Carl Vinson
Institute of Government
UNIVERSITY OF GEORGIA

Tax Incentive Evaluation

Georgia High-Tech Data Center Equipment Exemption

Bennett Hardee
Alexandra Hill
Tommie Shephard

December 2022

Tax Incentive Evaluation: Georgia High-Tech Data Center Equipment Exemption

Prepared by:
The University of Georgia
Carl Vinson Institute of Government

For:
Georgia Department of Audits and Accounts

Date of Delivery:
December 2022

Authors:
Bennett Hardee
Alexandra Hill
Tommie Shepherd

Carl Vinson Institute of Government
University of Georgia
201 North Milledge Avenue
Athens, Georgia 30602

1. Executive Summary

This study examines Georgia's High-Tech Data Center Equipment Tax Exemption (O.C.G.A. § 48-8-3(68.1)), conducted in accordance with the Tax Credit Return on Investment Act of 2021, also known as Senate Bill 6 (SB6). SB6 tax exemption studies are required to include a brief history of the exemption, a review of existing literature or academic research on similar exemptions, an estimate of forgone tax revenue, and any additional costs or revenues incurred by the state in administering the exemption. Studies are required to include an estimate of the economic impact of the exemption on the state economy and an estimate of the overall return on investment of the credit or exemption. Georgia's data center exemption was enacted in 2018 via House Bill (HB) 696 to encourage data centers to locate in Georgia by exempting a portion of construction materials and purchases of computer servers and related equipment from state and local sales and use tax. To qualify for the exemption, the data center must meet a minimum threshold level of investment in the facility and create a minimum number of jobs as prescribed by the enabling legislation.

Currently, too few taxpayers utilize the Georgia high-tech data center exemption to meet the IRS threshold for aggregation that is necessary to allow for publication of data. Consequently, actual data from the Georgia Department of Revenue could not be utilized or published in the study. Instead, the information used in this evaluation to estimate data center construction costs, equipment purchases, and employment was gleaned from a variety of sources, including data center websites and directories, press releases announcing new data center construction projects, and interviews with industry representatives. The Institute of Government researchers spoke with data center association representatives, management consultants, and data center construction project managers. Several economic impact studies were reviewed as well as the 2022 high technology data center fiscal note produced by Georgia State University's Fiscal Research Center (FRC).

NET CHANGE IN STATE REVENUE

This analysis provides a measure of the total change in state revenues attributable to Georgia's High-Tech Data Center Equipment Exemption. The largest component of the total fiscal impact is forgone tax revenue resulting from the direct cost of the exemption. This amount, projected to 2030, is shown in the first row of Table A. Projections are based on Institute estimates of construction and operations spending on newly constructed data centers between 2018 to 2030. Because firms are assumed to spend additional dollars on construction and operations of data centers as a result of the tax exemption, the state will collect additional tax revenues on the direct, indirect, and induced spending associated with these purchases. IMPLAN's estimates of these additional state tax revenues are shown in the second and third rows of Table A.

Forgone state tax revenue ranges from a low of $8 million in 2018 to a high of $80 million in 2030 as data centers accumulate in Georgia (Table A). Forgone revenue increases each year due to the projected construction of additional data centers. Increased state tax collections presented in Table A are subject to the "but for" adjustment (reduced by 10%), representing the assumption that only 10% of data center activity would have occurred "but for" the tax incentive. Increased state tax revenue from construction of data centers ranges from a low of $2.3 million in 2018 to a high of $19.4 million in 2030. Increased state tax revenue from data center operations ranges from a low of $.5 million in 2018 to a high of $4 million in 2030. The total of increased state tax collections resulting from construction and operation of data centers is not high enough to offset the forgone state tax revenue from the incentive, thus the fiscal impact is negative. The total fiscal impact of Georgia's High-Tech Data Center Equipment Exemption ranges from -$5.4 million in 2018 to -$56.7 million in 2030.

Table A. Net Change in State Revenue from Georgia's High-Tech Data Center Equipment Exemption

	2018	2019	2020	2021	2022	2023
Forgone State Tax Revenue	-$8,243,715	-$14,233,790	-$20,223,864	-$26,213,939	-$32,204,013	-$38,194,088
Increased State Tax Collections from Construction	$2,317,374	$4,277,245	$4,015,997	$6,340,494	$7,789,343	$9,238,191
Increased State Tax Collections from Operations	$530,228	$887,099	$960,715	$1,495,665	$1,785,148	$2,058,549
Total Fiscal Impact	**-$5,396,113**	**-$9,069,446**	**-$15,247,152**	**-$18,377,780**	**-$22,629,522**	**-$26,897,348**

2024	2025	2026	2027	2028	2029	2030
-$44,184,162	-$50,174,237	-$56,164,311	-$62,154,386	-$68,144,460	-$74,134,535	-$80,124,609
$10,687,039	$12,135,888	$13,584,737	$15,033,586	$16,482,434	$17,931,282	$19,380,131
$2,348,033	$2,637,517	$2,910,918	$3,200,401	$3,473,803	$3,763,286	$4,036,687
-$31,149,089	**-$35,400,832**	**-$39,668,657**	**-$43,920,400**	**-$48,188,223**	**-$52,439,967**	**-$56,707,791**

Source: Institute of Government estimates; IMPLAN 2022 data

NET CHANGE IN ECONOMIC ACTIVITY

To estimate the economic and fiscal impact of the high-tech data center exemption, Institute researchers utilized previous studies from Georgia and other states, along with information from interviews with data center consultants and construction project managers, to estimate the cost of constructing and operating a representative hyperscale data center. The research team assumed an annual increase in the total cost of construction of data centers in the state each year from 2018, when the legislation was enacted, through 2030. This linear trend in construction costs was based on the growing size and sophistication of new data centers, namely the technology used to cool the servers and power backup systems used to keep them running during outages. The research team also assumed that a representative, hyperscale data center would employ an average of 50 full-time staff. The largest economic impacts associated with data centers occur during the initial two-year construction period.

Based on the results of a highly rigorous study commissioned by the Virginia State Legislature, the assumption was made that "but for" the sales tax exemption, only 10% of the projected data center construction projects would have occurred (Virginia JLARC 2019). In other words, the sales tax exemption is assumed to have generated 90% of data center construction. This figure aligns with anecdotal evidence from industry representatives that, while sales tax incentives may not "seal the deal" on attracting new data center projects, a lack of incentives can certainly "kill the deal".[1] The projected economic impacts of data center construction and operations through 2030 are shown in Table B, including the "but for" reduction of 10%.

After applying the "but for" reduction, the economic impact of data center construction ranges from a low of $75.6 million in 2018 to a high of $761.3 million in 2030. Annual operations impact from data centers ranges from a low of $20.5 million in 2018 to a high of $160 million in 2030. These two impacts are added together for a low of $96.2 million in 2018 and a high of $920.9 million in 2030. Dividing the total construction and operations impact figure by the forgone state tax revenue, which was assumed to stimulate that impact, gives us the ROI, which ranges from a low of 10.49 in 2030 to a high of 10.73 in 2019. In simpler terms, for each $1 of forgone tax revenue from Georgia's High-Tech Data Center Equipment Exemption, the state accrues approximately $10.50 in value-added impact. This ROI is significantly higher than the alternate use scenario, which yields a value-added impact of $1.33 for each $1 of state revenue collected and spent on public services.

[1] Based on private communication with professional data center consultants.

Table B. Net Change in Economic Activity from Georgia's High-Tech Data Center Equipment Exemption, Impact Figures are Value-Added

	2018	2019	2020	2021	2022	2023
Forgone State Tax Revenue	$8,243,715	$14,233,790	$20,223,864	$26,213,939	$32,204,013	$38,194,088
Construction Impact (0.9)	$75,621,915	$136,754,896	$189,346,297	$249,062,999	$305,975,696	$362,888,391
Operations Impact (0.9)	$20,536,610	$30,269,151	$39,893,477	$59,150,628	$70,599,137	$81,411,617
Construction + Operations Impacts (0.9)	$96,158,525	$167,024,047	$229,239,773	$308,213,627	$376,574,832	$444,300,008
ROI (Impact/Forgone State Tax Revenue)	10.66	10.73	10.34	10.76	10.69	10.63

2024	2025	2026	2027	2028	2029	2030
$44,184,162	$50,174,237	$56,164,311	$62,154,386	$68,144,460	$74,134,535	$80,124,609
$419,801,087	$476,713,783	$533,626,479	$590,539,174	$647,451,871	$704,364,567	$761,277,263
$92,860,126	$104,308,635	$115,121,115	$126,569,624	$137,382,104	$148,830,612	$159,643,094
$512,661,213	$581,022,418	$648,747,594	$717,108,798	$784,833,975	$853,195,180	$920,920,356
10.60	10.58	10.55	10.54	10.52	10.51	10.49

Source: Institute of Government estimates; IMPLAN 2022 data

NET CHANGE IN PUBLIC BENEFIT

Tax incentives have intangible public benefits that cannot be captured by traditional economic impact estimates. These intangible benefits may be stated or implied as the intent—or part of the intent—of a credit, or they may simply accrue as an externality, or side effect, of the credit. While the preceding estimates are based solely on projected tax expenditures and their resulting economic impacts, note that a number of intangible benefits of Georgia's high-tech data center tax exemption, though immeasurable, likely exist.

Although data centers certainly bring jobs and capital investment to the regions where they choose to locate, they are also heavy utility users, which can have mixed effects on residents. One negative effect of a hyperscale data center could be strain on the electric grid and local water and sewer infrastructure. Data centers measure their electricity usage on the order of megawatts. The large-scale electricity needs of data centers could put strain the power grid during peak times such as heat waves and cold snaps. Data centers often require constant water flow for cooling purposes, in some cases straining already aging pipes and water purification plants.

Heavy electricity usage by data centers could also have some positive effects on residents. Expansion or improvement of the electric grid would likely create new jobs at Georgia Power or local Electric Membership Cooperatives (EMCs). Data centers also prefer sites with renewable energy, encouraging investment in solar, wind, hydroelectric, and nuclear which benefits residents in the region via increased sustainability and possibly lower electricity rates. Another positive effect of a new data center might be the improvement of broadband infrastructure within a county. Many counties in Georgia suffer from slow internet speeds or lack broadband access altogether; a new data center could bring the investment needed to expand broadband to previously unserved areas. Although large economic development projects such as data centers are heavy utility users, they often provide the level of investment needed to update or expand aging infrastructure, especially in more rural areas.

The projected economic impact calculations presented in this report are based on a relatively short-term projection of data centers and their economic impacts, along with accompanying forgone sales tax revenues. In the long run, however, these companies factor tax incentives, along with other information, into their decision to locate in Georgia or in another state. In other words, data centers may weigh other factors more heavily when initially selecting sites, but uncertainty surrounding tax policy may dissuade them from investing long-term in a certain state, especially when they plan to build a campus with multiple hyperscale data centers. Sales tax exemptions represent a savings that could tilt the relative cost of doing business in favor of states with more generous incentives or longer sunset dates. While analyzing Georgia's overall competitiveness in attracting data centers versus other states is well beyond the scope of this

analysis, some measure of Georgia's attractiveness to high-tech companies deserves consideration prior to modifying the current data center tax exemption.

Tax exemptions are one of many factors that create a positive business climate. Even the most complex models cannot include, or control for, every factor relevant to business decision-making or economic growth (Buss 2001). Other factors include corporate tax rates, commercial real estate prices, utility rates, the risk of natural disasters, the talent pool, and proximity to transportation hubs such as airports and ports. While tax incentives may not be the primary factor in location selection, they are certainly one of a group of factors impacting that decision. Consequently, a lack of incentives, or the repeal of existing incentives, may signal a negative business climate and can create an atmosphere of uncertainty for firms planning to relocate or expand. Further note that a large concentration of industry-leading high-tech corporations may serve to improve the business-friendly reputation of a state, whereas an exodus of those same corporations may have the opposite effect.

2. Georgia's High-Tech Data Center Equipment Tax Exemption: Background

This study is a review of the Georgia High Tech Data Center Equipment Tax Exemption (O.C.G.A. § 48-8-3(68.1)) conducted in accordance with the Tax Credit Return on Investment Act of 2021, also known as Senate Bill 6 (SB6). SB6, passed during the 2022 legislative session, requires periodic evaluation of Georgia tax credits and exemptions on a rolling five-year basis. SB6 tax exemption studies are required to include a brief history of the exemption, a review of existing literature or academic research on similar exemptions, an estimate of forgone tax revenue, and any additional costs or revenues incurred by the state in administering the exemption. Studies are required to include an estimate of the economic impact of the exemption on the state economy and an estimate of the overall return on investment (ROI) of the credit or exemption. Most importantly, evaluations must address the question of whether the taxpayer's spending and the accompanying economic impact would have occurred in the absence of the exemption, a topic commonly referred to as the "but for" question. This study is one of three produced under contract with the Georgia Department of Audits and Accounts by the Carl Vinson Institute of Government at the University of Georgia.

Data centers have largely been located in tech-heavy areas of the US in recent years. However, distribution of data centers across a wider swath of the US is expected to accelerate as limited space and power availability increase costs in supply-constrained primary markets (West 2020). Decentralization of data centers is expected to continue, as major markets like Silicon Valley and northern Virginia have limited land availability and power capacity for new development. Alternate markets such as Atlanta and Columbus should see increased demand as a result. Atlanta is considered the #6 primary market in the nation. Atlanta saw 171% growth in data centers from 2015 to 2020, fourth in the nation after northern Virginia; Dallas/Fort Worth, Texas; and Silicon Valley, California.

Georgia currently has approximately 100 data centers, the majority of which are located in the greater Atlanta metropolitan area of Fulton, Cobb, and Gwinnett counties (Mangum Economics 2021). Significant data center projects are also located in Bulloch, Carroll, Douglas, and Newton counties. Douglas and Newton counties are home to hyperscale data centers, each with over $1 billion invested. In its 2021 report, Mangum Economics estimated the total cost of construction and commission to full operating status of all 100 data centers in Georgia to be $35 billion (2021 dollars). The number of data centers in Georgia is on a growth trajectory.

History

Georgia's data center tax exemption was enacted in 2018 via House Bill (HB) 696. Adjustments were made to qualifying investment amounts and quality jobs by county tiers during the 2022

General Assembly session. The exemption was previously slated to sunset in 2028, but it was extended to 2033 due to passage of HB 1291. In 2022, HB 1291 modified the minimum job creation and investment components of the exemption. Table 1 details these changes.

Table 1. Georgia High-Tech Data Center Equipment Tax Exemption: Minimum Jobs and Investment Required to Qualify by County Population

County Population	Previous Jobs Requirement (2018–2021)	Current Jobs Requirement (2022–2033)	Minimum Investment (2018–2021)	Minimum Investment (2022–2033)
Under 30,000	20	5	$100M	$25M
30,000–50,000	20	10	$150M	$75M
Over 50,000	20	25	$250M	$250M

Purpose

This tax incentive was created to stimulate data processing and storage in the State of Georgia and to create high-quality jobs. The exemption reduces the taxes paid on certain building materials used in the construction of new data centers, and computer equipment necessary for the operation of data centers, thereby encouraging more and larger data centers to locate in the state. The incentive has lower thresholds for jobs and investment in counties with populations under 50,000, presumably to encourage data centers to consider locating in underserved and underutilized areas of the state.

Implementation

A high-tech data center (HTDC) is defined as "a facility, campus of facilities, or array of interconnected facilities in the state that is developed to power, cool, secure, and connect its own equipment or the computer equipment of [HTDC] customers." A majority of the data center's business must be conducted with entities with which it has no affiliation ("arm's length"). The exemption applies to state and local sales tax, and excludes prewritten computer software, cable, telephone central office equipment, voice-data transmission equipment, training/product-testing equipment, printers, paper, ink, mouse pads, tools, removable storage, and maintenance/repair equipment. Data centers and their customers seeking the exemption must obtain a certificate of exemption from the state tax commissioner.

Once a data center is certified for exemption, a minimum investment threshold must be met and a minimum number of quality jobs must be created for the center to receive the exemption, tiered by the population of the county in which it will be constructed. Equipment subject to a property tax abatement or any other sales tax exemption (e.g., the computer equipment exemption) does not count toward the minimum investment threshold. Data centers must meet the investment threshold within seven years of their exemption start date. A performance bond

of up to $20 million may be required by the state tax commissioner and is subject to forfeiture if the minimum investment is not met within the allotted time.

A "quality job" is defined as a new position of 30 or more working hours per week that pays at least 110% of the average wage in the county. In 2022, the Georgia General Assembly made changes to qualifying investment thresholds and quality job creation requirements. Currently, for counties with populations of over 50,000, the minimum threshold is $250 million and 25 jobs must be created, compared to $75 million and 10 jobs in counties with populations between 30,000 and 50,000, and $25 million and five jobs in counties with populations below 30,000. HB 1291 allows HTDCs in counties with populations under 50,000 to also earn quality job tax credits (QJTCs). These HTDCs were previously precluded from claiming QJTCs.

For example, a qualifying data center in Madison County (which has a population of 29,624 according to the 2020 US census) would have a minimum investment of $25 million over a seven-year period and would create a minimum of 5 new jobs that pay an average weekly wage of $775 (average weekly wage across all private industries in Madison County = $704; US Bureau of Labor Statistics 2020).

3. Georgia's High-Tech Data Center Equipment Tax Exemption: Utilization by the Numbers

The Georgia Department of Revenue (DOR) adheres to IRS regulations in determining the conditions under which taxpayer data may be released. Currently, too few taxpayers are utilizing the Georgia high-tech data center exemption to meet the IRS threshold for aggregation that is necessary to allow for publication of data. Consequently, very little data were provided by Georgia DOR. Additionally, the minimal data that were provided cannot be published in any form, either individually or aggregated, or used in any calculations that would be displayed in this study. Taxpayers utilizing the credit could not be mapped, enumerated, or described in any way.

The information utilized in this evaluation to estimate data center construction costs, equipment purchases, and employment was gleaned from a number of sources, including data center websites and directories, press releases announcing new data center construction projects, and interviews with industry representatives. The Institute of Government researchers spoke with data center association representatives, management consultants, and data center construction project managers. A number of existing economic impact studies (Mangum Research (2021), Mangum Research (2020), U.S. Chamber of Commerce Technology Engagement Center (2017), ESI ECONSULT Solutions Inc. (2019), Virginia Joint Legislative Audit and Review Commission (2020), Iowa Department of Revenue (2021) were reviewed as well as the 2022 high-technology data center fiscal note prepared by Georgia State University's Fiscal Research Center (2022).

4. High-Tech Data Center Tax Exemptions in Other States

Data center incentives differ widely across the US. Many states require that a minimum number of jobs be created, often requiring that they have higher salaries than the state average in an effort to create "high-quality jobs." Some states tier their incentives based on some measure of distress of a locality. Others allow longer timelines for increasing levels of investment. Some states have sunset dates for their incentives, and others offer incentives into perpetuity. Table 2 compares Georgia's data center incentive with those of its closest neighbors in the Southeast.

Table 2. Data Center Tax Incentives in the Southeast

State	Minimum Investment	Jobs	Years	Sunset
Alabama	None/$200M/$400M based on length of exemption desired	20	10-30	NA
Georgia	$25/$75/$250M based on county pop.	5/10/25	7	2031
Florida	$150M	NA	5	2027
Mississippi	$20M	20	10	NA
North Carolina	$75M	NA	5	NA
South Carolina	$50M	25	5	2031/2041
Tennessee	$100M	15	3	NA
Virginia	$70M/$150M based on county distress level	10/50	NA	2035

REVIEWS OF STATE PROGRAMS

Alabama

Alabama passed its data center tax exemption in 2012. The exemption duration is 10 to 30 years, based on the investment threshold. To qualify for a tax exemption in Alabama, data centers must meet the following criteria: investments under $200 million must be met within 10 years; investments of $200–$400 million must be met within 20 years; and investments of more than $400 million must be met within 30 years. Alabama's incentive also requires that 20 new jobs be created. The average annual total compensation of such new jobs, including benefits, may not be less than $40,000. Tax abatement includes property and sales/use tax. To receive the Alabama tax benefits, data centers must reapply for a certificate of exemption each year they are in operation. There is currently no sunset date for this exemption.

Florida

Florida passed its data center tax exemption in 2017. This exemption eliminates sales/use tax for data centers and the infrastructure, equipment, personal property, and electricity associated with each center. To qualify for Florida's tax exemption, the company must invest a minimum of $150 million into the data center, have a critical load of at least 15 megawatts (MW) or a critical load of at least 1MW per tenant in a colocation data center. Data centers must apply for an exemption certificate from the Florida Department of Revenue and report periodically to the department to demonstrate that the exemption was utilized properly. Florida's legislation also requires a review to assure continued qualification by each site and contains a "claw back" provision if companies improperly use the incentive. Each of these requirements must be satisfied no later than five years after the commencement of construction of the data center. Florida is one of two southeastern states that does not require jobs to be created to qualify for the exemption, with the other being North Carolina.

Mississippi

Mississippi passed its data center tax exemption in 2019. Data centers are exempt from state taxes for a period of 10 years from the date of certification by the Mississippi Development Authority. The minimum investment required is $20 million, and 20 new full-time jobs must be created with an average salary of 125% of the average annual wage in the state. Exempted taxes include those related to the purchase or lease of component building materials and equipment for the initial construction of facilities or expansion of facilities as well as the purchase of replacement hardware, software, or other necessary technology to operate a data center. Taxes on income earned by the business and taxes on the value of capital used, invested, or employed by the business are exempt as well. Mississippi does not currently have a sunset date set for this exemption.

North Carolina

North Carolina passed its most recent data center tax exemption in 2016. The state currently provides three different sales and use tax exemptions related to data centers and their operations: (1) electricity and support equipment purchased for a "qualifying data center"; (2) electricity and certain business property purchased for an "eligible internet data center"; and (3) computer software at a "data center."

The first, the qualifying data center exemption, applies to purchases of electricity and support equipment to be located and used at each facility. The power and cooling systems serving the computer equipment must include redundant capacity components and multiple distribution paths. To qualify, at least one owner must commit to investing $75 million into the site, and these funds must be invested within five years of the first real or tangible property investment. Investments made prior to January 1, 2012, are not eligible for exemption. Additionally, the data center must meet county wage standards and health insurance requirements.

The second exemption is applicable to eligible internet data centers and their purchases of electricity. "Eligible internet data centers" must meet the following conditions:

- The secretary of commerce certifies that $250 million in private funds will be invested in real property and/or eligible business property at the facility. The investment must take place within five years of the commencement of the construction of the facility.
- The facility comprises a structure or series of structures located or to be located on a single parcel of land or contiguous parcels of land that are commonly owned or owned by affiliation with the operator of that facility.
- The NAICS code of the facility is 511210 (software publishing) or 519130 (internet publishing and broadcasting).[2]
- The facility is located in a Tier 1 or Tier 2 county (one of the 80 most-distressed counties).

Lastly, North Carolina provides a sales tax exemption for computer software purchased by a data center. "Computer software" is specifically defined as "a set of coded instructions designed to cause a computer or automatic data-processing equipment to perform a task." North Carolina does not feature job creation requirements nor does it have sunset dates listed for any of its three incentives.

South Carolina

South Carolina introduced a data center tax exemption into law in 2009 and passed enhancements involving minimum job creation and capital investment in 2012. The exemption eliminates sales and use tax on computers, computer equipment, computer hardware and software, and electricity used by the data center and "eligible business property." Electricity used for purposes unrelated to the data center, such as for administrative offices, cafeterias, and storage warehouses, is not exempt. To qualify, a data center must be certified by the South Carolina Department of Commerce and invest at least $50 million in real and/or personal property over a five-year period. If two or more taxpayers are investing, the requirement is $75 million. In addition, the data center must create at least 25 full-time jobs with an average cash compensation level of 150% of the per capita income of the county in which the facility is located. The jobs must be created within the five-year period and must be maintained for three consecutive years after the data center has been certified. Finally, data centers must qualify by 2031, the end of the application period, and benefits are currently scheduled to end in 2041.

Tennessee

Tennessee's data center exemption was last modified in 2015. State law states that "a qualified data center may make certain purchases exempt from sales tax" and provides a reduced sales tax rate on electricity purchases for qualified data centers. The incentive requires that the data

[2] The North America Industry Classification System (NAICS) is the standard used by federal agencies to classify businesses based on type of economic activity. NAICS codes range from two to six digits, with more digits indicating a more detailed industry classification.

center must be newly constructed, expanded, or remodeled and must house high-tech computer systems and related equipment. To qualify, Tennessee data centers must make a capital investment of $100 million over three years and create at least 15 net new full-time jobs (defined as permanent for at least 12 consecutive months for at least 37.5 hours per week with health care benefits), which must pay at least 150% of the state's average occupational wage. A list of fully-exempt purchases includes computers and computer-related devices, software, repair, installation, warranties, and service contracts used in operation and backup power infrastructure/cooling equipment. In addition, the state also provides a reduced sales tax of 1.5% on all electricity costs upon meeting the requirements stated above. The Tennessee data center exemption is permanent and does not have a sunset date.

Virginia

Virginia created its data center exemption in 2008, and it currently sunsets in 2035. State law exempts all sales and use taxes on purchases of computer equipment or enabling software purchased or leased for the processing, storage, retrieval, or communication of data. Eligible purchases include servers, routers, connections, and other enabling hardware, including chillers and backup generators. Data centers must meet one of two thresholds, depending on whether they are locating in a "distressed locality" or elsewhere in the state. To qualify for the exemption generally, a data center must invest $150 million in new capital and create 50 new jobs located at the data center in the applicable locality and associated with the operation or maintenance of the data center. Each new job must be paid at least 150% of the prevailing annual average wage in the locality where the data center is located, excluding fringe benefits.

To qualify for the exemption in a "distressed locality," which is a locality with unemployment and poverty rates in calendar year 2019 that were greater than the state average, a data center must invest $70 million in new capital and create 10 new jobs associated with the operation or maintenance of the data center in the locality. Each new job in these "distressed localities" must also be paid at least 150% of the prevailing annual average wage in the locality where the data center is located, excluding fringe benefits.

5. Literature Review

The Institute of Government research team reviewed the existing literature on tax incentives for data centers. Sources included evaluations of incentives in other states, such as Oklahoma and Virginia, as well as reports summarizing trends in incentives across the country.

State and local incentives are often evaluated based on the number of full-time jobs created by the new business they are designed to attract (Miller 2008). This model of evaluation does not result in high returns on investment (ROIs) for data centers, which are highly automated, allowing a small number of workers—almost always less than 100 and more often less than 50—to operate and maintain a facility spanning tens of thousands of square feet. A new data center heralds capital investment in the millions or billions of dollars, but, creates a much smaller number of jobs than a factory or company headquarters of a similar size. Data center projects generate a large number of construction jobs during the construction phase, but only a fraction of that amount once the center is completed and enters its operational phase.

Because data centers are not employment-intensive projects, the primary benefit of incentivizing them to locate in a certain state or locality is the initial capital investment they inject into the economy. However, the presence of a state tax incentive is far from the primary factor in the site-selection process. Building a data center requires a huge amount of capital investment over years or decades, so companies evaluate a number of criteria before they choose a site.

First, regions prone to natural disasters such as hurricanes, floods, or earthquakes are eliminated from site-selection lists (Von Seggern et al. 2014). Companies looking to construct a new data center generally prefer sites with infrastructure already in place, such as access roads, utility lines, and water/sewer lines. Proximity to highways, railroads, airports, and coastal ports decreases the cost of shipping equipment and supplies during the construction and operation phases. Data centers also need reliable, high-speed internet connections. When selecting a location, companies evaluate the presence of fiber infrastructure and the amount of fiber installation needed if the current infrastructure is insufficient.

Though physical infrastructure is essential in site selection for a data center, by far the most important consideration in the site-selection process is the cost of electricity. Running servers is extremely energy-intensive and gives off huge amounts of waste heat, creating the need for even more energy-intensive cooling technology (Tarczynska 2016). Electricity accounts for about three-fourths of a typical data center's operating expenses. Many states that are hubs for data centers—Washington, Texas, Virginia, North Carolina, and Oregon—also have the cheapest electricity in the country (US Energy Information Administration 2022). Like other industrial users of electricity, some data centers negotiate lower rates with electricity providers,

which can save them millions on power costs. Electricity is such an essential consideration in the design of a data center that, unlike most commercial projects that are measured in cost per square foot, data center projects are designed and measured in cost per megawatt.[3]

Economic development subsidies and tax incentives are only considered during the last phase of the data center site-selection process, after possible choices have been reduced to a short list based on the risk of natural disasters, the current infrastructure, and electricity costs. Some prior research suggests that subsidies carry limited weight. In a survey of data center owners by Mortenson Construction, a commercial contractor that builds data centers, only 3% of respondents ranked tax credits and local incentives as the most important site-selection factor (Bruns 2014). Although subsidies are not the primary factor in data center site selection, companies aggressively seek subsidies from states and localities. The largest and most well-known technology companies have the most significant bargaining power for subsidies.

In this way, competition among states for data centers is viewed by critics as a "race to the bottom" that awards tax breaks to already large and profitable companies (Tarczynska 2016). For example, in 2009, North Carolina and Virginia were competing for an Apple data center. At first, North Carolina seemed to be the prime candidate for Apple's site selection. When Apple indicated it was more interested in Virginia, the North Carolina legislature quickly enacted a tax incentive that was estimated to save the company $300 million over three decades. Though Apple ultimately chose North Carolina for the site of the data center in question, Virginia enacted a sale and use tax exemption on computer equipment to appear more competitive to future high-tech companies.

Because data centers are capital- rather than labor-intensive projects, the primary benefit these facilities have on the state or local economy is tax revenue. However, fiscal benefits are significantly reduced when governments abate a large portion of those taxes. States often allow for the abatement of three main types of taxes generated by data centers: state and local sales and use taxes on purchases, real property taxes, and personal property taxes (Tarczynska 2016). Of these three main types of tax abatement, Georgia's data center incentive only exempts these businesses from sales and use tax on certain construction materials and computer equipment. In this way, Georgia's data center incentive is more conservative in its tax abatement than most other states in the Southeast.

More than 30 states have some type of data center tax incentive (Mangum Economics 2022). According to industry stakeholders, sunset dates are one of the most impactful factors of these tax exemptions[3]. Data centers require large amounts of capital investment, and planning takes place over decades, so uncertainty surrounding future tax burdens can create risks for decision-makers in the industry. Twenty-six states have tax incentives that last for 10 or more years, with 11 of them offering incentives with no sunset date (Mangum Economics 2022). Of southeastern

[3] Based on industry representative interviews held in 2022.

states currently offering data center incentives, Mississippi, North Carolina, and Tennessee have no sunset dates. Alabama's incentive lasts for 30 years, and South Carolina's incentive sunsets for new applicants in 2031, with benefits ending in 2041. Again, in this regard, Georgia's data center incentive, with a sunset date of 2033, is more conservative than those in other states in the region.

Competition among states leads not only to the implementation of incentives but also causes states to lower eligibility requirements to compete with one another. From 2012 to 2016, one-third of states lowered eligibility requirements for their data center incentive programs (Mangum Economics 2016). In 2022, Georgia's data center tax exemption was amended to make it easier for data centers to qualify: Job requirements were dropped from 20 to 5 in counties with populations under 30,000, and from 20 to 10 in counties with populations of 30,000 to 50,000. The minimum number of new jobs was increased from 20 to 25 for counties with populations over 50,000. Minimum investment thresholds were reduced by 75% for the lowest-population counties and by 50% for counties with 30,000 to 50,000 residents.

The implied purpose of lower employment and investment thresholds in Georgia's data center tax incentive is to redirect data centers to less-developed counties. The main reason for focusing economic development policy on the people and places most in need of resources—besides the assertion that areas with higher poverty rates need more economic help than others—is that such a policy is more economically efficient. Unfortunately, research shows that, in most states, only a portion of newly created jobs go to target residents. Skills mismatch between the new company and the current residents reduces the effectiveness of aiming economic development at economically distressed localities (Peters and Fisher 2004). It is politically and practically difficult to maintain a program focused on one area or population without acceding to the demands of other areas and/or populations that want to be granted similar policy instruments.

OTHER STATE EVALUATIONS

Oklahoma

In 2019, Oklahoma contracted with PFM Group Consulting to evaluate the effectiveness of the state's computer services and data processing tax exemption. The evaluation showed that the sales and use tax exemption for computer services and data-processing firms had not been used in the previous five fiscal years and that no new jobs were created as a result of the incentive, despite job creation requirements being present (PFM Group Consulting 2019). However, the report also found that data center investment may generate increased property and sales tax revenue. The authors noted that lack of broadband coverage likely negatively impacted the rate at which data centers located in Oklahoma, while affordable industrial electricity rates may have had a positive impact. In light of its lack of use and unproven ability to create jobs in the state, the project team recommended repealing the program.

Virginia

The Virginia data center exemption is the state's largest incentive in terms of forgone revenue, representing more than one-fifth of Virginia's spending on all economic development incentives from fiscal year 2010 to 2017 (Virginia JLARC 2019). A 2019 review found the incentive to be effective at attracting data centers to the state; the authors estimated that only 10% of data center activity would have occurred but for the incentive. However, the report notes that available data were insufficient to fully and accurately estimate the fiscal and economic impacts of the incentive. The report also concluded that, despite further incentivizing data centers to locate in "distressed localities," such areas have seen little benefit. Additionally, the report suggested that the increasing prevalence of tax incentives targeting data center firms in other states could affect Virginia's competitive position moving forward.

From fiscal year (FY) 2010 through FY 2017, Virginia spent $417.47 million on the data center exemption, representing around 21% of operating costs for new activity over a 20-year period. Based solely on this cost analysis, the exemption is estimated to induce up to 90% of the economic activity of these data centers. However, it is difficult to precisely estimate this impact, as business executives consider many factors when choosing a site location. Estimates also show that for each year in the study period, private-sector employment increased by 7,665 jobs, state GDP increased by $1.3 billion, and statewide personal income increased by $724.9 million, on average, due to the data center exemption. These estimates result in an annual average return on investment of $0.72 per $1 spent. The sizable tax revenue generated ($38 million) does not cover the costs of the exemption.

6. Economic Impact

To estimate the economic and fiscal impact of the high-tech data center exemption, the Institute of Government research team relied on previous studies from Georgia and other states, along with information from interviews with data center consultants and construction project managers. The researchers first estimated the cost of constructing and operating a representative hyperscale data center. The team projected an increase in the total cost of construction of data centers in the state each year from 2018, when the legislation was enacted, through 2030. This upward trend in construction costs was based on the growing size and sophistication of new data centers, namely the technology used to cool the servers and power backup systems used to keep them running during outages. The research team also assumed that a representative, hyperscale data center would employ an average of 50 full-time staff.

HOW ECONOMIC ACTIVITY IS MEASURED

Economic impact modeling is a technique used to estimate how a new firm, facility, or policy change will affect a specific region. Such estimates are often produced using an input-output model that first calculates a baseline forecast of economic activity for a geographic region and then estimates how shocks (inputs) to the economy alter economic activity (output). For this report, Institute of Government researchers estimated the economic impacts of Georgia's high-tech data center equipment tax exemption.

Institute researchers use IMPLAN, a widely used and accepted county-level economic model of the United States, to estimate the economic impacts of projects and changes to public policy (IMPLAN 2022). This model produces a baseline economic forecast using data from the US Census Bureau, the North American Industry Classification System (NAICS), the Bureau of Economic Analysis, and the Bureau of Labor Statistics as well as other data from the US Department of Commerce.

An input, or change to the economy, is added to the model. Inputs can be new jobs, labor income, increased demand for goods and services, or a variety of policy changes, such as tax incentives. IMPLAN estimates the increase in economic activity resulting from the change. The measures reported by the model include the number of jobs supported, the labor income associated with those jobs, the value added (or lost) to the economy in the particular geographic region being studied, and the total economic output added (or lost) as a result of the change. In the case of this evaluation, impacts are estimated separately for the construction and operation phases data centers qualifying for the tax exemption.

It is widely acknowledged that the high-tech industry creates quality jobs. The benefits of quality jobs do not only accrue to those employed in the technology field; there is a positive

spillover effect attributed to indirect and induced activity in the surrounding area. It is important for an estimate of economic impact to capture all jobs created by the tax credit, including the jobs from direct employment, indirect jobs (associated with the supply chain), and induced employment. Employees of a data center constitute the direct workforce and are paid directly by the company. Indirect jobs are primarily at vendors who supply data centers with all the goods and services required for the firms' operations, including the cashiers at the janitorial supply store and plant workers at Georgia Power. Finally, induced employment includes all of the satellite businesses that spring up due to the increased spending in the region.

Total output impacts are the most inclusive, largest measures of economic impact. Because of their high dollar value, total output impacts are often the most quoted figures in economic impact studies and receive the most media attention. One problem with total output as a measure of economic impact, however, is that it includes the value of inputs produced by other industries, which means that there is inevitably some double-counting of economic activity. The other measures of economic impact—employment, labor income, and value-added—are free from double-counting and provide a much more realistic measure of the true economic impact.

IMPLAN's value-added figure equates to an increase in state GDP, which consists of employee compensation, proprietor income, property income, and indirect business taxes. Value-added is equivalent to gross output (sales or receipts and other operating income, commodity taxes, and inventory change) minus intermediate inputs (consumption of goods and services purchased from other industries or imported). Because value-added impacts exclude expenditures from foreign and domestic trade, they are a more accurate measure of the actual economic benefits flowing to businesses and households in a region—in the case of this evaluation, Georgia—than the more inclusive output impacts.

GROSS ACTIVITY

To produce the most accurate estimates of economic impact, the Institute of Government researchers divided data center activity into two primary economic inputs: construction of the building shell and annual operating impacts of the data center. The initial server purchases required to fill a newly constructed data center were not included in the impact calculation. Servers are almost exclusively imported from overseas, creating little to no value-added impact in Georgia.

Purchases outside of the region are commonly referred to by economists as "leakage," meaning that dollars spent on these purchases leak from the local economy of the study region (i.e., Georgia) to other regions. Consequently, the associated indirect impact—that is, the impact of materials and labor used to produce the equipment—does not add dollars to the state economy. Data center servers are typically replaced, or "refreshed," every three to five years. This creates an additional category of ongoing spending with its own economic impact, which is analyzed separately in a companion study of the Computer Equipment Sales Tax Exemption (68).

Using literature from Georgia and other states, figures from past data center announcements, and interviews with industry representatives, the Institute of Government researchers estimated that a typical, hypothetical data center in Georgia would cost $800 million to construct. Construction of the facility would employ 4,217 workers across a two-year buildout, or 2,109 direct jobs per year (Table 3). In other words, for every $1 million in construction output, 5.3 jobs in the construction industry are created. Dividing direct labor income by the number of direct employees yields the average annual wage. A typical construction job in Georgia pays over $65,000 in annual wages. A significant number of indirect and induced jobs are also created by construction, as contractors purchase supplies and workers spend their wages on goods and services. Including indirect and induced jobs, for every $1 million in construction output, 9.1 total jobs are created in the State of Georgia.

Table 3. Economic Impact of $800 Million in Construction Spanning Two Years

Impact	Employment	Labor Income	Value-Added	Output
Direct	4,217	$277,879,779	$493,685,167	$800,060,854
Indirect	1,223	$94,645,303	$158,459,781	$282,271,150
Induced	1,870	$104,304,082	$193,718,677	$329,677,464
Total	7,310	$476,829,164	$845,863,625	$1,412,009,468

Source: Institute of Government estimates; IMPLAN 2022 data

Assuming that a hypothetical data center operates with approximately 50 direct employees, the value-added impact of annual operations to the state is $35.3 million (Table 4). The cost of annual operations includes employee salaries, utilities, and maintenance. IMPLAN estimates the direct labor income of 50 data center employees at $7.32 million, which includes both employee compensation and proprietor income. The relatively high cost of inputs to data centers and the high salaries of their employees translates to a large proportion of indirect and induced jobs. For each direct job in a data center, 4.3 indirect and induced jobs are created across the state.

Table 4. Economic Impact of Annual Operations at a Hypothetical Data Center

Impact	Employment	Labor Income	Value-Added	Output
Direct	50	$7,315,764	$13,545,284	$33,182,308
Indirect	136	$8,719,697	$13,428,456	$23,657,854
Induced	81	$4,500,614	$8,361,163	$14,228,315
Total	267	$20,536,074	$35,334,903	$71,068,477

Source: Institute of Government estimates; IMPLAN 2022 data

Value-added impact figures for hypothetical data center activity in Georgia are displayed in Table 5. The Institute research team projected data center activity to increase each year starting with 2018, when the state's data center incentive was enacted. Announcement and construction of new data centers are projected to increase steadily from 2018 through 2030. The value-added impact from data center construction ranges from $84 million in 2018 to $846 million in 2030. Operations continue to grow because each new data center has continuing operations for the entire period shown. The value-added impact from data center operations ranges from $74 million in 2018 to $718 million in 2030.

Table 5. Value-Added Impacts from the Construction and Operation of Hypothetical Data Centers in Georgia, 2018–2030

	2018	2019	2020	2021	2022	2023
Construction Impact	$84,024,350	$151,949,884	$210,384,774	$276,736,665	$339,972,995	$403,209,323
Operations Impact	$74,234,790	$125,678,701	$183,151,052	$235,029,659	$288,735,635	$342,441,611

2024	2025	2026	2027	2028	2029	2030
$466,445,652	$529,681,981	$592,918,310	$656,154,638	$719,390,968	$782,627,297	$845,863,625
$396,147,587	$449,853,564	$503,559,540	$557,265,516	$610,971,493	$664,677,469	$718,383,445

Source: Institute of Government estimates; IMPLAN 2022 data

"BUT FOR" ANALYSIS

Though local, state, and federal governments use subsidies as a means of stimulating target industries, the behavior of private business is ultimately driven by maximizing profits and minimizing risks. Even hefty subsidies offered by local governments cannot outweigh certain aspects of the business climate. Governments have little control over several important site selection factors, including the talent pool and the risk of natural disasters. Likewise, the clustering of an industry in certain locations often occurs organically, influenced by intangible factors. Those studying the economic relationship between public policy and the behavior of private firms must ask an essential question: How much of this activity would have occurred without (I. E. "but for" the incentive or subsidy of interest?

To calculate the return on investment (ROI) of Georgia's data center incentive, the Institute researchers had to first estimate the amount of activity that would have occurred "but for" the incentive. As previously discussed, data centers consider a myriad of factors when choosing a site, with electricity, low risk of natural disasters, and utility infrastructure ranking high on the list of considerations. However, with more than 30 states now offering some form of subsidy for data centers (Mangum Economics 2022), the presence or absence of an incentive likely plays a larger role in site selection than some previous studies have suggested (Bruns 2014). Although

the presence of a tax incentive would likely not add a state to the site selection short list, the absence of a tax incentive could certainly eliminate a state from the list.

Institute researchers estimated that 90% of data center activity in Georgia was attributable to the presence of its tax incentive, with approximately 10% of data center activity likely occurring but for the incentive. This figure aligns with Virginia's 2019 tax incentive evaluation (Virginia JLARC 2019). Data centers, particularly hyperscale facilities, require large capital investments, and while their buildout occurs swiftly, their operation is planned over decades, not years. Thus, it is plausible that they would not locate in states with changing tax policies that might significantly impact profit margins over the long term.

Table 7 compares projections of forgone state tax revenue with the economic impact of construction and operations spending incentivized by that forgone revenue. The ROI is significantly positive, by more than 10-fold, due to the fact that a relatively small tax expenditure is associated with a massive amount of construction spending. This ROI remains consistently large across years because the modeling process assumes that new data centers are continually under construction. Note that the economic impact of a single data center, in isolation, would drop off significantly after the construction period, since the impact of post-construction operations is much lower.

Table 6. Return on Investment Calculation Based on 10% "But For" Scenario, 2018–2030

	2018	2019	2020	2021	2022	2023
Forgone State Tax Revenue	$8,243,715	$14,233,790	$20,223,864	$26,213,939	$32,204,013	$38,194,088
Construction Impact (0.9)	$75,621,915	$136,754,896	$189,346,297	$249,062,999	$305,975,696	$362,888,391
Operations Impact (0.9)	$20,536,610	$30,269,151	$39,893,477	$59,150,628	$70,599,137	$81,411,617
Construction + Operations Impacts (0.9)	$96,158,525	$167,024,047	$229,239,773	$308,213,627	$376,574,832	$444,300,008
ROI (Impact/Forgone State Tax Revenue)	10.66	10.73	10.34	10.76	10.69	10.63

2024	2025	2026	2027	2028	2029	2030
$44,184,162	$50,174,237	$56,164,311	$62,154,386	$68,144,460	$74,134,535	$80,124,609
$419,801,087	$476,713,783	$533,626,479	$590,539,174	$647,451,871	$704,364,567	$761,277,263
$92,860,126	$104,308,635	$115,121,115	$126,569,624	$137,382,104	$148,830,612	$159,643,094
$512,661,213	$581,022,418	$648,747,594	$717,108,798	$784,833,975	$853,195,180	$920,920,356
10.60	10.58	10.55	10.54	10.52	10.51	10.49

Source: Institute of Government estimates; IMPLAN 2022 data

ALTERNATE USE OF FORGONE REVENUE

When evaluating tax credits, it is important to consider not only what is being gained by stimulating the desired activity, but also what is being given up. The analysis presented in Table 7 explores the economic impact of the forgone revenue had the state collected and spent it on social programs and other services. In Georgia, 56.6% of state expenditures go to education: 42 cents of a given tax dollar collected goes to pre-k through 12th-grade education, and 15 cents of that dollar goes to postsecondary education (Georgia General Assembly 2021). Health care makes up the second-largest piece of Georgia's budget at 23 cents of every tax dollar. The remaining 20 cents of each tax dollar is spent on public safety, transportation, and other government services.

The Institute research team calculated the economic impact of the alternate- use scenario using 2030 as an example year (Table 7). Georgia State University's Fiscal Research Center (FRC) provided an IMPLAN template used to calculate the alternate-use scenario to ensure consistency across all institutions and tax studies conducted in 2022. By collecting and spending the $80 million in revenue, the State of Georgia would have created a value-added economic impact of $107 million through indirect and induced employment and spending. That $80 million in state revenue would create 1,602 direct jobs, meaning that 20 state government jobs are created for each $1 million in revenue. If indirect and induced jobs are included, each $1 million in revenue supports 27 jobs across the state, including jobs in private industry.

Table 7. Alternate-Use Impact of Forgone State Tax Revenue (4%)

Impact	Employment	Labor Income	Value-Added	Output
Direct	1,602	$61,165,232	$57,099,053	$80,124,608
Indirect	150	$7,709,364	$13,121,345	$25,371,462
Induced	401	$19,316,777	$36,721,059	$62,869,285
Total	2,153	$88,191,374	$106,941,456	$168,365,355

Source: Institute of Government estimates; IMPLAN 2022 data; FRC 2022

Forgone state tax ranges from a low of $8 million in 2018 to a high of $80 million in 2030 as data centers accumulate in Georgia (Table 8). Forgone revenue increases each year due to the projected construction of new data centers. ROI of the alternate-use scenario stays consistent at 0.33, meaning that for every $1 of tax revenue that the state collects and spends in a given year, $1.33 accrues to the state economy.

When adding forgone local tax, the fiscal impact nearly doubles, ranging from a low of $15 million in 2018 to a high of $147 million in 2030. By offering an abatement of both state and local sales tax to data centers, the State's economy benefits from the additional impact created by

exempted local sales tax without giving up additional revenue. In other words, the state attracts data centers with a 7.35% tax exemption while only sacrificing the 4% state sales and use tax. Local governments receive economic benefits from data centers in the form of increased property taxes, taxes on locally sourced construction materials, and increased utility sales.

Table 8. Forgone State Tax, State and Local Tax, and Alternate Use of Forgone State Revenue, 2018–2030

	2018	2019	2020	2021	2022	2023
Forgone State Tax Revenue	$8,243,715	$14,233,790	$20,223,864	$26,213,939	$32,204,013	$38,194,088
Forgone State + Local Tax	$15,148,319	$26,155,438	$37,162,558	$48,169,678	$59,176,797	$70,183,917
Alternate Use (State 4%)	$11,002,798	$18,992,687	$26,992,574	$34,987,463	$42,982,351	$50,977,239
ROI (Alternate Use)	0.33	0.33	0.33	0.33	0.33	0.33

2024	2025	2026	2027	2028	2029	2030
$44,184,162	$50,174,237	$56,164,311	$62,154,386	$68,144,460	$74,134,535	$80,124,609
$81,191,037	$92,198,156	$103,205,276	$114,212,396	$125,219,515	$136,226,635	$147,233,754
$58,972,127	$66,967,016	$74,961,903	$82,956,792	$90,951,680	$98,946,568	$106,941,456
0.33	0.33	0.33	0.33	0.33	0.33	0.33

Source: Institute of Government estimates; IMPLAN 2022 data; FRC 2022

NET ECONOMIC ACTIVITY

Table 9 summarizes the results of the previous sections by directly comparing economic impacts and ROI of the data center sales tax exemption with the economic impacts and ROI of the alternate use scenario. Note that the significantly higher impact and ROI of the sales tax exemption is driven by the construction of new data centers and not by the ongoing operations of completed data centers.

Table 9. Projected Economic Impact of Georgia's High-Tech Data Center Equipment Tax Exemption, Alternate Use Economic Impact, and ROI by Year, 2018–2030

	2018	2019	2020	2021	2022	2023
Construction Impact (0.9)	$75,621,915	$136,754,896	$189,346,297	$249,062,999	$305,975,696	$362,888,391
Operations Impact (0.9)	$20,536,610	$30,269,151	$39,893,477	$59,150,628	$70,599,137	$81,411,617
Forgone State Sales Tax Revenue	$8,243,715	$14,233,790	$20,223,864	$26,213,939	$32,204,013	$38,194,088
Total Impact (0.9)	$96,158,525	$167,024,047	$229,239,773	$308,213,627	$376,574,832	$444,300,008
Incentive ROI	10.66	10.73	10.34	10.76	10.69	10.63
Alt.-Use Value- Added	$11,002,798	$18,992,687	$26,992,574	$34,987,463	$42,982,351	$50,977,239
Alt.-Use ROI	0.33	0.33	0.33	0.33	0.33	0.33

Table 9. Cont.

	2024	2025	2026	2027	2028	2029	2030
Construction Impact (0.9)	$419,801,087	$476,713,783	$533,626,479	$590,539,174	$647,451,871	$704,364,567	$761,277,263
Operations Impact (0.9)	$92,860,126	$104,308,635	$115,121,115	$126,569,624	$137,382,104	$148,830,612	$159,643,094
Forgone State Sales Tax Revenue	$44,184,162	$50,174,237	$56,164,311	$62,154,386	$68,144,460	$74,134,535	$80,124,609
Total Impact (0.9)	$512,661,213	$581,022,418	$648,747,594	$717,108,798	$784,833,975	$853,195,180	$920,920,356
Incentive ROI	10.60	10.58	10.55	10.54	10.52	10.51	10.49
Alt.-Use Value- Added	$58,972,127	$66,967,016	$74,961,903	$82,956,792	$90,951,680	$98,946,568	$106,941,456
Alt.-Use ROI	0.33	0.33	0.33	0.33	0.33	0.33	0.33

Source: IMPLAN (2018–2021)

7. Fiscal Impact

This section presents estimates of the fiscal impact of Georgia's High-Tech Data Center Equipment Exemption on the state budget. This analysis provides a measure of the total change in state revenues attributable to the exemption. The largest component of the total fiscal impact is forgone tax revenue resulting from the direct cost of the exemption. This amount, projected to 2030, is shown in the first row of Table 10. Projections are based on Institute estimates of construction and operation costs of data centers, which increase from 2018 through 2030.

Because firms are assumed to spend additional dollars on construction and operations of data centers as a result of the tax exemption, the state will collect additional tax revenues on the direct, indirect, and induced spending associated with these purchases. IMPLAN's estimates of these additional state tax revenues are shown in the second and third rows of Table 10.

Other aspects of the fiscal impact calculation include additional state revenue, administrative costs, and reduced state spending. Because there are no application fees or other costs associated with utilizing the incentive, additional revenues to the state (typically fee revenue) are assumed to be zero. Based on conversations with Georgia Department of Revenue officials, no new positions have been created to administer or audit this tax exemption program, and personnel resources currently allocated to administering the incentive are minimal; therefore, this cost is also assumed to be zero and thus not included in Table 10. There are also no known reductions in state spending that result from the credit; hence, this is also assumed to be zero and is similarly not included in Table 10.

Forgone state tax ranges from a low of $8 million in 2018 to a high of $80 million in 2030 as data centers accumulate in Georgia (Table 10). Forgone revenue increases each year due to the construction of additional data centers, as projected by institute researchers. Increased state tax collections presented in Table 10 are subject to the "but for" adjustment (multiplied by 0.9), representing the assumption that only 10% of data center activity would have occurred "but for" the tax incentive. Increased state tax revenue from construction of data centers ranges from a low of $2.3 million in 2018 to a high of $19.4 million in 2030. Increased state tax revenue from data center operations ranges from a low of $530.2 thousand in 2018 to a high of $4 million in 2030. The total of increased state tax collections resulting from construction and operation of data centers is not high enough to offset the forgone state tax revenue from the incentive, thus the fiscal impact is negative. The total fiscal impact of Georgia's High-Tech Data Center Equipment Exemption ranges from -$5.4 million in 2018 to -$56.7 million in 2030.

Table 10. Forgone State Tax, Increased State Tax Collected Due to Incentive, Total Fiscal Impact 2018–2030

	2018	2019	2020	2021	2022	2023
Forgone State Tax Revenue	-$8,243,715	-$14,233,790	-$20,223,864	-$26,213,939	-$32,204,013	-$38,194,088
Increased State Tax Collections from Construction	$2,317,374	$4,277,245	$4,015,997	$6,340,494	$7,789,343	$9,238,191
Increased State Tax Collections from Operations	$530,228	$887,099	$960,715	$1,495,665	$1,785,148	$2,058,549
Total Fiscal Impact	**-$5,396,113**	**-$9,069,446**	**-$15,247,152**	**-$18,377,780**	**-$22,629,522**	**-$26,897,348**

2024	2025	2026	2027	2028	2029	2030
-$44,184,162	-$50,174,237	-$56,164,311	-$62,154,386	-$68,144,460	-$74,134,535	-$80,124,609
$10,687,039	$12,135,888	$13,584,737	$15,033,586	$16,482,434	$17,931,282	$19,380,131
$2,348,033	$2,637,517	$2,910,918	$3,200,401	$3,473,803	$3,763,286	$4,036,687
-$31,149,089	**-$35,400,832**	**-$39,668,657**	**-$43,920,400**	**-$48,188,223**	**-$52,439,967**	**-$56,707,791**

Source: Institute of Government estimates; IMPLAN 2022 data

8. Public Benefit

In most cases, tax incentives have intangible public benefits that cannot be captured by traditional economic impact estimates. These intangible benefits may be stated or implied as the intent—or part of the intent—of a credit, or they may simply accrue as an externality, or side effect, of the credit. While the preceding estimates are based solely on projected tax expenditures and their resulting economic impacts, note that a number of intangible benefits of Georgia's high-tech data center tax exemption, though immeasurable, likely exist.

Although data centers certainly bring jobs and capital investment to the regions where they choose to locate, they are also heavy utility users, which can have mixed effects on residents. One negative effect of a hyperscale data center could be strain on the electric grid and local water and sewer infrastructure. Data centers measure their electricity usage on the order of megawatts. The large-scale electricity needs of data centers could put strain the power grid during peak times such as heat waves and cold snaps. Data centers often require constant water flow for cooling purposes, in some cases straining already aging pipes and water purification plants.

Heavy electricity usage by data centers could also have some positive effects on residents. Expansion or improvement of the electric grid would likely create new jobs at Georgia Power or local Electric Membership Cooperatives (EMCs). Data centers also prefer sites with renewable energy, encouraging investment in solar, wind, hydroelectric, and nuclear which benefits residents in the region via increased sustainability and possibly lower electricity rates. Another positive effect of a new data center might be the improvement of broadband infrastructure within a county. Many counties in Georgia suffer from slow internet speeds or lack broadband access altogether; a new data center could bring the investment needed to expand broadband to previously unserved areas. Although large economic development projects such as data centers are heavy utility users, they often provide the level of investment needed to update or expand aging infrastructure, especially in more rural areas.

The projected economic impact calculations presented in this report are based on a relatively short-term projection of data centers and their economic impacts, along with accompanying forgone sales tax revenues. In the long run, however, companies factor tax incentives, along with other information, into their decision to locate in Georgia or in another state. In other words, data centers may weigh other factors more heavily when initially selecting sites, but uncertainty surrounding tax policy may dissuade them from investing long-term in a certain state, especially when they plan to build a campus with multiple hyperscale data centers. Sales tax exemptions represent a savings that could tilt the relative cost of doing business in favor of states with more generous incentives or longer sunset dates. While analyzing Georgia's overall competitiveness in attracting data centers versus other states is well beyond the scope of this

analysis, some measure of Georgia's attractiveness to high-tech companies deserves consideration prior to modifying the current data center tax exemption.

Tax exemptions are one of many factors that create a positive business climate. Even the most complex models cannot include or control for every factor relevant to business decision-making or economic growth (Buss 2001). Other factors include corporate tax rates, commercial real estate prices, utility rates, the risk of natural disasters, the talent pool, and proximity to transportation hubs such as airports and ports. While tax incentives may not be the primary factor in location selection, they are certainly one of a group of factors impacting that decision. Consequently, a lack of incentives, or a repeal of existing incentives, may signal a negative business climate and can create an atmosphere of uncertainty for firms planning to relocate or expand. Note also that a large concentration of industry-leading high-tech corporations may serve to improve the business-friendly reputation of a state, whereas an exodus of those same corporations may have the opposite effect.

Note additionally that state sales tax incentives, such as the one analyzed here, are incremental. That is, if a data center fails to locate in a given state due to lack of a tax incentive (or any other factor), the potential sales tax is never collected. If that same data center chooses to locate in a state because of the exemption, the sales tax is still not collected, but the state stands to collect secondary taxes induced by the presence of the business. The assumption that tax revenue is actually forgone ultimately rests on the estimated, but ultimately unknown, "but for" parameter.

In the most optimistic scenario, Georgia's high-tech data center equipment tax exemption supports both the growth of a burgeoning industry and workforce development efforts by creating quality jobs in both construction and data center operations. This exemption has been a factor in attracting new and well-known companies that enhance Georgia's reputation as a good location to do business. The high concentration of tech companies in Georgia, specifically the Atlanta metropolitan area, builds the state's reputation as a technology hub. Furthermore, the changes to minimum job and investment thresholds in 2022 may successfully redirect data centers to underserved and rural areas. However, without a publishable sample size of taxpayers utilizing the incentive, estimating the economic and fiscal impact of data centers in Georgia is difficult, and estimating the public benefit is nearly impossible.

More research is needed to better estimate the extent to which data centers locate in the state due to the tax exemption or some other factor: the "but for" question. In modeling hypothetical data, the Institute of Government researchers found that companies building data centers consider nearly all design aspects of their facilities to be proprietary. Data centers are averse to sharing any details on the number of servers they purchase, the cost of those servers, where servers are purchased, and the design of cooling systems and backup power. If this tax

exemption is to be more thoroughly evaluated in the future, increased transparency between data centers, the DOR, and the research teams tasked with evaluating tax policy is essential.

Literature Cited

Bruns, Adam. 2014, December. Power priorities. *Site Selection Magazine.* Retrieved from www.siteselection.com/theEnergyReport/2014/dec/data-centers.cfm

Buss, Terry F. 2001. The effect of state tax incentives on economic growth and firm location decisions: An overview of the literature. *Economic Development Quarterly* 15(1): 90–105.Georgia

General Assembly. 2021. Amended FY2021 Appropriations Bill. HB80, 155th General Assembly, 2nd Sess. Adopted 15 February 2021. https://opb.georgia.gov/document/document/afy-2021-hb-80-passed/download

Georgia State University Fiscal Research Center. 2022. Fiscal Note for House Bill 1291 (LC 43 2426S.

IMPLAN® model, 2015–2022 Data, using inputs provided by the user and IMPLAN Group LLC, IMPLAN System (data and software). www.IMPLAN.com

Mangum Economics. 2016. *The Economic and Fiscal Contribution that Data Centers Make to Virginia*. Report prepared for North Virginia Technology Council. Glen Allen, VA: Mangum Economics.

Mangum Economics. 2018. *The Economic and Fiscal Contribution* that *Data Centers Make to Virginia*. Report prepared for North Virginia Technology Council. Glen Allen, VA: Mangum Economics.

Mangum Economics. 2021. *The Impacts of Data Centers on the Georgia Economy.* Report prepared for Data Center Coalition, Georgia Chamber of Commerce, Metro Atlanta Chamber of Commerce, and Technology Association of Georgia. Glen Allen, VA: Mangum Economics.

Mangum Economics. 2022. *The Impact of Data Centers on the State and Local Economies of Virginia.* Report prepared for North Virginia Technology Council. Glen Allen, VA: Mangum Economics.

Miller, Rich. 2008, January 18. The economics of data center staffing [Weblog post]. *Data Center Knowledge.* Retrieved from www.datacenterknowledge.com/archives/2008/01/18/the-economics-of-data-center-staffing

Peters, Alan and Peter Fisher. 2004. The failures of economic development incentives. *Journal of the American Planning Association* 70: 27–37.

PFM Group Consulting. 2019. *State of Oklahoma Incentive Evaluation Commission: Computer Services, Data Processing and Research and Development Tax Exemption Evaluation*. Oklahoma City: State of Oklahoma Incentive Evaluation Commission.

Tarczynska, Kasia. 2016. *Money Lost to the Cloud: How Data Centers Benefit from State and Local Government Subsidies*. Washington: Good Jobs First.

US Bureau of Labor Statistics. 2020 annual data. "Quarterly census of employment and wages" [last modified December 6, 2022]. Accessed from www. bls.gov/cew

US Census Bureau. 2021. "Georgia: 2020 census" [last modified August 25, 2021]. Accessed from www.census.gov

US Energy Information Administration. 2022. "Table 5.6.A. Average price of electricity to ultimate customers by end-use sector, by state (cents per kilowatt hour)." Retrieved from www.eia.gov/electricity/ monthly/epm_table_grapher.cfm?t=epmt_5_6_a

Virginia Joint Legislative Audit and Review Commission (JLARC). 2019. Data center and manufacturing incentives. *Economic Development Incentives Evaluation Series*. Richmond, VA: JLARC.

Von Seggern, Catherine, Tim Stasiw, Tara Byron, and Gopika Parikh. 2014, July. "Data centers: A perspective on site selection, incentives and outsourcing." *Site Selection Magazine.*

West, Bob. 2020, March 11. What are the top data center markets in the world? Data center real estate. *DataCenters.com.*