\$24,923,365	\$24,747,277
ACVB Enterprises, LTD	\$9,041,603	\$2,981,989
ACVB Foundation, Inc.	\$1,528,000	\$1,500,000
Transfer to ACMF Reserve	\$6,111,492	\$5,887,187
Total Expense	\$29,229,266	\$29,021,169



ACVB Executive Team



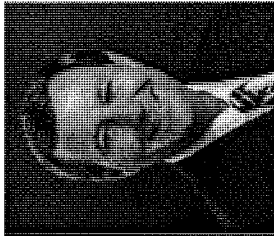
Daryl Evans
Chairman of the Board of Directors



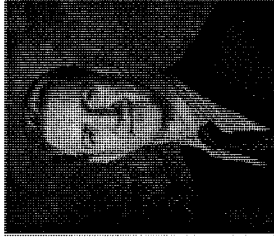
Mark Vaughan
Executive Vice President,
Chief Sales Officer



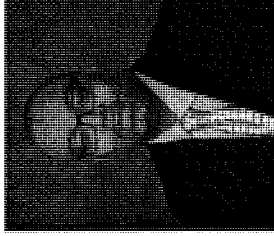
Amy Patterson
Vice President, Business
Development & Corporate Events



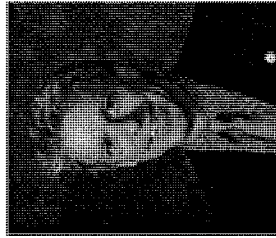
William Pate
President and CEO



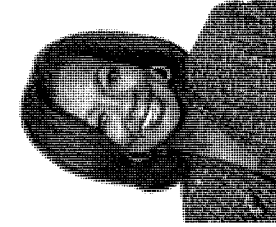
Andrew Wilson
Executive Vice President,
Chief Marketing Officer



Marcus Margerum
Vice President, Community
and Governmental Affairs



Gregory Pierce
Executive Vice President, CAO/CFO



Kathleen Bertrand
Senior Vice President,
Community and
Governmental Affairs



2014 Board of Directors

Officers

Chairman, Board of Directors & Executive Committee

Chris Womack
EVP and President, External Affairs
SOUTHERN COMPANY

President & CEO
William Pate
President & CEO
ATLANTA CONVENTION & VISITORS BUREAU

Chair, Advisory Board

Nancy Oswald
Co-Owner/Director of Marketing
RUTH'S CHRIS STEAK HOUSE

Vice Chair

Brad Koeneman
General Manager
HILTON ATLANTA

Vice Chair/Chair-Elect

Daryl Evans
VP, Advertising & Marketing Communication
AT&T

Vice Chair, Diversity Committee

Niles Harris
General Manager
SHERATON ATLANTA
Chair, ACMF Committee/Secretary

Ken Bernhardt
Regents Professor of Marketing Emeritus
GEORGIA STATE UNIVERSITY

Vice Chair, Treasurer

Ben Shanley
VP, National Distribution Organization
COCA-COLA NORTH AMERICA

Vice Chair, Compensation Committee

Erica Qualls
General Manager
ATLANTA-MARRIOTT-MARQUIS

Vice Chair, Finance & HR Committee

Stan Wilson
Managing Partner
ELARBEE, THOMPSON, SAPP & WILSON LLP

Executive Committee

Ed Baker *2015
Publisher
ATLANTA BUSINESS CHRONICLE

Stephanie Barrell *2015
SVP & Marketing Executive
BANK OF AMERICA

Debby Cannon *2015
Director, School of Hospitality
Georgia State University- Cecil B. Day School
of Hospitality

Tommy Dorch, Jr. *2014
President & CEO
TWD, INC.

Sharon Goldmacher *2016
President
COMMUNICATIONS 21

Jo Ann Herold *2015
CMO
INTERFACE

Raymond B. King *2015
President & CEO
ZOO ATLANTA

George McKerrow, Jr. *2014
Co-Owner
TED'S MONTANA GRILL

Peter McMahon *2015
General Manager
HYATT REGENCY ATLANTA

Peter Moraitakis *2016
SVP & COO
UNITED DISTRIBUTORS, INC.

Frank Poe *2015
Executive Director
GWCC

Jeff Portman *2014
President & CEO
AMERICASMART, INC

Kris Reinhard *2014
Membership Committee Chair
General Manager
FIFTH GROUP RESTAURANTS

Derek Schiller *2015
EVP, Sales & Marketing
Atlanta Braves

Alexis Scott *2015

Ron Tarson *2016
General Manager
WESTIN PEACHTREE PLAZA

Armand Vari *2015
VP
JACOBY DEVELOPMENT, INC.

ACVB Board

Leona Barr-Davenport *2016
President
ATLANTA BUSINESS LEAGUE

Karen Bremer *2016
Executive Director
GEORGIA RESTAURANT ASSOCIATION

Candace Byrd *2016
Chief of Staff, Office of the Mayor
City of Atlanta



2014 Board of Directors (continued)

Mark Castriota *2016
General Manager
LOEWS ATLANTA HOTEL

Pedro Cherry *2014
CFA
GEORGIA POWER COMPANY

William Ciccaglione *2015
General Manager
UNDERGROUND ATLANTA

Milton Clipper *2014
President & COO
PUBLIC BROADCASTING ATLANTA

Chris Coan *2015
VP & General Manager, Bus. & Govt. Markets
GAS SOUTH

Robert Coggin *2015
President
ALPINE MARKETING CONSULTANTS

Tony Conway, CMP *2016
President & CEO
A LEGENDARY EVENT DESIGN & CATERING

Dan Corso *2014
Executive Director
ATLANTA SPORTS COUNCIL

Mike Dangerfield *2014
President
CAREY EXECUTIVE LIMOUSINE

Bobby Donlan *2015
Managing Partner
DONLAN & GREENBAUM'S NEW YORK
PRIME RESTAURANT

Jennifer Dorian *2014
SVP, Strategy and Brand Development
TURNER BROADCASTING SYSTEM, INC.

Curly Dossman *2015
President & CEO
GEORGIA PACIFIC FOUNDATION

Brooke Edimond *2015
EVP
JACKMONT HOSPITALITY, INC.

Mark Elliott *2014
Partner
TROUTMAN SANDERS, LLP

Julia Emmons *2016
Partner
EMMONS BERMIN & MINKIN, LLC

Jorge Fernandez *2014
VP, Global Commerce
MACCOC

Neel Gandhi *2015
Associate Principal
MCKINSEY & CO.

Nathaniel R. Goldston III *2015
Chairman & CEO
GOURMET SERVICES, INC.

Alex Gonzalez *2016
President, North America Commercial
EQUIFAX

John Grant, Jr. *2015
CEO
100 BLACK MEN OF ATLANTA, INC.

Kevin Green *2015
President & CEO
MIDTOWN ALLIANCE

Sheffield Hale *2014
President & CEO
ATLANTA HISTORY CENTER/
MARGARET MITCHELL HOUSE

Heather Lisa Halpern *2016
Area Manager
NORTH GEORGIA PREMIUM OUTLETS

DeWayne Herbert *2016
Mall Manager
SIMON PROPERTY GROUP, LENOX SQUARE &
PHIPPS PLAZA

Virginia Hepner *2015
President & CEO
WOODRUFF ARTS CENTER

Robert Hope *2016
President
HOPE - BECKHAM, INC.

Ben Johnston *2016
President & CEO
MEDIA BROKERS INTERNATIONAL

Richard Jones *2014
Director of Sales
PRESENTING ATLANTA

Niko Karatassos *2016
Director of Operations
BUCKHEAD LIFE RESTAURANT GROUP

David J. Kimmel *2015
President and COO
GEORGIA AQUARIUM

Kevin Langston *2014
Assistant Commissioner for Tourism
GEORGIA DEPARTMENT OF ECONOMIC
DEVELOPMENT

Tim Mapes *2014
SVP, Marketing
DELTA AIR LINES, INC.

Richard Maples *2014
Vice President of Sales
SHEPARD CONVENTION SERVICES, INC.

David Marvin *2014
President
LEGACY PROPERTY GROUP

Sam Massell *2016
President
BUCKHEAD COALITION, INC.

Mary Pat Matheson *2014
Executive Director
ATLANTA BOTANICAL GARDEN, INC.



2014 Board of Directors (continued)

Kent Matlock *2014 Chairman & CEO MATLOCK ADVERTISING & PR	Fred Rich *2014 CEO OLYMPUS	Gary Stokan *2014 President CHICK-FIL-A BOWL	Bob Williams *2014 President ATLANTA HAWKS & PHILLIPS ARENA
John Metz *2014 CEO GREAZEY SPOON DEVELOPMENT COMPANY	A.J. Robinson *2014 President CENTRAL ATLANTA PROGRESS	Guy Thomson *2015 Owner PITTYPAT'S PORCH	
Hala Moddelmog *2015 President METRO ATLANTA CHAMBER	Andrew Saltzman *2014 Chief Revenue Officer PLAYONI SPORTS	Rick Thorpe *2016 Associate Athletics Director, Sales & Fan Experience GEORGIA TECH	<i>*As of September 19, 2014</i>
Bill Morrison *2015 Vice President SKANSKA USA BUILDING	Doug Shipman *2014 CEO NATIONAL CENTER FOR CIVIL & HUMAN RIGHTS	Dan Vargas *2014 CEO DORTCH VARGAS AMIGOS	
Hal Nowak *2016 Owner HAL'S OF ATLANTA	Jamie Sims *2015 Founder & Chief WITH Officer WITH/SIMS	Allan Vella *2016 President THE FOX THEATRE	
Eric O'Brien *2014 Partner JACKSON SPALDING	Steve Smith *2014 Deputy Superintendent & Chief of Staff ATLANTA PUBLIC SCHOOLS	Bob Walker *2014 SVP/Brand Solutions CUMULUS MEDIA	
Keith T. Parker *2015 General Manager and CEO MARTA	Miguel Southwell *2016 General Manager HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT	Tim Walsh *2015 President LANIER PARKING SOLUTIONS	
Robert Patterson *2015 President 200 PEACHTREE	Jim Sprouse *2016 Executive Director GEORGIA HOTEL & LODGING ASSOCIATION	Anderson Walston *2016 General Manager FREEMAN	
Mark Pettit *2016 President & CEO CREAXION	John Stephenson *2015 President & CEO COLLEGE FOOTBALL HALL OF FAME AND CHICK-FIL-A FAN EXPERIENCE	Dexter Warrior *2014 Principal & COO T. DALLAS SMITH & CO.	

2015 Board of Directors

Officers

Chairman, Board of Directors & Executive Committee

Daryl Evans *2017

SVP Mobile, Media and Advertising Strategy
MEDIALINK

President & CEO

William Pate

President & CEO
ATLANTA CONVENTION & VISITORS BUREAU

Chair, Advisory Board

Nancy Oswald

Co-Owner/Director of Marketing
RUTH'S CHRIS STEAK HOUSE

Vice Chair

Niles Harris

Diversity Committee Chair
General Manager
SHERATON ATLANTA

Chair, ACMF Committee/Secretary

Ken Bernhardt

Regents Professor of Marketing Emeritus
GEORGIA STATE UNIVERSITY

Treasurer

Ben Shanley

SVP, National Foodservice Operations
COCA-COLA NORTH AMERICA

Vice Chair, Compensation Committee

Erica Qualls

General Manager
ATLANTA MARRIOTT MARQUIS

Vice Chair, Finance & HR Committee

Stan Wilson

Managing Partner
ELARBEE, THOMPSON, SAPP & WILSON LLP

Executive Committee

Ed Baker *2015

Publisher
ATLANTA BUSINESS CHRONICLE

Stephanie Barrell *2015

SVP & Marketing Executive
BANK OF AMERICA

Debby Cannon *2015

Director, School of Hospitality
GEORGIA STATE UNIVERSITY- CECIL B. DAY
SCHOOL OF HOSPITALITY

Chris Coan *2015

VP & General Manager, Bus. & Govt. Markets
GAS SOUTH

Tommy Dorch, Jr. *2017

President & CEO
TWD, INC.

Sharon Goldmacher *2016

President
COMMUNICATIONS 21

Jo Ann Herold *2015

CMO
INTERFACE

Raymond B. King *2015

President & CEO
ZOO ATLANTA

Brad Koeneman *2017

General Manager
HILTON ATLANTA

George McKerrow, Jr. *2017

Co-Owner
TED'S MONTANA GRILL

Peter McMahon *2015

General Manager
HYATT REGENCY ATLANTA

Peter Moraitakis *2016

SVP & COO
UNITED DISTRIBUTORS, INC.

Frank Poe *2015

Executive Director
GEORGIA WORLD CONGRESS CENTER

Jeff Portman *2017

President & CEO
AMERICASMART, INC

Kris Reinhard *2017

Membership Committee Chair
General Manager
FIFTH GROUP RESTAURANTS

Derek Schiller *2015

EVP, Sales & Marketing
ATLANTA BRAVES

Alexis Scott *2017

Ron Tarson *2016

General Manager
WESTIN PEACHTREE PLAZA

Armand Vari *2015

VP
JACOBY DEVELOPMENT, INC.

ACVB Board

Leona Barr-Davenport *2016

President
ATLANTA BUSINESS LEAGUE

Karen Bremer *2016

Executive Director
GEORGIA RESTAURANT ASSOCIATION

Candace Byrd *2016

CHIEF OF STAFF, OFFICE OF THE MAYOR
CITY OF ATLANTA

Mark Castriota *2016

General Manager
LOEWS ATLANTA HOTEL

Pedro Cherry *2017

CFA
GEORGIA POWER COMPANY



2015 Board of Directors (continued)

William Ciccaglione *2015
General Manager
UNDERGROUND ATLANTA

Milton Clipper *2017
President & COO
PUBLIC BROADCASTING ATLANTA

Robert Coggin *2015
President
ALPINE MARKETING CONSULTANTS

Tony Conway, CMP *2016
President & CEO
A LEGENDARY EVENT DESIGN & CATERING

Dan Corso *2017
Executive Director
ATLANTA SPORTS COUNCIL

Mike Dangerfield *2017
President
CAREY EXECUTIVE LIMOUSINE

Bobby Donlan *2015
Managing Partner
DONLAN & GREENBAUM'S NEW YORK
PRIME RESTAURANT

Brooke Edmond *2015
EVP
JACKMONT HOSPITALITY, INC.

Mark Elliott *2017
Partner
TROUTMAN SANDERS, LLP

Julia Emmons *2016
Partner
ATLANTA TRACK CLUB (RETIRED)

Jorge Fernandez *2017
VP, Global Commerce
MACOC

Hector Gallardo *2017
VP, Sales
COCA-COLA COMPANY

Neel Gandhi *2015
Associate Principal
MCKINSEY & CO.

Nathaniel R. Goldston III *2015
Chairman & CEO
GOURMET SERVICES, INC.

Alex Gonzalez *2016
President, North America Commercial
EQUIFAX

John Grant, Jr. *2015
CEO
100 BLACK MEN OF ATLANTA, INC.

Kevin Green *2015
President & CEO
MIDTOWN ALLIANCE

Sheffield Hale *2017
President & CEO
ATLANTA HISTORY CENTER /
MARGARET MITCHELL HOUSE

Heather Lisa Halpern *2016
Area Manager
NORTH GEORGIA PREMIUM OUTLETS

DeWayne Herbert *2016
Mall Manager
SIMON PROPERTY GROUP, LENOX SQUARE
& PHIPPS PLAZA

Virginia Hepner *2015
President & CEO
WOODBUFF ARTS CENTER

Robert Hope *2016
President
HOPE - BECKHAM, INC.

Ben Johnston *2015
President & CEO
MEDIA BROKERS INTERNATIONAL

Richard Jones *2017
Director of Sales
PRESENTING ATLANTA

Niko Karatassos *2016
Director of Operations
BUCKHEAD LIFE RESTAURANT GROUP

Kevin Langston *2017
Assistant Commissioner For Tourism
GEORGIA DEPARTMENT OF ECONOMIC
DEVELOPMENT

Tim Mapes *2016
SVP, Marketing
DELTA AIR LINES, INC.

David Marvin *2015
President
LEGACY PROPERTY GROUP

Sam Massell *2016
President
BUCKHEAD COALITION, INC.

Kent Matlock *2017
Chairman & CEO
MATLOCK ADVERTISING & PR

John Metz *2016
CEO
GREAZEY SPOON DEVELOPMENT COMPANY

Haia Modelmog *2015
President
METRO ATLANTA CHAMBER

Bill Morrison *2015
VP
SKANSKA USA BUILDING

Hai Nowak *2016
Owner
HAL'S OF ATLANTA

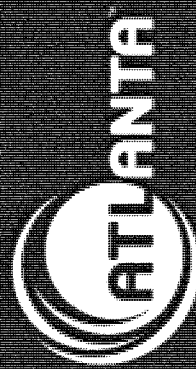
Adam Noyes *2017
SVP
PROOF OF THE PUDDING

Eric O'Brien *2017
Partner
JACKSON SPALDING



2015 Board of Directors (continued)

Keith T. Parker *2015 General Manager/CEO MARTA	Jim Sprouse *2016 Executive Director GEORGIA HOTEL & LODGING ASSOCIATION	Dexter Warrior *2017 Principal & COO T. DALLAS SMITH & CO.
Robert Patterson *2015 President 200 PEACHTREE	John Stephenson *2015 President & CEO COLLEGE FOOTBALL HALL OF FAME AND CHICK-FIL-A FAN EXPERIENCE	Bob Williams *2017 President ATLANTA HAWKS & PHILIPS ARENA
Mark Pettit *2016 President & CEO CREAXION	Gary Stokan *2015 President CHICK-FIL-A BOWL	<i>*As of February 27, 2015</i>
Fred Rich *2016 CEO OLYMPUS	Guy Thomson *2015 Owner PITTYPAT'S PORCH	
A.J. Robinson *2017 President CENTRAL ATLANTA PROGRESS	Rick Thorpe *2016 Associate Athletics Director, Sales & Fan Experience GEORGIA TECH	
Andrew Saltzman *2016 Chief Revenue Officer PLAYONI SPORTS	Dan Vargas *2017 CEO DORTCH VARGAS AMIGOS	
Doug Shipman *2017 CEO NATIONAL CENTER FOR CIVIL & HUMAN RIGHTS	Allan Vella *2016 President THE FOX THEATRE	
Jamie Sims *2015 Founder & Chief WITH Officer WITH/Sims	Tim Walsh *2015 President LANIER PARKING SOLUTIONS	
Steve Smith *2017	Anderson Walston *2016 General Manager FREEMAN	
Miguel Southwell *2016 Aviation General Manager HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT		



Convention & Visitors Bureau

233 Peachtree Street, NE Suite 1400
Atlanta, GA 30303

ALL RIGHTS RESERVED. COPYRIGHT © 2015

EXHIBIT 35

Report of Dr. David L. Sunding

Opportunities for Water Conservation in the Flint and Chattahoochee River Basins of Georgia

Prepared for the State of Florida, Through Its Department of
Environmental Protection and Its Counsel, Latham & Watkins LLP

May 20, 2016

THE **Brattle** GROUP

Confidential – S. Ct. 142

I. Introduction

1. Georgia has failed to implement a number of conservation measures to reduce streamflow depletions that: 1) it is implicitly obligated to undertake, 2) are associated with nominal expense, or 3) it has already considered itself. Additional conservation in the agricultural sector could be ramped up in drought years at relatively low cost.
2. In this report, I further describe some of the reasonable conservation policies Georgia may implement and the drought year yields associated with them. A combination of these measures could achieve Apalachicola streamflow savings of 2,000 cfs in the peak summer months. I use 2011 observed water use as the baseline throughout this report, as it was the most recent year with critically low levels of precipitation during the peak season.
3. I also discuss some of the significant investments Florida has made, and policies it has implemented, to protect its water resources. It has demonstrated the efficacy of these conservation measures. Although the most efficient and preferred set of conservation measures for Georgia depends on its own particular hydrologic, economic, and political context, Florida's actions highlight potential options for consideration.

II. Conservation Opportunities in Georgia

4. In the municipal sector, Georgia uses excessive amounts of outdoor water, particularly in very dry and drought years, despite the fact that outdoor use can be cut back on an as-needed basis at minimal monetary cost. A significant amount of consumptive water use is also accounted for by Georgia's aging and leaky municipal water infrastructure. Georgia must increase its return flows to the Chattahoochee River to fulfill its commitment to the U.S. Army Corps of Engineers,³ so a substantial portion of the costs of a leak abatement program are already implicitly committed. Georgia also currently exports water out of the ACF to other river basins.
5. In the agricultural sector, some growers irrigate their crops excessively, so large volumes of irrigation water are effectively wasted, with little to no benefit in crop yield. Georgia is also

³ Georgia Department of Natural Resources, Comments of the State of Georgia on Apalachicola-Chattahoochee-Flint River Basin Water Control Manual and Draft Environmental Impact Statement, GA02451834 (Jan. 29, 2016).

failing to implement its own regulatory program to pay farmers to forego irrigation during drought years under the Flint River Drought Protection Act.⁴ Growers may also be compensated for declines in crop yield associated with modest degrees of deficit irrigation. As Georgia has already been considering, it may also make the relatively small infrastructure investment needed to shift some water users to deeper aquifers that are not connected to Apalachicola River flows.

6. Taking advantage of all of the opportunities for conservation described above, Georgia may reduce streamflow depletions by up to 2,000 cfs in drought years like 2011. Table 1 summarizes the contributions of each of the measures discussed above, which are further detailed in the remainder of this section.

Table 1: Conservation Measures to Achieve 2,000 Cfs Reductions in Streamflow Depletions in Drought Years

Conservation Measure	Peak Summer Streamflow Saved (cfs)
Curb Municipal Outdoor Water Use during Severe Drought	385
Municipal Leak Abatement to Achieve Return Flows	95
Eliminate Net Basin Exports	66
Eliminate Wasted Irrigation of Rotation Crops	221
Eliminate Wasted Irrigation of Pecans	130
Implement March 2006 Flint River Plan during Severe Drought	322
Subtotal	1,219
Deficit Irrigation of Rotation Crops during Severe Drought*	408
Switching High-Value Crops to Deep Aquifers**	227
Reduced Evaporation from Small Impoundments	146
Subtotal	781
Total	2,000

Notes:

Agricultural measures are relative to a baseline of current irrigated acreage combined with drought year water use per acre, as represented by 2011 observed values.

* Deficit irrigation is assessed after all irrigation water waste has been subtracted out.

** The streamflow savings associated with switching to deeper aquifers are in addition to the savings associated with reduced pecan irrigation.

⁴ See Ga. Code Ann. §12-5-540 et seq. (2000).

A. OUTDOOR WATER USE REDUCTIONS

7. Urban outdoor water use is primarily for landscape watering, which is not directly associated with the production of any economic output. Curbing this use in very dry and drought years thus entails small or no losses in productivity or consequent broader economic impacts. Reducing urban outdoor use would also require only minimal additional equipment or investment.⁵ Indeed, municipal residents would save money on their water and sewer bills by cutting back on lawn and landscape watering in drought years.
8. Based on the municipal and industrial water permitting and withdrawals database maintained by the Georgia Environmental Protection Division (EPD)⁶, I estimate the total annual outdoor water use of all permitted municipal users withdrawing from the Chattahoochee and Flint River basins. As outdoor water use varies throughout the year, while indoor uses remains relatively constant, a common method for estimating outdoor use involves the comparison of usage across months within each year.⁷ For each permit-holder, I estimate outdoor use as the volume of water withdrawn in each month above their minimum monthly withdrawals within that year.
9. For example, the City of Atlanta's lowest monthly withdrawals in 2011 were 7,406 acre-feet in December, representing their baseline indoor use. In contrast, their June withdrawals amounted to 9,530 acre-feet, so their June outdoor use may be estimated as 2,124 acre-feet. The same calculation is done for each month and then summed to estimate annual outdoor water use, 11,285 acre-feet in the case of the City of Atlanta in 2011.
10. Total estimated outdoor water use from 2008 through 2013 is summarized in Table 2 below. As the estimates in Table 2 are based purely on EPD's withdrawals data, they already account for any conservation measures that were in place in each year.⁸ Despite the

⁵ Most conservation measures involve some degree of monitoring and enforcement of compliance which entail some expense, but these are likely minimal so they are not discussed in this report.

⁶ GA00000002_CONFIDENTIAL.

⁷ For example, see Appendix B of Gleick, P., et al. *Waste Not Want Not: The Potential for Urban Water Conservation in California*. Pacific Institute Report. November, 2003. Available online at <http://pacinst.org/publication/waste-not-want-not/>.

⁸ The Metropolitan North Georgia Water Planning District Water Metrics Report, February 2011, provides a timeline of outdoor water restrictions put in place between 2000 and 2009. Available at http://northgeorgiawater.org/wp-content/uploads/2015/09/2010_Water_Metrics_Report_FINAL1.pdf.

conservation measures that were implemented in 2011, outdoor use across the ACF amounted to approximately 163,000 acre-feet of withdrawals. Note that an outdoor watering ban was not called for in 2011, despite the drought’s extreme effect on agriculture, because the Metro North Georgia area was relatively less affected.⁹

Table 2: Outdoor Use in the ACF Basin

Year	Outdoor Use (acre-feet)
[1]	[2]
2008	147,510
2009	136,731
2010	154,948
2011	162,792
2012	154,344
2013	119,909

11. Assuming all municipal water is supplied by surface sources, outdoor water use resulted in approximately 513 cfs of peak summer streamflow depletions in 2011.¹⁰ A 50 percent cutback on municipal outdoor use would thus lead to a reduction in streamflow depletions of 256 cfs, and a 75 percent cutback to a reduction of 385 cfs, in a drought year like 2011.
12. Although these outdoor water use cutbacks and resulting streamflow improvements would not entail any monetary costs beyond those needed to maintain compliance, they would be associated with some “quality of life” impacts, as discussed in my February 2016 report. However, other states such as California have opted to implement such restrictions at greater welfare costs than are implied for Atlanta.¹¹

⁹ Knox, P. “Quiet’ drought is worse in some areas than 2007-2009 drought”. Georgia FACES, December 19, 2012. Available at http://apps.caes.uga.edu/gafaces/?public=viewStory&pk_id=4613.

¹⁰ 163,000 acre-feet of consumptive use is equivalent to an annual streamflow of 225 cfs. Based on the annual to peak monthly conversion factor of 2.28 provided by Dr. David Langseth, the resulting peak summer month streamflow depletion associated with outdoor use is 513 cfs.

¹¹ Buck, S., et al., “The Welfare Consequences of the 2015 California Drought Mandate: Evidence from New Results on Monthly Water Demand,” UC Berkeley, 2016.

EXHIBIT 36

Expert Report of
ROBERT N. STAVINS, PH.D.

Submitted in the matter of
Florida v. Georgia
Supreme Court of the United States, No. 142, Original

May 20, 2016

Exhibit 6: Economic Metrics for Water-Intensive Industries in the Upper Chattahoochee (2013)

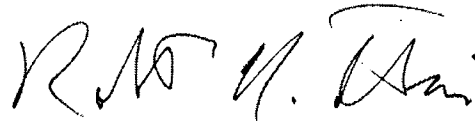
	Contribution to GGP (Millions, \$2013)	Output (Millions, 2013)	Total Water Expenditure (Millions, \$2013)	Total Employees
Top 10 Manufacturing Industries				
Flavoring syrup and concentrate manufacturing	\$9,159	\$16,303	\$8.0	4,153
Poultry processing	\$393	\$2,729	\$3.9	11,042
Other basic organic chemical manufacturing	\$75	\$696	\$3.5	349
Pharmaceutical preparation manufacturing	\$577	\$1,397	\$1.7	1,017
Other basic inorganic chemical manufacturing	\$234	\$634	\$1.1	608
Bottled and canned soft drinks & water	\$224	\$1,191	\$1.0	1,492
Plastics material and resin manufacturing	\$108	\$623	\$0.9	416
Aircraft manufacturing	\$1,036	\$3,805	\$0.8	5,299
Printing	\$682	\$1,432	\$0.8	8,393
Paperboard container manufacturing	\$352	\$1,182	\$0.7	2,514
<i>Subtotal</i>	\$12,840	\$29,991	\$22.3	35,283
Green Industries				
Landscape and horticultural services	\$621	\$910	\$0.0	13,810
Greenhouse, nursery, and floriculture production	\$37	\$54	\$0.0	527
<i>Subtotal</i>	\$658	\$964	\$0.0	14,337
Total	\$13,498	\$30,955	\$22.4	49,620

Notes & Sources: Totals include all counties included in the Upper-Chattahoochee, deemed to draw on water from the ACF-Georgia. See Exhibit 1. Total water expenditure consists of expenditures on water and sewerage (IMPLAN Code 51). Green Industries follows definition provided by Hall et al. (2005). Data accessed from IMPLAN.

- Dr. Phaneuf’s estimates of the value of natural resources and ecosystems services in the Apalachicola River region are unreliable and overstated, and further that Dr. Phaneuf has provided no economic support for his conclusion that “comparatively inexpensive upstream conservation measures” are justified or even needed to protect them.

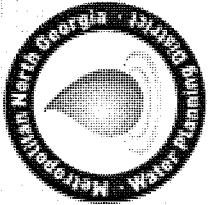
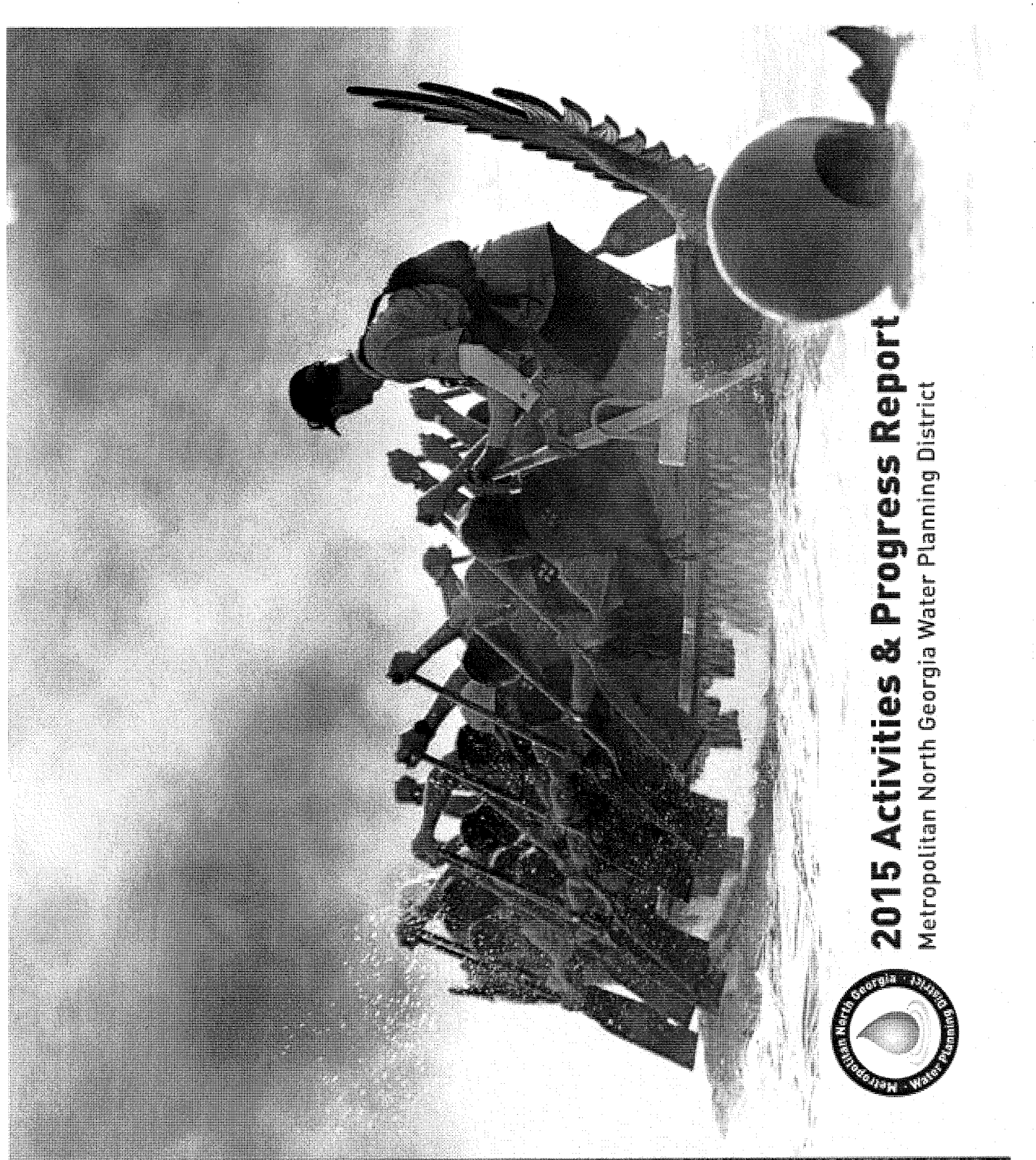
In light of these and other factors, I find that the Sunding Report and the Phaneuf Report do not support restricting water use in ACF Georgia, and in fact, the evidence indicates that restricting water use in ACF Georgia is not warranted from an economic perspective.

May 20, 2016

A handwritten signature in black ink, appearing to read "R. N. Stavins", written over a horizontal line.

Robert N. Stavins, Ph.D.

EXHIBIT 37

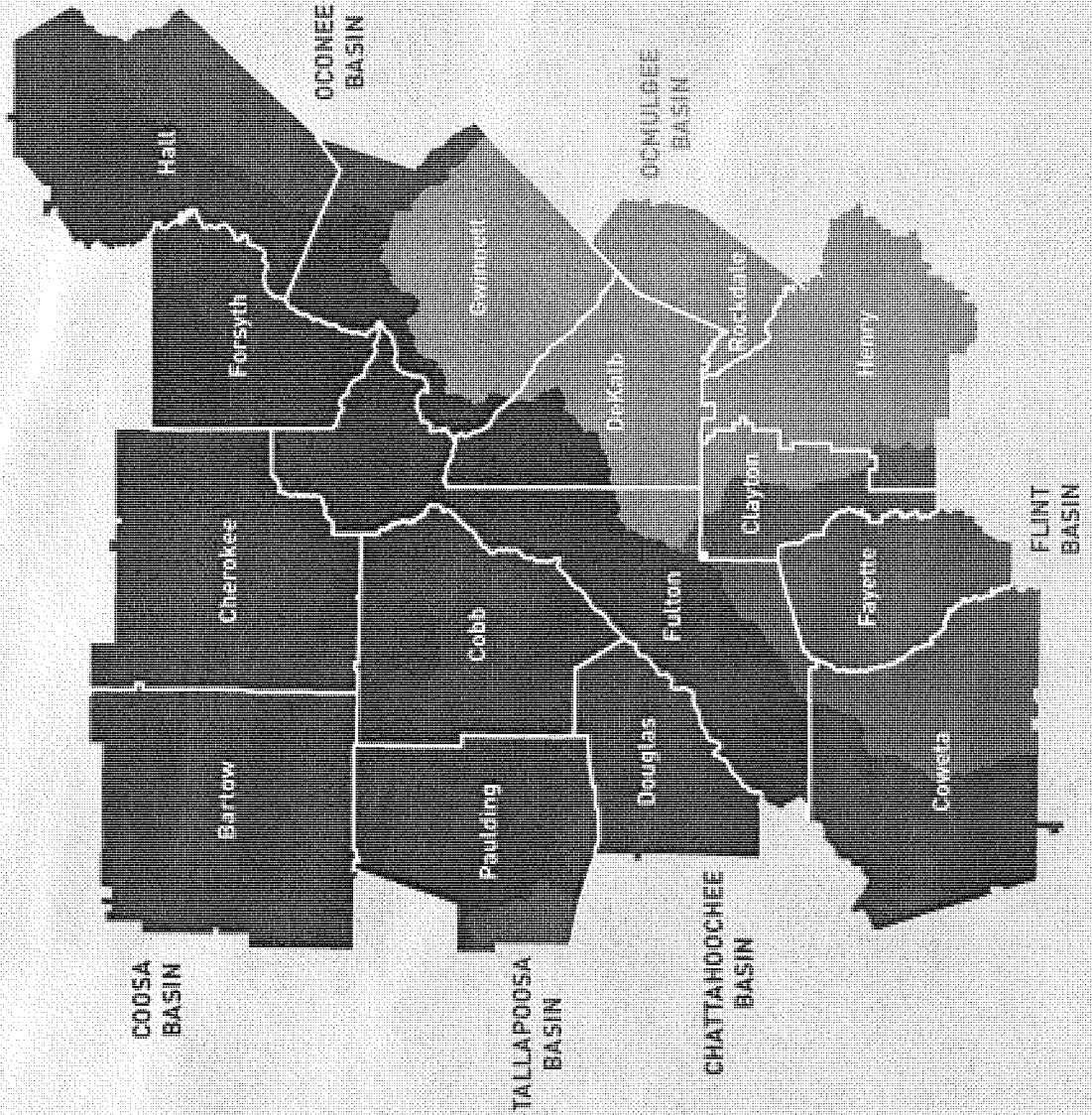


2015 Activities & Progress Report

Metropolitan North Georgia Water Planning District

About the Metropolitan North Georgia Water Planning District

The Georgia General Assembly established the Metro Water District in 2001, forming a framework for creating comprehensive plans for water supply and conservation, wastewater and watershed management in metro Atlanta. The Metro Water District adopted the first set of plans in 2003. Since then, it has worked in partnership with the state and local governments in the 15-county planning area to implement, update and strengthen the plans. The Metro Water District is currently working on the second update of the plans and is combining them into a single, integrated Water Resource Management Plan.



2015 Board Members

Elected Officials

The Hon. Boyd Austin, Jr. (District Chair)
Mayor, Dallas, Paulding County

The Hon. Kasim Reed
Mayor, City of Atlanta

The Hon. Matt Santini
Mayor, Cartersville, Bartow County

The Hon. L.B. "Buzz" Ahrens, Jr.
Chairman, Cherokee County Commission

The Hon. Jeff Turner
Chairman, Clayton County Commission

The Hon. Tim Lee
Chairman, Cobb County Commission

The Hon. Larry Owens
Mayor, Senoia, Coweta County

The Hon. Lee May
Interim CEO, DeKalb County

The Hon. Tom Werthan
Chairman, Douglas County Commission

The Hon. Greg Clifton
Mayor, Fayetteville, Fayette County

The Hon. H. Ford Gravitt
Mayor, Cumming, Forsyth County

The Hon. John Eaves
Chairman, Fulton County Commission

The Hon. Charlotte Nash
Chairman, Gwinnett County Commission

The Hon. Johnny Dinegan
Mayor, Saucersville, Hall County

The Hon. Timmy Smith
Chairman, Henry County Commission

The Hon. Richard Owen
Chairman, Rockdale County Commission

Citizen Members

Katie Kirkpatrick (Vice Chair), Atlanta

Birde Jackson (Secretary/Treasurer), Alpharetta

Pam Burnett, Marietta

Bradley Curney, Jr., Atlanta

Kit Dunlap, Saucersville

Chuck Halling, Mableton

Gerald Pouncey, Jr., Atlanta

Tim Thomas, Fayetteville

Steven Woodruff, Canton

Chairman's Message

As I write this, the Metropolitan North Georgia Water Planning District is preparing to celebrate its 15th anniversary and release a draft of its updated 2016 Water Resource Management Plan. For the first time, the Metro Water District is bringing together water supply and conservation, wastewater and watershed planning into one, integrated planning document. The Water Resource Management Plan relies on the best available technical information and diverse stakeholder perspectives to identify measurable and meaningful actions that will both sustain our water resources and ensure the region remains a water-secure, national innovator and leader.

One of the key findings in preparing the plan is that Metro Water District residents will use approximately 25 percent less water in 2050 than was previously projected. This forecast reflects the continuing success of conservation efforts that have already helped dramatically reduce water usage across the region, further solidifying metro Atlanta's position as a national leader in water stewardship and water loss prevention.

During the plan update, our stakeholders have provided an unprecedented level of invaluable input. Thus far, we have received more than 1,000 comments from Basin Advisory Council and Technical Coordinating Committee members on draft material. An important theme emerged from this feedback — to build upon outreach efforts by expanding the Metro Water District's technical assistance program. The updated plan will highlight critical opportunities where additional support can be provided to member jurisdictions across a broad range of water resource planning areas. The program will also be designed to support member governments in meeting Metro Water District plan and Georgia Environmental Protection Division audit requirements.

The Metro Water District's education and outreach program is well established and broadly recognized for its impacts. This year, we received the U.S. Environmental Protection Agency's (EPA) 2015 National WaterSense® Excellence Award for Education and Outreach, for advancing WaterSense® and water efficiency. Additionally, participation in our annual contests, festivals and Water Drop Dash 5k Race continue to be fun and effective.

Even as we document decreasing water demands and continue to receive recognition for our award-winning programs, the courtroom battles over water supply in two regional water basins continue. Last year, the U.S. Supreme Court granted Florida's motion to sue Georgia for an "equitable apportionment" of the waters of the Apalachicola-Chattahoochee-Flint basin. In this case, Florida alleges that Georgia's use of the basin's water has caused "substantial harm" to Florida. The suit is focused on increasing freshwater flows into Apalachicola Bay to support its oyster industry.

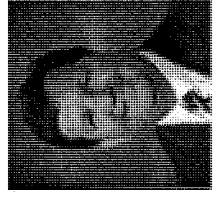
Georgia is not to blame for the collapse of the oyster industry. As noted in Georgia's brief to the Supreme Court, the collapse is due in part to Florida's mismanagement of the oyster industry, immediately followed by a major drought, which decreased freshwater flows across the basin.

In a separate case involving the Alabama-Coosa-Tallapoosa (ACT) Basin, the Atlanta Regional Commission, the Cobb County-Marietta Water Authority and the State of Georgia have sued the U.S. Army Corps of Engineers because the Army has failed to act on water supply requests at Allatoona Lake that have been pending since 1981. The suit asks the court to direct the Army to answer the requests in a reasonable period of time.

While we should be proud of our stewardship story, we also need to continue to advance, innovate and ensure the region has the water required to support the quality of life and economic prosperity that makes us a global leader. On behalf of the Governing Board, the Technical Coordinating Committee (TCC), the Basin Advisory Councils (BACs) and the District staff, we appreciate and look forward to your continued support and participation during the plan update.



Mayor Boyd Austin
Metro Water District Chair

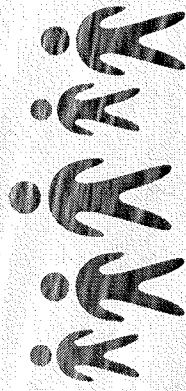


Education and Outreach

Award-Winning, Comprehensive

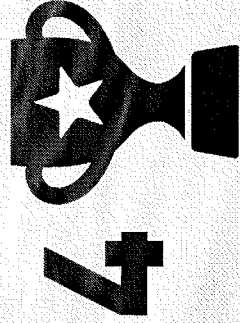
The Metro Water District's education and outreach program has received several prestigious awards to date. Much of this is due to its successful outreach to all age groups and implementation of programs that cover a wide variety of water resources management topics. This past year, the Metro Water District received one of the most coveted awards within the industry — the U.S. Environmental Protection Agency's (EPA) 2015 National WaterSense® Excellence Award for Education and Outreach. Of the more than 1,700 utilities, manufacturers, retailers, builders and organizations nationwide that partner with WaterSense®, only a select few programs receive this esteemed award each year.

The Metro Water District continues work on its two large-scale, critically-important programs: My Drop Counts, which addresses water conservation; and the Clean Water Campaign, metro Atlanta's solution to addressing stormwater pollution. Participation in program activities continues to grow. Each year, the Metro Water District's 109 member jurisdictions, utilities and water authorities host more than 2,000 activities and outreach events across the region, providing education on water conservation and water quality awareness. The Metro Water District's own events and contests, including the Water Drop Dash 5k Race and Water Festival, the middle school essay contest, the high school video contest and the Water Reflections calendar photo contest, continue to be fun and successful. In 2015, more than 2,700 area residents and students participated in these four signature events.



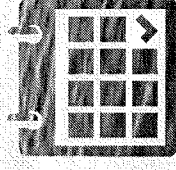
2,700+

The number of participants in four signature annual events and competitions



4

The number of prestigious national and international awards received in the last five years



2,000

The number of outreach activities hosted by District region wide partners every year





Integrated Planning

for Stronger Regional Results

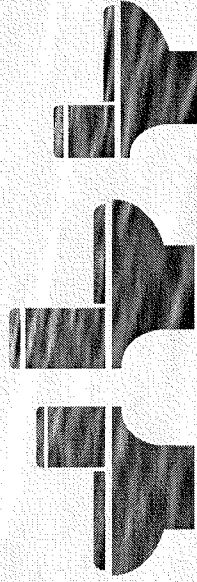
In 2015, the Metro Water District began updating the Water Supply and Water Conservation, Wastewater and Watershed Management plans and combining them into a single, integrated Water Resource Management Plan. The plan, scheduled for completion in the fall of 2016, will include elements of the 2009 plans but will apply greater focus on the interrelationships across the water planning sectors. These improvements will lead to a stronger plan that is more valuable to communities within the Metro Water District.

The past year's work included data gathering and updating water and wastewater forecasts for the year 2050. Staff also worked with stakeholders on key issues including commercial water conservation, septic management, the consolidation of watershed action items and an overhaul of education and outreach requirements to name a few. As 2015 came to an end, the consultant team was actively assembling data and information for the update and expects to have a draft plan available for public review in the summer of 2016.



55%

The decrease in grease-related sewer overflows from 2003 to 2014



110,000+

The number of toilets rebated since 2008, saving more than 2.6 million gallons of water per day



30%

The drop in per capita water demand since 2000

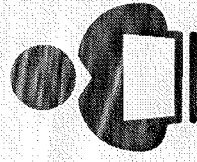
Engaging Our Stakeholders

Building a Solid Foundation

The keystone of a successful water resource management program is a well-rounded, engaged and informed stakeholder base. The Metro Water District relies heavily on its Basin Advisory Councils (BACs), Technical Coordinating Committee (TCC) and Governing Board members who spend countless volunteer hours strengthening the regional plan with diverse and local perspectives.

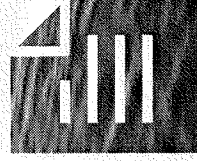
In 2015, as District staff prepared data and drafted portions of the Water Resource Management Plan (a process that began in January 2014 with visioning and

goal-setting exercises), stakeholders were invited to attend numerous discussions and review material. These interactions provided valuable feedback that has been used to enhance the plan. This past year alone, more than 250 stakeholders participated in 38 stakeholder meetings, providing more than 1,000 comments. This extensive level of participation is a testament to the dedication of Metro Water District stakeholders.



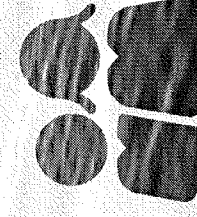
38

The number of stakeholder meetings in 2015 — That's one meeting every 1.4 weeks



1,000+

Comments received from District stakeholders to date



235

A record number of individuals from a broad range of interests that joined the BACs in 2015

For new County Recreation

Water Storage for the future

London
Water Co
Water

QUESTION 3. AS we embark on the plans for the District, what do you think our top goals should be?

Building regulations/standards/permits
to insure that all stakeholders
needs are represented and quality of
environmental

Financials 2015

2015 Budget
Adopted June 4, 2015

2015 End of Year
Budget Revision

Beginning General Fund Balance \$679,744 \$990,122

Revenues

Direct State Funding	\$250,000	\$250,000
Local Dues (2010 Census at \$0.265 per capita)	\$1,280,677	\$1,280,677
Interest Income	\$2,000	\$2,000
Misc. Fees	\$60,000	\$60,000

Total Revenues \$1,592,677 \$1,592,677

Expenses by Type

Chairman's Allowance	\$3,000	\$350
District Planning Function		
Salaries	\$408,900	\$408,900
Fringe Benefits	\$241,251	\$216,850
Contracts	\$800,000	\$1,000,000
Overhead	\$260,060	\$242,977
Miscellaneous Operating	\$96,000	\$150,000
Public Awareness / Education	\$160,000	\$120,000

Total Expenses \$1,969,211 \$2,139,077

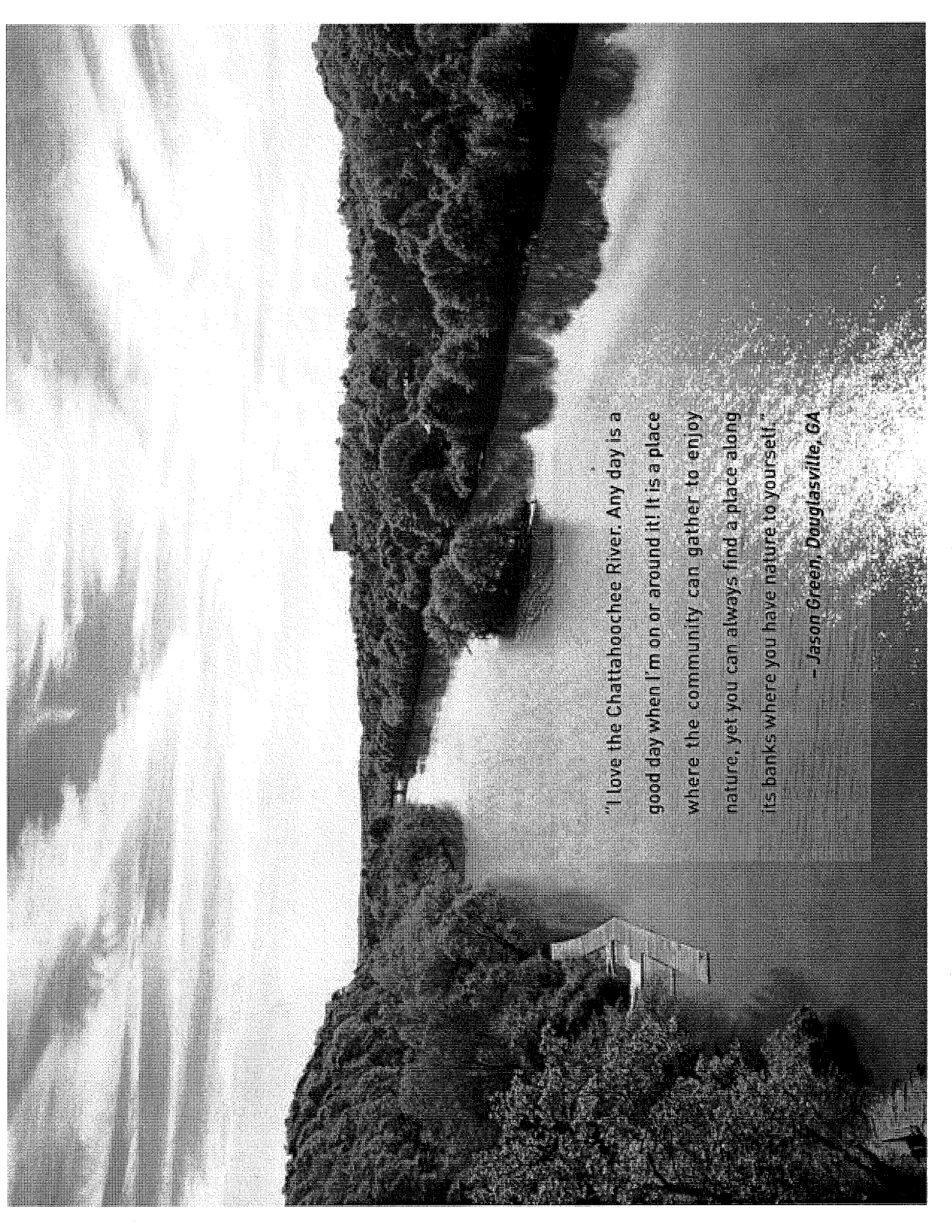
Projected Ending Fund Balance \$443,722

The Metropolitan North Georgia Water Planning District operates on a calendar-year budget, with the majority of revenues coming from local government dues (\$1,280,677) and state of Georgia allocations (\$250,000). For 2015, local government dues were \$0.265 per capita (based on the 2010 Census).

Adjacent is a review of the revenues and expenses for 2015. This accounting is subject to adjustment after fiscal year-end close and an independent audit.

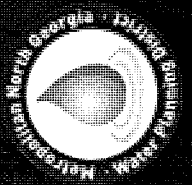
Financials for 2016

In June of 2015, the Metro Water District Governing Board adopted a final budget of \$1,825,159 for 2016, with the majority of revenues coming from local governments (\$773,239) and the state (\$750,000). Plan update activities will be complete at the end of 2016, and the projected fund balance will decrease as we return to normal operating procedures. The Metro Water District strives to maintain a minimum fund balance of \$300,000 for operating contingencies. Local government dues will be \$0.16 per capita (based on the 2010 census) for 2016. The Metro Water District was able to offset an additional dues increase because of contributions from the state (an additional \$500,000 in 2016).



"I love the Chattahoochee River. Any day is a good day when I'm on or around it! It is a place where the community can gather to enjoy nature, yet you can always find a place along its banks where you have nature to yourself."

- Jason Green, Douglasville, GA



Metropolitan North Georgia Water Planning District
40 Courtland Street, NE | Atlanta, GA 30303
404.463.3256 | fax 404.463.3254

www.northgeorgiawater.org

EXHIBIT 38

BY BOYD AUSTIN

Consumers, water suppliers need to conserve

By Boyd Austin

You don't need a weather report to know that we endured a scorching hot spring and summer. And it also has been dry. So dry, in fact, that much of metro Atlanta is experiencing severe drought conditions, according to the U.S. Drought Monitor.

After a wet winter, rainfall amounts dropped off. From March through September, Atlanta received 20.02 inches of rain — about 9.4 inches less than the 30-year average for the same seven-month period, according to the National Weather Service.

We don't know how long the dry weather will continue. Rainfall may return to normal, but we should also be prepared for a long-term drought. Last month, the Georgia Environmental Protection Division declared a Level 1 drought response, which requires water providers to inform the public about the drought conditions and water conservation strategies.

The good news: Metro Atlanta's robust track record of

water conservation has prepared us to manage through dry periods that are part of the normal weather cycle in our region.

Since the Metropolitan North Georgia Water Planning District was formed in 2001, utilities in the region have implemented one of the most comprehensive regional water management plans in the country. This plan includes:

- A toilet rebate program that has replaced more than 110,000 old fixtures with high-efficient models, saving nearly a billion gallons of water a year.

- A tiered pricing structure that charges higher rates the more water that is used, encouraging conservation.

- A sophisticated leak detection program that has enabled utilities to detect and repair more than 23,000 leaks in the past four years alone, using new methods such as sonar to inspect pipes.

These efforts have helped water use in metro Atlanta decrease by more than 10 percent since 2001, despite a pop-

ulation increase of more than 1 million. As a result of our conservation efforts, the region is projected to use 25 percent less water in 2050 than was previously predicted.

But, during dry times, it's important to step up our individual conservation efforts. There's much residents can do:

- Follow state law that limits outdoor watering to the hours of between 4 p.m. and 10 a.m. to avoid the hottest part of the day when more evaporation occurs.

- Use a rain gauge to determine how much it has rained over the week before watering outdoor plants.

- Water in several short sessions instead of one long session. This reduces runoff and allows water to infiltrate into soil and plant roots.

- Water lawns only when needed. If the blades of grass don't bounce back after walking across the lawn, it is time to water. More plants die from over-watering than under-watering.

- Check and fix leaks inside and outside the home.

- Shorten showers and turn off water when shaving or brushing teeth.

- Run dishwashers and washing machines only when you have full loads.

All of these measures build on our region's culture of water conservation.

Like a family managing its financial resources through good economic times and bad, we have developed strategies for using water wisely in order for us to better manage our supply during dry times. And thanks to strong regional planning and conservation efforts, our water providers are prepared to manage through this dry period too.

Still, we cannot afford to take anything for granted, and we all need to do our part. Our ongoing personal and regional water stewardship efforts are critically important to securing the economic, environmental and social vitality of our region.

Boyd Austin is chairman, Metropolitan North Georgia Water Planning District.

this page

The editorial page offers the AJC editorial board's insight and opinion on issues important to our community, it's a key part of our forum where different viewpoints are represented.

The board's mission is to be a catalyst for discussion and solutions-oriented community action to better both the Atlanta area and Georgia.

While the editorial board will offer opinions each Sunday, we recognize the importance of balance and of showcasing other views. Look for them on this page. Our intent is to give you more than just our viewpoint on each week's topic — with it will come a wide variety of information to help you make the best possible decisions.

Atlanta Forward

Building on this newspaper's legacy of leadership in the region, we launched Atlanta Forward in 2009 to tackle the major issues facing our community as the economy recovers. This designation identifies these reports and community-wide discussions.

EXHIBIT 39

Report of Dr. David L. Sunding

Economic Impacts of Reducing Water Consumption in the Chattahoochee and Flint River Basins of Georgia

Prepared for the State of Florida, Through Its Department of
Environmental Protection and Its Counsel, Latham & Watkins LLP

February 29, 2016

THE **Brattle** GROUP

Table 13: Cost of Reducing Outdoor Water Use

Percent Cutback	Water Saved (acre-feet)	Mean Cost (\$/acre-foot)	Total Cutback Cost (\$2012)
10%	15,857	1,691	26,807,189
20%	31,714	2,118	67,174,479
30%	47,570	2,546	121,101,869

Notes:

Savings are based on average outdoor use by ACF permit-holders in 2011 and 2012, estimated using minimum month methodology and Georgia EPD withdrawal data.

Mean cost per acre-foot is calculated using average residential price paid per acre-foot, price elasticity of outdoor demand, and the cost of providing residential service.

134. It should be noted that the economic costs of reducing outdoor use are qualitatively different from the costs of other conservation measures such as deficit irrigation and investments in more efficient irrigation equipment. Outdoor water use is a consumer good as opposed to an input into a production process. Prohibiting urban consumers from purchasing water they would like to buy results in a reduced quality of life, but does not result in a change in economic activity. That is, urban outdoor restrictions have aesthetic impacts, and while consumers would pay money to avoid them, they are not losses that reduce state household income, output or employment.

XI. Leak Abatement and Reduction of System Losses

135. In 2013, 30 percent of Atlanta’s Department of Watershed Management’s water supply was categorized as “lost,” according to DWM audit reporting spreadsheets. Water losses are primarily due to leakage from aging pipeline infrastructure and therefore likely have a consumptive use component.
136. As reported in Table 14, system losses between Atlanta DWM and DeKalb County Water and Sewer, the two municipalities for which I received audit worksheets during the

EXHIBIT 40

19 J. Land Use & Envtl. L. 47

Journal of Land Use & Environmental Law

Fall, 2003

Article

EQUITABLE APPORTIONMENT OF ECOSYSTEM SERVICES: NEW WATER LAW FOR A NEW WATER AGE

J.B. Ruhl^{a1}

Copyright © 2003 by Florida State University Journal of Land Use and Environmental Law; J.B. Ruhl

Table of Contents

I.	INTRODUCTION	47
II.	EAST MEETS WEST IN APALACHICOLA	48
III.	THE LAW OF THE RIVER (AND WHY THE ACF HAS NONE)	49
IV.	CONVENTIONAL INTERSTATE WATER ALLOCATION LAW	50
V.	INCORPORATING ECOLOGICAL REALITY INTO THE LAW OF INTERSTATE WATER ALLOCATION	52
VI.	THE "NEW" LAW OF THE LAW OF RIVERS	55
VII.	MERGING ECOLOGY AND ECONOMICS IN A NEW WATER LAW FOR A NEW WATER AGE	56

I. INTRODUCTION

It has been said that "[w]ater litigation is a weed that flowers in the arid West."¹ Well, the seeds have blown east. The eastern states, blessed with bountiful rain and plentiful lakes and rivers, seemed immune to battles over what water was whose, though we have certainly had our share of controversy over water quality. As a consequence, the law of interstate water allocation has been shaped largely by the states of the American West.²

*48 Alas, our tranquility in the East has been rocked with increasing drought frequency and a vastly increasing population and its demand for more water. The water wars have moved east, and the question is whether the East will simply import interstate water allocation law as it has been shaped in the West, or will forge a new water law for a new water age. My purpose in these comments is to suggest that we try the latter, that we mold water law to meet the ecological realities of our great river systems.

II. EAST MEETS WEST IN APALACHICOLA

Ironically, Florida has become an epicenter of the eastern version of water wars. We have, for example, the ongoing effort to "re-plumb" the Everglades.³ And there is the recent controversy over whether to pipe water from northern Florida to our thirsty southern cities.⁴ But the real ground zero is the battle over the water in the Apalachicola-Chattahoochee-Flint river basin – the ACF.⁵

The ACF is a new kind of water battle in three ways. First, it is a classic interstate water allocation fight between urban, agricultural, and rural areas of several states, something the East simply has not seen in many decades, certainly not of this magnitude. Second, and here it is unlike even the western tradition, the battle is not simply over a split of water flowing in the basin, or maintaining minimum downstream base flows. Florida's interest is in maintaining ecological quality downstream of water-hungry Georgia and into Apalachicola Bay, and that will require maintaining an ecologically-

based flow regime at the mouth of the Apalachicola River. This has not been the typical claim of a downstream state in such disputes. Finally, if this matter were to get in front of the Supreme Court, which seems likely, it would be the first major interstate apportionment case the Court has *49 entertained in the age of mature environmental statutory law. It is not at all clear how thirty years of environmental awareness and regulation may have affected the Court's demeanor when it comes to interstate water allocation.

Hence, as another commentator recently observed, it is no exaggeration to say that the ACF represents a “new and complicated issue on the horizon of water law.”⁶ So, with negotiations between the states having broken down, I thought it would be useful to examine the state of the river and the state of the law of the river—in particular, how the Supreme Court would approach this controversy were it to make its way to that forum, which seems a distinct possibility.

III. THE LAW OF THE RIVER (AND WHY THE ACF HAS NONE)

States have been getting into squabbles about water allocation for centuries, and generally there are three ways they can solve them, not counting pitched battle: (1) Congress, exercising its authority over interstate commerce, can legislate a division of water; or (2) the states can enter into a Compact agreeing to a division, which would have to receive congressional approval; or (3) the states can take their dispute to the U.S. Supreme Court, which may exercise its original jurisdiction over disputes between the states to arrive at an equitable apportionment of the water.⁷ For major western rivers such as the Colorado, the states along the river have resorted to all of these forums over the decades, and the combination of outcomes – which in the case of the Colorado makes up a dozen or so different agreements and court cases – is known as “The Law of the River.”⁸

The Law of the River is distinct from the law each state uses internally for allocation of water rights. For that purpose, western states are associated with the Appropriative Rights system – which is based on first in time – though many of those states have evolved into more complicated systems of adjudicated and regulated rights.⁹ The eastern states generally began under the Riparian Rights system, which afforded land adjacent to water the right of *50 reasonable use. Like the western states, however, many eastern states have modified the traditional riparian rules with permit systems and other regulations.¹⁰

The two principal disputants in the ACF situation, Georgia and Florida, have well-defined bodies of state water law, though each is taking a careful look at possible changes to meet internal needs. But the ACF itself has for all practical purposes no defined Law of the River. Georgia has been doing its thing with its share of the ACF, and Florida the same. Of course, the U.S. Army Corps of Engineers is also in the picture in a big way. Since the 1940s the Corps has been implementing Congress' mandates to tame the Chattahoochee and Apalachicola Rivers for navigation purposes. But there simply is no Law of the River in the same sense that there is for many western rivers – no resolution of water rights between the states.¹¹

After several years of negotiation under a compact, which was basically a compact to negotiate,¹² the states failed to reach a consensus on the proper allocation. Georgia wanted to retain rights sufficient to serve its vast urban and agricultural demands in times of drought, whereas Florida demanded that ecological flow regimes be retained on behalf of Apalachicola Bay.¹³ It seems unlikely that Congress will come to the rescue through federal legislation, so that leaves the matter to the Supreme Court.¹⁴ Anticipating this state of affairs, I have been thinking about how the Court might approach this situation, given some of the new twists it presents.

IV. CONVENTIONAL INTERSTATE WATER ALLOCATION LAW

The Supreme Court's law of interstate water allocation goes back almost 100 years. The Court first announced that it had the *51 authority, under its original jurisdiction power, to apportion interstate streams in 1907, in a dispute between Kansas and Colorado over the Arkansas River.¹⁵ That case is important because the Court rejected Colorado's argument that its territorial sovereignty gave it the right to deplete the entire flow of the river.¹⁶ Since then the Court has laid down three important foundational principles about the rights of states respective to others, as recently summarized in the 1983 case of *Idaho v. Oregon*:¹⁷

- First, a state may not preserve solely for its own inhabitants the natural resources located within its borders.
- Second, no state has inherent priority, absolute or presumptive, over another state in the use of water from an interstate stream.
- Third, all states have the affirmative duty to take reasonable steps to conserve prospective water use, and even to augment water supply, as a condition to making a successful claim to a fair share of an interstate water.

The Court had foreshadowed these principles by its early willingness to develop a federal common law of interstate nuisance, premised on the principle that no state had the right to abuse its territory to the detriment of another state.¹⁸ It was only a short step to these principles, which extended the same idea to interstate waters. The upshot is that, just because Georgia is upstream of Florida, it has no inherent right to deplete the flow of water to Florida, or take priority over Florida in use of the ACF waters, or use interstate waters within its boundaries however it sees fit.

Now, while these principles may sound good for Florida's interests, there is more to it. First, the Court has set a high standard of injury as a prerequisite to seeking relief in the form of a claim to the right to more water from an interstate stream. The complaining state must show clear and convincing evidence of a substantial injury to its interests as a result of another state's use of the resource.¹⁹ Particularly in the East, where the Riparian Rights system dominates state water law, this burden places states interested in water conservation at a disadvantage to states interested in rapid development of water resources.²⁰ Florida, for example, is interested in leaving water in the ACF to promote *52 ecological resources, while Georgia seeks ever more water for its urban and agricultural sectors. It is difficult for a state in Florida's position, under the conventional burden of proof, to pinpoint the nature and magnitude of injury needed to open the Court's door.

If that hurdle is passed, the Court applies a rather open-ended doctrine known as "equitable apportionment" to resolve the dispute. As summarized in *Nebraska v. Wyoming*,²¹ the factors that go into this mix include, but are not limited to:

- Established rights under state water law
- Physical and climactic conditions
- Consumptive use patterns
- Character and rate of return flows
- Extent of established uses
- Availability of water storage
- Practical effect of wasteful uses on downstream areas
- Damage to upstream areas as compared to benefits to downstream areas if the former are limited

In other words, equitable apportionment encompasses whatever seems relevant to a fair division of the resource between the states. This means equitable apportionment is a flexible doctrine, able to incorporate new knowledge not only about water demands and uses, but also about the ecology of water in general.²² The ACF presents just such an occasion.

V. INCORPORATING ECOLOGICAL REALITY INTO THE LAW OF INTERSTATE WATER ALLOCATION

Because of the way Florida has described its interests, focusing on maintaining natural flows rather than simply minimum base flows, the ACF situation presents some unusual factors for consideration under the doctrines of substantial injury and equitable apportionment.²³ Indeed, the ACF case presents an opportunity for the Court to update its law of interstate water allocation with a dose of ecological reality.

The ACF presents a novel situation for the substantial injury test. For the most part the Court's focus in determining the presence of injury is on economic injury. That would seem to favor *53 Georgia, which has monstrous Atlanta and its recreational playground, Lake Lanier, to offer versus the puny, by comparison, town of Apalachicola and its oyster industry.

But what of the ecological injury Georgia's unquenchable thirst poses downstream? It is well-demonstrated that the disruption of natural flow regimes on the ACF has disastrous effects on downstream fishery resources in the river and the bay, and could seriously alter riparian habitat regimes as well.²⁴ Surely Florida will want to press the case for this kind of injury in the Court.

Yet Florida need not stop there, for increasingly today we understand that ecological injury in fact *is* economic injury, because healthy functioning ecosystems provide immensely valuable services to human populations.²⁵ Indeed, recent work on the value of such ecosystem services suggests that the Apalachicola River and its floodplain basin are as or more economically valuable than the Lake Lanier based recreational economy. The natural flow regime supports huge values in Florida in the form of flood control, nutrient regulation, food for estuary fishes, and other important services. While a graduate student here at FSU, Greg Garrett estimated the economic value of those ecosystem services to be well over \$5 billion per year.²⁶

Indeed, although most of the Court's jurisprudence focuses on water, it has made clear that in interstate disputes all natural resources are subject to its original jurisdiction. Thus, in *Idaho v. Oregon*, the Court apportioned salmon runs in the Columbia-Snake River system between the two states, saying that "a dispute over the water flowing through the [river] system would be resolved by the equitable apportionment doctrine; we see no reason to accord different treatment to a controversy over a similar natural resource of that system."²⁷

Like fish flowing through the river system, ecosystem services do as well, delivering true economic value in many different ways *54 and locations. Injury to those economically valuable resources ought, therefore, to count in the "substantial injury" analysis.

Likewise, once those ecosystem services are recognized for both their ecologic and economic values, the Court should focus its equitable apportionment doctrine on the apportionment of resources associated with those services, which in this case is the natural flow regime of the ACF River. In other words, it is not enough to protect a minimum base flow for Florida, as Georgia has emphasized; rather, the real medium of apportionment should be the flow regime itself.

The suggestions that the Court should take injury to ecosystem services into account for purposes of its substantial injury test, and should focus on ecosystem services in the apportionment phase of the case as well, are novel propositions, but they are the logical, incremental extensions of the Court's analysis in *Idaho v. Oregon*. The salmon and trout involved in that case were the resource of interest for Idaho – they moved within the river system and were, for all practical purposes, what made the water valuable to the state.

Ecosystem services, like the salmon, are economically valuable resources that flow within the water system of the ACF and any other river. Moreover, with each year we understand more about the nature and value of ecosystem services –

to leave them out of the interstate water apportionment analysis would simply be to ignore the ecological and economic realities of river systems such as the ACF.

Why would the Court bother to engage in apportionment of interstate water, and of interstate fish, but not of interstate ecosystem services? What would be the point of leaving the latter out of the calculus? To be sure, water has value of its own in the consumptive sense – we drink it and use it for irrigation and other industrial applications. But water left in the river is also immensely valuable, not as a commodity but because of the ecosystem functions it performs. You can't have salmon without some water in the river. Wetlands aren't wet without water in the river. Riparian habitat isn't riparian if there is no water in the river. These are the ecosystem functions of water left in the river, and they provide valuable services which the Court could, and should, take into account in the water apportionment calculus.

Indeed, the Court did essentially that in 1931, in the pre-Clean Water Act case of *New Jersey v. New York*,²⁸ when it ruled that New York must provide the downstream Delaware Basin states with *55 sufficient minimum base flow in the river to dilute New York City's waste discharges. With today's greater understanding of the role and value of ecosystem services that instream water provides, such as not only waste dilution but nutrient and temperature regulation and riparian habitat support, the Court should be more than willing to move beyond the minimum base flow criterion to one embracing the natural flow regime.

In short, a river is about more than water, thus so too must the Court's doctrine of equitable apportionment extend beyond the mere question of water quantity. Justice O'Connor recently observed that the distinction between water quantity and water quality is “artificial.”²⁹ To the extent anyone suggests the Court's equitable apportionment jurisprudence is about only water quantity, therefore, they too rely on an artificiality that must cede to ecological reality. The ACF may very well become the test case for that proposition, and potentially the dawn of a new era for the doctrine of equitable apportionment.

VI. THE “NEW” LAW OF THE LAW OF RIVERS

Any discussion of interstate water allocation in modern times would be remiss not to include consideration of the influence of public law on the river system, particularly laws regulating environmental quality and natural resource conservation. Regardless of what the Supreme Court does, the ACF also is likely to experience what has transpired in the great river systems of the West. Gradually, the “Old” Law of the River throughout rivers in the West is yielding to a “New” Law of the River. Most of the interstate compacts, congressional legislation, and Supreme Court cases fixing the Law of the River for western waters predate the age of mature environmental laws. What western states are finding is that the Law of the River, once thought to be settled, is no match for the law of the Endangered Species Act (ESA), the Clean Water Act (CWA), and other modern environmental laws. The Law of the River doesn't always work well under those statutes, and court after court has said it must yield to them. And this “New” Law of the River springs not from interstate compacts and Supreme Court decisions, but from federal administrative agencies, citizen suit litigation, and the lower federal courts.

*56 This is all very disconcerting to western states used to waging their water wars on familiar grounds and with familiar foes.³⁰ While time does not permit a full exploration of how laws such as the ESA and CWA could play out in the ACF, my hunch is that the situation will remain dynamic for some time to come. In other words, don't expect the Supreme Court to settle once and for all how the ACF gets divided up. An endangered mussel here or threatened fish there, and you get a whole different set of issues and players. Indeed, particularly under the conventional law of interstate water allocation, which favors states that rapidly develop water uses over states interested in conservation, states like Florida may find strategic use of ESA and CWA litigation effective in the short run for controlling their thirsty neighbors.³¹

VII. MERGING ECOLOGY AND ECONOMICS IN A NEW WATER LAW FOR A NEW WATER AGE

All of this talk about ecosystem services and the Endangered Species Act probably has economic development interests running for the hills. But they should instead be running with the concepts all the way to the bank. This case is about far more than a small struggling oyster fishery in a sleepy southern town. It is about Florida's largest flowing river, the lifeblood of one of the most biologically diverse estuaries in the nation, and Apalachicola Bay, a major playground of the Florida Panhandle. Every banker, resort operator, marina owner, restaurant proprietor, housing developer, fishing outfitter, boat retailer – basically, anyone who depends on there being an economy in the Florida Panhandle – ought to envision what his or her livelihood and lifestyle would be like were the Apalachicola to go the way of the Colorado River, which in many years fails to reach its historical delta.³² Sure, you may say, that'll never happen here. Are you so sure of that? Do you trust Atlanta politicians, Lake Lanier party boaters, and South Georgia farmers to make sure of it?

I hesitate to make this sound like a war between Georgia and Florida, but that's what an interstate water dispute is like. Just ask anyone in Arizona how they feel about California when it comes to *57 water. This isn't just hardball, it's kickboxing. And the reality is that under the Supreme Court's conventional approaches to interstate water allocation, Florida loses. If it wants to prevail, Florida *must* urge the Court to consider the full import of the underappreciated ruling in *Idaho v. Oregon* to make its equitable apportionment jurisprudence align with the real reason we care about water – its ecosystem service values. This is, in other words, no eastern version of a western water case – it is about forging a whole new water law for a new water age.

Footnotes

a1 Matthews & Hawkins Professor of Property, The Florida State University College of Law, Tallahassee, Florida. This Article is an edited and annotated version of remarks I delivered at The FSU College of Law's forum on *The Future of the Apalachicola-Chattahoochee-Flint River System: Legal, Policy, and Scientific Issues*, held on November 5, 2003. The Article is not intended to present a comprehensive review of the interstate water dispute involving the river system, or of the conventional law of equitable apportionment that the U.S. Supreme Court has used to resolve interstate water allocation disputes in the past. Limited references to sources providing that background are provided *infra*. Rather, my purpose is to suggest that the greater understanding we have today of the role ecological processes play in delivering tremendous economic value to human populations demands that the law recognize these important ecosystem services as a critical factor in the interstate water apportionment calculus. The dispute regarding the Apalachicola-Chattahoochee-Flint River System, described *infra*, presents the perfect opportunity to press that point. I owe special thanks to my colleague Dave Markell for organizing the forum, and to Dan Tarlock for his invaluable input on the content of the presentation.

1 United States v. Orr Water Ditch Co., 256 F.3d 935, 940 (9th Cir. 2001).

2 See Robert Haskell Abrams, *Interstate Water Allocation: A Contemporary History for Eastern States*, 25 U. ARK. LITTLE ROCK L. REV. 155, (2002) (“To date, with a few notable exceptions, the states of the American West have made the law” of interstate water allocation.).

3 See John J. Fumero, *Florida Water Law and Environmental Water Supply for Everglades Restoration*, 18 J. LAND USE & ENV'T'L L. 379, 386-89 (2003).

4 See Bruce Ritchie, *Is there a Water Crisis?*, TALLAHASSEE DEMOCRAT, Oct. 29, 2003, at 1A.

5 The ACF River Basin extends from north-central Georgia to Apalachicola on the Florida Panhandle, straddling the lower half of the Alabama-Georgia border. Directly to the west of the ACF is the Alabama-Coosa-Tallapoosa river network, known as the “ACT,” which extends from northwest Georgia through Alabama to Mobile. For an excellent background on the origins and history of the water disputes between the states involved in these two river basins, see C. Grady Moore, *Water Wars: Interstate Water allocation in the Southeast*, 14 NAT RESOURCES & ENV'T 5, 6-10 (origins & history) (1999); Dustin S. Stephenson, *The Tri-State Compact: Falling Waters and Fading Opportunities*, 16 J. LAND USE & ENV'T'L L. 83 (2000).

- 6 See Grady, *supra* note 5, at 67.
- 7 For an excellent, and still timely, summary of the law of interstate water allocation, see A. Dan Tarlock, *The Law of Equitable Apportionment Revisited, Updated, and Restated*, 56 U. COLO. L. REV. 381 (1985).
- 8 For an excellent summary of the Law of the River concept in general, and for the Colorado River in particular, see Antonio Rossman, *A New Law and the "Era of Limits" on the Colorado*, 18 NAT. RESOURCES & ENV'T 3, 3-4 (2003).
- 9 See Steven T. Miano and Michael E. Crane, *Eastern Water Law: Historical Perspectives and Emerging Trends*, 18 NAT. RESOURCES & ENV'T 14, 14 (2003) (summarizing western water law).
- 10 See *id.* at 15-16 (summarizing eastern water law).
- 11 This is not unusual for eastern rivers. There has been only a handful of Supreme Court water decisions in the East, most notably in the protracted dispute between New York and downstream states of the Delaware River Basin. See Tarlock, *supra* note 7, at 396-98. There have also been several significant interstate water compacts, most notably the Susquehanna Basin Compact (Maryland, New York, and Pennsylvania), the Great Lakes Basin Compact (Great Lakes states and Quebec and Ontario), and the Delaware River Basin Commission Compact Delaware, New Jersey, New York, and Pennsylvania). See Miano & Crane, *supra* note 9, at 17-18.
- 12 See Grady, *supra* note 5, at 7 ("The heart of the ACT and ACF compacts is the agreement to negotiate an equitable apportionment of the surface waters in each basin.").
- 13 See Letter to Editor of Tallahassee Democrat from David Struhs, Secretary, Florida Department of Environmental Protection, *Unwilling to Accept Agreement that Relied on Minimum Flow*, TALLAHASSEE DEMOCRAT, Sept. 7, 2003, at 4E ("In the end, Florida was unwilling to accept an agreement that relied on the minimum flow").
- 14 See *id.* ("Florida will pursue an equitable allocation formula in the U.S. Supreme Court.").
- 15 *Kansas v. Colorado*, 206 U.S. 46 (1907).
- 16 *Id.*
- 17 462 U.S. 1017, 1020-27 (1983); see generally Tarlock, *supra* note 7, at 400-07.
- 18 See, e.g., *Georgia v. Tennessee Copper Co.*, 237 U.S. 474 (1907).
- 19 See *Missouri v. Illinois*, 200 U.S. 496, 521 (1906).
- 20 See Abrams, *supra* note 2, at 170-71.
- 21 325 U.S. 589, 618 (1945). See generally Tarlock, *supra* note 7, at 399-401.
- 22 Tarlock describes the doctrine as having "considerable evolutionary potential." See Tarlock, *supra* note 7, at 384.
- 23 See Grady, *supra* note 5, at 67 ("[T]he 'natural flow regime' approach to allocation proposed by Florida elevates environmental concerns to a new level in water quantity disputes.").
- 24 See Bruce Ritchie, *Florida Willing to Take River Battle to Court*, TALLAHASSEE DEMOCRAT, Aug. 27, 2003, at 3B ("Constant minimum flows will hurt oysters in Apalachicola Bay, scientists say. Farther upstream, the minimum flows will prevent the river from flowing across the floodplain and into sloughs where fish feed and reproduce.").
- 25 For a comprehensive background on the role and value of ecosystem services, see NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS (Gretchen Daily ed. 1997).
- 26 See Gregory W. Garrett, *The Economic Value of the Apalachicola River and Bay* (Jan. 6, 2003) (unpublished masters degree paper). Garrett used ecological economics principles forged by noted economist Robert Costanza, who made quite a splash in

1997 with his work on the value of global ecosystem services. *See* Robert Costanza et al., *The Value of the World's Ecosystem Services and Natural Capital*, 387 NATURE 253 (1997).

27 462 U.S. at 1024.

28 283 U.S. 336, 345-48.

29 PUD No. 1 v. Washington Dep't of Ecology, 511 U.S. 700, 701 (1994) ("Petitioners' assertion that the [Clean Water] Act is only concerned with water quality, not quantity, makes an artificial distinction, since a sufficient lowering of quantity could destroy all of a river's designated uses, and since the Act recognizes that reduced stream flow can constitute water pollution.").

30 *See* Rossman, *supra* note 8, at 4-5 (covering this phenomenon and its effect on water politics and law for the Colorado River).

31 *See* Abrams, *supra* note 2, at 171-72. ("Resort to non-allocational devices related to water quality and instream flow requirements offer a ... protective strategy for states that do not make present beneficial use of the water off stream.").

32 For a comprehensive review of the Colorado River's ecological conditions and legal context, *see* A. Dan Tarlock, *The Recovery of the Colorado River Delta Ecosystem: A Role for International Law?*, COLO. J. INTL. ENVTL. L. & POL'Y 9 (2002).

EXHIBIT 41



Federal Register

Wednesday,
December 27, 2000

Part IX

Office of Management and Budget

Standards for Defining Metropolitan and
Micropolitan Statistical Areas; Notice

OFFICE OF MANAGEMENT AND BUDGET

Standards for Defining Metropolitan and Micropolitan Statistical Areas

AGENCY: Executive Office of the President, Office of Management and Budget (OMB), Office of Information and Regulatory Affairs.

ACTION: Notice of decision.

SUMMARY: This Notice announces OMB's adoption of Standards for Defining Metropolitan and Micropolitan Statistical Areas. These new standards replace and supersede the 1990 standards for defining Metropolitan Areas. In arriving at its decision, OMB accepted many of the recommendations of the interagency Metropolitan Area Standards Review Committee (the Review Committee) as published in the August 22, 2000 *Federal Register*. In response to public comment, and with the further advice of the Review Committee, OMB modified the recommended criteria for titling Combined Statistical Areas, identifying Principal Cities, and determining Metropolitan Divisions. The new standards appear at the end of this Notice in Section D.

The Supplementary Information in this Notice provides background information on the standards (Section A), a brief synopsis of the public comments OMB received in response to the August 22, 2000 *Federal Register* notice (Section B), and OMB's decisions on the final recommendations of the Review Committee (Section C).

The adoption of these new standards will not affect the availability of Federal data for geographic areas such as states, counties, county subdivisions, and municipalities. For the near term, the Census Bureau will tabulate and publish data from Census 2000 for all Metropolitan Areas in existence at the time of the census (that is, those areas defined as of April 1, 2000).

EFFECTIVE DATE: This Notice is effective immediately. OMB plans to announce definitions of areas based on the new standards and Census 2000 data in 2003. Federal agencies should begin to use the new area definitions to tabulate and publish statistics when the definitions are announced.

ADDRESSES: Please send correspondence about OMB's decision to Katherine K. Wallman, Chief Statistician, Office of Information and Regulatory Affairs, Office of Management and Budget, Room 10201 New Executive Office Building, 725 17th Street, NW., Washington, DC 20503; fax: (202) 395-7245.

Electronic Availability and Addresses: This *Federal Register* notice, and the three previous notices related to the review of the Metropolitan Area standards, are available electronically from the OMB web site: <http://www.whitehouse.gov/OMB/jedreg/index.html> and from the Census Bureau web site: <http://www.census.gov/population/www/estimates/masrp.html>. *Federal Register* notices also are available electronically from the U.S. Government Printing Office web site: http://www.access.gpo.gov/su_docs/aces/aces140.html.

FOR FURTHER INFORMATION CONTACT: Suzann Evinger, Office of Information and Regulatory Affairs, Office of Management and Budget, (202) 395-7315; or E-mail: pop.frquestion@census.gov.

SUPPLEMENTARY INFORMATION:

A. Background

The Metropolitan Area program has provided standard statistical area definitions for 50 years. In the 1940s, it became clear that the value of metropolitan data produced by Federal agencies would be greatly enhanced if agencies used a single set of geographic definitions for the Nation's largest centers of population and activity. Prior to that time, Federal agencies defined a variety of statistical geographic areas at the metropolitan level (including "metropolitan districts," "industrial areas," "labor market areas," and "metropolitan counties") using different criteria applied to different geographic units. Because of variations in methodologies and the resulting inconsistencies in area definitions, one agency's statistics were not directly comparable with another agency's statistics for any given area. OMB's predecessor, the Bureau of the Budget, led the effort to develop what were then called "Standard Metropolitan Areas" in time for their use in the 1950 census reports. Since then, comparable data products for Metropolitan Areas have been available. Because of the usefulness of the Metropolitan Area standards and data products, many have asked that the standards take into account more territory of the United States. Extending the standard to include the identification of Metropolitan Statistical Areas responds to those requests.

1. Concept and Uses

The general concept of a Metropolitan Statistical Area or a Micropolitan Statistical Area is that of an area containing a recognized population nucleus and adjacent communities that

have a high degree of integration with that nucleus. The purpose of the Standards for Defining Metropolitan and Micropolitan Statistical Areas is to provide nationally consistent definitions for collecting, tabulating, and publishing Federal statistics for a set of geographic areas. To this end, the Metropolitan Area concept has been successful as a statistical representation of the social and economic linkages between urban cores and outlying, integrated areas. This success is evident in the continued use and application of Metropolitan Area definitions across broad areas of data collection, presentation, and analysis. This success also is evident in the use of statistics for Metropolitan Areas to inform the debate and development of public policies and in the use of Metropolitan Area definitions to implement and administer a variety of nonstatistical Federal programs. These last uses, however, raise concerns about the distinction between appropriate uses—collecting, tabulating, and publishing statistics as well as informing policy—and inappropriate uses—implementing nonstatistical programs and determining program eligibility. OMB establishes and maintains these areas solely for statistical purposes.

In order to preserve the integrity of its decision making with respect to reviewing and revising the standards for designating areas, OMB believes that it should not attempt to take into account or anticipate any public or private sector nonstatistical uses that may be made of the definitions. It cautions that Metropolitan Statistical Area and Micropolitan Statistical Area definitions should not be used to develop and implement Federal, state, and local nonstatistical programs and policies without full consideration of the effects of using these definitions for such purposes.

Metropolitan and Micropolitan Statistical Areas—collectively called Core Based Statistical Areas (CBSAs)—should not serve as a general purpose geographic framework for nonstatistical activities and may or may not be suitable for use in program funding formulas. The Metropolitan and Micropolitan Statistical Area Standards do not equate to an urban-rural classification; all counties included in Metropolitan and Micropolitan Statistical Areas and many other counties contain both urban and rural territory and populations. Programs that base funding levels or eligibility on whether a county is included in a Metropolitan or Micropolitan Statistical Area may not accurately address issues or problems faced by local populations,

organizations, institutions, or governmental units. For instance, programs that seek to strengthen rural economies by focusing solely on counties located outside Metropolitan Statistical Areas could ignore a predominantly rural county that is included in a Metropolitan Statistical Area because a high percentage of the county's residents commute to urban centers for work. Although the inclusion of such a county in a Metropolitan Statistical Area indicates the existence of economic ties, as measured by commuting, with the central counties of that Metropolitan Statistical Area, it may also indicate a need to provide programs that would strengthen the county's rural economy so that workers are not compelled to leave the county in search of jobs.

Program designs that treat all parts of a CBSA as if they were as urban as the densely settled core ignore the rural conditions that may exist in some parts of the area. Under such programs, schools, hospitals, businesses, and communities that are separated from the urban core by large distances or difficult terrain may experience the same kinds of challenges as their counterparts in rural portions of counties that are outside CBSAs. Although some programs do permit large Metropolitan Area counties to be split into "urban" and "rural" portions, smaller Metropolitan Area counties also can contain isolated rural communities.

Geographic information systems technology has progressed significantly over the past 10 years, making it practical for government agencies and organizations to assess needs and implement appropriate programs at a local geographic scale when appropriate. OMB urges agencies, organizations, and policy makers to review carefully the goals of nonstatistical programs and policies to ensure that appropriate geographic entities are used to determine eligibility for and the allocation of Federal funds.

2. Evolution and Review of the Metropolitan Area Standards

From the beginning of the Metropolitan Area program, OMB has reviewed the Metropolitan Area standards and, if warranted, revised them in the years preceding their application to new decennial census data. Periodic review of the standards is necessary to ensure their continued usefulness and relevance. Our current review of the Metropolitan Area standards—the Metropolitan Area Standards Review Project—has been the fifth such review. It has addressed, as a first priority, user concerns with the

conceptual and operational complexity of the standards as they have evolved over the decades. Our three previous **Federal Register** notices have discussed this and other key concerns, as well as major milestones of the review.

In the fall of 1998, OMB chartered the Metropolitan Area Standards Review Committee (the Review Committee). We charged it with examining the 1990 Metropolitan Area standards in view of work completed earlier in the decade and providing recommendations for possible changes to those standards. The Review Committee included representatives from the Bureau of the Census (Chair), Bureau of Economic Analysis, Bureau of Labor Statistics, Bureau of Transportation Statistics, Economic Research Service (Agriculture), National Center for Health Statistics, and, *ex officio*, OMB. The Census Bureau provided research support to the Review Committee.

This is the fourth and final Notice pertaining to the Metropolitan Area Standards Review Project. OMB presented four alternative approaches to defining statistical areas in a December 21, 1998 **Federal Register** notice, "Alternative Approaches to Defining Metropolitan and Nonmetropolitan Areas" (63 FR 70526–70561). That Notice also included a discussion of the evolution of the standards for defining Metropolitan Areas as well as the standards that were used to define Metropolitan Areas during the 1990s.

OMB presented the Review Committee's initial recommendations in an October 20, 1999 **Federal Register** notice entitled, "Recommendations From the Metropolitan Area Standards Review Committee to the Office of Management and Budget Concerning Changes to the Standards for Defining Metropolitan Areas" (64 FR 56628–56644). OMB then published the Review Committee's final report and recommendations for revised standards in an August 22, 2000 **Federal Register** notice entitled "Final Report and Recommendations From the Metropolitan Area Standards Review Committee to the Office of Management and Budget Concerning Changes to the Standards for Defining Metropolitan Areas" (65 FR 51060–51077). The final recommendations presented in that Notice reflected some of the concerns raised in comments in response to the Review Committee's initial recommendations.

3. Future Directions

a. Statistical Area Research Projects

Our review of the Metropolitan Area standards over the past 10 years has

raised a number of issues and suggested alternative approaches that warrant continued research and consideration. Ongoing research projects will improve understanding of the Nation's patterns of settlement and activity and how best to portray them. For example, Census Bureau staff are investigating the feasibility of developing a census tract level classification to identify settlement and land use categories along an urban-rural continuum. The Economic Research Service, in conjunction with the Office of Rural Health Policy in the Department of Health and Human Services and the University of Washington, has developed a nationwide census tract level rural-urban commuting area classification. This classification is available from the Economic Research Service web site: <http://www.ers.usda.gov:80/briefing/rural/ruca/rucc.htm>. These research efforts may lead to pilot projects at the Census Bureau or other agencies in the future.

b. Review of the Relationship Between Statistical Geographic Classifications and Other Federal Programs

The review of the Metropolitan Area standards also prompted comments about the use of Metropolitan and Micropolitan Statistical Area definitions in the design and administration of nonstatistical Federal programs and funding formulas. Although this relationship was not a criterion in reviewing the standards, the Review Committee and OMB recognize the existence and importance of this relationship. Comments received throughout the review indicated a need to distinguish more clearly between using Metropolitan and Micropolitan Statistical Areas to collect, tabulate, and publish statistics that measure economic and social conditions to inform public policy, and the use of the area definitions as a framework to determine eligibility or allocate funds for nonstatistical programs. Further, the Review Committee and OMB, as well as many commenters, recognize the need to begin a collaborative, interagency process that could result in the development of geographic area definitions that are appropriate for the administration of nonstatistical programs. Such a process could result in the identification of existing geographic area definitions and modifications to them that are already in use by agencies (for instance, there are at least six definitions of "urban" or "urban place" currently in use by Federal agencies), and in the development of guidelines that explain appropriate use of specific area definitions in various

circumstances. A longer-term goal of such an effort could be the development of one or more geographic area classifications designed specifically for use in the administration of nonstatistical Federal programs or of guidance for agencies that need to define geographic areas appropriate for use with specific programs.

B. Summary of Comments Received in Response to the August 22, 2000 Federal Register Notice

The August 22, 2000 **Federal Register** notice requested comment on the Review Committee's final recommendations to OMB concerning revisions to the standards for defining Metropolitan Areas.

OMB received 1,672 comment letters from individuals (1,483), municipalities and counties (88), regional planning and nongovernmental organizations (62), Members of Congress (25), state governments (13), and Federal agencies (1). Of the 1,672 letters, 1,314 offered comments regarding the Fort Worth, Texas area; all of these letters dealt with the identification of Metropolitan Divisions within the Dallas-Fort Worth-Arlington area and with the criteria for titling Combined Areas. OMB also heard concerns about the identification of Metropolitan Divisions and Combined Area titles from 141 other commenters from around the country.

Thirty-two commenters expressed concern about the potential effects of the proposed changes to the Metropolitan Area standards on nonstatistical Federal programs. Eight commenters were concerned about the effect on programs oriented toward rural areas, particularly if Micropolitan Areas were not treated as "rural" for purposes of Federal programs. Nine commenters expressed concern about the impact of the recommended standards on health-related programs. Several commenters suggested that OMB undertake research on the programmatic impact of the recommended standards. Others suggested that OMB state more strongly that it does not define Metropolitan and Micropolitan Areas for use in administering and determining participation in Federal nonstatistical programs.

Eight commenters addressed the Review Committee's recommendations about the qualification requirements for areas and central counties. Three commenters supported the Review Committee's recommendation that areas should qualify for CBSA status if a core of sufficient size—a Census Bureau defined urban cluster of at least 10,000 population or an urbanized area of at least 50,000 population—was present.

Three commenters questioned the way in which the recommended standards would use urban clusters and urbanized areas as cores to qualify central counties, in particular when a core crosses county lines but the portion of the core in one county is not sufficient to qualify that county as central.

OMB received six comments about terminology in the proposed standards. Three commenters expressed support for the Review Committee's recommendation to retain the term "metropolitan" in reference to areas containing at least one core of 50,000 or more population. These commenters also expressed support for the use of the term "micropolitan" in reference to areas containing cores of at least 10,000 and less than 50,000 population. Several commenters expressed concern that the term "Core Based Statistical Area" would not be popular among users; only one commenter, however, supported dropping the term. One commenter favored using the terms "megapolitan" and "macropolitan" to distinguish between areas containing cores of at least one million and 50,000 population, respectively, as discussed in the October 20, 1999 **Federal Register** notice.

Twenty-six commenters remarked on the Review Committee's recommendations for identifying categories of CBSAs. Five commenters expressed support for the identification of two categories of CBSAs—metropolitan and micropolitan. Three commenters opposed identification of Micropolitan Areas because of the potential, but as yet unknown, impact such areas might have on the allocation of funds to Metropolitan Areas. One commenter expressed a similar concern without opposing the identification of Micropolitan Areas. Seven commenters favored the qualification of any county containing 100,000 or more population as a Metropolitan Area. Two commenters suggested that Combined Areas should be treated as CBSAs and that their component entities should be treated as Metropolitan Divisions.

Twelve commenters remarked on the Review Committee's recommendation to use the county as the geographic building block for CBSAs. Four commenters expressed support for the continued use of counties as building blocks. Three commenters expressed support for the use of minor civil divisions as building blocks for a primary set of statistical areas in New England. Five commenters expressed concern about the use of counties as building blocks, noting that some geographically large counties may contain populations that are not integrated with the CBSA to which the

county qualifies. Several of these comments referred specifically to Douglas County, NV, which has commuting ties with the South Lake Tahoe area in the eastern end of El Dorado County, CA. Populations in the western end of El Dorado County, however, are more closely aligned with the Sacramento, CA area. When the recommended standards were applied to 1990 census data as a demonstration of the standards, the South Lake Tahoe area (El Dorado County, CA and Douglas County, NV) qualified to merge with the Sacramento area.

Forty-three commenters responded regarding the recommended criteria for qualifying outlying counties. Nearly all commenters supported the use of commuting data in determining the qualification of outlying counties. Thirteen of the commenters suggested that other measures should be used in addition to commuting. Six of these commenters suggested including a county in a Metropolitan Area if it is part of that area's metropolitan planning organization for transportation planning purposes. One commenter noted that commuting to work is a less relevant measure of interaction in areas that have high percentages of retirees. Three commenters suggested that commuting is too simplistic and is an insufficient measure of all social and economic interactions between areas. One commenter took issue with the specific wording of the decennial census questionnaire's place of work question, which was the basis of commuting data used to define Metropolitan and Micropolitan Areas under the standards recommended by the Review Committee. Nineteen commenters specifically responded regarding the commuting threshold used in qualifying outlying counties. Three commenters supported a 25 percent commuting threshold for outlying county qualification, as the Review Committee recommended; one commenter suggested reducing the threshold to less than 25 percent, and another specifically proposed a 20 percent threshold. Eleven commenters favored a 15 percent commuting threshold for outlying county qualification; these commenters generally drew attention to a particular county that did not qualify at the 25 percent level. Three commenters expressed general support for the Review Committee's recommendations but did not mention a specific commuting threshold.

OMB received 157 comments about the recommendations for merging and combining adjacent CBSAs. Nearly all commenters supported the recommendation to merge or combine

adjacent CBSAs when social and economic interaction between adjacent areas is evident. Two commenters suggested eliminating the identification of Combined Areas, arguing that the optional combination recommended by the Review Committee results in an inconsistent application of the Metropolitan and Micropolitan Area standards. Three commenters expressed concern that the criteria for combining adjacent CBSAs were too simplistic and by only measuring interactions between pairs of CBSAs did not account for more complex ties within large regions. One commenter suggested that OMB clarify the relationship between areas defined using the recommended standards (CBSAs, Combined Areas, and Metropolitan Divisions) and areas defined using the 1990 Metropolitan Area standards (Metropolitan Statistical Areas, Consolidated Metropolitan Statistical Areas, and Primary Metropolitan Statistical Areas). Two commenters suggested that Combined Areas should be treated as official Metropolitan or Micropolitan Areas. Eighty-nine commenters supported merging the Brownsville and McAllen areas to form a single Metropolitan Area, although these areas lacked sufficient commuting interchange to merge when the recommended standards were applied with 1990 census data. Twelve commenters expressed opposition to the potential combination of the Sarasota-Bradenton and Port Charlotte areas in Florida (which, according to the Review Committee's recommended standards applied to 1990 data, would combine only if local opinion in both areas favored doing so). Several of these commenters also noted that ties between the Port Charlotte area and the northern (Bradenton) portion of the Sarasota-Bradenton area were minimal. Eighteen commenters responded regarding the delineation of Combined Areas in North Carolina for Raleigh and Durham as well as for Greensboro-High Point, Burlington, and Eden-Reidsville. Of these, one commenter supported the Review Committee's recommendations based on the results of applying the recommended standards with 1990 census data; however, 17 expressed a preference to eliminate the five individual CBSAs that combine and instead recognize only the resultant combined entities.

Forty-seven commenters responded about the recommendations for identification of Principal Cities and the use of those cities in titling Metropolitan and Micropolitan Areas. Eighteen commenters expressed concern

about the identification of census designated places as Principal Cities and the use of those places in titling Metropolitan and Micropolitan Areas. Seventeen of these commenters responded regarding the identification of specific census designated places as Principal Cities and the titling of their respective Metropolitan Areas. Eight commenters responded regarding aspects of the Principal City criteria that prevented some locally important cities from qualifying as Principal Cities and being included in their respective areas' titles. These commenters were concerned primarily with the requirement that Principal Cities with less than 250,000 population have a population at least one-third that of the largest place. One commenter suggested modifying the Principal City criteria to designate a larger number of places; this commenter also noted that doing so would reduce the need to use county names in the titles of Metropolitan Divisions. Eleven commenters responded regarding the titles of specific CBSAs in North Carolina; their comments on CBSA titles were related to their comments about the recommendations for merging and combining adjacent CBSAs. One commenter suggested that all cities of 500,000 or more population should be included in area titles.

OMB received 1,352 comments regarding the Review Committee's recommended criteria for identifying Metropolitan Divisions. Of these, 1,332 commenters expressed opposition to the Review Committee's recommendation, suggesting that the criteria were too strict and did not adequately identify all counties that could be considered "main counties." Most of these commenters expressed support for recognizing a specific county or set of counties as a Metropolitan Division within a larger Metropolitan Area; however, some did note that the maximum outcommuting threshold was too low and should be either raised or eliminated. Five commenters supported the Review Committee's recommendation. Three commenters from New Jersey opposed the recommendation, noting that, in their opinion, it resulted in too many Metropolitan Divisions in that state. These commenters suggested lowering the outcommuting threshold so as to reduce the number of counties that qualified as main counties. Two commenters suggested that the boundaries of current Primary Metropolitan Statistical Areas (PMSAs) should be maintained as Metropolitan Division boundaries or the criteria for defining Metropolitan Divisions should

result in areas that are consistent with current PMSA boundaries. Four commenters expressed a desire for smaller groupings of counties than those represented by the Metropolitan Divisions that resulted from the application of the recommended standards with 1990 census data. One commenter expressed opposition to the identification of Metropolitan Divisions when doing so would split the component urban core between two or more divisions. In effect, the commenter opposed the Review Committee's recommendation to identify Metropolitan Divisions, since the reason for doing so was to recognize the complexity of social and economic interactions within large Metropolitan Areas that contain individual urban cores that extend across multiple counties.

OMB received 1,394 comments about the Review Committee's recommended criteria for titling Combined Areas. Most of these comments pertained to the recommendation to include in the title the name of the largest Principal City from each of up to three CBSAs that combine. These commenters generally expressed support for titling Combined Areas using the largest Principal Cities within the combination regardless of their CBSA locations. Some commenters expressed concern about the Review Committee's recommendation that the Combined Area title include an additional place name only if the CBSA in which that place is located has a population at least one-third the size of the largest CBSA in the combination. Regardless of the specific circumstances, nearly all commenters noted that a result of the Review Committee's recommendation was to exclude some socially and economically prominent Principal Cities from the titles of their Combined Areas.

Seven commenters responded regarding the Review Committee's recommendations for defining New England City and Town Areas (NECTAs), NECTA Divisions, and NECTA Combined Areas. All seven commenters supported the identification of areas in New England that used cities and towns as building blocks. Three commenters specifically supported the Review Committee's recommendations regarding the identification of NECTAs. Two commenters suggested that cities and towns should be the building blocks for a primary set of areas in New England and that counties should be used to define an alternative set of areas. One commenter expressed support for the designation of NECTAs as either metropolitan or micropolitan. Two

commenters suggested that NECTAs should be defined using criteria that are different from criteria used to define CBSAs in the rest of the country; one of these commenters suggested that other measures should be used in addition to commuting to determine the extent of areas in New England.

OMB has taken all of these comments into account, giving them careful consideration. As outlined below, we have adopted some of the suggested changes and modified criteria recommended by the Review Committee in August 2000. In a number of other cases, however, we have concluded that we could not adopt the suggestions made by commenters without undermining efforts to achieve a consistent, national approach designed to enhance the value of data produced by Federal agencies.

C. OMB's Decisions Regarding Recommendations From the Metropolitan Area Standards Review Committee Concerning Changes to the Standards for Defining Metropolitan Areas

This section of the Notice provides information on the decisions OMB has made on the Review Committee's recommendations. In arriving at these decisions, we took into account not only the public comment on the Review Committee's recommendations published in the **Federal Register** on August 22, 2000, but also the considerable amount of information provided during the 10 years of this review process, including public comments gathered from two conferences, a Congressional hearing, discussions attendant to numerous presentations to interested groups, and responses to two earlier OMB Notices (on December 21, 1998, and October 20, 1999). Our decisions benefitted greatly from the public participation that served as a reminder that, although identified for purposes of collecting, tabulating, and publishing Federal statistics, the Metropolitan and Micropolitan Statistical Areas defined through these standards represent areas in which people reside, work, and spend their lives and to which they attach a considerable amount of pride. Finally, in reaching our decisions, OMB benefitted substantially from the continuing deliberations of the Review Committee in response to the public comment as well as the research support provided by Census Bureau staff. We have relied upon and very much appreciate the expertise, insight, and dedication of Review Committee members and Census Bureau staff.

OMB presents below our decisions on the Review Committee's specific recommendations:

1. OMB accepted the Review Committee's recommendation to define Metropolitan Areas and Micropolitan Areas within a Core Based Statistical Area (CBSA) classification, but modified the title of the standards and the names of the categories to include the word "statistical," as indicated in Section 6 of the standards.

We considered two primary issues regarding the basis for categorizing CBSAs as either Metropolitan Statistical Areas or Micropolitan Statistical Areas. The first issue was whether to base categorization on the total CBSA population or on core population. OMB agrees with the Review Committee that since cores are the organizing entities of CBSAs, categorization should be based on the population in cores, reasoning that the range of services and functions provided within an area largely derive from the size of the core.

The second issue was whether to categorize areas based on the population of the most populous (or "dominant") core or on the total population of all (or "multiple") cores within a CBSA. OMB agrees with the Review Committee's recommendation that a single core of 50,000 or more population provides a wider variety of functions and services than does a group of smaller cores, even when such a group may have a collective population greater than 50,000. OMB was concerned that CBSAs categorized as Metropolitan Statistical Areas on the basis of the population in all cores would not bear the same kinds of characteristics as CBSAs categorized as Micropolitan Statistical Areas on the basis of a single core of 50,000 or more population. This decision also retains the current conceptual approach to defining Metropolitan Areas as based around concentrations of 50,000 or more population. The retention of this concept and the 50,000 population threshold will facilitate comparison of data for Metropolitan Statistical Areas over time.

OMB inserted the word "statistical" into the terms for categories of CBSAs and the title of the standards to make clearer the statistical purpose of these areas.

2. OMB accepted the Review Committee's recommendation to use counties and equivalent entities as the geographic building blocks for defining CBSAs throughout the United States and Puerto Rico, and to use cities and towns as the geographic building blocks for defining New England City and Town Areas (NECTAs).

Using counties and equivalent entities throughout the United States and Puerto Rico continues current practice, except in New England, where historically Metropolitan Areas have been defined using minor civil divisions. The choice of a geographic unit to serve as the building block can affect the geographic extent of a statistical area and its relevance or usefulness in describing economic and demographic patterns. The choice also has implications for the ability of Federal agencies to provide data for statistical areas and their components.

We believe it advantageous to use counties and their equivalents because they are available nationwide, have stable boundaries, and are familiar geographic entities. In addition, more Federal statistical programs produce data at the county level than at any subcounty level. OMB agrees with the Review Committee that the well-known disadvantages of using counties as building blocks for statistical areas—the large geographic size of some counties and resultant lack of geographic precision that follows from their use—are outweighed by the advantages offered by using counties.

We have reached our decision to use the county as the building block for CBSAs in New England, because we attach priority to the use of a consistent geographic unit nationwide. Use of a consistent geographic building block offers improved usability to producers and users of data; data for CBSAs in all parts of the country would be directly comparable. Some statistical programs, such as those providing nationwide economic data and population estimates, also have regarded the Metropolitan Area program's use of minor civil divisions in New England as a hindrance. They have sometimes used the currently available alternative county based areas for New England, known as the New England County Metropolitan Areas, or have minimized the number of data releases for Metropolitan Areas. Under the current Metropolitan Area program, data producers and users typically choose between (1) adhering to the preferred Metropolitan Statistical Areas, Consolidated Metropolitan Statistical Areas, and Primary Metropolitan Statistical Areas throughout the country and having data that limit comparisons between some areas, and (2) using alternative areas in New England and having more comparable data. OMB's decision eliminates the need for this choice.

Demographic and economic data for minor civil divisions in New England are more plentiful than similar data for

subcounty entities in the rest of the Nation. In recognition of the importance of minor civil divisions in New England, the wide availability of data for them, and their long-term use in the Metropolitan Area program, OMB also will use the minor civil division as the building block for a set of areas for the six New England states. These NECTAs are intended for use in the collection, tabulation, publication, and analysis of statistical data, whenever feasible and appropriate, for New England. Data providers and users desiring areas defined using a nationally consistent geographic building block should use the county based CBSAs in New England; however, counties are less well-known in New England than cities and towns.

3. OMB accepted the Review Committee's recommendation to use Census Bureau defined urbanized areas of 50,000 or more population and Census Bureau defined urban clusters of 10,000—49,999 population as the cores of CBSAs and to use the locations of these cores as the basis for identifying central counties of CBSAs. OMB also accepted the Review Committee's recommendation to identify central counties as those counties that (a) have at least 50 percent of their population in urban areas (urbanized areas or urban clusters) of at least 10,000 population or (b) have within their boundaries a population of at least 5,000 located in a single urban area (urbanized area or urban cluster) of at least 10,000 population.

In accepting the Review Committee's recommendation to use Census Bureau defined urbanized areas and urban clusters as the cores of Metropolitan Statistical Areas and Micropolitan Statistical Areas, OMB recognizes that urbanized areas and urban clusters are the organizing entities of CBSAs. The use of urbanized areas as cores is consistent with current practice. To extend the classification to areas based on cores of 10,000 to 49,999 population, OMB will use urban clusters as cores for Micropolitan Statistical Areas. Urban clusters will be identified by the Census Bureau following Census 2000 and will be conceptually similar to urbanized areas.

OMB agreed with the Review Committee that the location of these cores should be used to identify the central county or counties of each CBSA. The identification of central counties facilitates the use of county-to-county commuting data when determining whether additional counties qualify for inclusion in the CBSA.

4. OMB accepted the Review Committee's recommendation to use data on journey to work, or commuting, as the basis for grouping counties together to form CBSAs (i.e., to qualify "outlying counties"). OMB accepted the Review Committee's recommendation to qualify a county as an outlying county if (a) at least 25 percent of the employed residents of the county work in the CBSA's central county or counties, or (b) at least 25 percent of the jobs in the potential outlying county are accounted for by workers who reside in the CBSA's central county or counties. OMB also accepted the Review Committee's recommendation not to use measures of settlement structure, such as population density, to qualify outlying counties for inclusion in CBSAs.

Three priorities guided OMB in reaching this decision. We believe the data used to measure connections among counties should describe those connections in a straightforward and intuitive manner, be collected using consistent procedures nationwide, and be readily available to the public. These priorities steered us to the use of data gathered by Federal agencies and, more particularly, to commuting data from the Census Bureau. Commuting to work is an easily understood measure that reflects the social and economic integration of geographic areas. OMB agrees with the Review Committee that changes in settlement, commuting patterns, and communications technologies have made settlement structure unreliable as an indicator of metropolitan character. We agree that the percentage of a county's employed residents who commute to the central county or counties is an unambiguous, clear measure of whether a potential outlying county should qualify for inclusion. The percentage of employment in the potential outlying county accounted for by workers who reside in the central county or counties is similarly a straightforward measure of ties. Including both criteria addresses the conventional and the less common reverse commuting flows.

There have been changes in daily mobility patterns and increased interaction between communities as indicated by increases in inter-county commuting over the past 40 years. The percentage of workers in the United States who commute to places of work outside their counties of residence has increased from approximately 15 percent in 1960 (when nationwide commuting data first became available from the decennial census) to nearly 25 percent in 1990. OMB agrees with the Review Committee that raising the commuting percentage required for

qualification of outlying counties from the 15 percent minimum of the 1990 standards to 25 percent is appropriate against this background of increased overall inter-county commuting coupled with the removal of all settlement structure requirements from the outlying county criteria. In other words, since out-of-county commuting has become more commonplace, a higher percentage of commuting is necessary to demonstrate ties comparable to those indicated by a lower commuting rate in 1960. Further, both the Review Committee and OMB considered the "multiplier effect" (a standard method used in economic analysis to determine the impact of new jobs on a local economy) that each commuter would have on the economy of the county in which he or she lives. The size of the multiplier effect varies depending on the size of a region's economy and employment base, but a multiplier of two or three generally is accepted by regional economists, regional scientists, and economic development analysts for most areas. Applying such a measure in the case of a county with the minimum 25 percent commuting requirement means that the incomes of at least half of the workers residing in the outlying county are connected either directly (through commuting to jobs located in the central county) or indirectly (by providing services to local residents whose jobs are in the central county) to the economy of the central county or counties of the CBSA within which the county at issue qualifies for inclusion.

5. OMB accepted the Review Committee's recommendation to merge contiguous CBSAs to form a single CBSA when the central county or counties of one area qualify as outlying to the central county or counties of another. OMB accepted the Review Committee's recommendation to use the same minimum commuting threshold—25 percent—as is used to qualify outlying counties.

In accepting the Review Committee's recommendation to merge contiguous CBSAs, OMB recognized that patterns of population distribution and commuting sometimes are complex and, as a result, close social and economic ties, as measured by commuting, exist between some contiguous CBSAs. OMB agreed with the Review Committee that strong ties between the central counties of two contiguous CBSAs, similar to the ties between an outlying county and a central county or counties, should be recognized by merging the two areas to form a single CBSA.

6. OMB accepted the Review Committee's recommendations to identify Principal Cities and to use them

to title areas, but modified the recommendation concerning the criteria used to identify Principal Cities as indicated in Section 5 of the standards.

OMB's modifications address two concerns: (1) ensuring that at least one incorporated place of 10,000 or more population (if one is present) is recognized as a Principal City, and (2) allowing a fuller identification of places that represent the more important social and economic centers within a Metropolitan or Micropolitan Statistical Area. In the first instance, we were concerned that an unincorporated place with a large population, but relatively small employment base, would qualify as the only Principal City of its CBSA. OMB noted some instances in which an incorporated place of at least 10,000 population accounted for a larger amount of employment than the most populous place, but lacked sufficient population to qualify as a Principal City. OMB's modification to recognize the largest incorporated place of at least 10,000 population as a Principal City will affect only a small number of areas nationwide in which the most populous incorporated place has less population than a larger unincorporated community.

We also were concerned that the recommended criteria were too restrictive and that many smaller, but locally important, cities would not be recognized as Principal Cities of their respective CBSAs. This was especially the case when the CBSA included one city that was significantly larger in population size than all other cities within the CBSA. OMB's modification will permit a fuller identification of places with at least 50,000 population as Principal Cities. This modification likely will result in the identification of approximately 100 additional Principal Cities, many of which currently are recognized as central cities of Metropolitan Areas.

7. *OMB accepted the Review Committee's recommendation to identify Metropolitan Divisions and NECTA Divisions that function as distinct areas within Metropolitan Statistical Areas and NECTAs that contain at least one core of 2.5 million or more population. OMB modified the criteria used to define Metropolitan Divisions within Metropolitan Statistical Areas as well as NECTA Divisions within NECTAs, as indicated in Section 7 of the standards.*

OMB's modifications to the Metropolitan Division criteria reflect two concerns. First, OMB was concerned that the Review Committee's recommended criteria for identifying the main counties of Metropolitan

Divisions were too strict, particularly with regard to the requirement that a county have less than 15 percent commuting to any other county within the Metropolitan Statistical Area. The purpose of the main county criteria is to identify those counties within a Metropolitan Statistical Area that are self-contained economic centers. Such counties, because of the strength of their employment base, can form the basis for a separate division within the larger Metropolitan Statistical Area. The first two criteria for main counties recommended by the Review Committee—percent of resident workers employed within a particular county and the ratio of jobs to employed residents—provide indicators of the economic strength and relative independence of the county. OMB determined, however, after considering public comment and further discussion by the Review Committee, that the (third) outcommuting requirement was not a direct indicator of a county's economic strength or its identity as an organizing entity around which to form a Metropolitan Division. Therefore, we are eliminating the outcommuting criterion.

Second, upon further review of commuting patterns and related social and economic interactions within the ten Metropolitan Statistical Areas that contained cores of at least 2.5 million population in 1990, OMB discerned two kinds of counties. In the first category are those counties that are strongly self-contained. These are characterized by high percentages (65 percent or greater) of employed residents who remain in the county to work and by high ratios of jobs to resident workers (.75 or greater). These "main counties" stand alone as self-contained social and economic units within the larger Metropolitan Statistical Area or provide the social and economic center around which a group of counties is organized.

A second category of counties consists of those with high ratios of jobs to resident workers, but a lower percentage of employed residents working within the county (50 percent to 64.9 percent). These "secondary counties," while they can be identified as social and economic centers, also connect strongly with one or more adjacent counties through commuting ties. Such counties are only moderately self-contained and can provide the organizing basis for a Metropolitan Division only when paired with one or more counties of similar or greater economic strength. As such, they must combine with another secondary county or with a main county when forming the basis for a Metropolitan Division.

We also note that when combining secondary counties with other main or secondary counties and when qualifying additional outlying counties for inclusion in a Metropolitan Division, the employment interchange measure offers a more appropriate measure of interaction than determining ties based on the strength of commuting in one direction only. (The employment interchange measure is defined as the sum of the percentage of commuting from the entity with the smaller total population to the entity with the larger population and the percentage of employment in the entity with the smaller total population accounted for by workers residing in the entity with the larger total population.) Our decision to use the employment interchange measure is consistent with the reason for defining Metropolitan Divisions—that is, to recognize the complex social and economic interactions that occur within Metropolitan Statistical Areas that contain large urbanized areas. For the same reason, OMB modified the NECTA Division criteria to use the employment interchange measure, instead of the percentage of out-commuters, when qualifying additional outlying cities and towns for inclusion in a NECTA Division.

8. *OMB accepted the Review Committee's recommendation to combine contiguous CBSAs when ties between those areas are less intense than those captured by mergers, but still significant. OMB accepted the Review Committee's recommendation to base combinations on the employment interchange measure between two CBSAs. OMB also accepted the Review Committee's recommendations that combinations of CBSAs, based on an employment interchange measure of at least 15 but less than 25, should occur only if local opinion (see Section C.10 below) in both areas is in favor and that combinations should occur automatically if the employment interchange measure between two CBSAs equals or exceeds 25. OMB added the word "statistical" to the term used to refer to areas resulting from the combination of CBSAs as indicated in Section 8 of the standards.*

OMB agreed with the Review Committee that ties between contiguous CBSAs that are less intense than those captured by mergers (see Section C.5 above), but still significant, be recognized by combining those CBSAs. Because a combination thus defined represents a relationship of moderate strength between two CBSAs, OMB agrees with the Review Committee that the combining areas should retain their

identities as separate CBSAs within the combination.

OMB inserted the word "statistical" into the term used for combinations to make clearer the statistical purpose of these areas.

9. OMB accepted the Review Committee's recommendations to title (1) Metropolitan Divisions using the names of up to three Principal Cities, or up to three county names if no Principal Cities are present, in order of descending population size; and (2) NECTA Divisions using the names of up to three Principal Cities in order of descending population size, or the name of the largest minor civil division if no principal city is present. OMB modified the Review Committee's recommendations concerning titles of CBSAs, NECTAs, and Combined Statistical Areas, as indicated in Section 9 of the standards.

OMB's modification of the criteria for titling CBSAs addresses instances in which the largest Principal City is an unincorporated census designated place. Titles should provide a means of easily recognizing and locating CBSAs, and we are concerned that titles in which the first-named place is an unincorporated community might not be as recognizable nationally as those in which the first-named place is an incorporated place.

OMB's modification of the criteria for titling Combined Statistical Areas addresses three concerns: (1) The title of a Combined Statistical Area, to the extent possible, should reflect the geographic extent of the combination by including the names of Principal Cities contained within the areas that combine; (2) the title of a Combined Statistical Area, to the extent possible, should contain the names of the largest Principal Cities since these cities often are the social and economic centers for the broad region represented by the combination; and (3) the title of a Combined Statistical Area should not duplicate the title of any of the combining Metropolitan or Micropolitan Statistical Areas or Metropolitan Divisions.

10. OMB accepted the Review Committee's recommendation to apply only statistical rules when defining Metropolitan and Micropolitan Statistical Areas. OMB accepted the Review Committee's recommendation to allow the use of local opinion when contiguous CBSAs qualify to combine with an employment interchange measure of 15 to 24.9, but added one provision (Section 11b of the standards) that would allow for local opinion in titling Combined Statistical Areas.

Applying only statistical rules when defining areas minimizes ambiguity and maximizes the replicability and integrity of the process. Consideration of local opinion in specific circumstances, however, can provide room for accommodating some issues of local significance without impairing the integrity of the classification. OMB agrees with the Review Committee that when two contiguous CBSAs have an employment interchange measure of at least 15 and less than 25, the measured ties may be perceived as minimal by residents of the two areas. In these situations, local opinion is useful in determining whether to combine the two areas. OMB also agrees with the Review Committee that local opinion is useful in determining titles for Combined Statistical Areas that address the issues discussed in Section C.9 above.

11. OMB accepted the Review Committee's recommendation not to define types of settlement structure, such as urban, suburban, rural, and so forth, within the CBSA classification.

OMB recognizes that formal definitions of settlement types such as inner city, inner suburb, outer suburb, exurb, and rural would be of use to the Federal statistical system as well as to researchers, analysts, and other users of Federal data. Such settlement types, however, are not necessary for the delineation of statistical areas in this classification that describes the functional ties between geographic entities. These types would more appropriately fall within a separate classification that focuses exclusively on describing settlement patterns and land uses. We believe the Census Bureau and other interested Federal agencies should continue research on settlement patterns below the county level to describe further the distribution of population and economic activity throughout the Nation. In addition, OMB will consider initiating a collaborative, interagency process to foster improved understanding of geographic area classifications and to investigate the feasibility of developing alternative geographic area classifications that are appropriate for purposes such as the administration of nonstatistical programs.

12. OMB accepted the Review Committee's recommendation that the definitions of current Metropolitan Areas should not be automatically retained (i.e., "grandfathered") in the implementation of the "Standards for Defining Metropolitan and Micropolitan Statistical Areas."

In this context, "grandfathering" refers to the continued designation of an

area even though it does not meet the standards currently in effect. The 1990 standards permitted changes in the definitions, or extent, of individual Metropolitan Areas through the addition or deletion of counties on the basis of each decennial census, but those standards did not permit the disqualification of Metropolitan Areas that previously qualified on the basis of a Census Bureau population count. To maintain the integrity of the classification, OMB favors the objective application of the new standards rather than continuing to recognize areas that do not meet the standards. The current status of a county as being within or outside a Metropolitan Area will play no role in the application of the Standards for Defining Metropolitan and Micropolitan Statistical Areas.

13. OMB accepted the Review Committee's recommendation to define new CBSAs between decennial censuses on the basis of Census Bureau population estimates or special census counts and to update the definitions of all existing CBSAs in 2008 using commuting data from the Census Bureau's American Community Survey.

The frequency with which new CBSAs are designated and existing areas updated has been of considerable interest to data producers and users throughout the Metropolitan Area Standards Review Project. The first areas to be designated by OMB using the Metropolitan and Micropolitan Statistical Area Standards and Census 2000 data will be announced in 2003. The sources and future availability of data for updating these areas figured prominently in the Review Committee's discussions and OMB's decisions. The availability of population totals and commuting data affects the ability to identify new CBSAs, reclassify existing areas among categories, and update the extent of existing areas. OMB agreed with the Review Committee that existing CBSAs should be updated every five years, and agreed that the availability of commuting data for all counties from the Census Bureau's American Community Survey in 2008 offered the possibility of updating the definitions of all existing CBSAs at that time.

Our decisions as discussed above are reflected in the text of the official Standards for Defining Metropolitan and Micropolitan Statistical Areas that we are issuing today. The following section presents these standards.

D. Standards for Defining Metropolitan and Micropolitan Statistical Areas

The Office of Management and Budget will use these standards to define Core

Based Statistical Areas (CBSAs) beginning in 2003. A CBSA is a geographic entity associated with at least one core of 10,000 or more population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties. The standards designate and define two categories of CBSAs: Metropolitan Statistical Areas and Micropolitan Statistical Areas.

The purpose of the Metropolitan and Micropolitan Statistical Area Standards is to provide nationally consistent definitions for collecting, tabulating, and publishing Federal statistics for a set of geographic areas. The Office of Management and Budget establishes and maintains these areas solely for statistical purposes.

Metropolitan and Micropolitan Statistical Areas are not designed as a general purpose geographic framework for nonstatistical activities or for use in program funding formulas. The CBSA classification does not equate to an urban-rural classification; Metropolitan and Micropolitan Statistical Areas and many counties outside CBSAs contain both urban and rural populations.

CBSAs consist of counties and equivalent entities throughout the United States and Puerto Rico. In view of the importance of cities and towns in New England, a set of geographic areas similar in concept to the county based CBSAs also will be defined for that region using cities and towns. These New England City and Town Areas (NECTAs) are intended for use with statistical data, whenever feasible and appropriate, for New England. Data providers and users desiring areas defined using a nationally consistent geographic building block should use the county based CBSAs in New England.

The following criteria apply to both the nationwide county based CBSAs and to NECTAs, with the exceptions of Sections 6, 7, and 9, in which separate criteria are applied when identifying and titling divisions within NECTAs that contain at least one core of 2.5 million or more population. Wherever the word "county" or "counties" appears in the following criteria (except in Sections 6, 7, and 9), the words "city and town" or "cities and towns" should be substituted, as appropriate, when defining NECTAs.

Section 1. Population Size Requirements for Qualification of Core Based Statistical Areas

Each CBSA must have a Census Bureau defined urbanized area of at least 50,000 population or a Census

Bureau defined urban cluster of at least 10,000 population. (Urbanized areas and urban clusters are collectively referred to as "urban areas.")

Section 2. Central Counties

The central county or counties of a CBSA are those counties that:

- (a) have at least 50 percent of their population in urban areas of at least 10,000 population; or
- (b) have within their boundaries a population of at least 5,000 located in a single urban area of at least 10,000 population.

A central county is associated with the urbanized area or urban cluster that accounts for the largest portion of the county's population. The central counties associated with a particular urbanized area or urban cluster are grouped to form a single cluster of central counties for purposes of measuring commuting to and from potentially qualifying outlying counties.

Section 3. Outlying Counties

A county qualifies as an outlying county of a CBSA if it meets the following commuting requirements:

- (a) at least 25 percent of the employed residents of the county work in the central county or counties of the CBSA; or
- (b) at least 25 percent of the employment in the county is accounted for by workers who reside in the central county or counties of the CBSA.

A county may appear in only one CBSA. If a county qualifies as a central county of one CBSA and as outlying in another, it falls within the CBSA in which it is a central county. A county that qualifies as outlying to multiple CBSAs falls within the CBSA with which it has the strongest commuting tie, as measured by either (a) or (b) above. The counties included in a CBSA must be contiguous; if a county is not contiguous with other counties in the CBSA, it will not fall within the CBSA.

Section 4. Merging of Adjacent Core Based Statistical Areas

Two adjacent CBSAs will merge to form one CBSA if the central county or counties (as a group) of one CBSA qualify as outlying to the central county or counties (as a group) of the other CBSA using the measures and thresholds stated in 3(a) and 3(b) above.

Section 5. Identification of Principal Cities

The Principal City (or Cities) of a CBSA will include:

- (a) the largest incorporated place with a Census 2000 population of at least 10,000 in the CBSA or, if no

incorporated place of at least 10,000 population is present in the CBSA, the largest incorporated place or census designated place in the CBSA; and

- (b) any additional incorporated place or census designated place with a Census 2000 population of at least 250,000 or in which 100,000 or more persons work; and

- (c) any additional incorporated place or census designated place with a Census 2000 population of at least 50,000, but less than 250,000, and in which the number of jobs meets or exceeds the number of employed residents; and

- (d) any additional incorporated place or census designated place with a Census 2000 population of at least 10,000, but less than 50,000, and one-third the population size of the largest place, and in which the number of jobs meets or exceeds the number of employed residents.

Section 6. Categories and Terminology

A CBSA receives a category based on the population of the largest urban area (urbanized area or urban cluster) within the CBSA. Categories of CBSAs are: Metropolitan Statistical Areas, based on urbanized areas of 50,000 or more population, and Micropolitan Statistical Areas, based on urban clusters of at least 10,000 population but less than 50,000 population.

Counties that do not fall within CBSAs will represent "Outside Core Based Statistical Areas."

A NECTA receives a category in a manner similar to a CBSA and is referred to as a Metropolitan NECTA or a Micropolitan NECTA.

Section 7. Divisions of Metropolitan Statistical Areas and New England City and Town Areas

- (a) A Metropolitan Statistical Area containing a single core with a population of at least 2.5 million may be subdivided to form smaller groupings of counties referred to as Metropolitan Divisions.

A county qualifies as a "main county" of a Metropolitan Division if 65 percent or more of its employed residents work within the county and the ratio of the number of jobs located in the county to the number of employed residents of the county is at least .75.

A county qualifies as a "secondary county" if 50 percent or more, but less than 65 percent, of its employed residents work within the county and the ratio of the number of jobs located in the county to the number of employed residents of the county is at least .75.

A main county automatically serves as the basis for a Metropolitan Division. For a secondary county to qualify as the basis for forming a Metropolitan Division, it must join with either a contiguous secondary county or a contiguous main county with which it has the highest employment interchange measure of 15 or more.

After all main counties and secondary counties are identified and grouped (if appropriate), each additional county that already has qualified for inclusion in the Metropolitan Statistical Area falls within the Metropolitan Division associated with the main/secondary county or counties with which the county at issue has the highest employment interchange measure. Counties in a Metropolitan Division must be contiguous.

(b) A NECTA containing a single core with a population of at least 2.5 million may be subdivided to form smaller groupings of cities and towns referred to as NECTA Divisions.

A city or town will be a "main city or town" of a NECTA Division if it has a population of 50,000 or more and its highest rate of out-commuting to any other city or town is less than 20 percent.

After all main cities and towns have been identified, each remaining city and town in the NECTA will fall within the NECTA Division associated with the city or town with which the one at issue has the highest employment interchange measure.

Each NECTA Division must contain a total population of 100,000 or more. Cities and towns first assigned to areas with populations less than 100,000 will be assigned to the qualifying NECTA Division associated with the city or town with which the one at issue has the highest employment interchange measure. Cities and towns within a NECTA Division must be contiguous.

Section 8. Combining Adjacent Core Based Statistical Areas

(a) Any two adjacent CBSAs will form a Combined Statistical Area if the employment interchange measure between the two areas is at least 25.

(b) Adjacent CBSAs that have an employment interchange measure of at least 15 and less than 25 will combine if local opinion, as reported by the congressional delegations in both areas, favors combination.

(c) The CBSAs that combine retain separate identities within the larger Combined Statistical Areas.

Section 9. Titles of Core Based Statistical Areas, Metropolitan Divisions, New England City and Town Divisions, and Combined Statistical Areas

(a) The title of a CBSA will include the name of its Principal City with the largest Census 2000 population. If there are multiple Principal Cities, the names of the second largest and third largest Principal Cities will appear in the title in order of descending population size. If the Principal City with the largest Census 2000 population is a census designated place, the name of the largest incorporated place of at least 10,000 population that also is a Principal City will appear first in the title followed by the name of the census designated place.

(b) The title of a Metropolitan Division will include the name of the Principal City with the largest Census 2000 population located in the Metropolitan Division. If there are multiple Principal Cities, the names of the second largest and third largest Principal Cities will appear in the title in order of descending population size. If there are no Principal Cities located in the Metropolitan Division, the title of the Metropolitan Division will use the names of up to three counties in order of descending population size.

(c) The title of a NECTA Division will include the name of the Principal City with the largest Census 2000 population located in the NECTA Division. If there are multiple Principal Cities, the names of the second largest and third largest Principal Cities will appear in the title in order of descending population size. If there are no Principal Cities located in the NECTA Division, the title of the NECTA Division will use the name of the city or town with the largest population.

(d) The title of a Combined Statistical Area will include the name of the largest Principal City in the combination, followed by the names of up to two additional Principal Cities in the combination in order of descending population size, or a suitable regional name, provided that the Combined Statistical Area title does not duplicate the title of a component Metropolitan or Micropolitan Statistical Area or Metropolitan Division. Local opinion will be considered when determining the titles of Combined Statistical Areas.

(e) Titles also will include the names of any state in which the area is located.

Section 10. Update Schedule

(a) The Office of Management and Budget will define CBSAs based on Census 2000 data in 2003.

(b) Each year thereafter, the Office of Management and Budget will designate new CBSAs if:

(1) A city that is outside any existing CBSA has a Census Bureau special census count of 10,000 or more population, or Census Bureau population estimates of 10,000 or more population for two consecutive years, or

(2) A Census Bureau special census results in the delineation of a new urban area (urbanized area or urban cluster) of 10,000 or more population that is outside of any existing CBSA.

(c) In the years 2004 through 2007, outlying counties of intercensally designated CBSAs will qualify, according to the criteria in Section 3 above, on the basis of Census 2000 commuting data.

(d) The Office of Management and Budget will review the definitions of all existing CBSAs in 2008 using commuting data from the Census Bureau's American Community Survey. The central counties of CBSAs identified on the basis of a Census 2000 population count, or on the basis of population estimates or a special census count in the case of intercensally defined areas, will constitute the central counties for purposes of the 2008 area definitions. New CBSAs will be designated in 2008 and 2009 on the basis of Census Bureau special census counts or population estimates as described above; outlying county qualification in these years will be based on 2008 commuting data from the American Community Survey.

Section 11. Local Opinion

Local opinion, as used in these standards, is the reflection of the views of the public and is obtained through the appropriate congressional delegations. The Office of Management and Budget will seek local opinion in two circumstances:

(a) When two adjacent CBSAs qualify for combination based on an employment interchange measure of at least 15 but less than 25 (see Section 8). The two CBSAs will combine only if there is evidence that local opinion in both areas favors the combination.

(b) To determine the title of a Combined Statistical Area.

After decisions have been made regarding the combinations of CBSAs and the titles of Combined Statistical Areas, the Office of Management and Budget will not request local opinion again on these issues until the next redefinition of CBSAs.

Section 12. Definitions of Key Terms

Census designated place.—A statistical geographic entity that is

equivalent to an incorporated place, defined for the decennial census, consisting of a locally recognized, unincorporated concentration of population that is identified by name.

Central county.—The county or counties of a Core Based Statistical Area containing a substantial portion of an urbanized area or urban cluster or both, and to and from which commuting is measured to determine qualification of outlying counties.

Combined Statistical Area.—A geographic entity consisting of two or more adjacent Core Based Statistical Areas (CBSAs) with employment interchange measures of at least 15. Pairs of CBSAs with employment interchange measures of at least 25 combine automatically. Pairs of CBSAs with employment interchange measures of at least 15, but less than 25, may combine if local opinion in both areas favors combination.

Core.—A densely settled concentration of population, comprising either an urbanized area (of 50,000 or more population) or an urban cluster (of 10,000 to 49,999 population) defined by the Census Bureau, around which a Core Based Statistical Area is defined.

Core Based Statistical Area (CBSA).—A statistical geographic entity consisting of the county or counties associated with at least one core (urbanized area or urban cluster) of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration with the core as measured through commuting ties with the counties containing the core. Metropolitan and Micropolitan Statistical Areas are the two categories of Core Based Statistical Areas.

Employment interchange measure.—A measure of ties between two adjacent entities. The employment interchange measure is the sum of the percentage of employed residents of the smaller entity who work in the larger entity and the percentage of employment in the smaller entity that is accounted for by workers who reside in the larger entity.

Geographic building block.—The geographic unit, such as a county, that constitutes the basic geographic component of a statistical area.

Main city or town.—A city or town that acts as an employment center

within a New England City and Town Area that has a core with a population of at least 2.5 million. A main city or town serves as the basis for defining a New England City and Town Area Division.

Main county.—A county that acts as an employment center within a Core Based Statistical Area that has a core with a population of at least 2.5 million. A main county serves as the basis for defining a Metropolitan Division.

Metropolitan Division.—A county or group of counties within a Core Based Statistical Area that contains a core with a population of at least 2.5 million. A Metropolitan Division consists of one or more main/secondary counties that represent an employment center or centers, plus adjacent counties associated with the main county or counties through commuting ties.

Metropolitan Statistical Area.—A Core Based Statistical Area associated with at least one urbanized area that has a population of at least 50,000. The Metropolitan Statistical Area comprises the central county or counties containing the core, plus adjacent outlying counties having a high degree of social and economic integration with the central county as measured through commuting.

Micropolitan Statistical Area.—A Core Based Statistical Area associated with at least one urban cluster that has a population of at least 10,000, but less than 50,000. The Micropolitan Statistical Area comprises the central county or counties containing the core, plus adjacent outlying counties having a high degree of social and economic integration with the central county as measured through commuting.

New England City and Town Area (NECTA).—A statistical geographic entity that is defined using cities and towns as building blocks and that is conceptually similar to the Core Based Statistical Areas in New England (which are defined using counties as building blocks).

New England City and Town Area (NECTA) Division.—A city or town or group of cities and towns within a NECTA that contains a core with a population of at least 2.5 million. A NECTA Division consists of a main city or town that represents an employment

center, plus adjacent cities and towns associated with the main city or town, or with other cities and towns that are in turn associated with the main city or town, through commuting ties.

Outlying county.—A county that qualifies for inclusion in a Core Based Statistical Area on the basis of commuting ties with the Core Based Statistical Area's central county or counties.

Outside Core Based Statistical Areas.—Counties that do not qualify for inclusion in a Core Based Statistical Area.

Principal City.—The largest city of a Core Based Statistical Area, plus additional cities that meet specified statistical criteria.

Secondary county.—A county that acts as an employment center in combination with a main county or another secondary county within a Core Based Statistical Area that has a core with a population of at least 2.5 million. A secondary county serves as the basis for defining a Metropolitan Division, but only when combined with a main county or another secondary county.

Urban area.—The generic term used by the Census Bureau to refer collectively to urbanized areas and urban clusters.

Urban cluster.—A statistical geographic entity to be defined by the Census Bureau for Census 2000, consisting of a central place(s) and adjacent densely settled territory that together contain at least 2,500 people, generally with an overall population density of at least 1,000 people per square mile. For purposes of defining Core Based Statistical Areas, only those urban clusters of 10,000 more population are considered.

Urbanized area.—A statistical geographic entity defined by the Census Bureau, consisting of a central place(s) and adjacent densely settled territory that together contain at least 50,000 people, generally with an overall population density of at least 1,000 people per square mile.

John T. Spotila,

Administrator, Office of Information and Regulatory Affairs.

[FR Doc. 00-32997 Filed 12-26-00; 8:45 am]

BILLING CODE 3110-01-P