Fort Gordon Regional Growth Management Plan

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What is the Fort Gordon Regional Growth Management Plan?

The Fort Gordon Regional Growth Management Plan (GMP) is a plan developed to address future growth in the communities around Fort Gordon. Since 2012, the Installation has added 8,449 new service members and an additional 894 are anticipated through 2024. In addition, family members, contractors, and other support jobs will translate into thousands of new residents to the area.

The purpose of the GMP is to address both the challenges and opportunities resulting from increased activity and personnel at Fort Gordon. The challenges consist of ensuring the region develops sufficient infrastructure and service capacities to accommodate growth while maintaining a high quality of life for military personnel and area residents. The opportunities relate to increased economic activity and capitalizing on economic development opportunities to sustain the region's vibrant economy. Three major goals are part of the planning process:

→ Provide a comprehensive assessment of potential infrastructure, service impacts and needs associated with growth at Fort Gordon to enable area communities to prepare and plan for growth.

→ Develop a collaborative public involvement process which enables and facilitates the coordination of the region's various stakeholders and focuses on sustaining quality of life benefits and opportunities for both military and civilian communities.

→ Sustain the region's focus as a military supportive community and integrate economic development opportunities as part of this focus.

What area does the GMP cover?

The GMP covers a seven-county area in Georgia and South Carolina. The counties surround the Installation and make up the Study Area for the Plan. The seven counties are:

In Georgia:

→ Augusta- Richmond County
→ Burke County
→ Columbia County
→ Lincoln County
→ McDuffie County

In South Carolina:

→ Aiken County
→ Edgefield County

These counties correspond to the Augusta-Aiken Metropolitan Statistical Area, which is also referred to as 'The Cyber District'. This area is rapidly becoming a
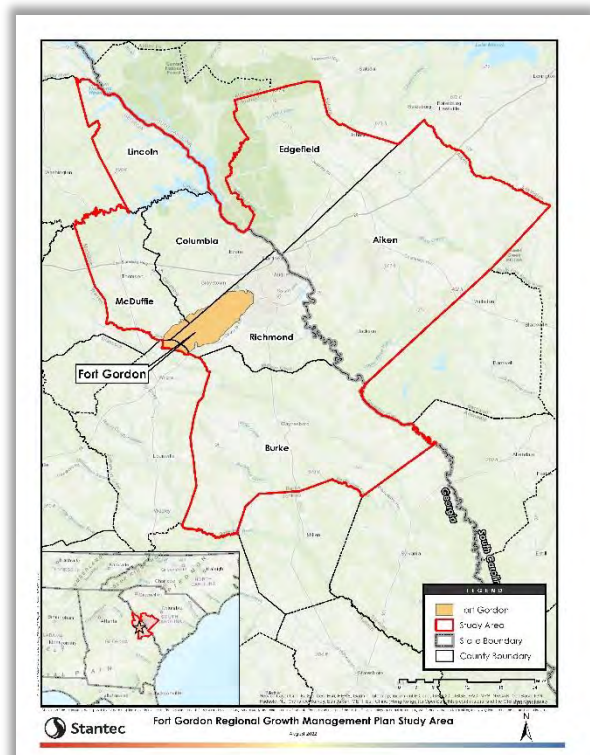

Figure ES-1: GMP Study Area.

focal point for new technology industries, with Installation-related economic development opportunities.

What was the process?

An Advisory Group, consisting of staff and board members of the Central Savannah River Area Regional Commission (CSRA RC) and the Alliance for Fort Gordon, was formed to help guide the GMP. The Advisory Group participated directly with the project team to provide feedback and decision-making throughout the GMP process.
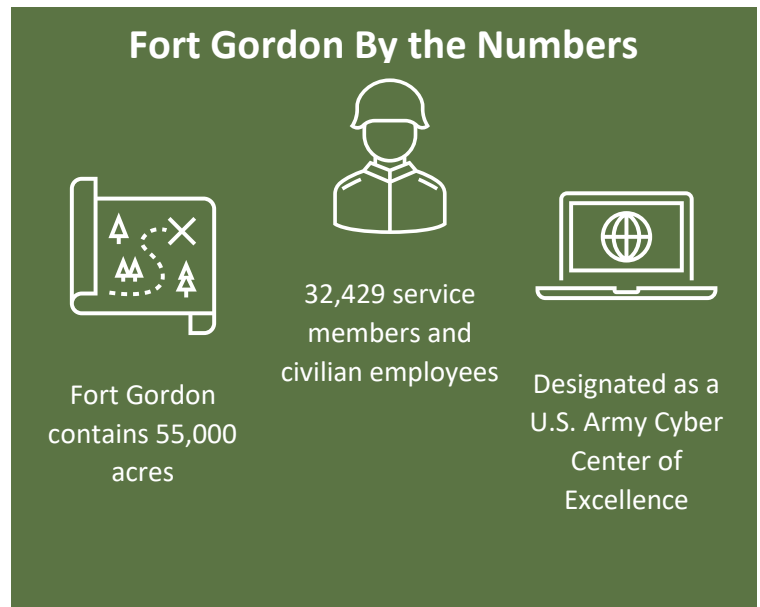
A series of virtual public meetings were hosted to obtain feedback and inform the public. Four rounds of virtual public meetings were held online by Zoom. A project website accompanied traditional methods of public notice and outreach. Draft versions of chapters, recorded public meetings, newsletters, information sheets, and press releases were also included on the website and distributed to stakeholders and media. The website included a sign-up for the project mailing list and provided a way to gather public comments.

What is included in the GMP?

To accomplish these plan goals, the following topics and themes, central to growth management planning, were addressed as part of the GMP process:

- → Demographics and Population Projections
- → Transportation
- → Public Services
- → Public Infrastructure
- → Employment, Workforce Development and Economic Development
- → Education
- → Housing
- → Health Care Services
- → Child Care Services

There is a chapter in the report dedicated to each of these topics. The Demographics and Population Projections (Chapter 2) provides population projections for the Study Area. These population projections form the basis for the analysis in each of the other chapters. The analyses examine how projected population growth will affect each of the topic areas. In order to ensure that the area plans for growth and preserves its quality of life, a series of recommendations are included at the end of each chapter. The final chapter in the GMP collects all of the recommendations in one place, and provides additional details regarding costs, funding sources, and measures of success.

Fort Gordon By the Numbers

Fort Gordon contains 55,000 acres

32,429 service members and civilian employees

Designated as a U.S. Army Cyber Center of Excellence

Population Projections

Past population growth and future population projections were examined to provide an assessment of the Installation's impact on the area's population as well as provide an estimate of how future changes in Installation personnel could impact the population within the Study Area. Analysis of past population growth shows that since 2012, when the buildup at the Army's Cyber Center began, 8,449 personnel have been added to the Installation. This personnel increase has resulted in a population increase of approximately 60,191 people when accounting for service member dependents, contractors, and indirect population growth.

To estimate the population growth that is anticipated as a result of an additional 894 service members through 2024, past growth trends were carried into the future. Major findings of these analyses include:

→ An additional 3,138 military personnel and their dependents are anticipated by 2024.
→ This additional population will lead to a secondary population increase of 3,186 people in the civilian population because the increase in military personnel creates jobs within the community.
→ Columbia County is anticipated to absorb most of this growth, with the county's population increasing by 22.43% through 2030.
→ Augusta-Richmond County and Aiken County are also expected to grow during this time period, by 5.12% and 4.74%, respectively.

These population projections were used in other sections of the GMP to estimate the effect of the buildup of Installation growth on transportation, public services, infrastructure, education, jobs, health care, childcare, and housing.

Figure ES-2: Population Growth by Census Tract for the Study Area, 2010-2029.
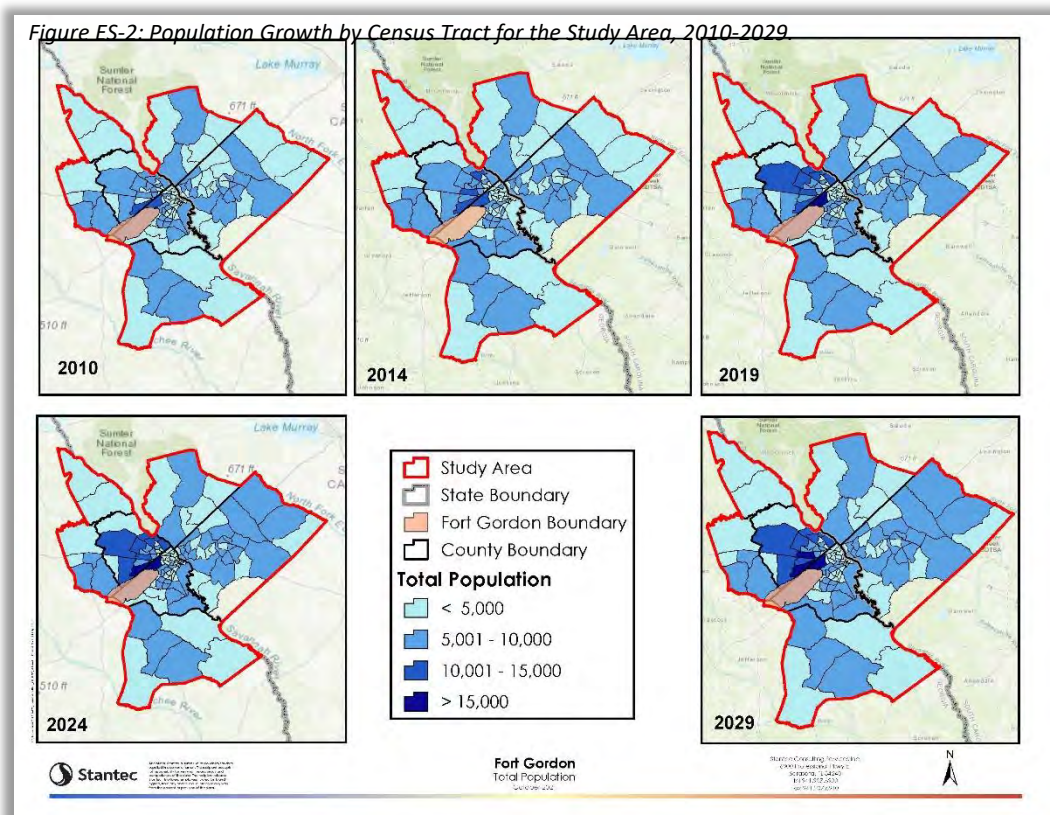
Executive Summary

Transportation

The transportation network around Fort Gordon provides access to the Installation for both military personnel and civilians. Traffic counts were collected at five intersections to determine the existing load on the network. In addition, several plans and studies from the Augusta Regional Transportation Study, including Long Range Transportation Plans and the Transportation Improvement Plan, were examined to review the expected traffic loads on roadways around the installation and what improvements are expected to be made. The Study used a two percent average annual growth rate to represent the anticipated growth around the Installation. Growth in demand for air service was also examined. Results of these analyses estimate that several intersections around the Installation will experience lengthy delays by 2040, and that air passengers will continue to be lost to neighboring airports. Transportation improvements proposed to mitigate these conditions include:

→ **Gordon Highway and Jimmie Dyess Parkway/7th Avenue (Gate 1):** Construct a third eastbound through lane, extend the existing northbound left-turn lane on 7th Avenue from 600 to 900 feet, and convert the southbound right-turn lane to a free-flowing movement

→ **Gordon Highway and Future Gate 6:** Construct a third westbound exclusive left-turn lane, extend existing turn lanes to ensure that a minimum 1,300 feet of full-width storage and an appropriate taper is provided on Gordon Highway, and construct a receiving lane for ingress traffic at Gate 6.

→ **Avenue of the States/Tobacco Road (Gate 5):** Install traffic signals at both ramp terminals of the interchange to control traffic.

→ **Gordon Highway and Jimmie Dyess Parkway/7th Avenue (Gate 1):** Consider alternative intersection configurations and consider a grade-separated interchange.

→ **Gordon Highway and Future Gate 6:** Consider alternative intersection configurations such as a continuous flow intersection and consider redirecting minor movements such as the northbound left-turns

Figure ES-3: Access Points and Intersections Included in the Transportation Study. Source: Google Earth.

Public Services

Increased population growth will lead to additional demand for fire, emergency medical services (EMS), and police services.

Fire and ambulance services are often found in the same location, and these services were analyzed together using national standards for response times and a geographic information system analysis to determine the drive time for each of the fire stations within the Study Area. This analysis showed the parts of the Study Area that are not reachable by fire truck or ambulance within the defined response time. These areas were then compared to the projected high growth areas to determine where additional fire stations and EMS services may be needed in the future. Planned stations will fill some gaps shown in Figure ES-4, but additional fire stations in areas of high growth are needed to maintain response times.

For police services, a per-capita approach was used. A per-1,000 population ratio of police personnel was calculated. This ratio was applied to the future population projections to determine how many future officers would be needed to maintain the current level of police force. Since only some parts of the Study Area are expected to have a large increase in population, only these areas were projected forward.

Figure ES-4: Fire and EMS Service Drive Time Analysis.
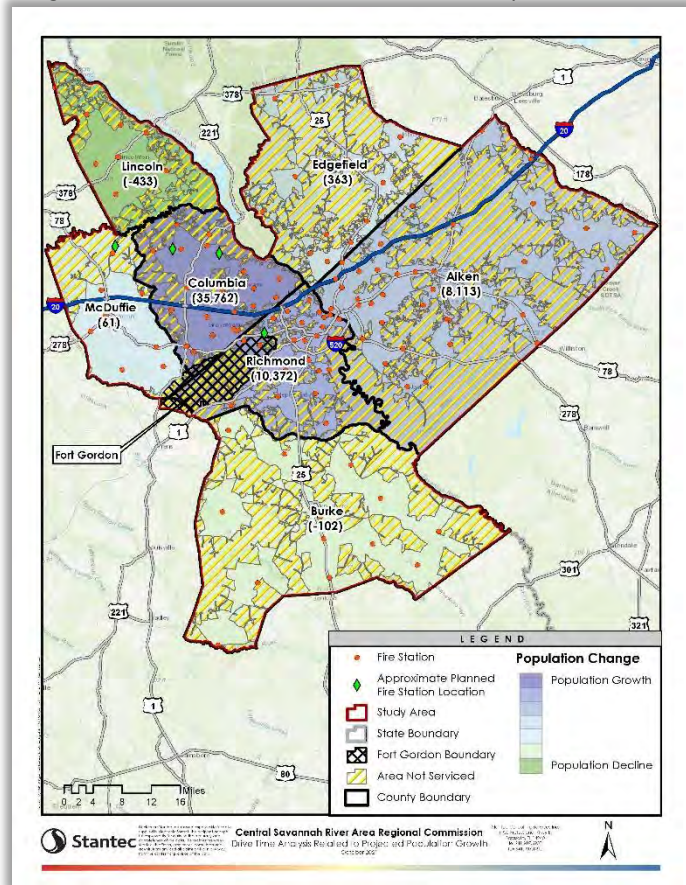
Table ES-1: Estimated Additional Police Officers Needed, 2030

Community	Sworn Officers		Civilians	Employees	Personnel per 1,000 people	Projected Population Increase (2030)	Additional Officers Needed (2030)
	Full Time	Part Time					
Augusta-Richmond County	2.27		1.33		3.60	10,186	37
Columbia County	2.77				2.77	33,908	94
City of Grovetown	1.52		1.19		2.71	3,718	10
City of Harlem	2.37	1.48			3.85	827	3
Aiken County				1.71	1.71	5,390	9
City of North Augusta				2.73	2.73	1,195	3

Employment, Workforce Development, and Economic Development

An increase in military personnel has an economic impact on an area. An industry cluster analysis was used to determine which employment sectors have the highest potential for growth in the Study Area. The CSRA Regional Plan and the CSRA Comprehensive Economic Development Strategy (CEDS) were used to develop a base analysis. The Regional Plan provides strategies for promoting a strong and diversified regional economy, while the CEDS identified focus areas for future development efforts, along with business retention and expansion strategies.

The following analyses were conducted: 1) To determine the impact the Installation has had in the past, industries were examined by job growth and decline; industries with the highest job growth were identified; the top ten industries by total jobs were identified; and the top ten jobs by highest percentage growth were identified. In addition, summary statistics of the top five location quotient industries (plus military) and Cyber jobs were formulated as well as the summary statistics for the top five Industry Mix Effect and Competitive Effect. The percent of total jobs by educational attainment and work experience was calculated, and summary statistics were formulated. This information was used to highlight important growing industries.

To identify target industries, industries were grouped together based on related products and/or supply chains. This strategy helps identify industries that could be strong targets for industry attraction. Within the Study Area, the following industry groups were identified: research organizations, small vehicles, construction, hospitality establishments, computer services, specialty contractors, communications equipment components. These groups were identified based on unique aspects to the Study Area.

The 894 expected military jobs were used to calculate the addition of initial, direct, indirect, induced, and total jobs. Additionally, this information was used to examine the impact of military job increases on earnings, taxes on production and imports, and addition of other jobs by industry. In order to manage population growth, communities within the Study Area will need to coordinate efforts to ensure that employment growth meets the needs of its growing population.

Economic Development strategies were identified to build upon regional opportunities for economic growth. The Study Area has several existing workforce development strategies, including the CSRA Alliance for Fort Gordon, the Army Transition Assistance Program, and the Army Career Skills Program. While the Study Area has built a strong foundation for growing and sustaining regional talent, further measures can be adopted to build upon these efforts. Additional economic and workforce development strategies are included below:

Economic Development Strategies	Workforce Development Strategies
→ Create a regional association for defense contractors → Identify expansion opportunities for existing businesses → Develop or align a business attraction strategy focusing on target industries → Leverage existing initiatives and investments in Cyber at Fort Gordon	→ Employer-driven sector partnerships → A comprehensive work-based learning strategy with funding mechanisms

Education

Anticipated general population growth, combined with expansion of the Cyber Command stationing activities underway at Fort Gordon, will increase the need for education services in the Augusta area, particularly in Augusta-Richmond, Columbia, and Aiken Counties. Several area elementary, middle, and high schools are anticipated to have capacity gaps by 2025. Columbia County has two new elementary schools planned to be constructed by 2025. Aiken County is planning for a new elementary/middle school. The annual right-sizing assessments of the Richmond County School System has identified the need to build two new schools in the near term. Recommendations to meet the educational needs of future populations include:

→ Assess school capacity and the need for new schools
→ Increase education standard test scores
→ Expand Cyber curriculum in schools
→ Modernize technology
→ Assess the need for additional teachers and develop recruiting tools
→ Support military families and use of established military family support programs
→ Assess additional funding opportunities

Table ES-2: Study Area School Capacity Estimates, 2025

County	Estimated School Capacity	Military Personnel Increase-related Students	Remaining Capacity or Deficit
Elementary School			
Augusta-Richmond	282	300	-18
Burke	102	-13	115
Columbia	-60	981	-1,041
Lincoln	19	24	-5
McDuffie	-26	-13	-13
Aiken	-1,023	241	-1,264
Edgefield	-1,189	17	-1,207
Middle School			
Augusta-Richmond	128	126	2
Burke	7	-5	12
Columbia	-36	412	-448
Lincoln	(See High School)	10	(See High School)
McDuffie	18	-5	23
Aiken	1,383	101	1,282
Edgefield	-366	7	-373
High School			
Augusta-Richmond	251	174	77
Burke	11	-8	19
Columbia	-44	569	-613
Lincoln	16	14	-10
McDuffie	19	-7	26
Aiken	-254	140	-394
Edgefield	-134	10	-144

Executive Summary

Health Care

The demographics of expansion at Fort Gordon are strongly skewed toward younger adults and children, who spend less than half of the per capita average on health care compared to the general population. Therefore, health care demand will increase less than the raw population growth would predict. Nonetheless, growth at Fort Gordon will increase health care demand overall.

An emphasis should be placed on areas that are currently underserved because these are potential future chokepoints in health care provision.

First, growth will be needed in certain professional occupations to meet increases in demand. There are currently 180 mental health professional providers operating in the Study Area. To meet growth demands and reach an average coverage level compared to national levels, 158 additional practitioners need to be introduced into the Study Area by 2030.

Analysis of physician specialties showed a sufficient supply of all specialty areas, but a future supply shortage of primary care physicians is predicted. From a current count of 439, the Study Area needs to add 76 new practitioners by 2030.

Additionally, a number of health care support occupations are currently "underindexed" compared to national averages. An index of 1.0 represents an average level of coverage compared to nationwide service levels. The underindexed health care support occupations are listed in Table ES-3.

Table ES-3: Study Area Underindexed Health Care Occupations

Health Occupations	Index (Local workers per capita compared to national workers per capita)
Pharmacy Staff	Pharmacists = 0.53
	Pharmacy technicians = 0.61
Medical Technicians	Radiologic Technicians = 0.47
	Clinical Lab Technicians = 0.66
	MRI Technicians = 0.81
	Sonographic Technicians = 0.81
First-line Care Occupations	Emergency Medical Technicians = 0.51
	Personal Care Aides = 0.75

Most public health concerns will be less prevalent than expected, given that the new population will be young, employed, and more highly educated than average. Additionally, concerns about health care coverage will be less than expected because 99 percent of military personnel have coverage, and indirect personnel will, by definition, have a high labor force participation and thus be more likely to have coverage.

However, based on the demographics of the incoming population (disproportionately young adults), substance abuse is a public health issue that is likely to be disproportionately occurring and will warrant attention.

Housing

Fort Gordon plays a significant role in tightening the demand for housing in the Study Area. Fort Gordon employs an estimated 31,000 service members, civilians and contractors. Since 2012, Fort Gordon has added approximately 11,000 military personnel. Family housing is offered on-post with approximately 1,000 family units available. Of those housing units on-post, 762 units range in age of 49-61 years and are commonly called 'legacy' homes. With limited and aging housing units and limited options on-post, service members and their families are forced to find adequate housing off-post. Approximately 4,330 housing units in the Study Area are occupied by personnel employed at the Installation, since 2012. Assuming a constant average household size of 2.54, it can be expected that by 2024, approximately 1,253 of the new housing units developed for the entire population will be required to accommodate new service members.

When looking at home values, nearly 70% of homes within the Study Area are worth less than $200,000. The percentage of homes below this threshold is higher than in Georgia, South Carolina, and the United States average. The median home value within the Study Area is $191,533; the median home value for the United States is $264,021. The significant difference in home value is due, in part, to the demand for housing; as the demand for homes in an area rises, housing costs rise as well.

Affordable housing in the region is projected to require 125 additional units to meet market demand through 2022. In addition, 314 market-rate units are estimated to be needed to meet market demand through the same timeline. Between 2021 and 2030, an estimated 26,372 housing units will be required to keep up with the Study Area's growth. Between 2010 and 2019, the Study Area saw an additional 16,283 new housing units developed. Based on this housing demand model, development will have to occur at a much faster rate over the next 10 years in order to keep up with demand. Support strategies might be necessary to promote the development of housing to meet the growing population's housing needs through the planning timeframe.

Figure ES-5: Aggregate Monthly Gross Rent Payment (2019)
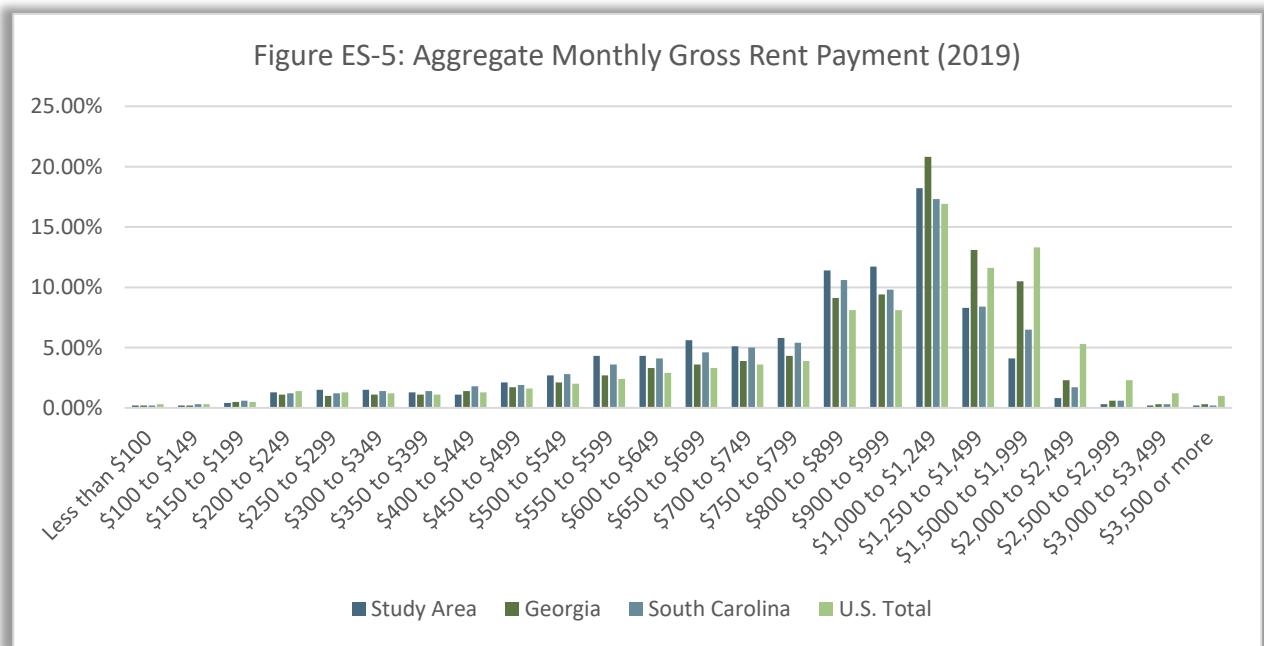
Child Care

The military population tends to be concentrated in age groups that are more likely than average to be parents of young children. Children under the age of six constitute 12.1 percent of the population of military households in the Study Area. This is in line with national figures for military populations, which are notably more likely to have young children than are non-military populations. Nationally, 21 percent of military households nationwide have at least one child in this age range, compared to 16 percent of non-military households. Therefore, a disproportionately large proportion of young children is a likely expectation of new military households arriving in the area and not just a local phenomenon.

The addition of 6,370 service members and their households will add an estimated 773 children under the age of six. Some populations such as military populations can include unique migration characteristics. Rather than moving into the area and aging in place, military populations often rotate in and out of locations. Therefore, households are often being replaced by other households that share the same demographic traits. In that case, there will be a consistent supply of new young children while military households rotate into and out of the area, and the demographic profile essentially remains constant. In this scenario, a peak in 2024 is maintained going forward with minor variation due to natural growth changes.

The childcare sector employs a total of 4,126 people in the Study Area. When considering that there were 45,098 children under the age of six during the year in which this data was collected, that would show that a ratio of 91 childcare workers per 1,000 children is sufficient to meet demand for child care. This ratio is on par with the two-state and national averages. Examining this ratio relative to the expected increase in child population implies that new childcare capacity equivalent to (773 children*91 workers per 1,000 children) 70 new child care workers is needed.

| 773 new children in the Study Area through 2030 | → | 70 new or preserved child care jobs | ⟨ | 80% of new jobs will be direct child care and teaching |
| | | | | 20% of new jobs will be in other areas of child care |

Interviews were conducted with local childcare practitioners and experts with the aim of understanding challenges and opportunities associated with growth at Fort Gordon. During these interviews, other challenges and opportunities were discussed that might impact the ability to meet increased demand for childcare services. Recommendations to address these challenges are shown below.

24-hour Capacity for Military Personnel	Financial Sustainability in Covid	Lack of Afforability	Employee Hiring and Retention	Quality of Child Care
• Only 2 percent of system capacity is available from 6 pm to 5 pm.	• Shutdowns and lost revenue put small firms at risk.	• The US Department of Health and Human Services deems child care affordable if it costs no more than 7% of a family's income. The figure is 18% for the average family in the study area.	• Average hourly wages are $7.62 per hour for childcare workers and $13.19 for preschool teachers. Low wages promote high turnover.	• More education is needed on what quality child care looks like, to ensure that families make proper choices.

Infrastructure

The Study Area is expecting growth over the next ten years related to the buildup of personnel at Fort Gordon and general growth unrelated to the Installation. The ability of public infrastructure systems to support existing and future demands and identify needed infrastructure improvements, including costs, timing, and phasing was evaluated. Water, wastewater, solid waste collection and treatment, electric distribution systems, and natural gas were evaluated.

Each system was evaluated to determine their existing capacity and to identify if the systems will be able to support future demands. The methodology used to conduct this evaluation consisted of a data collection phase and analysis phase. The data collection phase reviewed a combination of local government data, online research, and interviews. The majority of the data was collected through online research of each county utility department and was supplemented with interviews with department employees. Information collected from county officials included confirmation of existing capacities, average daily use, and any planned expansions to each infrastructure system.

The analysis phase used the estimated population information to determine the impacts to each infrastructure system for the duration of the study period. Using the data collected, each infrastructure system was evaluated for capacity, current demand, and future demand based on the population projections. Infrastructure demand calculations were prorated based on the percentage of population growth. Where deficiencies were identified, proposed improvements for each utility were provided along with a timeline/phasing plan to ensure that the utility will be able to support the increased usage.

There is currently adequate capacity within the Study Area's infrastructure to serve future growth; however, this growth may occur in areas that are not currently served by the existing infrastructure. Infrastructure may need to be extended to other areas, particularly in the areas of potable water and sanitary sewer. Local governments within the Study Area that provide potable water and sanitary sewer should coordinate with the CSRA Regional Commission on funding for the expansion of infrastructure to serve future populations.

Figure ES-6: Existing Water Service Infrastructure, Augusta-Richmond County.
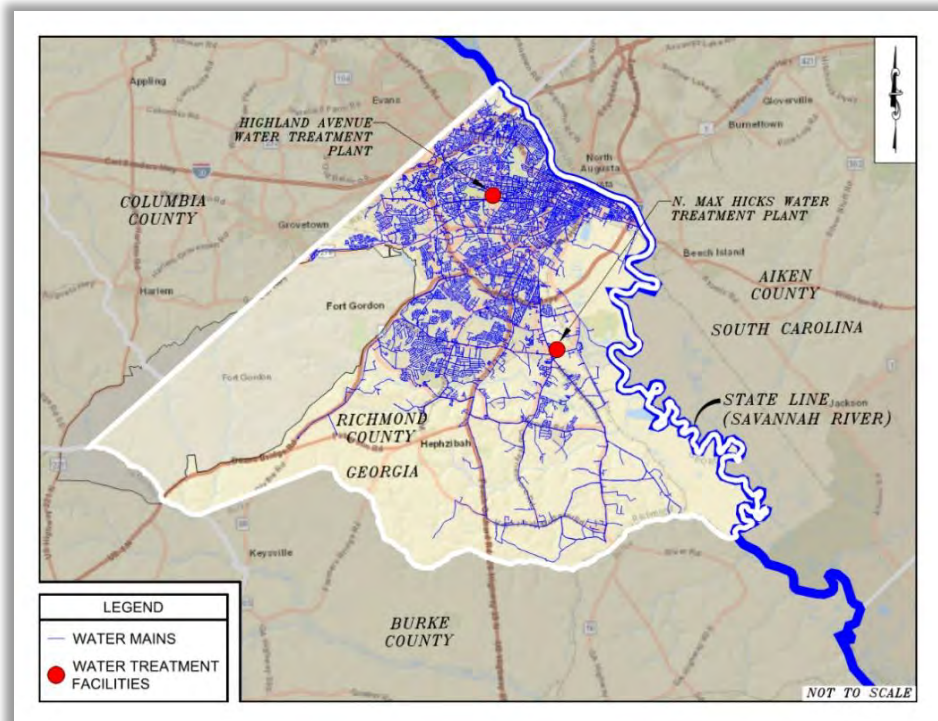
What are the Recommendations?

Each of the recommendations incorporate one or more actions that can be implemented to preserve the quality of life within the Study Area. The recommended strategies function as tools to aid the community in their goals of preparing and planning for growth, sustaining quality of life benefits and opportunities for both military and civilian communities, and integrating economic development opportunities. Collectively, these strategies represent an assertive and coordinated approach that demonstrate the community's commitment to that goal.

Each of the recommendations incorporates one or more actions that can be implemented to mitigate impacts to transportation facilities, fire and emergency services, police services, the region's economy and employment, education, health care, childcare, housing, and infrastructure. The recommended strategies function as tools to aid the community in their goal of ensuring the continued sustainability of the military mission at the Installation and the efficient operation of the surrounding communities.

The recommendations from Chapters 3 through 10 of the GMP were provided in a spreadsheet to members of the Advisory Group for their input on ranking and prioritization. Each member of the Advisory Group was asked to consider the importance of the recommendation and its achievability, and rank each of these factors on a scale of 1-4, with one being the most important or achievable and four being the least important or achievable. The average score for importance, achievability, and overall score for each recommendation was then calculated. These overall scores were used to group the recommendations into three priority groups. Priority Group One represents the most achievable and important, Priority Group Two represents the moderately achievable and important, and Priority Group Three represents the least important and achievable.

Table ES-4: Example Recommendation from the Implementation Chapter.

4.1: Advertise volunteer fire department opportunities with new Cyber Command elements moving into the area and identify qualified potential volunteers currently on Fort Gordon living in surrounding communities.	
Responsible Party: Local Fire Departments	**Priority:** Group One
Discussion: In order to increase participation in local volunteer fire departments, notify new personnel coming into the area about the opportunity to volunteer. Local fire departments should coordinate with the Installation to identify ways to notify potential recruits.	
Timeline:	Ongoing
Estimated Costs:	Costs for this recommendation should be minimal, limited to printing materials for sending out or time for sending out emails.
Financing Mechanisms:	Local Volunteer fire Department's existing budgets
Indicator:	Number of new recruits.

What are the next steps?

The Advisory Group will transition to an Implementation Group and will begin the work of implementing the recommendations. The CSRA Regional Commission will serve as staff for the implementation of the recommendations, and the Implementation Group will work with local partners to follow up on the recommendations. A communication plan and overall community metrics, to evaluate the success of the GMP's recommendations, will be developed to aid with implementation efforts.

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Appendices

Chapter 1:
Introduction

1 Introduction

1.1 Study Area

Fort Gordon is a 56,000-acre, multi-service and multi-mission U.S Army installation located just outside Augusta, Georgia. It is home to the U.S. Army Cyber Center of Excellence, U.S. Army Cyber Corps, U.S. Army Signal Corps, and various Army, Navy, Air Force, Marine, and multinational forces. These forces engage in joint forces activities, training, and operations. In addition, the Installation includes several tenant units under the command of U.S. Forces Command, medical units under the U.S. Army Medical Command, reserve units under U.S. Army Reserve Command, and National Guard units under U.S. Army National Guard.

Fort Gordon has a long-standing presence in the Augusta area. As the cities and counties around Fort Gordon have grown, the relationship between the Installation and the community has

Figure 1.1: Fort Gordon Regional Growth Management Study Area. Source: Stantec 2021.

been reinforced. The Installation is critical to the regional economy, employing approximately 31,000 military personnel, civilians, and contractors. Since 2012, activities at the Installation have added approximately 60,191 people to the region, including 8,449 military personnel, 21,629 dependents, and 30,112 people in indirect growth. The Installation produces an estimated $2.4 billion in annual economic activity and tax revenue. Similarly, Fort Gordon service members and civilian employees enjoy the region's great quality of life, benefiting from access to amenities found in large metropolitan areas but without the congestion and high cost of living.

Based on Department of Defense (DoD) estimates, Fort Gordon is anticipating 894 additional military personnel by 2024, in addition to the 8,449 who have arrived since 2012. Further population growth will be generated from dependents, contractors, and other support staff, as well as indirect jobs, translating into thousands of new residents to the region. The region itself is rapidly growing. The Augusta-Aiken Metropolitan Statistical Area (MSA), known as The Cyber District, includes the Georgia counties of

Augusta-Richmond, Columbia, Burke, McDuffie, and Lincoln as well as the South Carolina counties of Aiken and Edgefield. The region of 611,000 residents borders the Savannah River and is anchored around the Installation. Augusta-Richmond and Columbia Counties account for approximately 56% of the MSA's population and an even higher share of employment. The area is rapidly becoming a focal point of new technology industries, and the continued growth of Fort Gordon Cyber personnel will help the region develop new economic development opportunities.

1.2 Project Goals

The purpose of the Fort Gordon Regional Growth Management Plan (GMP) is to address both the challenges and opportunities resulting from the increased activity and personnel at Fort Gordon. The challenges consist of ensuring the region develops sufficient infrastructure and service capacities to accommodate growth while maintaining a high quality of life for military personnel and area residents. The opportunities relate to increased economic activity and capitalizing on economic development opportunities (particularly Cyber-related industry development), to sustain the region's vibrant economy. The goals of the GMP are listed below:

Goal 1	Goal 2	Goal 3
Provide a comprehensive assessment of potential infrastructure, service impacts and needs associated with growth at Fort Gordon in order to enable area communities to prepare and plan for growth. This assessment will lead to the development and implementation of a regional action plan for growth management.	Develop a collaborative public involvement process which enables and facilitates the coordination of the region's various stakeholders and focuses on sustaining quality of life benefits and opportunities for both military and civilian communities.	Sustain the region's focus as a military supportive community and integrate economic development opportunities as part of this focus, particularly the Cyber economy.

1.3 Report Structure

In order to accomplish the above goals, the chapters in this GMP discuss the following subject areas central to growth management planning:

→ Demographics and Population Projections
→ Transportation
→ Public Service
→ Employment, Workforce Development and Economic Development
→ Education
→ Health Care Services
→ Housing
→ Child Care Services
→ Infrastructure and Utilities

Chapter 2, Demographics and Population Projections, of this GMP is the basis for many of the analyses that are included in the other chapters. Growth within the Study Area reflects both regional and national population trends.

In addition to the chapters exploring each of the subject areas listed above, there is an Implementation Strategy, Chapter 11, which lists all the recommendations from each of the chapters and includes details regarding cost, funding source, responsible party, and metrics to gauge the success of implementing a recommendation. The list of recommendations was presented to the Project Advisory Group to obtain their input on how recommendations should be prioritized. The results of the rankings of the Advisory Group were used to rank the recommendations into three priority groups. Additional information regarding the ranking of the recommendations is in Chapter 11.

Members of the Alliance for Fort Gordon served as part of the Advisory Group for the GMP.

To guide the GMP, an Advisory Group consisting of members of the CSRA Regional Commission and Alliance for Fort Gordon was formed. The Advisory Group was tasked with providing input on technical reports and guidance regarding the development of recommendations, action strategies, and implementation strategies.

1.4 Public Involvement

Public participation has been an integral part of the GMP planning process and has helped to ensure that the recommendations and decisions being made consider and benefit public needs. Public involvement brings diverse viewpoints and values into the decision-making process and builds mutual understanding and trust among stakeholders and the public.

As part of public outreach efforts for the GMP, a list of key stakeholders, including elected officials, stakeholders, interested members of the public, and the media was created. This list was used to keep stakeholders informed and to gather information for the report. A variety of communication tools were used to facilitate this and other outreach to the community. These tools included the following:

Virtual Public Meetings and Communications: Virtual public meetings were held throughout the planning process to inform the public about the purpose of the GMP, the GMP planning process, GMP recommendations, and to seek input during key phases of the study. The first public meeting was held on July 28, 2021, to provide an overview of the project, followed by meetings on October 19, 2021, and December 15, 2021, to present the first four, and next three chapters, respectively. A final virtual public meeting was held on June 27, 2022 to present the final draft of this GMP.

Website: A project website, fortgordongmp.com, was developed to provide the public with information regarding the project. Information about meetings, draft reports, press releases, copies of information

sheets, copies of the newsletters, and recordings of public meetings were all posted to the website for the public to access. The website also served as a location for the public to submit comments.

Digital Literature: In order to provide the public with information regarding the GMP, information sheets for each subject listed in section 1.3 was developed. These information sheets included brief summaries of the findings in each chapter as well as the address of the project website. In addition, four newsletters were developed to provide updates on GMP progress and additional information about each subject area within the GMP. Digital postcards with meeting details were also developed and distributed through email.

The information sheet for the Education chapter was released to the public at the same time the chapter was made available. Source: Stantec, 2021.

Press Releases: At the release of each group of chapters to the public and before each public meeting, a press release was prepared. The press release served as a notice of the GMP progress to the media.

1.5 Next Steps

The GMP culminates into a series of recommendations and strategies to be implemented by local jurisdictions, regional organizations, and other stakeholders. The recommendations are intended to be used to help prepare for growth and preserve the area's quality of life, for both its military and civilian populations. The next step in implementing the GMP will be to establish an Implementation Group to guide future efforts.

Chapter 2:

Demography and Population Projections

2 Demography and Population Projections

2.1 Overview

This chapter is the basis for many of the analyses that are included in subsequent chapters of this report. Growth within the Study Area reflects both regional and national population trends. Examining past growth and capturing the expected growth and effects of that growth as accurately as possible is important to the success and usability of this Plan. Care was taken during the development of the methodology used to generate the population projections to ensure that historical trends within the Study Area were considered when calculating future changes. Therefore, these population projections reflect both the general continuation of trends in population changes seen in the Study Area over the past ten years and the impact of growth at Fort Gordon.

2.2 Data Collected

The data collected for this analysis includes Comprehensive Plans for jurisdictions within the Study Area, population estimates and projections from the US Census Bureau, the State of Georgia Governor's Office of Planning and Budget, the South Carolina Revenue and Fiscal Affairs Office, previous studies of the area, including the 2019 Fort Gordon/Central Savannah River Area Compatible Use Study, and the Fort Gordon Army Stationing and Installation Plan. These documents and population figures were combined to provide a population projection that would reflect the probable changes that an increase in base personnel would bring to the Study Area.

2.2.1 Baseline Data

State of Georgia Governor's Office of Planning and Budget

Within the Official Code of Georgia Annotated, section 45-12-171 (OCGA§45-12-171) enrolls the Governor's Office of Planning and Budget (OPB) as the principal state agency for the coordination of demographic data. OPB takes data from the US Census Bureau's decennial census or American Community Survey (ACS) and applies a standard cohort component methodology to derive population projections. The cohort component relies upon recent fertility, migration, and age data to predict changes in population for each cohort. Annual population projections by county are available through 2040.

South Carolina Revenue and Fiscal Affairs Office

The South Carolina Revenue and Fiscal Affairs Office (RFA) was created in 2014 as part of the restructuring of the Budget and Control Board. The RFA provides a diverse set of fiscal and statistical analyses, reports, and other services. One of the analyses that the RFA provides is population projections. Within the RFA is the South Carolina Census Data Center, which partners with the US Census Bureau. The Census Data Center provides annual population projections by county through 2035.

US Census Bureau

In addition to the decennial census, the US Census Bureau collects information through the ACS. While the decennial census provides an actual count of people in the United States, the ACS is conducted monthly every year and is sent to a sample of addresses across the country. It covers topics that are not

covered in the decennial census, such as education, employment, internet access, and transportation. These responses to the ACS are extrapolated to provide estimates that reflect the community.

For this analysis, decennial census numbers were used for the years that they are available (2010, and some data for 2020), and ACS estimates were used for years where the decennial census was not available (2011-2020). While a decennial census was conducted in 2020, the complete results of that census were not available at the time this analysis was conducted; where data was available, they were used for this analysis.

Army Stationing and Installation Plan (ASIP)
The ASIP is the Army's installation population planning database and is used to determine installation support requirements. By tracking its personnel, the Army can identify when certain thresholds have been met and when additional resources may be required. Projections are updated quarterly and reflect the buildup and drawdown of personnel. Data from the ASIP used for this analysis includes historic personnel numbers (from Fiscal Year 2012 through Fiscal Year 2020) and projected numbers of personnel through 2024. As home to the Army's Cyber Command, this document records the historical and projected personnel changes within this program. The number of projected personnel does not include the families of military personnel that may also come to reside in the area.

2.2.2 Planning Data

Comprehensive Plans
In Georgia, Comprehensive Plans are required by the Department of Community Affairs (DCA). The DCA serves the state's public interest by establishing minimum standards for land use in order to protect and preserve its natural resources, environment, and vital areas. It does this by 1) developing, promoting, and establishing standards and procedures for coordinated and comprehensive planning, 2) assisting local governments to participate in an orderly process for coordinated and comprehensive planning, and 3) assisting local governments to prepare and implement comprehensive plans.

Each local government's Comprehensive Plan contains policies that govern the way that the community grows, including directing growth to preferred specific areas while planning for activity centers, greenspace and parks, economic growth, community amenities, and public infrastructure such as water, sewer, stormwater, and transportation. Comprehensive Plans for communities within the Study Area were reviewed for policies that directed growth to specific areas.

For Augusta-Richmond County, the Comprehensive Plan notes that Fort Gordon has a large effect on the rental market, with an estimated 15% of units rented in the metropolitan statistical area being rented by military households. Most of the apartment rentals are within 10 miles of the Installation and are directly affected by personnel changes. The Installation covers approximately 20% of Augusta-Richmond County's land area; the remaining area of the County has a high percentage of low-density residential land.

Belair, a neighborhood within Augusta-Richmond County located near the Installation, has a vision plan that recommends the promotion of moderate density, traditional neighborhood design developments, and the promotion of mixed-use development that blends residential and non-residential uses. The Augusta-Richmond Comprehensive Plan encourages the redevelopment of older neighborhoods and the creation of infill development to accommodate population increases. The Comprehensive Plan also encourages the rezoning of agricultural land to single family residential, where the lot size is less than two acres, near the South Augusta and Belair neighborhoods. By encouraging redevelopment, infill, and select up-zoning of agricultural land, Augusta-Richmond County can encourage its growth to locate in areas already served by urban services, lowering the cost of development.
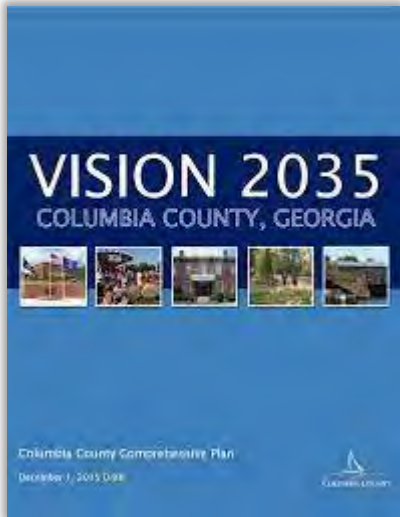
Within Columbia County, the Comprehensive Plan directs the county government to collaborate with other local governments and entities to address land use and development issues. The Comprehensive Plan also includes a strategy to guide growth through the creation of a county-wide Water and Wastewater Master Plan which will guide planning for future sewer infrastructure expansion projects and will direct growth away from areas designated as rural communities. The City of Grovetown, within Columbia County, is projected to have a 74% increase in its population by 2035, according to the Comprehensive Plan. The City of Grovetown is located directly outside one of Fort Gordon's gates and will be directly affected by personnel changes at the Installation. The county seeks to create new residential construction at suburban densities to accommodate the expected future growth.

Fort Gordon/Central Savannah River Area Compatible Use Study

In 2019, The Central Savannah River Area Regional Commission (CSRA RC), in conjunction with Fort Gordon, conducted a Compatible Use Study (CUS). Previously known as a Joint Land Use Study, these studies are collaborative planning efforts among active military installations and surrounding communities. The objective is to identify compatible land uses and growth management guidelines to reduce encroachment adjacent to the military installation while continuing to foster growth within the community. Through the planning process, communication and coordination is strengthened between the Installation and the community. The process encourages stakeholders to act together as a team to prevent or limit any encroachment issues caused by future mission expansion or local growth.

The result of the CUS is a set of recommendations designed to meet the objectives of reducing encroachment and fostering growth. The development of this GMP is one of the recommendations that came out of the CUS. In addition, the CUS provided some insight into the growth of the region.

The CUS discusses the population growth and projections for the counties within its study area. These include Augusta-Richmond, Burke, Columbia, Jefferson, and McDuffie Counties and their constituent cities.

2.3 Methodologies Used

The population projection methodology used for the demographic analysis within this report was the constant share approach. This methodology uses a historical proportion of the population (e.g., a county's share of a state's total population) and applies it to future estimates. The proportion of each county's growth and each census tract's proportion of growth for the Study Area were applied to future estimates for the analysis. There is no guarantee that past trends will continue; however, there is no available data that suggests that these trends will change through the planning horizon. Therefore, the constant share methodology was used.

2.3.1 Historical Population Increase

Since 1990, the population within the Study Area has increased during each decade, from 436,642 in 1990 to 499,684 in 2000 to 556,877 in 2010 and 611,000 in 2020. The rate of population growth has consistently exceeded the national average but slightly trailed Georgia and South Carolina's statewide growth rates. Refer to Table 2.1 below for population trends from 1990 to 2020.

Table 2.1: Population Trends, 1990-2020

Area	Study Area	Georgia	South Carolina	United States
1990 Population	436,642	6,478,216	3,486,703	248,709,873
2000 Population	499,684	8,186,453	4,012,012	281,421,906
1990-2000 Percent Growth	14.44%	26.37%	15.07%	13.15%
2010 Population	556,877	9,727,566	4,625,364	309,183,463
2000-2010 Percent Growth	11.45%	18.83%	15.29%	9.86%
2020 Population	611,000	10,711,908	5,118,425	331,183,463
2010-2020 Percent Growth	9.72%	10.12%	10.66%	7.20%

Source: US Census Bureau; Stantec, 2021

Personnel increases related to the Cyber Command have been ongoing since 2012. To understand the magnitude of population increases, population growth that may have been related to the increase in personnel was calculated. According to the ASIP data slide, most of the buildup in personnel occurred between 2012 and 2020. A methodology similar to the future population projections, described in detail below, was used; however, weighting according to the proportion of active-duty military was not undertaken.

Table 2.2 details estimates of historical population changes related to personnel increases and decreases at Fort Gordon. Since 2012, the number of Installation personnel increased from 23,980 to 32,429, an increase of 8,449, or 35.2%. Dependents, jobs directly related to Fort Gordon, and induced growth accounted for an estimated additional 60,191 in population. Since overall population growth in the Study Area between 2010 and 2020 was estimated to be 54,123, Fort Gordon has been responsible for most of the net population growth in the last decade. While the estimated population increase is more than the American Community Survey's estimated increase in population, both are estimates of population trends

and are best estimates of population. In addition, it is possible that some of the additional population is located outside the Study Area.

Table 2.2: Fort Gordon-related Estimated Historic Population Changes, 2012-2020

Year	Fort Gordon Employment	Increase	Dependents	Community Jobs	Community Jobs Population Growth	Estimated Total Population Increase
2012	23,980	0	0	0	0	0
2013	24,212	232	594	464	827	1,653
2014	25,793	1,581	4,047	3,162	5,635	11,263
2015	25,467	-326	-835	-652	-1,162	-2,322
2016	25,700	233	596	466	830	1,660
2017	26,045	345	883	690	1,230	2,458
2018	26,797	752	1,925	1,504	2,680	5,357
2019	32,854	6,057	15,506	12,114	21,587	43,150
2020	32,429	-425	-1,088	-850	-1,515	-3,028
Total		8,449	21,629	16,898	30,112	60,191

Source: Stantec, 2021

Age and sex distributions of the population were examined to determine if the increase in personnel within the Study Area since 2012 resulted in any noticeable changes. Military service is primarily performed by younger men, although the number of women serving is growing rapidly. A large military presence within an area can increase the number of men between the ages of 18 and 30, skewing the proportion of men when compared to areas without a large military presence. Figures 2.1 through 2.4 show the age and sex distribution for the Study Area, the State of Georgia, the State of South Carolina, and the United States for 2010.

Figure 2.1: Study Area Age and Sex, 2010
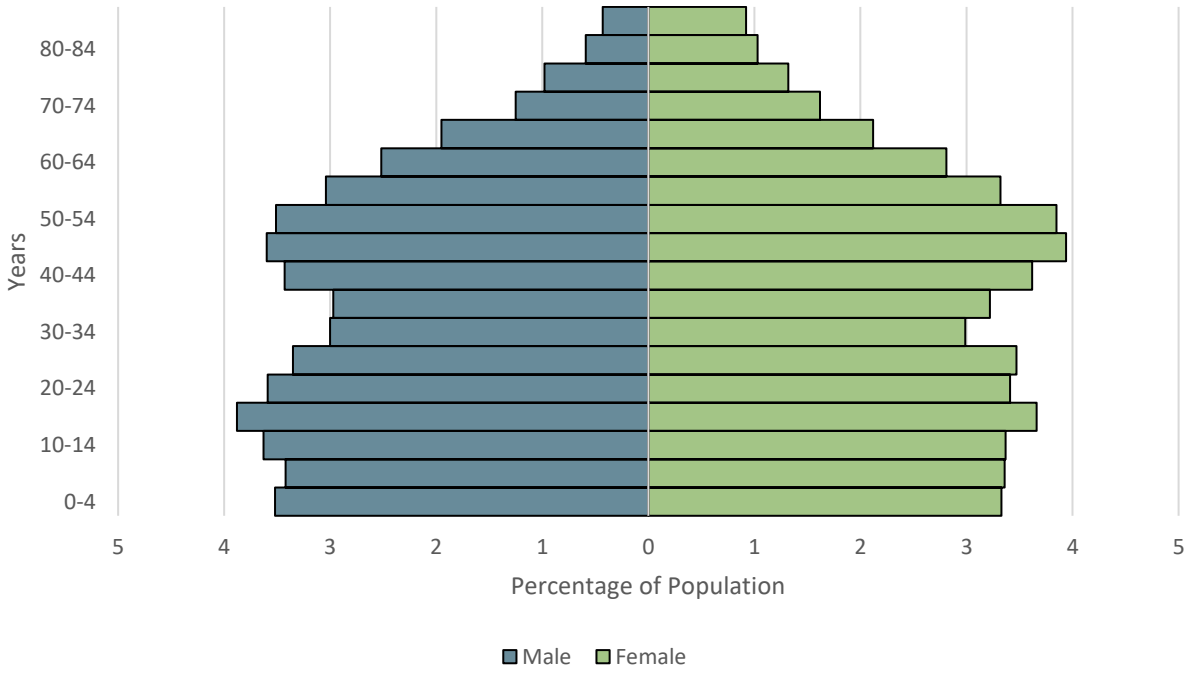
Figure 2.2: Georgia Age and Sex, 2010
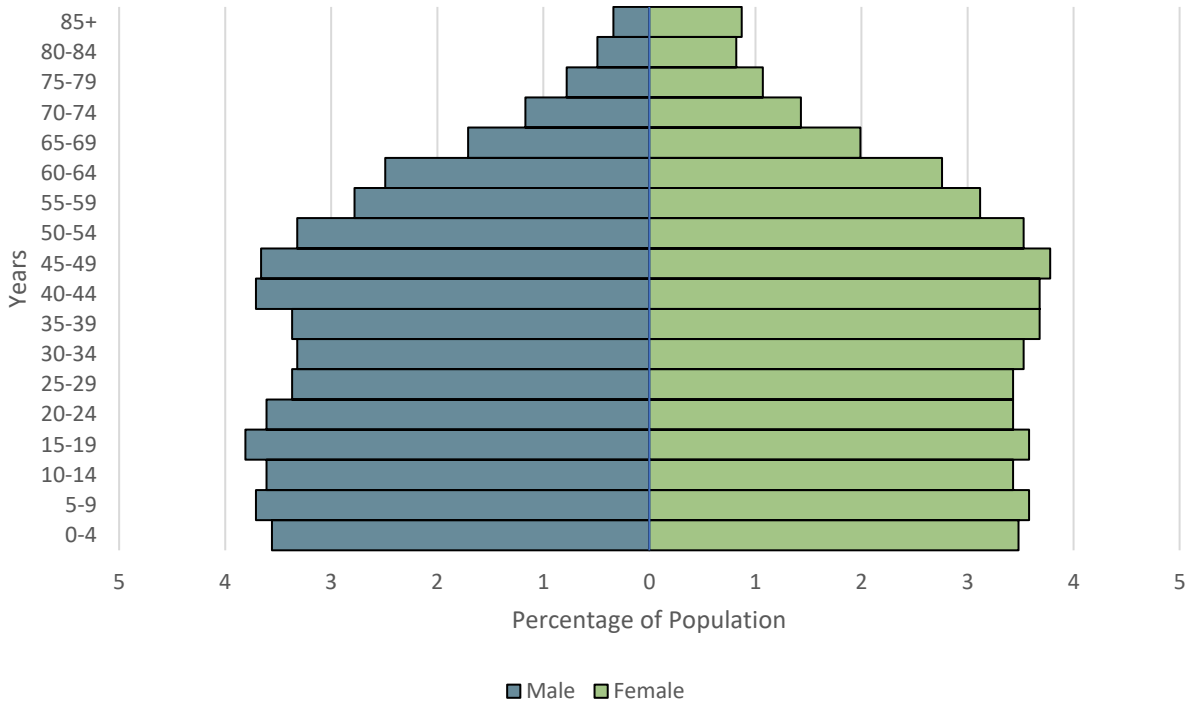
Figure 2.3: South Carolina Age and Sex, 2010
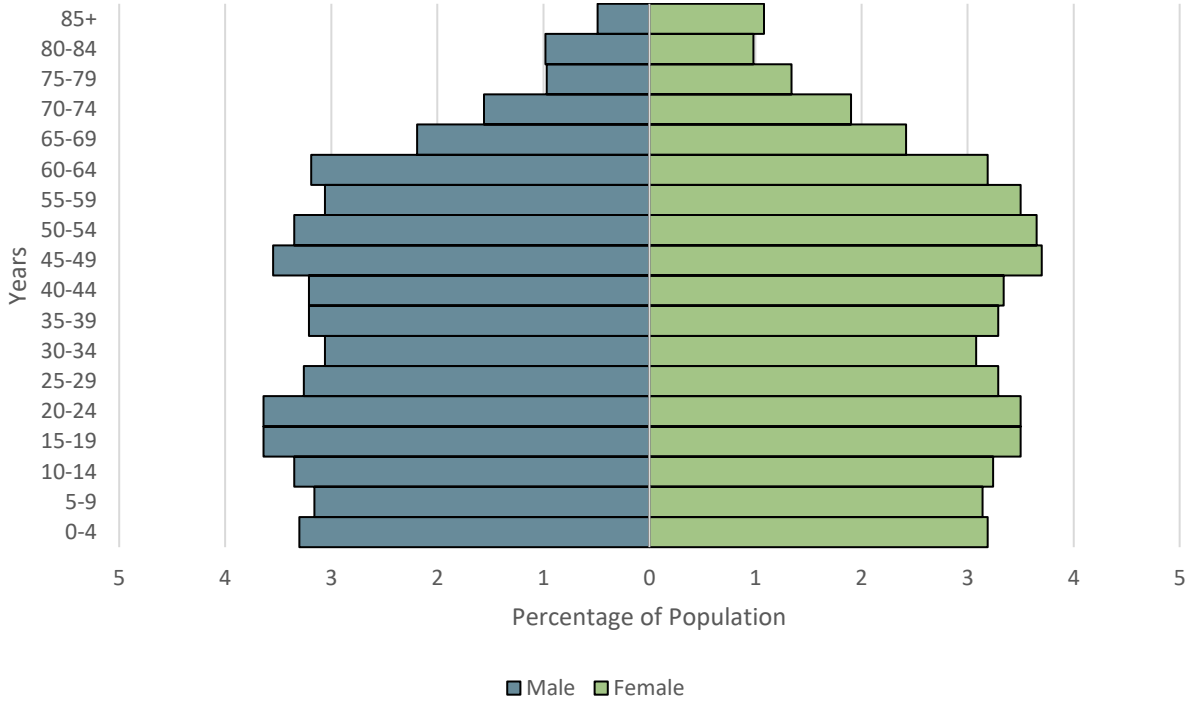
Figure 2.4: USA Age and Sex, 2010
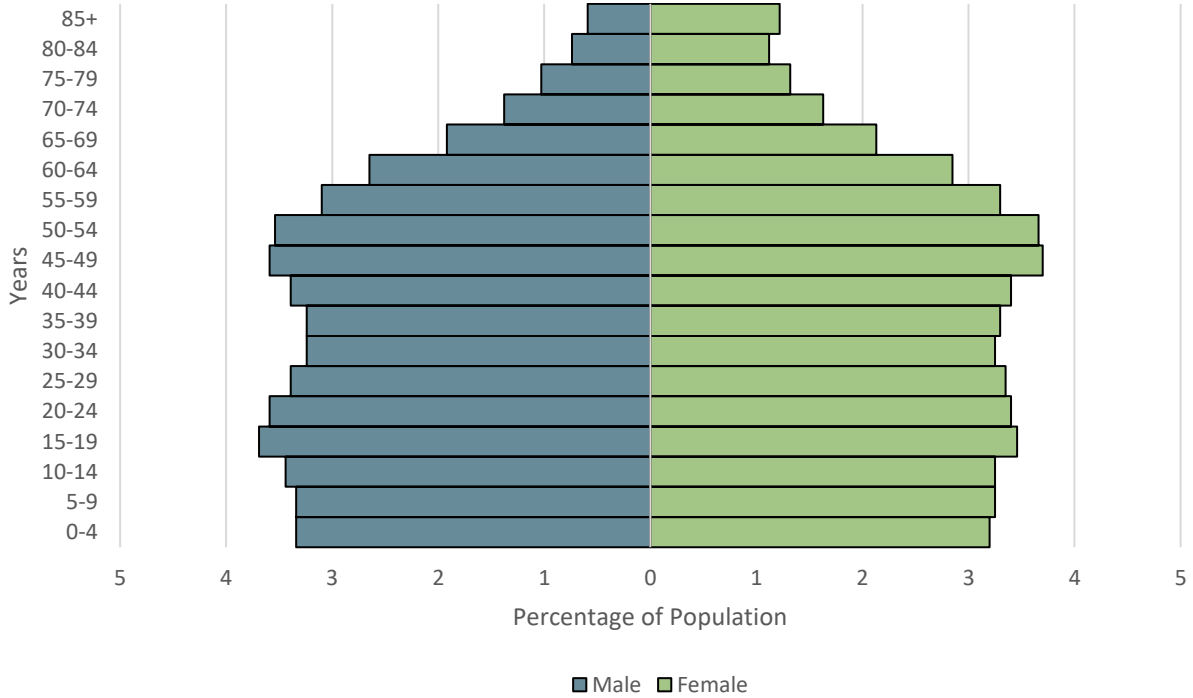
These figures show that the breakdown of age and sex cohorts within the Study Area generally reflected those of the state and the nation in 2010. Bulges are centered around the 45-49 and 50-54 age groups representing the "Baby Boomer" generation that was born after the end of World War II. Another bulge are centered around the 15- to 19-year-old age group. Figures 2.5 through 2.8 show changes in age and sex cohorts in 2019 within the Study Area, the State of Georgia, the State of South Carolina, and the nation for 2019. This time interval encompasses the buildup of military personnel at Fort Gordon.

Figure 2.5: Study Area Age and Sex, 2019

Figure 2.6: Georgia Age and Sex, 2019

Figure 2.6: Georgia Age and Sex, 2019

Figure 2.7: South Carolina Age and Sex, 2019
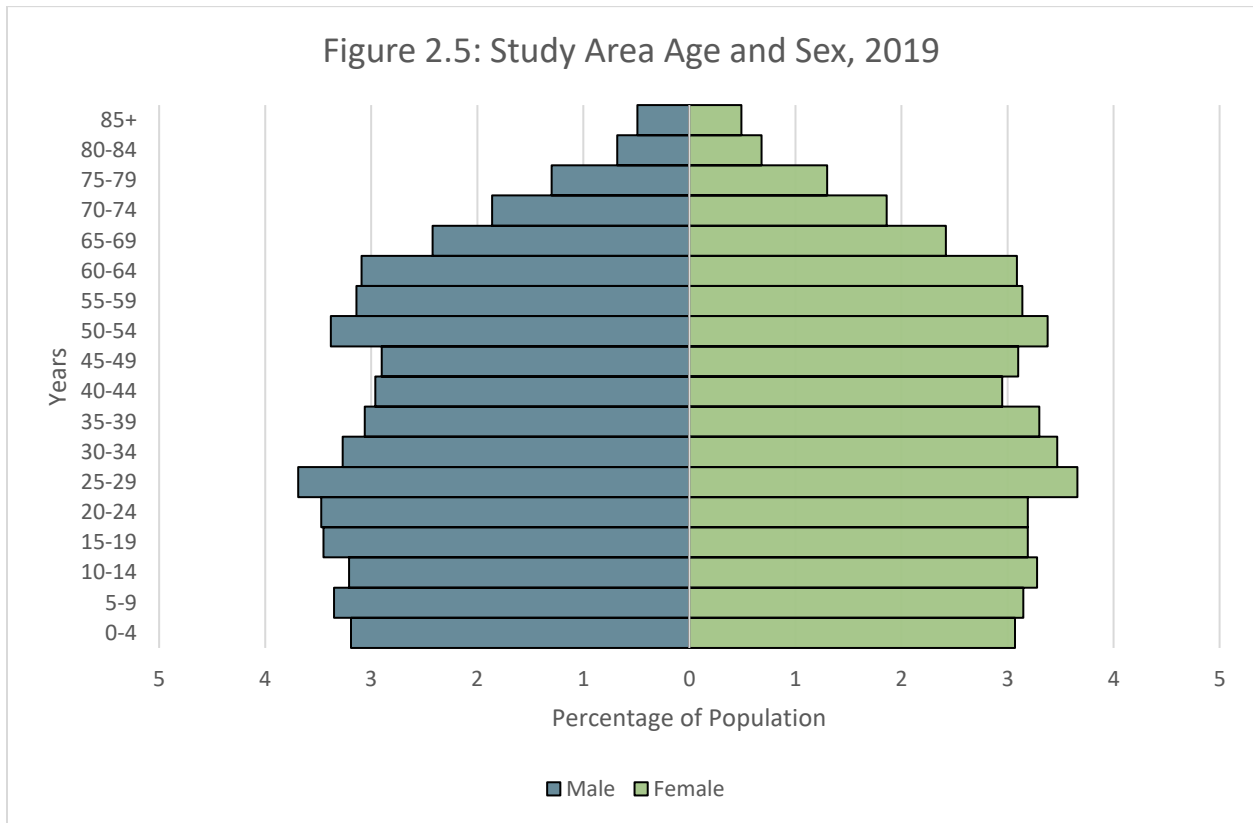
Figure 2.7: South Carolina Age and Sex, 2019
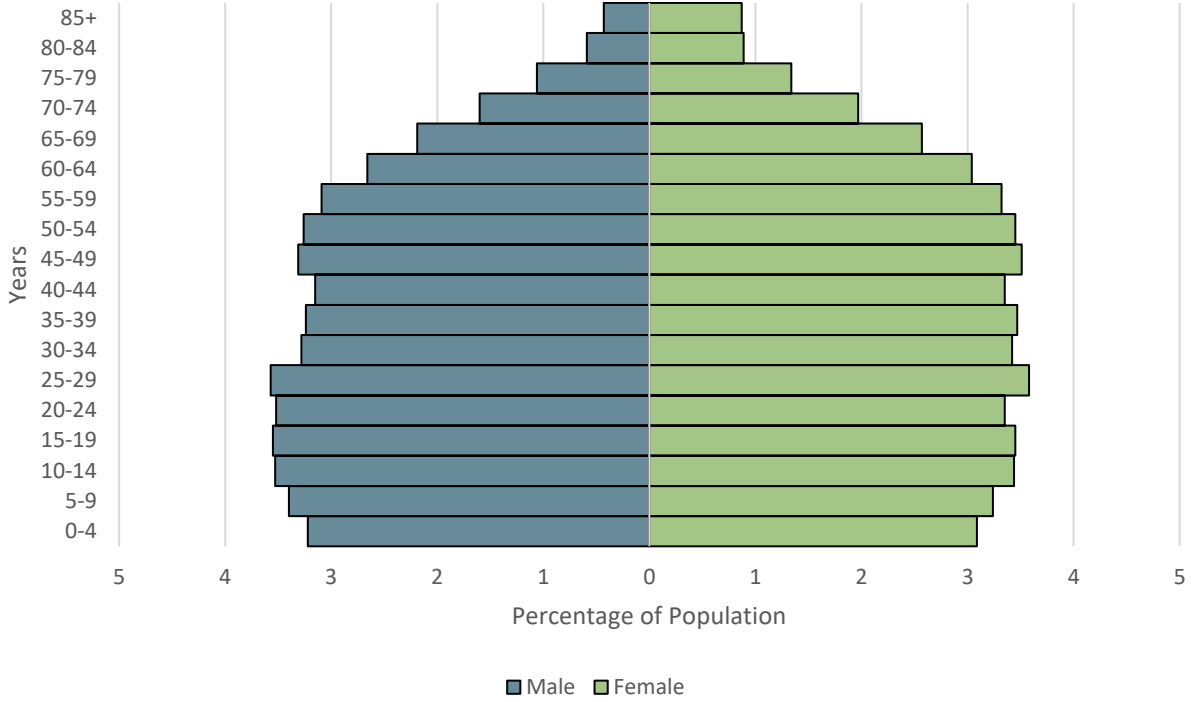
Figure 2.8: USA Age and Sex, 2019
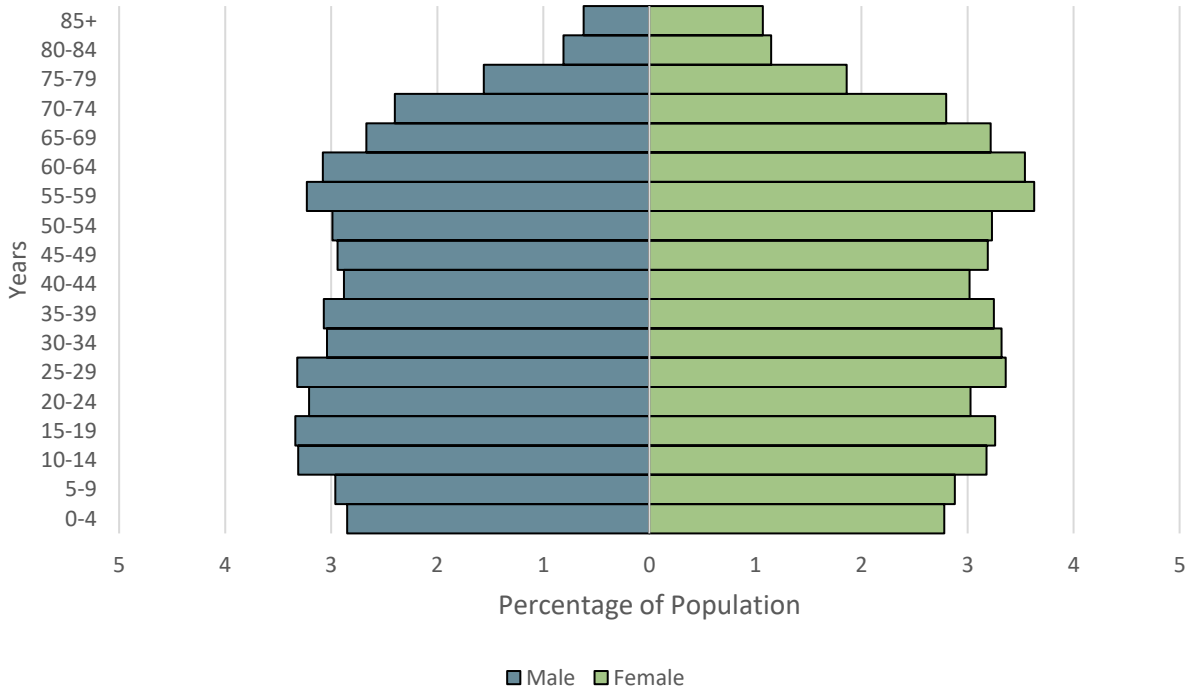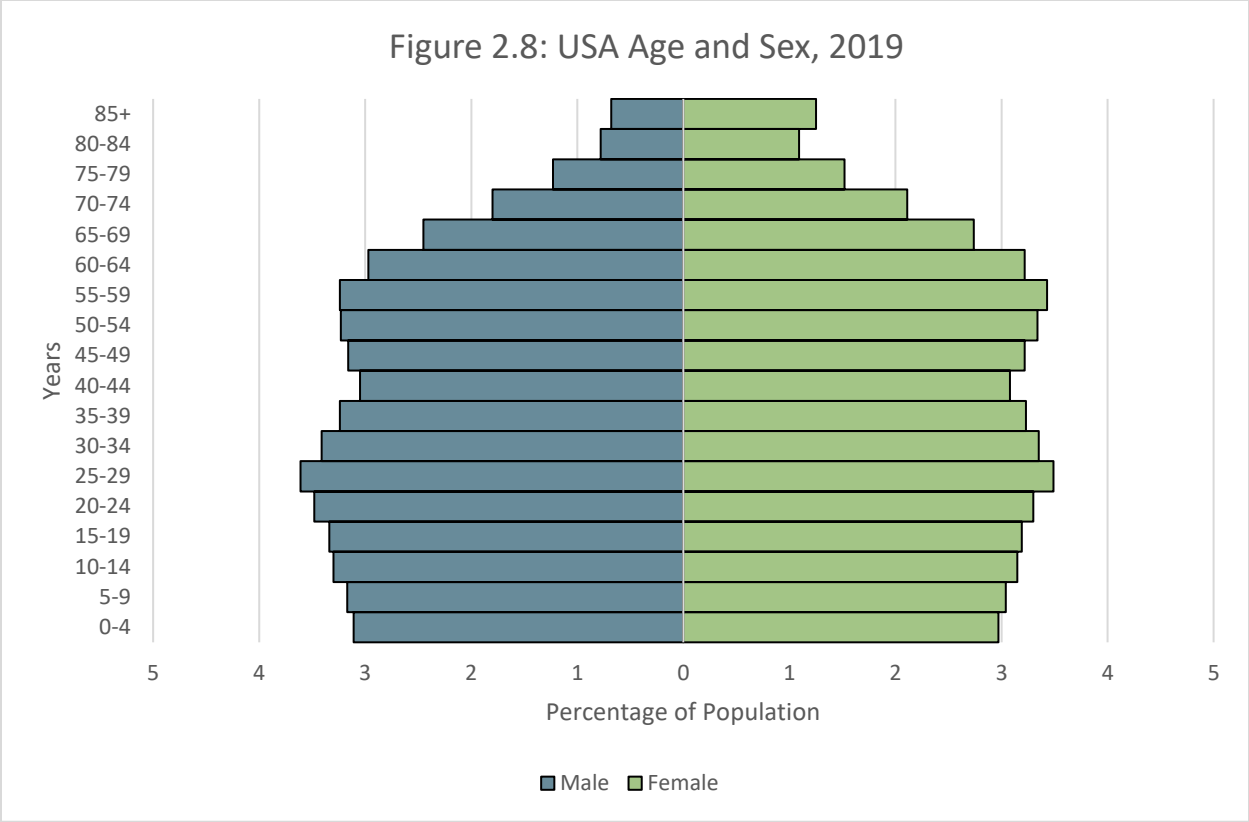
In the above figures, the two bulges from the previous age and sex charts have moved up. The "Baby Boomer" generation is more apparent in the Study Area and the nation as a whole, and less apparent in Georgia and South Carolina. The bulge at 15- to 19-year-olds has moved up to 25-29 years old. Generally, the male population is larger from birth to approximately 30, and the female population represents a greater proportion of the population in later years. Overall, there is a larger proportion of people aged 25-29 within the Study Area compared to Georgia and South Carolina, and slightly more than the nation as a whole. The effect of an increase in service members at the Installation may be blunted by accompanying family members and a commensurate increase in indirect jobs whose employees cover a wider range of ages.

From 2010-2019, the total number of households and average household size have increased within the Study Area. At the state and national levels, the number of households has increased over the same time period, but the average household size within these geographies decreased. This indicates that households within the Study Area are getting larger in contrast to state and national trends. The reasons for this difference are not clear but are possibly due to more families with children locating in the area, more intergenerational households, or more combined households.

During this time period, average household income increased across all geographies. Average household income for the Study Area was slightly below the state average and below the national average; however, average household incomes for Columbia County well exceeded both state and national averages in both 2010 and 2019. Please see Table 2.3 for the number of households, average household size, and average household income within the relevant geographies.

Table 2.3: Change in Select Household Characteristics, 2010 – 2019

Geography	Number of Households		Household Size		Household Income	
	2010	2019	2010	2019	2010	2019
Burke County	7,686	8,193	2.93	2.72	$33,155	$44,151
Columbia County	41,722	59,836	2.81	3.18	$66,333	$82,339
Richmond County	74,199	71,400	2.51	2.69	$37,882	$42,728
Lincoln County	3,435	3,475	2.32	2.23	$36,399	$39,742
McDuffie County	8,283	8,153	2.58	2.59	$35,414	$43,468
Aiken County	62,072	67,598	2.49	2.45	$44,468	$51,399
Edgefield County	9,121	9,176	2.62	2.64	$42,834	$49,127
Study Area	206,518	227,831	2.61	2.64	$42,355	$50,422
Georgia	3,482,420	4,378,391	2.72	2.70	$46,430	$58,700
South Carolina	1,761,393	1,921,862	2.55	2.54	$42,018	$53,199
USA	114,567,419	139,684,244	2.63	2.62	$50,046	$62,843

Source: US Census Bureau, 2021

The number of veterans that live in the Study Area has decreased from 2010 to 2019. This is consistent with state and national trends. This change may be attributable to natural attrition as the large pool of veterans that served in prior decades ages and pass on. However, veterans make up a larger percentage of the population in the Study Area than at the state or national level. In addition, the proportion of veterans in the overall population increased in Columbia County between 2010 and 2019, mirroring its relatively large general population increase. Please see Table 2.4 for information on the veteran population within the selected geographies.

Table 2.4: Change in Veteran Population, 2010 – 2019

Geography	Number of Veterans		Total Population		Percent Veteran Population	
	2010	2019	2010	2019	2010	2019
Burke County	1,674	1,494	23,083	22,520	7.25%	6.63%
Columbia County	12,752	17,438	117,858	150,705	10.82%	11.57%
Richmond County	21,044	18,374	198,170	201,852	10.62%	9.10%
Lincoln County	857	579	8,111	7,856	10.57%	7.37%
McDuffie County	1,340	1,594	21,719	21,455	6.17%	7.43%
Aiken County	14,548	13,195	156,670	168,301	9.29%	7.84%
Edgefield County	2,343	1,986	26,680	26,927	8.78%	7.38%
Study Area	54,558	54,660	552,291	599,616	9.87%	9.12%
Georgia	696,844	629,302	9,712,587	10,403,847	7.17%	6.05%
South Carolina	409,008	354,669	4,625,364	5,148,714	8.84%	6.89%
USA	21,798,077	18,230,322	309,349,689	324,697,795	7.05%	5.61%

Source: Derived from US Census Data, 2021

2.3.2 Future Population Projections

Initial population projections were provided by each state's county-level projections. Georgia's population is projected through 2040 and South Carolina's is projected through 2035. A more near-term horizon of 2030 was selected for this analysis. Please see Table 2.5 for the population projections for each county.

Table 2.5: Baseline Population Projections, 2021-2030

Year	Augusta-Richmond	Burke	Columbia	Lincoln	McDuffie	Aiken	Edgefield
2021	203,330	22,273	162,542	7,795	21,257	172,270	27,210
2022	204,091	22,265	165,898	7,756	21,261	173,235	27,255
2023	205,018	22,272	169,324	7,711	21,269	174,185	27,305
2024	205,767	22,277	172,821	7,682	21,292	174,920	27,350
2025	206,609	22,304	176,146	7,642	21,307	175,635	27,370
2026	207,511	22,300	179,423	7,611	21,321	176,360	27,395
2027	208,447	22,279	182,716	7,568	21,321	177,075	27,415
2028	209,237	22,268	185,918	7,510	21,329	177,810	27,460
2029	209,881	22,236	189,002	7,467	21,336	178,285	27,470
2030	210,374	22,196	192,137	7,411	21,306	178,735	27,475

Source: State of Georgia's Office of Planning and Budget and South Carolina Revenue and Fiscal Affairs Office, 2021

Next, the expected change in population for each county from year to year was calculated. Some counties in some years are projected to decrease. Burke and Lincoln Counties are expected to decrease from year to year with no projected increase over the planning horizon. While the population in the region is expected to increase due to additional personnel at the Installation, not enough is known about the reasons behind these counties' population declines to assume that additional regional growth beyond the baseline projection would reverse these trends. Please refer to Table 2.6.

Table 2.6: Change in Population, Baseline Data, 2020-2030

Year	Augusta-Richmond	Burke	Columbia	Lincoln	McDuffie	Aiken	Edgefield
2020-21	760	-34	3,137	-58	-6	950	60
2021-22	761	-8	3,356	-39	4	965	45
2022-23	927	7	3,426	-45	8	950	50
2023-24	749	5	3,497	-29	23	735	45
2024-25	842	27	3,325	-40	15	715	20
2025-26	902	-4	3,277	-31	14	725	25
2026-27	936	-21	3,293	-43	0	715	20
2027-28	790	-11	3,202	-58	8	735	45
2028-29	644	-32	3,084	-43	7	475	10
2029-30	493	-40	3,135	-56	-30	450	5

Source: Stantec, April 2021

Then, as shown in Table 2.7 below, the proportion of growth for each county was calculated by dividing each county's projected increase in population by the total increase in population. Counties whose population is expected to decrease during the yearly interval were excluded from the proportional calculation.

Table 2.7: Growth Rate, 2020-2030

Year	Augusta-Richmond	Columbia	McDuffie	Aiken	Edgefield
2020-21	15.49%	63.93%		19.36%	1.22%
2021-22	14.83%	65.41%	0.08%	18.81%	0.88%
2022-23	17.29%	63.91%	0.15%	17.72%	0.93%
2023-24	14.83%	69.26%	0.46%	14.56%	0.89%
2024-25	17.12%	67.62%	0.31%	14.54%	0.41%
2025-26	18.25%	66.30%	0.28%	14.67%	0.51%
2026-27	18.86%	66.34%	0.00%	14.40%	0.40%
2027-28	16.53%	66.99%	0.17%	15.38%	0.94%
2028-29	15.26%	73.08%	0.17%	11.26%	0.24%
2029-30	12.07%	76.78%		11.02%	0.12%

Source: Stantec, April 2021

The increase in the number of military personnel and additional population generated by military personnel's families was calculated by using a data slide provided by the CSRA Alliance for Fort Gordon titled *FY12 FY24 Fort Gordon ASIP Growth Projections Updated*. This slide is part of the ASIP and shows the projected increase in personnel at the Installation through 2024. The 2021 ASIP number of jobs (30,611) was considered to be the basis for the projections. The projections show both undocumented and documented jobs. Undocumented means military and government service civilian growth that the proper paperwork has caught up with, while documented means anticipated growth in authorizations. The difference between the total (documented and undocumented) personnel number and the previous year's personnel number was used to calculate the incremental increase in jobs for 2021 through 2024 (the final year of projections shown by the slide). According to this information, the total number of jobs to be added to the Installation between 2021 and 2024 is 894.

According to the table on an additional data slide titled *Fort Gordon Stationing and Growth*, a ratio of 2.56 dependents is expected for every personnel member. This ratio was used to determine the number of expected dependents related to the increase in personnel numbers. Between 2021 and 2024, the Study Area population is projected to increase by 3,183 military personnel and dependents (Table 2.8).

Table 2.8: Estimated Military Population, 2021-2024

Year	Previous Year's ASIP	Projected	Difference in Military Jobs	Dependents	Total New Military Population
2021	30,611	30,780	169	433	602
2022	30,780	31,409	629	1,610	2,239
2023	31,409	31,592	183	468	651
2024	31,592	31,505	-87	-223	-310

Source: Stantec, 2021; derived from FY 12 FY 26 Fort Gordon ASIP Growth Projections Updated

The average percentage of total military personnel living in the seven-county region was used to weight the distribution of military personnel. It is expected that military personnel would want to live near their place of employment and, all else being equal, would follow the same distribution pattern as the existing population. Please refer to Table 2.9.

Table 2.9: Weighted Military Population Growth

County	2021	2022	2023	2024
Augusta-Richmond	392	1,461	425	-202
Burke	2	7	2	-1
Columbia	185	687	200	-95
Lincoln	2	6	2	-1
McDuffie	3	12	3	-2
Aiken	17	62	18	-9
Edgefield	1	5	1	-1
Total	602	2,239	651	-310

Source: Stantec, 2021

When assessing the active-duty military population, there are a few caveats to keep in mind. The census and ACS include individuals who identified themselves as being active members of the armed forces. However, the total population identified as being in the armed forces within the Study Area may not be affiliated with Fort Gordon (service members from other installations may temporarily be located at Fort Gordon for training or assignment). In this case, their permanent address will be in another location. It is also possible that service members permanently located at Fort Gordon are still using their old civilian addresses when answering census or ACS questions. In addition, there may be service members in the process of transitioning to civilian life who are answering the census or ACS as no longer in the military. The census and ACS represent a collection of estimates over a period of years, and overall service member levels presently posted at the Installation will have changed from when the data was gathered. Given these limitations, the data still offers some insights into the distribution of military personnel and illustrates which jurisdictions have historically attracted larger proportions of this population.

According to the US Department of Commerce, each military job supports two community jobs. This multiplier of two was used to determine the number of community jobs that would be projected to be created by the increase in installation personnel. The US Bureau of Labor Statistics indicates that approximately 50% of households have two people working. Thus, each community job supports 0.66 households. This ratio gives the number of households that would be projected to be supported by the new community jobs. For Georgia, the average household size is 2.7 people, according to the US Census Bureau. This number was multiplied by the projected number of additional households to estimate the additional population projected to be supported by the new community jobs.

The percentage of growth for each county was applied to the additional population expected to be generated by the community jobs (indirect military increase). Because the community jobs are not directly tied to the Installation, their distribution is expected to follow the distribution of the general population in the seven-county region. The increased population due to community jobs was multiplied by the percentage of growth for each county to get a distribution of population across the Study Area. Through 2024, the Study Area population is projected to increase by 3,187 through indirect population growth related to the increase in personnel at Fort Gordon. Please see Table 2.10 for the indirect military population projections.

Table 2.10: Indirect Military Population Projections

County	2021	2022	2023	2024
Augusta-Richmond	93	332	113	-46
Burke	0	0	0	0
Columbia	385	1,466	417	-215
Lincoln	0	0	0	0
McDuffie	0	2	1	-1
Aiken	117	422	116	-45
Edgefield	7	20	6	-3
Total	602	2,242	653	-310

Table 2.11 shows the total growth attributable to personnel increases at the Installation through 2024. These numbers are the sum of the military personnel, their dependents, and indirect growth in the community. The result is a projected population growth of 6,370.

Table 2.11: Total Military-Related Population Growth, 2021-2024

County	2021	2022	2023	2024
Augusta-Richmond	486	1,793	538	-248
Burke	2	7	2	-1
Columbia	570	2,153	617	-310
Lincoln	2	6	2	-1
McDuffie	3	14	4	-3
Aiken	133	484	134	-54
Edgefield	9	25	7	-4
Total	1,204	4,481	1,304	-620

For the population projections for 2021 through 2030, the next year's projection is the previous year's projection, plus the direct military increase, the indirect military increase, and the state's projected increase. This yields a population projection that shows the already expected growth in the county and includes the growth that is projected to result from increased personnel at Fort Gordon. Additional Installation-related population increases cease after 2024 because this is where the projections of the ASIP slide end. State-level population increases are carried forward from here with the Installation-related increased projected population serving as the base in 2024. Tables 2.12 through 2.18 show the total population growth (military-related and background) for each county in the Study Area through the planning timeframe.

Table 2.12: 2021 Study Area Population Projections

County	2020 Population Estimate	Direct Military Increase	Indirect Military Increase	Natural Increase	2021 Population Projection
Burke	22,307	2	0	-34	22,275
Columbia	159,405	185	385	3,137	163,112
Lincoln	7,853	2	0	-58	7,797
McDuffie	21,263	3	0	-6	21,260
Richmond	202,570	392	93	760	203,816
Aiken	171,320	17	117	950	172,403
Edgefield	27,150	1	7	60	27,219

Source: Stantec, 2021

Table 2.13: 2022 Study Area Population Projections

County	2021 Population Projection	Direct Military Increase	Indirect Military Increase	Natural Increase	2022 Population Projection
Burke	22,275	7	0	-8	22,273
Columbia	163,112	687	1,466	3,356	168,621
Lincoln	7,797	6	0	-39	7,764
McDuffie	21,260	12	2	4	21,278
Richmond	203,816	1,461	332	761	206,370
Aiken	172,403	62	422	965	173,853
Edgefield	27,219	5	20	45	27,289

Source: Stantec, 2021

Table 2.14: 2023 Study Area Population Projections

County	2022 Population Projection	Direct Military Increase	Indirect Military Increase	Natural Increase	2023 Population Projection
Burke	22,273	2	0	7	22,282
Columbia	168,621	200	417	3,426	172,664
Lincoln	7,764	2	0	-45	7,720
McDuffie	21,278	3	1	8	21,290
Richmond	206,370	425	113	927	207,835
Aiken	173,853	18	116	950	174,937
Edgefield	27,289	1	6	50	27,346

Source: Stantec, 2021

Table 2.15: 2024 Study Area Population Projections

County	2023 Population Projection	Direct Military Increase	Indirect Military Increase	Natural Increase	2024 Population Projection
Burke	22,282	-1	0	5	22,286
Columbia	172,664	-95	-215	3,497	175,851
Lincoln	7,720	-1	0	-29	7,691
McDuffie	21,290	-2	-1	23	21,310
Richmond	207,835	-202	-46	749	208,335
Aiken	174,937	-9	-45	735	175,618
Edgefield	27,346	-1	-3	45	27,388

Source: Stantec, 2021

Table 2.16: 2025-2026 Study Area Population Projections

County	2024 Population Projection	Natural Increase	2025 Population Projection	Natural Increase	2026 Population Projection
Burke	22,286	27	22,313	-4	22,309
Columbia	175,851	3,325	179,176	3,277	182,453
Lincoln	7,691	-40	7,651	-31	7,620
McDuffie	21,310	15	21,325	14	21,339
Richmond	208,335	842	209,177	902	210,079
Aiken	175,618	715	176,333	725	177,058
Edgefield	27,388	20	27,408	25	27,433

Source: Stantec, 2021

Table 2.17: 2027-2028 Study Area Population Projections

County	2026 Population Projection	Natural Increase	2027 Population Projection	Natural Increase	2028 Population Projection
Burke	22,309	-21	22,288	-11	22,277
Columbia	182,453	3,293	185,746	3,202	188,948
Lincoln	7,620	-43	7,577	-58	7,519
McDuffie	21,339	0	21,339	8	21,347
Richmond	210,079	936	211,015	790	211,805
Aiken	177,058	715	177,773	735	178,508
Edgefield	27,433	20	27,453	45	27,498

Source: Stantec, 2021

Table 2.18: 2029-2030 Study Area Population Projections

County	2028 Population Projection	Natural Increase	2029 Population Projection	Natural Increase	2030 Population Projection
Burke	22,277	-32	22,245	-40	22,205
Columbia	188,948	3,084	192,032	3,135	195,167
Lincoln	7,519	-43	7,476	-56	7,420
McDuffie	21,347	7	21,354	-30	21,324
Richmond	211,805	644	212,449	493	212,942
Aiken	178,508	475	178,983	450	179,433
Edgefield	27,498	10	27,508	5	27,513

Source: Stantec, 2021

2.3.3 GIS Analysis Methodology

The GIS methodology used census tract-level data from the ACS. Information was gathered regarding the total population and children attending school from pre-school through 12th grade. The number of active-duty military personnel was not available for each census tract; therefore, this analysis was done at the county level.

The 2010 decennial census and ACS data from 2014 and 2019 were used to illustrate past population estimates. These intervals were chosen to show the change in population approximately every five years. These dates were chosen to incorporate the 2024 additional military personnel horizon and the 2010 decennial census. Since the census is an actual count and not an estimate, it is more accurate and a better place to start estimating growth rates and projecting population.

For the total population projections by census tract, the 2019 percentage of the total population for the county was calculated for each census tract. This percentage was applied to the 2024 and 2029 population projections for the county to get the projected population for each census tract for those years.

For the number of school-aged children, the percentage of school-aged children for each census tract for 2019 was calculated. This percentage was applied to the projected population for that census tract for the years 2024 and 2029. This method carries the same percentage of school-aged children forward into the future.

2.4 Projected Population Forecasts

There are 118 census tracts within the Study Area; the per-census-tract calculations are in Appendix A. Please see Table 2.19 for the GMP population projections.

Table 2.19: Study Area Population Projections, 2021-2030

Year	Augusta-Richmond	Burke	Columbia	Lincoln	McDuffie	Aiken	Edgefield
2021	203,816	22,275	163,112	7,797	21,260	172,403	27,219
2022	206,370	22,273	168,621	7,764	21,278	173,853	27,289
2023	207,835	22,282	172,664	7,720	21,290	174,937	27,346
2024	208,335	22,286	175,851	7,691	21,310	175,618	27,388
2025	209,177	22,313	179,176	7,651	21,325	176,333	27,408
2026	210,079	22,309	182,453	7,620	21,339	177,058	27,433
2027	211,015	22,288	185,746	7,577	21,339	177,773	27,453
2028	211,805	22,277	188,948	7,519	21,347	178,508	27,498
2029	212,449	22,245	192,032	7,476	21,354	178,983	27,508
2030	212,942	22,205	195,167	7,420	21,324	179,433	27,513

Source: Stantec, 2021

The above population projections show that the largest increases in population will occur in Columbia, Augusta-Richmond, and Aiken counties. Please see Table 2.20 for the number and percentage of the change in population by 2030 for all counties in the Study Area.

Table 2.20: Study Area Population Change, 2020-2030

County	2020 Population Estimate	2030 Population Estimate	Increase in Population, 2020-2030	Growth Percentage, 2020-2030
Augusta-Richmond	202,570	212,942	10,372	4.87%
Burke	22,307	22,205	-102	-0.46%
Columbia	159,405	195,167	35,762	18.32%
Lincoln	7,853	7,420	-433	-5.84%
McDuffie	21,263	21,324	61	0.29%
Aiken	171,320	179,433	8,113	4.52%
Edgefield	27,150	27,513	363	1.32%

Source: Stantec, 2021

Based upon the population projections, Columbia County will grow the most, increasing in population by 26.68% between 2020 and 2030. Columbia County and the communities within it have already experienced a large amount of growth since 2012, when Fort Gordon began the buildup of its Cyber Command. Driven by its proximity to one of the gates into the Installation, and what the community has to offer those moving to the area, these projections show that this growth will continue through the planning timeframe.

2.5 Spatial Analysis

The Spatial Analysis performed for this GMP shows graphically the distribution of population increases over the Study Area. These population increases are shown for each census tract and depict the changes in total population and number of school-aged children.
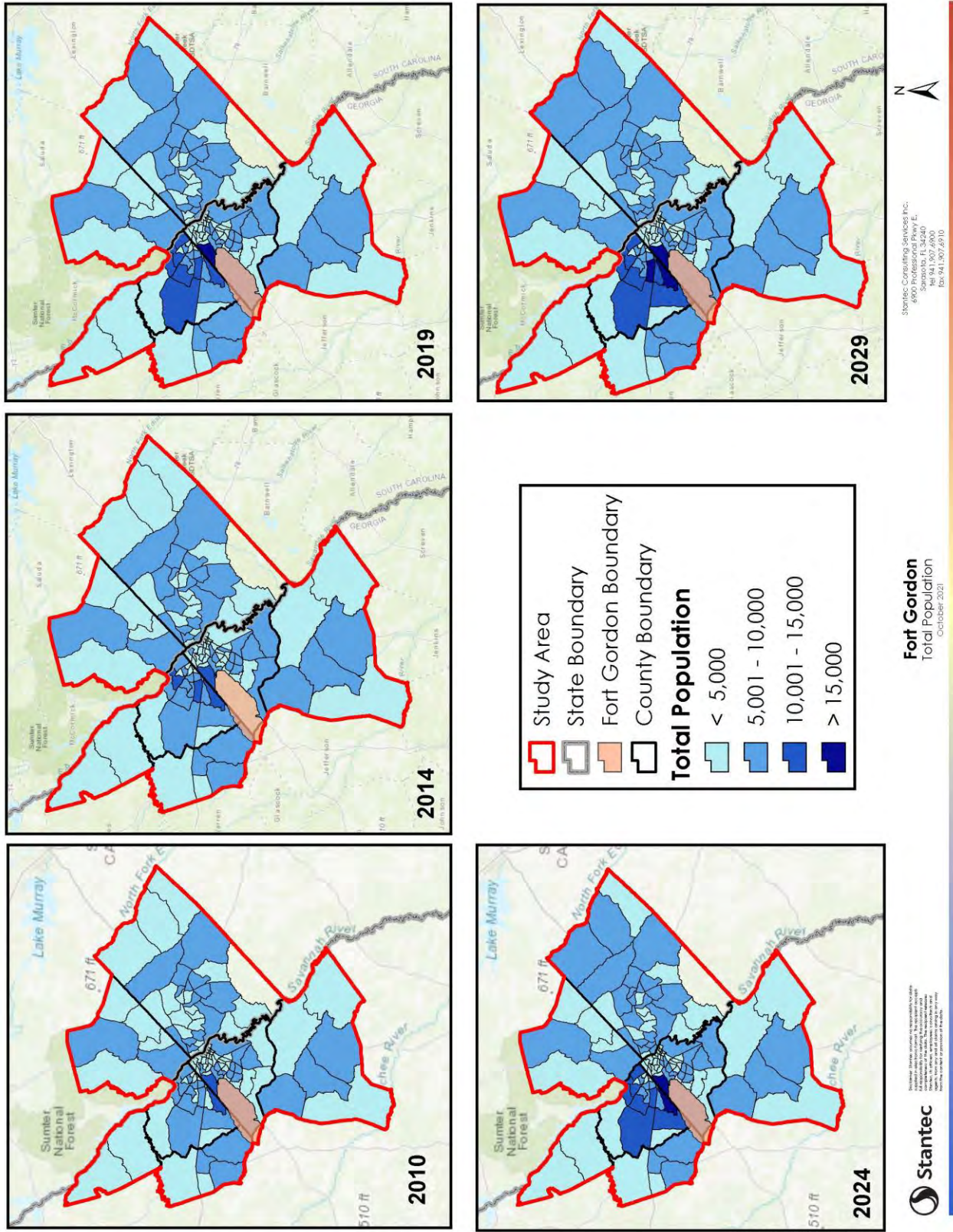
Figure 2.9:: Study Area total population change by census tract, 2010-2029. Source: Stantec, 2021.
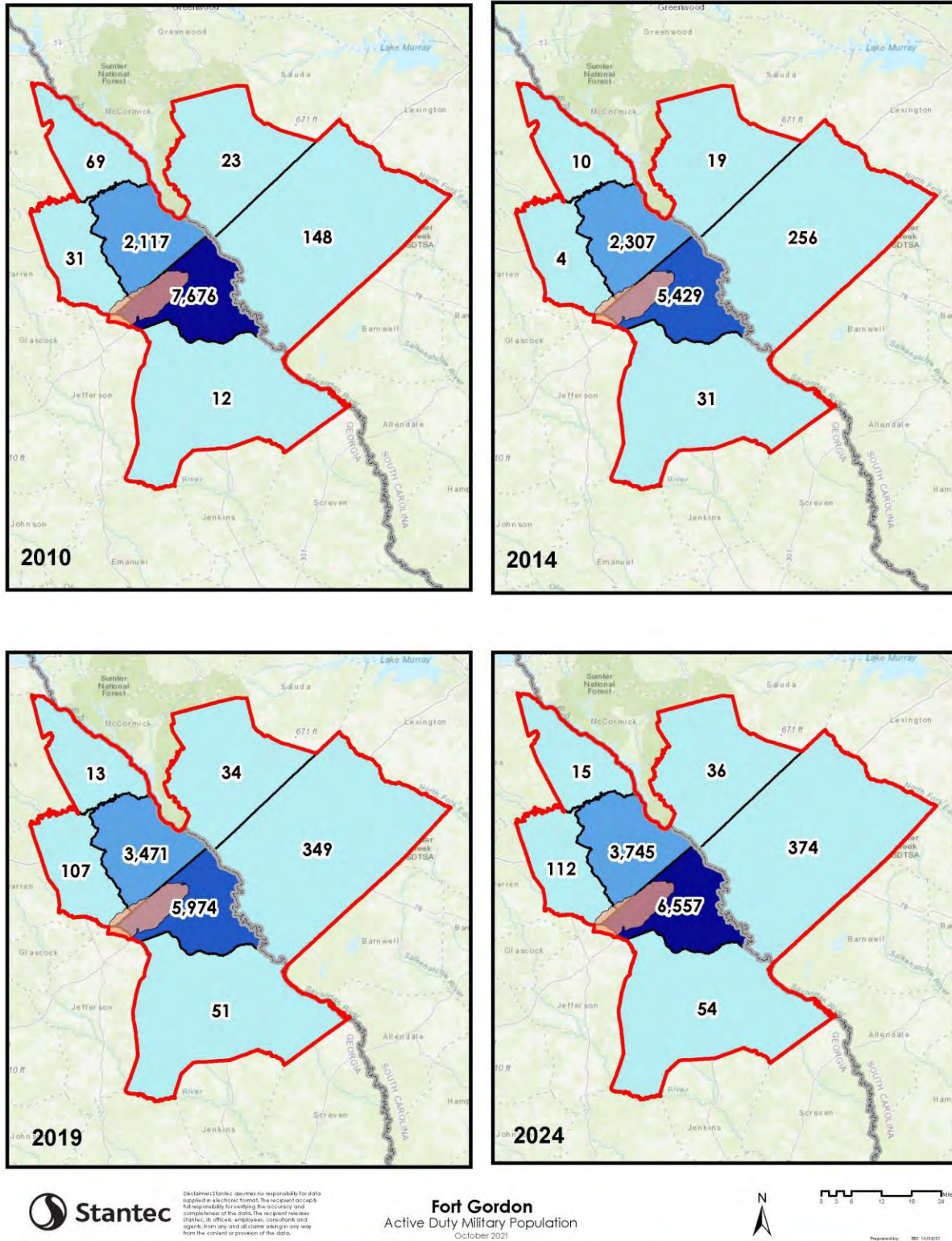
Figure 2.10: Study Area change in active-duty military population, 2010-2024. Source: Stantec 2021.
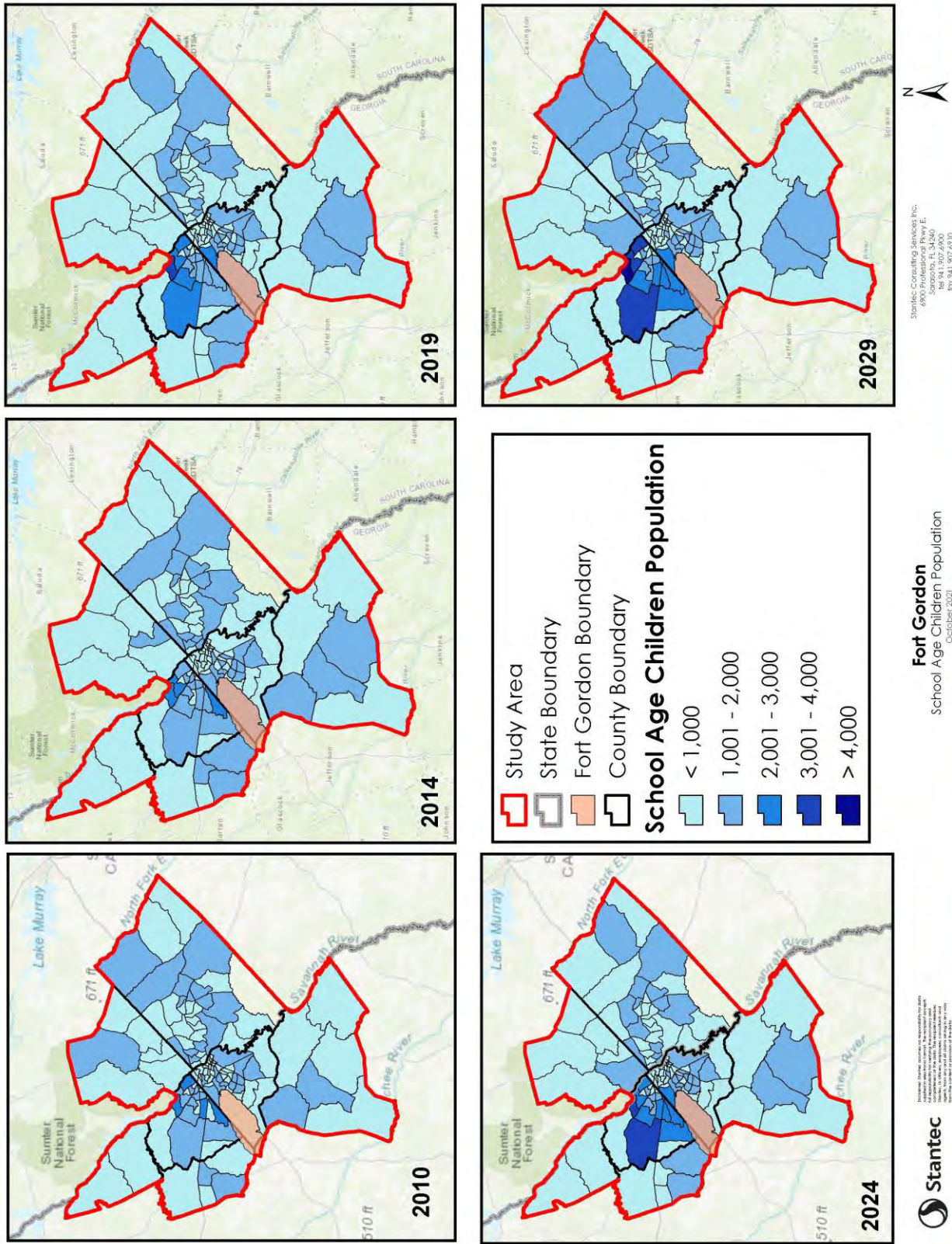
Figure 2.11: Study Area school-aged children population change, 2010-2029. Source: Stantec, 2021.

2.6 Conclusion

This study uses a constant-share approach to projecting future populations. This approach uses existing growth trends and applies them to future population estimates. Therefore, the location of future growth reflects the growth that has occurred in the past. The new information this study provides is the magnitude of that growth.

Since 2012, Fort Gordon has experienced an expansion in its operations that has created growth in neighboring communities. For Columbia County, this growth has been significant. Augusta-Richmond and Aiken Counties have also experienced meaningful community growth in this time period. This assessment indicates that all three counties will continue to experience population growth through 2030, driven in part by growth at Fort Gordon. With this information, Study Area communities can plan the location of this growth and ensure that they have the public facilities, services, and infrastructure to preserve their quality of life.

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Chapter 3:
Transportation

3 Transportation

3.1 Overview

Fort Gordon is the economic engine of the Augusta area and ensuring a smooth flow of traffic in, out, and around the Installation is vital to its long-term sustainability. As part of the transportation analysis, the existing transportation network and future conditions are evaluated in this chapter. The future transportation network analysis focuses on operations through optimizations of the existing system and improvements to the network.

Local access to Fort Gordon is primarily served by the following key Augusta area highways and thoroughfares: US-78/Gordon Highway, East Robinson Avenue, Jimmie Dyess Parkway, Tobacco Road, and US-1/Deans Bridge Road. US-78/Gordon Highway serves most trips to and from Fort Gordon, primarily drawing traffic from Augusta and Columbia County. US-1/Deans Bridge Road provides access to southeast Augusta, Richmond County, and the Augusta Regional Airport. The Augusta area also has Augusta Transit and transfer connections to Aiken County's Best Friend Express, though neither service stops at Fort Gordon.

Regional access to Fort Gordon is served by I-20, I-520, and the Augusta Regional Airport. I-20 provides a direct interstate route to Atlanta and Columbia, SC, and from there, to the entire southeast United States by I-75, I-77, I-85, I-95, and I-26. The Augusta Regional Airport also provides convenient commercial airline connections to major airline hubs in Atlanta, Charlotte, Dallas, and Washington. The airport is a gateway for many service members to Fort Gordon and plays a role in military missions. The key local and regional transportation facilities are highlighted in Figure 3.1.
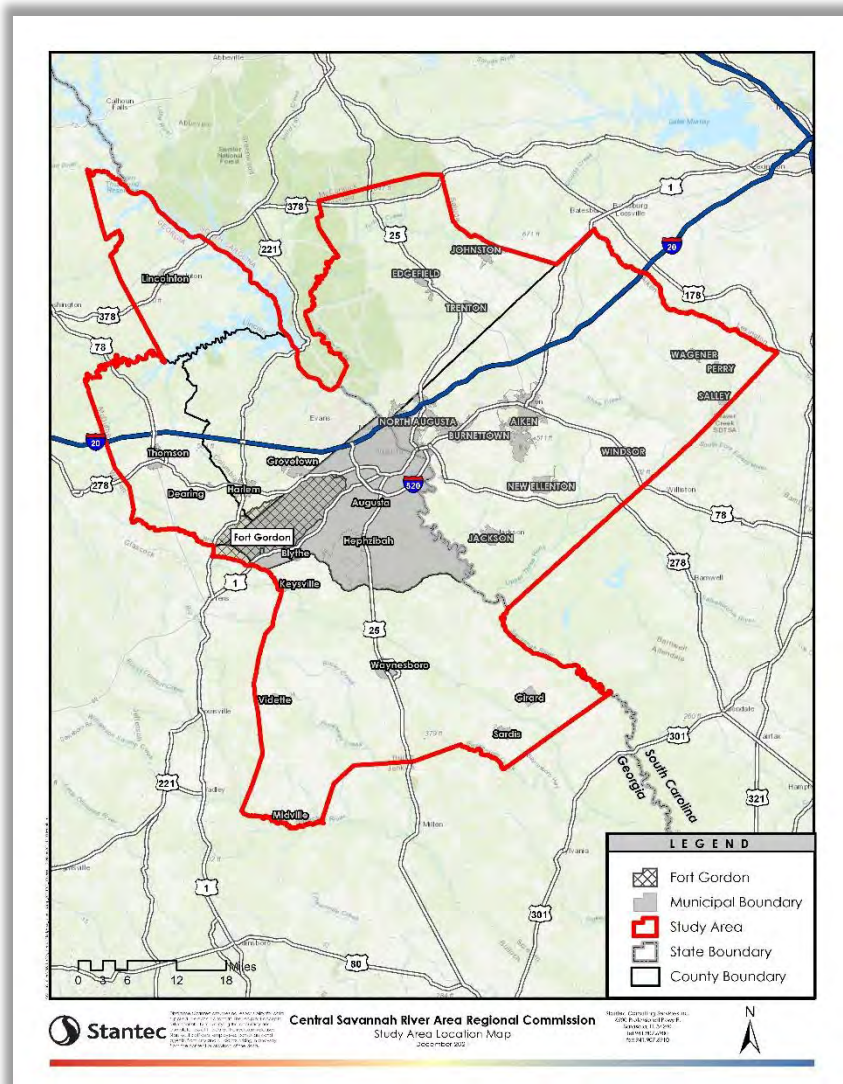
Figure 3.1: Major Roadways in the Study Area. Source: Stantec, 2021
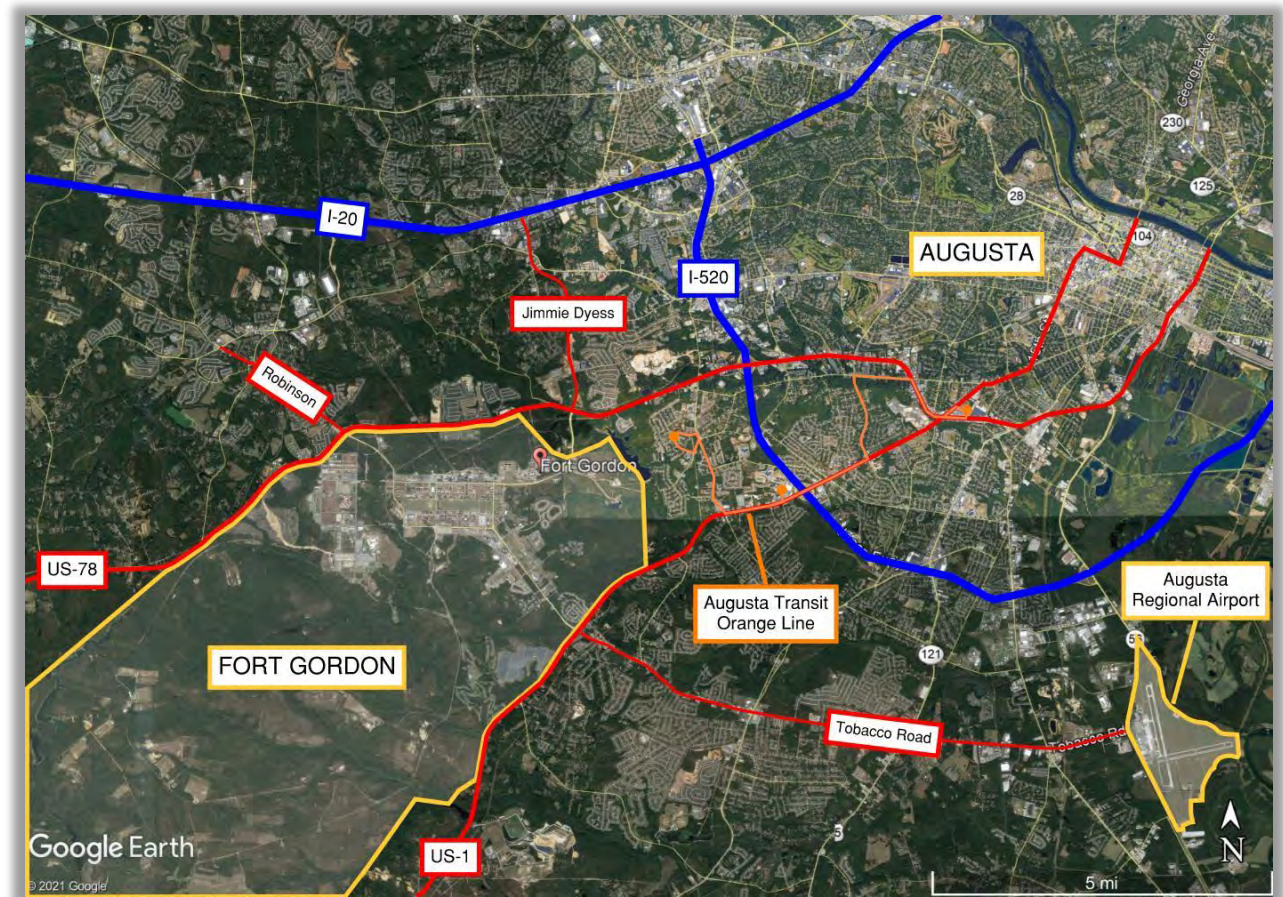
Figure 3.2: Augusta Area Map of Transportation Facilities in the Vicinity of the Study Area. Source: Google Earth.

Fort Gordon has several points of access. Some are closed with locked gates and most have security checkpoints. The access points analyzed in this study (see Figure 3.3) are:

→ Jimmie Dyess Parkway/7th Avenue (Gate 1)
→ East Robinson Avenue/19th Street (Gate 2)
→ McCoys Creek Road/East 13th Avenue (Gate 3)
→ Avenue of the States/Tobacco Road (Gate 5)
→ Gordon Highway, south of Parham Road (Gate 6)

Gates 1, 2, and 3 have direct access to Gordon Highway. This 4-lane divided facility provides high-volume service along the northern boundary of the Installation. Intersections at Jimmie Dyess Parkway/7th Avenue (Gate 1) and East Robinson Avenue/19th Street (Gate 2) have traffic signal control and McCoys Creek Road/East 13th Avenue (Gate 3) is stop-controlled on the minor street. Gate 1 is the primary access point from I-20 (by Jimmie Dyess Parkway) and I-520 (by Gordon Highway). Both routes lead to downtown Augusta. The I-20/Belair Road/Jimmie Dyess Parkway interchange is the gateway to Columbia County, where some civilian housing is located. Avenue of the States/Tobacco Road (Gate 5) provides access to the southern and eastern portions of the base with a grade-separated partial cloverleaf interchange at U.S. Route 1/Deans Bridge Road and housing in south Augusta from Tobacco Road.

Gate 6 on Gordon Highway, south of Parham Road, was under construction during the data collection and analysis phases of this study and was the result of two separate projects: the Georgia Department of Transportation's (GDOT) Gordon Highway Widening project and the Department of Defense's Gate 6 and new access road construction project. Gate 6 and the new visitor center were opened to traffic on October 23, 2021. Traffic at the newly constructed full-movement intersection of Gordon Highway at Gate 6 is controlled by a traffic signal. With the opening of Gate 6, traffic congestion at Gate 1, the Installation's busiest gate, is expected to decrease. The opening of Gate 6 also corresponds with the closing of two other Gordon Highway access points (Gate 2 and Gate 3).

Figure 3.3: Access Points and Intersections Included in this Transportation Study. Source: Google Earth.

3.2 Existing Conditions

3.2.1 Location

Fort Gordon is located in southwest Augusta-Richmond County, Georgia, though portions of the Installation extend into Columbia, McDuffie, and Jefferson counties. To the north and west of Fort Gordon are the cities of Grovetown and Harlem in Columbia county. To the east of Fort Gordon is the City of Hephzibah and the City of Blythe in Richmond County. The Augusta-Aiken County Metropolitan Statistical Area (MSA) consists of five Georgia counties (Richmond, Burke, Columbia, Lincoln, and McDuffie Counties) and two South Carolina counties (Aiken and Edgefield Counties).

3.2.2 Installation Characteristics

During World War II, the U.S. Army activated Fort Gordon (formerly Camp Gordon) for infantry and armored training. With more than 55,000 acres and home to several Army training centers, schools, brigades, and commands, Fort Gordon has played a critical role in U.S. Army operations since its inception. The Installation is currently home to 32,429 service members and civilian employees. In 2014, the U.S. Army designated Fort Gordon as the U.S Army Cyber Center of Excellence (Source: https://home.army.mil/gordon/index.php/about/history).

3.2.3 Existing Transportation Network

The Fort Gordon on-post transportation network is composed of an internal network of roadways and sidewalks. The transportation network is primarily concentrated in the northern reaches of the Installation. Chamberlain Avenue serves as the spine of Fort Gordon's internal transportation network. On-going construction and improvements near Chamberlain Avenue impact mobility through the Installation. There are currently three gates, or access points, that connect the Fort Gordon transportation network with the greater Augusta area transportation network. With the opening of Gate 6, Gate 2 and Gate 3 have been closed.

Roadway

Table 3.1 provides a detailed description of the existing roadway network in the Study Area. Gordon Highway and US 1/Deans Bridge Road are both part of the Strategic Highway Network (STRAHNET), a national 62,791-mile system of roads deemed necessary for emergency mobilization and peacetime movement of heavy armor, fuel, ammunition, repair parts, food, and other commodities to support U.S. military operations. Gordon Highway, between I-520 and Fort Gordon, is a STRAHNET Connector and US 1/Deans Bridge Road is a non-interstate STRAHNET Route south of I-520 (Source: ARTS Future Mobility 2050, September 10, 2020). The average annual daily traffic (AADT) information was obtained from the GDOT's Traffic Analysis and Data Application (TADA).

Table 3.1: Study Area Existing Roadway Characteristics

Road Name	Road Number	Primary Cross-Section	Functional Classification	2019 AADT (vpd)	Speed Limit (mph)
Gordon Highway	US 78 / US 278 / GA 10	4-Lane Divided	Principal Arterial - Other	18,500	55
Jimmie Dyess Parkway	GA 383	4-Lane Divided	Principal Arterial - Other	21,600	55
East Robinson Avenue	GA 233	2-Lane Undivided	Principal Arterial - Other	17,300	45
McCoys Creek Road	-	2-Lane Undivided	-	-	35
Avenue of the States/Tobacco Road	-	5-Lane Section	Principal Arterial - Other	20,700	45

Source: Georgia Department of Transportation Traffic Analysis & Data Application / State Functional Classification Map, June 2021

At the time of the publication of this report, the Gordon Highway Widening project and the Gate 6 construction were completed. Both projects impact the Study Area along Gordon Highway between the Gate 6 intersection and the East Robinson Avenue/19th Street intersection. Further details of the existing roadway network and base model assumptions in this study are provided in 3.2.6 Traffic Counts and 3.2.7 Traffic Volume Development and COVID-19 Adjustment Factor.

Transit

Fort Gordon does not have any transit services on the Installation. Augusta Transit's Orange Line, which serves Barton Chapel Road (north of Fort Gordon) is the most proximate transit service, though it does not provide any direct connection to Fort Gordon or its access points.

Taxi / Ride-Share

Yellow Cab of Augusta provides app-based taxi service on Fort Gordon.

Bicycle and Pedestrian

In the Study Area, only Avenue of the States has bicyclist or pedestrian facilities entering Fort Gordon. Avenue of the States has sidewalks on both sides of the roadway. No other roadways entering Fort Gordon have bicyclist or pedestrian facilities. Further, thoroughfares that provide access to Fort Gordon, Gordon Highway and US 1/Deans Bridge Road, do not have bicyclist or pedestrian facilities.

Within Fort Gordon, there are two bicycle road courses (one is approximately 23 miles long and another is approximately 15 miles long). There are also many off-road routes that provide access to scenic and recreational sites on the installation.

3.2.4 Existing Access Gates

At the time of this study, access to Fort Gordon was limited to four gates near key intersections or interchanges on the periphery of the base. Gates 1, 5, and 6 had varying hours of operation and service during the data collection and analysis phases of this study. Gate 1 (Jimmie Dyess Parkway/7th Avenue/Gordon Highway) and Gate 2 (East Robinson Avenue/19th Street/Gordon Highway) are the most-heavily used gates. Gate 5 (Avenue of the States/Tobacco Road) provides access to the southern and eastern portions of the base with a grade-separated partial cloverleaf interchange at U.S. Route 1/Deans Bridge Road.

3.2.5 Crash Data

Crashes at each study intersection were evaluated to identify patterns in frequency, type, or severity. Data was obtained via the Georgia Electronic Accident Reporting System (GEARS) website. This analysis was undertaken while Gate 2 and Gate 3 were still in operation. Data covered the five-year period from May 1, 2016, to April 30, 2021 for the following locations:

→ Jimmie Dyess Parkway/7th Avenue (Gate 1)
→ East Robinson Avenue/19th Street (Gate 2)
→ McCoys Creek Road/East 13th Avenue (Gate 3)
→ Avenue of the States/Tobacco Road (Gate 5)
→ Gordon Highway, south of Parham Road (Gate 6)

At the study intersections, 461 crashes were recorded. Almost half of these crashes occurred at Jimmie Dyess Parkway/7th Avenue near Gate 1. Approximately one-third of the total crashes occurred at East

Robinson Avenue/19th Street near Gate 2. By far, the most prevalent crash-type at these two intersections was rear-end crashe. This is typical of congested conditions at signalized intersections. Figure 3.4 shows the total crashes by intersection in the Study Area. Crash data at each intersection is summarized in the following sections.
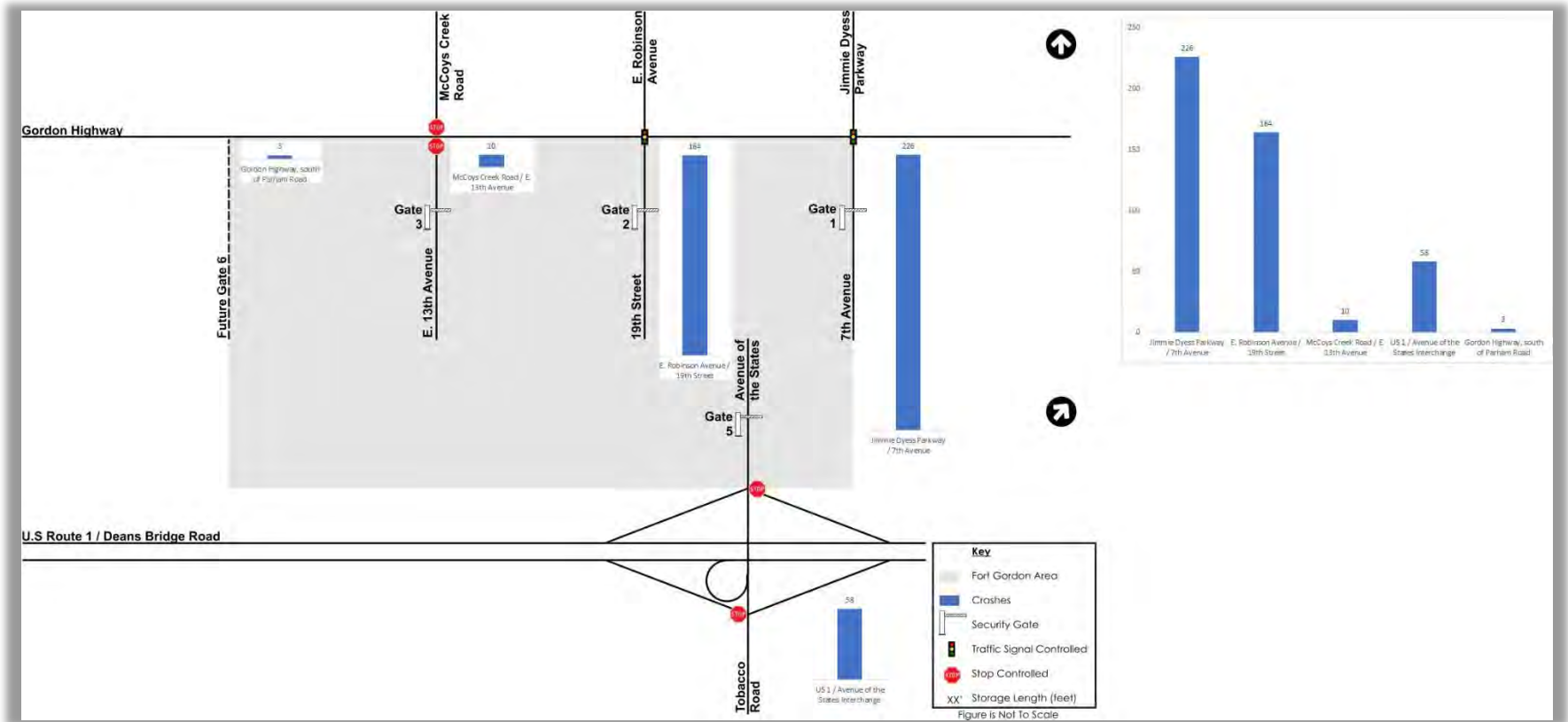
Figure 3.4: Crash Frequency in the Study Area. Source: GEARS Database, Atlanta, Georgia, June 2021.

Jimmie Dyess Parkway/7th Avenue

Jimmie Dyess Parkway/7th Avenue and Gordon Highway was listed as the ninth worst intersection by crash severity index (1.58) between 2015 and 2017 in the Augusta Regional Transportation Study (ARTS) MPO area (Source: ARTS Annual Traffic Crash and Intersection Analysis, 2011-2017 Report, April 2019); 226 crashes were reported during the study duration at this intersection. No fatal crashes were reported but 52 crashes (or 23%) resulted in an injury. The most common crash type was rear-end collision, consisting of approximately two-thirds of the total crashes. This can be attributed to congested conditions at the intersection. Day-of-week distribution is relatively flat, though crashes peak on Wednesdays and Thursdays.

Crash Severity
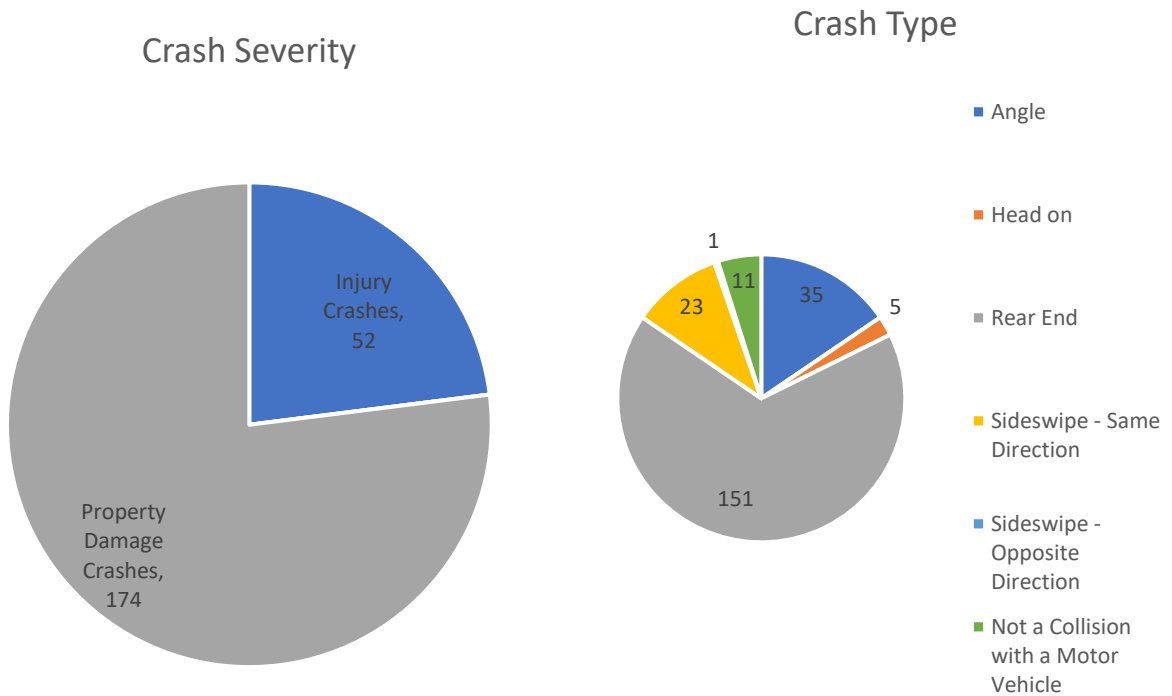
Crash Type

Figure 3.5: Crash Severity at Jimmie Dyess Parkway/7th Avenue. Source: GEARS Database, Atlanta, Georgia, June 2021.

Figure 3.6: Crash Type at Jimmie Dyess Parkway/7th Avenue Crash. Source: GEARS Database, Atlanta, Georgia, June 2021.

Crashes by Day of Week
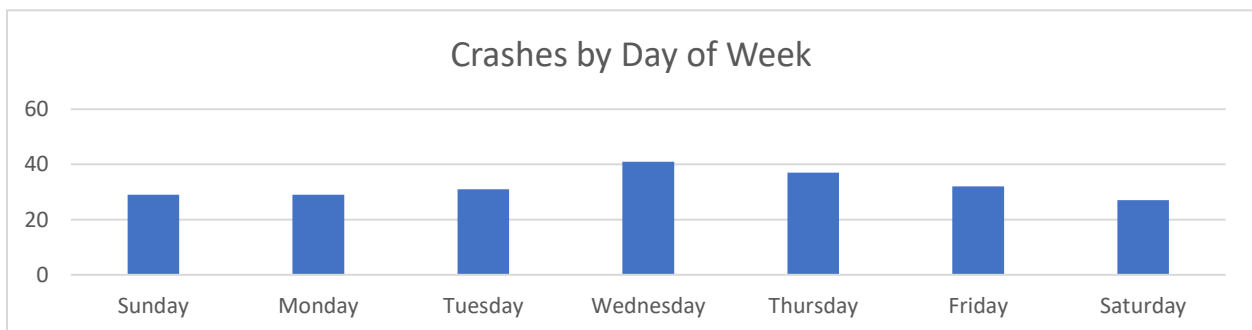
Figure 3.7: Jimmie Dyess/7th Avenue Crashes by Day. Source: GEARS Database, Atlanta, Georgia, June 2021.

East Robinson Avenue / 19th Street

At this intersection 164 crashes were reported during the study duration. No fatal crashes were reported, however, 34 crashes (or 21%) resulted in an injury. The most common crash type was shown rear-end collision, consisting of more than half of the total crashes. This can be attributed to congested conditions at the intersection. Day-of-week distribution is relatively flat, though crash frequency is highest on Wednesdays.

Crash Severity

Crash Type

- Angle
- Head on
- Rear End
- Sideswipe - Same Direction
- Sideswipe - Opposite Direction
- Not a Collision with a Motor Vehicle
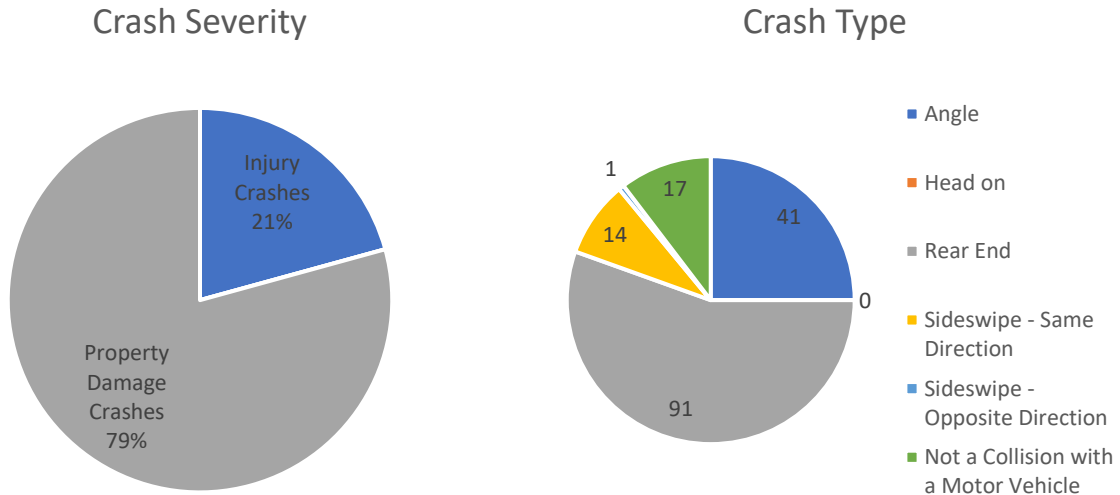
Figure 3.8: East Robinson Avenue/19th Street Crash Severity. Source: GEARS Database, Atlanta, Georgia, June 2021.

Figure 3.9: East Robinson Avenue/19th Street Crash Type. Source: GEARS Database, Atlanta, Georgia, June 2021.

Crashes by Day of Week
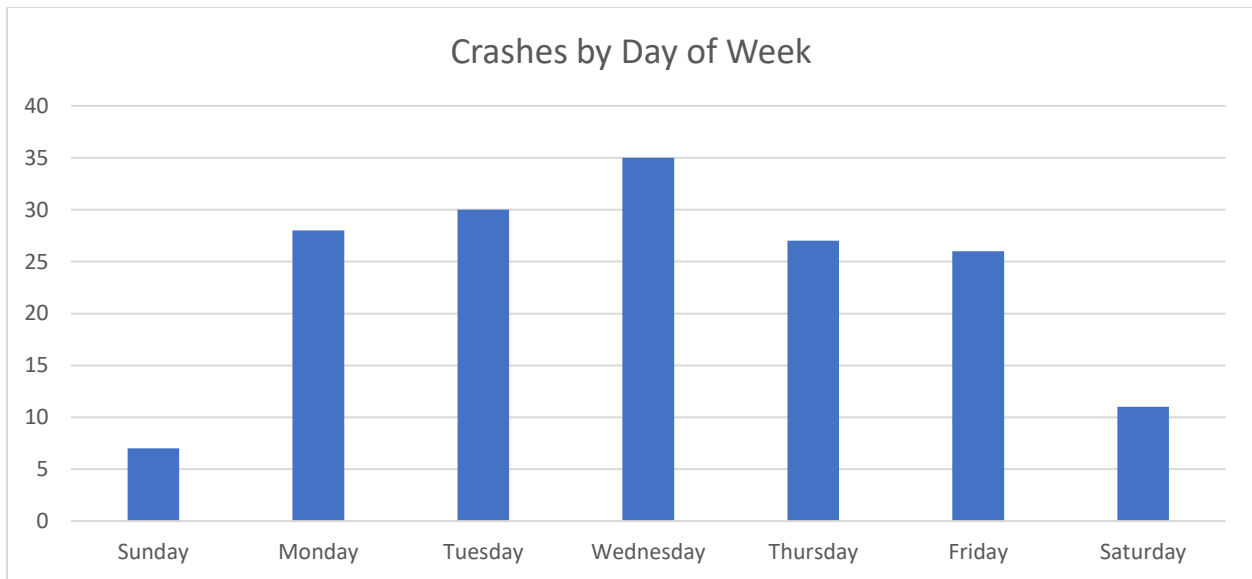
Figure 3.10: East Robinson Avenue/19th Street Crashes by Day. Source: GEARS Database, Atlanta, Georgia, June 2021.

McCoys Creek Road / East 13th Avenue

At this intersection, 10 crashes were reported during the study duration. No fatal crashes were reported but three crashes (or 30%) resulted in an injury. The most common crash type was angle, consisting of 60% of the total crashes. At this intersection, the minor street approach is stop-controlled (McCoys Creek Road/East 13th Avenue). Angle crashes are more likely when vehicles entering the major street (Gordon Highway) have unprotected movements. The likelihood of an angle crash also increases during congested periods when vehicles make riskier movements to "shoot the gap" after extended periods of delay. Day-of-week distribution is clustered between Monday and Wednesday, with most crashes occurring on Mondays.

Crash Severity
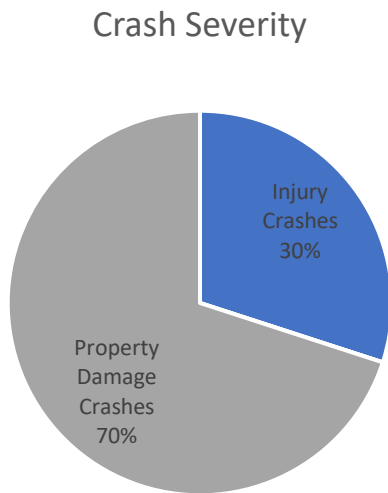
Crash Type

Figure 3.11: McCoys Creek Road/East 13th Avenue Crash Severity. Source: GEARS Database, Atlanta, Georgia, June 2021.
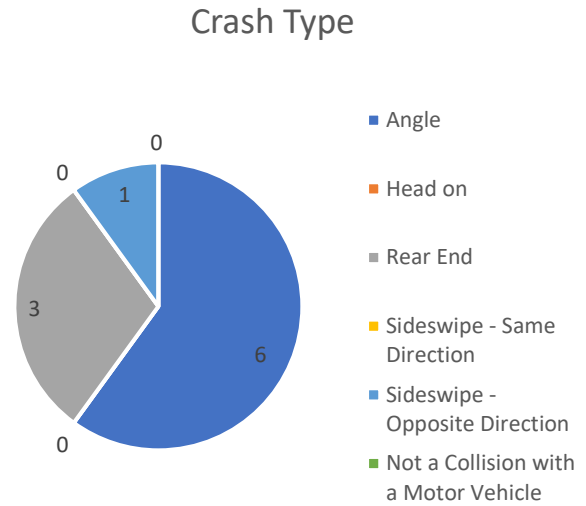
Figure 3.12: McCoys Creek Road/East 13th Avenue Crash Type. Source: GEARS Database, Atlanta, Georgia, June 2021.
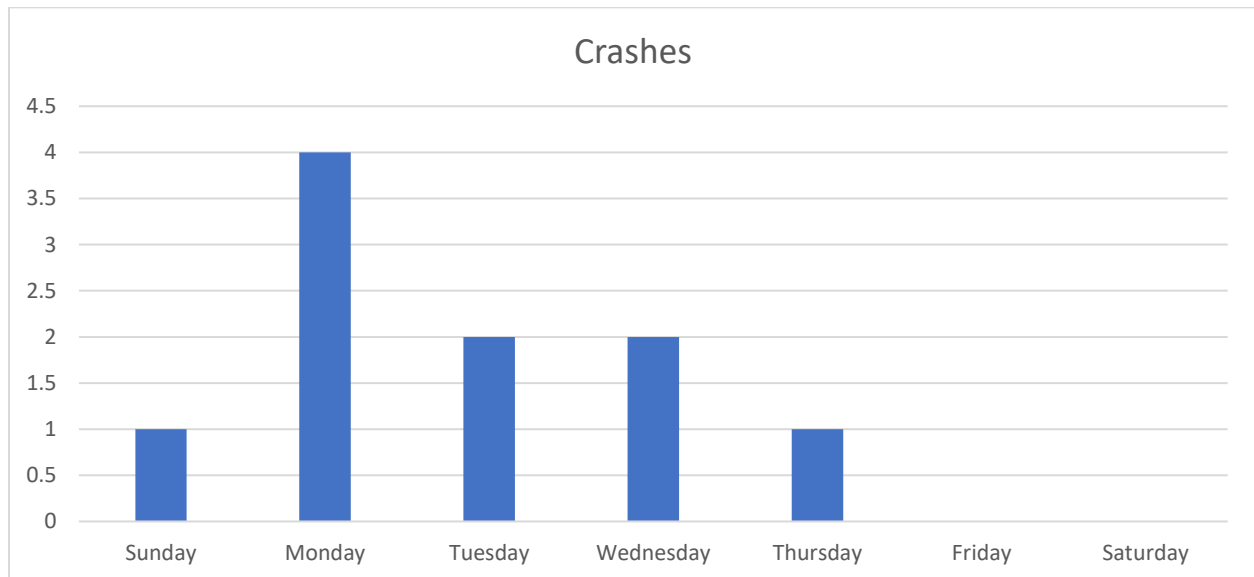
Crashes

Figure 3.13: McCoys Creek Road/East 13th Avenue Crashes by Day. Source: GEARS Database, Atlanta, Georgia, June 2021.

US 1 / Avenue of the States Interchange

At this intersection, 58 crashes were reported during the study duration. The intersection recorded one fatal crash and ten (or 17%) crashes resulted in an injury. The remaining 47 consisted of property damage only. The most common crash type was "Not a Collision with a Motor Vehicle". One common cause of this crash type is when a vehicle runs off the road and collides with roadside infrastructure. The day of week distribution is clustered around Thursday and Friday, with most crashes occurring on Thursdays.

The fatal crash (March 30, 2020) at this intersection was "Not a Collision with a Motor Vehicle". According to the Motor Vehicle Crash Report, the vehicle was traveling northbound on US 1 approaching the exit for Avenue of the States/Tobacco Road. The vehicle, shortly after taking the off-ramp, departed the roadway and crashed in the grass area between US 1 and the off-ramp.
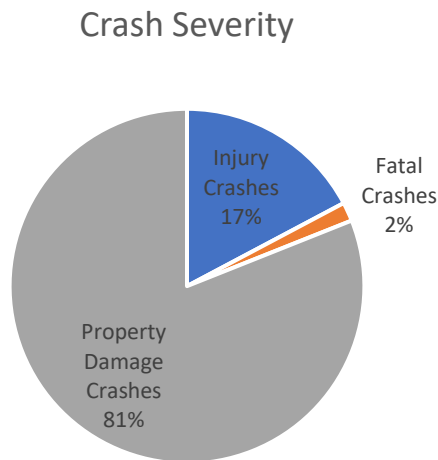
Figure 3.14: US 1/Avenue of the States Interchange Crash Severity. Source: GEARS Database, Atlanta, Georgia, June 2021.
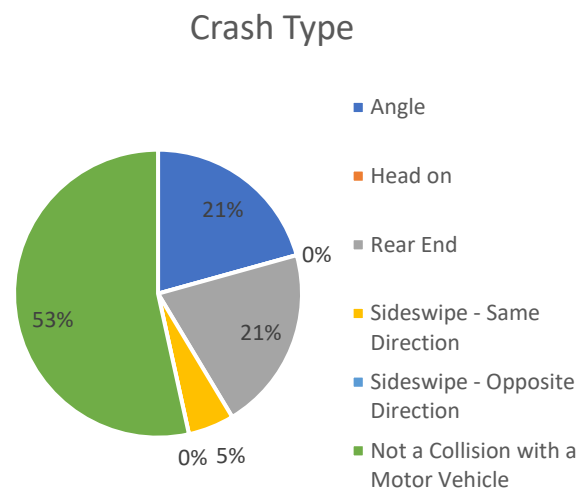
Figure 3.15: US 1/Avenue of the States Interchange Crash Type. Source: GEARS Database, Atlanta, Georgia, June 2021.
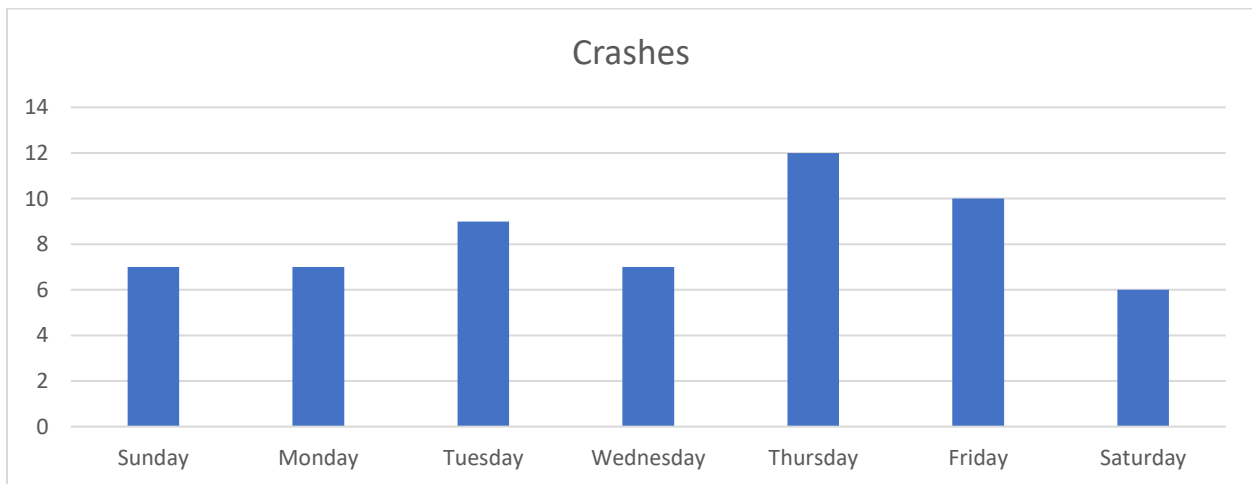
Figure 3.16: US 1/Avenue of the States Interchange Crashes by Day. Source: GEARS Database, Atlanta, Georgia, June 2021.

Gordon Highway, south of Parham Road

Gate 6 intersects with Gordon Highway approximately 0.5 miles southwest of Parham Road. In this area, three crashes were reported during the study duration. None resulted in a fatality or injury. With only three crashes, the sample size is insufficient to draw conclusions, but the following crash types were observed:

→ Rear end
→ Sideswipe – same direction
→ Not a collision with a motor vehicle

3.2.6 Traffic Counts

National Data & Surveying Services collected turning movement counts at each of the existing study intersections (Jimmie Dyess Parkway/7th Avenue/Gordon Highway, East Robinson Avenue/19th Street/Gordon Highway, McCoys Creek Road/East 13th Avenue/Gordon Highway, Avenue of the States/U.S. Route 1/Deans Bridge Road southbound ramps, and Tobacco Road/U.S. Route 1/Deans Bridge Road northbound ramps) and 13-hour volume counts along U.S. Route 1/Deans Bridge Road at the Avenue of the States/Tobacco Road interchange on Thursday, 4/29/2021, and Saturday, 5/1/2021. At the time of the traffic counts, the Gordon Highway Widening project was in progress and Gate 6 was not open to traffic. Figure 3.17 shows the 2021 peak hour traffic counts.
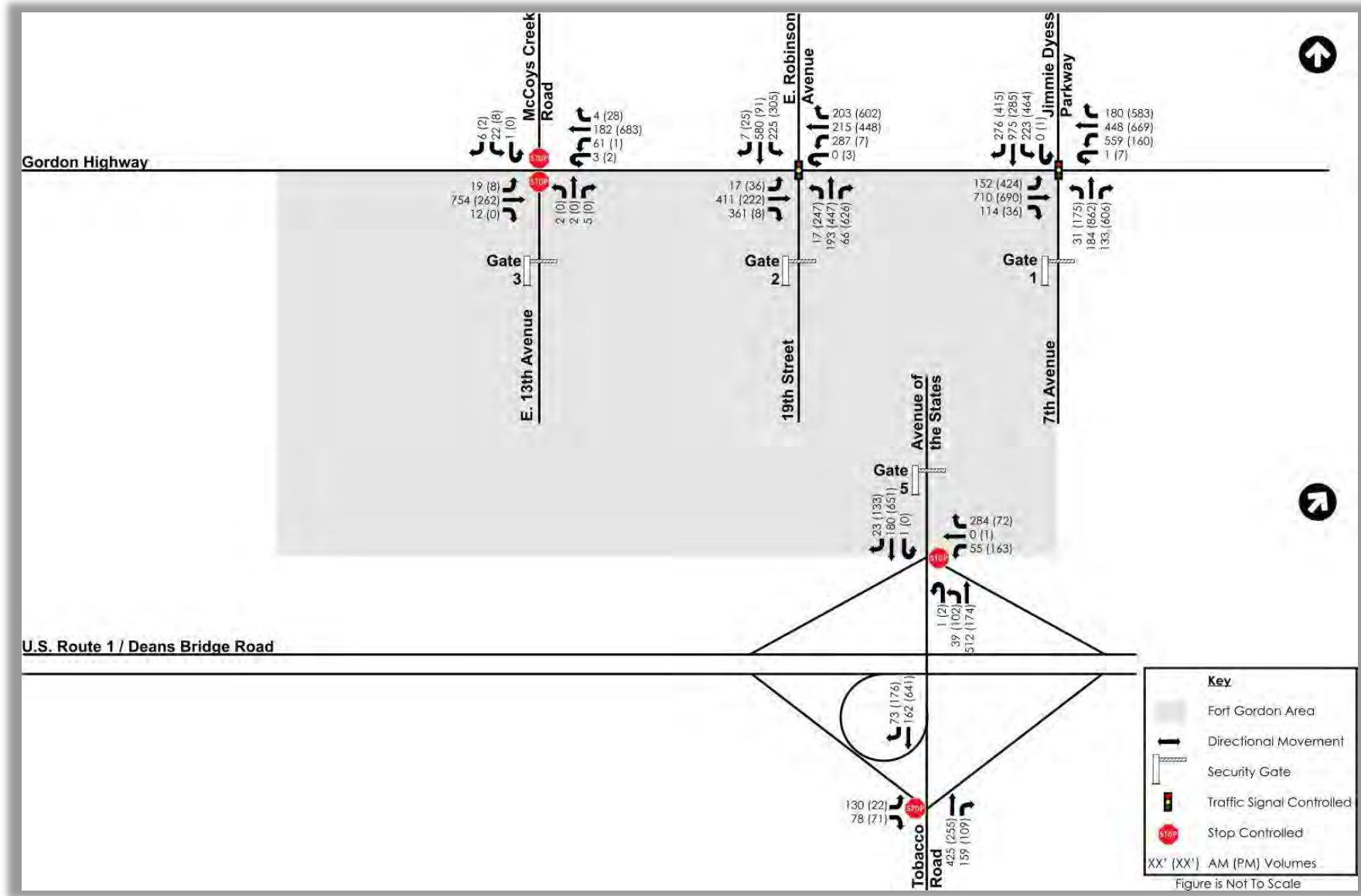
Figure 3.17: 2021 NDS Peak Hour Traffic Counts. Source: Stantec Consulting Services, 2021

3.2.7 Traffic Volume Development and COVID-19 Adjustment Factor

Collected traffic counts (April 29 and May 1, 2021) at two of the study intersections (East Robinson Avenue/19th Street/Gordon Highway and McCoys Creek Road/East 13th Avenue/Gordon Highway) have different approach geometry and permitted movements than the completed Gordon Highway Widening project geometry. In addition, Gate 6 was not open at the time of the traffic counts. Gate 6 and a new visitor center were opened to traffic on October 23, 2021. Since the Gordon Highway Widening project was near completion, it was determined that the interim work zone geometry observed at the time of traffic counts was short-term and does not provide a suitable comparison to future year scenarios. Therefore, the Gordon Highway Widening final geometry with Gate 6 open to traffic was determined to be the most appropriate base model scenario for this analysis. The base model laneage is shown in Figure 3.18.

Traffic counts were adjusted to reflect the completed Gordon Highway Widening project geometry. Figure 3.19 shows the 2021 peak hour traffic counts converted to the Gordon Highway Widening project's final geometry.

The converted movement volumes are significantly less than the design hourly volumes used in the Gordon Highway Widening project's traffic forecast. For several movements, the Gordon Highway Widening project's design hourly volumes were more than 40% than the converted 2021 traffic counts (shown in Figure 3.19). As such, and due to on-going impacts of the COVID-19 pandemic, an adjustment factor was derived to increase the converted volumes. Figure 3.20 lists the magnitude difference between the converted traffic counts and the Gordon Highway Widening project's design hourly volumes. An overall adjustment factor of 45.6% and 19.7% used to increase the traffic volumes for the AM and PM peaks, respectively, was determined by calculating the gross percent difference in traffic volumes.

The 2021 peak hour traffic counts (shown in Figure 3.18), were increased by the respective adjustment factor, to generate this study's 2021 Base Model volumes. The 2021 Base Model volumes are summarized in Figure 3.21.
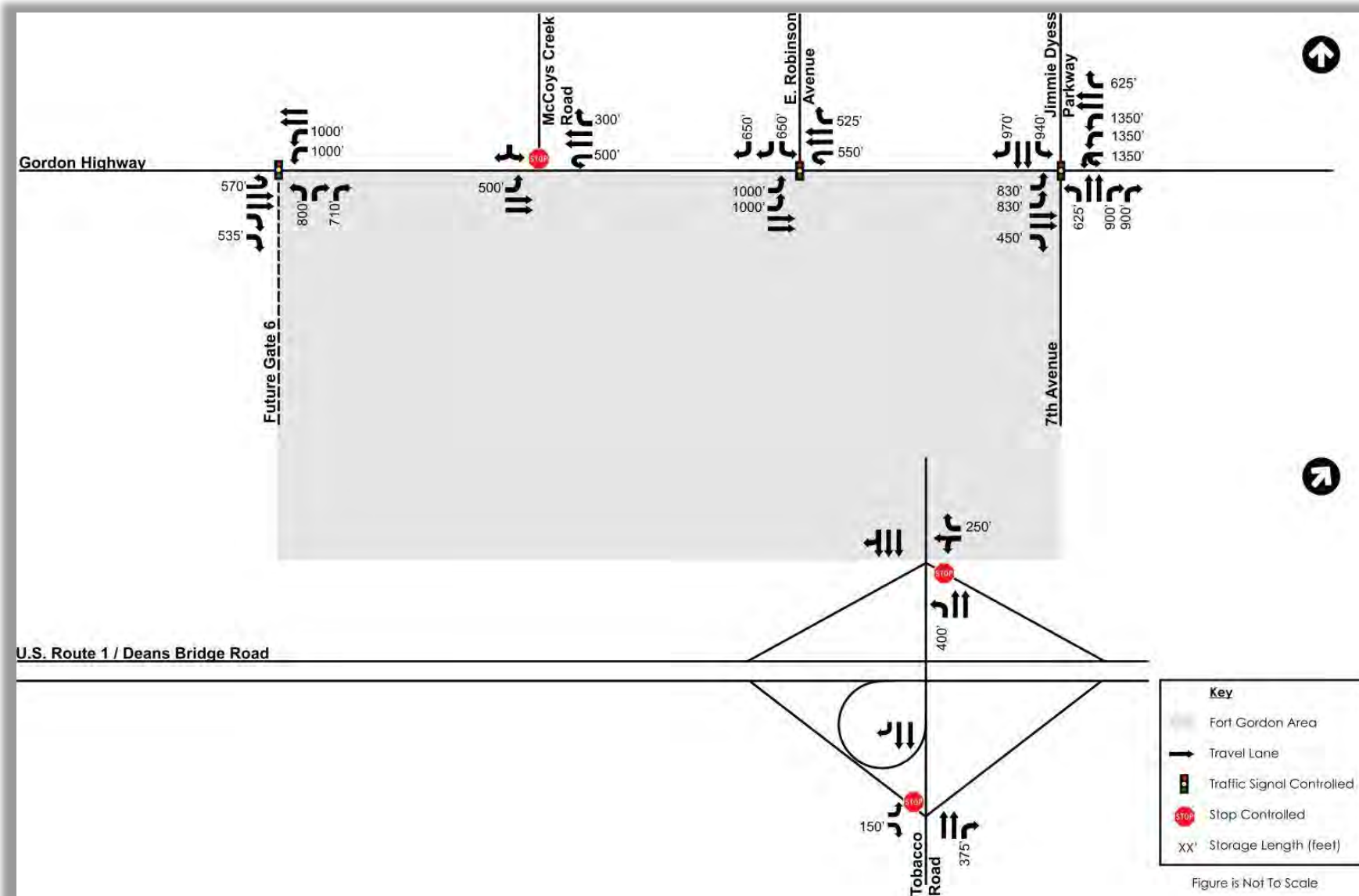
Figure 3.18: 2021 Base Model Laneage at Study Intersections. Source: Stantec Consulting Services, 2021
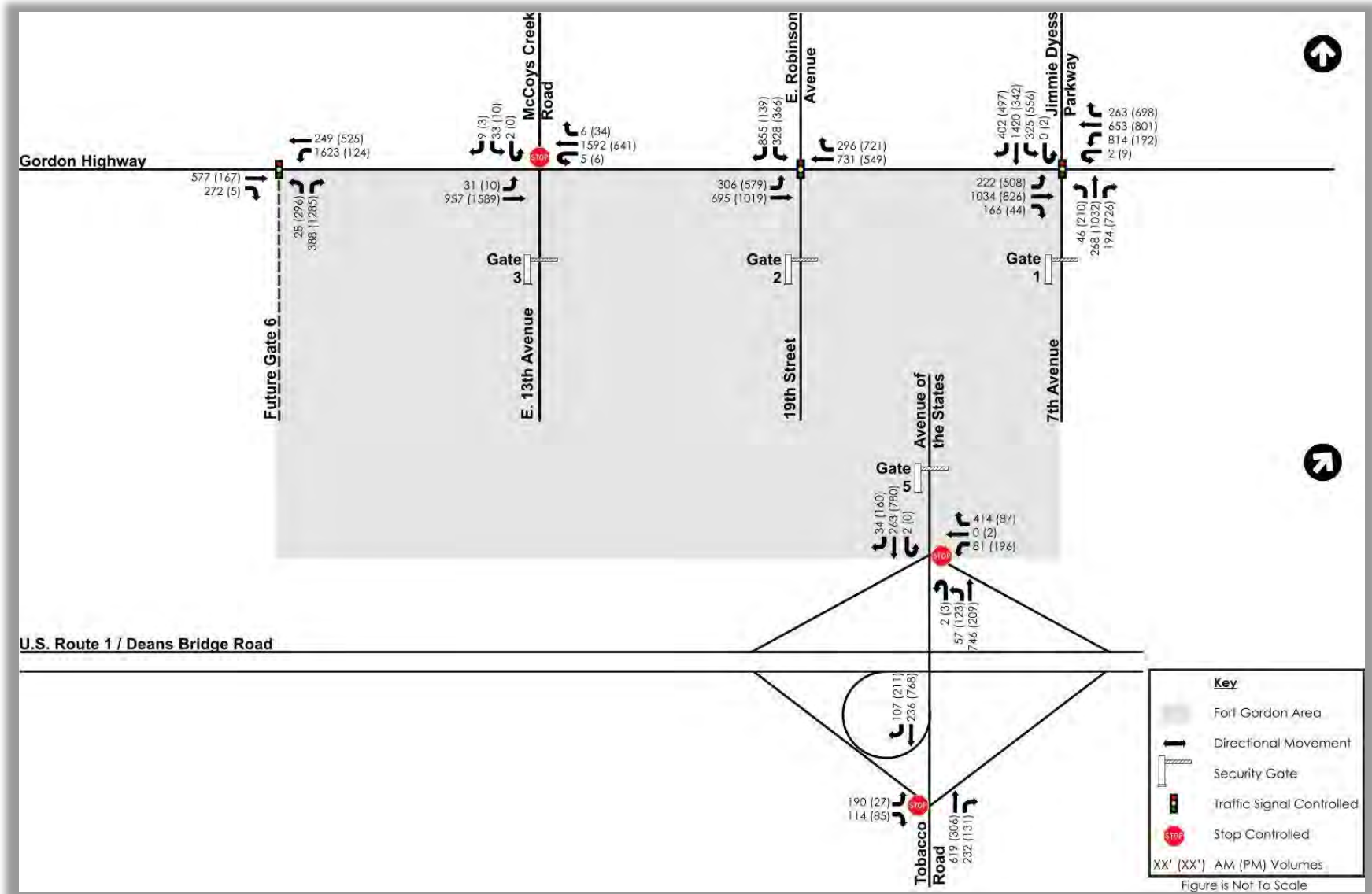
Figure 3.19: 2021 NDS Traffic Counts adjusted to Reflect the Gordon Highway Widening Project's Final Geometry. Source: Stantec Consulting Services, 2021
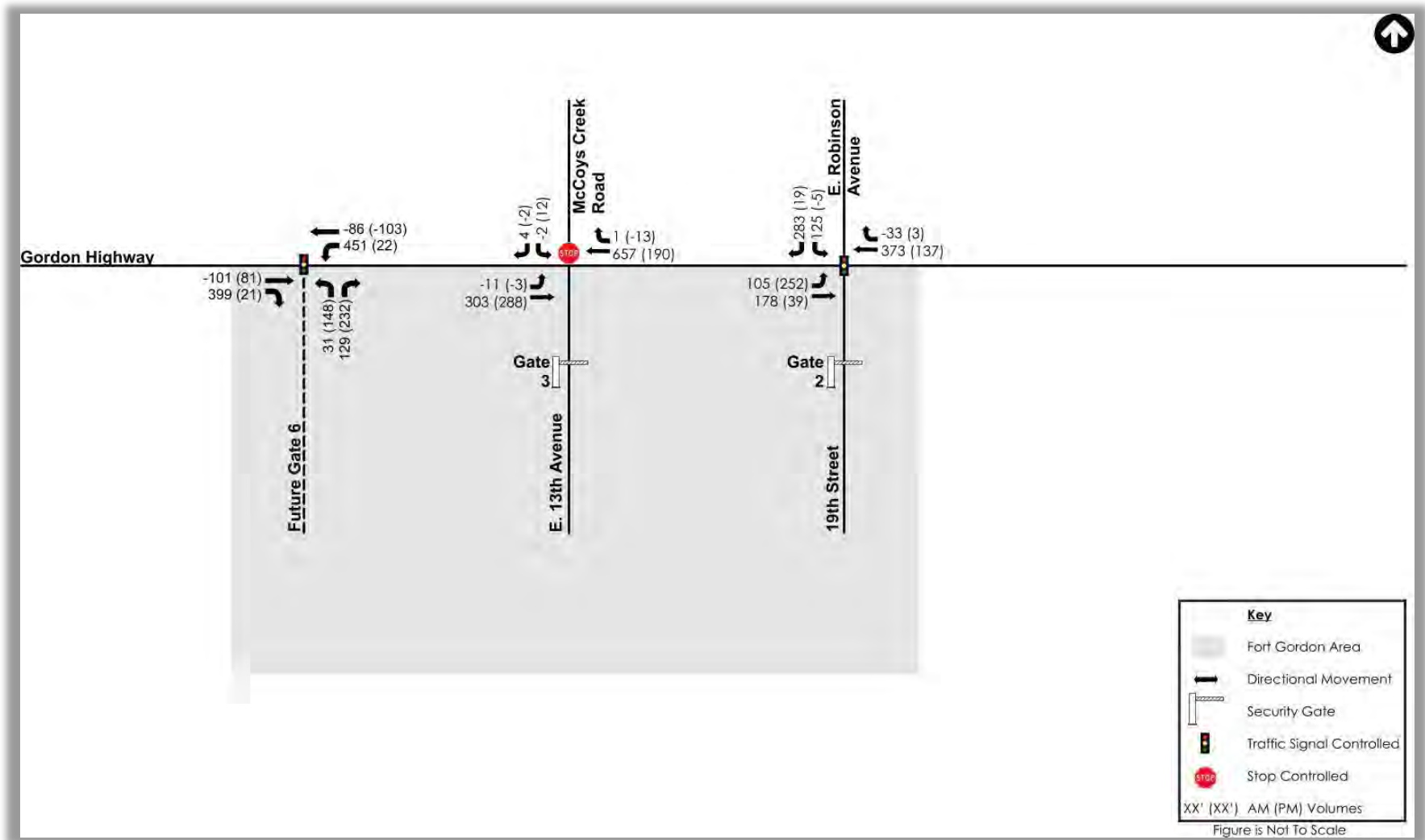
Figure 3.20: The Magnitude Difference of Volumes Between the Converted Traffic Counts and the Gordon Highway Widening Project's Design Hourly Volumes.
Source: Stantec Consulting Services, 2021
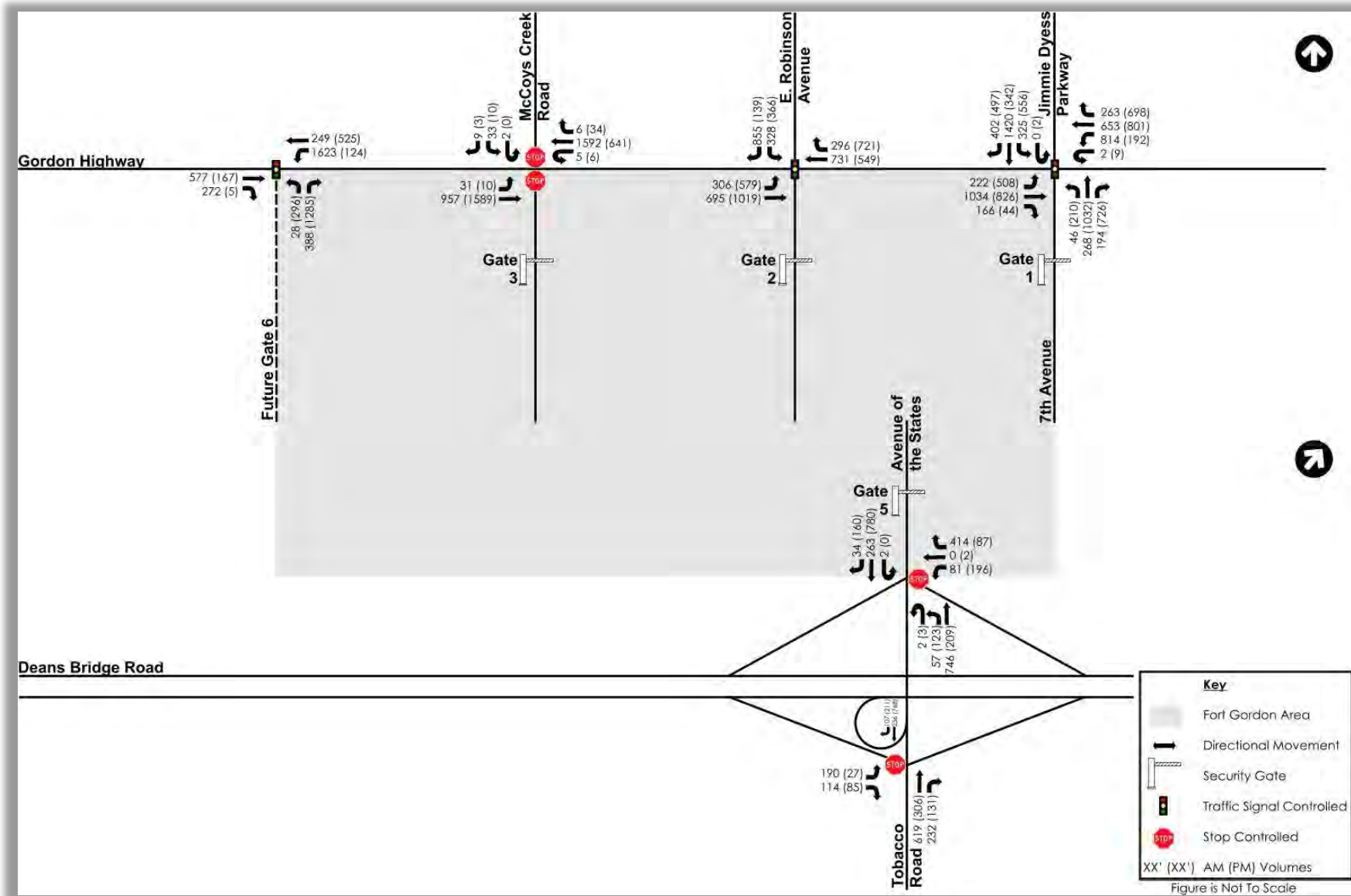
Figure 3.21: 2021 Base Model Volumes Converted to Final Gordon Highway Widening Project Geometry and Adjusted for Impacts by COVID-19.
Source: Stantec Consulting Services, 2021

3.3 Future Conditions

3.3.1 Plans and Studies

The following planning reports were reviewed for information relevant to the analysis.

→ Augusta Regional Transportation Study (ARTS) Transportation Improvement Program, February 2021
→ ARTS Future Mobility 2050, September 10, 2020
→ ARTS Annual Traffic Crash and Intersection Analysis, 2011-2017 Report, April 2019
→ ARTS Transportation Improvement Program, Amended February 8, 2018
→ ARTS 2040 Long Range Transportation Plan, Adopted September 2, 2015
→ ARTS 2035 Long Range Transportation Plan, Adopted September 2, 2010

These reports outline the anticipated growth and future transportation needs for the Augusta metropolitan planning area. Between 2015 and 2050, the ARTS metropolitan planning area is estimated to grow 35% in population and 31% in employment. Columbia County alone is expected to increase in population by 91% and employment by 64% (Source: ARTS Future Mobility 2050, September 10, 2020). The ARTS Future Mobility 2050 plan estimates growth from a variety of sources, such as the American Community Survey, Georgia Statewide Travel Demand Model 2015/2050, and Georgia Governor's Office of Planning and Budgeting. However, data directly linked to Fort Gordon or a narrative describing the impact of Fort Gordon's growth on the ARTS planning area were not available.

Fort Gordon, with the establishment of the Army Cyber Command, is a major contributing factor to employment growth in the ARTS metropolitan planning area.

There are several projects outlined in the ARTS planning reports that directly impact the intersections around Fort Gordon. Those projects (funded and unfunded) are summarized in Table 3.2. Of most relevance to this study are the projects identified on Gordon Highway, Jimmie Dyess Parkway, and East Robinson Avenue. These projects may have the greatest impact to mobility along the northern perimeter of Fort Gordon where population growth from Columbia County is anticipated to saturate the network.

Table 3.2: Future Projects at Study Intersections or of Direct Impact to Study Intersections

Project Category	GA Project Ranking	Location	Type	Costs
Tier 1 (2021-2024)	28	Louisville Road and I-20 New Interchange (PE and ROW)	New Road / Interchange	$4,560,000
Tier 1 (2021-2024)	37	Jimmie Dyess Parkway between Powell Road & Gordon Highway	Operational	$947,300
Tier 1 (2021-2024)	38	Gordon Highway from Robinson Avenue to Fort Gordon Gate 1, widen from 4 to 6 lanes (PE and ROW)	Capacity - Widening	$13,012,017
Tier 1 (2021-2024)	40	SR 4/ US 1 (Deans Bridge Road) from Meadowbrook Drive to Tobacco Road, widen from 4 to 6 lanes (PE and ROW)	Capacity - Widening	$4,416,151
Tier 2 (2025-2034)	80	Fort Gordon Access near Tobacco Road & Deans Bridge Road	Operational	$3,421,663

Project Category	GA Project Ranking	Location	Type	Costs
Tier 2 (2025-2034)	81	SR 4/ US 1 (Deans Bridge Road) from Meadowbrook Drive to Tobacco Road, widen from 4 to 6 lanes (Construction)	Capacity - Widening	$22,230,241
Tier 2 (2025-2034)	87	Robinson Avenue between Gordon Highway and Wrightsboro Road, widen from 2 to 4 lanes	Capacity - Widening	$2,923,581
Tier 3 (2035-2050)	91	Gordon Highway between Savannah River and SR 223	Operational	$4,215,887
Tier 3 (2035-2050)	28	Louisville Road and I-20 New Interchange (Construction)	New Road / Interchange	$33,900,733
Tier 3 (2035-2050)	95	Gordon Highway & Jimmie Dyess Parkway	Safety	$87,193
Tier 3 (2035-2050)	101	US 78 / SR 10 from Robinson Avenue to Fort Gordon Gate 1, widen from 4 to 6 lanes (Construction)	Capacity - Widening	$96,736,165
Unfunded Priority	200	Parham Road between Newmantown Road and Gordon Highway, widen from 2 to 4 lanes	Capacity - Widening	$8,453,200
Regional Transportation Needs	-	Gordon Highway Park and Ride and express bus service from US 78 to Jimmie Dyess Parkway	Transit	$4,650,600
Regional Transportation Needs	-	US 1 / Deans Bridge Road Park and Ride at Tobacco Road	Transit	-

Source: ARTS Future Mobility 2050, September 10, 2020

3.3.2 Future Transportation Network

Tier 1 and 2 projects identified in the ARTS Future Mobility 2050 report have near-term potential to improve the transportation network. Beyond Tier 1 and 2, there are more significant and impactful projects in Tier 3. With more than $96 million (project year estimate) budgeted for capacity and widening improvements on Gordon Highway between East Robinson Avenue and Jimmie Dyess Parkway, significant and transformative improvements are in the queue for Fort Gordon's most congested access point. A new interchange at Louisville Road and I-20 is also listed in Tier 3 and would provide more direct access to Gate 6 and relief of traffic congestion at Jimmie Dyess Parkway and Gordon Highway (Gate 1). Additional capacity and widening improvements on East Robinson Avenue and U.S. 1/Deans Bridge Road will further increase throughput at Fort Gordon access points.

3.3.3 Future Access Gates

With the completion of the Gordon Highway Widening project and the new Gate 6, access to Fort Gordon is limited to three gates near key intersections or interchanges on the periphery of the Installation. Gate 1 (Jimmie Dyess Parkway/7th Avenue/Gordon Highway) and Gate 6 (new Gate 6 access road/Gordon Highway) will be signal controlled, while Gate 5 (Avenue of the States/Tobacco Road) is accessed from a grade-separated partial cloverleaf interchange (stop-controlled) at U.S. Route 1/Deans Bridge Road. The

future access gate layout and volume distribution is shown in Figure 3.22. The existing conditions and future conditions model analysis both use the future access gate layout for a reliable study benchmark and comparison.

Figure 3.22: Future Access Gate Layout Used for the Existing and Future Model Analysis and Estimated Volume Share (%) by Gate. Map Source: Google Earth; Data Source: Stantec Consulting Services, 2021

3.3.4 Anticipated Growth and Traffic Volume Development

Population growth identified in the ARTS Future Mobility 2050 report (average 0.87% annual population growth for the planning area between 2015 and 2050) and historical AADT data (Source: GDOT Traffic Analysis and Data Application (TADA)) indicate growth between 0.4% and 5.2% per year between 2010 and 2019. GDOT's historical AADT data consists of multi-year data at several locations around the perimeter of Fort Gordon. The historical AADT data serves as a proxy for travel demand growth induced by Fort Gordon's rapid growth (approximately 9,000 additional service members assigned to Fort Gordon) during the past decade. The historical AADT growth, summarized in Figure 3.23, supports the ARTS Future Mobility 2050 report that estimates that most of the Augusta area growth will occur in Columbia County (north of Fort Gordon and Gordon Highway). Traffic volumes at locations along Gordon Highway grew much faster (between 1.9% and 5.2%) than locations near the Deans Bridge Road/Avenue of the

States/Tobacco Road interchange (0.4% and 1.2%). Demographic trends continue to point towards growth in Columbia County and future strain on Gates 1 and 6 along Gordon Highway.

In line with these data sources, a 2% average annual growth in traffic is assumed to conservatively account for Columbia County's significant growth (91% between 2015 and 2050) and employment growth at Fort Gordon. This growth rate does not explicitly account for growth on specific roadway segments, Fort Gordon gates, or employment centers; the growth rate is a universal average, determined by available data, to broadly represent the anticipated growth in the vicinity of Fort Gordon. Between the base year (2021) and future year analysis (2040), a 2 % annual growth rate equates to a total traffic volume increase of 45.7%.

Figure 3.23: Average Annual Growth in AADT at GDOT Locations between 2010 and 2019. Map Source: Google Earth; Data Source: GDOT Traffic Analysis and Data Application (TADA), 2021

The 2021 converted traffic counts (shown in Figure 3.21) were increased by 45.7% to 2040 Future Year Model volumes, as shown in Figure 3.24.
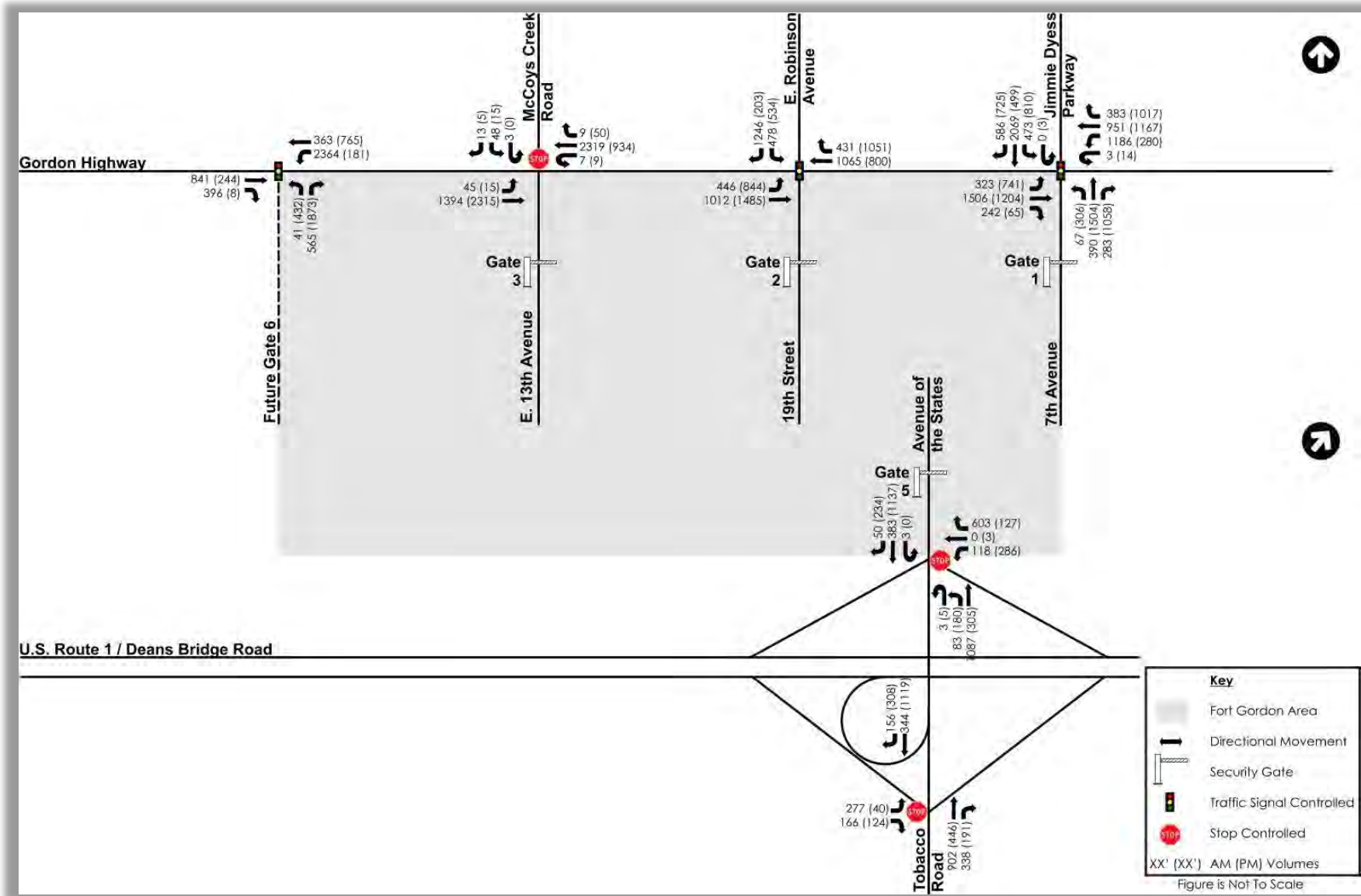
Figure 3.24: 2040 Projected Volumes. Source: Stantec Consulting Services, 2021

3.4 Air Service Assessment

This section assesses air service at the Augusta Regional Airport (AGS), focusing upon longer-term trends and using 2019 as a baseline. This assessment includes air service at AGS, "leakage" to other regional airports, and the potential for new air service. In addition, a summary of the impact of COVID-19 is also provided. A review of increased personnel at Fort Gordon and the subsequent (forecasted) population increase is reviewed and its impact upon air travel demand from the region assessed.

3.4.1 Summary

Once disruptions related to the COVID-19 pandemic end and air travel demand normalizes to 2019 levels, it is likely that 2019 AGS air service levels will be insufficient to meet the increased air travel demand created as a result of growth at Fort Gordon. This assessment is based upon 2019 airline load factors and forecasted regional population growth. While airlines would add capacity over time to meet this increased travel demand, it is not likely to keep pace with demand. Regarding the Washington, D.C. market, flights to Ronald Reagan Washington National Airport are slot-restricted, meaning that capacity is limited. AGS will likely not get additional service to Washington, DC unless airlines reduce service to another Washington, DC market. The result is that AGS will see increased "leakage" to other area airports and relatively higher airfares and/or a combination of the two in future years.

3.4.2 Augusta Regional Airport (AGS) Catchment Area Review

AGS is essential to the region's economic infrastructure, supporting a number of industries including, but not limited to, aerospace technology, manufacturing, distribution, tourism, and agriculture. Some of the area's major employers include Proctor & Gamble, John Deere, Kellogg, Bridgestone/Firestone, and T-Mobile. It also provides access to Fort Gordon and numerous leisure activities including the Augusta National Golf Club.

Figure 3.25 illustrates the AGS catchment area, which is defined as a 60-minute drive from AGS. Color density shows population density; the darker the color, the higher the population density. As shown, most of the population is close to AGS. The 60-mile catchment area (highlighted below) consists of a population of approximately 677,000 people. When looking at a core catchment area of 30 miles for AGS, the population is 533,000 people.

The U.S. generated approximately 400 million Origin-Destination passengers in 2019. With a population of roughly 330 million people, this equates to about 1.2 passengers per capita. While this can vary widely by market, if AGS generated 1.2 trips/capita, this equates to approximately 640,000 enplaned passengers at 30 miles and almost 778,000 enplaned passengers at 60 miles. However, a fair amount of this air traffic base is "leaking" – instead driving to another regional airport such as at Atlanta or Charlotte.

Figure 3.25: Augusta Regional Airport (AGS) Catchment Area
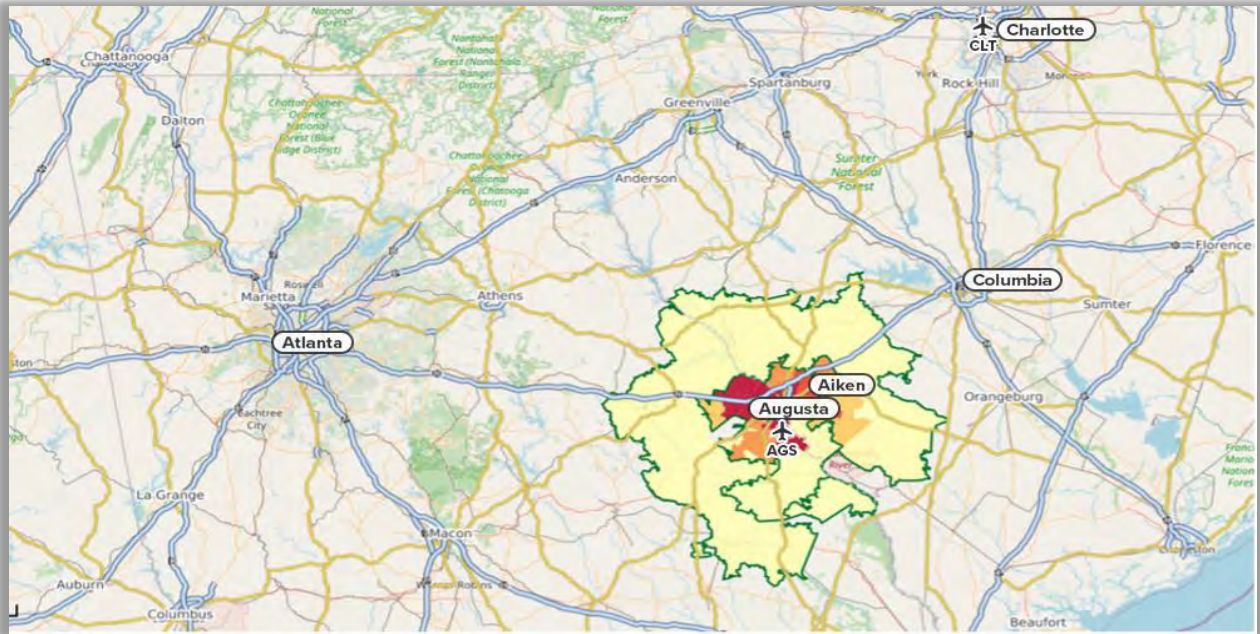
Leakage has and will likely continue to be an issue at AGS. It is a roughly 2.5-hour drive to Charlotte and about a 2.4-hour drive to Atlanta. Charlotte and Atlanta are two of the largest airport hubs in the world, offering nonstop service to most large cities, in addition to offering airfares that are generally lower than those offered in smaller spoke markets such as AGS. Columbia, SC is only a 1.3-hour drive away. In addition, Savannah to the south has seen significant tourism and subsequently air service growth over the past two years, including Southwest Airlines starting service in 2020. It is likely that more traffic will "leak" to Savannah going forward. Savannah is also a 2.5-hour drive from Augusta. Drives to Atlanta, Charlotte, Columbia, and Savannah are all on 4-lane highways.

Figure 3.26: Airport of Origin 2019 (Bookings within 30 Miles)

Figure 3.26 illustrates the airport of origin for passengers booking air travel from the Augusta catchment area for 2019. As shown, 56% of passengers from the region booked traveled out of AGS, while 44% flew out of other regional airports. AGS generated 320,000 enplaned passengers in 2019 (source: USDOT), this implies that 571,000 passengers booked travel out of the Augusta regional catchment area which is less when compared to the

population-based estimates derived earlier. Of the 517,000 people that booked a flight from the catchment area, approximately 251,000 chose to fly out of other regional airports.

3.4.3 Historical AGS Traffic Trends

Despite leakage, AGS has generated impressive air traffic growth over longer periods of time. As shown in Figure 3.27, AGS has experienced 82% passenger growth over the past 20 years (1999 to 2019). Specifically, AGS's Compound Annual Growth Rate over the past 20 years was 3.5%, 5.4% over 10 years, and 4.6% over 5 years. As shown, AGS has steadily outpaced U.S. trends since 2006. AGS's performance since 2006 is rare, as most airports saw significant traffic declines during the deep recession from 2007-2009 and only recovered later in the next decade.

Figure 3.27: AGS vs U.S. Enplaned Passengers (Indexed to 1999)
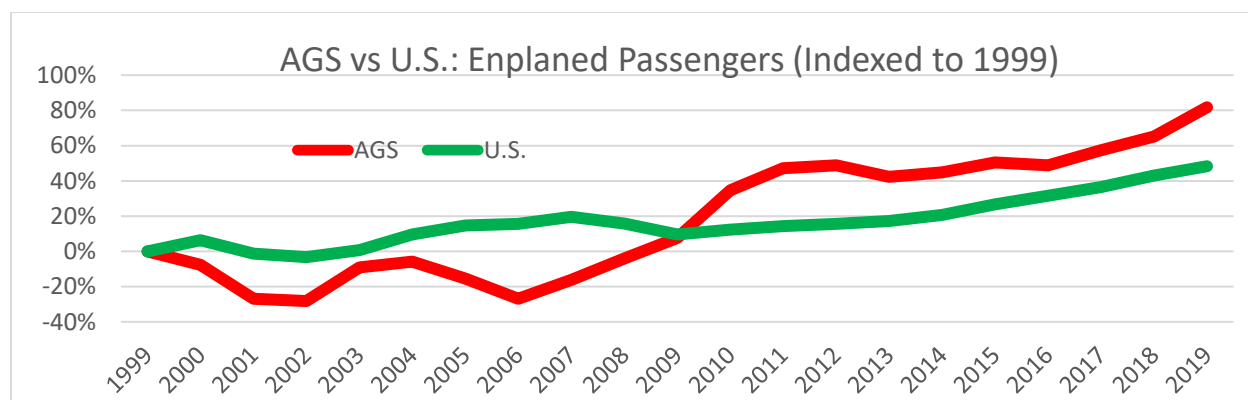
Source: Diio Mi (DOT Report T100), 2021

3.4.4 COVID-related Capacity & Traffic Trends

During the COVID-19 pandemic, AGS has generally outperformed U.S. trends. This is likely because of AGS's service to outdoor types of leisure activities, as travelers pursued travel to markets that were deemed safer to travel to during the pandemic. The worst performing airports across the U.S. were generally large airports, particularly those on the east coast. Big cities were hit particularly hard by the pandemic; business travel has dropped significantly as travelers avoided big cities. AGS particularly benefited from American Airlines, which has kept capacity at relatively higher levels as compared to their competition during the pandemic.

In addition, American Airlines added nonstop service to Washington, D.C., starting what appears to be permanent service in February 2021 with one daily round-trip service. Going forward, this route will likely be flown with a 65-seat, dual cabin CRJ-700 aircraft.

Table 3.3: Schedule Monthly Summary Report for Passenger (Air - All) flights from AGS for travel August 2021 vs. August 2019

Travel Period		Aug 2021			Aug 2019		
Mkt Al	Destination	Flights	Seats	ASMs	Flights	Seats	ASMs
AA	Charlotte	146	8,383	1,173,620	185	10,971	1,535,940
AA	Washington, DC	31	2,015	943,020	0	0	0
AA	Dallas-Fort Worth	31	2,356	2,059,144	31	2,015	1,761,110
DL	Atlanta	217	18,904	2,703,272	263	19,499	2,788,357
TOTAL		425	31,658	6,879,056	479	32,485	6,085,407

Difference			Percent Difference		
Flights	Seats	ASMs	Flights	Seats	ASMs
(39)	(2,588)	(362,320)	(21.1%)	(23.6%)	(23.6%)
31	2,015	943,020			
0	341	298,034	0.0%	16.9%	16.9%
(46)	(595)	(85,085)	(17.5%)	(3.1%)	(3.1%)
TOTAL	(54)	(827)	793,649	(11.3%)	(2.5%)	13.0%

Table 3.3 illustrates AGS capacity for the most current month (August 2021) as compared to August 2019. As shown, AGS's seat capacity has decreased 2.5% versus 2019 levels. The U.S. as a whole has decreased by approximately 15%. As shown, AGS benefited from the return of Dallas Fort Worth service and the new Washington, DC service. Finally, Delta Air Lines also returned service to near 2019 levels. For Delta, this was unusual as Delta's system capacity has consistently been down about 20% versus 2019 levels. This table considers Available Seat Miles (ASMs) which measures carrying capacity available for all flights to generate revenues. This increased by nearly 800,000 from August 2019 to August 2021.

3.4.5 Air Service Assessment of Currently Served Routes

To assess AGS's current air service, an evaluation of carrier Revenue per Available Seat Mile (RASM) was conducted as shown below. RASMs indicate a route's relative profitability as compared to their system averages. As shown below, the curved line illustrates the average RASM or profitability at every mileage level. The light blue dots represent each market in the carrier systems (for American Airlines and Delta). The red dots show the RASM for American Airlines service to Charlotte and Dallas-Fort Worth, while the dark blue dot shows the RASM for Delta's service to Atlanta. Data for Washington, DC service is not yet available. Both Atlanta and Charlotte are operated as "feeder" markets, where the vast majority of the traffic is connecting. This typically results in relatively lower yields, although airlines expect this in very short haul markets such as AGS-Charlotte and AGS-Atlanta. In summary, both routes are generating solid results as compared to similar markets.

Figure 3.28: Carrier RASM & Stage Length for Markets < 1,500 miles

AGS Air Service Overview: CY 2019

Airline	Market	Daily Depts	Enplaned Psgrs	Departing Seats	Load Factor
AA	CLT	5.7	102,103	130,608	78
	DFW	0.8	17,149	22,123	78
DL	ATL	7.8	200,811	233,077	86
	Total	14.3	320,062	385,808	83
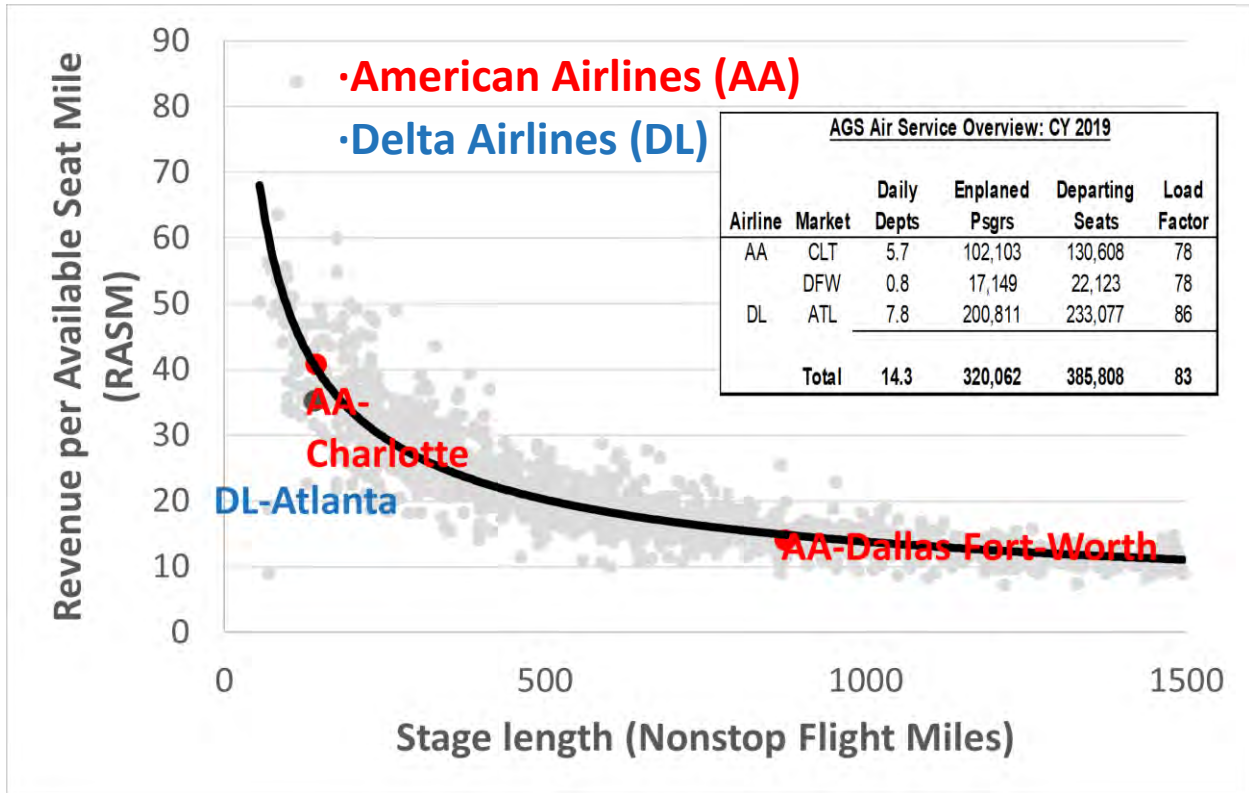
* Source Diio Mi; YE 4Q2019, 2021

As shown, American Airlines' Charlotte and Dallas-Fort Worth service operated at very close to system averages in 2019, while Delta's Atlanta service was slightly below. Load factors were solid-to-high, with both American Airline's Charlotte and Dallas-Fort Worth service operating at 78% load factors in 2019, with Delta's Atlanta service generating a relatively high 86% load factor. Again, all three core routes generated solid results. Finally, American Airline's initial results flying to Washington, DC have been good, with April at a 61% load factor and May at 63%. In today's environment, those results (which are the most current available at the route level) appear solid. These results would be expected to improve throughout the coming months.

3.4.6 Assessment of Potential for New Routes

In evaluating a market's potential for new service, it is necessary to evaluate Origin-Destination level demand, both that which is flying out of the airport (AGS) and leakage from the catchment area that is flying out of other airports. For example, Table 3.4 there were an average of 32.5 Origin-Destination passengers daily each way (PDEW) flying between AGS and Dallas-Fort Worth. There were also another 22.5 leaking to other regional airports, indicating that approximately 54.8 passengers were booked daily from the Augusta catchment area to fly to Dallas-Fort Worth.

Table 3.4: Top AGS Origin-Destination Markets: 2019

Rank	City Name	Airport Code	Reported PDEW	Leaked PDEW	TRUE PDEW	Avg Fare
1	Dallas-Fort Worth	DFW	32.5	22.3	54.8	$72
2	Baltimore	BWI	30.5	32.5	63.1	$89
3	Washington, D.C.	DCA	28.7	24.2	52.9	$208
4	New York-La Guardia	LGA	25.7	63.3	89.1	$77
5	Chicago-O'Hare	ORD	22.1	30.8	52.9	$201
6	Philadelphia	PHL	18.9	17.2	36.1	$120
7	Detroit	DTW	17.5	12.3	29.8	$93
8	Boston	BOS	17.4	40.0	57.4	$202
9	Las Vegas	LAS	17.3	46.7	63.9	$207
10	Denver	DEN	17.0	19.3	36.3	$212

Source: Diio Mi (USDOT) and ARC, 2021

Based upon this review, there appear to be three markets with new/additional nonstop potential from AGS:

- **Washington, D.C.** There were 116 PDEWs flying between AGS and the Washington, D.C. metro area when including Baltimore. Baltimore is likely attracting price-sensitive traffic flying to the DC area. As noted earlier, American Airlines has initiated service to Washington, DC from AGS earlier in 2021. Additional service to Washington, DC will likely be impacted by American Airlines being able to attract additional takeoff and landing slots at Washington, DC. Another option to DC would be service to either Washington, Dulles (mostly likely on United Airlines) or Baltimore on a carrier such as recent start-up Breeze Airways.

- **New York City.** There are 89 booked PDEWs flying between AGS and New York LaGuardia. As with Washington, DC, LaGuardia is also a slot-restricted airport with limited access. Should those slots become available, Delta Air Lines would be the most likely carrier to add more service. Another option for New York City service would be to Newark on United Airlines.

- **Chicago-O'Hare.** There are almost 53 booked PDEWs and significant connectivity options. The most likely carrier to add this service would be American Airlines or possibly United Airlines should they enter AGS.

3.4.7 Forecasted Population Growth and Impact upon Air Travel Demand

Chapter 2 estimates population projections for the Study Area and specifically for base growth at Fort Gordon. A summary of those population projections follows.

Population growth is estimated at 54,136 within the Study Area from 2020 to 2030. This is an 8.85% growth rate over the 10-year period or a 0.85% Compound Annual Growth Rate. This compares to forecasted U.S. population growth of 5.6% or a 0.55% Compound Annual Growth Rate over the same 10-year period. In other words, the Augusta area is forecasted to experience a population growth rate of approximately 50% more than the rate of growth of the nation as a whole. Much of this growth will be tied to the increase in military personnel at Fort Gordon.

Based on the industry average of 1.2 trips per capita, the forecasted population increase of 54,136 would result in an additional 64,963 enplaned passengers being generated from the region, regardless of the airport of origin. Based upon studied 2019 leakage, a little over half of these would likely use AGS, with the remainder leaking to other regional airports due to the relative availability of nonstop air service or lower airfares.

Figure 3.29: Study Area Regional Population Projections
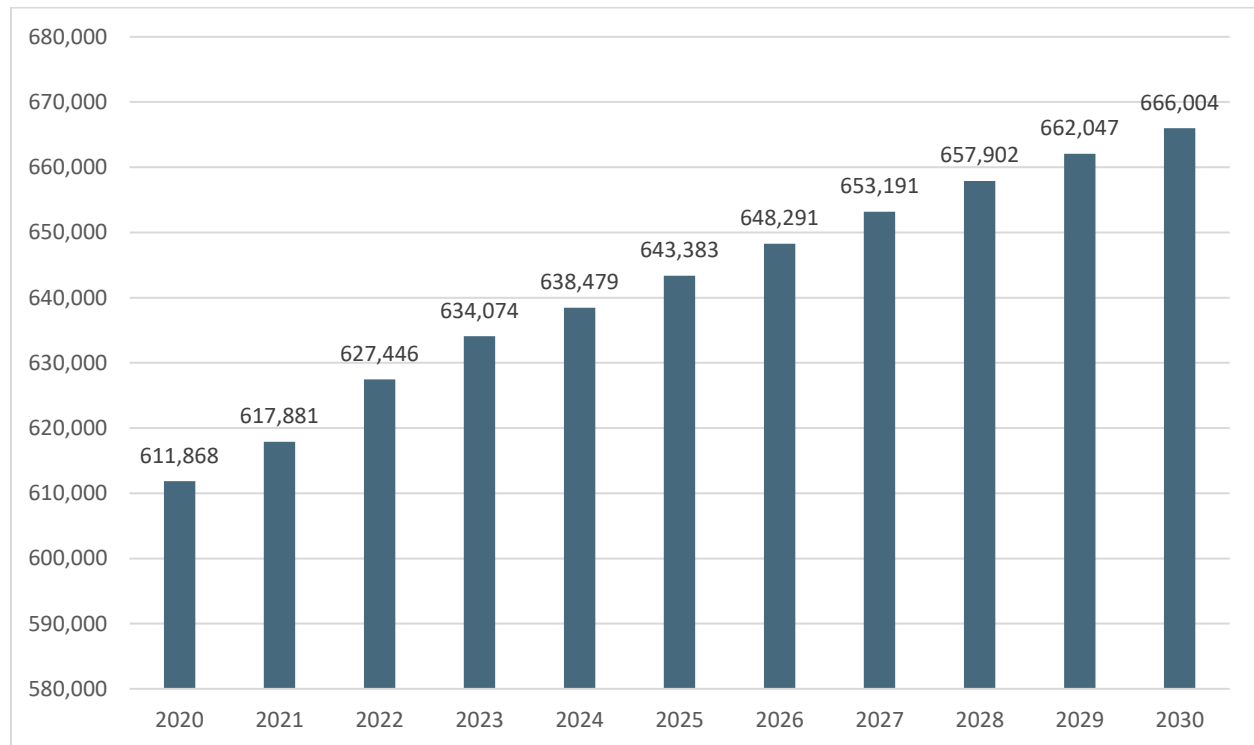
In summary, AGS' current air service is performing well, particularly the 5 daily trips on American Airlines to their Charlotte hub and DL's 7 daily roundtrips to their Atlanta hub. Both airline/routes will likely see additional seat capacity as traffic/loads continue growing. That said, due to the number of flights offered by American Airlines and Delta, they are already hitting the majority of their connecting banks at those hubs. Eventually, both will possibly look to add additional hub services. It appears that American Airlines is already doing this with service to both Dallas-Fort Worth and Washington, DC, with the potential for more in the future. There are two to three markets that appear to be candidates for new, nonstop air service over the next few years and possibly more in the longer term.

In addition, AGS's long-term traffic growth has outpaced the broader U.S. market, particularly when considering long-term leakage to the relatively larger airports in the region. However, determining the timing of any new service is very difficult right now. With the continuation of the COVID-19 pandemic, it is difficult to predict when air travel will return to pre-pandemic levels. While trends have improved since 2020's depressed levels, business traffic is still down at least 60% versus 2019 levels and lower yielding leisure traffic isn't sufficient to return airlines to pre-COVID profitability.

The airline industry is currently experiencing aircraft and pilot shortages. The major airlines are indicating that they could not maintain their 2019 schedules today even if they wanted to, given the shortage of planes and pilots. Airlines are indicating that operations will hopefully normalize.

"Leakage" for an airport is difficult to "fix." This is particularly true for airports relatively close to major airline hubs. In the case for AGS, there are two hubs that are close. Hubs can work as funnels, drawing traffic for both their nonstop air service and relatively lower airfares.

The best strategy to address leakage is garnering additional air service, particularly from low-cost airlines that offer relatively lower airfares. Another strategy is for airports to work with their local businesses to encourage use, for example, requiring corporate travelers to use the local airport unless airfares are a certain amount higher relative to other regional airports ($200 is a fare difference that is regularly used). In addition, if there is a relatively large or influential corporation that is willing to take the role of a "champion" and encourage travel through the local airport, it can be useful in leading other companies to follow suit. One successful example of this is the South Bend International Airport, which has created a program called Project Propel. Project Propel has helped to shrink their air traffic's leakage to Chicago by 25%. This was due to business travelers using the local airport and, subsequently, more air service has been added to the market, which further improved the results. The "champion" in this example was the University of Notre Dame.

3.5 Existing and Future Capacity Analysis

Capacity analyses of the study intersections were completed using the procedures in the Transportation Research Board's Highway Capacity Manual (HCM) 6th Edition. Synchro 10 was used to apply the methodology at the study intersections.

Operating conditions at intersections are evaluated in terms of Levels of Service (LOS). LOS A through D are generally considered to be adequate peak hour operations. LOS E and F are generally considered inadequate conditions. However, in urban areas, LOS D and E are generally considered acceptable.

Levels of service for signalized intersection are reported in composite fashion, i.e., one LOS for the entire intersection, and this is based on average control delay. Individual turning movements at a signalized intersection may experience inadequate LOS, particularly where those volumes are relatively low, while the intersection as a whole has an adequate LOS. This is due to the major movements being given priority in assigning signal green time.

Traffic conditions at unsignalized intersections, with stop-sign control on the minor street only, are evaluated for the minor street approaches and for the left-turns from the major street. This is because the major street traffic is assumed to have no delay because there is no control (i.e., no stop sign). Inadequate LOS for minor street approaches to unsignalized intersections are not uncommon because the continuous flow traffic will always get priority.

LOS for all-way stop-controlled intersections is reported both for key intersection movements and in a composite fashion. That is, one LOS for the entire intersection, based on average control delay.

The HCM LOS criteria for intersections is shown in Table 3.5.

Table 3.5: HCM Intersection Level of Service Criteria

LOS	Control Delay (seconds per vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	≤ 10	≤ 10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	> 80	> 50

Source: Highway Capacity Manual, Sixth Edition, 2016

3.5.1 2021 Existing Conditions Analysis

Table 3.6 shows the LOS results for the study intersections under the 2021 existing traffic conditions. The results of the existing conditions analysis highlight two locations with high delays:

→ Jimmie Dyess Parkway/7th Avenue (Gate 1)
→ Avenue of the States/Tobacco Road (Gate 5) SB On/Off Ramp

All approaches to the intersection of Gordon Highway at Jimmie Dyess Parkway/7th Avenue near Gate 1 operate with long delays in both the AM and PM peak hours. This is attributed to high traffic volumes at the intersection.

The stop-controlled approach of US 1/Deans Bridge Road southbound off-ramp operates at LOS F during the PM peak hour. This is traffic exiting US 1 and turning left (away from Fort Gordon). Delays on this approach can be attributed to high traffic volumes exiting Fort Gordon in the PM peak hour.

It should be noted that the southbound approach of McCoys Creek Road at Gordon Highway operates with high delays, but the volume of traffic is relatively low exiting the residential neighborhood.

Table 3.6: 2021 Fort Gordon Gate Areas Existing Capacity Analysis Results

Intersection		2021 Existing				
		Overall	EB	WB	NB	SB
Jimmie Dyess Parkway/7th Avenue (Gate 1)	AM	F (105.9)	F (135.4)	F (102.4)	E (62.1)	F (99.5)
	PM	F (119.1)	F (119.2)	F (144.6)	F (100.5)	F (114.2)
East Robinson Avenue/19th Street (Gate 2)	AM	D (35.8)	C (20.5)	D (43.4)	-	D (42.0)
	PM	D (43.3)	D (47.0)	D (43.9)	-	C (30.0)
McCoys Creek Road/East 13th Avenue (Gate 3)	AM	# (9.2)	# (0.5)	# (0.1)	-	F (185.3)
	PM	# (0.4)	# (0.1)	# (0.4)	-	D (29.2)
Avenue of the States/Tobacco Road (Gate 5) NB On/Off Ramp	AM	# (4.5)	# (0.0)	# (0.0)	C (17.0)	-
	PM	# (1.4)	# (0.0)	# (0.0)	C (15.0)	-
Avenue of the States/Tobacco Road (Gate 5) SB On/Off Ramp	AM	# (2.7)	# (0.2)	# (0.7)	-	D (32.0)
	PM	# (15.1)	# (0.0)	# (6.2)	-	F (101.2)
Gordon Highway at Future Gate 6	AM	D (35.7)	E (63.0)	C (27.6)	B (16.3)	-
	PM	C (22.4)	E (61.7)	A (2.6)	C (26.1)	-

Source: Stantec Consulting Services, 2021

3.5.2 2040 Future Conditions Analysis

Table 3.7 shows the LOS results for the study intersections under the 2040 future traffic conditions. The results of the existing conditions analysis demonstrate that the following intersections within the Study Area operate with longer delays:

→ Jimmie Dyess Parkway/7th Avenue (Gate 1)
→ McCoys Creek Road/East 13th Avenue (Gate 3)
→ Avenue of the States/Tobacco Road (Gate 5) NB On/Off Ramp
→ Avenue of the States/Tobacco Road (Gate 5) SB On/Off Ramp

All approaches to the intersection of Gordon Highway at Jimmie Dyess Parkway/7th Avenue near Gate 1 operate with long delays in both the AM and PM peak hours. This is attributed to high traffic volumes at the intersection. High delays also were present at this intersection in the existing conditions analysis.

McCoys Creek Road/East 13th Avenue operates with high delays for the southbound approach exiting the residential neighborhood. High delays also were present on this approach in the existing condition analysis.

High delays were observed for traffic turning left from the off-ramps at the Avenue of the States/Tobacco Road interchange with US 1/Deans Bridge Road. High delays are typical for unsignalized approaches to high-volume facilities.

High delays are observed at the intersection of Gordon Highway at Gate 6 in the AM peak hour. This is attributed to a high-volume of left-turning traffic entering Fort Gordon from Gordon Highway in the morning.

Table 3.7: Fort Gordon Gate Areas 2040 Future Capacity Analysis Results

Intersection		2040 Future				
		Overall	EB	WB	NB	SB
Jimmie Dyess Parkway/7th Avenue (Gate 1)	AM	F (224.9)	F (273.5)	F (207.3)	F (89.3)	F (239.0)
	PM	F (214.5)	F (164.2)	F (239.6)	F (199.5)	F (247.4)
East Robinson Avenue/19th Street (Gate 2)	AM	D (50.6)	C (21.0)	E (66.2)	-	E (62.2)
	PM	E (78.5)	E (67.6)	F (100.4)	-	E (57.5)
McCoys Creek Road/East 13th Avenue (Gate 3)	AM	# (1.4)	# (0.9)	# (0.1)	-	F (58.8)
	PM	# (2.3)	# (0.1)	# (1.5)	-	F (306.4)
Avenue of the States/Tobacco Road (Gate 5) NB On/Off Ramp	AM	# (20.1)	# (0.0)	# (0.0)	F (76.5)	-
	PM	# (2.5)	# (0.0)	# (0.0)	D (26.6)	
Avenue of the States/Tobacco Road (Gate 5) SB On/Off Ramp	AM	# (17.0)	# (0.2)	# (0.8)	-	F (239.7)
	PM	# (298.8)	# (0.0)	# (15.6)	-	F (2190.2)
Gordon Highway at Future Gate 6	AM	F (100.2)	F (131.4)	F (103.9)	B (19.8)	-
	PM	C (28.4)	D (50.0)	A (7.8)	C (34.4)	-

Source: Stantec Consulting Services, 2021

3.6 Recommendations

The following Improvements to the transportation network have been identified and recommended for near, mid, and long-term implementation.

3.6.1 Near-Term Priorities

Gordon Highway & Jimmie Dyess Parkway/7th Avenue (Gate 1)

→ Construct a third eastbound through lane. This can be achieved by reducing the free-flowing northbound right-turn lanes from two to one and reconfiguring the intersection.

→ Extend the existing northbound left-turn lane on 7th Avenue from 600 to 900 feet of full-width storage and appropriate taper

→ Convert the southbound right-turn lane to a free-flowing movement into the newly constructed lane traveling westbound from the intersection.

3.6.2 Mid-Term Priorities

Gordon Highway and Gate 6

→ Construct a third westbound exclusive left-turn lane. Extend existing turn lanes to ensure that a minimum 1,300 feet of full-width storage and appropriate taper is provided on Gordon Highway.

→ Construct a receiving lane for ingress traffic at Gate 6. This lane can merge with the current two lanes approximately 1,000 feet downstream to avoid impacting the existing security area.

Avenue of the States/Tobacco Road (Gate 5)

→ Install traffic signals at both ramp terminals of the interchange to control traffic.

3.6.3 Long-Term Priorities

Long-term improvements have been identified for future consideration. These improvements will require further coordination with GDOT and local agencies. Two locations, Gordon Highway and Jimmie Dyess Parkway/7th Avenue (Gate 1) and Gordon Highway and Future Gate 6, have been identified for this future consideration, given the analysis results and funding required to plan, engineer, and construct such improvements.

Gordon Highway and Jimmie Dyess Parkway/7th Avenue (Gate 1)

→ Alternative intersection configurations such as a continuous flow intersection (CFI) should be considered at this location. Redirecting a movement such as the westbound left-turns could reduce delays at the intersection substantially.

→ Beyond alternative intersection configurations, a grade-separated interchange should be considered. The railroad track and right of way largely constricts the type of interchange that can be constructed at this location, but a partial cloverleaf interchange may be considered. Figure 3.30 shows a nearby example of Interstate 520 at GA 56 south of Augusta.

Figure 3.30: I-520/GA 56 Interchange. Source: Google Earth, Augusta, Georgia, November 2019.

Gordon Highway and Gate 6

→ Alternative intersection configurations such as a continuous flow intersection (CFI) should be considered at this location. Redirecting a movement such as the westbound left-turns could reduce delays at the intersection substantially. Another strategy to evaluate would be redirecting minor movements such as the northbound left-turns. In this scenario, the northbound left-turns would be directed to turn east onto Gordon Highway and can perform a U-turn on Gordon Highway. This allows additional green-time to be allocated to higher volume movements at the traffic signal.

It is worth noting that the ARTS Future Mobility 2050 report identifies two key GDOT projects (Tier 3: 2035-2050), a new road and interchange at Louisville Road and I-20 (MTP Project ID: 154); and Gordon Highway widening and intersection improvements at Jimmie Dyess Parkway (MTP Project ID: 321), which may alleviate the operational deficiencies noted in this study. Both projects may improve the distribution of Fort Gordon ingress and egress traffic between Gate 1 and Gate 6, improve safety at Jimmie Dyess Parkway and Gordon Highway, and provide a bypass to Grovetown.

In addition to roadway network improvements, improvements in transit and active transportation facilities may help to alleviate growth in and around Fort Gordon. Fort Gordon is not directly served by local transit and does not have convenient access to regional transportation modes (i.e., air), but investments in transit may improve mobility of those that work, live, and visit the Installation. Park-and-ride shuttles or designated bus stops near gate entrances may improve mobility to and from the Installation. On the Installation, last-mile service with automated or micro-transit may enhance connectivity within the Installation and with the greater Augusta area.

The Study Area is also relatively low-density and does not have mixed-use development that supports active modes (walking and biking). Planning and foresight to include amenities for pedestrians and bicyclists in future improvements provides more options for travel. Today, the predominant mode is a single-occupant vehicle, which drastically reduces the utilization and efficiency of roadway infrastructure. Greater emphasis and investment in shared modes, such as transit and last-mile services, along with pedestrian and bicyclist facilities will help offset the burden of traffic growth on Fort Gordon-area roads. This study recommends further analysis into the range of multimodal improvements in the Study Area as a means to reduce traffic congestion.

3.6.4 2040 Future Conditions with Improvements Analysis

The future conditions with improvements analysis incorporate the near and mid-term priorities discussed previously. The corresponding laneage is shown in Figure 3.31. Figures with the location of improvements overlaid on aerial imagery or construction plans are provided in Figures 3.32, 3.33, and 3.34.
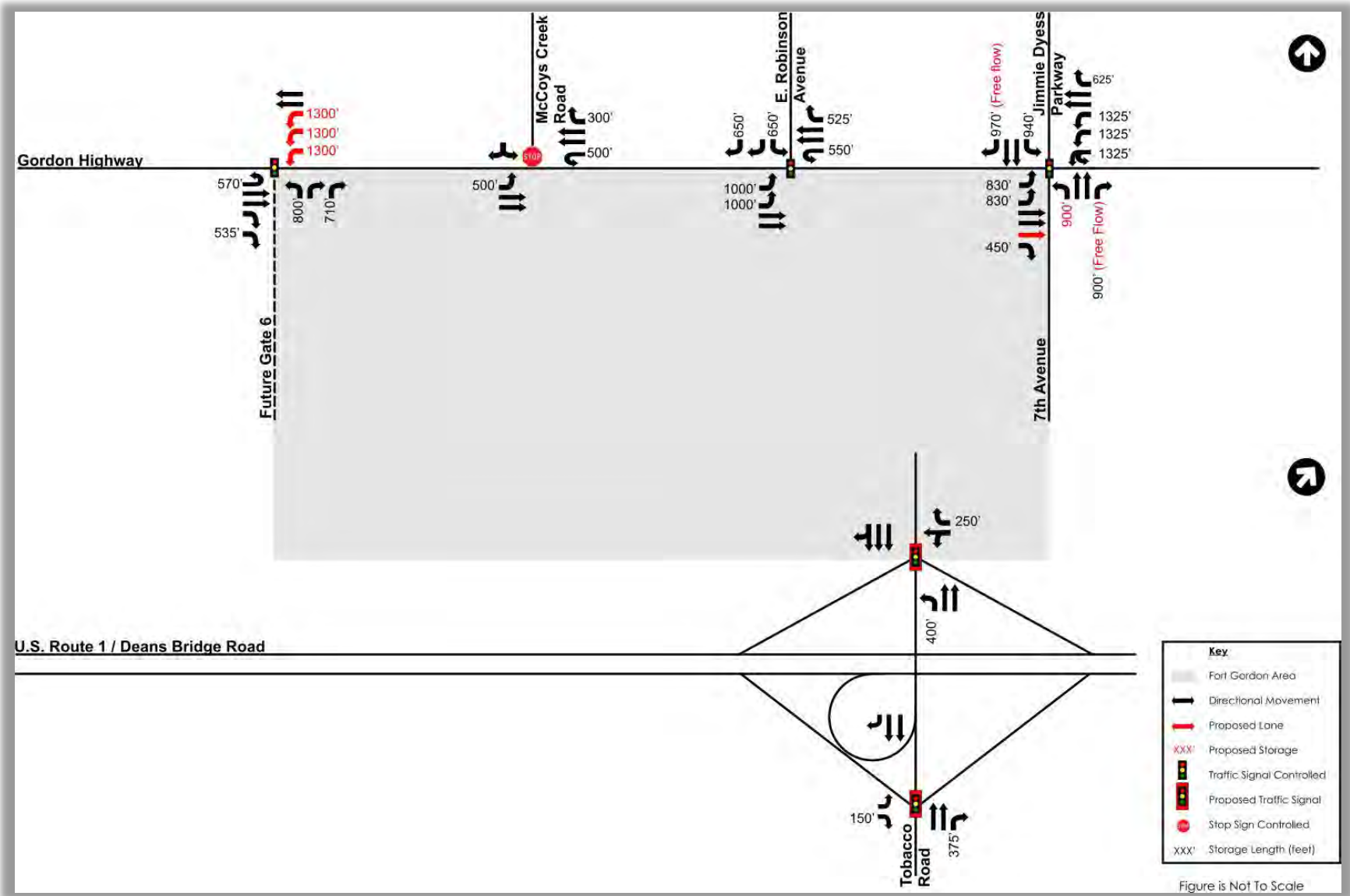
Figure 3.31: 2040 Build Model Laneage at Study Area Intersections.
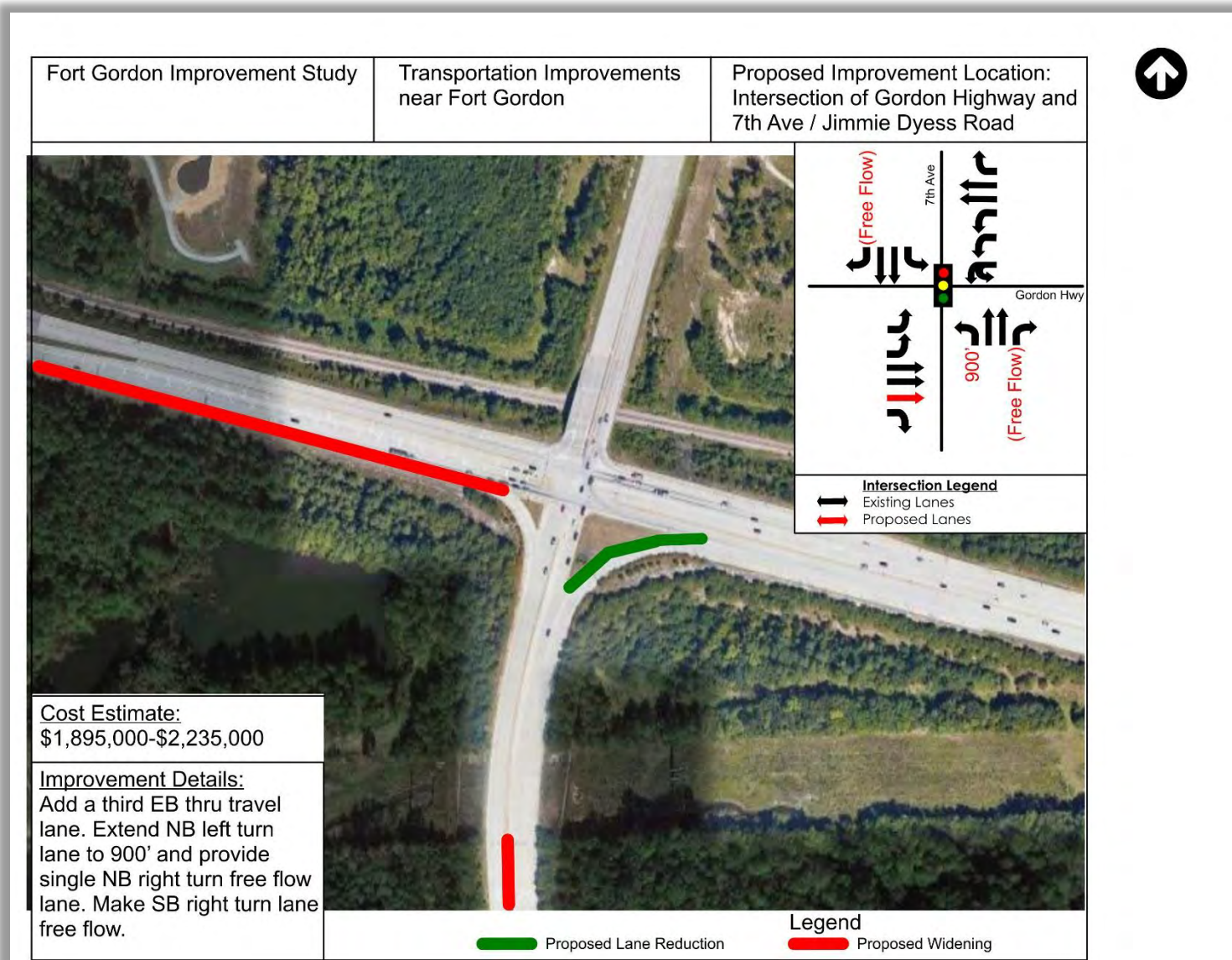
Figure 3.32: Gordon Highway and Jimmie Dyess Parkway/7th Avenue (Gate 1) Proposed Improvements

Fort Gordon Improvement Study | **Transportation Improvements near Fort Gordon** | **Proposed Improvement Location: Intersection of Gordon Highway and 7th Ave / Jimmie Dyess Road**

7th Ave

(Free Flow)

Gordon Hwy

900'

(Free Flow)

Intersection Legend
Existing Lanes
Proposed Lanes

Cost Estimate:
$1,895,000-$2,235,000

Improvement Details:
Add a third EB thru travel lane. Extend NB left turn lane to 900' and provide single NB right turn free flow lane. Make SB right turn lane free flow.

Legend
Proposed Lane Reduction
Proposed Widening

Figure 3.33: Gordon Highway and Gate 6 Proposed Improvements

| Fort Gordon Improvement Study | Transportation Improvements near Fort Gordon | Proposed Improvement Location: Interchange of US 1 and Tobacco Rd / Avenue of the States |

Cost Estimate:
$635,000-750,000

Improvement Details:
Add signals to
US 1 NB & SB Ramps

Figure 3.34: Avenue of the States/Tobacco Road (Gate 5) Proposed Improvements

Table 3.8 summarizes the LOS results for the study intersections under the 2040 future traffic conditions with the near and mid-term recommendations in place. As a result, LOS of the study intersections is improved. However, Jimmie Dyess Parkway/7th Avenue (Gate 1) still operates with long delays in both peak hours. This is attributed to high traffic volumes at the intersection. Long-term funding and coordination are recommended with GDOT and local stakeholders to plan, design, and construct a potential conversion to a grade-separated interchange. Columbia County has determined that a new interchange and connector road between I-20 and Gate 6 is the preferred strategy to eliminate traffic congestion at that gate.

Table 3.8: 2040 Future with Improvements Capacity Analysis Results

Intersection		2040 Future with Improvements				
		Overall	EB	WB	NB	SB
Jimmie Dyess Parkway/7th Avenue (Gate 1)	AM	F (181.9)	F (219.2)	F (173.0)	F (93.8)	F (185.2)
	PM	F (181.1)	F (169.5)	F (228.7)	F (193.7)	F (128.3)
East Robinson Avenue/19th Street (Gate 2)	AM	D (53.3)	C (25.1)	E (68.3)	-	E (64.2)
	PM	E (77.9)	E (67.8)	F (99.5)	-	E (55.4)
McCoys Creek Road/East 13th Avenue (Gate 3)	AM	# (1.6)	# (1.0)	# (0.1)	-	F (68.3)
	PM	# (2.3)	# (0.1)	# (1.5)	-	F (306.4)
Avenue of the States/Tobacco Road (Gate 5) NB On/Off Ramp	AM	B (13.6)	A (3.0)	A (7.5)	D (38.8)	-
	PM	A (5.2)	A (0.7)	A (3.3)	D (43.2)	-
Avenue of the States/Tobacco Road (Gate 5) SB On/Off Ramp	AM	A (7.8)	B (10.7)	A (6.6)	-	A (8.0)
	PM	C (26.4)	C (25.2)	C (21.7)	-	D (35.8)
Gordon Highway at Gate 6	AM	D (50.0)	E (75.3)	D (43.0)	C (29.1)	-
	PM	C (31.4)	D (46.9)	A (6.0)	D (40.1)	-

Source: Stantec Consulting Services, 2021

3.7 Implementation Plan

Planning level estimates of probable costs were prepared for all the near- and mid-term recommendations. Tables 3.9 through 3.11 list the estimated costs for near- and mid-term improvements, respectively. It should be noted that these costs include planning-level estimates of paving, grading, traffic control, drainage, utilities, signing, marking, traffic signals, right-of-way, engineering, inspection, and construction contingencies.

Table 3.9: Planning Level Cost Estimation: Near-Term Recommended Improvements

Gordon Highway & Jimmie Dyess Parkway / 7th Avenue (Gate 1)		Total Project Cost	
		Lower Range	Upper Range
3.1	Construct a third eastbound through lane	$1,630,000	$1,920,000
3.2	Extend the northbound left-turn lane by 300 feet	$195,000	$230,000
3.3	Convert the southbound right-turn lane to a free-flowing movement	$70,000	$85,000
	Subtotal	*$1,895,000*	*$2,235,000*

Source: Stantec Consulting Services, 2021

Table 3.10: Planning Level Cost Estimation: Mid-Term Recommended Improvements

| Gordon Highway & Gate 6 | | Total Project Cost | |
		Lower Range	Upper Range
3.4	Construct a third westbound exclusive left-turn	$1,110,000	$1,305,000
3.5	Construct a new interchange at I-20 and Louisville Road for a future connector roadway to Fort Gordon	$35,000,000	$40,000,000
	Subtotal	*$2,085,000*	*$2,450,000*
Avenue of the States/Tobacco Road (Gate 5)		Total Project Cost	
		Lower Range	Upper Range
3.6	Install traffic signals at both ramp terminals	$635,000	$750,000

Source: Stantec Consulting Services, 2021

Table 3.11: Planning Level Cost Estimation: Long-Term Recommended Improvements

| Gordon Highway & Gate 6 | | Total Project Cost | |
		Lower Range	Upper Range
3.7	Construct a new connector roadway from I-20 to Gate 6	$50,000,000	$60,000,000

Source: Stantec Consulting Services, 2022

3.7.1 Funding

Infrastructure improvements identified in this study may be funded in part or whole by a variety of sources. For state-maintained roads, such as Gordon Highway (US-78) or Deans Bridge Road (US-1), state and federal funds typically cover projects identified and prioritized by the state. Local roads owned by municipalities use a combination of local, state, and federal monies to cover infrastructure improvements. In either case, the owner maintains discretion for the prioritization, funding, and implementation of infrastructure improvements. A list of common funding sources is provided below:
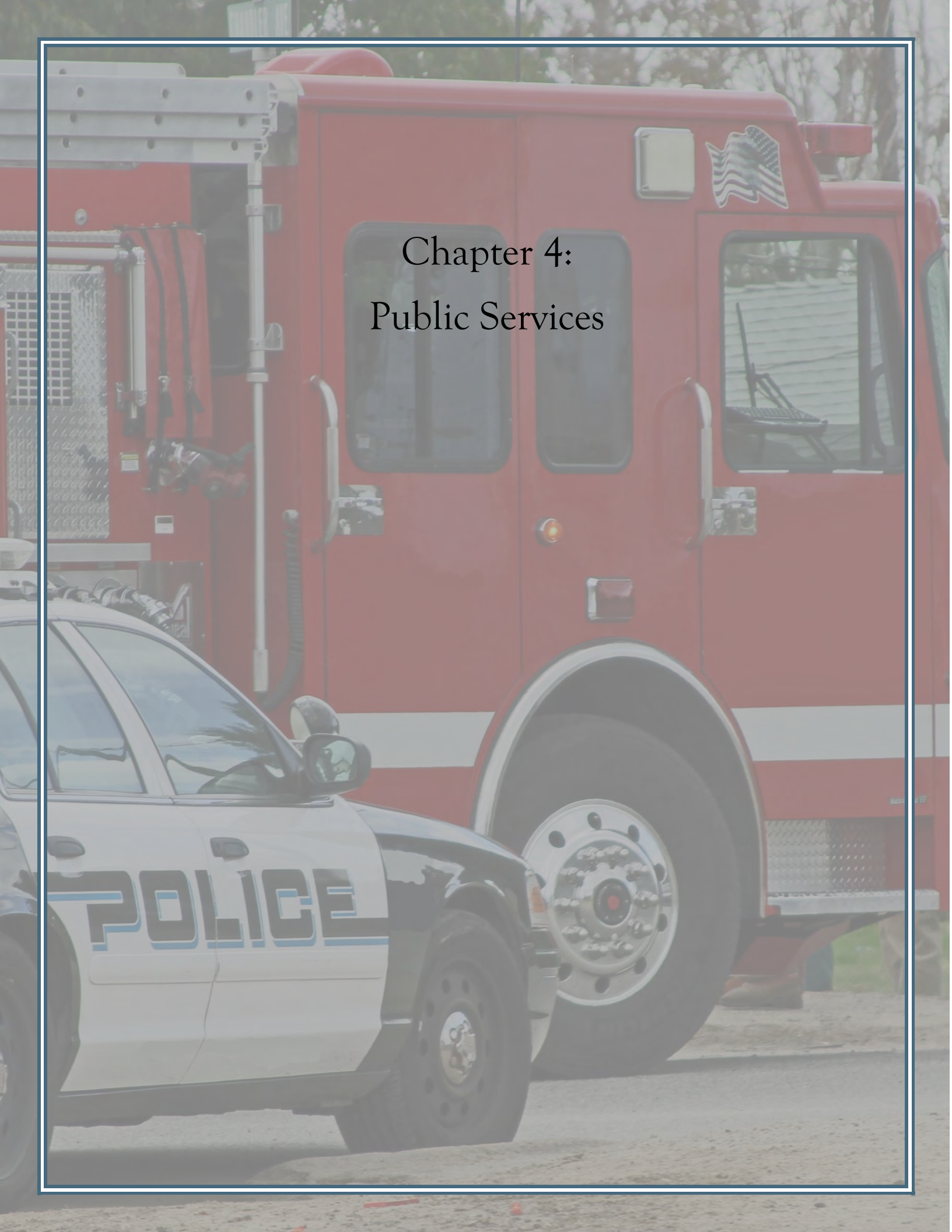
→ Federal (use taxes and fees; grants):
- Federal Highway Administration
- Federal Transit Administration

→ State (use taxes and fees; grants):
- Central Savannah River Area Transportation Special Purpose Local Option Sales Tax (SPLOST)
- Georgia Transportation Infrastructure Bank
- GO! Transit Capital Program

→ Local (property taxes, general funds, and use taxes)

SPLOST is a sales tax increase implemented at the county level in Georgia. These are voted on by a referendum. At the time of the vote, all expenditures (i.e., projects) must be defined before the vote. If passed, the SPLOST is in-place for five years. The most recent SPLOST passed in March of 2021 and included $78,500,000 for infrastructure projects. Table 3.12 lists these potential transportation funding sources.

Table 3.12: Potential Transportation Funding Sources

Fund Name	Funding Agency	Description
Federal Infrastructure Spending	GDOT	A new federal infrastructure bill is being developed in the Federal Legislature. The bill would provide over $100 billion for transportation infrastructure and nearly $40 billion for public transit.
National Highway Performance Program (NHPP)	FHWA	Provides funding for improvements to rural and urban roads including the Interstate Highway System.
Highway Safety Improvement Program	FHWA	Federal-aid program with the purpose to achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
Surface Transportation Block Grant Program	FHWA	Funds may be used for many transportation improvements; including bicycle and pedestrian facilities.
Grant Anticipation Revenue Vehicles Bonds (GARVEE)	USDOT	A debt instrument with the pledge of future Title 23 Federal-aid funding. It is authorized for Federal reimbursement of debt service and related financing costs. These allow a state to accelerate construction timelines
Transportation Alternatives Program	FHWA	These funds encompass a variety of smaller-scale transportation projects such as bicycle and pedestrian facilities.

Source: Stantec Consulting Services, 2021

Chapter 4:

Public Services

4 Public Services

4.1 Overview

Public Services functions provided by county government are essential support services for the community. Growth associated with the expansion of the Cyber Command stationing activities underway at Fort Gordon will expand the need for these public services in the surrounding communities. Within the Study Area, the analysis presented here evaluates existing and projected demand on fire, emergency medical services (EMS), and policing.

Development within the Study Area ranges from rural, low-density development to urban and more densely populated developments. According to the demographic projections described in Chapter 2, the highest anticipated projected levels of growth will occur (ranked in order of highest growth) in Columbia and Augusta-Richmond counties, followed by Aiken County.

This analysis identified a key strength in the communities' provision of public services: its local mutual aid service agreements among the Study Area jurisdictions, including Fort Gordon's mutual aid agreements with the surrounding jurisdictions. Challenges to the local jurisdictions include firefighter personnel staffing and retention as well as funding. The need to attract and retain volunteer firefighters in jurisdictions with stagnant or decreasing population is particularly problematic. Funding for additional personnel is also an issue in policing.

4.2 Fire and EMS Needs Assessment

4.2.1 Baseline Assessment/Existing Conditions of Fire, Emergency, and Medical Services

ISO Classifications

The ISO is a for-profit organization that provides statistical information throughout the United States on risk to the property insurance industry related to a community's fire suppression capabilities. The community receives a Public Protection Classification (PPC™) grade based on data under the Fire Suppression Rating Schedule (FSRS). The FSRS evaluates major elements of a community's fire protection system. Insurance companies use the PPC™ classification for underwriting and to calculate premiums for fire insurance.

ISO's PPC™ program evaluates communities and assigns points according to a uniform set of criteria, incorporating nationally recognized standards developed by the National Fire Protection Association and the American Water Works Association and incorporated into the FSRS manual. ISO staff visit the community to conduct a field survey to evaluate the fire protection systems. The program scope is limited to evaluating only features related to reducing property losses from fire. The PPC™ grade of ISO classification depends on the community's score on a 100-point scale, as evaluated by the following criteria:

→ **Emergency Communication Systems**, including emergency reporting, telecommunications, and dispatching systems. This accounts for up to 10 points of the total classification.

→ **Fire Department**, including equipment, staffing, training, the geographic distribution of fire companies, and operational considerations. This accounts for up to 50 points of the total classification.

→ **Water Supply**, including inspection and flow testing of hydrants, alternative water supply operations, and a careful evaluation of the amount of available water compared with the amount needed to suppress fires up to 3,500 gpm. This accounts for up to 40 points of the total classification.

→ **Community Risk Reduction**, which considers fire prevention code adoption and enforcement, public fire safety education, and fire investigation. This allows for extra credit, for a potential total of 105.5.

The ISO classification systems include rankings from 1 to 10, with 1 representing superior property fire protection and 10 signaling that the fire suppression program does not meet the ISO's minimum criteria. Insurance rates are then established to reflect the prevailing classification: the lower the classification, the lower the rates.

Table 4.1: ISO Classification

Major Class Groupings	Characteristics
Class 10	No recognized defenses
Class 9	Recognized fire department but no recognized community water system
Class 4-8	Recognized fire department and recognized community water system
Class 1-3	More complete and sophisticated systems, based entirely upon individual grading of suppression

Source: Aiken County Comprehensive Plan

The classification numbers are further defined as follows:

→ **Class 1 through (and including) Class 8** represents a fire suppression system that includes an FSRS creditable dispatch center, fire department, and water supply.

→ **Class 8B** is a special classification that recognizes a superior level of fire protection in an otherwise Class 9 area. This design represents a fire protection delivery system that is superior except for the lack of a water supply system capable of the minimum FSRS fire flow criteria of 250 gpm for two hours.

→ **Class 9** is a fire suppression system that includes a creditable dispatch center, fire department but no FSRS creditable (recognized community water system) water supply.

→ **Class 10** does not meet minimum FSRS criteria for recognition, including areas that are farther than five road-miles from a recognized fire station.

According to the ISO classification system, there is a single PPC™ for a community or there is a split classification for a community. Single classifications have the same ratings across the entire community. A split classification example is 4/4X or 4/4Y. The first number applies to properties within five road-miles of a recognized fire station and within 1,000 feet of a fire hydrant or alternate water supply. The second number, with either an X or Y designation, applies to properties within five road miles of a fire station but beyond 1,000 feet of a fire hydrant. Generally, ISO assigns Class 10 to properties beyond five road-miles.

ISO classifications are updated once every 10 years unless there is a change to the items score or a community requests one sooner.

For the state of Georgia, each county reports the ISO level as part of the annual Government Management Indicators (GOMI) Survey. Please refer to Figure 4.1 Overall Fire ISO Ratings for the state of Georgia.
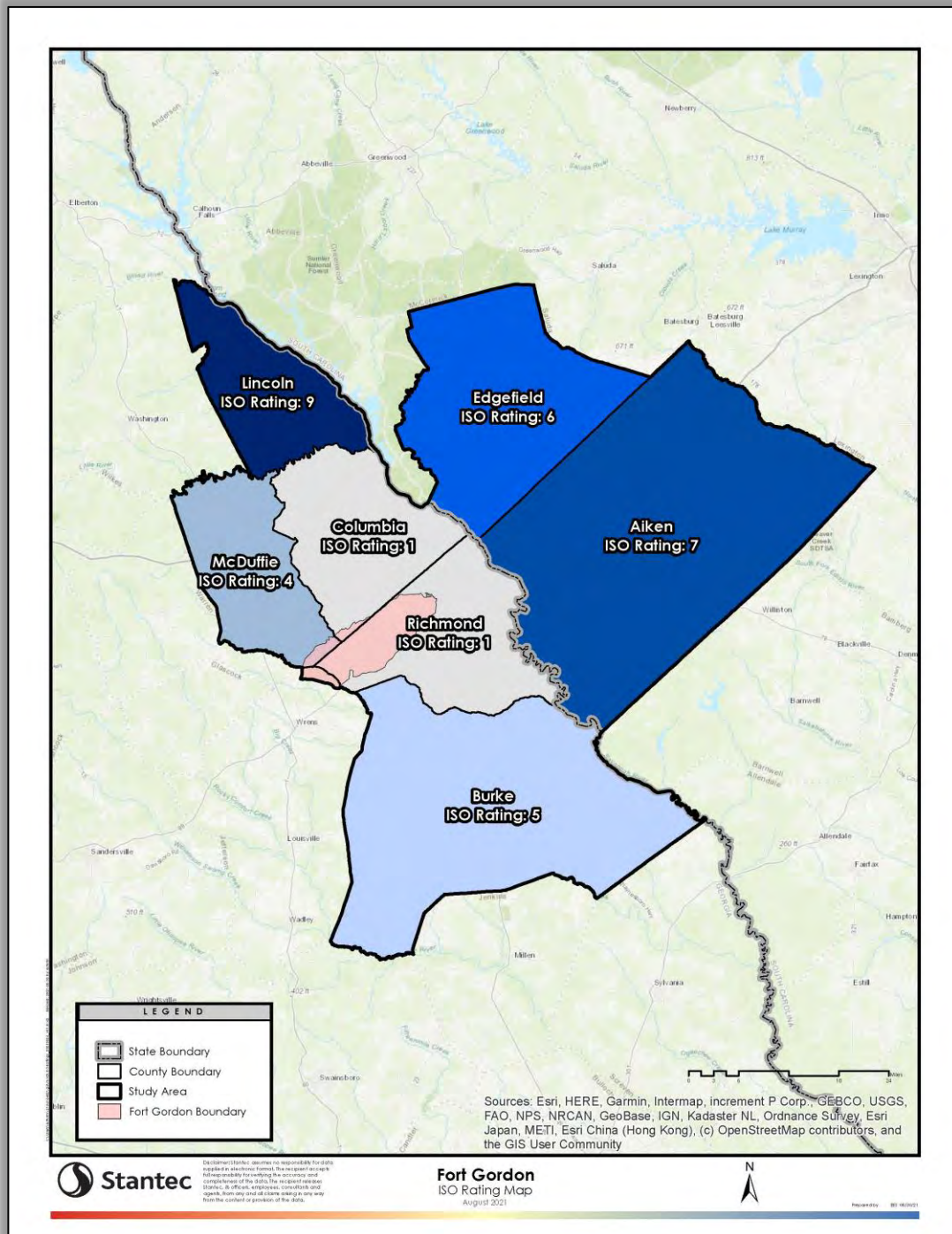
Figure 4.1: Overall Fire ISO Ratings for the Study Area. Source: Georgia: 2020 GOMI Survey, Georgia Department of Community Affairs, March 2021; South Carolina rating were calculated by averaging the ISO ratings of fire departments within each county; ISO data was gathered from the South Carolina State Firefighters' Association 2018 Department Directory for Edgefield County and the Aiken County Comprehensive Plan.

There was not a comparable map for South Carolina (Aiken and Edgefield Counties), so an average of the ISO rating for communities across each county was used. More detailed ISO classification descriptions are included below.

Augusta-Richmond County

There are currently 19 fire stations in Augusta-Richmond County, which operates 19 Engine Companies and 6 Truck Companies, all of which are licensed Medical First Responder vehicles. There are 320 career firefighters (no volunteer firefighters). All the firefighters are cross trained as EMTs. There are plans to construct a twentieth fire station in the near term.

The EMS zone provider is Gold Cross EMS, Inc. Gold Cross EMS is based out of Augusta and serves as the 911 provider for Columbia, Richmond, and McDuffie Counties in Georgia, and Aiken County in South Carolina. The Augusta Fire Department currently operates one ambulance, which provides mutual aid upon the request of the EMS zone provider. The Augusta Fire Department has 262 EMS certified (EMT, EMT-1, AEMT, or Paramedic) personnel.

In the fall of 2017, the Augusta Fire Department had received an ISO Public Protection Classification rating of 01/1X, which is the best ISO rating a fire department can achieve.

Six ambulance companies service Richmond County:

→ Capital City Ambulance of Augusta (2623 Washington Road)
→ Goldcross EMS (2802 Regency Boulevard)
→ Med Trans Air Med Ambulance (3623 J Dewey Gray Circle)
→ Palmetto Ambulance Service of Augusta (1220 West Wheeler Parkway)
→ Southstar Ambulance of Augusta (2451 Wheeless Road)

Burke County

There are 12 fire/EMS stations throughout Burke County. There are currently 93 career firefighters and hiring efforts are underway to help fill vacancies. The full-time first responders receive cross-training in EMS and firefighting. The training levels include firefighter/emergency medical technician (EMT)-I), firefighter/advanced emergency medical technician (FF/AEMT) or firefighter/paramedic. There are no private ambulance companies in Burke County. Emergency Medical Services and fire services are managed out of the 12 fire/EMS stations.

According to the *Public Protection Classification (PPC™) Burke County FPSA Georgia Report*, the overall community classification is 04/4X. The first class (04) applies to properties within five road-miles of a recognized fire station and within 1,000 feet of a fire hydrant or alternate water supply. The second class (4X) applies to properties beyond 1,000 feet of a fire hydrant but within five road-miles of a recognized fire station.

Columbia County

Within the unincorporated area of Columbia County, there are 15 engine companies that are fully staffed 24 hours a day. Staffing includes 189 career and 8 volunteer firefighters. In addition, there are business office staff and a 24/7 dispatch center. All firefighters are trained as a medical first responder, EMT, or paramedic.

Incorporated fire services include the Grovetown Department of Public Safety Fire Rescue Division and the Harlem Fire Department. Fire protection, vehicle extrication, rescue, medical first response, and fire safety education to the citizens of Grovetown are provided by the Grovetown Department of Safety Fire Rescue Division. The Grovetown Department of Public Safety Fire Rescue Division also provides these services in the unincorporated area just south of the city limits, under contract with Columbia County along with mutual and automatic aid to surrounding fire departments. Fire protection services in the City of Harlem are provided by the Harlem Fire Department.

The ISO Classification for Columbia County is a 1/1X rating, effective February 1, 2017. This high rating is shared only by 204 other communities nationwide. This designation means homes are located with five road-miles of a fire station and 1,000 feet of a fire hydrant.

Gold Cross Ambulance, a private ambulance company, has four locations across Columbia County. They are located in Appling (6868 Cobbham Road), Martinez (4146 Wheeler Road), Augusta (4328 Wheeler Road), and Groveton (480 Sugarcreek Drive). Columbia ambulance services provide transport services to area hospitals as well as EMS.

Lincoln County

Lincoln County has four fire departments (six stations altogether) located in rural Lincoln County and the Lincoln County Office of Emergency Services has a fire engine at their office on Global Drive. The address and equipment for each rural fire station include: 1) Beulah VFD located at SR 79 and Gills Point Road with one fire engine, one tanker, and one brush truck;   2) Midway VFD, located at 2578 Remsen Road with two engines, two knockers, and one brush truck; 3) Loco VFD with two stations (located at 2650 SR 220 and 2248 Lovelace Road) with two engines, one tanker, one brush truck, and one service truck; 4) Martin's Crossroads VFD with two stations (located at 3911 Double Branches Road and Bethany Church Road) with two engines, one brush truck, and one service truck.

All 70-75 firefighters in the Lincoln County rural fire departments are volunteers. Training for the volunteer firefighters meets State Firefighter's Standards and Training Office Volunteer Firefighters with live fire certification and training.

The City of Lincolnton has one fire department located on Peachtree Street. There are 16 volunteer firefighters who are trained to state standards; two are trained to National Professional Qualifications (NPQ) FF2 and two are trained to NPQ FF1 certification. The city responds with automatic aid to fire incidents. Automatic aid is assistance dispatched to all first alarm structural fires automatically by contractual agreement between two communities. Mutual aid differs, as it is arranged on a case-by-case basis.

According to the Lincoln County Comprehensive Plan, ongoing fire protection efforts have included increasing water supply lines throughout the County. In 2006, a $6 million United States Department of Agriculture project expanded the water treatment plant, constructed a 300,000-gallon elevated water tank, and replaced water meters. In 2008, over 15,000 linear feet of 6-inch water lines were installed providing improved pressure, reliability, and fire protection throughout Lincolnton.

Fire/Rescue, Emergency Management Assistance, and Emergency Management are operated by the Lincoln County Office of Emergency Services (LCOES). Staffing includes six paramedics, six AEMTs or EMTs. Full-time staff are cross-trained for fire and medical emergencies in addition to some part-time staff.

When all ambulances are occupied, a volunteer division manages auto extrication and emergency medical response. Ambulance service is provided 24 hours a day, seven days a week with three ambulances rotated for service as needed. One fire engine crew has fire and ambulance crew trained to operate interchangeably. LCOES has one 21-foot boat for water-related emergencies.

According to the Georgia GOMI Survey, the ISO rating for Lincoln County is 9, which indicates there is a fire suppression system that includes a creditable dispatch center and fire department but no FSRS creditable water supply.

Lincoln County Emergency Medical Ambulance provides emergency and non-emergency medical transport services for patients in Lincolnton. They transport patients to hospitals, medical centers, and health care facilities.

McDuffie County

In 2019, McDuffie County consolidated its fire department with the City of Thomson. There are six fire stations in McDuffie County of which three are manned fire stations (24 hours) and three are volunteer stations. All firefighters are required to be trained to the level of AEMT as a minimum, with paramedic training being preferred. There are three different shifts for personnel: A, B, and C shifts. Each shift has 1 Battalion Chief and 12 firefighters/paramedics/AEMTs/ EMTs. Three volunteer firefighters are active.

Equipment for the six fire stations includes eight fire apparatus (fire engines), one reserve fire apparatus, one aerial truck (75 ft. ladder truck), seven Advanced Life Support (ALS) equipped ambulances, four Chief vehicles, one equipment truck, three wildland/brush fire trucks, one dive/rescue boat, and two utility vehicles and trailers.

Within the Town of Dearing, there is one Volunteer Fire Department and one manned EMS Station (with ALS equipment on the ambulance). Ambulance personnel includes one paramedic and one AEMT. All volunteer firefighters are cross-trained as firefighters with medical emergency response capabilities.

According to an emergency service official, the ISO rating for the City of Thomson is two. For McDuffie County, the ISO rating where hydrants are located is 4 and the ISO rating where no hydrants exist is 9.

Aiken County

There are 43 fire stations in Aiken County serving a population of 165,707 people in an area of 1,071 square miles. This equates to one fire station per 3,602 people, and one station per 23 square miles. In South Carolina, Aiken County is ranked 34th of 46 counties in fire departments per capita, and 18th of 46 counties in fire station per square mile.

The total number of paid and volunteer fighters in Aiken County is 801 personnel. The Aiken County Fire Department has 171 pieces of equipment.

There are multiple ISO ratings for Aiken County. The latest, as captured in the Aiken County Comprehensive Plan, is as follows:

Table 4.2: Aiken County Fire Departments ISO Classification

Department	ISO Rating
Aiken City (in and outside)	2
Bath	4/9
Beech Island	4/9

Department	ISO Rating
Belvedere	3
Clearwater	6
Couchton	6
Center	7
Eureka	9
GVW	4
Hollow Creek	9
Jackson	5
Langley	6
Monetta	8/9
Montmorenci	7/9
New Ellenton	6
New Holland	7/9
North Augusta City	3
Salley	7/9
Sandy Ridge	8
Silver Bluff	7/9
Wagener	7/9
Windsor	9

Source: Aiken County Comprehensive Plan 2014-2024

There are six ambulance services in Aiken County:

→ Palmetto Ambulance of Aiken (1552 Richland Avenue West, Aiken, SC)
→ Regional Ambulance Services of Warrenville (1089 Augusta Road, Warrenville, SC)
→ Regional Ambulance of Aiken (204 University Parkway, Aiken, SC)
→ Riverside Ambulance Service (1 Business Court, Aiken, SC)
→ Southern Star Ambulance (681 Silver Bluff Road, Aiken, SC)
→ Veterans Transportation Ambulance (121 East Marion Avenue, North Augusta)

The above listed ambulance services provide transport services or transport services in conjunction with EMS. Ambulance services within Aiken County provide emergency and non-emergency medical transport for patients going to hospitals, medical centers, and other health care facilities.

Edgefield County

There are 12 fire stations in Edgefield County serving a population of 26,620 people in an area of 501 square miles. There is one fire station per 2,047 people, and one fire station per 38 square miles. In South Carolina, Edgefield County is ranked 22nd of 46 counties in fire stations per capita, and 39th of 46 counties in fire stations per square mile.

The total number of paid and volunteer fighters in Edgefield County is 171 Personnel. Edgefield County has 64 pieces of equipment.

According to the Edgefield County Comprehensive Plan, Edgefield County has a mutual support service contract with the Ridge Spring Fire Department, located 10 miles east of Johnston in Saluda County. The Comprehensive Plan also highlights there is a need to identify funding resources to fund additional fire and police personnel.

There are multiple ISO ratings for Edgefield County.

Table 4.3: Edgefield County Fire Departments ISO Classification

Department	ISO Rating
County Line Fire Department	4/9
Edgefield Fire Department	5
Johnston Fire Department	5
Merriweather Fire Department	5
Northside Fire Department	9
Trenton Fire Department	5
Westside Fire Department	9

Source: South Carolina State Firefighter's Association 2018 Department Directory, 2018.

There are two emergency services offices located in Edgefield County.

→ Edgefield County Emergency Medical Services Station 1 (35 Star Road, Edgefield, SC)
→ Edgefield County Emergency Medical Services Station 2 (1879 West Martintown Road, North Augusta, SC)

The stations listed above provide emergency preparedness, emergency management services, natural disaster preparedness, and emergency first response services.

State Resources

Statistical information available varies among Georgia and South Carolina.

Please refer to Appendix A for South Carolina State Fire statistical information, e.g., Fire Marshall Portal of Services Public Data Dashboards capturing statistics used to evaluate each county, including average response times, personnel, total call volume, fire incident type, and total fire loss.

4.2.2 National Fire Protection Agency Guidance

This following section describes key National Fire Protection Agency (NFPA) guidance and a GIS mapping analysis of the drive times for the Study Area fire stations.

National Fire Protection Agency

NFPA is dedicated to eliminating death, injury, property, and economic loss related to fire, electrical, and related hazards. The need for uniform design standards related to fire protection was the foundation of NFPA's creation. Standardized design and installation for sprinkler systems was the first set of NFPA guidelines. Currently, NFPA's series of nearly 275+ codes and standards impact and guide virtually every aspect of buildings, for the purpose of minimizing the risk and effects of fire.

NFPA 1710: Standards for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Departments

NFPA 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Departments (NFPA 1710) provides essential benchmarks related to the basic components of fire department emergency response such as organization and deployment of fire suppression and emergency medical operations.

Documenting the benchmarks and response objectives that make up NFPA 1710 is crucial to capturing and tracking data that would help ensure the necessary allocation of resources. Figure 4.2 Response Objectives demonstrates some of the key benchmarks.

```
┌─────────────────────────┐         ┌─────────────────────────┐
│     Alarm Answer        │         │    Alarm Processing     │
│  15 sec 95% of the time │────────▶│  64 sec 95% of the time │
│          or             │         │          or             │
│  40 sec 99% of the time │         │ 106 sec 99% of the time │
└─────────────────────────┘         └─────────────────────────┘
            │                                   │
            ▼                                   ▼
┌─────────────────────────┐         ┌─────────────────────────┐
│        Turnout          │         │     First-due engine    │
│     Fire: 80 sec        │────────▶│     240 sec (4 min)     │
│     EMS: 60 sec         │         │     90% of the time     │
└─────────────────────────┘         └─────────────────────────┘
                                                │
                                                ▼
                                    ┌─────────────────────────┐
                                    │    Second-due engine    │
                                    │     360 sec (6 min)     │
                                    │     90% of the time     │
                                    └─────────────────────────┘
                                                │
                                                ▼
                         ┌─────────────────────────┐
                         │     Initial full alarm  │
                         └─────────────────────────┘
                              │                │
                              ▼                ▼
┌─────────────────────────┐      ┌─────────────────────────┐
│    Low/medium hazard    │      │       High hazard       │
│     480 sec (8 min)     │      │  610 sec (10 min 10 sec)│
│     90% of the time     │      │     90% of the time     │
└─────────────────────────┘      └─────────────────────────┘
```
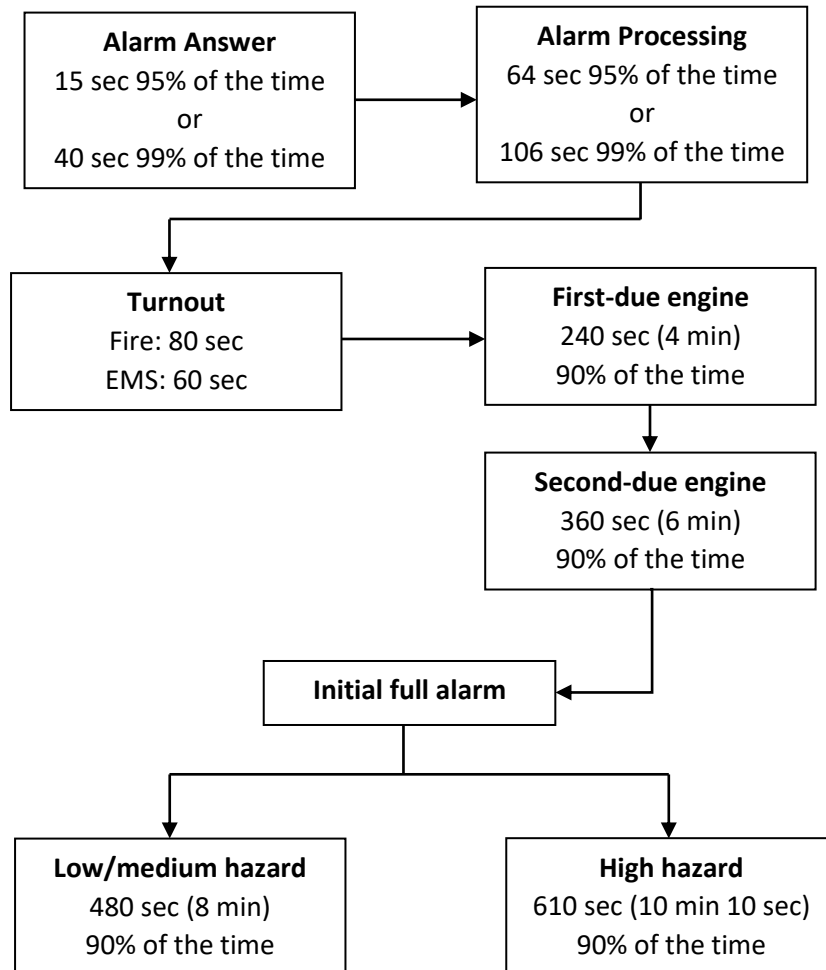
Figure 4.2: Response Objectives
Source: NFPA 1710

NFPA 1710 establishes "Standards of Coverage" related to response time rates categorized by the geographic categories of urban, suburban, and rural. The guidelines are as follows:

→ **Urban** <1,000 people per square feet and/or population of over 30,000 – six minutes
→ **Suburban** Between 500 and 1,000 people per square mile – seven minutes
→ **Rural** < 500 people per square mile – ten minutes

NFPA 1710 contains standards related to two components of total response time: turnout time and travel time. Turnout time begins when an emergency response unit is first notified of an incident and ends when

travel to the incident begins. Travel time begins when an emergency response unit is in route to an incident and ends when a unit arrives on the scene. NFPA 1710 turnout and travel time standards are:

→ 80 second turnout time for fire response
→ 60 second turnout time for medical response
→ 240 second travel time for fire response
→ 480 second travel time for medical response

Physical Gaps in Coverage Based on Existing Resources – Methodology

A drive time analysis using GIS software was undertaken to identify gaps in service area coverage, based on NFPA adopted response time goals for fire services. The methodology utilized did not differentiate between career and volunteer fire departments. Drive times accounted for a one-minute dispatch time and a one-minute turnout time. This analysis mapped four-, five-, and eight-minute drive times on each station to illustrate six-, seven-, and ten-minute goal fire response-time service areas. Census tract population data was used to categorize the areas into urban, suburban, or rural, as listed above. Please refer to Figure 4.3, Existing Fire Station Drive-Time Coverage Areas for Fire Suppression. The second part of the analysis depicts gaps in service for those areas not covered in the drive-time analysis. Refer to Figure 4.4, Areas Not Serviced Within Fire Suppression Response Time Standards.
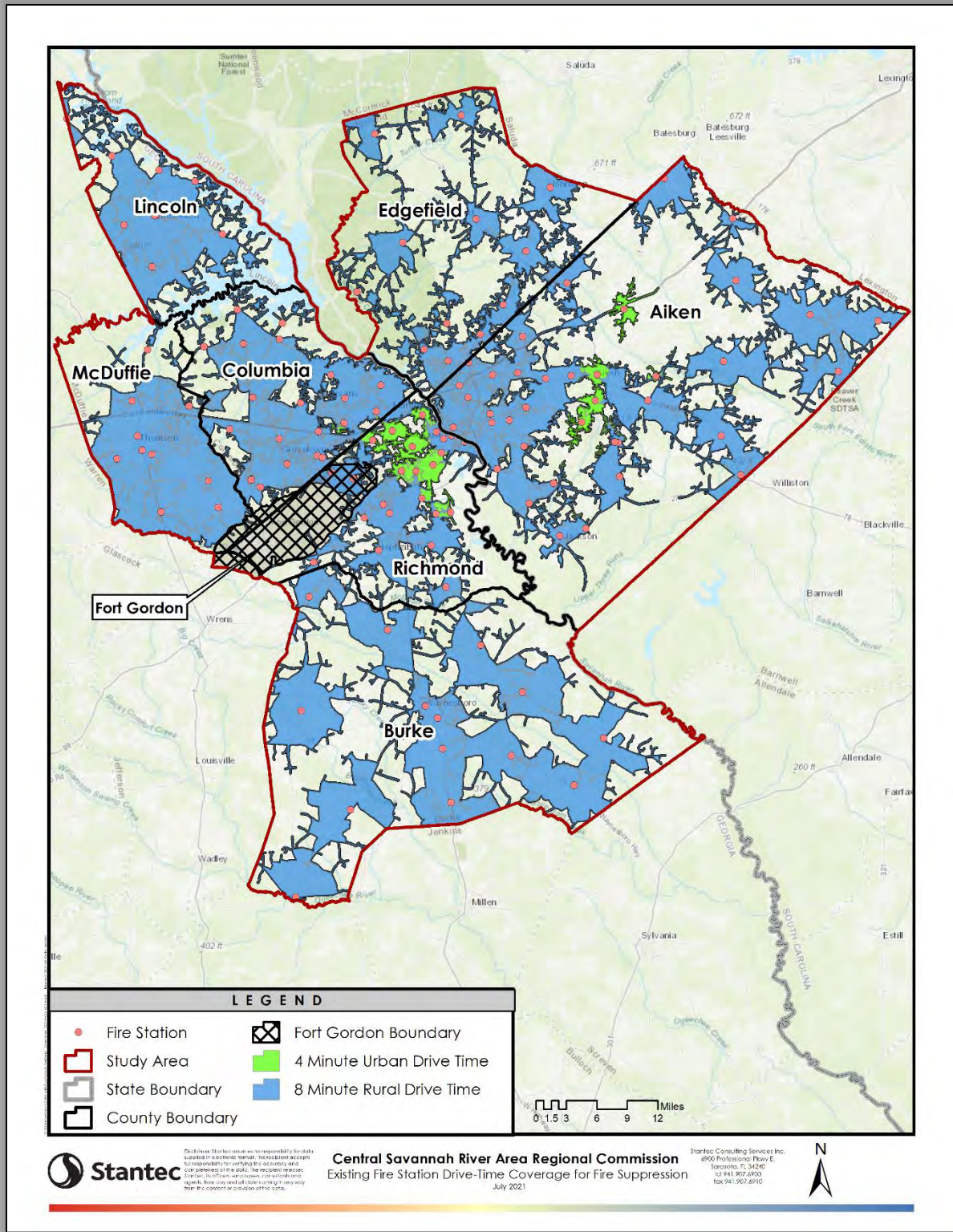
Figure 4.3: Existing Fire Station Drive-Time Coverage Areas for Fire Suppression.
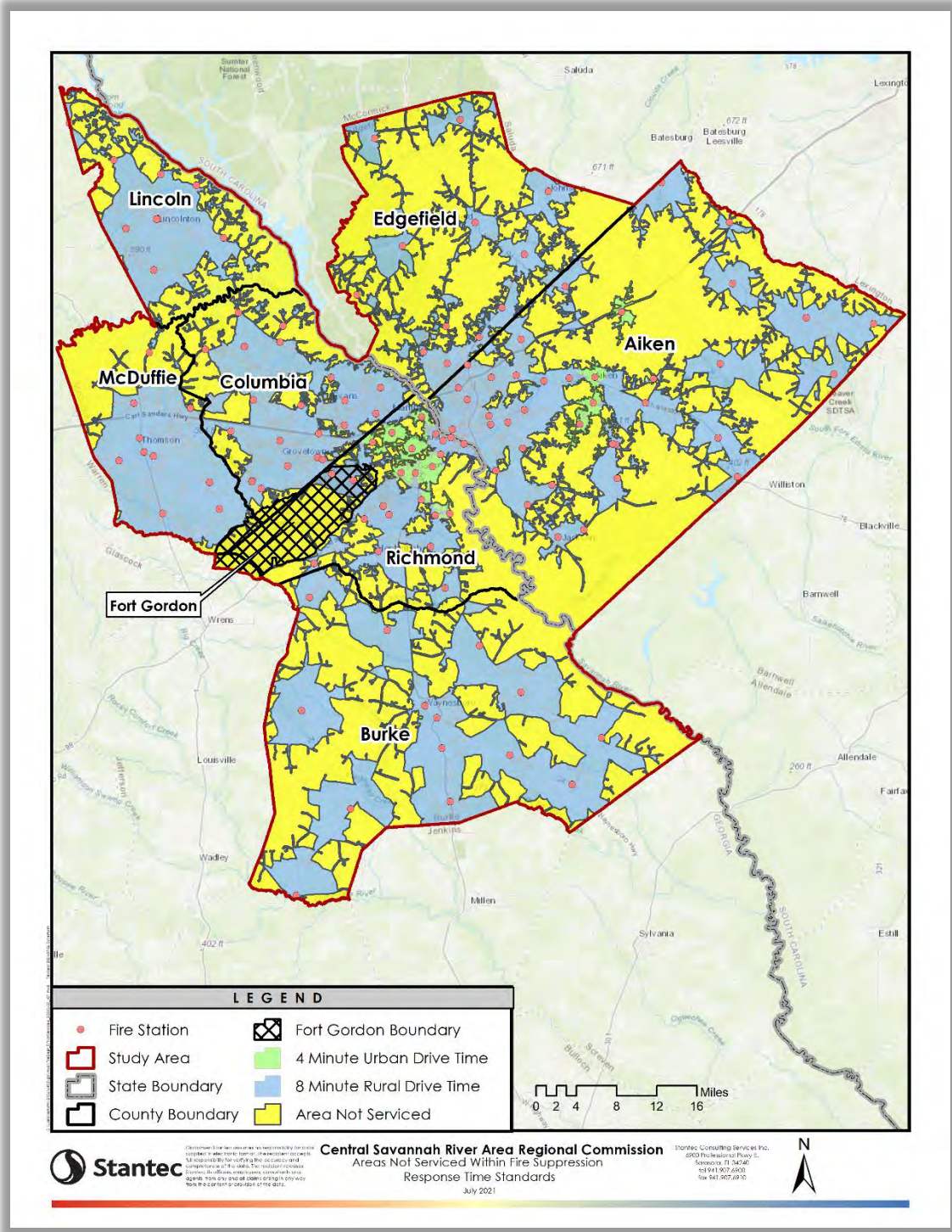
Figure 4.4 Areas Not Serviced Within Fire Suppression Response Time Standards.

4.2.3 Future Needs Related to Fire and EMS

Projected Growth

As noted in Chapter 2, Demographics and Growth, the area where the population is expected to increase the most is Columbia County, followed by Augusta-Richmond and Aiken Counites. Table 4.4 shows the overall population increases for counties in the Study Area.

Table 4.4: Study Area Population Growth Estimates, 2020-2030

County	2020 Population Estimate	2030 Population Projection	Population Change
Augusta-Richmond	202,570	212,942	10,372
Burke	22,307	22,205	-102
Columbia	159,405	195,167	35,762
Lincoln	7,853	7,420	-433
McDuffie	21,263	21,324	61
Aiken	171,320	179,433	8,113
Edgefield	27,150	27,513	363

Source: Stantec, 2021

Plans for New Fire Stations

Planned future fire stations include:

- **Augusta-Richmond County** – Plan for one new fire station. It will be located at 2649 Gordon Highway on the corner of Gordon Highway and Powell Road, close to Gate 1 for Fort Gordon.
- **Columbia County** – Two additional fire stations planned in the 2023-2025 timeframe: 1) Washington Road and Rosemont Drive area; and 2) Highway 150 and Smith Crawford Road.
- **Thomson-McDuffie County** – Thomson-McDuffie County has plans for a new fire station in Raysville to be open at the end of 2021. Plans for another station to be constructed in the west end of the county at a location to be determined are also underway.

4.2.4 Physical Gaps in Coverage Related to Population Projections

The following exhibit depicts the drive-time analysis related to projected population growth. Note, this exhibit does not analyze the five planned fire stations. Refer to Figure 4.5, Drive Time Analysis Related to Projected Population Growth.
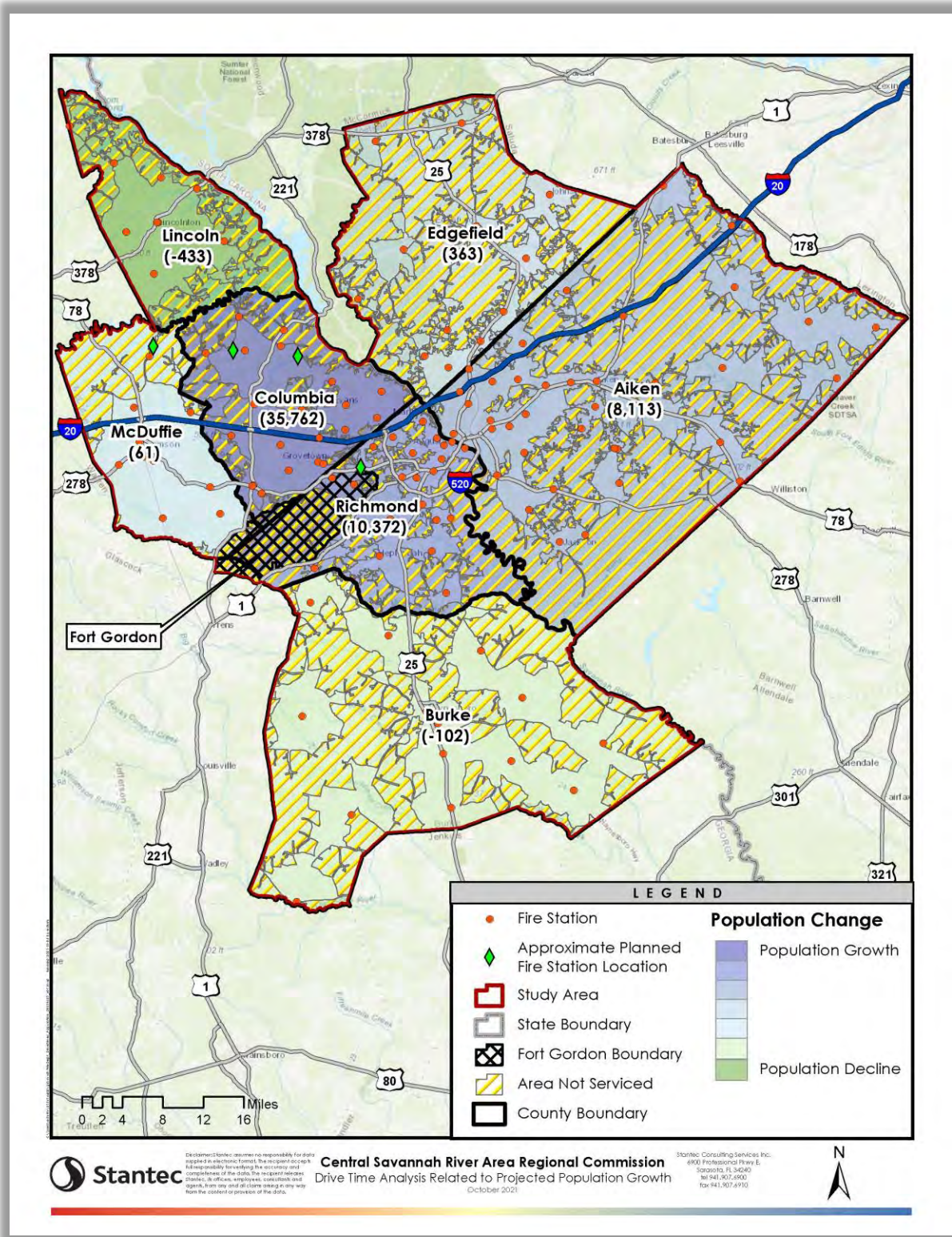
Figure 4.5: Fire Station Drive-Time Analysis Related to Projected Population Growth

Figure 4.7 provides a high-level overview of areas not serviced within the fire suppression response time standards related to projected growth. The highest growth is anticipated in Columbia County, with an anticipated increase of 22.43% by 2030. The two new stations planned within Columbia County will fill current service gaps in these areas. With the second highest anticipated growth county, Augusta-Richmond, areas not serviced within the fire suppression response time standards are in the more rural areas away from the Augusta urban core. The fire station planned outside Gate 1 at Fort Gordon will alleviate any areas not serviced within the fire suppression response time standards in that vicinity. Aiken County, ranking as the third fastest growing county has significant rural areas outside the fire response time standards. Figures 4.6 through 4.8 provide a county-by-county analysis for the fastest growing counties (Columbia, Augusta-Richmond, and Aiken), comparing population growth by census tract to areas currently covered by the drive-time analysis. This comparison allows for an examination of which areas in each county that are expected to grow the most and determination of which areas may need additional fire stations in order at adequately serve the projected population.
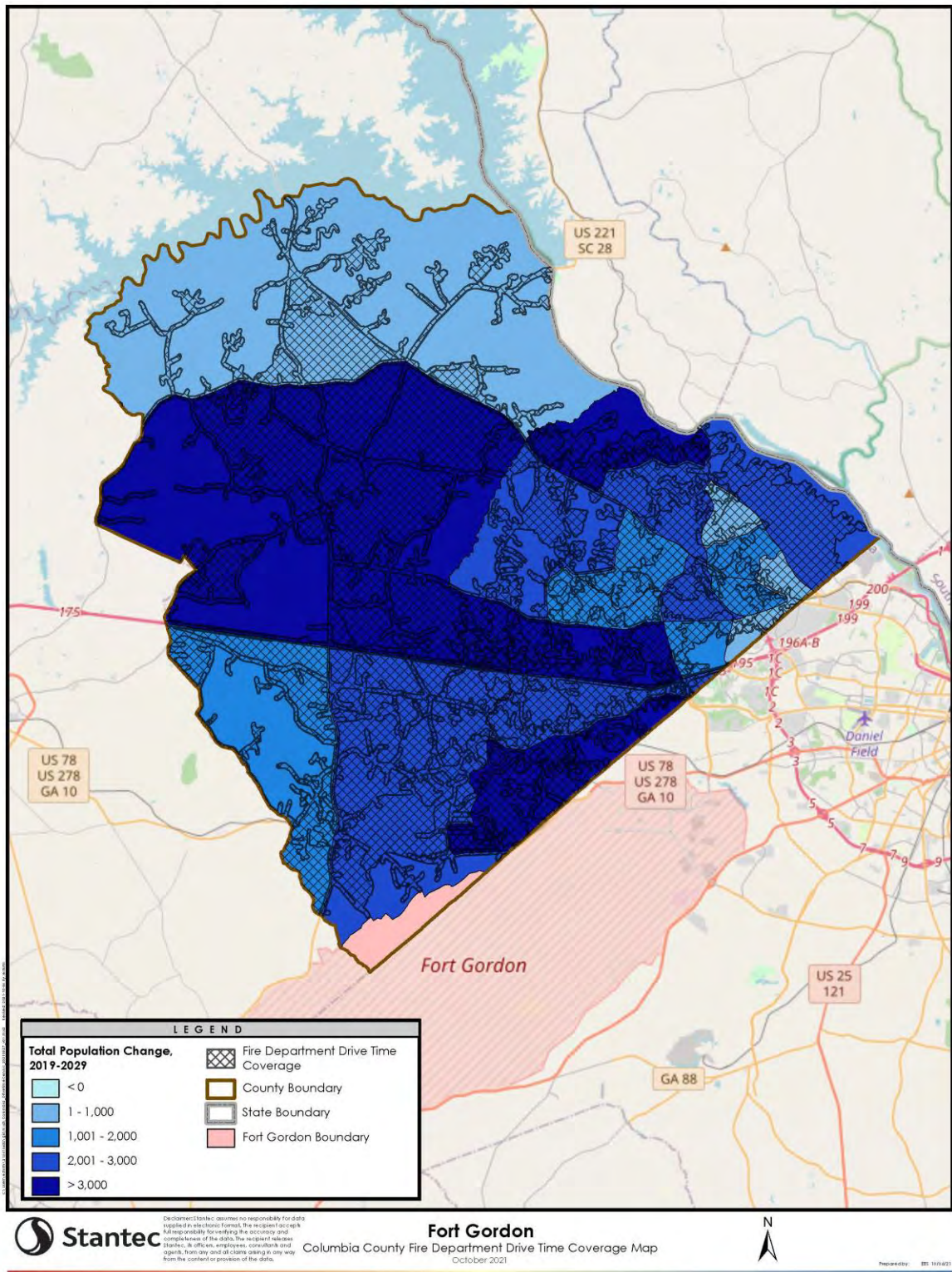
Figure 4.6: Fire and EMS Coverage with Population Growth, Columbia County, 2029. Source: Stantec, 2021.
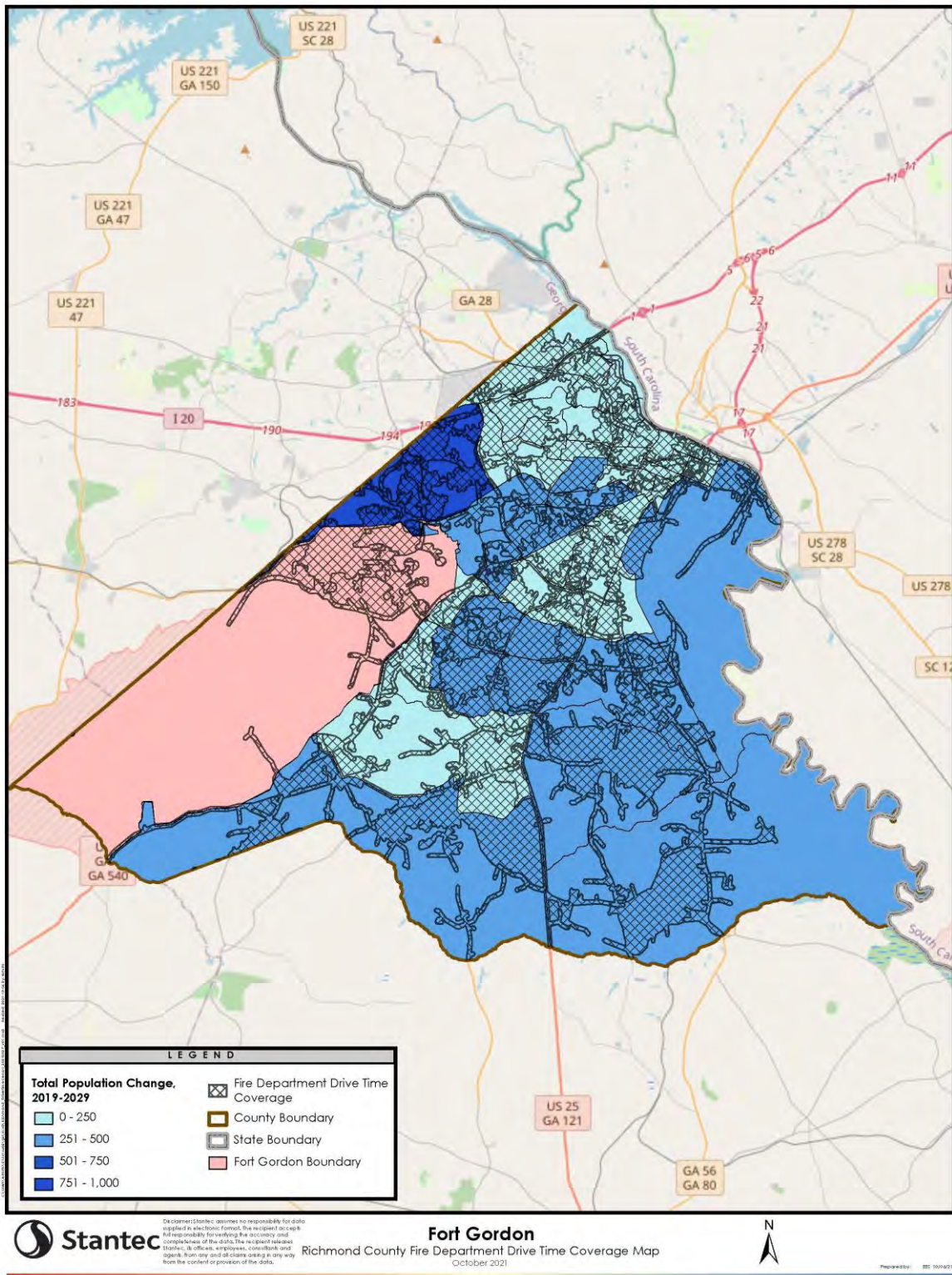
Figure 4.7: Fire and EMS Coverage with Population Growth, Richmond County, 2029. Source: Stantec, 2021.

Fort Gordon Regional Growth Management Plan
Public Services: Fire and EMS Needs Assessment
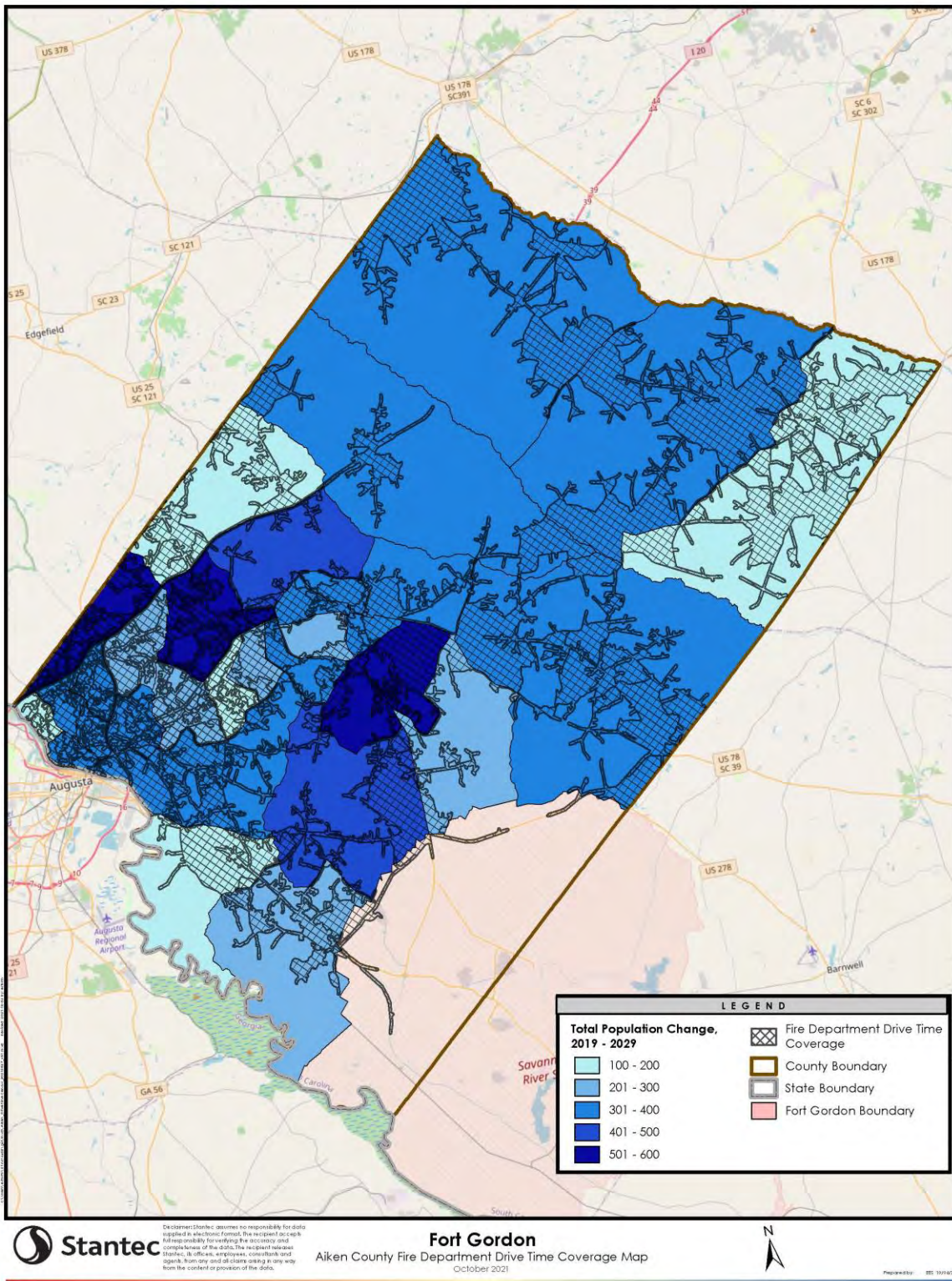
Figure 4.8: Fire and EMS Coverage with Population Growth, Aiken County, 2029. Source: Stantec, 2021.

Figure 4.8, Fire and EMS coverage with Population Growth for Columbia County, 2029, shows that there is adequate Fire and EMS coverage for the areas that are expected to grow the most. However, some areas do not fall within the requisite drive-time. Figure 4.7, Fire and EMS Coverage with Population Growth for Augusta-Richmond County, shows that there is adequate coverage for the areas expected to grow the most, but there are some gaps. For example, in Aiken County, in Figure 4.8, there is a large area within the census tracts directly east of the City of Augusta; while the population is not expected to grow in this area as much as in Columbia and Augusta-Richmond Counties, there is inadequate fire service within this area to serve a growing population. All three counties should examine the likelihood of additional residential land use within this area and determine if additional fire stations are needed.

4.2.5 Fire Assessment Key Findings

From 2012, when the U.S Army began the buildup of personnel at the Cyber Center, through 2020, personnel changes at the Installation resulted in a population increase of approximately 60,191 people. This growth likely contributed to the need for additional fire services in the areas of highest growth. The effects of this growth can be seen in the assessments for each of the jurisdictions below. Future growth and its accompanying increase in demand for housing and roadway capacity will create a need for more facilities and will also impact the ability of fire personnel to reach their destinations in a timely manner. Planning for the location and impacts of this growth is critical. The need for additional fire personnel is directly related to the location of new development. Since service criteria are based on response times, new construction that occurs in already developed areas that are close to existing services will create less of a need for additional fire stations. The majority of fire stations in the Study Area have indicated issues with funding and staffing. It is important that city and county governments responsible for land use regulation coordinate with fire services to ensure that new construction can be served and does not create additional strain on the existing fire services.

Stakeholder Identified Issues and Needs

Based on the counties that responded to the data request to identify issues and needs, the following were the top listed issues:

→ **Staffing** – Recruiting, retention or qualified personnel to fill vacancies for firefighter positions.
→ **Funding** - The primary sources of funding listed were the Special Purpose Local Option Sales Tax (SPLOST) and the fire tax and General Fund. Funding is needed for equipment replacement and staffing.

Additional details provided by counties are below:

Augusta-Richmond

The Augusta Fire Department's top deficiency is personnel shortage. As of June 2021, there were 48 open positions ranging from Firefighter 1 to Shift Commander. The Fire Department is also awaiting the delivery of an aerial truck. Projected needs include five new engines and a minimum of two new ambulances.

The Augusta Fire Department anticipates the need to provide additional advanced life support care while working in conjunction with the EMS zone provider to provide the best pre-hospital medical care possible. Economic growth coupled with a declining health status creates demand for EMS services, both emergent and non-emergent. This demand can be very taxing to any EMS system and will foreseeably require a significant increase of ambulances or EMS agencies within the county.

Burke County

Recruiting and retaining firefighters is the priority issue for Burke County.

Columbia County

Fire service needs identified for Columbia County as identified in the Comprehensive Plan: Vision 2035 include:

→ Obtain fire services accreditation from the Center for Public Safety Excellence.
→ Additional fire station in the Washington Road and Rosemont Drive area (2023-2025 timeframe).
→ Additional fire station in the Highway 150 and Smith Crawford Road area (2023-2025 timeframe).

McDuffie County

County officials identified the need to increase staff and maintain and replace equipment, specifically ambulances. The county transports people to the medical facilities in Augusta and this "puts a lot of miles" on the ambulances, which need replacing over time. The county is trying to stay "ahead of the curve" on replacing fire vehicles. Plans are to purchase a new fire apparatus in the near future and expectations are to start planning for the next aerial truck. Expanding emergency services into McDuffie County will require the construction of additional staffed stations to house equipment and personnel.

Aiken County

The Aiken County Comprehensive Plan lists the following fire protection goal: promote the most cost-effective countywide fire protection and prevention service with minimum Class 6 ISO rating for all areas of the county, where practical. To support this goal, the Comprehensive Plan recommends the following strategies:

→ Prepare and adopt Standard Operating Procedures (SOPS) for every fire department with a training schedule for all department personnel.
→ Institute a countywide computer system.
→ Continually monitor and update equipment on all trucks.
→ Institute minimum officer/firefighter qualification program.
→ Institute individual written and adopted fire department preventative maintenance programs.
→ Investigate the feasibility of district consolidation and pursue, where feasible, on an incremental basis.

Within Aiken County, public service needs are identified by both the cities and the county. Volunteer fire departments manage budgets independently.

Edgefield County

The Edgefield County Comprehensive Plan highlights a need to identify funding resources to fund additional fire and police personnel. The County is served primarily by volunteer fire departments, and finding volunteers willing to donate their time to receive the necessary training and serve the community is a challenge.

Within this small jurisdiction, county officials often wear multiple hats. Two of the mayors are also firefighters. The budget for fire services is supported by the fire tax fund and is supplemented with grants.

The Mutual Aid Agreements across the region and the state, according to county officials, are exceptional. Fire services are coordinated statewide and at the federal level. Sumter National Forest is within Edgefield

County and is managed by the United States Forest Service. This requires coordination for fire services with the Edgefield Fire Department.

Emergency notification services include two services: Nixle and CodeRED. Nixle requires users to register. The CodeRED public alerting system is available for use in Edgefield County as well as throughout the state. CodeRED does not require user registration; it enables public safety personnel to notify residents and businesses of emergency and urgent notifications such as evacuation notices, missing persons, and severe weather advisories by telephone, text message, email, and social media. Nixle notifies residents and businesses of the same by text message.

Funding for EMS services comes from medical insurance reimbursement for services rendered. There is an independent EMS station at the south side of the county in the higher density area near Fort Gordon.

4.3 Police Force Needs Assessment

Crime rates within the Study Area are, on average, below that of Georgia and South Carolina. The reasons for crime are connected and difficult to isolate. Different crimes have different causes, and a method that is effective at reducing one kind of crime may not affect other types of crime. Education levels, employment levels, wages, police staffing, and local law enforcement policies are some of the factors that can influence crime rates.

As populations grow, they often change. Counties within the Study Area that are projected to grow the most (Augusta-Richmond and Columbia Counties in Georgia and Aiken County in South Carolina) will see the composition of their populations change as the effects of recent and future growth at Fort Gordon are fully realized. These effects on the population composition could have positive or negative impacts on the crime rate, and other effects on the amount and type of policing that a community needs to ensure public safety.

4.3.1 Policing Levels Methodologies

There are four widely used methodologies to determine police staffing levels: a workload-based approach, a minimum staffing approach, an authorized level approach, and a per capita approach. Each of these methodologies will be briefly described.

Workload-based Approach

The workload-based approach includes analysis of historical workload, calls for service, and reflects an agency's policy priorities. The style of policing a police department or sheriff's office elects to do will affect the number of officers needed and the types of activities that they do on a day-to-day basis. This, combined with the number of service calls, the area covered, and the length of time needed to resolve the service call will all have an impact on the demand for policing staff.

The workload-based method for determining a police or sheriff's office staffing levels is considered to be the most accurate method for determining how many and what kind of officers are needed. However, this method also has no universally accepted standards, requires extensive data and calculations, and requires software that can be expensive.

Minimum Level Approach

The minimum level approach to determining police staffing needs establishes a minimum number of officers that are needed to maintain officer safety and provide public safety. The overall number of staff

needed is determined based upon the minimum that are needed to be deployed. This method ensures officer and public safety but does not have the flexibility to change based upon changes in conditions, and often there are no objective standards used to develop the minimum staffing level. Overtime may be used to meet minimum levels, making maintaining the police force more expensive.

Authorized Level Approach

This method uses adopted budgets to specify the number of police officers. This method reflects the availability of resources and is usually based upon a formal staffing analysis. However, the numbers adopted do not necessarily reflect the workload; for example, the workload could be met with fewer officers, but if not staffed to the authorized level, the department is perceived as being understaffed. In addition, if not staffed above the authorized levels, departments would frequently fall below authorized levels due to employee turnover.

Per Capita Approach

This method determines an optimum ratio of officers per resident within the jurisdiction. This simple methodology allows for comparison between jurisdictions but does not consider the difference in community conditions, needs, expectations, or types of policing. However, this methodology is the most appropriate to be used in our analysis. This analysis is looks at the effects of growth on the community and maintaining the quality of life.

As a population grows, its composition often changes as well. As described above, crime is dependent upon many factors, and predicting crime rates and policing needs in future populations is a complex issue. In addition, most policing agencies rely on short-term planning to best respond to changes within their communities. Therefore, this analysis will apply the current ratio of police officers/police employees to 1,000 people to determine the number of police officers that may be needed in the future. These estimates will give communities a starting point to further analyze and evaluate how many officers will be needed in the future.

For this analysis, the areas that are projected to grow the most, as described in Chapter 2 are analyzed to estimate future policing needs. These areas include Augusta-Richmond County, Columbia County, the City of Grovetown, the City of Harlem, Aiken County, and the City of North Augusta.

4.3.2 Current Conditions

Augusta-Richmond County

Under the consolidated government of Augusta-Richmond County, the Richmond County Sheriff's Department serves the unincorporated areas of Richmond County as well as the area within the City of Augusta's limits. There are four Sheriff's department locations within the county, with the main office located in downtown Augusta. The cities of Hephzibah and Blythe have their own police departments and are outside the Richmond County Sheriff's office jurisdiction.

The Sheriff's office employs 449 full-time sworn officers and 263 full-time civilians. The population of Augusta-Richmond (excluding Hephzibah and Blythe) in 2019 was estimated to be 197,888. This gives a ratio of 2.27 sworn officers and 1.33 full-time civilians per 1,000 people.

Table 4.5, below, shows the crime rate for Augusta-Richmond County in 2017.

Table 4.5: Augusta-Richmond County Crime Rates by Type, 2017

	Murder	Rape	Robbery	Assault	Burglary	Larceny	Vehicle Theft
Augusta-Richmond County*	23	47	283	523	1,615	6,832	672
Rate per 1,000 people	0.11	0.23	1.40	2.59	8.01	33.9	3.33

Includes unincorporated Augusta-Richmond County, City of Hephzibah, and City of Blythe

Source: Derived from Georgia Bureau of Investigation, accessed June 2021.

Burke County

The Burke County Sheriff's office serves unincorporated areas of Burke County. The Sheriff's office has one location, the main office is located with the City of Waynesboro. The incorporated areas of Midville, Waynesboro, and Sardis have their own police departments.

The Sheriff's office employs 29 full-time sworn officers, 32 full-time civilians, and 4 part-time civilians. The Burke County Sheriff's Office serves unincorporated areas of Burke County as well as some of the cities and towns, except for Midville, Waynesboro, and Sardis, which have their own policing forces. The total population of Burke County (excluding Midville, Waynesboro and Sardis) is 15,469. This gives a ratio of 1.87 full-time sworn officers and 2.33 civilians (full and part-time) per 1,000 people.

Table 4.6, below, shows the crime rates for Burke County, 2019.

Table 4.6: Burke County Crime Rates by Type, 2019

	Murder	Rape	Robbery	Aggravated Assault	Simple Assault	Burglary	Theft	Motor Vehicle Theft
Burke County*	4	2	3	19	78	56	142	26
Rate per 1,000 people	0.04	0.02	0.03	0.21	0.86	0.62	1.57	0.29

Includes incorporated and unincorporated areas of Burke County.

Source: Burke County Sheriff's Office Annual Report, 2019

Columbia County

The Columbia County Sheriff's Department serves the unincorporated areas of Columbia County. The incorporated cities of Grovetown and Harlem are served by their own police departments and are outside the Columbia County Sheriff's office jurisdiction. There are two Sheriff's department locations within the county, with the main office located in the unincorporated area of Appling. The Sheriff's department has the following divisions: Administrative Services, Criminal Investigation, Community Services, Special Operations, Professional Standards, Patrol, and Detention and Court Services. The Detention Center has a rated bed space of 280, and an average of 6,400 inmates are processed through the facility annually.

The Sheriff's office employs 383 officers. The population of Columbia County (excluding Grovetown and Harlem) in 2019 was estimated to be 138,191. This gives a ratio of 2.77 officers per 1,000 people.

Table 4.7, below, shows the crime rate for all of Columbia County (unincorporated, City of Grovetown, and City of Harlem) for 2017. Table 4.7: Columbia County Crime Rates by Type, 2017

	Murder	Rape	Robbery	Assault	Burglary	Larceny	Vehicle Theft
Columbia County*	0	13	21	42	251	1,907	94

	Murder	Rape	Robbery	Assault	Burglary	Larceny	Vehicle Theft
Rate per 1,000 people	0	0.08	0.14	0.28	1.66	12.59	0.62

*Includes unincorporated Columbia County, City of Grovetown, and City of Harlem
Source: Derived from Georgia Bureau of Investigation, accessed June 2021

The City of Grovetown

The City of Grovetown's Police Department serves the incorporated areas of the City of Grovetown. There is one police department located within the city.

The Police department employs 23 full-time sworn officers and 18 full-time civilians. The population of the City of Grovetown in 2019 was estimated to be 15,152. This gives a ratio of 1.52 sworn officers and 1.19 full-time civilians per 1,000 people.

The City of Harlem

The City of Harlem's Police Department serves the incorporated areas of the City of Harlem. There is one police department located within the city, which also has mutually beneficial aid agreements with surrounding jurisdictions.

The Harlem Police Department employs eight full-time officers and five part-time officers, for a total of 13 officers. The population of the City of Harlem in 2019 was estimated to be 3,371. This gives a ratio of 2.37 full-time officers and 1.48 part-time officers per 1,000 people.

Most of the City's crime are misdemeanors, with major crimes and violent crimes occurring rarely. According to the City's Deputy Chief of Police, as the City's population has increased, so has the incidence of crime in general. The City's calls for service were approximately 300 in 2015 and have risen to almost 1,000 in 2020.

Lincoln County

The Lincoln County Sheriff's office serves the unincorporated areas of Lincoln County. The Sheriff's office has one location, with the office located within the City of Lincolnton. The incorporated City of Lincolnton has its own police department.

The Sheriff's office employs 12 full-time sworn officers, 3 part-time sworn officers, 14 full-time civilians, and 1 part-time civilian. The population served by the Lincoln County Sheriff's Office is approximately 6,412; this is the total county population minus the populations of Lincolnton, which has its own policing forces. This gives a ratio of 2.34 sworn officers (full and part-time) and 2.3 civilians (full and part-time) per 1,000 people.

Table 4.8, below, shows the crime rates for Lincoln County, 2017.

Table 4.8: Lincoln County Crime Rates by Type, 2017

	Murder	Rape	Robbery	Assault	Burglary	Larceny	Vehicle Theft
Lincoln County*	0	0	0	24	20	107	4
Rate per 1,000 people	0	0	0	3.03	2.53	13.5	0.50

*Includes both unincorporated Lincoln County and the City of Lincolnton.
Source: Derived from Georgia Bureau of Investigation, accessed July 2021

McDuffie County

The McDuffie County Sheriff's office serves the unincorporated areas of McDuffie County and the City of Dearing. The Sheriff's office has three locations, with the main office located within the City of Thomson. The incorporated City of Thomson has its own police department.

The population served by the McDuffie County Sheriff's Office is approximately 15,003; this is the total county population minus the population of the City of Thomson, which has its own policing forces.

Table 4.9, below, shows the crime rates for McDuffie County, 2017.

Table 4.9: McDuffie County Crime Rates by Type, 2017

	Murder	Rape	Robbery	Assault	Burglary	Larceny	Vehicle Theft
McDuffie County*	0	0	0	4	5	10	2
Rate per 1,000 people	0	0	0	0.19	0.23	0.47	0.09

Includes both unincorporated McDuffie County and the City of Thomson.
Source: Derived from Georgia Bureau of Investigation, accessed July 2021

Aiken County

The Aiken County Sheriff's Department serves the unincorporated areas of Aiken County. The incorporated cities are served by their own police departments and are outside the Aiken County Sheriff's office jurisdiction. There is one Sheriff's department with nine locations within the county. The main office is in the City of Aiken.

In 2019, the Sheriff's office had 184 employees. The population of Aiken County (excluding incorporated areas) in 2019 was estimated to be 107,572. This gives a ratio of 1.71 sheriff's office employees per 1,000 people. According to Aiken County's annual financial reports, there were 68,957 deputy responses to calls for service in 2020. Since 2008, the number of deputy responses to calls for service has varied from 64,117 to 86,684 annually. The number of officers has increased from 168 in 2008 to 188 in 2020.

Table 4.10: Aiken County Crime Rates by Type, 2019

	Murder	Sexual Battery	Robbery	Aggravated Assault	Breaking and Entering	Motor Vehicle Theft	Larceny
Aiken County	12	119	93	616	1,149	572	3,706
Rate per 1,000 people	0.11	1.11	0.86	5.72	10.68	5.32	34.44

Source: Crime in South Carolina, 2019

North Augusta

The North Augusta's Police Department serves the incorporated areas of the City of North Augusta. There are two police department locations within the city.

The North Augusta Police Department employs 65 people. The population of the City of North Augusta in 2019 was estimated to be 23,845. This gives a ratio of 2.73 employees per 1,000 people. According to North Augusta's annual financial reports, there were 32,520 deputy responses to calls for service in 2020. Since 2011, the number of deputy responses to calls for service has varied from 32,520 to 50,356 annually. The number of officers has increased from 55 in 2011 to 65 in 2020.

Table 4.11: City of North Augusta Crime Rates by Type, 2019

	Murder	Sexual Battery	Robbery	Aggravated Assault	Breaking and Entering	Motor Vehicle Theft	Larceny
North Augusta	0	12	14	34	82	41	560
Rate per 1,000 people	0	0.50	0.59	1.43	3.45	1.72	23.53

Source: Crime in South Carolina, 2019

City of Aiken

The City of Aiken's Police Department serves the incorporated areas of the City of North Aiken. There are two police department locations within the city.

The Aiken Department of Public Safety has 141 full-time public safety officer positions in 2019. The population of the City of Aiken in 2019 was estimated to be 30,869. This gives a ratio of 4.56 officers per 1,000 people. According to the City of Aiken's Department of Public Safety Annual Report, 2018-2019, there were 47,903 calls for service during the 2018-2019 fiscal year. Since 2014, the number of calls for service has varied from 40,008 to 47,903 annually.

Table 4.11: City of Aiken Crime Rates by Type, 2019

	Murder	Rape	Robbery	Aggravated Assault	Burglaries	Motor Vehicle Theft	Larceny
City of Aiken	2	21	36	76	204	71	1,014
Rate per 1,000 people	0.06	0.68	1.17	2.46	6.61	2.30	32.85

Source: Aiken Department of Public Safety Annual Report, 2018-2019

4.3.3 Future Needs

This analysis uses the population projections described in Chapter 2 to estimate the number of police officers that may be needed by each community expected to grow the most within the planning timeframe. Other counties within the Study Area are expected to slightly increase their population, maintain their population, or decrease their population. In these cases, additional police officers, based upon a per capita ratio, would not be needed. Table 4.12, below, shows the number of additional police predicted to be needed for the areas of highest growth. Table 4.13 shows the number of additional police personnel needed to serve direct and indirect military growth through 2024.

Table 4.12: Estimated Additional Officers Needed by 2030

Community	Sworn Officers		Civilians	Employees	Personnel per 1,000 people	Projected Population Increase (2030)	Additional Officers Needed (2030)*
	Full Time	Part-Time					
Augusta-Richmond County	2.27		1.33		3.60	10,186	37
Columbia County	2.77				2.77	33,908	94
City of Grovetown	1.52		1.19		2.71	3,718	10
City of Harlem	2.37	1.48			3.85	827	3
Aiken County				1.71	1.71	5,390	9
City of North Augusta				2.73	2.73	1,195	3

Community	Sworn Officers		Civilians	Employees	Personnel per 1,000 people	Projected Population Increase (2030)	Additional Officers Needed (2030)*
	Full Time	Part-Time					
City of Aiken	4.56				4.56	1,547	7

Detailed population projections provided in Chapter 2 used census tract level data and boundaries to estimate future population. Census tract boundaries do not always follow municipal boundaries. Therefore, for this analysis, each community's percentage of the overall county's population for 2019 was applied to the county-level estimates for 2030 to generate a constant-share estimate of each community's population.

Table 4.13: Estimated Additional Officers Needed by 2024

Community	Personnel per 1,000 people	Military-related population increase (2024)	Additional Officers Needed	Indirect Population Growth (2024)	Additional Officers Needed
Augusta-Richmond County	3.60	2,029	7	481	2
Columbia County	2.77	862	2	1,810	5
City of Grovetown	2.71	94	0	198	1
City of Harlem	3.85	21	0	44	0
Aiken County	1.71	56	0	384	1
City of North Augusta	2.73	12	0	85	0
City of Aiken	4.56	16	0	110	0

Table 4.12 indicates that to keep the current ratio of police officers per 1,000 people, each of the police and sheriff's departments within the Study Area's communities of greatest growth have to increase their policing forces commensurate.

In general, police departments do not have long-term predictions of how many officers are going to be needed. Due to the complex nature of crime and its causes, not all growth indicates a blanket increase in crime or in all types of crime. Based upon the discussions with some of the communities within the areas of highest growth, most planning is done on a short-term basis and reflects recent shifts in population, crime, and traffic data. Input from these areas is then used to estimate the next year's need for additional positions and is added to the budget.

For example, the City of Harlem Police Department uses the growth projections created as part of the Community's Comprehensive Planning process as well as past crime statistics, traffic information from the National Highway Traffic Safety Administration, and other data to estimate the department's future needs. Needs for additional personnel and equipment are added to the annual budget and approved by the City Manager prior to being adopted by the City Council before December 31 of each year. For the 2022 fiscal year, the department plans to add one position, a criminal investigator. This addition will necessitate not only a budgetary increase of the salary of the new officer, but also a vehicle, a computer, weapon, and other gear and equipment necessary for the officer to complete his job.

According to the Deputy Chief of Police, the biggest issue facing the City of Harlem Police Department is budgetary constraints. With the growth rate associated with Columbia County and the cities Harlem and Grovetown, keeping staff levels abreast of demand generated by population growth is a challenge facing these communities.

Changes to staffing levels must be approved through the municipal budget process. Aiken County's adopted 2021 budget indicates that the Sheriff's Office requested additional budget in 2021 for new positions that were ultimately not approved by the County Council. Staff is continuing to reach out to police and sheriff's offices to discuss how they plan for the future and what their plans for the future are.

4.4 Recommendations

This section identifies primary issues and recommendations to resolve the issues identified.

4.4.1 Fire and EMS

Fire Fighter Staffing and Recruiting

A potential idea shared by one of the stakeholders was to provide basic emergency response training in high schools. Students could get a jump start on the training to become a firefighter in their local communities.

Improve ISO Ratings

With new development, likely there will be the extension of water service lines. New hydrants and water service lines could help jurisdictions score higher points and improve ISO ratings.

Construct New Fire Stations

Locate new fire stations in areas not serviced within suppression response standards. Further study is required, and individual characteristics of each community needs to be considered in future fire station planning.

Regional Collaboration

There is an opportunity for regional collaboration regarding mutual aid agreements as the population grows. There is a potential for Central Savannah River Area Regional Commission to host such events.

Funding

Sales Tax (SPLOST) and grants are feasible.

The funding options below could potentially address the construction of new facilities or addition of equipment, adjusting squad staffing levels, and replacement of existing vehicles. The Department of Homeland Security's Federal Emergency Management Agency (FEMA) grants include:

→ **Assistance to Firefighters Grant (AFG)** – The Assistance to Firefighters Grant (AFG) was established in 2001 with the goal of helping fire departments meet the firefighting and emergency response needs of their communities. The AFG helps firefighters and other first responders obtain critically needed equipment, protective gear, emergency vehicles, training, and other resources needed to provide fire and EMS services to the public. https://www.fema.gov/assistance-firefighters-grant.

→ **Fire Prevention & Safety Grant (FP&S)** – The Fire Prevention and Safety (FP&S) Grant is part of the Assistance to Firefighters Grant (AFG) program and supports projects that enhance the safety

of the public and firefighters from fire and related hazards. The main goal of the PF&S Grant is to reduce injuries and prevent deaths related to fire hazards among high-risk populations. https://www.fema.gov/fire-prevention-safety-grants.

→ **Staffing for Adequate Fire & Emergency Response Grant (SAFER)** – The Staffing for Adequate Fire and Emergency Response Grant (SAFER) was established to provide direct funds to fire departments to help them increase or maintain the number of trained "front line" firefighters available in their communities. The SAFER Grant aims to enhance fire department abilities to comply with staffing, response, and operational standards established by NFPA 1710 and 1720. https://www.fema.gov/staffing-adequate-fire-emergency-response-grants

State grants include:

→ **Georgia Trauma Related Equipment Grant** – This is a non-competitive grant based on 911 ambulance call volume issued by the Georgia Trauma Commission. AFY 2021 EMS Grant Application | Georgia Trauma Care Network Commission (georgiatraumacommission.org)

→ **South Carolina Forestry Commission Volunteer Fire Assistance Grants** – This is a 50/50 matching fund grant intended to increase firefighting capacity, especially for those fire departments serving communities in the wildland-urban interface. SCFC Fire Dept Protection Grants (state.sc.us)

The Cyber Command projected growth as it relates to fire and EMS services are captured in the below Fire and EMS Implementation Plan. Refer to Table 4.9, Public Services Implementation Plan.

4.4.2 Police

Police Force Funding

Policing forces are funded through municipal governments, which are primarily funded through both property and sales taxes. Within a municipal government, there are many demands on funds. For many of the local governments within the Study Area, public safety budgets comprise a large percentage of the community's expenditures every year. While increased growth means additional property and sales taxes are generated, local governments will have to budget carefully to ensure that revenue is available to meet increased demands. Possible additional funding sources include the following:

→ **Community Policing Development Program Grant.** Administered by the Department of Justice, this grant program funds projects that develop knowledge, increase awareness of effective community policing strategies, increases the skills and abilities of law enforcement and community partners, increases the number of law enforcement agencies using proven community policing practices.

→ **Community Policing Development Microgrants Program.** This microgrant program, administered by the Department of Justice, offers grants to develop and test innovative policing strategies and build knowledge about best practices.

→ **COPS Hiring Program:** The Community Oriented Policing Services (COPS) at the Department of Justice provides grants to hire entry-level career law enforcement officers in order to preserve jobs, increase community policing capabilities, and support crime prevention efforts.

→ **Local Law Enforcement Block Grant Programs.** This program provides funds to local governments to support projects that reduce crime and improve public safety.

Police Force Staffing

Recruiting, hiring, and retaining officers is a nationwide issue. Reasons for staffing issues range from the public image of law enforcement, a lengthy and thorough hiring process, and a desire for a favorable work-life balance. These issues may compound staffing issues within communities that are expected to grow. Potential solutions include the following:

→ **Opportunities to gain experience.** Rather than go through an involved process only for new employees to discover they don't like policing, ride-alongs and outreach to secondary schools and colleges can increase the likelihood of reaching candidates whose interest in the job would be maintained.

→ **Compensation Incentives.** Out-of-the-box benefits, such as student loan repayment, conversion of experience for college credit, and sign-on bonuses give the opportunity to gain training without incurring debt.

→ **Relaxation of candidate qualifiers**. Allowing, for example, visible tattoos may broaden the applicant pool.

→ **Programs that promote work-life balance.** These programs can include part-time work and training for those who are balancing childcare or other responsibilities and online training to remove the hardship of being away from home for weeks at a time.

→ **Material Perks.** Non-monetary benefits, such as being able to bring a squad car home, having a uniform allowance, or allowing relaxed uniforms in appropriate circumstances can make the job more attractive.

→ **Recruitment Campaigns.** Having an online recruitment website (separate from the municipal website) that highlights the day-to day aspects of the job can bring in applicants.

→ **Workload-based Analysis.** Perform a workload-based analysis to determine that the police department has the appropriate number of officers and that they are deployed effectively.

4.5 Implementation Plan

The recommendations summarized above have been divided into a timeline. Short-term actions should be undertaken within 1-3 years; mid-term actions should be undertaken within 4-5 years, and long-term actions should be undertaken within 5+ years. Ongoing indicates activities that should be undertaken annually or regularly within the planning timeframe.

Identification of Issues, Goals, and Strategies		Responsible Party	Timeline
Fire and EMS			
Staffing			
Goal	Increase participation in local volunteer fire departments.		
Strategy 4.1	Advertise volunteer fire department opportunities with new Cyber Command elements moving into the area and identify qualified potential volunteers currently on Fort Gordon living in surrounding communities.	Local Departments	Short-term
Strategy 4.2	Conduct public service announcements and a public relations campaign in local media to advertise needs	Local Departments	Short-term
Strategy 4.3	Explore outreach to high schools and colleges to attract more students who may be interested in firefighting work.	Local Departments	Mid-term

Identification of Issues, Goals, and Strategies		Responsible Party	Timeline
Fire Service Gaps			
Goal	Close Gaps in Fire Service Response Times		
Strategy 4.4	Use a drive-time analysis to identify areas that are not adequately served by existing fire stations to plan the locations of future fire stations to close service gaps.	Local Departments	Ongoing
Funding			
Goal	Identify alternative grant sources		
Strategy 4.5	Apply for grants, including Federal Emergency Management Agency (FEMA) grants: Assistance to Firefighters Grants, FEMA Fire Prevention and Safety Grants, FEMA Staffing for Adequate Fire and Emergency Response Grant, and state grants for firefighting assistance	Local Departments	Ongoing
Maintain and Renew Success of Mutual Aid Service Agreements			
Goal	Maintain and Renew Success of Mutual Aid Service Agreements		
Strategy 4.6	Coordinate regional and local Fire Service Meetings to coordinate on community needs.	Local Governments	Short-term
Strategy 4.7	Foster regional cooperative and collaborative meetings among the Fire Service and EMS providers to identify current and changing needs.	Local Governments	Short-term
Police			
Funding			
Goal	Apply for grants to supplement regular municipal funding		
Strategy 4.8	Apply for grants, including the Community Policing Development Program Grant, the Community Policing Development Microgrant, the COPs hiring program grant, and the Local Law Enforcement Block Grant Programs.	Local Departments	Ongoing
Staffing			
Goal	Explore ways to increase recruitment and retention of officers.		
Strategy 4.9	Partner with local colleges and universities to create more opportunities for experience to be accepted as college credit. Explore outreach to high schools and colleges to attract more students who may be interested in police work.	Local Departments	Mid-term
Strategy 4.10	Identify additional compensation or on-the-job perks that may help to retain officers.	Local Departments	Short-term
Strategy 4.11	Explore work-life balance initiatives that will attract and retain officers.	Local Departments	Short-term
Strategy 4.12	Expand recruitment efforts.	Local Departments	Short-term
Strategy 4.13	Perform a workload-based analysis to determine the right number of officers and the most efficient way to deploy them.	Local Departments	Short-term

Chapter 5:

Employment, Workforce Development, and Economic Development

5 Employment, Economic Development and Workforce Development

5.1 Overview

As discussed in previous chapters, changes related to growth at Fort Gordon have far-reaching effects across the region's communities. This chapter discusses the changes to employment and how emerging economic trends and technology will influence the local economy.

This chapter provides a data-driven approach to the economic trends of the Study Area around Fort Gordon and provides an understanding of the economic impact of an increase in military personnel as well as which industries will benefit. Understanding which industries are growing and which ones are not is crucial to planning for growth and ensuring the region can benefit economically.

The chapter is based on an industry cluster analysis and workforce talent overview of the existing workforce in the Study Area. The clusters were analyzed to determine the sectors with the highest potential for growth in the Study Area.

Regional business data and economic studies were consulted to supplement the analysis of past workforce patterns and current employment trends. Data sets from Economic Modeling Specialists International (EMSI), US Census Data, the Bureau of Labor Statistics, and the Bureau of Economic Analysis were reviewed to gain a comprehensive view of the Study Area and its needs. Ultimately, this analysis highlights the past and present economic and workforce conditions as well as industry clusters and workforce occupations with the most significant potential, along with industries targeted for growth. Through attraction, retention strategies, and supporting local entrepreneurs, the region can grow and develop critical competencies to become highly competitive and innovative in these industries, fostering a dynamic environment that can propel the local economy.

Much of the changes occurring in the Study Area are driven by Cyber industry growth at Fort Gordon. Concurrently, the overall economy is transitioning to a predominantly digital orientation while this military-driven growth occurs. What results is an increase in information technology across industry sectors, especially Cybersecurity-related firms operating in conjunction with the Installation and private businesses. This growth in technology will drive new market opportunities, especially in Department of Defense (DOD) contracting, Cybersecurity, health Information Technology (IT), data centers, manufacturing, e-commerce, hotels, and related small businesses. Industries that find ways to integrate information technologies into their operations will be best positioned to succeed in a digitally driven economy.

A broad understanding of industrial sectors, and how they align with information technology, Cybersecurity, and regional commerce can help prepare the labor force, form career paths, and enhance regional competitive advantages in innovation technology adaptation. This analysis provides an understanding of the drivers of innovation among critical industries in the Study Area and how to address supply chain gaps through competitive industry advantages and adoption of technology.

Information technologies are a central component of our lives and the economy. How we think about and use these technologies will change significantly as part of the digital transformation that is underway. This

transition represents an economic opportunity and the chance to secure a leadership position in emerging industries within the Study Area.

5.1.1 Components of Analysis

Economic Base - The economic base analysis assesses current industry concentration, identifying the industries that employ the most people in the area as well as those that represent unique specializations.

Targeted Industries - The targeted industry analysis utilizes clusters of industries to identify existing industry strengths and determine industry groups that could be potential areas for growth.

Workforce/Talent - The workforce analysis looks at the most common occupations and assesses education and the required training programs to enter the trade field. This analysis also looks at the most in-demand skills.

5.2 Economic Base Analysis

The economic base analysis examines the Study Area's largest industries, past and projected growth, industry concentrations, and industry competitiveness. Evaluating these indicators paints a picture of the current and prospective future of an industry within the area. Much of this report, including the economic base analysis, examines industries by North American Industry Classification System (NIACS) codes. This coding system helps correlate and analyze specific industry and economic data.

5.2.1 Existing Economic Development Plans

CSRA Regional Plan

There are two overarching economic development plans for the Study Area. The CSRA Regional Plan is a long-range plan for the management of the region's projected growth by local governments and the CSRA Regional Commission Council. The CSRA has six primary goals:

1. Economic Development – Maintain a vibrant, diversified economy that expands job opportunities in the region, develops a qualified workforce, supports downtowns as multi-use destinations, and improves the quality of life for all residents.
2. Natural and Cultural Resources – Protect and preserve natural, environmental, and cultural resources in the region from development pressure, build a network of connected communities, and highlight historical resources and natural assets in the area.
3. Community Facilities and Services – Provide community facilities and services throughout the region that encourage appropriate development and more walkable, mixed-use communities that enhance the overall quality of life for all residents.
4. Housing – Provide a range of housing types and choices available in urban and rural areas that is safe and physically and economically accessible to all residents.
5. Land Use and Transportation – Effectively use existing infrastructure to ensure the coordination of land use and transportation planning in support of improved resident quality of life, including provisions for pedestrians, trails and bicycles, housing, access to recreation and green space, and protected natural and historic areas.
6. Intergovernmental Coordination – Create a culture of collaboration in planning and government decision-making where communities join to define commonalities and development strategies

that benefit multiple jurisdictions to further growth, increase access to resources, generate cost savings, and promote healthy, active residents.

Economic development priorities established in the CSRA Regional Plan include promoting agricultural, natural, and heritage tourism opportunities, increasing job opportunities through business expansion, attraction, and retention, and to develop better qualified workers. Strategies established, but not fully executed, include supporting major employers and promote specialized growth in sectors like Cyber, surveying high-tech and niche manufacturers about skills needs, and utilizing the existing workforce development programs. These strategies are appropriate for promoting a strong and diversified regional economy. This report will identify additional economic and workforce development strategies that build on the planning already completed and regional economic trends, to serve the needs of a growing regional population.

CSRA Comprehensive Economic Development Strategy (CEDS)

The CSRA CEDS examines the entire 13-county CSRA Region. The CEDS notes that the regional population has grown 32% since 1980, but lags state growth. Growth is uneven as 6 of 13 counties lost population. The regional population is also relatively evenly distributed among a variety of age cohorts suggesting that an aging population is not as significant of a challenge as it may be in other parts of the United States. Regional household incomes have also increased since 1980 but the area still has lower income than the Georgia average.

The CEDS found that the CSRA Regional economy is heavily reliant on timber-related industries. Manufacturing has been challenged with somewhat recent factory closings and most occupations now exist in services and sales/admin support sectors. Despite manufacturing challenges, the sector still employs over 14,000 people in the CSRA region and fabricated metal, food, nonmetallic mineral products, paper, wood products, and transportation equipment are some of the largest sectors. Though manufacturing has a significant presence, the CEDS plan notes that the area is transitioning to a service dominant economy due to substantial growth in retail trade, finance, wholesale trade, health care, admin and waste management, transportation and warehousing, and food service sectors.

The CEDS plan also notes the economic importance of Fort Gordon, describing the Installation as the regional economic driver. This relates both to direct employment at the Installation as well as contracting needs to support its operations. Future growth opportunities driven by Fort Gordon are likely in retail, tourism, manufacturing, military, education and health care.

Specific strategies in the CEDS plan place an emphasis on the following:

→ Niche Manufacturing
→ Warehousing and Distribution
→ Business Services and IT
→ Tourism
→ Downtown Development

These are likely good areas to focus future development efforts based on regional strengths and growth opportunities further identified in the plan. Niche manufacturing may be an especially strong area for the region to focus on, based on identified strengths in small vehicle production.

The CEDS also emphasizes business retention and expansion as well as a cluster-based approach to economic development strategies. This report builds on these strategies by identifying clusters that may be appropriate for additional economic development focus in terms of attraction and retention efforts.

5.3 Past Industry Growth

Between 2010 to 2020, the industries that added the most jobs were examined. Beginning with 2-digit NAICS, most industries had a job increase. This was strongest in Construction as well as Health Care and Social Assistance, which comprise of over 70% of the net job growth. Moreover, the industries which saw the greatest percentage growth were Mining, Quarrying, and Oil and Gas Extraction (20%), Real Estate and Rental and Leasing (22%), Utilities (27%), Government (27%) Transportation and Warehousing (30%), and Construction (53%). As such, Construction has contributed to a great deal of aggregate job growth and percentage job growth. Lastly, the change in the GRP (GDP for the region by industry) of each industry was examined, and the industries with the greatest net GRP increase were Health Care and Social Assistance ($950,083,236), Manufacturing ($2,251,961,132), Utilities ($1,627,560,179), Government ($2,936,473,863), and Construction ($1,793,004,288). More information is listed in Table 5.1.

Table 5.1: Study Area Industries by Job Growth/(Decline) (2-digit NAICS)

Description	2010 Jobs	2020 Jobs	Job Change	% Job Change	2010 GRP	2020 GRP	Net GRP
Government	60,350	57,738	(2,612)	(4%)	$3,317,088,984	$6,253,562,847	$2,936,473,863
Health Care and Social Assistance	27,441	32,594	5,152	19%	$1,514,122,335	$2,464,205,571	$950,083,236
Retail Trade	25,954	27,211	1,257	5%	$808,094,658	$1,784,963,332	$976,868,674
Manufacturing	20,210	22,427	2,216	11%	$1,298,109,799	$3,550,070,931	$2,251,961,132
Administrative and Support and Waste Management and Remediation Services	22,273	22,058	(215)	(1%)	$1,337,155,186	$2,170,054,672	$832,899,486
Construction	13,870	21,283	7,413	53%	$844,754,946	$2,637,759,234	$1,793,004,288
Accommodation and Food Services	18,919	20,903	1,984	10%	$312,811,877	$688,083,947	$375,272,071
Other Services (except Public Administration)	12,679	13,447	768	6%	$372,020,604	$589,795,096	$217,774,491

Description	2010 Jobs	2020 Jobs	Job Change	% Job Change	2010 GRP	2020 GRP	Net GRP
Professional, Scientific, and Technical Services	9,309	10,427	1,118	12%	$818,086,510	$1,381,248,035	$563,161,525
Transportation and Warehousing	4,744	6,153	1,409	30%	$277,852,103	$551,768,391	$273,916,287
Wholesale Trade	4,432	5,149	716	16%	$309,957,105	$916,049,337	$606,092,232
Finance and Insurance	5,826	4,151	(1,676)	(29%)	$466,923,944	$930,841,591	$463,917,647
Arts, Entertainment, and Recreation	3,131	3,294	163	5%	$98,771,685	$193,923,641	$95,151,955
Educational Services	3,138	3,009	(129)	(4%)	$84,134,896	$131,307,948	$47,173,052
Real Estate and Rental and Leasing	2,382	2,896	513	22%	$256,735,492	$544,149,132	$287,413,640
Utilities	1,931	2,453	522	27%	$195,310,087	$1,822,870,267	$1,627,560,179
Agriculture, Forestry, Fishing and Hunting	2,417	2,346	(71)	(3%)	$128,151,384	$130,324,004	$2,172,620
Information	2,636	2,249	(387)	(15%)	$154,215,978	$588,707,063	$434,491,085
Management of Companies and Enterprises	783	464	(320)	(41%)	$85,625,713	$64,427,560	($21,198,152)
Mining, Quarrying, and Oil and Gas Extraction	351	421	70	20%	$31,048,684	$82,498,854	$51,450,170

Description	2010 Jobs	2020 Jobs	Job Change	% Job Change	2010 GRP	2020 GRP	Net GRP
Unclassified Industry	185	206	21	12%	Insf. Data	Insf. Data	
Total	**242,964**	**260,879**	**37,029**	**15%**	**$12,710,971,972**	**$27,476,611,453**	**$14,765,639,482**

The top 15 industries between 2010 to 2020 were examined at the 6-digit NAICS level. There were six industries that added over 1,000 new jobs:

→ Federal Government, Military (9,936)
→ Power and Communication Line and Related Structures Construction (4,591)
→ Limited-Service Restaurants (2,463)
→ General Medical and Surgical Hospitals (2,325)
→ Warehouse Clubs and Supercenters (2,000)
→ Home Health Care Services (1,243)
→ Other Heavy and Civil Engineering Construction (1,079)

Moreover, there were four industries that saw over 100% job growth:

→ Power and Communication Line and Related Structures Construction (4,924%)
→ Other Heavy and Civil Engineering Construction (1,146%)
→ Snack and Nonalcoholic Beverage Bars (207%)
→ Electric Power Distribution (119%)

In both cases, Power and Communication Line and Related Structures Construction saw significant growth, meaning that it likely contributed to a great deal to economic growth. This can be seen by the fact that this industry also had the second greatest net GRP ($807,957,970). General Medical and Surgical Hospitals ($290,263,287), Other Heavy and Civil Engineering Construction ($306,776,257), Electric Power Distribution ($415,756,994), and Federal Government, Military ($1,670,808,010), Federal Government, Civilian, Excluding Postal Service ($490,374,294) saw significant GRP growth as well. More information is listed in Table 5.2.

Table 5.2: Study Area Industries with Highest Job Growth, 2020 (6-digit NAICS)

Description	2010 Jobs	2020 Jobs	Job Growth	% Job Change	2010 GRP	2020 GRP	GRP Growth
Federal Gov, Military	22,493	32,429	9,936	44%	$710,995,289	$2,381,803,299	$1,670,808,010
Power and Communication Line and Related Structures Construction	93	4,684	4,591	4,924%	$6,210,746	$814,168,715	$807,957,970

Description	2010 Jobs	2020 Jobs	Job Growth	% Job Change	2010 GRP	2020 GRP	GRP Growth
Limited-Service Restaurants	7,318	9,781	2,463	34%	$169,854,109	$289,080,165	$119,226,056
General Medical and Surgical Hospitals	8,908	11,234	2,325	26%	$653,984,221	$944,247,508	$290,263,287
Warehouse Clubs and Supercenter-s	2,378	4,378	2,000	84%	$96,538,147	$229,762,203	$133,224,056
Home Health Care Services	1,526	2,769	1,243	81%	$66,765,737	$145,602,581	$78,836,844
Other Heavy and Civil Engineering Construction	94	1,174	1,079	1,146%	$8,230,242	$315,006,500	$306,776,257
Federal Government, Civilian, Excluding Postal Service	8,200	9,020	820	10%	$916,949,748	$1,407,324,042	$490,374,294
Tire Manufacturing (except Retreading)	1,097	1,828	731	67%	$113,796,058	$221,795,809	$107,999,751
Snack and Nonalcoholic Beverage Bars	326	1,003	677	207%	$5,355,790	$18,825,332	$13,469,542
Industrial Building Construction	2,518	3,187	669	27%	$367,595,573	$431,703,662	$64,108,089
Travel Trailer and Camper Manufacturing	0	616	616	Insuf. Data	$0	$55,928,946	$55,928,946
Animal (except Poultry) Slaughtering	622	1,212	590	95%	$33,124,345	$116,336,422	$83,212,077
Electric Power Distribution	460	1,009	549	119%	$161,598,214	$577,355,208	$415,756,994
All Other Transportation Equipment Manufacturing	1,215	1,744	529	44%	$214,886,220	$361,218,040	$146,331,820

Description	2010 Jobs	2020 Jobs	Job Growth	% Job Change	2010 GRP	2020 GRP	GRP Growth
Landscaping Services	1,696	2,213	517	30%	$54,239,056	$91,112,304	$36,873,247
Total	**58,944**	**88,281**	**29,337**	**50%**	**$3,580,123,495**	**$8,401,270,736**	**$4,821,147,240**

Source: Emsi 2021.3, August 2021 and TPMA

5.3.1 Industry Analysis

Regionally, the largest employers by industry closely match national trends, with the exception of Federal Government - Military, Hazardous Waste Treatment and Waste Disposal, and Power and Communication Line and Related Structures Construction.

Table 5.3: Study Area Top Ten Industries by Total Jobs, 2020 (6-Digit)

Description	2015 Total Jobs	2020 Total Jobs	Avg. Earnings per Person	2015 LQ	2020 LQ	Ind. Mix Effect	Nation Growth Effect	Expect-ed Change	Competitive Effect
Federal Gov, Military	25,481	32,429	$62,969	4.17	4.15	(64)	(2)	(66)	7,254
Elementary and Secondary Schools (Local Government)	13,365	13,202	$62,468	1.18	1.16	(357)	(2)	(359)	196
General Medical and Surgical Hospitals	9,360	11,234	$68,549	1.28	1.44	376	(1)	375	1,499
Limited-Service Restaurants	9,387	9,781	$17,212	1.42	1.42	96	(1)	94	300
Colleges, Universities	10,320	9,738	$80,287	2.43	2.22	30	(1)	29	(611)
Federal Government, Civilian, Excluding Postal Service	8,226	9,020	$109,255	2.29	2.26	675	(1)	674	120
Local Government, Excluding Education and Hospitals	7,820	7,621	$64,654	0.88	0.83	(8)	(1)	(9)	(189)
Full-Service Restaurants	7,562	6,618	$20,524	0.90	0.98	(1,685)	(1)	(1,686)	742

Description	2015 Total Jobs	2020 Total Jobs	Avg. Earnings per Person	2015 LQ	2020 LQ	Ind. Mix Effect	Nation Growth Effect	Expect-ed Change	Competitive Effect
Hazardous Waste Treatment and Waste Disposal	5,886	6,402	$108,934	108.14	103.61	607	(1)	607	90
Power and Communication Line and Related Structures Construction	196	4,684	$135,932	0.69	12.85	49	0	49	4,439

Source: Emsi 2021.3, August 2021 and TPMA

Table 5.4: Study Area Top 10 Jobs by Highest Percentage Growth, 2019 to 2020

Description	2015 Jobs	2019 Jobs	2020 Jobs	2021 Jobs	2015-2019 % Growth	2019-2020 % Growth	2020-2021 % Growth	Recovery Percent
Sign Manufacturing	78	20	76	79	(74.01%)	275.37%	3.99%	290.33%
Locksmiths	17	32	112	129	90.73%	244.98%	15.25%	297.58%
Fruit and Vegetable Canning	0	17	53	62	Insuf. Data	205.47%	16.39%	255.53%
Research and Development in Biotechnology (except Nanobiotechnology)	23	143	434	503	531.80%	203.61%	15.84%	251.69%
Packaging and Labeling Services	21	13	40	44	(37.29%)	198.11%	10.26%	228.71%
Other Miscellaneous Nondurable Goods Merchant Wholesalers	22	16	45	49	(29.25%)	183.95%	9.60%	211.21%
Commercial Bakeries	54	44	120	126	(18.89%)	174.22%	5.48%	189.25%
Research and Development in the Social Sciences and Humanities	34	11	27	29	(68.44%)	150.15%	7.91%	169.93%

Description	2015 Jobs	2019 Jobs	2020 Jobs	2021 Jobs	2015-2019 % Growth	2019-2020 % Growth	2020-2021 % Growth	Recovery Percent
Animal (except Poultry) Slaughtering	726	500	1,212	1,340	(31.05%)	142.36%	10.54%	167.90%
Storage Battery Manufacturing	435	104	241	273	(76.02%)	130.89%	13.16%	161.27%

Source: Emsi 2021.3, August 2021

5.3.2 Industry Sector Concentration: Location Quotient (LQ)

A locations quotient, or LQ, quantifies and compares the concentration of industries in a particular area or region. In most industries, the Study Area is considered below average, as the median location quotient in 2020 was 0.6. This means that most industries have a lower proportion of jobs in the region compared to the nation, and that the region has highly concentrated sectors. This is not necessarily negative, but likely signifies an opportunity to expand and grow related support sectors. Several industries were considered well above average, such as All Other Schools and Educational Support Services (State Government) (37.03), Newsprint Mills (51.93), All Other Transportation Equipment Manufacturing (60.36), Hazardous Waste Treatment and Disposal (103.61), and Kaolin and Ball Clay Mining (114.12). Moreover, Military was considered above average in Fort Gordon, as should be expected.

A regression was run to see how 2015 and 2020 LQ were related. The regression results indicate that industries with a higher LQ saw an increased concentration in the Study Area by 1.057 times in the five-year time span. This is to say that Fort Gordon generally became better for businesses already concentrated in the region.

Another regression was run to see if a change in LQ effected job change. The results indicate that a change in LQ had a positive effect on growth. This means that, when industries became more specialized for business at Fort Gordon, they had more jobs.

The five most specialized industries in the Study Area had an average LQ of 71.65, meaning the share of total employment for the most specialized industries was on average almost 72 times more than the U.S. average of those industries. The five least specialized industries in the Study Area had an average LQ of 0.044, meaning the share of total employment for the least specialized industries was on average about 23 times less than the U.S. average for those industries. More information about the top and bottom five LQ industries is listed in Table 5.5.

Table 5.5: Study Area Top Five LQ Industries, 2020 (Plus Military)

Description	2015 Jobs	2020 Jobs	Avg. Earning per job	2015 LQ	2020 LQ	Ind. Mix Effect	Nation Growth Effect	Expected Change	Competitive Effect
Federal Government, Military	25,481	32,429	$62,969	4.17	4.15	(64)	(2)	(66)	7,254

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Description	2015 Jobs	2020 Jobs	Avg. Earning per job	2015 LQ	2020 LQ	Ind. Mix Effect	Nation Growth Effect	Expected Change	Competitive Effect
Kaolin and Ball Clay Mining	237	326	$89,843	77.18	114.12	(23)	0	(23)	112
Hazardous Waste Treatment and Disposal	5,886	6,402	$108,934	108.14	103.61	607	(1)	607	(90)
All Other Transportation	1,710	1,744	$80,853	69.36	60.36	237	0	237	(203)
Newsprint Mills	339	340	$108,080	38.11	51.93	(96)	0	(96)	98
All Other Schools	847	866	$60,030	33.05	37.03	(96)	0	(96)	115

Source: Emsi 2021.3, August 2021 and TPMA

5.3.3 Cyber Jobs

From 2015 to 2020, most Cyber jobs saw a net growth, as only three of the Cyber-related industries saw a decline, as shown in Table 5.6. Most Cyber Jobs will experience net growth to 2025 as only five industries are projected to decline. Engineering Services saw a precipitous drop from 2015 to 2020 (1,714 jobs lost) which has led to a steep decline in the LQ as well. If Engineering Services were excluded, there would have been a net growth in Cyber jobs. Only one Cyber industry is considered relatively better than the rest of the U.S., and that is Computer Facilities Management Services (2.44 LQ in 2020). This same pattern is projected from 2020 to 2030, where a net job loss in Cyber-related jobs, much of which is anchored by a loss in Engineering Services (914 jobs lost) is anticipated. If that sector were excluded, there would be a net gain in jobs. Moreover, only Computer Facilities Management Services is considered above average compared to the rest of the U.S.

Engineering Services consisted of the most Cyber-related jobs in 2015 and 2020, making up 62.36% in 2015 and 35.31% in 2020. In 2030, however, the sector is no longer projected to have the largest concentration of Cyber jobs, as shown in Table 5.7. If Engineering Services were excluded in the 2015 to 2020 analysis, there would be a net job gain of 816 jobs. Likewise, if Engineering Services were excluded in the 2020 to 2030 analysis, there would have been a net gain of 862 jobs. This suggests that Cyber is a relatively strong industry within the region. However, growth in this industry is somewhat distorted by the Engineering Services sector, which saw significant decline. Factoring out Engineering Services, the region would have experienced a net gain of 1,678 jobs between 2015 and 2030.

Table 5.6 Study Area Cyber Jobs, 2015-2025

Description	2015 Jobs	2020 Jobs	2025 Jobs	2015-2025 Change	% Change	Competitive Effect
Computer Facilities Management Services	88	323	525	438	499%	411

Description	2015 Jobs	2020 Jobs	2025 Jobs	2015-2025 Change	% Change	Competitive Effect
Computer Systems Design Services	376	657	775	399	106%	272
Research and Development in the Physical, Engineering, and Life Sciences	198	331	470	272	138%	249
All Other Telecommunications	75	179	268	193	255%	159
Other Scientific and Technical Consulting Services	141	233	310	169	120%	166
Computer Training	67	154	228	161	240%	132
All Other Professional, Scientific, and Technical Services	110	164	192	82	75%	41
Custom Computer Programming Services	293	353	369	76	26%	-34
Electronic Shopping and Mail-Order Houses	143	153	189	46	32%	-19
Process, Physical Distribution, and Logistics Consulting Services	36	58	78	41	115%	28
Internet Publishing and Broadcasting and Web Search Portals	16	28	35	19	119%	5
Security Systems Services	110	112	107	(3)	(3%)	(24)
Other Computer Related Services	120	88	96	(24)	(20%)	(45)
Data Processing, Hosting, and Related Services	114	76	77	(37)	(33%)	(75
Software Publishers	241	100	70	(171)	(71%)	(356)
Engineering Services	3,228	1,514	868	(2,360)	(73%)	(2,695)

Description	2015 Jobs	2020 Jobs	2025 Jobs	2015-2025 Change	% Change	Competitive Effect
Total	**5,356**	**4,523**	**4,657**	**(699)**	**(13%)**	**(1785)**

Table 5.7: Study Area Cyber Jobs 2020-2030

Description	2020 Jobs	2030 Jobs	2020 – 2030 Change	2020 – 2030 % Change	2020 LQ	2030 LQ
Computer Facilities Management Services	323	653	330	102%	2.44	3.74
Research and Development in the Physical, Engineering, and Life Sciences	331	538	207	63%	0.43	0.67
Computer Systems Design Services	657	854	197	30%	0.36	0.36
Other Scientific and Technical Consulting Services	233	356	123	53%	0.59	0.79
All Other Professional, Scientific, and Technical Services	164	209	45	27%	0.36	0.36
Custom Computer Programming Services	353	382	29	8%	0.2	0.17
All Other Information Services	10	16	6	60%	0.23	0.29
Testing Laboratories	108	112	4	4%	0.38	0.38
Other Management Consulting Services	47	48	1	2%	0.24	0.2
Data Processing, Hosting, and Related Services	76	76	0	0%	0.13	0.11
Security Systems Services (except Locksmiths)	112	103	(9)	(8%)	0.49	0.39
Administrative Management and General Management Consulting Services	360	290	(70)	(19%)	0.27	0.16
Engineering Services	1,514	600	(914)	(60%)	0.87	0.33
Total	**4,288**	**4,237**	**(51)**	**(0.01%)**	-	-

5.3.4 Industrial Competitiveness and Competitive Advantage

Shift share is an economic indicator that demonstrates which industries (or occupations) are competitive in a region. It has four components: industrial mix effect, national growth effect, expected change, and regional competitive effect.

Industry Mix Effect is a measurement of how many jobs within an industry are predicted to come to an area, given the national growth of jobs within that industry. The Competitive Effect measures how much of the change in number of jobs is due to the strength of the industry within the region. These metrics are used to understand how much job growth can be attributed to either national trends or the region itself.

The national growth effect shows the number of jobs that an industry is expected to gain or lose according to the industry's national job growth. So, if the industry sees national net job growth, job growth in most regions within the country can be expected as well.

Expected change is the amount of job growth or decline that would be expected for a particular regional industry based on the national growth effect and the Industry (or occupation) Mix Effect. Job change beyond this level is "unexpected" and can therefore be attributed to the region's unique competitive effect

For the Industry Mix Effect, as indicated in Table 5.8, the industries with the highest were Plumbing, Heating, and Air-Conditioning Contractors (349), General Medical and Surgical Hospitals (376), General Warehousing and Storage (599), Hazardous Waste Treatment and Disposal (607), and Federal Government, Civilian, Excluding Postal Service (675). While Civilian Personnel saw a strong Industry Mix Effect, surprisingly, Federal Government, Military (NAICS code 901200) saw a negative Industry Mix Effect of −66, indicating that growth in Federal Government, Military was outpaced by job growth in other sectors. Interestingly, the Civilian Personnel sector growth out-paced the national average.

Table 5.8: Study Area Top 5 Industry Mix Effect

Description	2015 Jobs	2020 Jobs	2015 LQ	2020 LQ	Ind. Mix Effect	Nation Growth Effect	Expected Change	Competitive Effect
Federal Government, Civilian, Excluding Postal Service	8,226	9,020	2.29	2.26	675	(1)	674	120
Hazardous Waste Treatment and Disposal	5,886	6,402	108.14	103.61	607	(1)	606	(90)
General Warehousing and Storage	696	493	0.60	0.22	599	0	599	(803)

Description	2015 Jobs	2020 Jobs	2015 LQ	2020 LQ	Ind. Mix Effect	Nation Growth Effect	Expected Change	Competitive Effect
General Medical and Surgical Hospitals	9,360	11,234	1.28	1.44	376	(1)	375	1,499
Plumbing, Heating, and Air-Conditioning Contractors	2,245	2,050	1.29	0.99	349	0	349	(544)

Source: Emsi 2021.3, August 2021

For the Competitive Effect, the industries with the highest concentrations were Full-Service Restaurants (742), Other Heavy and Civil Engineering Construction (1,148), Industrial Building Construction (1,199), General Medical and Surgical Hospitals (1,499), and Power and Communication Line and Related Structures Construction (4,439). Power and Communication Line and Related Structures has a regional competitive advantage, and this implies that this industry will see continual growth for the foreseeable future. Federal Government, Military (NAICS code 901200) also has a very strong Competitive Effect (306). This is expected given Fort Gordon's presence in the Study Area and indicates that Fort Gordon should continue to see a relatively high rate of job increase in this sector. Civilian Personnel also had a positive Competitive Effect. This is different from the Industry Mix Effect because Industry Mix Effect measures a certain sector's economy to the overall country's economy. Competitive Mix Effect measures job change that comes from a region's strength or emphasis on some sector.

Table 5.9: Study Area Top 5 Competitive Effect

Description	2015 Jobs	2020 Jobs	2015 LQ	2020 LQ	Ind. Mix Effect	Nation Growth Effect	Expected Change	Competitive Effect
Power and Communication Line	196	4,684	0.69	12.85	49	0	49	4,439
General Medical and Surgical Hospital	9,360	11,234	1.28	1.44	376	(1)	375	1,499
Industrial Building Construction	2,329	3,187	8.43	13.14	(341)	0	(341)	1,199
Other Heavy and Civil Engineering Constructions	24	1,174	0.12	5.41	2	0	2	1,148
Full-Service Restaurants	7,562	6,618	0.90	0.98	(1,685)	(1)	(1,686)	742

Source: Emsi 2021.3, August 2021

The impact from COVID-19 was examined as well. This was done by seeing how the 2015 to 2019 percent job change, 2019 to 2020 percent job change, and the 2020 to 2021 percent job change affected their respective Industry Mix Effects. Three regressions were run and found that an increase in the percent job change had no effect on Industry Mix Effect in 2015 to 2019 and 2019 to 2020 but did effect Industry Mix Effect from 2020 to 2021. More specifically, the effect of 2020 to 2021 percent job change on Industry Mix Effect was positive. This is likely due to strong industries and sectors that are not always growing at a rapid pace, but account for a significant amount of GRP in the region. The results from 2020 to 2021 is likely significant because that was around the time COVID-19 restrictions began to loosen, which likely led to more jobs being created in sectors that may have more significance on the economy.

A regression was run to see if bigger industries had a bigger or smaller Industry Mix Effect in 2020. The size of an industry was determined by number of jobs. This would show that, if larger industries had a higher Industrial Mix Effect, given national growth effects, then they are reaping the benefits. The results indicate that the number of jobs in 2020 had no effect on Industry Mix Effect, meaning that the size of an industry does not serve as an indicator for the relative strength of the sector compared to the United States' overall economic growth.

5.4 Operational Analysis

The highest concentrations of occupations in the greater Fort Gordon region in 2020 were Registered Nurses (6,577), Military-only Occupations (6,794), Cashiers (6,872), Fast Food and Counter Workers (7,003), and Retail Salespersons (7,391). Of these jobs, the median annual income is $22,401.30, with Registered Nurse being the only occupation having a living wage.

Table 5.10: Study Area Entry Level Education and Work Experience

Description	2015 Jobs	2020 Jobs	2015-2020 % Job Change	2020 LQ	Automa tion Index	Entry Level Education	Work Exp.
Retail Salespersons	7,800	7,391	(5%)	1.15	93.4	No formal education	None
Fast Food and Counter Workers	7,291	7,003	(4%)	1.24	130.8	No formal education	None
Cashiers	7,126	6,872	(4%)	1.23	105.5	No formal education	None
Military-only Occupations	6,771	6,794	0%	4.15	N/A	N/a	None
Registered Nurse	6,387	6,577	3%	1.30	85.3	Associates Degree	Licensing Examination

Source: Emsi 2021.3, August 2021

The typical amount of education and work experience required was examined. This was done for 2015, 2020, and 2030. This was done by examining the number of jobs available for each occupation and seeing the education level required. Then, the proportion of respective jobs by education requirement was examined as well as work experience. For educational requirements, a high school diploma tends to be the most common job requirement. The proportion of educational requirements is relatively stable through the years: no formal education is second, Bachelor's degree is third, and more. Overall, Bachelor's

degree has become somewhat more popular, and no formal education has become somewhat less popular. However, the change in educational requirements by job in a given year is modest at best. The same can be said about Work Experience through the years; no work experience remains the most popular but goes down somewhat from 2015 to 2030 while less than five years and five years or more rise. However, like with educational requirements, these changes are modest at best.

In comparing high concentrations of jobs in the Fort Gordon area with military spousal employment, the easiest jobs to find may not typically be the types of employment military spouses are seeking. Military spouses are a highly educated group, with over 89% completing with some college education, 30% with a four-year degree, and 15% with an advanced degree (Source: Department of Labor, Military Spouses Fact Sheet). Additionally, up to 34% of military spouses in the workforce are in occupations that require licensure/certification, primarily in health and education-related fields. Frequent moves and various state requirements can lead to long periods of unemployment/underemployment for military spouses. In fact, over 30% of military spouses report being underemployed, where they are working part-time but would like to work more. (Source: Department of Labor, Military Spouses Fact Sheet). While employment in retail and food service may be necessary for military spouses to support their family with a second income, like many families in America, it does not necessarily suit the needs of military spouses to find jobs that match their educational attainment and career goals.

Figure 5.1: Percent of Total Jobs by Educational Requirement

Source: Emsi 2021.3, August 2021

Figure 5.2: Percent of Total Jobs by Work Experience
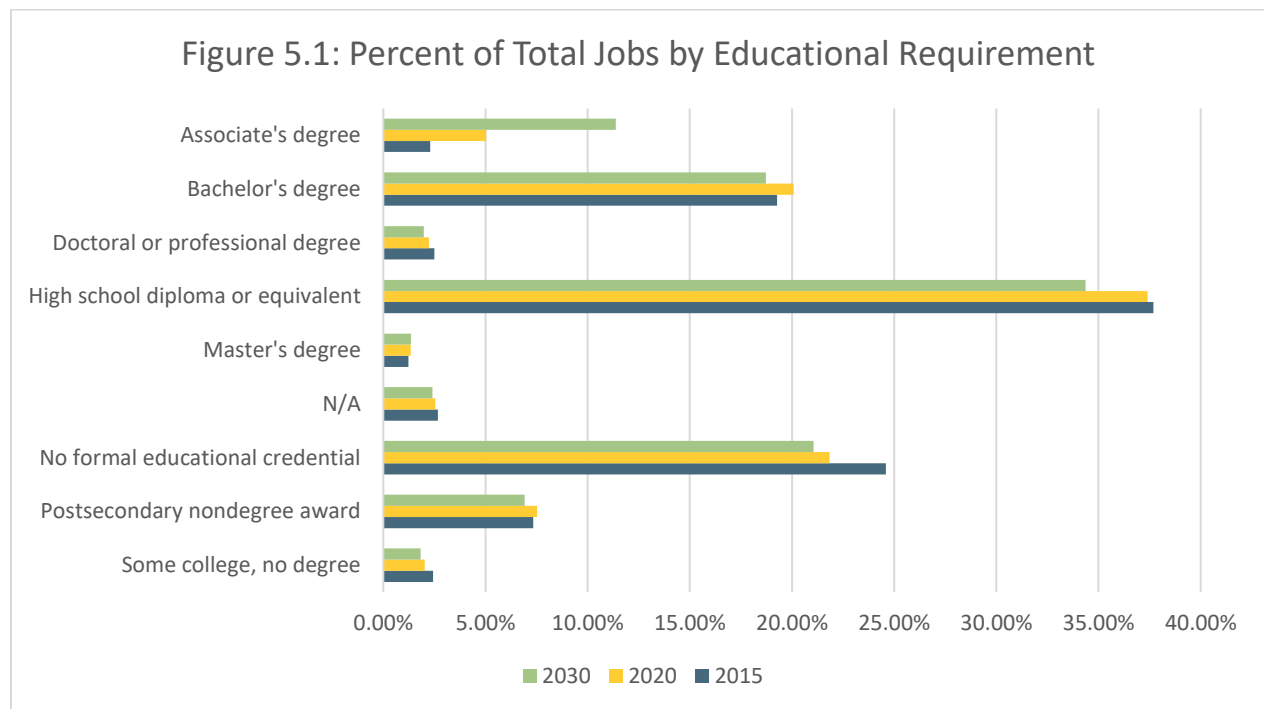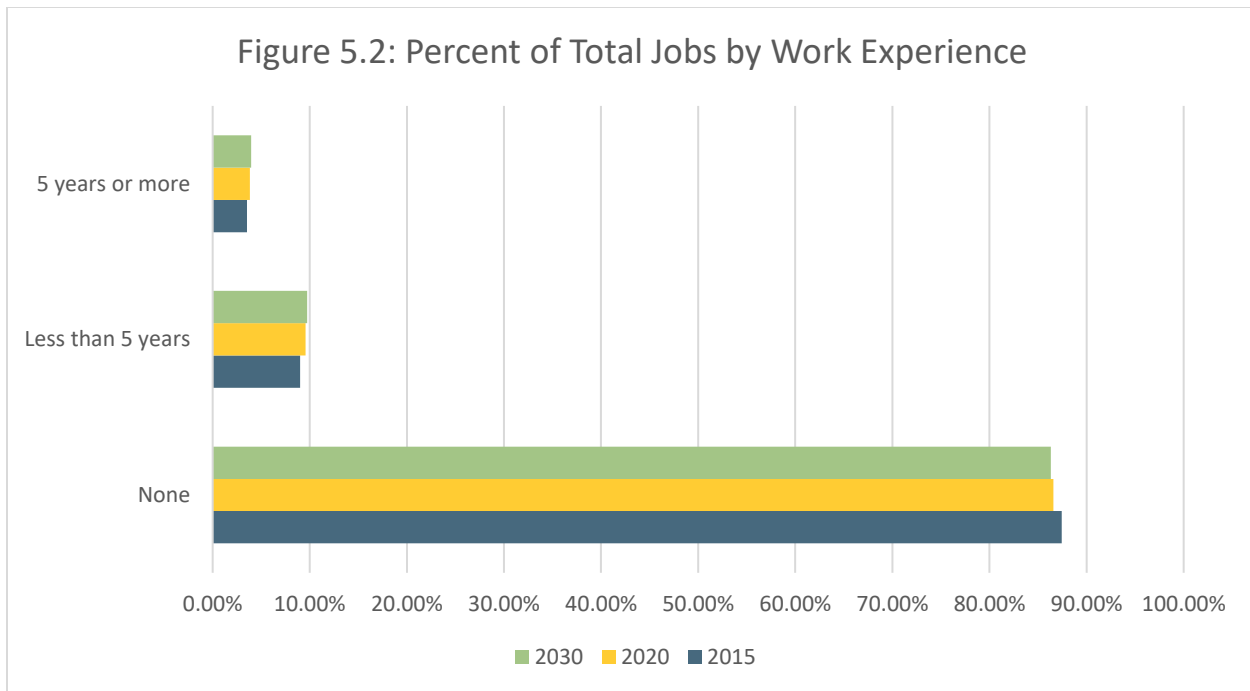
Source: Emsi 2021.3, August 2021

Of all occupations in the Study Area, Paperhangers (136.9), Terrazzo Workers and Finishers (137), Reinforcing Iron and Rebar Workers (137.2), Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters (137.3), and Floor Layers, Except Carpet, Wood, and Hard Tiles (139.1) have the highest automation index. Moreover, the two occupations with the highest Automation Index had a LQ above one, meaning that the Study Area specializes in those jobs. Economic challenges may occur for workers in, and industries related to these occupations because automation may cause workforce displacement. Opportunities to reskill and upskill workers may be necessary to reduce the risk automation may have on trade-related occupations.

5.5 Target Industries

The following targeted industry analysis identifies potential industries that could be strong targets for industry attraction. The Economic Base analysis contains data gathered from NAICS codes, which are used by the US, Canada, and Mexico to classify businesses by industry. Each business is classified into a six-digit NAICS code number based on the activity at the business. This analysis takes place primarily at the subcluster level by identifying, first, existing subclusters in the Study Area and, second, clusters that could fit into the existing supply chain. Subclusters are a division of clusters as defined by the U.S. Cluster Mapping project from Harvard Business School. This method groups like industries together based not on NAICS code but on related products and/or supply chains. For example, the automotive cluster includes not only the manufacturing of motor vehicles but also automotive parts and metalworking that goes into the manufacturing of cars. Subclusters are used in this analysis to provide more specificity than clusters, but less granularity than looking at a sole industry. An example of a subcluster structure for the automotive clusters includes automotive parts, motor vehicles, metal mills and foundries, gasoline engines and engine parts, small vehicles, and military vehicles and tanks.

Weighting was placed on trends for forecasted job growth, total imports/exports, and regional jobs to help rank industries that may be best fits for industry attraction efforts to address local supply chain gaps. The region for the target industry analysis focused on the Study Area but was also informed by economic conditions from the greater CSRA region. Target industry sub-clusters are identified to help guide the region in future economic development efforts.

5.5.1 Target Industry Sub Clusters

Using this quantitative analysis as a basis and feedback from the project Advisory Group, the following targeted industry groups were identified:

1. Research Organizations
2. Small Vehicles
3. Construction
4. Hospitality Establishments
5. Computer Services
6. Specialty Contractors
7. Communications Equipment Components

These industry groups were identified based on unique aspects to the Study Area. The following analysis provides a list and description of industries included in each subcluster as well as information on the local and regional demand, location factors, and the overall opportunities and challenges related to each group. Specific industries within these subclusters to focus attraction and development efforts are identified as well.

5.5.2 Research Organizations

NAICS Codes
  → 541710: Research and Development in the Physical, Engineering, and Life Sciences
  → 541711: Research and Development in Biotechnology
  → 541712: Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology)
  → 541713: Research and Development in Nanotechnology
  → 541714: Research and Development in Biotechnology (except Nanobiotechnology)
  → 541715: Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)
  → 541720: Research and Development in the Social Sciences and Humanities

This industry includes companies and organizations that are involved in physical, engineering or life sciences research and development (R&D). The industry only includes operators whose primary purpose is R&D and excludes players such as pharmaceutical or manufacturing companies that may undertake R&D to support their primary operations. Government entities are also excluded from this industry, though these entities may contract and fund the research this industry undertakes.

The federal government sources more than half of total industry revenue, so changes in federal funding levels greatly affect industry revenue. Over the last decade, this industry performed well as a result of its transition toward private funding sources and decreased reliance on federal spending. This trend is

expected to continue as corporate profit margins continue to drive strong private investment. Additionally, investment in new technologies, such as nanotechnology, will benefit industry operators.

Table 5.11: Study Area Research Organizations Industry Data

NAICS	Description	2015 Jobs	2020 Jobs	2015 - 2020 Change	2020 Location Quotient	Competitive Effect	2020 % Demand met by Imports
541713	Research and Development in Nanotechnology	<10	<10	Insf. Data	0.13	0	85%
541714	Research and Development in Biotechnology (except Nanobiotechnology)	23	434	412	1.13	401	60%
541715	Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)	198	331	133	0.43	118	87%
541720	Research and Development in the Social Sciences and Humanities	34	27	(7)	0.25	(8)	85%

Source: Emsi 2021.3, August 2021

Research organizations present a strong opportunity because a significant percentage of in-region demand is met by imports coming from outside the region. Nearly 90% of these research and development services are supplied by out-of-region businesses. This supply chain gap indicates an opportunity to attract or locally develop businesses in these sectors that could have linkages to the Study Area or the Savannah River Site. Of the six-digit industries in this subcluster, Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) has the greatest regional presence based on employment, but all of these industry sectors present supply chain opportunities.

5.5.3 Small Vehicles

NAICS Codes

→ 336999: All Other Transportation Equipment Manufacturing

This Industry includes businesses that manufacture smaller vehicles such as ATVs, golf carts, and snowmobiles. This industry produces many of the most popular recreational vehicles on the market. Consequently, the industry's performance is sensitive to changes in consumer spending. This industry's

performance is directly tied to employment and discretionary income level, which drive purchases of recreational vehicles. The industry has introduced several well-received products in recent years to lure a new class of customers. Despite these successes, revenue growth has been partially hindered by the appreciating US dollar and steep declines in exports to Canada, the largest foreign consumer of industry products, amid weak economic growth in that country.

Fluctuating input prices have also complicated industry expansion. Volatility made it difficult for operators to plan their annual budgets, which sometimes caused unexpected declines in profit margins. Additionally, because the agriculture sector has struggled due to an oversupply of crops (particularly corn), demand for some industry products used primarily in farming has dropped substantially. Consequently, revenue streams from that segment have declined. Increases in total industry revenue, coupled with the adoption of ambitious cost-cutting strategies by larger industry operators, have translated to a sizable increase in profit margins. Given the increased efficiency of larger operators, the industry has remained relatively consolidated, with the top four major companies commanding nearly 60.0% of the entire market.

Table 5.12: Study Area Other Transportation Equipment Manufacturing Industry Data

NAICS	Description	2015 Jobs	2020 Jobs	2015 – 2020 Change	2020 Location Quotient	Competitive Effect	2020 % Demand met by Imports
336999	All Other Transportation Equipment Manufacturing	1,710	1,744	34	60.36	(203)	1%

Source: Emsi 2021.3, August 2021

5.5.4 Construction

NAICS Codes

→ 233310: Mfg & Industrial Building Construction
→ 234920: Pwr/Communication Transmission Line Construction
→ 234930: Industrial Nonbuilding Structure Construction
→ 234990: All Other Heavy Construction
→ 236210: Industrial Building Construction
→ 237120: Oil and Gas Pipeline and Related Structures Construction
→ 237130: Power and Communication Line and Related Structures Construction
→ 237990: Other Heavy and Civil Engineering Construction

This subcluster includes industry sectors in all forms of construction ranging from Heavy and Civil Engineering Construction, Construction of Buildings, and Construction of Utilities. Heavy Engineering Construction includes Operators primarily engaged in heavy and engineering construction projects, except for highway, street, bridge, and airport construction. Work performed includes new work, reconstruction, rehabilitation, and repairs. The industry also includes specialty trade contractors, if they are primarily active in activities related to engineering construction projects. Construction projects include waterworks, marine facilities development, and open space improvement.

Construction of industrial buildings also falls within this subcluster. This includes contractors primarily responsible for the construction (e.g., new work, additions, alterations, maintenance, and repairs) of industrial and manufacturing buildings. Establishments include general contractors, design-build companies, and construction management operators.

Finally, this subcluster includes construction of utility-related projects such as fossil fuels pipelines and electrical infrastructure. Operators in this sector provide construction, repair, rehabilitation, and maintenance work for a variety of forms of electric power and telecommunications infrastructure, including power lines, power plants, radio and television towers, and cable infrastructure. Industry operators, however, do not perform construction work on hydroelectric power stations, the construction of broadcast studios or electrical maintenance work within buildings.

Table: 5.13: Study Area Construction Industry Data

NAICS	Description	2015 Jobs	2020 Jobs	2015 - 2020 Change	2020 Location Quotient	Competitive Effect	2020 % Demand met by Imports
236210	Industrial Building Construction	2,329	3,187	858	13.14	1,199	2%
237120	Oil and Gas Pipeline and Related Structures Construction	<10	428	Insf. Data	1.82	418	57%
237130	Power and Communication Line and Related Structures Construction	196	4,684	4,488	12.85	4,439	5%
237990	Other Heavy and Civil Engineering Construction	24	1,174	1,150	5.41	1,148	13%

Source: Emsi 2021.3, August 2021

Regionally significant industries in this subcluster include Industrial Building Construction, Oil and Gas Pipeline and Related Structures Construction, Power and Communication Line and Related Structures Construction, and Other Heavy and Civil Engineering Construction. Together, these industries employed 9,225 workers within the Study Area. It is one of the most regionally significant clusters due to high LQs for all industries listed in Table 5.12, especially Industrial Building Construction and Power and Communication Line and Related Structures Construction which, have exceptionally high LQs. This regional specialization along with a rapid five-year growth make it a strategic industry for the Study Area. Future economic development efforts could focus on attracting construction-related businesses to the region to build on these industry sector strengths. Oil and Gas Pipeline and Related Structures Construction has the greatest supply chain gap and may present to the greatest opportunity for industry attraction efforts, but the other sectors in Table 5.13 show potential to address supply chain leakages and regional demand.

5.5.5 Hospitality Establishments

NAICS Codes

→ 722110: Full-Service Restaurants
→ 722211: Limited-Service Restaurants
→ 722212: Cafeterias
→ 722213: Snack and Nonalcoholic Beverage Bars
→ 722310: Food Service Contractors
→ 722320: Caterers
→ 722410: Drinking Places (Alcoholic Beverages)
→ 722511: Full-Service Restaurants
→ 722513: Limited-Service Restaurants
→ 722514: Cafeterias, Grill Buffets, and Buffets
→ 722515: Snack and Nonalcoholic Beverage Bars

This subcluster includes industry sectors related to hospitality and tourism, primarily restaurants and catering. Restaurants include chain and single location establishments that provide food services to patrons who order and are served while seated (i.e., waiter or waitress service) and pay after eating. These establishments may provide this type of food service to patrons in combination with selling alcoholic and other beverages. Fast food restaurants are also included in this subcluster.

Furthermore, this subcluster includes catering-related industry sectors. Caterers are companies that provide individual event-based food services. These companies generally have equipment and vehicles to transport meals and snacks to events or prepare food off-site. Banquet halls with catering staff are included in this industry. Examples of events catered by establishments in this industry are graduation parties, wedding receptions, business luncheons, and trade shows. Food service contractors also fit into this subcluster.

Table 5.14: Study Area Hospitality Establishments Industry Data

NAICS	Description	2015 Jobs	2020 Jobs	2015 - 2020 Change	2020 Location Quotient	Competitive Effect	2020 % Demand met by Imports
722310	Food Service Contractors	945	935	(10)	1.36	172	5%
722320	Caterers	157	136	(21)	0.56	27	12%
722330	Mobile Food Services	27	55	29	0.64	21	8%
722410	Drinking Places (Alcoholic Beverages)	336	288	(48)	0.61	39	19%
722511	Full-Service Restaurants	7,562	6,618	(944)	0.98	742	17%
722513	Limited-Service Restaurants	9,387	9,781	395	1.42	300	2%

NAICS	Description	2015 Jobs	2020 Jobs	2015 - 2020 Change	2020 Location Quotient	Competitive Effect	2020 % Demand met by Imports
722514	Cafeterias, Grill Buffets, and Buffets	538	275	(263)	2.30	(27)	2%
722515	Snack and Nonalcoholic Beverage Bars	659	1,003	345	0.84	224	26%

Source: Emsi 2021.3, August 2021

Food services Contractors, Cafeterias, Grill Buffets, and Buffets, and Limited-Service Restaurants have the highest LQs of all industries in this subcluster within the Study Area. Industry sectors with the greatest unmet regional demand include Snack and Nonalcoholic Beverage Bars and Drinking Places (Alcoholic Beverages) as both have above 19% of demand met by imports, indicating supply chain gaps.

5.5.6 Computer Services

NAICS Codes:
→ 514210: Data Processing Services
→ 518210: Data Processing, Hosting, and Related Services
→ 541511: Custom Computer Programming Services
→ 541512: Computer Systems Design Services
→ 541513: Computer Facilities Management Services
→ 541519: Other Computer Related Services

The Computer Services subcluster includes data centers, Cybersecurity, and other computer-related service industry sectors. IT and Cyber Security is a major component of this cluster. This includes firms that provide the following services to client companies: writing, testing and supporting custom software; planning and designing integrated hardware, software and communication infrastructure; and on-site management of computer systems and data processing facilities. This industry excludes packaged software publishers and off-site data processing and hosting services.

Data processing and data processing centers make up the other component of this sector. Businesses in these industries provide data processing or hosting activities. Data processing services provide specialized reports from information supplied by clients. Hosting services can include web and application hosting. Services range from automated data entry to processing data. Most of these hosting services are contained in data centers.

Table 5.15: Study Area Computer Services Industry Data

NAICS	Description	2015 Jobs	2020 Jobs	2015 – 2020 Change	2020 Location Quotient	Competitive Effect	2020 % Demand met by Imports
518210	Data Processing, Hosting, and Related Services	114	76	(38)	0.13	(61)	93%
541511	Custom Computer Programming Services	293	353	60	0.20	9	88%
541512	Computer Systems Design Services	376	657	281	0.36	226	78%
541513	Computer Facilities Management Services	88	323	235	2.44	225	4%
541519	Other Computer Related Services	120	88	(32)	0.41	(39)	72%

Source: Emsi 2021.3, August 2021

Many of the industry sectors in this subcluster do not have a high LQ when examining the Study Area. Computer Facilities Management has the highest LQ and is on par with the national average. However, this subcluster stands out because many of the industry sectors included have a significant amount of unmet regional demand. Significant regional supply chain gaps likely exist in Data Processing, Hosting, and Related Services, Custom Computer Programming Services, and Computer Systems Design Services. These industry sectors present business attraction and growth opportunities that could be targeted by future economic development efforts.

5.5.7 Specialty Contractors

NAICS Codes

→ 238110: Poured Concrete Foundation and Structure Contractors
→ 238120: Structural Steel and Precast Concrete Contractors
→ 238130: Framing Contractors
→ 238140: Masonry Contractors
→ 238150: Glass and Glazing Contractors
→ 238160: Roofing Contractors
→ 238170: Siding Contractors
→ 238190: Other Foundation, Structure, and Building Exterior Contractors
→ 238210: Electrical Contractors
→ 238220: Plumbing, Heating, and Air-Conditioning Contractors
→ 238290: Other Building Equipment Contractors
→ 238310: Drywall and Insulation Contractors
→ 238320: Painting and Wall Covering Contractors
→ 238330: Flooring Contractors
→ 238340: Tile and Terrazzo Contractors
→ 238350: Finish Carpentry Contractors

- → 238390: Other Building Finishing Contractors
- → 238910: Site Preparation Contractors
- → 238990: All Other Specialty Trade Contractors
- → 332322: Sheet Metal Work Manufacturing
- → 337212: Custom Architectural Woodwork and Millwork Manufacturing
- → 562991: Septic Tank and Related Services

Specialty Contractors is a broad industry sector that includes 22 different industry sectors. Many of these industry sectors include contractors associated with building construction such as plumbers, drywall and insulation installers, and carpenters. Contracted work typically includes new construction, alterations, maintenance, and repairs and additions.

Table 5.16: Study Area Specialty Contractors Industry Data

NAICS	Description	2015 Jobs	2020 Jobs	2015 – 2020 Change	2020 Location Quotient	Competitive Effect	2020 % Demand met by Imports
238110	Poured Concrete Foundation and Structure Contractors	180	231	50	0.51	18	50%
238120	Structural Steel and Precast Concrete Contractors	139	90	(49)	0.60	(57)	37%
238130	Framing Contractors	50	41	(9)	0.23	(14)	72%
238140	Masonry Contractors	141	149	8	0.49	8	58%
238150	Glass and Glazing Contractors	47	52	5	0.38	(4)	60%
238160	Roofing Contractors	169	162	(7)	0.38	(36)	61%
238170	Siding Contractors	120	116	(4)	1.24	(18)	15%
238190	Other Foundation, Structure, and Building Exterior Contractors	115	110	(6)	1.09	(13)	27%
238210	Electrical Contractors	1,122	1,300	178	0.75	53	47%

NAICS	Description	2015 Jobs	2020 Jobs	2015 – 2020 Change	2020 Location Quotient	Competitive Effect	2020 % Demand met by Imports
	and Other Wiring Installation Contractors						
238220	Plumbing, Heating, and Air-Conditioning Contractors	2,245	2,050	(196)	0.99	(544)	23%
238290	Other Building Equipment Contractors	127	108	(19)	0.41	(28)	69%
238310	Drywall and Insulation Contractors	309	329	20	0.63	3	53%
238320	Painting and Wall Covering Contractors	308	339	31	0.60	24	40%
238330	Flooring Contractors	169	198	29	0.85	18	34%
238340	Tile and Terrazzo Contractors	129	106	(24)	0.69	(31)	41%
238350	Finish Carpentry Contractors	312	353	41	0.81	24	26%
238390	Other Building Finishing Contractors	60	75	15	0.45	13	62%
238910	Site Preparation Contractors	1,052	1,245	193	1.41	91	12%
238990	All Other Specialty Trade Contractors	656	662	6	0.76	(36)	26%
332322	Sheet Metal Work Manufacturing	134	190	56	1.04	49	84%
335912	Primary Battery Manufacturing	0	310	310	15.20	310	67%

NAICS	Description	2015 Jobs	2020 Jobs	2015 – 2020 Change	2020 Location Quotient	Competitive Effect	2020 % Demand met by Imports
337212	Custom Architectural Woodwork and Millwork Manufacturing	<10	<10	Insf. Data	0.09	0	95%
562991	Septic Tank and Related Services	63	33	(30)	0.62	(40)	74%

Source: Emsi 2021.3, August 2021

Because this subcluster is so large, it contains a mix of industry sectors with varying LQs and unmet demand. The largest opportunities for industry attraction and business development efforts from an unmet demand standpoint include Sheet Metal Work, Septic Tank and Related Services, Custom Architectural Woodwork and Millwork Manufacturing because these industry sectors have a demand met by imports above 70%. Site Preparation Contractors is a strong existing sector with a high LQ and large number of jobs making it possible to build on this sector's strengths; however only 12% of demand is met by imports, so there are likely limited supply chain opportunities in the region related to this industry.

5.5.8 Communications Equipment Components

NAICS Codes

→ 335912: Primary Battery Manufacturing

Communications Equipment Components is a small subcluster consisting of only Primary Battery Manufacturing. Primary batteries are non-rechargeable batteries. Industry products have a variety of uses in cell phones, medical equipment, households, and the automotive and transport sectors. Batteries have become an indispensable household item because they are used for a range of portable electronics, from wireless electric razors to flashlights. High disposable income contributes to favorable spending patterns and increases demand for batteries.

Table 5.17: Study Area Primary Battery Manufacturing Industry Data

NAICS	Description	2015 Jobs	2020 Jobs	2015 - 2020 Change	2020 Location Quotient	Competitive Effect	2020 % Demand met by Imports
335912	Primary Battery Manufacturing	0	310	310	15.20	310	67%

Source: Emsi 2021.3, August 2021

The Study Area has seen a significant increase in Primary Battery Manufacturing in the past five years, growing from zero jobs in 2015 to 310 in 2020. The LQ for this industry is also very high at over 15 times the national average. Despite this, there is significant regional unmet demand: 67% of all demand is

satisfied by imports. This suggests there is more room for this industry sector to grow and build on regional strengths.

5.6 Economic Impact Analysis

5.6.1 Military Growth

According to calculations on military job growth from Chapter 2, it is projected that 894 jobs will be added to the Installation between 2021 and 2024. The economic impact of adding these jobs was examined for the Study Area. Based on this increase, it is anticipated that 1,560 additional jobs would be created by direct, indirect, and induced effects for a total of 2,454 jobs. Table 5.18 breaks down the various economic effects created by this increase in personnel.

Table 5.18: Effect on Jobs from Adding 894 Jobs to Federal Government, Military

Initial Jobs	Direct Jobs	Indirect Jobs	Induced Jobs	Total Jobs
894	378	97	1,085	2,454
1.00 Multiplier	0.41 Multiplier	0.11 Multiplier	1.2 Multiplier	2.75 Multiplier

Source: Emsi 2021.3 and TPMA, August 2021

The initial number represents the initial change in jobs. Direct Jobs examines the effect of new input purchases by the initially changed industries. This is the first round of impacts. This change is due to inter-industry effects. Indirect Jobs include the subsequent ripple effect in further supply chains resulting from the direct change. This shows the sales change within the supply chain, because of the direct change. This is the sum of the second and subsequent rounds of impact. This change is due to inter-industry effects. Induced effect is the change due to the impact of the new earnings, investment, and government-created by the initial, direct, and indirect changes. Induced effects enter the economy as employees spend their paychecks in the region, businesses invest to grow their operations, and government spends more to support the changes. In this scenario, the induced effect also anticipates additional jobs created by military spouses accompanying those filling the 894 initial jobs.

How these job increases are spread across sectors can also be examined. Table 5.19 shows where jobs are expected to be added at a high level across industry sectors at the 2-digit NAICS level. Besides government related jobs factored by the initial input, Construction and Professional, Scientific, and Technical Services industry sectors are expected to see the greatest impact due to ARCYBER growth.

Table 5.19: Study Area Economic Impact Scenario Results by Industry

NAICS	Industry	Change in Jobs
11	Agriculture, Forestry, Fishing and Hunting	1
21	Mining, Quarrying, and Oil and Gas Extraction	1
22	Utilities	2
23	Construction	250
31	Manufacturing	27
42	Wholesale Trade	42
44	Retail Trade	83
48	Transportation and Warehousing	50
51	Information	33
52	Finance and Insurance	33

NAICS	Industry	Change in Jobs
53	Real Estate and Rental and Leasing	65
54	Professional, Scientific, and Technical Services	258
55	Management of Companies and Enterprises	4
56	Administrative and Support and Waste Management and Remediation Services	133
61	Educational Services	33
62	Health Care and Social Assistance	127
71	Arts, Entertainment, and Recreation	36
72	Accommodation and Food Services	100
81	Other Services (except Public Administration)	96
90	Government	1,080
All	**Total**	**2,453**

Source: Emsi 2021.3, August 2021

In addition to new jobs created by the increase in troops, the additional earnings for all new jobs can be calculated as well. It is anticipated that adding 894 new jobs to the Study Area would create an additional $133M in regional earnings. Table 5.20 demonstrates how the various economic multipliers effect this earnings total.

Table 5.20: Effect on Earnings from Adding 894 Jobs to Federal Government, Military

Initial Earnings	Direct Earnings	Indirect Earnings	Induced Earnings	Total Earnings
$56.3M	$22.5M	$4.1M	$50.1M	$133.0M
1.00 Multiplier	0.40 Multiplier	0.07 Multiplier	1.12 Multiplier	2.36 Multiplier

Source: Emsi 2021.3 and TPMA, August 2021

Like job change, the initial figure represents the initial change in earnings. Direct Earnings examines the effect of new input purchases by the initially changed industries. This is the first round of impacts; this change is due to inter-industry effects. The subsequent ripple effect in occur in supply chains resulting from the direct change. This shows the sales change within the supply chain, because of the direct change. This is the sum of the second and subsequent rounds of impact. This change is due to inter-industry effects. Induced change is due to the impact of the new earnings, investment, and government created by the initial, direct, and indirect changes. Induced effects enter the economy as employees spend their paychecks in the region, businesses invest to grow their operations, and government spends more to support the changes.

Finally, examine the expected change in taxes on production and imports tied to the economic impact of these jobs can be examined. Based on Fort Gordon growth, it is anticipated that $6.6M taxes will be generated from production and imports of new goods and services. Table 5.21 demonstrates the various local state and regional tax increases that could be generated.

Table 5.21: Effect on Taxes on Production and Imports from Adding 894 Jobs to Federal Government, Military

Local Tax	State Tax	Federal Tax	Total Tax
$2.9M	$2.5M	$1.2M	$6.6M

Taxes on production and imports (TPI) consist of tax liabilities, such as general sales and property taxes, that are chargeable to business expense in the calculation of profit-type incomes. Special assessments are also included. TPI is comprised of state and local taxes—primarily non-personal property taxes, licenses, and sales and gross receipts taxes—and Federal excise taxes on goods and services.

5.6.2 Population Growth

Population growth increases the total size of the economy with increased consumer spending on goods and services, which drives an increase in jobs to meet that demand. A healthy population growth can mean that employers are able to grow their own employees regionally and reduce costs in recruiting and relocation. It is important to note, as well, that as "Baby Boomers" retire and exit the labor force, there will be a smaller proportion of the population in the labor market seeking employment. While population and employment growth do not have to mirror one another, drastic population growth with lagging jobs will put additional stresses on a local economy. Population growth without jobs will lead to increased competition for existing jobs, the ability for employers to offer lower wages, and a rising unemployment rate.

As shown in Table 5.22, the national population ten-year growth rate is expected to be 6.76% from 2020 to 2030, with a national employment ten-year growth rate of 7.75% from 2020 to 2030. It is a positive economic indicator to see employment growing at a rate that will support the number of people entering the labor market but it can be a cause for concern if there are not enough people in the economy to support the employment needs, creating a labor shortage.

The Study Area, on the other hand, is projected to see a ten-year growth rate of 8.84%, with employment growing by 8.52%. Adding 54,136 to the population in the Study Area by 2030 will increase the demand for services as well as the demand for jobs. To accommodate this population growth and not face a rising unemployment rate, the Study Area will need to coordinate efforts to ensure that employment growth meets the needs of its growing population.

Table 5.22: Study Area Population and Employment Change, 2020-2030

	United Sates	Study Area
2020 Population Estimate	332.6 million	611,868
2030 Population Estimate	355.1 million	666,004
10-Year Population Growth Rate	6.76%	8.84%
2020 Employment Estimate	153.5 million	279,993
2030 Employment Estimate	165.4 million	303,863
10-Year Employment Growth Rate	7.75%	8.52%

Table 5.23: Study Area Employment Change by Industry 2-digit

NAICS	Description	2020 Jobs	2030 Jobs	2020 - 2030 Change
62	Health Care and Social Assistance	32,594	38,668	6,074
23	Construction	21,283	26,254	4,970
72	Accommodation and Food Services	20,903	25,424	4,521
31	Manufacturing	22,427	24,562	2,135
44	Retail Trade	27,211	28,694	1,483
42	Wholesale Trade	5,149	6,415	1,266
81	Other Services (except Public Administration)	13,447	14,524	1,078
54	Professional, Scientific, and Technical Services	10,427	11,378	950
48	Transportation and Warehousing	6,153	6,912	759
53	Real Estate and Rental and Leasing	2,896	3,592	696
61	Educational Services	3,009	3,536	527
71	Arts, Entertainment, and Recreation	3,294	3,577	283
21	Mining, Quarrying, and Oil and Gas Extraction	421	499	77
51	Information	2,249	2,295	46
99	Unclassified Industry	206	219	13
11	Agriculture, Forestry, Fishing and Hunting	2,346	2,303	(43)
22	Utilities	2,453	2,342	(111)
55	Management of Companies and Enterprises	464	231	(233)
52	Finance and Insurance	4,151	3,728	(423)
90	Government	57,738	57,199	(539)
56	Administrative and Support and Waste Management and Remediation Services	22,058	20,020	(2,038)
Total		260,879	282,371	21,492

Source: Emsi 2021.3, August 2021

5.7 Recommendations

A region's ability to connect workers with good quality jobs and employers with a skilled, qualified workforce is central to its economic vitality. The Study Area has much of the infrastructure and assets in place to rise to the challenge of further aligning the talent development system that equips workers with the requisite skills to meet the needs of employers with quality jobs.

Building on its strengths, lessons learned from across the country, and local labor market information, the region can take several steps to further align its workforce and economic development efforts. In terms of economic development, the Augusta area should consider the following strategies:

1. Create a regional association for defense contractors
2. Identify expansion opportunities for existing businesses
3. Develop or align a business attraction strategy focusing on target industries
4. Leverage existing initiatives and investments in Cyber at Fort Gordon

While these economic development activities are underway, the region should be proactively investing in an aligned set of workforce development strategies that will ensure that the talent development system has a pipeline of qualified, skilled talent available to meet the needs of new and existing businesses. These activities should include the identification, design, and implementation of sector partnership and work-based learning activities that support these targeted economic development efforts. Additionally, there will be a need to ensure that all residents have equitable access to the high-quality employment opportunities that result from these investments.

5.7.1 Economic Development Strategies

Based on findings from the target industry analysis, The Fort Gordon region has an opportunity to attract industries in the following sectors:

→ Research Organizations
→ Small Vehicles
→ Construction
→ Hospitality Establishments
→ Computer Services
→ Specialty Contractors
→ Communications Equipment Components

These industries were identified based on regional strengths and trends, including job growth, location quotient, and existing supply chain gaps. Emphasis was placed on industry sectors with significant gaps in-region. These supply chain gaps suggest significant opportunities for regional industry attraction efforts.

Currently, regional economic development efforts include projects like the Gate 6 access road which is driven by a $50 million investment and will create a new interchange that will eventually link Fort Gordon to I-20. Development at White Oak Business Park located in Columbia County, GA along I-20 includes 612 acres of developable land. Leadership has been working to develop spec buildings at the park to aid regional economic development efforts. Master planning has been completed for two phases of development at the park which will include modern business park eco-friendly amenities and prioritizes preserving the area's natural resources. Anchor tenants will include Amazon and Club Car. There are regional opportunities to build on these business attractions through additional economic development strategies. This could include building on local flexible local incentives. The Growth of ARCYBER at Fort Gordon has also increased Information Technology related opportunities to build economic development efforts around, including data centers which can be significant drivers for tax revenue and utility services. Ensuring regional utility access will be important for future economic growth. Fortunately, the region

seems to have a strong utility sector presence. The following strategies are aimed to build on regional opportunities for economic growth:

Create a Regional Association for Defense Contractors

Regional opportunities likely exist to connect large and small employers working cooperatively within the region to address industry challenges, supply chain gaps, and defense contracting needs. A regional association for defense contractors may have a similar function to the CSRA Alliance for Fort Gordon but could maintain a much broader mission that aims to work with defense contractors across all industry sectors. The CSRA Alliance for Fort Gordon could be the lead entity for this new organization. Creating an association for defense contractors headed by influential regional industry leaders will give the CSRA Alliance Region's defense industry a defined sense of direction.

Industry leaders would serve on the association's board of directors and would appoint staff members to run its daily operations. This group would advocate on behalf of the region's defense contractors at national, state, and regional levels on issues the defense community faces.

Due to the diversity of defense contractors across an array of industries, it may be necessary to create sub-committees within the defense association. These sub-committees would be specific to the distinct clusters that comprise the region's defense contractors, such as construction contractors, manufacturers, R&D, and professional services contractors. Subcommittees could meet monthly, while the entire defense contractor's association could meet quarterly. All members would have access to the same benefits, which could include:

→ Acting as an advocacy group for the region's defense industry contractors
→ Serving as a liaison with local, state, and federal agencies and elected officials
→ Developing or improving the regional defense community's ability to develop, attract, retain, and execute business opportunities
→ Improving interactions between defense contractors and defense customers

The association for defense contractors could be partially funded through memberships and structured similarly to other local and state defense associations; examples of this include the Charleston Defense Contractors Association (CDCA), Dayton Area Defense Contractors Association (DADCA), Florida Defense Contractors Association (FDCA), North Carolina Military Business Center (NCMBC), and the Northeast Indiana Defense Industry Association (NIDIA). These examples illustrate different sizes of defense associations, ranging from the metropolitan level, regional level, or state-wide level; however, each could be scaled or reduced to meet the Alliance's needs. These defense contractor organizations also represent many different types of contractors. For example, the NCMBC works to connect the following industries with defense contracts:

→ Advanced Manufacturing and Materials
→ Aerospace Systems
→ Biotechnologies and Biodefense
→ Clothing and Textiles
→ Construction
→ Cyber, Software, and Advanced IT Systems
→ Energy and Environment

- → Food
- → Furniture
- → Human Factors
- → Medical Technologies
- → Transportation

The NCMBA is structured slightly different than the other defense industry association mentioned because it is more of a business development entity, rather than a true industry association, however it is an example of how many different contracting industries can be represented by an organization. Leveraging aspects of this organization in addition to the traditional activities of a membership-driven industry association would be beneficial. As mentioned previously, the CSRA Alliance for Fort Gordon could scale existing membership programs into an industry association that focuses on more than just Cyber development.

Programming offered by a defense contractors association could include networking opportunities and conferences. Members would also be able to participate in monthly "lunch and learn" events specific to each industry sub-committee. For example, the defense manufacturer subcommittee could have an expert present on international exporting, or product commercialization. Quarterly meetings combining all subcommittees could focus on broader contracting topics. Additionally, a yearly summit could be created for association members with relevant exhibits and speakers.

Potential funding sources could come from association membership tiers such as the CSRA Alliance for Fort Gordon's existing membership model.

Identify Expansion Opportunities for Existing Businesses

Opportunities likely exist to work with local economic developers and build upon existing business retention and expansion programs (BRE) to help identify opportunities for suppliers within target industries. BRE programs help reduce the risk of businesses leaving or downsizing, as these businesses typically have strong community ties. Additionally, BRE assistance programs are generally less expensive than business attraction programs and generate more jobs. Research shows that BRE programs assist communities by:

- → Increasing sustainable job creation and new business development
- → Boosting the overall regional business climate
- → Establishing an early warning system for at-risk companies
- → Promoting the availability of business resources
- → Advancing a collaborative environment, building partnerships among the business community, economic development leaders, and public officials
- → Increasing communication and awareness for economic development professionals and public officials on the business community's strengths and weaknesses

Additional opportunities for existing businesses to expand production to fill a need that is being addressed by companies from outside the region have been identified in the target industry analysis. Helping local businesses expand into these opportunities will not only help growth but will also prevent businesses from closing. Potential funding sources could include local funding for Economic Development, U.S. Department of Commerce, U.S. Department of Commerce International Trade Administration, U.S.

Department of Labor, U.S. Small Business Administration, U.S. Small Business Administration Office of International Trade, and Business Retention & Expansion International (BREI).

Develop or Align a Business Attraction Strategy Focusing on Target Industries

A business attraction strategy geared toward target industries could help build and diversify the region's economic base. An initial action item could include marketing existing critical mass of assets of advanced manufacturing, construction, energy, and information technology/computer services, specialty contractor, as well as the emerging opportunities related to tourism, distribution, and hospitality. This attraction strategy should be completed in partnership with business, retention, and attraction. Business attraction is a key component to maintaining regional competitiveness. This chapter identifies an initial roadmap for business attraction and highlights industries that are primed for further investment. The following industries were identified:

→ Research Organizations
→ Small Vehicles
→ Construction
→ Hospitality Establishments
→ Computer Services
→ Specialty Contractors
→ Communications Equipment Components
→ Defense Contractors

Increased focus on marketing existing strengths and opportunities to site location consultants, business leaders, and even competing regions is encouraged. Spotlighting the region's strengths, as well as effective collaboration efforts, will rouse attention with both the existing communities and external competing regions. Action steps for implementing or enhancing existing business attraction strategies could include:

→ Identifying and attending pertinent economic development conferences and industry-specific trade shows
→ Developing reuse concepts for buildings that are strategic assets of the region
→ Developing attraction lead lists, cost comparison reports, and collaborative marketing materials
→ Conducting prospecting missions to target markets, site selectors, and businesses
→ Partnering with the region's telecom and electric providers on economic development opportunities
→ Enhancing asset promotion for the region, including opportunities with Fort Gordon
→ Working with installation leadership to ensure that all the necessary resources and amenities are in place locally to ensure contracts are executed within the Fort Gordon MSA

Leverage Existing Initiatives and Investments in Cyber at Fort Gordon

Fort Gordon is experiencing tremendous investment and growth due to the movement of U.S. Army Cyber Headquarters from facilities in Virginia, Maryland, and Washington, DC. This expansion includes over 80 major construction and renovation projects that will bring nearly $2 billion of investment over the next ten years. This development includes projects such as the Cyber Center Schoolhouse and Army Cyber Headquarters. The Installation is in a tremendous position to continue leveraging these investments to promote future economic development. A working group within the CSRA Alliance for Fort Gordon could

be formed to identify specific opportunities for public-private partnerships that capitalize on the Installation's strengths. This includes Cyber but also energy-related investments. For example, a project with Georgia Power could be replicated in future public private partnerships. Through this partnership, Fort Gordon has provided 750 acres for a 30-megawatt solar energy project. Potentially, private industry could view this model as a best practice. The information technology and energy strengths of the Installation could create opportunities for public-private partnerships around projects like data centers.

In today's 'data is everything' world, increasing the number of data centers serving Fort Gordon and housing data for the Army is a competitive strength. Regional leadership should harness the investments made in information technology within the Installation to grow the IT industry sector around Fort Gordon. Targeting and attracting IT focused companies who can capitalize on the technologies and workforce developed 'inside the gates' would prove fruitful for the regional economy.

Funding for this initiative could be provided by the Economic Development Administration, FCC Universal Service Fund, as well as the Department of Agriculture. USDA grants that could be eligible include USDA Rural Development, USDA Telecommunications Infrastructure Loan Program, and USDA Community Connect Grant Program.

5.7.2 Workforce Developments Strategies

Existing Strategies and Identified Gaps

As described in the labor market information outlined above, the Study Area has several growing industries with good jobs that include pathways to family sustaining wages. However, when reviewing the top occupations in the region, many workers are in historically vulnerable industries with low wages and limited advancement opportunities such as retail, food service, material handling, and healthcare support. The region has many of the assets in place to deliver high quality workforce development services; however, it must replicate and scale these strategies to ensure that employers have a qualified talent pool and workers do not become stagnated in low-wage work.

Examples of successful existing workforce strategies include:

The CSRA Alliance for Fort Gordon (The Alliance) is a two-state, seven-county regional economic development and attraction initiative that supports both the defense and private sectors in technology, innovation, and growth. The Alliance offers workforce development activities including free Cyber training and job placement for veterans and military spouses.

Fort Gordon Cyber District/Alliance for Cyber Education is Metro Augusta's Youth Cyber-Education program. The purpose of this program is to promote Cyber skill development and future career opportunities to regional K-12 students. While created through the nonprofit CSRA Alliance for Fort Gordon, the program is a partnership between the K-12 education system, business leaders, and other community-based partners. It has been recognized not only as a local best practice, but as a national best practice model as well. For two consecutive years, the Fort Gordon Cyber District/Alliance for Cyber Education has been named a CyberPatriot Center of Excellence. CyberPatriot is the nation's largest youth Cyber education program, and the initiative is dedicated to strengthening Cyber skills among American youth. The Center of Excellence designation is awarded to communities and institutions that provide leadership and support to further the educational experiences of their students through the CyberPatriot program.

The Army Transition Assistance Program (TAP), which helps transition service members to civilian careers for soldiers with at least 180 or more continuous days of Title 10 active-duty service. TAP also provides skills translation, resume building, and job search techniques as well as mandated curriculum, which includes pre-separation briefing, transition overview, Military Occupation Specialty (MOS) crosswalk, and more. The MOS crosswalk program helps those in military occupations identify pathways and training opportunities that allow them a variety of career pathways in which they can advance their military careers.

The Army Career Skills Program (CSP), which provides training for transition military members. CSP provides training for skills such as welding, IT, Commercial Driver's License (CDL) training, construction, and industrial maintenance, most of which are at no cost to soldiers.

The Study Area has built a strong foundation for growing and sustaining a regional talent pool that meets the needs of both employers and workers in the Cyber industry. Through the Alliance for Fort Gordon, business, government, education, workforce, economic development, and community-based organizations have a demonstrated an ability to work collaboratively to implement Cyber-specific initiatives. These same partnerships, skills, and collaborative spirit will need to be brought to bear to ensure that access to opportunity in the region is equitable for workers and that similar sector specific supports and initiatives are available to other growth sectors in the region.

Workforce Development Recommendations

A workforce system that is clearly aligned with business needs will better allocate resources to strengthen efficiencies between career-readiness providers, adult education, the public workforce system, and industry groups. This type of demand-driven alignment can ensure that employers are effectively signaling the required skills for a job; education and training providers are able to prepare workers; and workers are empowered to communicate their proficiency in the required skills. To achieve this alignment, the region should focus on three primary areas: equity and accessibility in STEM careers; sector-specific strategies, including work-based learning; and sector partnerships.

Sector Partnerships are an employer-driven model for aligning resources and promoting collaboration among educational institutions, workforce service providers, and community-based organizations to meet the needs of business. They offer a way to simultaneously meet business' need for a robust and qualified workforce, while also expanding access to the skills that lead to jobs with family-sustaining wages for workers.

In its *Toolkit for Developing High Performing Industry Partnerships*, The National Fund for Workforce Solutions outlines five characteristics for a successful sector strategy: employer and industry engagement, stakeholder engagement, data informed strategy and continuous learning, operational capacity, and race equity and inclusion. Given the success of the Alliance for Fort Gordon in building a robust partnership to support the growth of the Cyber industry in the region, it seems like a natural next step to begin to leverage that success for additional industries that may be struggling to meet their talent needs. Based on available labor market information, two industries that may be ripe for sector partnership exploration are construction and advanced manufacturing. In addition to being a strong economic driver in the region, the support of an advanced manufacturing sector partnership would build a complementary workforce to the STEM and Cyber talent pipelines that have already been identified as areas of need. Many of the skills and technical requirements necessary for occupations in manufacturing may be transferable to the skill sets required in other STEM fields such as engineering.

A potential partnership the region could explore is with the National Military Family Association (NMFA) and the Socratic Arts' Cyber Academy, a Department of Defense funded program, to provide Cyber security scholarships for military spouses. With most military families requiring two incomes to earn a living wage, many overeducated and underemployed military spouses find part-time employment in industries with lower paying jobs that are most affected by downturns in the economy. Before the pandemic skyrocketed unemployment, military spouses saw unemployment rates above 20% and even higher rates of underemployment. More recently, in a survey conducted by NMFA during the pandemic, 34% of military spouses reported that they lost their job, 25% reported a loss in hours, and 53% said their family as a whole experienced a decrease in income. Creating a partnership connecting military spouses to Cyber security with the influx of families arriving at Fort Gordon for ARCYBER can build upon the catalyst created by the growth of the Installation to create higher paying jobs for military spouses and grow the civilian Cyber security industry in the region.

Additional partnerships could be explored for veterans and military Spouses alike through existing relationships at organizations such as the U.S. Chamber of Commerce Hiring Our Heroes (HOH). Fort Gordon has been a long-time partner of HOH and should consider expanding opportunities through the Chamber's Military Spouse Economic Empowerment Zone or the Next Step Vets initiatives. Programs like these have the opportunity to expand the Installation's footprint to those who may reside outside the area but are looking at retiring and/or relocating in the Fort Gordon footprint.

Work-based learning, referred to as WBL, is the "umbrella" term used to identify activities that collaboratively engage employers and training providers in providing structured learning experiences for individuals, particularly students. Types of work-based learning include internships, cooperative education, on-the-job training, work-experience, transitional jobs, pre-apprenticeships, and apprenticeships. These experiences focus on assisting individuals in developing broad, transferable skills for secondary and post-secondary education and the workplace; often translating into employment opportunities that offer livable wages.

A comprehensive work-based learning strategy connected to the sector-specific partnership outlined above brings value for educators, workers, and employers and is an important piece of a skills-centered talent development system. It can provide workers, in particular young workers and workers of color, with the important signposts and roadmaps necessary to successfully transition from the K-12 system to the workforce. JFF's Center for Apprenticeship and Work-Based Learning defines work-based learning "as a student or worker completing meaningful jobs and tasks in a workplace that develop readiness for work, knowledge, and skills that support entry or advancement in a particular field." While a work-based learning framework should be tailored to the specific needs of the Fort Gordon region, JFF has developed a continuum for skill development that can be applied across a broad range of workers and learners: K-12 students, young adults, college students, adult jobseekers, and incumbent workers.

The Study Area is a relatively diverse community and, as a result, equity and accessibility to STEM careers will be of upmost importance as Fort Gordon continues to orient its regional economy around Cyber, IT, and other STEM careers. Occupations in these sectors are some of the fastest growing, in-demand, and high wage career options in the region and yet, people of color and women are underrepresented in these high-quality jobs. A failure to address these inequities early and often during this time of regional growth will result in continued inequality for women and people of color.

To ensure that the opportunity created by public-private investments in Cyber, STEM and other high-quality careers meets both the talent needs of employers and is equitably accessible to workers, the Study Area will need to apply a systemic, equity explicit and outcomes-oriented lens to its talent development efforts.

An overview of race-explicit strategies that could be deployed to ensure people of color have equitable access to careers in Cyber and STEM is outlined in Race Forward's *Race-Explicit Strategies for Workforce Equity in Healthcare and IT.* Examples of these strategies include the collection and tracking of outcome-focused data by race, expansion of access to certifications for people of color, and the development of racially inclusive framing as a part of partner-building strategies.

In order to ensure that opportunities in the Cyber and STEM fields are accessible to women (92% of military spouses are women), the region may want to consider targeting outreach and recruitment for training programs and employment opportunities to the spouses of military personnel stationed at Fort Gordon. While not all military spouses are women, most are women due to the higher rates of men participating in military service. These women often have the skills and competencies necessary for the job or training program but have had their careers impacted by their service member's military service. With so much recruitment being dependent on personal connections and many jobs being filled by referrals, military spouses are at a disadvantage each time they move and have to start a new career network. By creating a strategy to specifically recruit, train, hire, and retain military spouses for Cyber and STEM careers, the region can begin to see improved representation by women in these fields.

Examples of such strategies could include partnerships with local education and institutions to offer discounted or free certifications for Cyber and STEM careers to military spouses; encouraging local Chamber members to offer on-the-job training, flexible work arrangements, or remote work to military spouses who traditionally have difficulty finding childcare due to a lack of family network and frequent moves. Programs such as the U.S. Chamber's Hiring Our Heroes Military Spouse Economic Empowerment Zones provide a framework for communities to create inclusive and creative environments that are military-spouse friendly.

This commitment to equity is not only a benefit for workers. In order to increase its available talent pool, the region cannot focus solely on the attraction of new talent but must also retain its current talent and tap into nontraditional talent. By developing recruitment, hiring, and retention strategies for diverse and non-traditional IT and STEM talent pipelines, the Augusta area will be able to maximize its local talent pool.

Implementation and Funding Strategies

One of the most ubiquitous issues currently is the mobilization of industry, education, and policymakers as each recognizes the opportunities and challenges associated with meeting the evolving talent needs of employers. As outlined above, two of the plausible solution strategies include sector-focused partnerships and work-based learning. Both initiatives often include technical and community colleges, as well as employers and leaders who coalesce around the need to produce and increase the number of technically skilled and career-ready workers. Opportunities continue to emerge for such alliances to leverage state and federal grants with private and endowed funds to support incumbent worker advancement credentialing at no cost to participants; to identify potential leaders within the current labor force and provide the necessary training to advance them, thus backfilling the workforce pipeline with newly skilled talent.

Examples of successful sector partnership implementation and funding are the following.

In the **State of Ohio,** grant funding was established to support local communities and regions interested in starting or accelerating an industry sector partnership. The vision was to fill in-demand jobs and continue to diversify and grow a high quality, dynamic workforce which were led by the business community with common workforce-related goals. While matching funds were required for eligibility, there were a number of qualifiers: cash funds raised; equipment costs, including computers, training equipment, software, subscriptions, and other items directly related to partnership operations; and/or facility costs, including acquisition, rent, utilities, and other costs incurred directly related to partnership operations. Twelve partnerships were awarded across various regions and focus on multiple in-demand industry sectors, and these included healthcare, information technology, manufacturing, construction, and transportation.

One marquee example is the **Mahoning Valley Manufacturers Coalition (MVMC).** Through the establishment of a successful sector-partnership model, relationship building among industry champions has flourished and replicable tools and templates were designed to meet employer needs in such a successful manner that twelve other regional industry sector partnerships across Ohio replicated it, aiding in the implementation of a U.S. Department of Labor Scaling Apprenticeship grant. Additionally, a toolkit was developed as was a systematic process for interviewing, collecting data, and building employer-specific proposals. Customized work-based learning solutions were delivered to employers as a result of this model.

Another relevant engagement strategy occurred in the **State of Montana** with a consortium known as **BillingsWorks**, which is comprised of an economic development organization, two institutions of higher education, the chamber of commerce, and various stakeholders. Sector partnerships convened to identify skill gaps with which employers found themselves challenged, and conversations were facilitated to discuss the feasibility and willingness to buy into and hire from a newly created career and technical center campus.

Building upon the initial project, a State of the Workforce Report was generated with an action plan for local employers and industry leaders. BillingsWorks was able to use the strategy plan and the four strategic goals to outline its vision as a premier business-driven workforce development hub. Plus, they launched their own sector partnership, and created the Montana BioScience Internship Initiative, which linked educational institutions and businesses to career and internship opportunities. Also included was forming the Summer Intern Leadership Initiative.

The collaborative standard of education and employer alliances and the call to reenergize relations amongst stakeholders point to transformative outcomes for communities and the economy through such sector-based partnerships. The alliances have proven to yield a strong return on investment for stakeholders ranging from the employers and public agencies to taxpayers and the workforce. The strategic and significant effort of economic resiliency through workforce education is a journey and an ever-changing challenge; therefore, technical and community colleges were integral to the process for their ability to provide flexible, accelerated, non-credit, and for-college-credit curricular models that speak directly to business and industry needs for attracting a new workforce, while also strengthening and advancing the current workforce.

While the mapping of external funding, including philanthropy and government investments, will play a vital role in the sustainability of sector-based partnerships, Next Generation Sector Partnerships advises against using external grant funding to support early, start-up costs associated with establishing sector partnerships. The Next Generation Sector Partnership Training Manual states, "To be clear, standard procedure for Next Gen Sector Partnerships has been to avoid start-up or implementation grants. This comes on the tail of many years and lessons learned of partnerships forming because of money, and therefore not sustaining over time. States, however, can play important roles in capacity support for conveners and support teams as well as incentive funding for actual projects and activities after a successful partnership has come together authentically." Understanding this recommendation means the Fort Gordon region will need to leverage existing collaborations and partnerships when supporting new sector partnerships.

The following are xxamples of successful work-based learning implementation and funding:

The Strengthening Career and Technical Education for the 21st Century Act (Perkins V) provides a framework for forming regional consortia of local educational agencies and institutions of higher education that can collectively use Perkins funds to support consortium-wide activities and initiatives that include work-based learning opportunities. Plans to be supported by Perkins funds often include a system of organized regional associations, including secondary and post-secondary education institutions, industry partners, community stakeholders, and state agency representatives that work collaboratively to develop programs of study that are fully aligned and lead directly to careers. Plans also traditionally outline how regional collaboration between secondary schools, post-secondary institutions, and employers will provide students with experience in, and an understanding of, all aspects of an industry, which may include work-based learning such as internships, mentorships, simulated work environments, and other hands-on or inquiry-based learning activities.

In one case study, a regional strategic work-based learning (WBL) plan was facilitated to best understand the opportunities and barriers to effective WBL experiences for secondary and post-secondary career and technical education students in **Northern New Mexico**. It was also designed to help lay the groundwork for further collaboration of future workforce training-grant opportunities. The client was the United States Department of Energy's national laboratory, the **Los Alamos National Laboratory (LANL**). It is one of the largest employers in the State of New Mexico. In a project funded by the LANL Foundation, consensus was built among a group of disparate partners with conflicting priorities, and a plan for work-based learning opportunities was established. The plan reached stakeholders ranging from tribal nations and local employers to community organizations and the general population. Representation from each population congregated in virtual, community round-table engagements to collectively build strategy, action steps, and activities with ownership and buy-in from all. They were provided a full-scale strategic plan with recommendations for implementation, as well as a systematic approach for regional partners to bridge gaps and a logic model for regional leaders to execute a work-based learning ecosystem in a comprehensive manner.

5.8 Implementation Plan

The recommendations summarized above have been divided into a timeline. Short-term actions should be undertaken within 1-3 years; mid-term actions should be undertaken within 4-5 years, and long-term

actions should be undertaken within 5+ years. Ongoing indicates activities are those that should be undertaken annually or regularly within the planning timeframe.

Identification of Issues, Goals, and Strategies		Responsible Party	Timeline
Economic Development Strategies			
Strategy 5.1	Create a regional association for defense contractors	CSRA Alliance for Fort Gordon	Short-term
Strategy 5.2	Identify expansion opportunities for existing businesses	CSRA Alliance for Fort Gordon	Mid-term
Strategy 5.3	Develop or align a business attraction strategy focusing on target industries	CSRA Alliance for Fort Gordon, Local Governments	Mid-term
Strategy 5.4	Leverage existing initiatives and investments in Cyber at Fort Gordon	CSRA Alliance for Fort Gordon	Mid-term
Workforce Development Strategies			
Strategy 5.5	Identify sector partnerships to align resources and promote collaboration.	CSRA Alliance for Fort Gordon, CSRA Regional Commission, Economic Development Authorities, Chambers of Commerce	Mid-term
Strategy 5.6	Identify work-based learning activities that collaboratively engage employers and training providers in providing structured learning experiences.	CSRA Alliance for Fort Gordon	Mid-term

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Chapter 6:
Education Services

6 Education Services

6.1 Overview

Education planning is critical to properly support the needs of incoming military personnel and their families. Education is highly valued by today's military members as well as the Department of Defense (DoD) civilian and defense contractor personnel who are associated with Fort Gordon. The population expansion of the Cyber Command stationing activities underway at Fort Gordon will expand the need for education services in the surrounding communities. An analysis and evaluation of existing and projected demand for education services is presented in this chapter.

6.2 Education Needs Assessment

The primary schools attended by students of Fort Gordon military active-duty service members are within Columbia and Augusta-Richmond Counties in Georgia and Aiken County in South Carolina. Many of the middle and high schools as detailed below also support the Fort Gordon "Cyber District" by teaching Cyber curriculum. A Cyber curriculum generally focuses on computer sciences, information technology, and virtual reality. This focus in education will allow students to stay in the region and support the Fort Gordon "Cyber District" as it grows. In 2018, the region was recognized as the nation's newest CyberPatriot Center of Excellence and was awarded the Air Force Association's CyberPatriot Program District of Distinction. Figure 6.1 shows the location of Study Area schools.
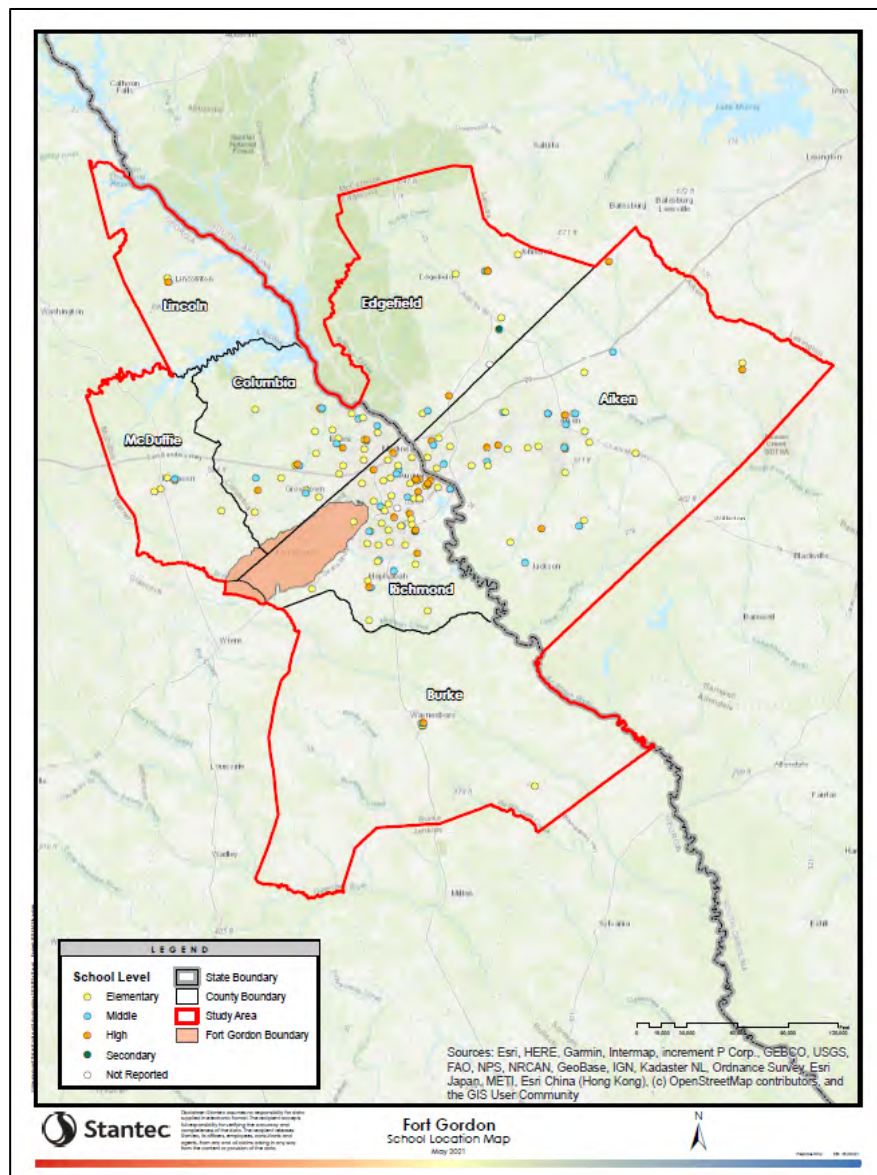
Figure 6.1: Study Area School Location Map

6.2.1 Baseline Assessment

Fort Gordon

Freedom Park School is located on the Installation and serves the Installation's families. The school opened its doors in 2002 and currently serves PreK through eighth grade. The current enrollment for the school is 663 students.

Freedom Park Elementary Mission:

"The Mission of Freedom Park School is to provide all students with a high-quality education that enables them to be contributing members of a global society. We seek to create an environment that achieves equity for all students and ensures that each student is a successful learner."

Points of pride for the school:

→ Pearson National Model School
→ Georgia School of Distinction
→ Georgia School of Excellence
→ International Baccalaureate Candidate School
→ Achieved Georgia Gold Award School status for two consecutive years of academic achievement gains.
→ Maintained 10 years or Adequate Yearly Progress status since opening in 2002.
→ Richmond County Teacher of the Year
→ 2020-2021 Military Flagship School Award, given to schools going above and beyond to provide a supportive environment for military students and families.

The College and Career Ready Performance Index (CCRPI) is Georgia's statewide school accountability system. The CCRPI assesses how well students are prepared for college and careers and ensures that schools are focused on improving achievement among all students. The index measures progress on indicators such as content mastery, student attendance, and preparation for the next school level. Schools earn CCPRI points based on indicators that vary by grade and school level and align with measures of college- and career-readiness. Schools may earn up to a set number of points in five main categories, for a total of 100 possible points. (In 2019-2020, statewide accountability was suspended due to COVID-19 pandemic-related closures.)

The CCRPI scores for Freedom Park Elementary can be seen in Figure 6.2. These scores show that while there has been a decrease in the CCRPI score between the 2017-2018 and 2018-2019 school years, Freedom Park Elementary still has high CCRPI scores overall, and it is higher than or equal with the State of Georgia for the past two years.

Figure 6.2: Freedom Park Elementary School CCRPI Scores
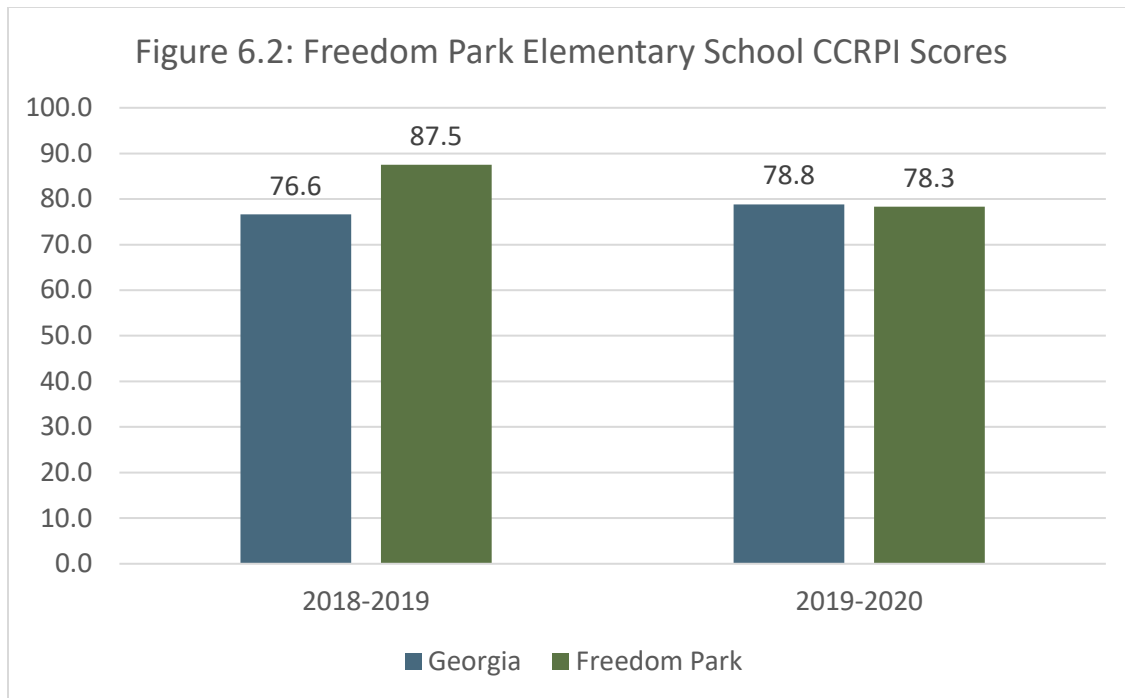
Augusta-Richmond County

There are 60 schools in the Richmond County School System. Of these, 33 are elementary, 11 are middle (including two charter schools), 8 are high schools, 4 are magnet schools and 3 are alternative/specialty schools. The Richmond County School System current enrollment is 29,093 for grades K-12 with an additional 1,500 students if Pre-K is counted. The total utilization rate is 81%. It is the largest school district among the school area jurisdictions.

The School Board conducts annual right-sizing public meetings. The Richmond County Technical Career Magnet School formed in 2012. Recent closures include National Hill Elementary School and Collins Elementary School. CT Walker will be changed from a K-8 to a K-5 in 2023.

The State of Georgia's Department of Education offers a 'career cluster' curriculum that includes Cybersecurity as part of the Information Technology cluster. This curriculum is offered to high school students. Students take classes tailored to their cluster, and each cluster includes multiple possible career pathways. The program allows students to explore a group of possible careers and shows them the relevance of what they are learning in the classroom. The Richmond County School System offers the Cyber Academy of Excellence, which offers students the opportunity to both classes within the Cybersecurity cluster and industry certification.

In addition, Richmond County offers two magnet schools. Richmond County Technical Career Magnet School serves students from grades 6 through 12 with a focus on Cybersecurity, networking, energy engineering, audio/visual technology and film, business, and robotics. It is located adjacent to Augusta Technical College, and approximately 20% participate in dual enrollment programs at the College. The school also serves as the home of the Cyber Academy of Excellence Program. The A.R. Johnson Health Science and Engineering Magnet School also serves students from grades 6 through 12 and focuses on

science, technology, engineering, and mathematics. Additionally, the Robotics and Computer Programming Program at Spirit Creek Middle School furthers the concept of Science, Technology, Engineering, Arts, and Math education and narrows the focus to the fields of robotics and computer programming.

Performance Snapshot

→ Richmond County's **overall performance** is higher than 4% of districts.
→ Its elementary students' **academic growth** is higher than 46% of districts.
→ Its middle school students' **academic growth** is higher than 9% of districts.
→ Its high school students' **academic growth** is higher than 21% of districts.
→ 30.1% of its third grade students are **reading at or above the grade target level.**
→ 50.1% of its eighth grade students are **reading at or above the grade level target.**
→ Its **four-year graduation rate is 75.1%,** which is higher than 3% of districts.
→ 37.8% of graduates are **college and career ready.**

The CCRPI score is based on standardized test scores, student growth on these tests, graduation rates, and other factors. However, the Georgia Department of Education revised the CCRPI calculation in 2018. Therefore, 2018 scores are not directly comparable to prior years. Unlike previous versions, each component is now scored out of 100 possible points, and then the components are weighted to calculate the final CCRPI score. The total possible CCRPI score is 100 points.

Figure 6.3: Richmond County CCRPI Scores
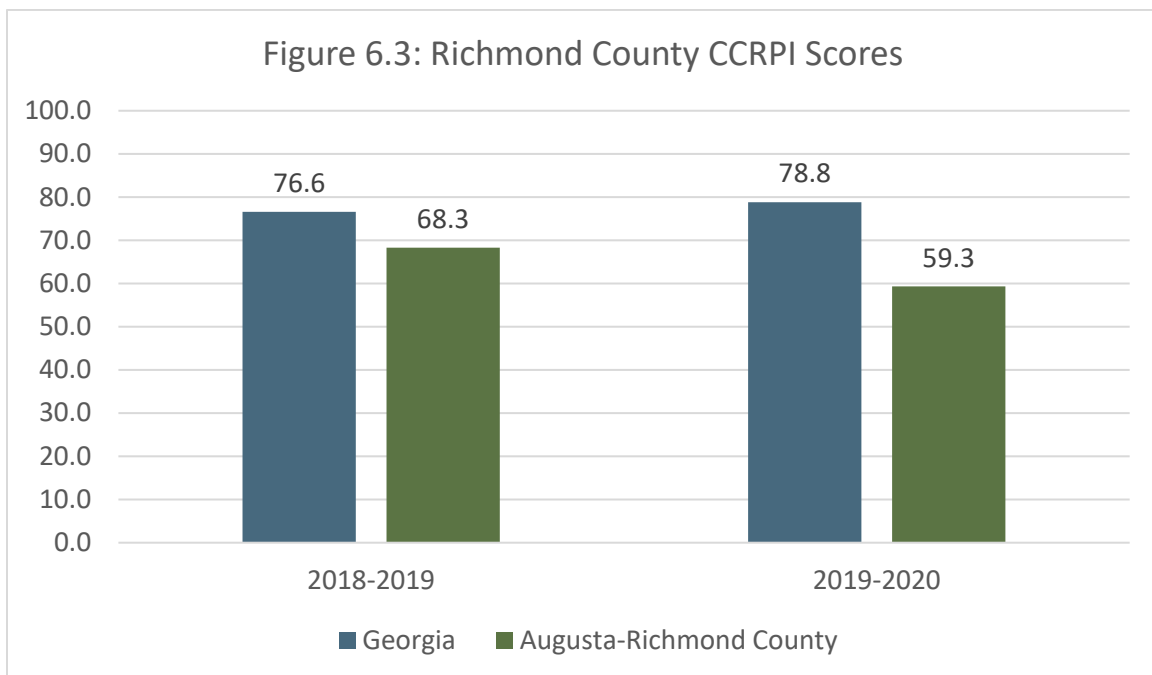
Source: Derived from Georgia DOE website, Stantec, 2021

The per pupil expenditures measure the amount of money spent per student in a school. The total dollar amount (as measured by the Financial Efficiency Star Rating) is divided by the total number of students

enrolled in the school. Transportation, school meals, facilities, debt service, and non-K-12 expenditures are not included in this measure.

Figure 6.4: Richmond County Per Pupil Expenditures
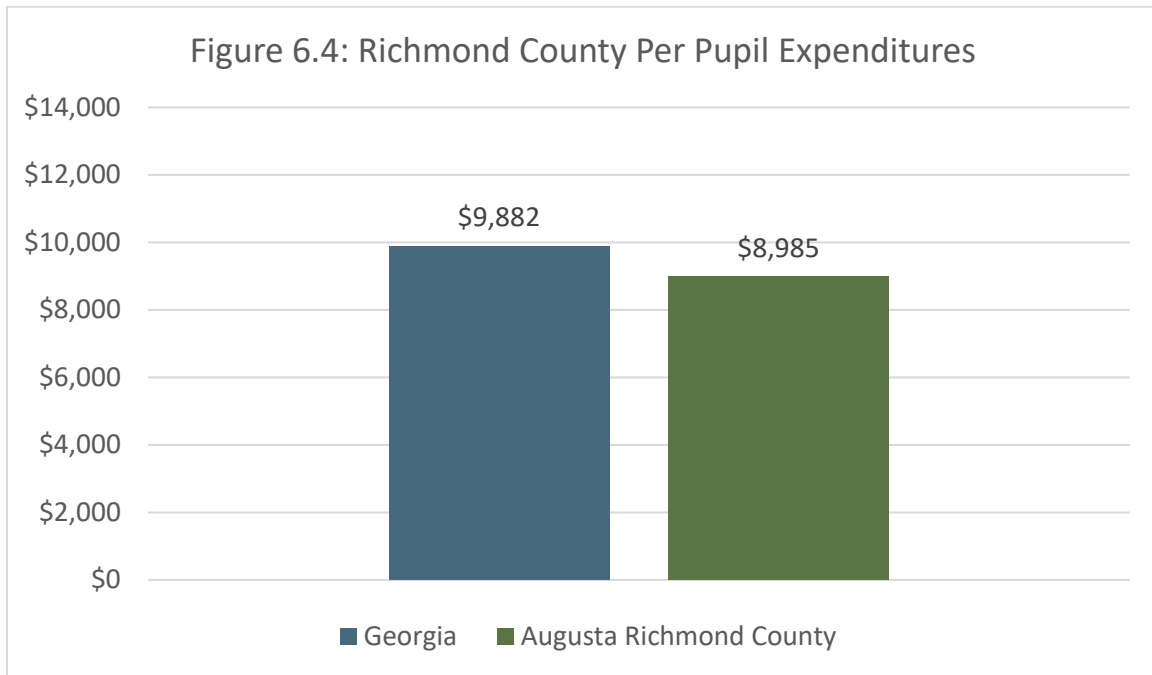
Source: Governor's Office of Student Achievement, 2021

Funding Sources and Planned Schools

Funding sources for the school board include:
→ The use of bonds and sales tax which are combined to fund improvement projects.
→ Impact Aid funding for 2021 was $4,571,497. This included 1,182 parent or guardian military members either living on-base or within the school district and 733 students living in low rent housing which is federally owned. Impact Aid is federal funding provided to local school districts with concentrations of children who have parents in the uniformed services or employed on eligible federal properties who do not live on federal property, children residing on military bases, low-rent housing or on Indian lands. These school districts sometimes operate with less local revenue than is available to other school districts because federal property is exempt from local property taxes. Student households are asked to fill out a questionnaire, which provides the assessment data.
→ Coronavirus Aid, Relief, and Economic Security (CARES) Act Funding (I and II) provided federal funding to support school districts through funding a wide range of activities, including cleaning and sanitizing, purchasing educational technology such as laptops and hotspot devices, training educators to use online learning tools, ensuring access to education for students with disabilities, and providing students emergency funding for food, housing, and other basic essentials.

The annual right-sizing assessments of the Richmond County School System has identified the need to build two new schools in the near term.

The Burke County Board of Education has five public schools and there are three private schools in Burke County. Information on the public schools and capacity of the schools is listed in Table 6.1: Enrollment in Burke Area Schools and Capacity. There is sufficient capacity in the existing schools. The three private schools which teach PK-12 grades are Edmund Burke Academy, Waynesboro Mennonite School, and Faith Christian Academy.

Table 6.1: Enrollment and Capacity at Burke Area Schools

School	Grades	Current Enrollment	Capacity of School	Current % of Capacity
Burke County High School	9-12	1,274	1,450	87.8%
Burke County Middle School	6-8	953	1,250	76.2%
Blakeney Elementary School	3-5	738	1,325	55.6%
SGA Elementary School	K-5	275	525	52.4%
Waynesboro Primary School	PK-2	1,009	1,400	72%

Source: Burke County School Board

Current Enrollment is 3,982 students.

Performance Snapshot

- → Burke County's **overall performance** is higher than 24% of districts.
- → Its elementary student's **academic growth** is higher than 45% of districts.
- → Its middle school students' **academic growth** is higher than 40% of districts.
- → Its high school students' **academic growth** is higher than 65% of districts.
- → 31.9% of its third grade students are **reading at or above the grade target level.**
- → 48.0% of its eighth grade students are **reading at or above the grade level target.**
- → Its **four-year graduation rate is 91.6%**, which is higher than 73% of districts.
- → 64.4% of graduates are **college and career ready.**
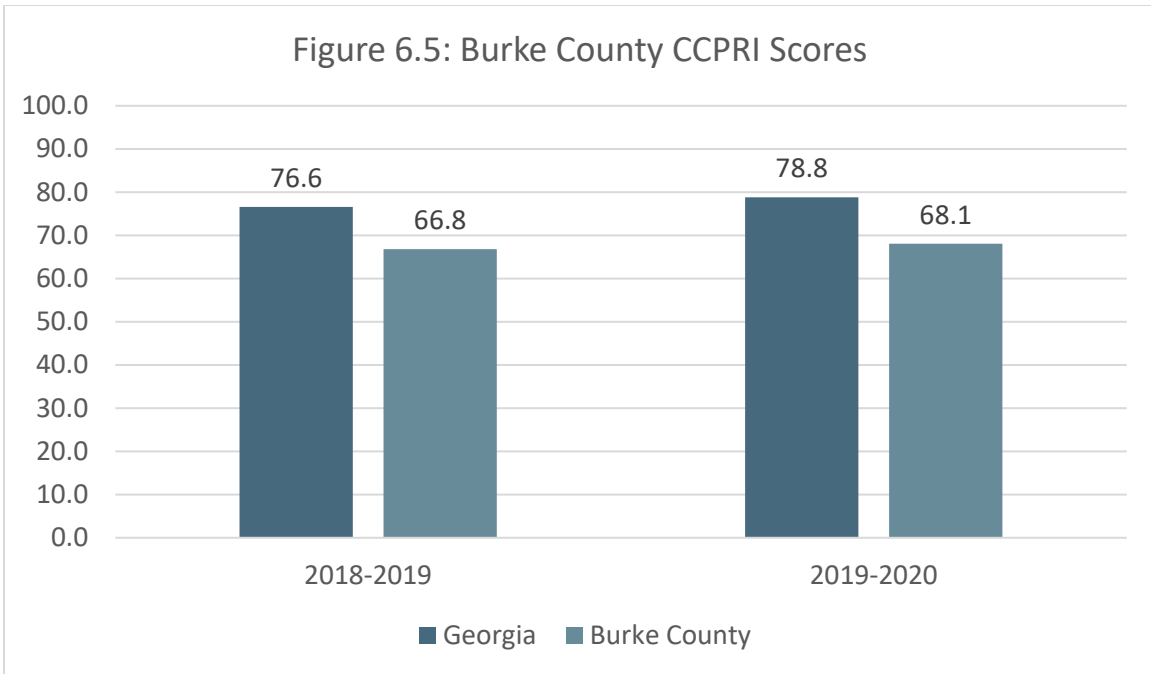
Figure 6.5: Burke County CCPRI Scores

Source: Derived from Georgia DOE website, Stantec, 2021

Figure 6.6: Burke County Per Pupil Expenditures
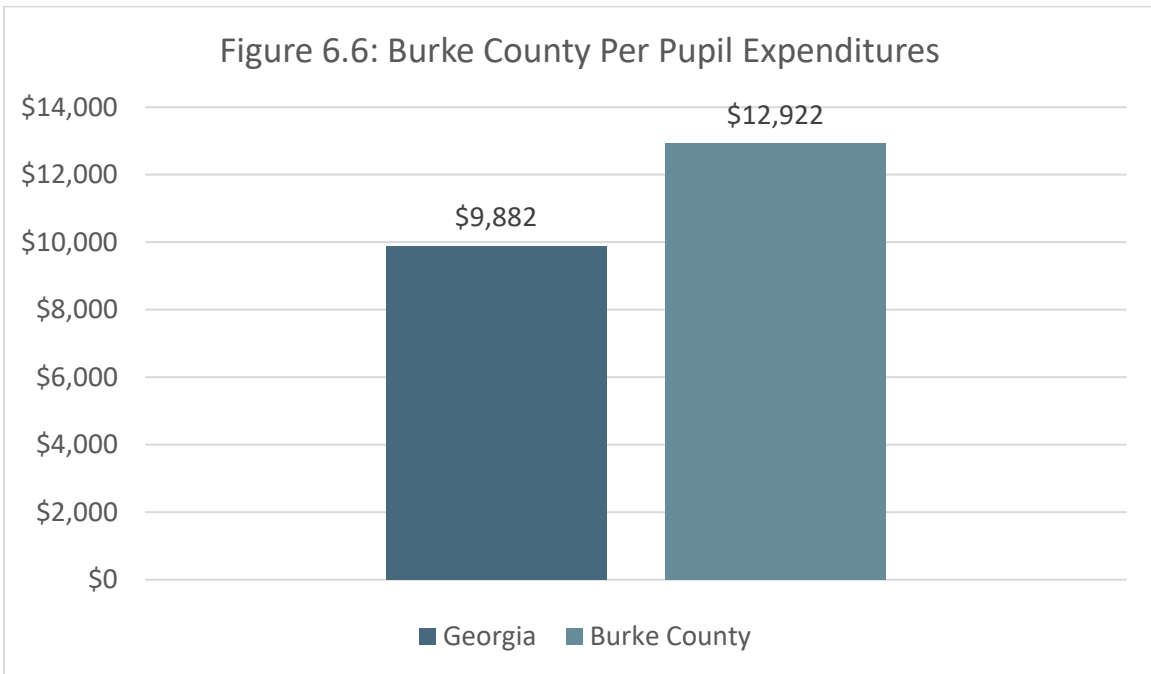
Source: Governor's Office of Student Achievement, 2021

Funding and New Schools

The school budget funding sources include local, state, and federal funding. The Burke County School Board does not receive Impact Aid funding as it does not meet minimum school district size requirements. There are no planned new schools.

Columbia County

The Columbia County School System includes 17 elementary schools, eight middle schools, and six high schools. According to the Columbia County Comprehensive Plan, population growth resulted in fairly steady school construction, with five new schools built since 2008 (two elementary, two middle, and one high school).

The current enrollment is 27,818 students. Columbia County School System is the second largest school district within the Study Area. It also has the highest density population and is among the fastest growing counties in terms or population growth. Columbia County School Board has the highest CPRI scores (B) among the Study Area school boards.

According to the Columbia County School District Annual Report, their goal is to prepare students to be productive citizens who can successfully communicate and collaborate with other across the globe. To accomplish this purpose, the school board has worked cooperatively with stakeholders to establish a framework for ensuring success. The Columbia County School District's motto is to L.E.A.R.N. – Lead by example, Expect all to succeed, Achieve excellence through engaging experiences, Respect and value each other, Now and tomorrow.

Notable curriculum includes Greenbriar High School's cutting-edge design programs and Cybersecurity simulations to prepare students in high school to enter the job market with skills taught at the college level.

Riverside Elementary School was recognized as an inaugural Military Flagship School. The Military Flagship School Award recognizes schools going above and beyond to provide outreach to military families recognizing their unique needs while providing a supportive environment for military students and families.

Performance Snapshot

→ Columbia County's **overall performance** is higher than 84% of districts.
→ Its elementary student's **academic growth** is higher than 86% of districts.
→ Its middle school students' **academic growth** is higher than 21% of districts.
→ Its high school students' **academic growth** is higher than 51% of districts.
→ 65.0% of its third grade students are **reading at or above the grade target level.**
→ 78.4% of its eighth grade students are **reading at or above the grade level target.**
→ Its **four-year graduation rate is 92.0%**, which is higher than 75% of districts.
→ 62.5% of graduates are **college and career ready.**
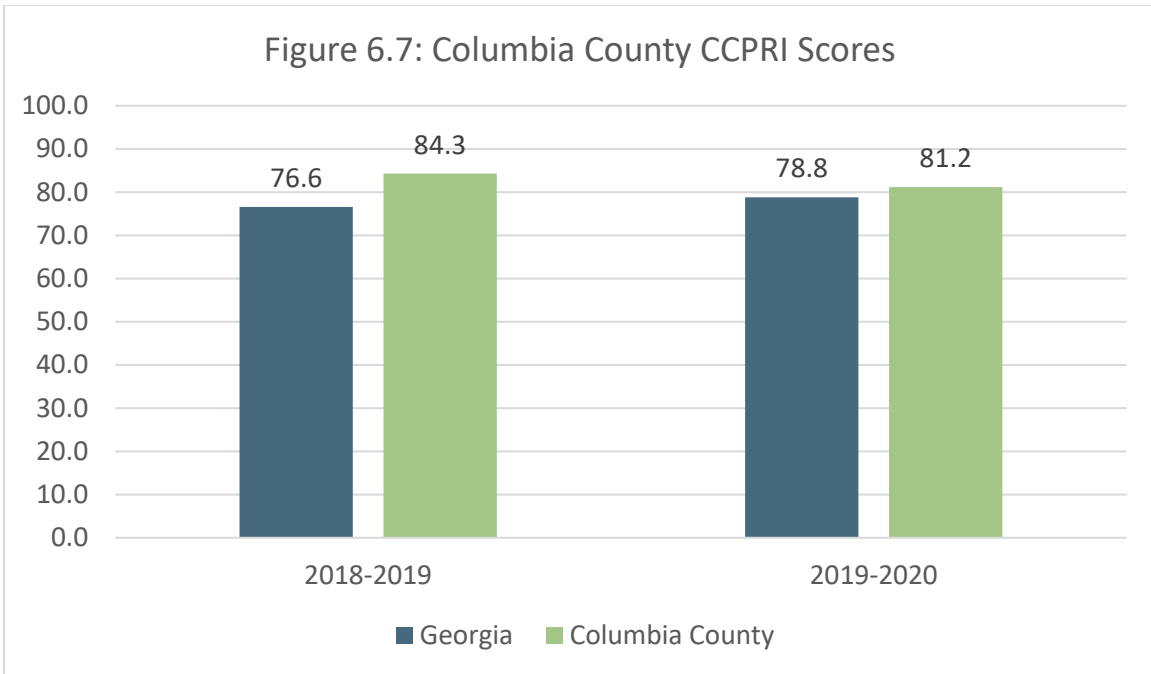
Figure 6.7: Columbia County CCPRI Scores

Source: Derived from Georgia DOE website, Stantec, 2021

Figure 6.8: Columbia County Per Pupil Expenditures
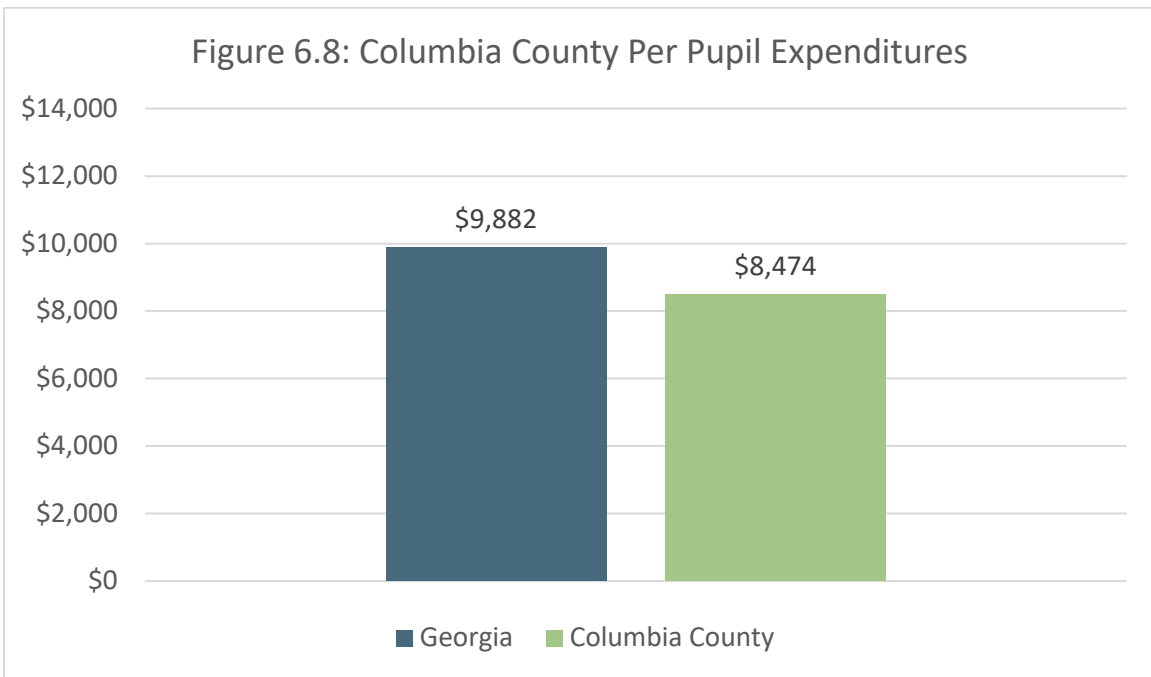
Source: Governor's Office of Student Achievement, 2021

Funding and New Schools

Columbia County voters have approved the Education Special Purpose Local Option Sales Tax (ESPLOST) annually since 1997. The ESPLOST is a one percent sales tax shared by all residents as well as tourists, and visitors who shop in Columbia County. The ESPLOST funds are used to pay for new schools, facility improvements, buses, technology, and other capital outlay needs. ESPLOST funds cannot be used for

instructional supplies or salaries. Additional funding sources include the general fund, Federal Impact Aid funding, and the debt service fund.

Recent construction projects included: a new elementary school on William Few Parkway, Grovetown Elementary School, and Harlem Middle School. Columbia County has two new elementary schools planned to be constructed by 2025.

Lincoln County

The Lincoln County Board of Education has three public schools: Lincoln County Elementary School, Lincoln County Middle School, and Lincoln County High School. Current Enrollment is 1,067 students. According to the Lincoln County School Board, the schools within the district are at two-thirds capacity.

The school district is expanding its offering of Cyber-related curriculum, including elementary coding and robot programming, middle school coding and programming, a high school Cyber curriculum, and participation in the CyberPatriot Competition in Middle and High School. Other assets within the Lincoln County School Board includes a ratio of computers to students is 1:1.

Performance Snapshot

→ Lincoln County's **overall performance** is higher than 47% of districts.
→ Its elementary student's **academic growth** is higher than 65% of districts.
→ Its middle school students' **academic growth** is higher than 54% of districts.
→ Its high school students' **academic growth** is higher than 19% of districts.
→ 52.6% of its third grade students are **reading at or above the grade target level.**
→ 69.2% of its eighth grade students are **reading at or above the grade level target.**
→ Its **four-year graduation rate is 84.8%**, which is higher than 26% of districts.
→ 57.1% of graduates are **college and career ready.**
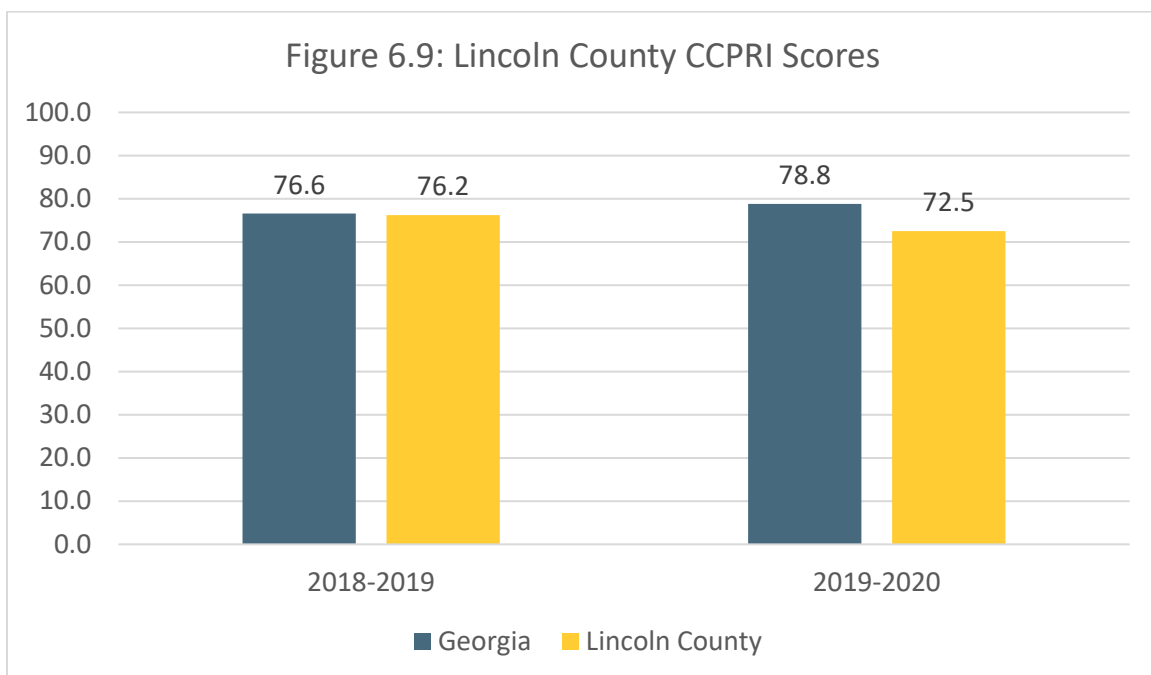
Figure 6.9: Lincoln County CCPRI Scores

Figure 6.10: Lincoln County Per Pupil Expenditures
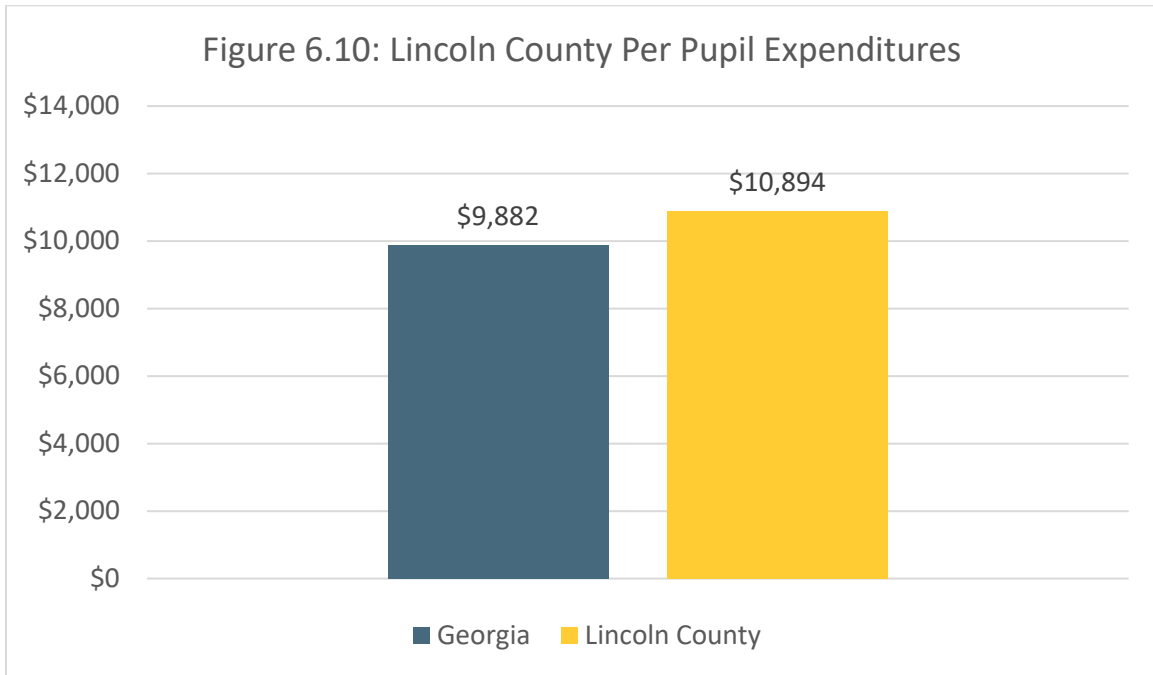
Source: Governor's Office of Student Achievement, 2021

McDuffie County

The McDuffie County School System is comprised of six schools: four elementary, one middle school, one high school as well as one alternative learning center, McDuffie Achievement Center. Two schools have been recognized as Georgia and National Schools of Excellence: Thomson High School and Maxwell Elementary School. Current enrollment is 3,662 students.

High school programs offer on-the-job training in vocational office Training (VOT) and diversified cooperative training (DCT) which provide for student interaction within the community. Dual high school and college training programs includes a Practical Nursing certificate from Augusta Technical College as a dual credit high school program. An industrial technology lab teaches students how electronic technology impacts business and industry and serves as a college preparatory education. Thomson High School also participates in the Georgia Work Readiness program.

Table 6.2: McDuffie County School Board Enrollment and Instructional Unit Overview

School	Grades	Available Instructional Units	Earned Instructional Units	Current Enrollment (Last FTE)
Maxwell Elementary*	PK-1	36	23**	453 (109 PK)
Thomson Elementary*	2-3	41	16	324
Norris Elementary	4-5	25	17	399
Dearing Elementary	PK-5	32	30**	423 (44 PK)
Elementary Totals		134	86	1,599
Thomson-McDuffie Middle	6-8	61	43	874
Thomson High	9-12	63	44	960
System Totals		258	173	3,433 (3,171 without PK)

Source: McDuffie County School Board

* These schools are scheduled to be replaced with one school in 2023

**Does not include classrooms used for PRE-K

Performance Snapshot

→ McDuffie County's **overall performance** is higher than 23% of districts.

→ Its elementary students' **academic growth** is higher than 38% of districts.

→ Its middle school students' **academic growth** is higher than 2% of districts.

→ Its high school students' **academic growth** is higher than 51% of districts.

→ 41.2% of its third grade students are **reading at or above the grade target level.**

→ 36.7% of its eighth grade students are **reading at or above the grade level target.**

→ Its **four-year graduation rate is 82.2%**, which is higher than 14% of districts.

→ 44.2% of graduates are **college and career ready.**
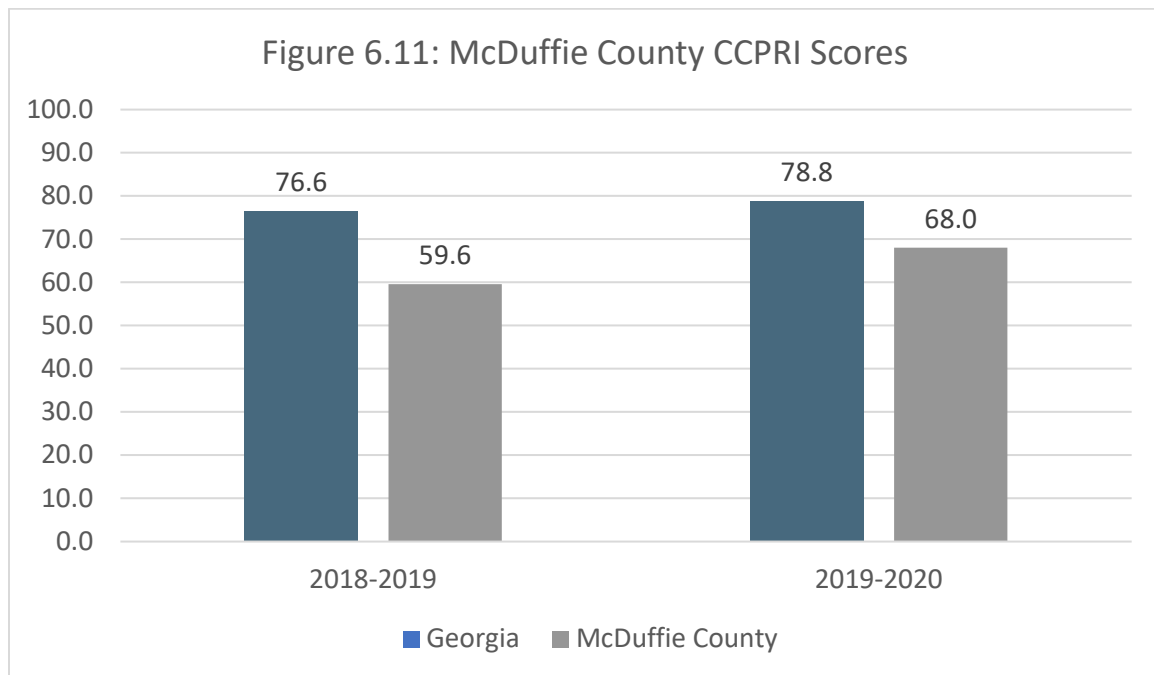
Figure 6.11: McDuffie County CCPRI Scores

Source: Derived from Georgia DOE website, Stantec, 2021

Figure 6.12: McDuffie County Per Pupil Expenditures
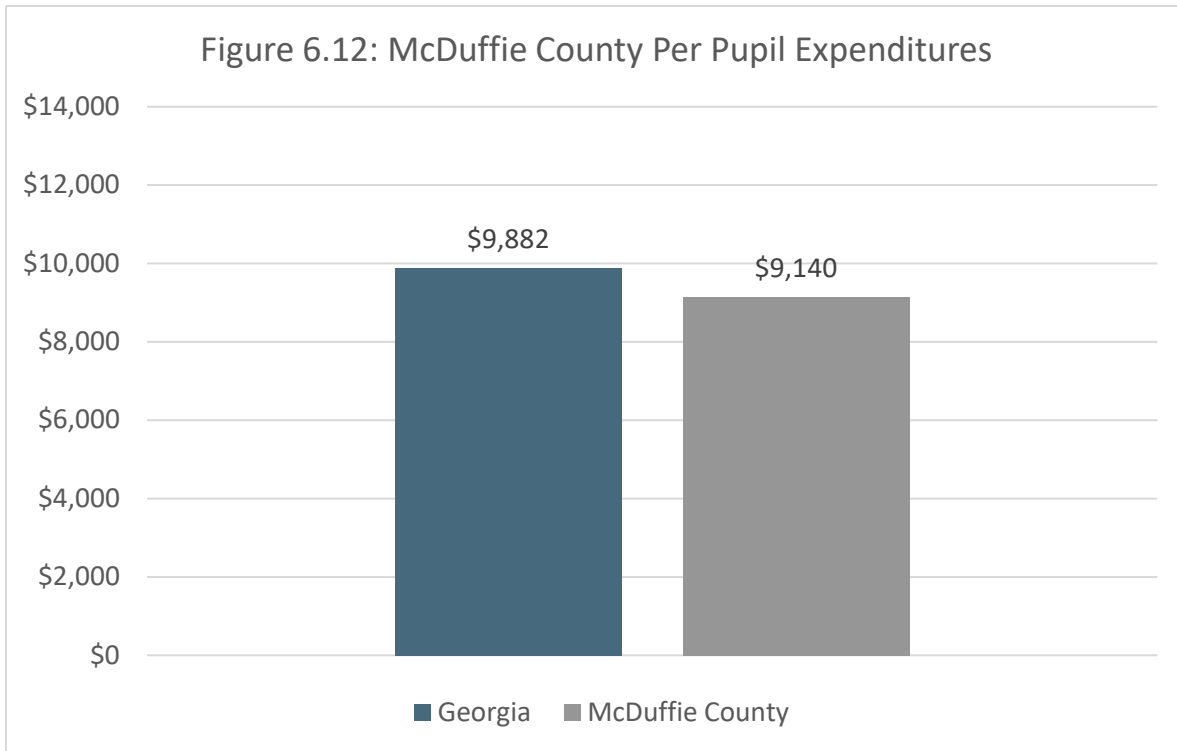
Source: Governor's Office of Student Achievement, 2021

Aiken County

There are 40 schools in Aiken County. The listing of schools and current capacity for each school is detailed in Table 6.3 Aiken County School Capacity. The current total enrollment is 21,686 students.

Achievements of the Aiken County School District include creating apprenticeships and co-op programs with local businesses. Career counseling is available at the middle school level to assist students in early post-graduation planning.

Aiken County School District is South Carolina's First and the Study Area's only Purple Star School District. Purple Star Schools is a program to help children of military families adapt to moving frequently (every two to three years on average).

Table 6.3: Aiken County School Capacity

School	2020/2021	2019/2020	2018/2019	Capacity of School	Current % of Capacity
Aiken Elementary	567	641	683	875	64.8
Aiken High	1,237	1,278	1,326	1700	72.7
Aiken Intermediate	474	542		775	61.1
Aiken Middle			420	0.00	CLOSED
Aiken Scholars Academy	134	91		200	67
Belvedere Elementary	570	592	523	645	88.4

School	2020/2021	2019/2020	2018/2019	Capacity of School	Current % of Capacity
Busbee Elementary	409	423	433	640	63.9
Byrd Elementary	537	521	721	700	76.8
Chukker Creek Elementary	655	742	775	783	83.6
Clearwater Elementary	344	351	395	483	71.3
Corbett Middle	197	186	193	300	65.8
East Aiken School of the Arts	529	570	568	652	81.1
Gloverville Elementary	291	322	323	403	72.3
Graniteville Elementary	277	262	0	320	86.6
Greendale Elementary	337	365	362	534	63.2
Hammond Hill Elementary	633	694	693	728	87
J. D. Lever Elementary	417	481	499	680	61.4
Jackson Middle	373	358	347	707	52.7
Jefferson Elementary	489	538	490	575	85
Kennedy Middle	695	693	851	985	70.5
LBC Middle	641	651	649	795	80.7
Leavelle-McCampbell Middle	610	640	619	750	81.4
Midland Valley High	1,239	1,262	1,314	1326	93.4
Millbrook Elementary	592	538	514	761	77.9
Mossy Creek Elementary	568	622	646	731	77.8
New Ellenton Middle	282	272	195	436	64.6
North Aiken Elementary	428	418	399	691	62
North Augusta Elementary	628	636	633	822	76.5
North Augusta High	1,570	1,525	1,439	1700	92.3
North Augusta Middle	599	631	635	983	60.1
Oakwood-Windsor Elementary	373	383	352	728	51.2
Paul Knox Middle	744	802	741	826	90
Redcliffe Elementary	596	663	678	1017	58.6
RSM Elementary	321	352	365	611	52.5
RSM Middle	193	198	201	300	64.5
RSM High	258	255	257	400	64.4
Schofield Middle	501	574	544	770	65
Silver Bluff High	641	642	638	850	75.4
South Aiken High	1,337	1,414	1,416	1652	80.1
Wagener-Salley High	266	274	272	540	49.3
Warrenville Elementary	314	338	436	464	67.6
District	**21,868**	**22,738**	**22,545**	**29,838**	**73.3**

Source: Aiken County School Board

The South Carolina Board of Education has a statewide report card for its schools. Below is the snapshot of the report card for Aiken County.

Figure 6.13 – Aiken County School Report Card
Source: South Carolina Report Card

Funding and New Schools

Funding sources include Debt Service Fund, Capital Projects Fund, Pupil Activity Fund, Food Service Fund, Education Improvement Act Fund, Special Revenue Fund, the General Fund, and American Rescue Plan

funding. There is also a 1% sales tax to fund capital projects and new schools across the district. Impact Aid related to Fort Gordon is not available as Fort Gordon is in a different state.

A new school is planned for Aiken County: Highlands Springs Elementary/Middle School. The new school will have a core capacity of 1,250 student (500 elementary students and 750 middle school students) on a newly developed site. Phase 1 will be a 134,000 square foot two-story middle school to include: middle school classrooms, gymnasium, administration space, media centers, and food service. Phase 2 will be a 61,500 two-story elementary school to include: elementary school classrooms and physical education space. There is the potential for a future addition to Phase 2 to increase the core capacity to 1,500 (750 elementary students and 750 middle school students.) The new school site is near Belvedere Clearwater Road and Old Sudlow Lake Road. The project is being developed jointly with the developer of the proposed Highland Spring community.

Edgefield County

Edgefield County School Board has eight schools as detailed in the table below. Edgefield County has had a historical trend of a declining population. Current enrollment is 3,214 students.

Table 6.4: Edgefield County Capacity for Student Growth

School	In-Person Students	Full Remote Students	Current Enrollment	Total Capacity After New Construction	Current Enrollment (Last FTE)
Douglas Elementary	165	37	202		223
JET Middle	342	97	439		211
Johnston Elementary	226	45	271		229
Merriwether Elementary	642	104	*746 (this includes out of zone students, see below)	1,110	364
Merriwether Middle	296	89	*385 (this includes out of zone students, see below)	600	215
Strom Thurmond High & Career Center	622	144	766	1,200	434
W.E. Parker Elementary	311	95	406		244
Edgefield County School District	2,603	611	3,214		1,930

Source: Edgefield County Board of Education

An Edgefield County facilities assessment by Thompson Turner Construction was completed in 2018. It advises that while there has been an overall decline in enrollment over the last several years, assessment growth in the Merriweather area necessitated improvements at Merriweather Elementary School and Strom Thurmond High School and Career Center which are currently underway. The recommended

formula within the assessment study was to anticipate 40 new students for every 100 new homes that are built.

Overall Student Performance

SC Ready English Language Arts and Mathematics
English Language Arts (Reading and Writing) - Percent Met or Exceeding

District   41.7%   (667 / 1598)

State   45.4%   (159686 / 351481)

Mathematics - Percent Met or Exceeding

District   38.2%   (610 / 1597)

State   45.1%   (158655 / 351479)

End-of-Course Assessment Results in English 1 and Algebra 1
English - Scoring C or Higher

District   50.5%   (105 / 208)

State   56.3%   (32823 / 58287)

Algebra - Scoring C or Higher

District   52.4%   (109 / 208)

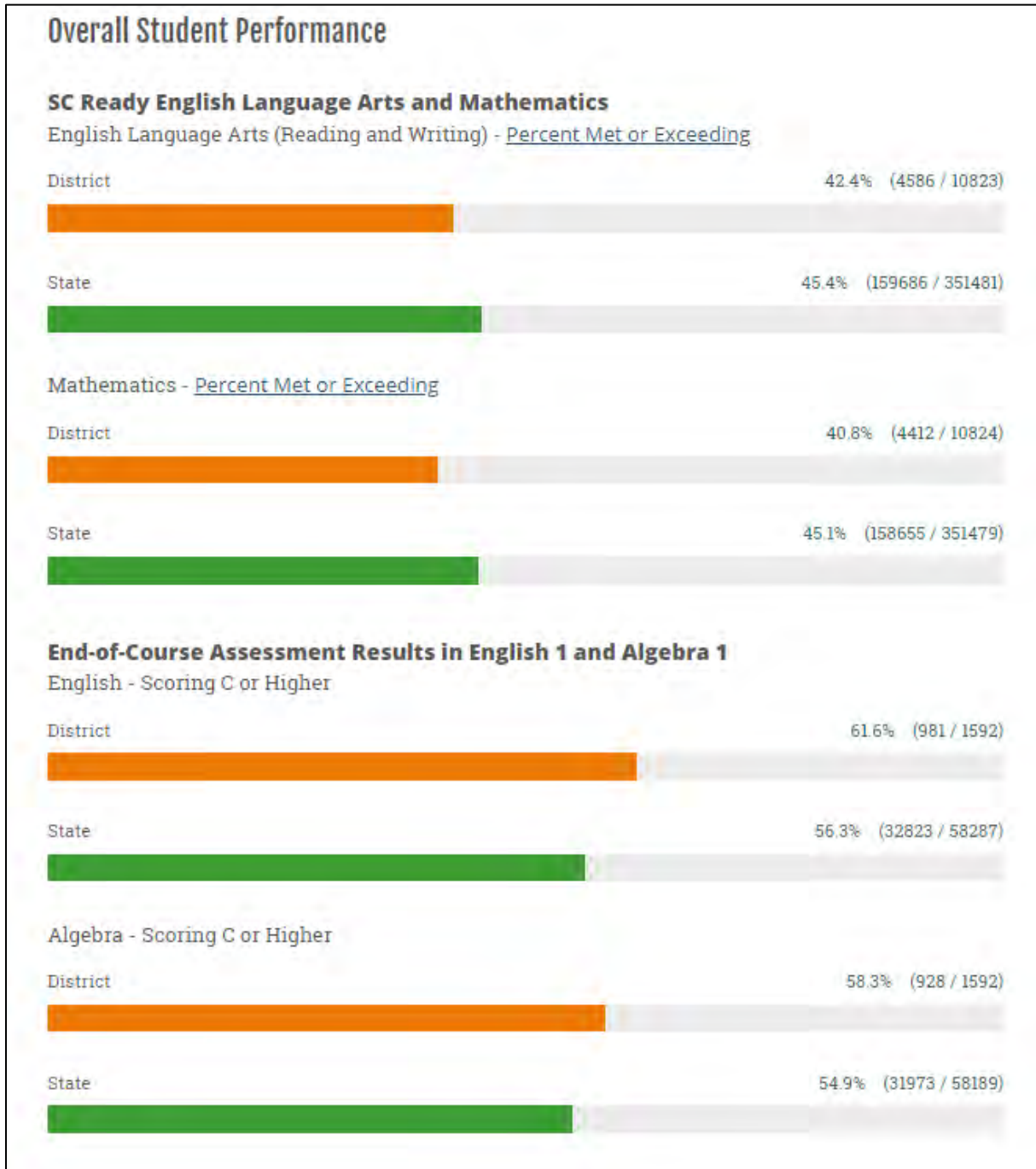State   54.9%   (31973 / 58189)

Figure 6.14 – Edgefield County School Report Card
Source: South Carolina Report Card

<u>Funding and New Schools</u>

Funding sources include Debt Service Fund, Capital Projects Fund, Pupil Activity Fund, Food Service Fund, Education Improvement Act Fund, Special Revenue Fund, the General Fund, and American Rescue Plan funding. Impact Aid related to Fort Gordon is not available as the Installation is in Georgia.

Recent school improvements included Merriweather Elementary School and Strom Thurmond High School and Career Center. No new schools are planned at this time.

6.2.2 State Education Accountability Standards

The following section provides a description of key education standards at the state and federal level as well as overall school capacity per school district as provided by the Georgia Department of Education. The same information was not available for South Carolina.

As part of the Georgia Department of Education standards, the CCRPI is a comprehensive school improvement, accountability, and communication platform intended to promote college and career readiness. It is Georgia's annual tool for measuring how well its schools, districts, and the state itself is preparing students for the next educational level. The CCRPI measures on a scale or 0 to 100 five categories: content mastery; progress; closing gaps; readiness; and graduation rate (high school).

The Scholastic Aptitude Test (SAT) for each school district is provided below. The SAT, administered by the College Board, is widely accepted by U.S. colleges and many international collected and universities. The test assesses skills in three main sections: math, reading, and writing. Typically, the test is taken by 11th and 12th grade students. While the SAT is the standards in many places, there are issues with relying on it for direct score comparisons:

→ Statistical Reliability - The SAT is the leading test in some counties, while the ACT is the leading test in other counties, rendering it difficult to capture weighted averages.
→ Selective Reporting - Different counties place varied levels of importance on ACT and SAT test scores. Counties that report the higher test scores may also have among the lowest participation rates.
→ Local Differences in Eligibility - Some county school districts allow all students to take ACT and SAT tests while others require that certain criteria be met (i.e., enrollment in a preparatory courses, completion a sequence of courses, etc.) before allowing students to sit for the tests.

Georgia Department of Education

Table 6.5 shows the "Local Facilities Plans Based on the Year 2025" as provided the Georgia Department of Education Facility Services Section.

Available Instructional Spaces – instructional space currently listed in school facilities inventory as available as of June 30, 2021.

Earned Instructional Spaces – instructional spaces for state funded, certified staff needed by 2025. School systems may employ additional certified staff for special programs and/or a lower pupil/teacher ratio which would require more instruction spaces than the Georgia Department uses in the calculation of earned instructional spaces.

Table 6.5: Local Facilities Plans Based on the Year 2025 - Burke, Columbia, Lincoln, McDuffie, and Richmond School Systems

School System	Burke	Columbia	Lincoln	Richmond	McDuffie
Projected Change in Number of Students by 2025	-60	2,575	-110	-1,080[1]	-710[1]
Elementary School Available Instructional Spaces in 2021	200	804	45	1,229	57
Elementary School Earned Instructional Spaces by 2025	98	864	26	947	83
Elementary School Net Available Instructional Spaces by 2025	102	-60	19	282	-26
Elementary New Schools Planned by 2025	None Planned	2 New Elementary Schools Planned	None Planned	None Planned	1 New Elementary Schools Planned
Middle School Available Instructional Spaces in 2021	77	381	*Note: Middle combined with High in 6-12 grade configuration	385	61
Middle School Earned Instructional Spaces by 2025	70	417		257	43
Middle School Net Available Instructional Spaces by 2025	7	-36		128	18
Middle School New Schools Planned by 2025	None Planned	1 New Middle School Planned		None Planned	None Planned
High School Available Instructional Spaces in 2021	75	387	48	771	63
High School Earned Instructional Spaces by 2025	64	431	32	520	44
High School Net Available Instructional Spaces by 2025	11	-44	16	251	19

School System	Burke	Columbia	Lincoln	Richmond	McDuffie
High School New Schools Planned in 2025	None Planned	1 New High School Planned	None Planned	None Planned	None Planned

[1] *The Georgia DOE's student projections do not align with population forecasts from the State Office of Planning and Budget. For the given time period, Richmond County's overall population is projected to increase while McDuffie County's is projected to hold steady.*
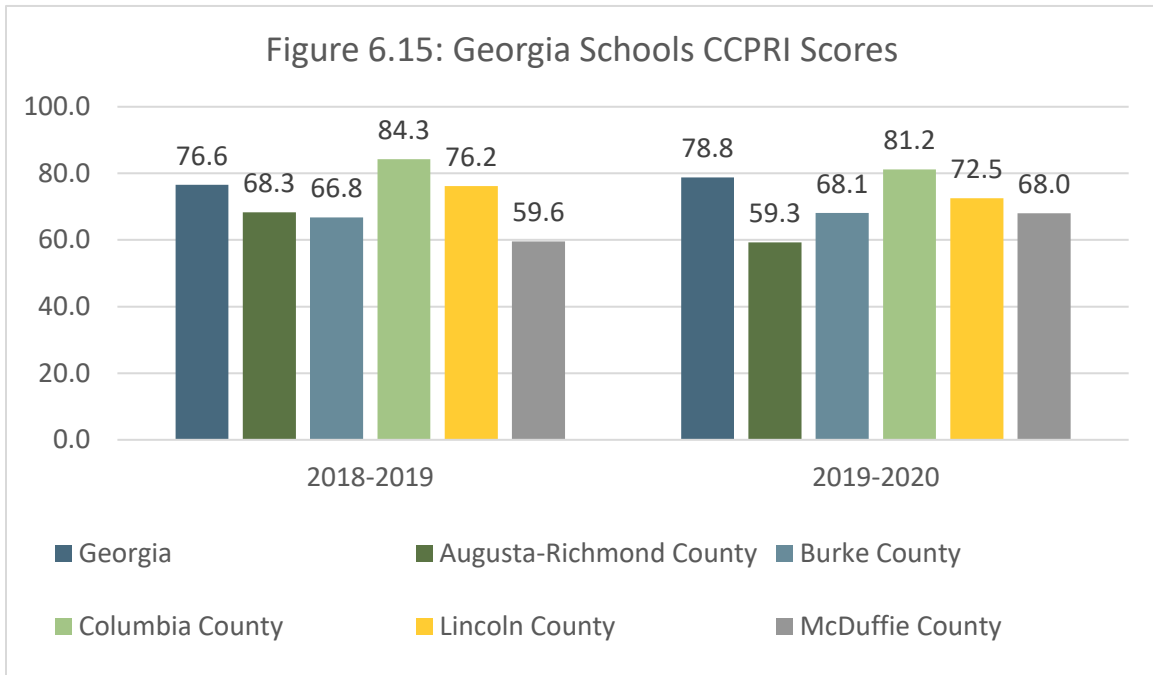
Figure 6.15: Georgia Schools CCPRI Scores

Fort Gordon Regional Growth Management Plan
Education Services: Education Needs Assessment

Figure 6.16: Per Pupil Expenditures

Georgia — $9,882	Augusta Richmond County — $8,985	Burke County — $12,922	Columbia County — $8,474	Lincoln County — $10,894	McDuffie County — $9,140
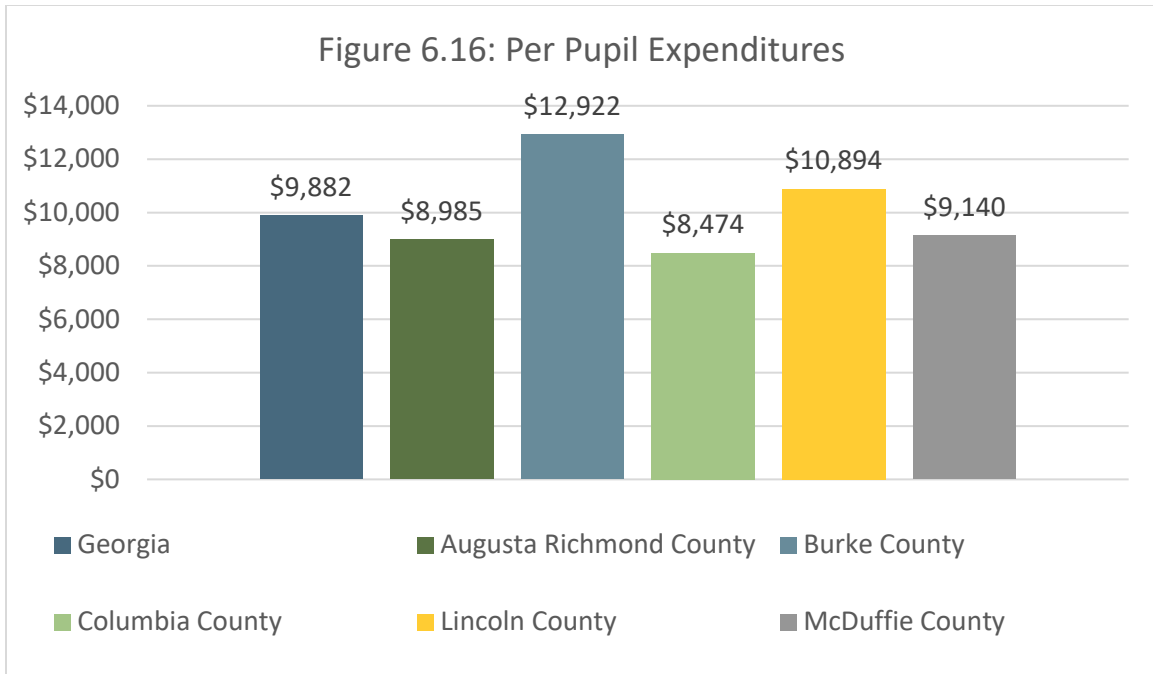
Georgia Public High School Standards

Table 6.6: Georgia Public High Schools – SAT 2020 Summary by District

County	SAT Test Takers	Total Mean Score	Evidence-Based Reading and Writing Mean Score	Math Mean
Augusta-Richmond	831	958	493	465
Burke	94	987	500	487
Columbia	1,228	1,087	551	535
Lincoln	48	992	506	486
McDuffie	101	986	506	480
Georgia	63,697	1,009	516	492

SAT results are based on graduating seniors in 2020. This report displays scores for those students who, at the time of test administration, indicated that they would be graduating in the 2019-20 school year. The College Board administered the first redesigned SAT in March 2016. This report includes senior test-takers who took the SAT in March 2016 or later. Students are counted only once, no matter how often they test, and only their latest score is used in these calculations.

Table 6.7: South Carolina Public High Schools – Mean SAT Scores for 2020 Graduating Seniors

Nation/State/County	SAT Test Takers	12th Graders	Percent Tested	Evidence-Based Reading and Writing	Math Score	Total Score
Nation	1,849,197			520	510	1,030
State	27,673	49,416	56.0%	519	499	1,019
Aiken	930	1,485	62.6%	515	488	1,003
Edgefield	97	191	50.8%	509	511	1,019

* Total scores are calculated using the actual (before rounding) score for each test.
**"12th Graders" = actively enrolled 12th grade students in SC Public Schools as of 135th day of school year 2020.
***"ERW" = Evidence-Based Reading and Writing.
Source: South Carolina Department of Education, 2021

6.2.3 Opportunities and Military Family Support Programs

Below is a list of military family support programs of which some but not all the Study Area jurisdictions are active participants.

Georgia Military Friendly Policies

There are several provisions, preserved in State of Georgia Statute, that support military students and their families. These provisions include:

→ Authorization for military school children to attend any school with a district that includes a portion of the military installation at which their parent is stationed.

→ Allows the children of service members to pre-enroll in a new school surrounding the installation their parent has been assigned to before establishing residency. This provision helps with class preregistration, enrolling in special learning opportunities, and joining charter school lotteries.

→ Provisions also include excused absences for students whose parents are deployed for combat, both before and during the deployment.

Purple Star Schools

The Military Child Education Coalition (MCEC) is the national advocate for the Purple Star School Program. The Purple State School program is a complete resource for schools designed to provide a toolkit to support the educational and social-economic challenges to military-connected children face as they typically move every two to three years. The goal is to keep students on track to be college, workforce, and life ready.

Purple Star Schools help military-connected students transition with:

→ School staff member training to facilitate entry into the new school

- → Student-led programs to foster social connections
- → A military family webpage on the school website
- → Some states have additional program requirements such as school-wide military recognition events that encourage tolerance and inclusion

Military Interstate Children's Compact Commission

The Interstate Compact on Education Opportunity for Military Children is an interstation compact among 50 states and the District of Columbia. The compact is intended to "address the perceived inequities facing schoolchildren of military parents when they are required to relocate across state lines" and provide for consistent policies in every school district in every member state.

The compact addresses issues surrounding eligibility, enrollment, placement, graduation requirements, transfer of AP scores. It applies to the children of:

- → Active-duty members of the uniformed services, including members of the National Guard and Reserve on active-duty orders pursuant to 10 U.S.C §1209 and 1211.
- → Members of veterans of the uniformed services who are severely injured and medically discharged or retired for a period of one year after medical discharge or retirement.
- → Members of the uniformed services who die on active duty for a period of one year after death.

Some states have also extended the compact to include the children of civilian Department of Defense employees.

HOPE Scholarship

Over $10 billion of financial assistance for education programs beyond high school has been made available from the Helping Outstanding Pupils Educationally (HOPE). The HOPE Scholarship is a merit-based award available to Georgia residents who have demonstrated academic achievement. A HOPE Scholarship recipient must graduate from high school with a minimum 3.00 grade point average and maintain a minimum 3.00 cumulative postsecondary grade point average to remain eligible. The scholarship provides tuition assistance to students pursuing an undergraduate degree at a HOPE Scholarship eligible college or university in Georgia.

6.2.4 Future Education Needs

Projected Growth

As discussed in Chapter 2, Demographics and Growth, the area where population is expected to increase the most is Columbia County, followed by Augusta-Richmond and Aiken Counites. Table 6.8 shows the overall population increases for counties within the Study Area.

Table 6.8: Study Area Population Increase Estimates, 2020-2030

County	2020 Population Estimate	2030 Population Projection	Population Change
Augusta-Richmond	202,570	212,942	10,372
Burke	22,307	22,205	-102
Columbia	159,405	195,167	35,762
Lincoln	7,853	7,420	-433
McDuffie	21,263	21,324	61

County	2020 Population Estimate	2030 Population Projection	Population Change
Aiken	171,320	179,433	8,113
Edgefield	27,150	27,513	363
Total	611,868	666,004	54,136

Source: Stantec, 2021

To analyze if adequate school capacity is available to meet future growth spurred by personnel increases at Fort Gordon, the number of school-aged children was projected. A planning horizon of 2024 was used, as this is the last year for which Fort Gordon Personnel projections are available. While the total number of students was projected using a constant-share approach applied to the overall population projections as described in Chapter 2, the grade level of each student was not extrapolated from this data. To generate projections by school type (elementary, middle, and high), a ratio for each school type was applied. While not used widely in Georgia and North Carolina, this method is used in other areas of the county to estimate the number of students that may be generated by proposed developments. The percentages used are Elementary (PreK-5th Grade) – 50%, Middle (6th Grade – 8th Grade) – 21%, and High (9th Grade – 12th Grade) – 29%. Please see Table 6.9, below, for the breakdown, by County, for the projected total number of students by school type.

Table 6.9: Projected Number of Students by County and School Type, 2024

County	2024 Elementary School Population Projection	2024 Middle School Population Projection	2024 High School Population Projection
Augusta-Richmond	18,875	7,927	10,947
Burke	2,298	965	1,333
Columbia	17,862	7,502	10,360
Lincoln	616	259	357
McDuffie	2,111	887	1,224
Aiken	15,107	6,345	8,762
Edgefield	2,317	973	1,344

Source: Stantec, 2021

Table 6.10, below, shows the number of projected students because of the buildup of personnel at Fort Gordon compared to a projection of student population based upon the state's baseline projection of population. The difference between these numbers shows the number of students by school type that are attributable to personnel growth through 2024.

Table 6.10: Number of Military Personnel Increase Related Students, 2024

County	Military-Related Population Projections	State Projections	Difference
Elementary School			
Augusta-Richmond	18,875	18,575	300
Burke	2,298	2,311	-13
Columbia	17,862	16,881	981
Lincoln	616	592	24
McDuffie	2,111	2,124	-13
Aiken	15,107	14,866	241
Edgefield	2,317	2,299	17

County	Military-Related Population Projections	State Projections	Difference
Middle School			
Augusta-Richmond	7,927	7,801	126
Burke	965	971	-5
Columbia	7,502	7,090	412
Lincoln	259	248	10
McDuffie	887	892	-5
Aiken	6,345	6,244	101
Edgefield	973	966	7
High School			
Augusta-Richmond	10,947	10,773	174
Burke	1,333	1,340	-8
Columbia	10,360	9,791	569
Lincoln	357	343	14
McDuffie	1,224	1,232	-7
Aiken	8,762	8,622	140
Edgefield	1,344	1,334	10

Source: Stantec, 2021

The projected increase in personnel at Fort Gordon is expected to lead to large increases in students in Augusta-Richmond, Columbia, and Aiken County. Table 6.11, below, shows the estimated capacity of schools within the Study Area, the schoolboard estimated student enrollment, military personnel-related increase, and the remaining capacity (or deficit) within each school type for the Study Area. Capacity data for Georgia are taken from Table 6.5. Capacity and enrollment data for South Carolina are derived from the capacity numbers found in Tables 6.2 and 6.3 and the projected school enrollment found in Table 6.10.

Table 6.11: Study Are School Capacity Estimates, 2025

County	Estimated School Capacity	Military Personnel Increase-related Students	Remaining Capacity or Deficit
Elementary School			
Augusta-Richmond	282	300	-18
Burke	102	-13	115
Columbia	-60	981	-1,041
Lincoln	19	24	-5
McDuffie	-26	-13	-13
Aiken	-1,023	241	-1,264
Edgefield	-1,189	17	-1,207
Middle School			
Augusta-Richmond	128	126	2
Burke	7	-5	12
Columbia	-36	412	-448
Lincoln	(See High School)	10	(See High School)
McDuffie	18	-5	23

County	Estimated School Capacity	Military Personnel Increase-related Students	Remaining Capacity or Deficit
Aiken	1,383	101	1,282
Edgefield	-366	7	-373
High School			
Augusta-Richmond	251	174	77
Burke	11	-8	19
Columbia	-44	569	-613
Lincoln	16	14	-10
McDuffie	19	-7	26
Aiken	-254	140	-394
Edgefield	-134	10	-144

Source: Stantec, 2021

The above capacity analysis demonstrates that the buildup in personnel at Fort Gordon has the potential to increase the demand for schools, which is beyond their current capacity in many counties. Of those most affected, Columbia County has plans to build two new Elementary Schools, one new Middle School, and one new High School. Depending on the size of these schools, they may be sufficient to accommodate the projected student population. Augusta-Richmond County has no new schools planned at this time, and existing schools are projected to exceed their capacity. Aiken County is projected to exceed its school capacity in Elementary, Middle, and High Schools. The County has plans to construct a new elementary school with a capacity of 1,500 (750 elementary students and 750 middle school students). However, this may not be enough capacity to absorb the projected number of students. The analysis also shows a deficit in Edgefield County school capacity, although the projections contribute to this deficit nominally.

As part of the Education analysis, the number of students with a military active-duty parent or guardian and students with a military parent or guardian in the reserves was analyzed. Below are tables that show first the current numbers and then they calculate the projected numbers out to 2030. Similar data is collected for students in South Carolina, however, according to the School Boards who provided the data, it is pertinent to Fort Jackson, South Carolina and not Fort Gordon, Georgia.

Table 6.12: Study Area Count of Students with Parent/Guardian in Active-Duty Military Service, 2020

	Active-Duty Military Personnel, 2019	Students with Active-Duty Parent, 2019	Active-Duty Student to Personnel Ratio	Projected Active-Duty Military Population, 2024	Projected Students with Active-Duty Parent, 2024	Projected Increase in Students, 2019-2024
Burke	51	30	0.59	54	32	2
Columbia	3,471	3,701	1.07	3,745	3,993	292
Lincoln	13	0	0.00	15	0	0
McDuffie	107	97	0.91	112	101	4
Richmond	5,974	1,262	0.21	6,557	1,385	123
Aiken	349	326	0.93	374	349	23
Edgefield	34	34	1.00	36	36	2

Source: Derived from Georgia Department of Education and Aiken County School Board, Stantec, 2021

The numbers in the above referenced table were added to an exhibit depicting population projection to identify where population growth and decline are anticipated in relation to the highest concentrations of students with a parent or guardian in active military service.

Figure 6.17: Student Population with Active-Duty Military Parent, 2019, 2024
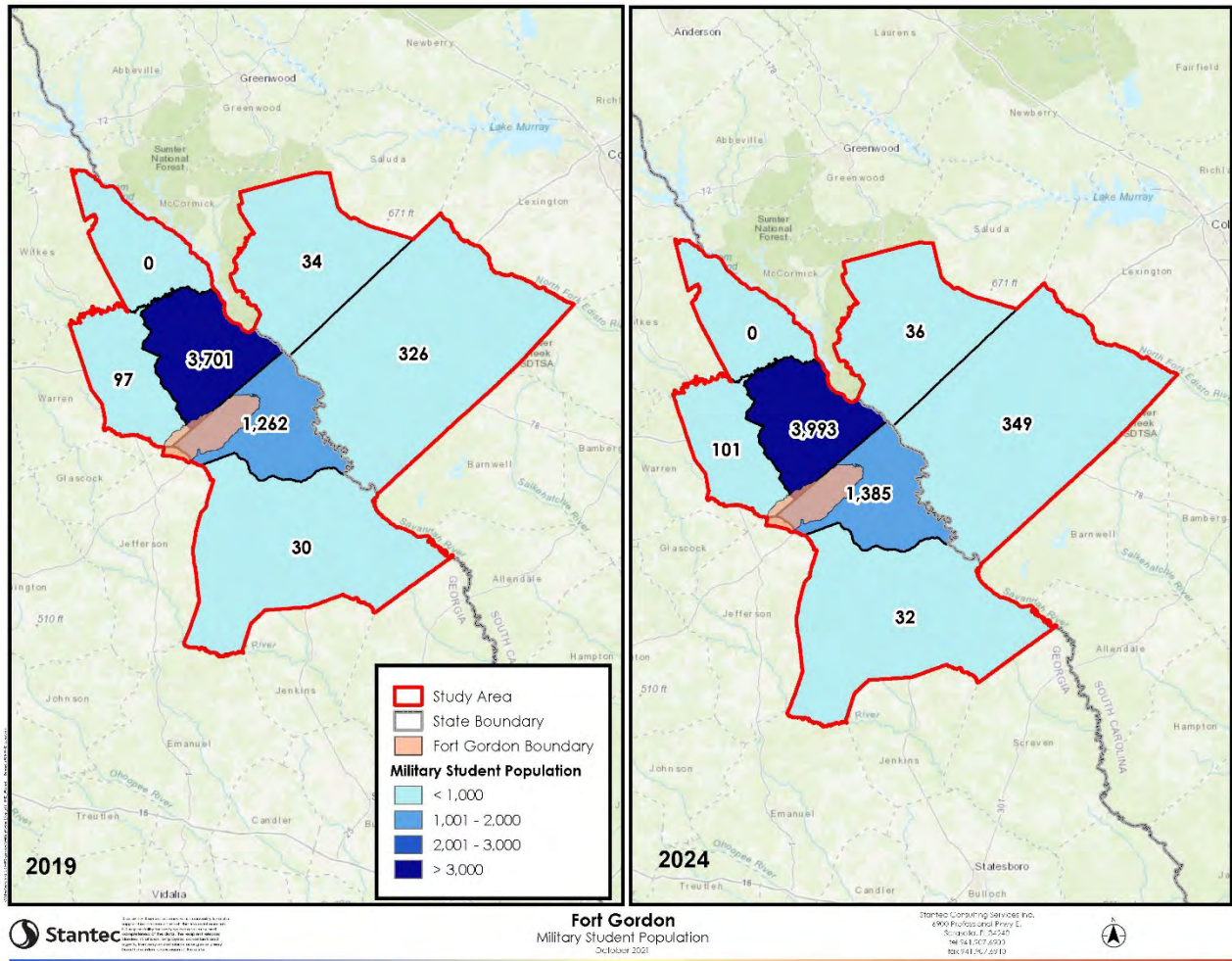
6.2.5 Projected Population Projections

The following exhibit depicts the areas with the highest number of children. The highest concentrations of school age children are in Columbia County which coincides with the preceding exhibit showing the highest number of students with active military or military reserve parent or guardian.

Figure 6.18: Study Area School Age Children Population
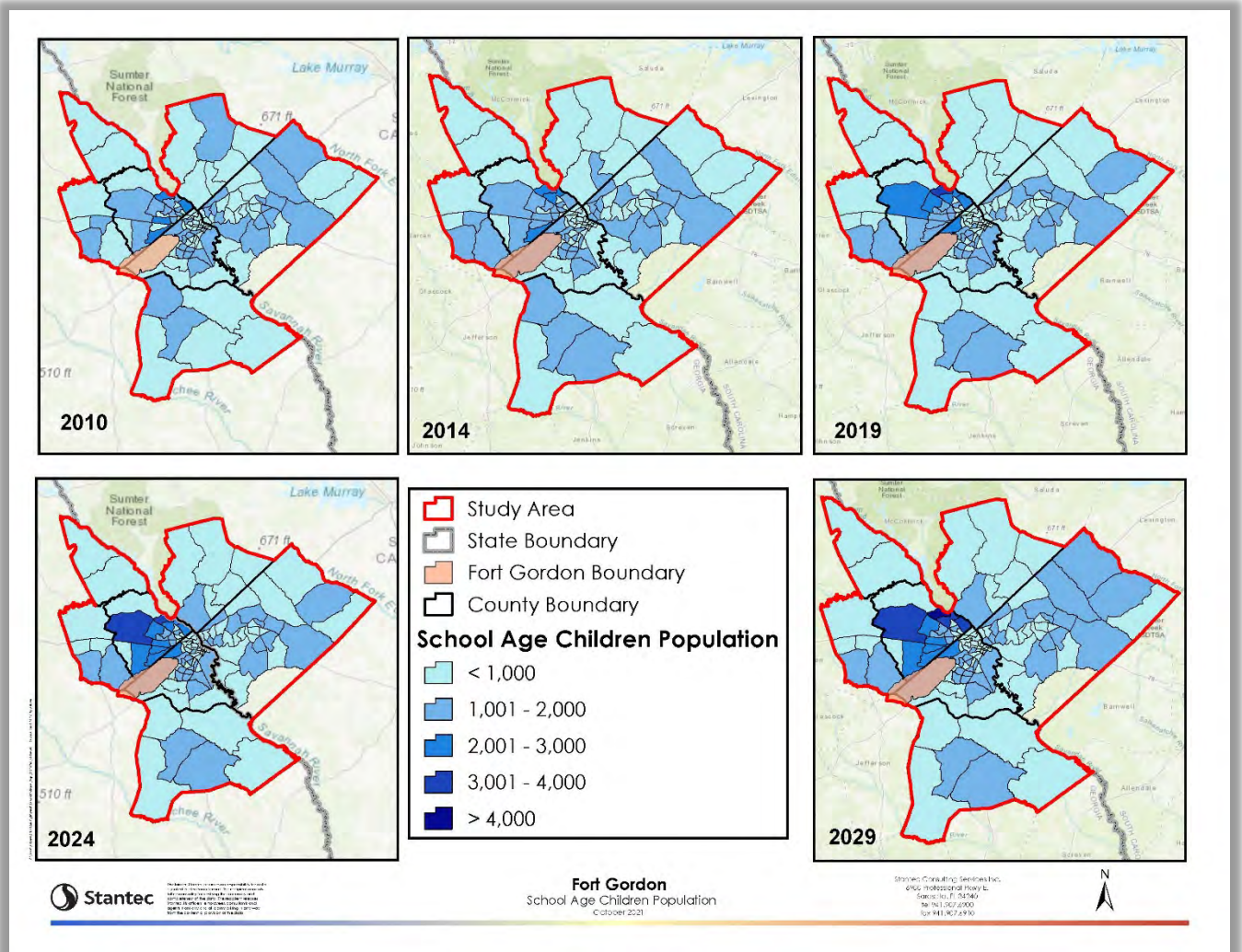
6.3 Recommendations

School Capacity and New Schools

For Georgia, as detailed in Section 6.2. and throughout this chapter, the highest projected growth for new students is anticipated in Columbia County. By 2025, there are five new schools planned for Columbia County: two new elementary schools, one new middle school, one new high school which will alleviate any capacity issues. McDuffie School Board has plans to construct one new elementary school in 2025.

For South Carolina, one new school is planned for Aiken County, Highland Springs Elementary/Middle School. The school design plans were recently reviewed by the Aiken County School Board. Within Edgefield County, improvements are currently underway at Merriweather Elementary School and Strom Thurmond High School and Career Center.

Enrollment projections provide one estimate of how much the growth at Fort Gordon could impact school capacity. As growth continues in the Study Area, on-going evaluations will be needed by each school board

to evaluate and update facility plans for school improvements and plans for new school construction. It is recommended that each school board continue to monitor growth and locate new schools in the areas of highest growth.

School Boards and County Planning staff should partner to estimate the impact of developments on school capacity and to coordinate the location of schools. The coordination could involve the use of a generation rate assigned to each type of dwelling unit in order to estimate the number of students that each development may produce.

Increase Education Standard Test Scores

One of the top criteria in attracting talent to support the Fort Gordon "Cyber District" is the availability of quality education. Families want to live in communities with higher performing schools.

It is recommended that schools work towards increasing school performance. The Georgia Department of Education has a process to improve schools. This process includes:

→ **Step 1: Identify Needs** – Consult a variety of sources to determine what within the district needs improvement. Plan and prepare for the process; collect and analyze data; identify needs; and conduct a root cause analysis.

→ **Step 2: Select Interventions** – Research a variety of sources to determine the solutions that have a good chance of meeting the identified district needs. Consider all the evidence needed for improvements; research possible interventions; and determine if staff has the capacity to implement possible interventions.

→ **Step 3: Plan Implementation** – Develop a team and plan to implement the solutions that are most promising and can be carried out at the school. Identify roles and responsibilities of those implementing the intervention; develop an implementation team and timeline; identify resources and supports needed for the intervention implementation; and track implementation.

→ **Step 4: Implement Plan** – Carry out the plan to implement promising solutions, making real-time adjustments where and when needed. Collect information to monitor the quality of supports being provided for the intervention; consider what additional information is needed to determine if intervention is working, assess the degree to which the implementation plan is being followed; identify ways to break down any barriers; identify and track progress; and build capacity of others to facilitate the improvement process now and in the future.

→ **Step 5: Examine Progress** – Determine whether the implementation of the promising solutions is meeting the originally identified needs of the school. Determine if the staff can formally study the effects of the intervention to share with others in the field; monitor implementation and progress against defined goals; define reasonable expectations for success; identify and track progress and performance; develop a plan for how knowledge about the intervention will be shared with others; and use the evidence to determine whether should continue as is, be modified, or be discontinued.

Expand Cyber Curriculum in Schools

While a Cyber curriculum is taught in many of the Study Area schools, it is not yet available in all of them. It is recommended that school districts consider expanding Cyber curriculum teachings to those schools that do not yet offer it in their curriculum to create easy access. This Cyber curriculum provides a head start for students wishing to pursue a Cyber career and also trains a future local Cyber workforce.

Modernize Technology

Invest in technology upgrades to improve operational efficiency.

Teacher Staffing and Recruiting

According to efficiency reports, strategic plans, and interviews with school board staff, there is a need for additional teachers in the Study Area. Recommend the continuation of efforts to recruit teachers at in state and out of state teaching colleges.

Support Military Families and Use of Established Military Family Support Programs

Military families face unique circumstances with frequent moves resulting in lost credits, missed lessons, and impacts on grading and graduation requirements. Raise awareness to all Study Area schools of available education support programs for military families, e.g., Purple Star school program.

Funding

Funding sources for education includes a variety of funds such as general funds, debt service funds, bonds, ESPLOST, Impact Aid Funding, among others. New schools generally cost between $20 million for elementary schools to $30 million for high schools. Location and amount of land needed can greatly influence the costs of schools, with high schools generally requiring more land for parking and sports fields than elementary and middle schools.

The funding options below could potentially address facility improvements, equipment, and provide new school sites.

→ **Partnerships with Developers** – When new large scale residential developments are being rezoned, partner with community planners and developers for dedication of land for future school sites. This strategy has helped to provide land for a needed school in Dalton, Georgia in 2017. Donation of land for schools is supported by State of Georgia Code (GA Code §48-7-29.12) which provides a tax credit for the donation of real property to governmental agency or a bona fide charitable nonprofit organization.

→ **Charitable Foundations and Organizations** – Thousands of private foundations, corporations, and associations are dedicated to education-related objectives. Among the multitude of resources for searching is the website https://www.instrumentl.com/. These grants can be used to obtain additional educational materials that may not be included in a typical school budget.

→ **Federal Grants, Funding and Benefit Program** – Beyond Department of Education Funding, federal CARES Act and additional grants are available. The following is a website that provides information on such programs https://www.grants.gov/.

6.4 Implementation Plan

The recommendations summarized above have been divided into a timeline. Short-term actions should be undertaken within 1-3 years; mid-term actions should be undertaken within 4-5 years, and long-term actions should be undertaken within 5+ years. Ongoing indicates activities that should be undertaken annually or regularly within the planning timeframe.

Identification of Issues, Goals, and Strategies		Party Responsible	Timeline
Education			
New Schools and Facility Improvements			
Goal	Construct new schools based on capacity levels.		
Strategy 6.1	School boards annually track school facility needs including need for new schools and facility renovations. Continue these efforts and collaborate with local planning departments to track new residential growth to identify where growth and demand will be highest.	School Boards	Short-term
Increase Education Accountability System Scores			
Goal	Raise performance on state and federal accountability scorecards.		
Strategy 6.2	Utilize the Georgia Department of Education model for improving supportive learning environments.	School Boards	Mid-term
Cyber Curriculum Expansion			
Goal	Expand Cyber Curriculum in Schools		
Strategy 6.3	Foster collaboration between schools that have a Cyber curriculum and those that do not by to sharing how the model curriculum is taught.	School Boards	Short-term
Modernize Technology			
Goal	Modernize technology used in schools and to support education services.		
Strategy 6.4	During annual facility plan reviews, review technology as upgrades can improve operational efficiency.	School Boards	Ongoing
Teacher Staffing and Recruiting			
Goal	Explore ways to increase recruitment and retention of teachers.		
Strategy 6.5	Continue to recruit teachers at in state and out of state teaching colleges.	School Boards	Short-term
Support Military Families and Use of Established Military Family Support Programs			
Goal	Support military families and use of established military family support programs.		
Strategy 6.6	Raise awareness of all Study Area schools of available education support programs for military families, e.g., Purple Star school program.	School Boards	Short-term
Funding			
Goal	Utilize alternative funding sources.		
Strategy 6.7	Work with community planners to identify upcoming large-scale residential developments. Partner with developers for dedication of future school sites.	School Boards, Planning Departments	Mid-term
Strategy 6.8	Apply for charitable foundation and organization grant opportunities that support education-related objectives. Beyond standard federal funding, search for additional grant opportunities.	School Boards	Short-term

Chapter 7:

Health Care Analysis

7 Health Care

7.1 Overview

This chapter examines the impact of Fort Gordon growth on health care in the Study Area. Richmond County is the core metropolitan county that is home to the City of Augusta. Fort Gordon is also primarily located in Richmond County, approximately ten miles southeast of Augusta. However, 67 percent of the metro area population is in the other six component counties, comprising one integrated economic and population center.

For comparison purposes, this analysis will concentrate on three years: 2013, 2019, and 2030. The year 2019 is the most recent available data for key data sources used in this section. The year 2013 is a baseline date after recovery from the Great Recession, and the Year 2030 is five years after the Installation expansion is complete.

7.1.1 Analysis Approach

Health care is a very broad and diverse field. The topic can include personal preventive health such as smoking and mental health that fall under the domain of public health, and it includes health care access issues such as the availability of health care providers and the ability to pay (i.e., health coverage).

The analysis addressed these two factors by taking an "exacerbation and gaps" approach. Exacerbation will be used to examine public health issues, and particularly identifying those that will be disproportionately impacted by the influx of a new military-oriented population. The gaps approach will examine areas, and particularly occupations, where the Study Area will require growth to maintain key capacity levels, and/or where the Study Area is currently underrepresented compared to national-level or regional figures.

7.2 Demographic Overview

Historic population data shows an increase in the Study Area. From 2013 through 2019, the population grew by 3.4 percent. From 2019 to 2025, the population is projected to grow by 7.3 percent, fueled in part by growth at Fort Gordon, before slowing again to a 3.5 percent rate during the next five years after the Installation expansion is complete in 2025. See Figure 7.1 and Figure 7.2.

As an initial assumption, it is assumed that the demographics of the military growth generally align with the current Installation demographics, which will drive the conclusions of the following analysis.

Figure 7.1: Study Area Population Change

Source: Stantec, 2021.

Figure 7.2: Study Area Population Change by Type

Legend: Base Population, Natural Growth, Direct Military Increase, Indirect Military Increase
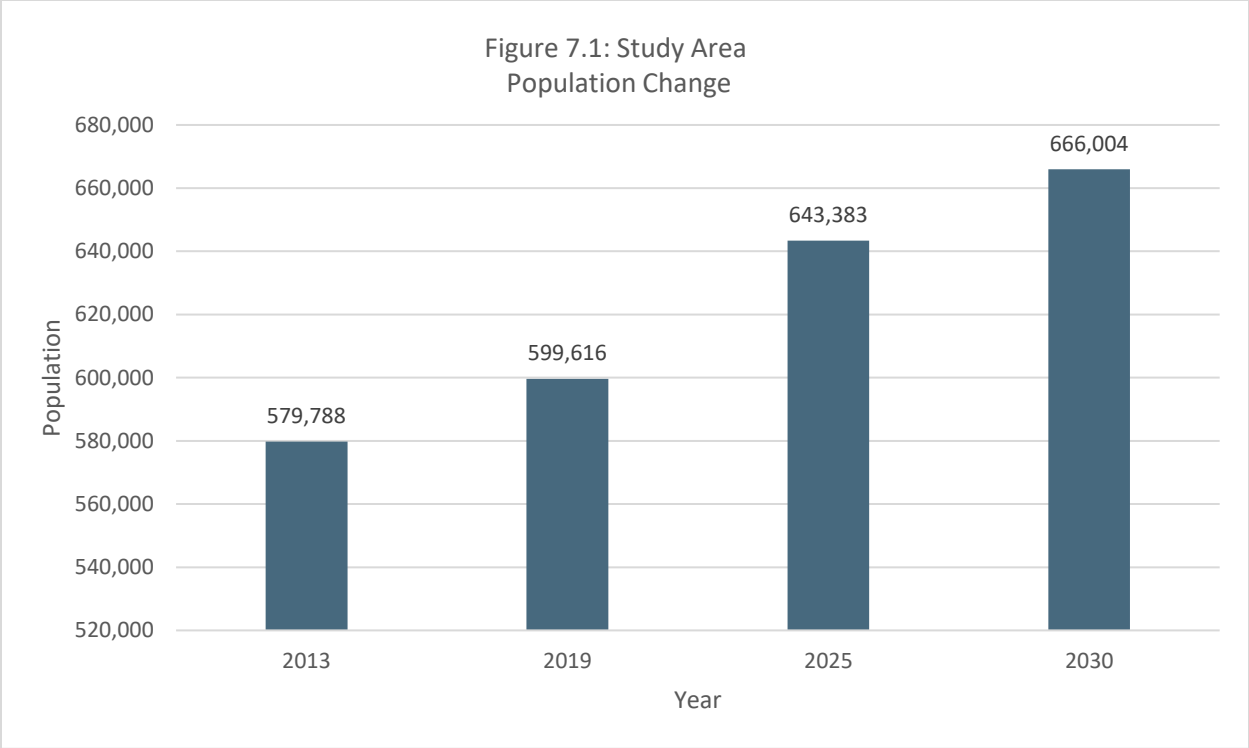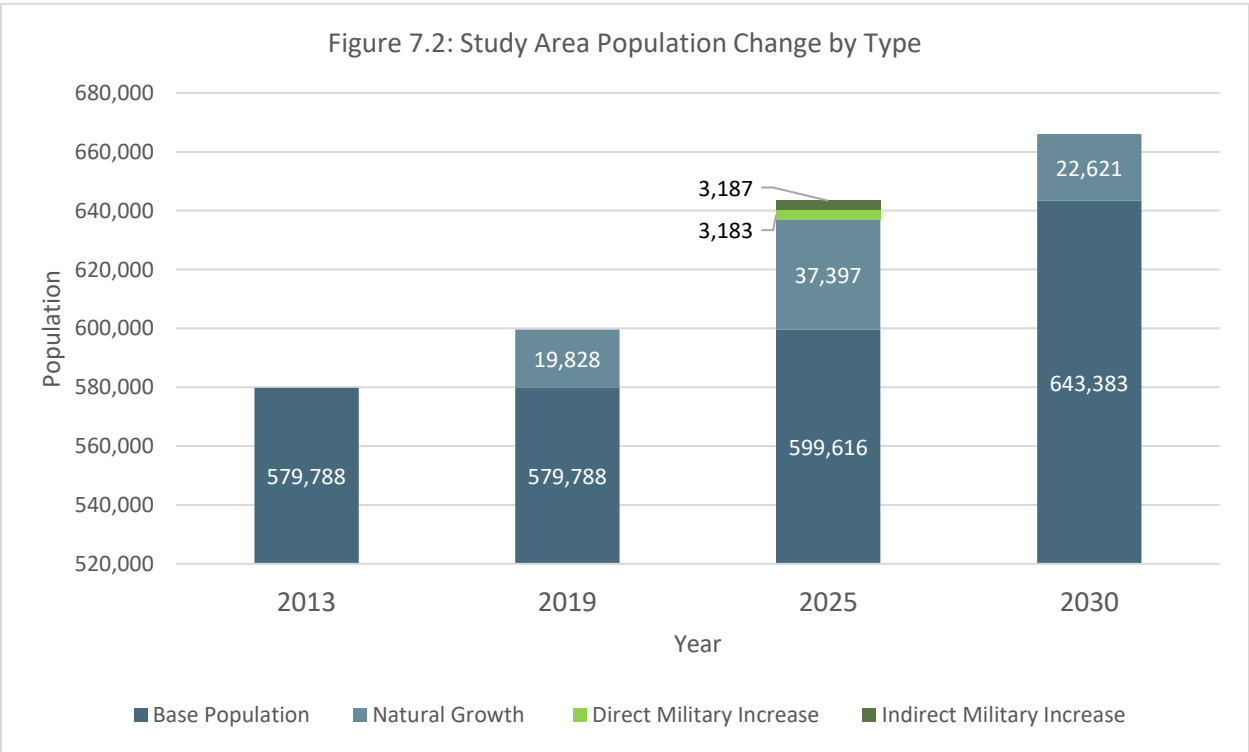
Source: Stantec, 2021.

The Study Area's military population currently exists generally in a narrow age band of the 20s and 30s. Assuming that the direct military growth will be similar in structure, the impact of the growth will be somewhat diluted in terms of impacting senior health needs.

Additionally, the indirect military growth will likely be a subset of age bands as it will include working-age people and children, but likely few seniors.

Figure 7.3 shows the age distribution of military personnel and others in their household (indirect military) and then compares them to the general non-military population in the area.

Figure 7.3: Military Age Profile in the Study Area
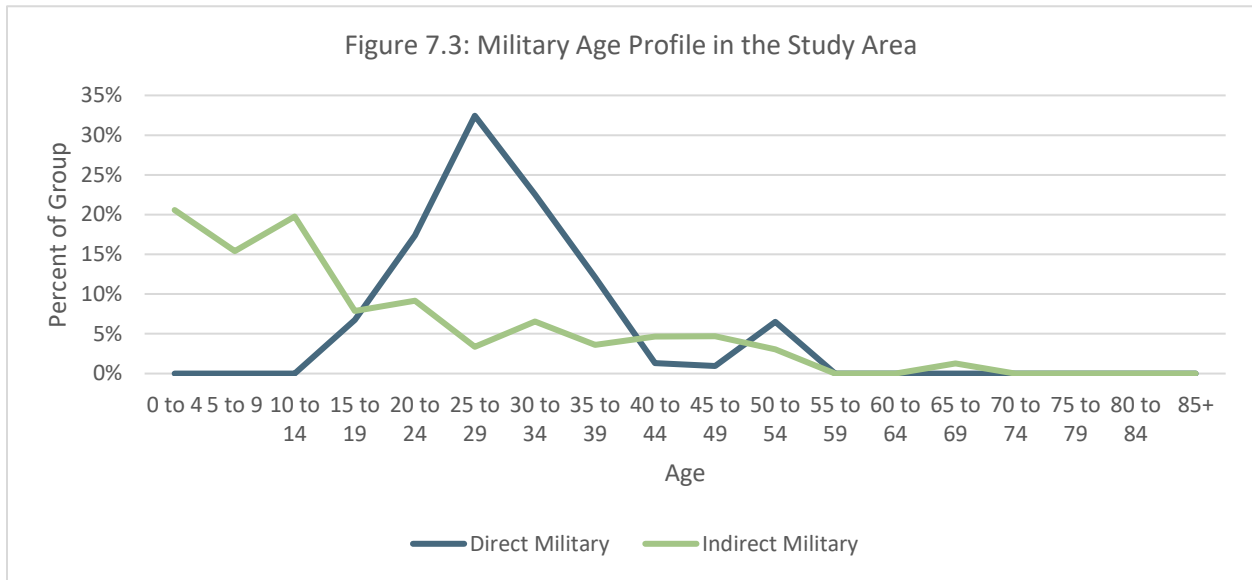
Source: American Community Survey, US Bureau of the Census, 2021

Combining the direct and indirect military highlights that military growth will tilt toward younger age demographics, and particularly the 20 to 34 age group (see Figure 7.4).

Figure 7.4: Military/Non-Military Age Profile in the Study Area
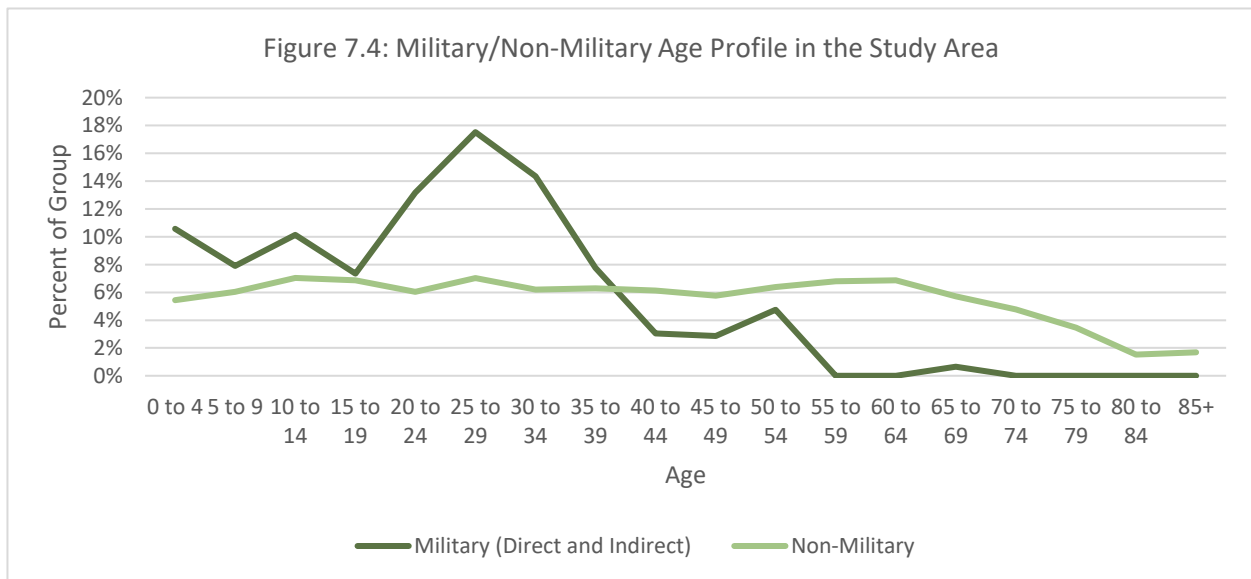
Source: American Community Survey, US Bureau of the Census, 2021

Due to these age differences, growth in the military population will likely take a different path of growth among a non-military population. Figure 7.5 compares the projected growth profile of the military population (direct and indirect) versus a hypothetical growth profile of the general population. The graph shows that the military population growth will have a much younger skew.

Figue 7.5: Military versus Same Level of Non-Military Growth
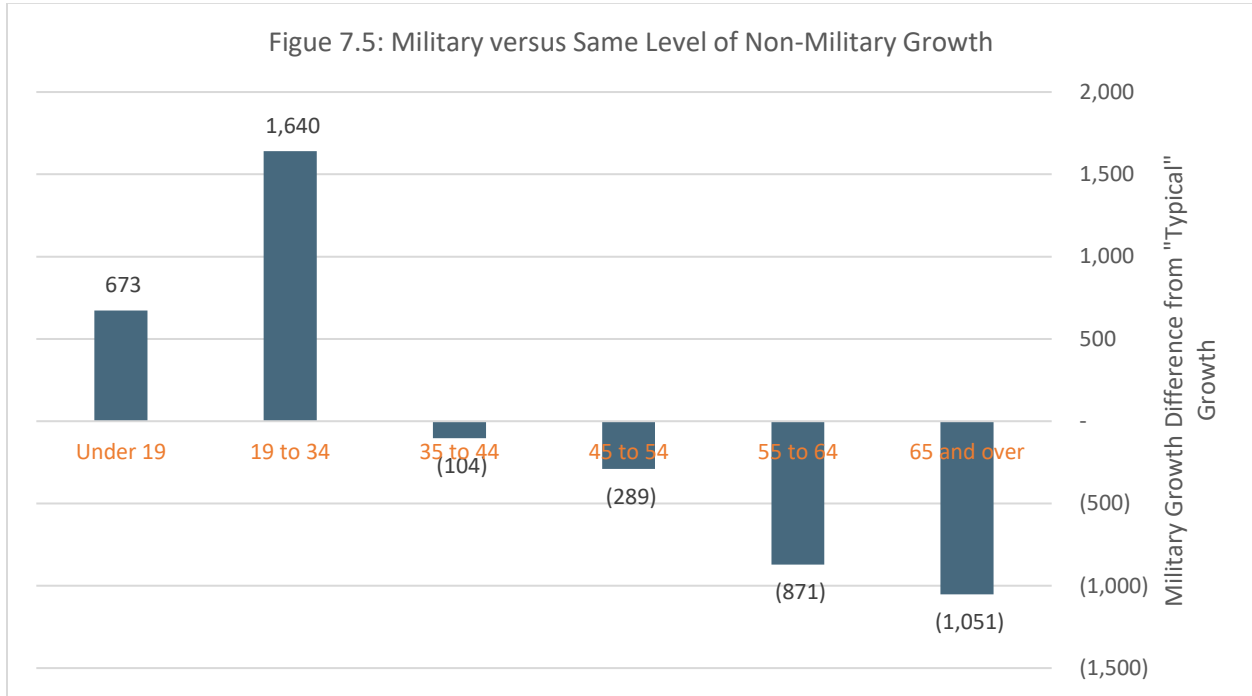
This growth profile will have differences in terms of stress on the health care system. Figure 7.6 shows that younger populations tend to require less health care.
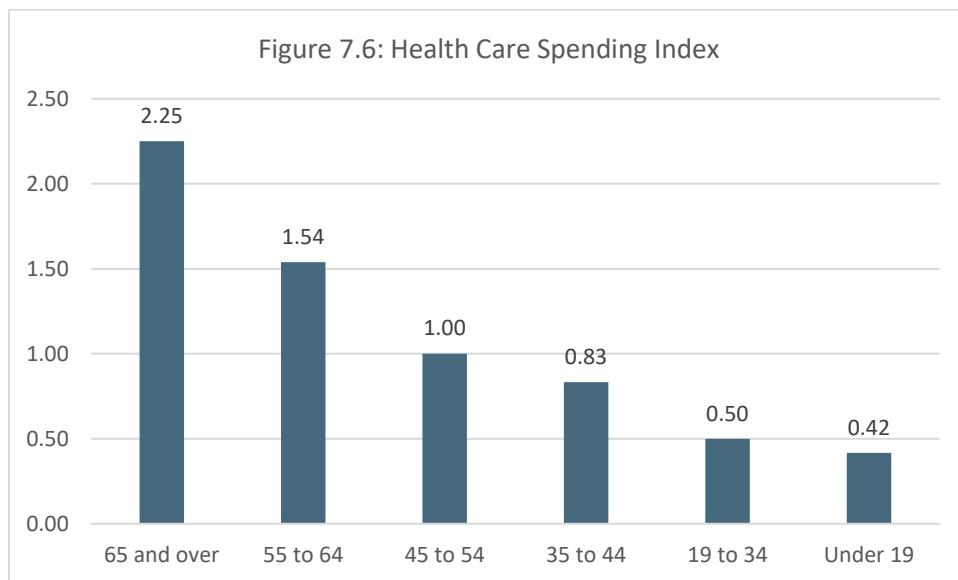
Figure 7.6: Health Care Spending Index

The net result of the military age skew is that health needs and health issues that affect people in their 20s and 30s will be of particular interest when considering health care impacts. Additionally, growth among the military population will produce only 54 percent of the demand on health care that a corresponding general population growth would incur.

Installation growth may potentially have an impact on gender breakdowns in the Study Area since the active military population tends to be disproportionately male. Figure 7.7 shows that the anticipated majority of military population increase would be male, based on existing gender population figures.

However, the indirect military population increase includes a significant number of family members of military personnel and exists at a 50/50 breakdown by gender. Therefore, while the population increase will skew more male than a corresponding natural increase, the gender impact will likely not be skewed enough to create notable gender-specific impacts.
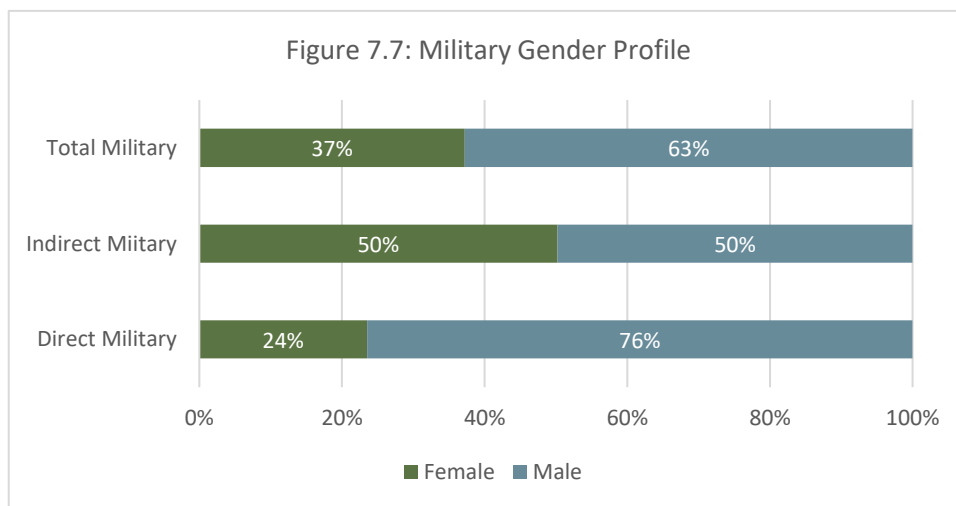
Figure 7.7: Military Gender Profile

	Female	Male
Total Military	37%	63%
Indirect Military	50%	50%
Direct Military	24%	76%

Source: American Community Survey, US Bureau of the Census, 2021

Figure 7.8: Race and Ethnicity Profile in the Study Area

	Non-Hispanic White Alone	People of Color
Military	51%	49%
Non-Military	53%	47%
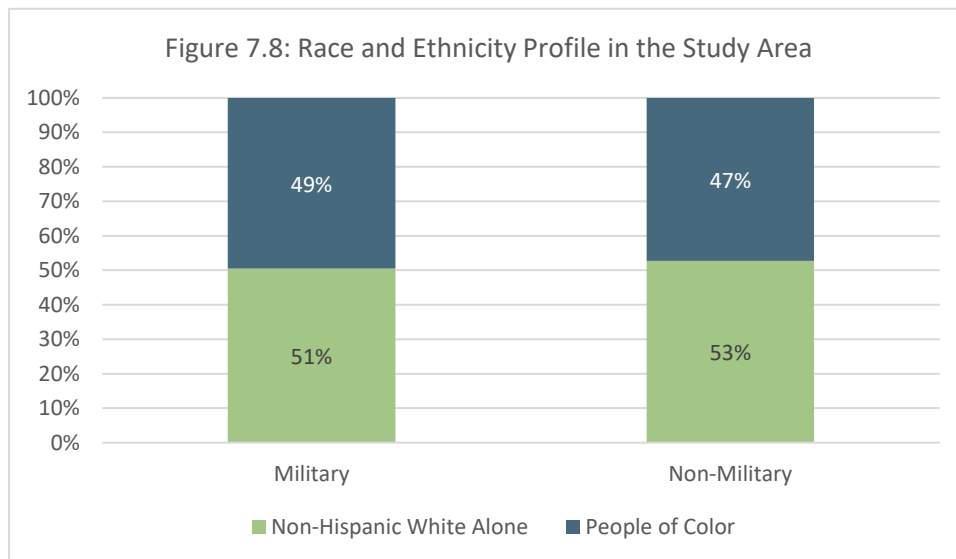
Source: American Community Survey, US Bureau of the Census, 2021

The growth at Fort Gordon will slightly increase the proportion of BIPOC (black, Indigenous, and people of color) people in the metro area, though the change will be negligible (see Figure 7.8).

Another key differentiating factor is health coverage, which is provided for all military personnel and households through the TRICARE program (with a handful of exceptions). Under the Affordable Care Act, a strong majority of the non-military population also have health coverage, but the figure is not generally all-encompassing, as seen in the military (see Figure 7.9).

Despite having military health coverage, it should be noted that military personnel often use civilian health care, with TRICARE-related expenditures of nearly $168 million in local health care purchases during Fiscal Year 2019, according to data from the EAMC Resource and Analysis Division.

Figure 7.9: Health Coverage in the Study Area

Military Households: 99%
Non-Military Households: 88%
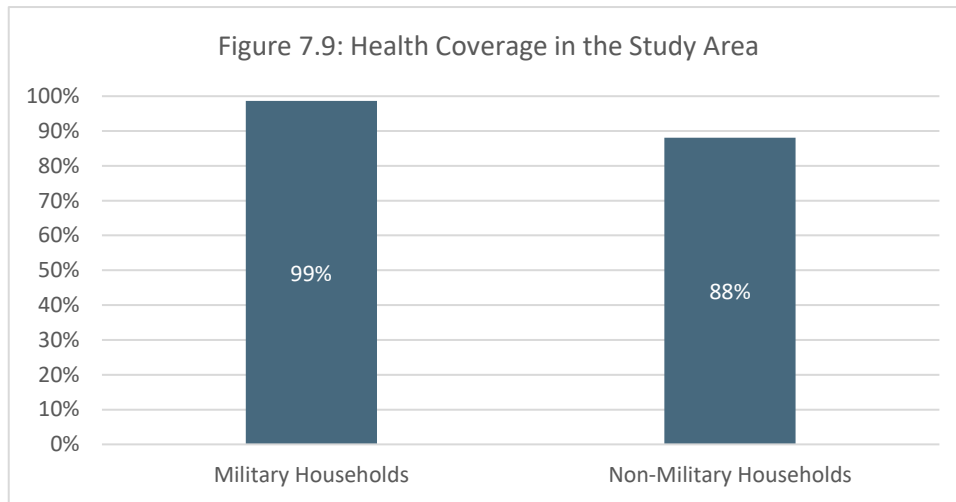
Source: In-depth analysis of American Community Survey, US Bureau of the Census, 2021

The military population also skews toward higher education levels in the local area, with more college degrees and fewer people who did not complete high school. Figure 7.10 includes only people of age 25 or older.

Figure 7.10: Educational Attainment, Age 25+, Study Area

	Direct Military	Indirect Military	Military (Dir and Ind)	Non-Military
College Degree	63%	34%	55%	34%
HS Diploma	37%	66%	45%	54%
No Diploma				12%

No Diploma ■ HS Diploma ■ College Degree
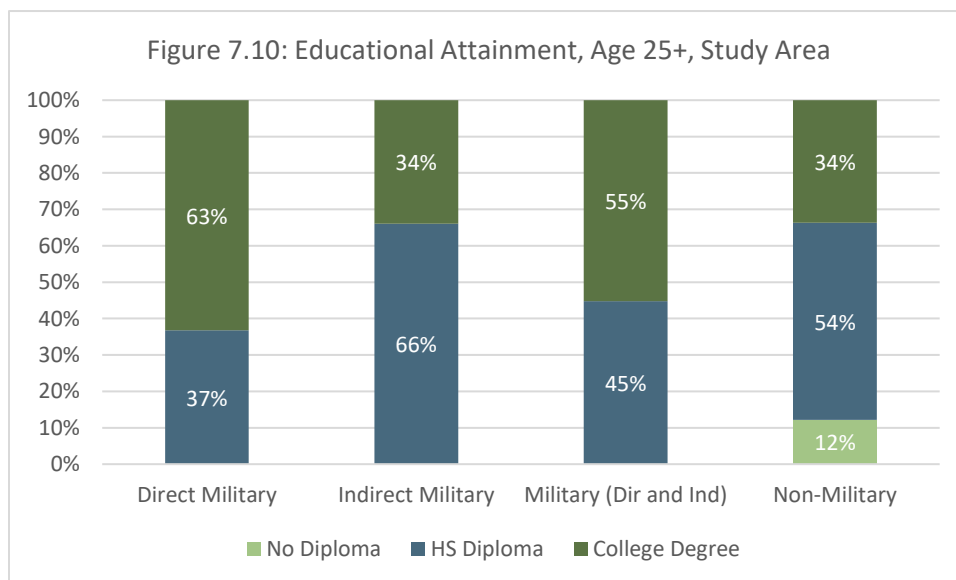
Source American Community Survey, US Bureau of the Census, 2021

7.2.1 Key Public Health Issues

The first set of issues to consider is those that are related to healthy behaviors and healthy environments. The analysis examined existing studies in the Study Area, and then identified whether those issues would be disproportionately impacted by the addition of a significant influx of military-oriented population. The following issues are deemed to be of high priority for improvement in the Study Area or in constituent parts of the metro area. These include:

→ Substance abuse, including opioids
→ Mental health, including depression, anxiety, and bullying among youth, sedentary lifestyle
→ Lack of transportation leading to (or related to) poverty
→ Aging issues
→ Leading causes of death such as cancer and heart disease
→ Above-average causes of death such as lung, colorectal, and breast cancer.
→ Early diagnosis of cancer among people of color
→ Leading health problems include Cancer, hypertension, obesity, poor nutrition, diabetes, heart disease, substance abuse, opioid abuse, STDs, and arthritis
→ Low medical IQ in terms of healthy living and preventive care and medical language
→ Tobacco use
→ Health coverage
→ Dental care
→ Lack of primary care physicians
→ Lack of capacity in community health clinics
→ Food deserts
→ Affordable housing

When considering which of these will be most impacted by the Installation expansion, two factors come into play: the unique attributes of the military community and the sheer size of the expansion. Size will have impacts on all the above areas, of course, but when considering the military community's attributes, one can identify areas where impacts will likely be larger or smaller than the increase would normally produce (see Table 7.1). Those areas where the impacts may be disproportionately large warrant special consideration.

Table 7.1: Public Health Relative Impacts

Proportionately Larger Impacts	Proportional Impact	Proportionately Smaller Impact
• Substance abuse	• Lack of primary care physicians • Mental health • Diagnosis and preventive care among people of color	• Aging • Causes of death • Health coverage • Dental care • Affordable housing • Lack of transportation • Tobacco use • Low medical IQ • Food deserts

Source: Corona Insights, 2021

		• Community health clinic capacity

The demand for all health care will increase due to the scale of the population growth. However, because the population growth will skew toward younger adults with health coverage and jobs, challenges such as aging, and lack of health coverage will rise at a proportionally lower rate. Similarly, poverty-related social determinants like housing and transportation, and community issues such as food deserts and clinic capacity will increase in need, but at a lower rate than might be expected given the population growth since part of the new population will arrive with jobs and health benefits in hand.

Similarly, there is no strong indication for or against other issues like mental health and lack of primary physicians being disproportionately impacted.

If the military population is slightly more likely to be BIPOC, then early diagnosis can be disproportionately impacted, but as noted, the variation between the military and non-military populations is negligible.

While the more highly educated characteristics of the military population may point toward less substance abuse, the younger age profile points toward higher substance abuse. This would indicate that substance abuse is an area where extra effort should be considered.

7.3 Health Care Provision Gaps

Various methods and data sources are used to examine health care provision gaps.

The analysis examines the presence of health professionals in the Study Area, drawing on comparisons of per-capita health professionals versus the two-state Georgia-South Carolina area. This analysis identifies areas where the supply of health care might be constricted and per capita rate changes using a third measure for selected health professionals.

7.3.1 Occupational Presence in the Study Area

The first analysis examines the density of various occupations. An index measure that compares the Study Area to the national average and the two-state Georgia/South Carolina region was developed. The index is the per-capita presence of an occupation in the Study Area divided by the per-capita presence of that same occupation in the two-state region. Therefore, an Index of 1.0 means that the Study Area has an average presence of that occupation relative to the region. An index of less than one means that the Study Area has a lower presence of that occupation than average, and a presence of greater than one means that the Study Area has an above-average presence.

A low index does not necessarily mean that a profession is underserved in an absolute sense since the figures are relative to the regional average, and similar a high index may not mean that a profession is overserved. It merely indicates a higher likelihood of those things.

These figures are based on current populations. A notable increase in population will push these indices lower.

A number of occupations are underrepresented, as shown in the Table 7.2. However, a few patterns and key occupations particularly stand out.

→ Pharmacy staff are underrepresented.

- → A number of technician fields are underrepresented, including MRI, sonogram, radiologic, and laboratory technicians.
- → Various types of therapists are slightly underrepresented.
- → First-line care occupations such as paramedics and personal care aides are underrepresented.

Table 7.2: Underrepresented Occupations in the Study Area

Occupation	Workers Per 10,000 People			Index Weight
	Study Area	GA-SC	USA	(Study Area to National)
Speech-Language Pathologists	1.43	5.20	6.25	0.27
Chiropractors	0.72	2.23	2.23	0.32
Nurse Practitioners, And Nurse Midwives	2.53	6.88	7.16	0.37
Radiologic Technologists and Technicians	3.55	7.52	7.33	0.47
Physician Assistants	1.64	3.38	4.65	0.48
Opticians, Dispensing	0.96	1.98	2.50	0.48
Emergency Medical Technicians	2.77	5.45	4.65	0.51
Surgeons	0.63	1.22	1.88	0.52
Pharmacists	6.35	12.04	11.56	0.53
Other Healthcare Practitioners and Technical Occupations	1.86	3.11	3.36	0.60
Dental Hygienists	5.10	8.36	6.93	0.61
Veterinarians	1.68	2.75	3.12	0.61
Pharmacy Technicians	8.44	13.81	13.55	0.61
Clinical Laboratory Technologists and Technicians	7.48	11.27	11.97	0.66
Personal Care Aides	24.49	32.44	56.30	0.75
Occupational Therapists	2.09	2.66	4.57	0.79
Magnetic Resonance Imaging Technologists	1.09	1.35	1.51	0.81
Diagnostic Medical Sonographers	2.00	2.48	3.10	0.81
Miscellaneous Health Technologists and Technicians	3.54	4.01	5.36	0.88
Other Therapists	3.70	3.92	6.64	0.94
Surgical Technologists	4.38	4.53	3.67	0.97
Physical Therapist Assistants and Aides	3.06	3.09	4.36	0.99

Source: American Community Survey, US Bureau of the Census

Professions that are over-indexed (see Table 7.3) include both doctors and registered nurses, dentists, and various types of assistants (medical, dental, nursing, respiratory, and therapy). However, the large educational presence in fields such as medicine, nursing, and dentistry may be artificially inflating these indices since academic staff are included in the data.

Table 7.3: Overrepresented Occupations in the Study Area

Occupation	Workers Per 10,000 People			Index Weight
	Study Area	GA-SC	USA	(Study Area to National)
Physical Therapists	6.82	6.76	9.11	1.01
Veterinary Assistants and Laboratory Animal Caretakers	2.08	1.90	2.28	1.09
Physicians	28.69	24.54	30.34	1.17
Paramedics	5.48	4.52	4.18	1.21
Registered Nurses	136.64	110.93	116.96	1.23
Dietitians and Nutritionists	4.38	3.15	3.68	1.39
Home Health Aides	10.78	7.69	21.85	1.40
Licensed Practical and Licensed Vocational Nurses	31.97	22.46	25.63	1.42
Medical Assistants	25.25	16.93	21.11	1.49
Respiratory Therapists	5.95	3.90	4.00	1.53
Cardiovascular Technologists and Technicians	2.70	1.62	1.71	1.66
Dentists	6.75	3.96	6.20	1.70
Veterinary Technologists and Technicians	7.25	3.96	5.24	1.83
Medical Records Specialists	13.57	7.16	6.74	1.89
Nursing Assistants	92.82	48.44	52.84	1.92
Optometrists	1.64	0.85	1.55	1.92
Orderlies and Psychiatric Aides	3.82	1.74	2.83	2.19
Dental Assistants	20.46	9.20	11.95	2.22
Radiation Therapists	3.37	1.11	0.57	3.05
Podiatrists	0.88	0.29	0.36	3.06
Nurse Anesthetists	8.96	1.60	1.48	5.60
Psychiatric Technicians	13.48	1.81	2.94	7.47
Occupational Therapy Assistants and Aides	14.28	1.89	1.95	7.55
Recreational Therapists	8.37	0.95	0.60	8.79

Source: American Community Survey, US Bureau of the Census

7.3.2 Employment Capacity in the Study Area

A second way to understand health care capacity is to examine employment at health care providers. This can highlight potential gaps in capacity following the Fort Gordon expansion. An analysis of capacity, based on total employment is shown in Figure 7.4. These data do not separate support staff from medical staff; all employees of the medical offices are counted in Figure 7.4.

Table 7.4: Employer Types in the Study Area

Establishment Type	USA, 2019		Study Area, 2019			Comparison to National Ratios		New Employment by 2030 Needed to Maintain 2019 Ratios
	Employment	Employees Per 10,000 People	Employment	Employees Per 10,000 People	Local Ratio to USA	Employment Shortfall in 2019	Employment Shortfall in 2030 if no Growth	
Offices of physicians (except mental health specialists)	2,506,655	76.4	3,833	63.9	0.84	746	1,248	406
Offices of physicians, mental health specialists	43,770	1.3	43	0.7	0.54	37	46	5
Offices of dentists	975,666	29.7	1,499	25.0	0.84	283	479	159
Offices of chiropractors	140,492	4.3	140	2.3	0.55	117	144	15
Offices of optometrists	135,328	4.1	169	2.8	0.68	78	105	18
Offices of mental health practitioners (except physicians)	140,765	4.3	84	1.4	0.33	173	201	9
Offices of physical, occupational and speech therapists, and audiologists	417,813	12.7	384	6.4	0.50	379	462	41
Offices of podiatrists	35,317	1.1	42	0.7	0.65	23	30	4
Offices of all other miscellaneous health practitioners	93,376	2.8	89	1.5	0.52	82	100	9
Family planning centers	24,575	0.7	10	0.2	0.22	35	40	1
Outpatient mental health and substance abuse centers	280,154	8.5	110	1.8	0.21	402	456	12
HMO medical centers	159,781	4.9	0	0.0	0.00	292	323	0
Kidney dialysis centers	129,072	3.9	454	7.6	1.93	0	0	48
Freestanding ambulatory surgical and emergency centers	165,073	5.0	230	3.8	0.76	72	104	24
All other outpatient care centers	413,531	12.6	339	5.7	0.45	416	498	36
Medical laboratories	193,907	5.9	57	1.0	0.16	297	335	6
Diagnostic imaging centers	92,481	2.8	13	0.2	0.08	156	174	1
Home health care services	1,528,844	46.6	3,089	51.5	1.11	0	13	327

Establishment Type	USA, 2019		Study Area, 2019		Local Ratio to USA	Comparison to National Ratios		New Employment by 2030 Needed to Maintain 2019 Ratios
	Employment	Employees Per 10,000 People	Employment	Employees Per 10,000 People		Employment Shortfall in 2019	Employment Shortfall in 2030 if no Growth	
Table 7.4 (continued)								
Ambulance services	185,556	5.7	382	6.4	1.13	0	0	40
Blood and organ banks	81,294	2.5	241	4.0	1.62	0	0	26
All other miscellaneous ambulatory health care services	76,812	2.3	168	2.8	1.20	0	0	18
General medical and surgical hospitals	5,586,027	170.2	15,480	258.2	1.52	0	0	1,638
Psychiatric and substance abuse hospitals	251,237	7.7	0	0.0	0.00	459	508	0
Specialty (except psychiatric and substance abuse) hospitals	241,213	7.3	0	0.0	0.00	441	487	0
Nursing care facilities (skilled nursing facilities)	1,623,081	49.4	2,497	41.6	0.84	468	793	264
Residential intellectual and developmental disability facilities	574,238	17.5	749	12.5	0.71	300	414	79
Residential mental health and substance abuse facilities	217,611	6.6	0	0.0	0.00	398	440	0
Continuing care retirement communities	489,311	14.9	15	0.3	0.02	879	974	2
Assisted living facilities for the elderly	509,759	15.5	973	16.2	1.04	0	61	103
Other residential care facilities	124,496	3.8	102	1.7	0.45	125	150	11

[1] *Red shading represents areas with a ratio of less than 0.8 for the local area compared to the national average.*

Source: U.S. Census Bureau (2019). All Sectors: County Business Patterns, including ZIP Code Business Patterns, by Legal Form of Organization and Employment Size Class for the U.S., States, and Selected Geographies: 2019

To keep the same ratio of provider to 10,000 residents, an additional 1,638 general hospital employees will be needed in the Study Area, which is the equivalent of an average-sized hospital in the area. While hospitals are currently over-indexed, this may be in part due to the medical school and treatment of out-of-area individuals. If the goal is to maintain current per-capita levels, this suggests the need for an additional hospital to be built in the area or at least significant hospital expansion in the future.

A notable gap in elderly care is also projected without an expansion of health care staff in that area. Between assisted living facilities for the elderly, home health care services, and nursing care facilities (skilled nursing facilities) a projected need of an additional 672 staff is estimated. However, these needs will be somewhat overstated due to the fact that the direct military growth will generally not include users of those services.

An additional 545 dentist office employees and physician office employees will be needed.

It is important to note the largest medical school and dental school in the Study Area. The Medical College of Georgia – Augusta University has 230 first year students and 552 academic staff. The Dental School of Georgia has more than 300 dental students. Both institutions provide additional care capabilities for the surrounding area.

7.3.3 Professional Occupations in the Study Area

Per-capita rates of selected key high-skill positions were examined to estimate health care needs. Per-capita rates for the Study Area are shown in Figure 7.11, Figure 7.12, and Figure 7.13. Data for 2030 assume no increase in the number of providers to cover population growth.

Figure 7.11: Supply of Primary Care Physicians
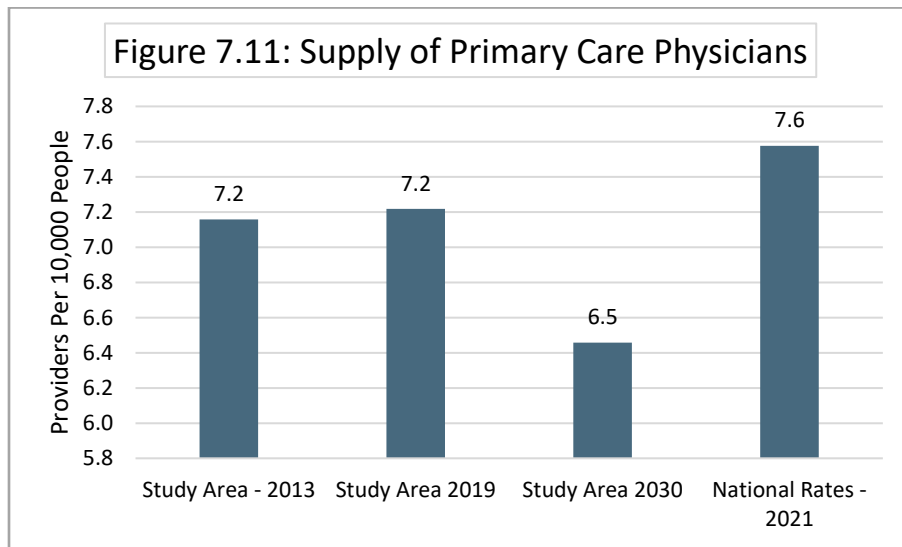
Source: countyhealthrankings.org, 2021

With a 2019 count of 439 primary care physician providers, the Study Area falls short of the current national rate by approximately 22 providers. Given the anticipated growth in the area, the Study Area would need approximately 76 new providers by 2030 to meet the current national average.

Figure 7.12: Supply of Dentists
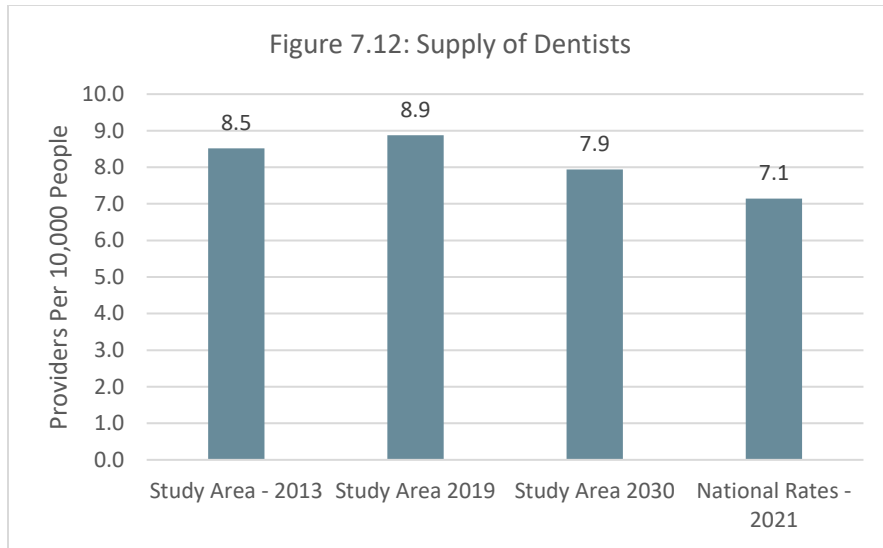
Source: countyhealthrankings.org, 2021

With a 2019 count of 540 Dentist providers, the Study Area exceeds the national rate and would still exceed the rate in 2030 even with no increase in providers.

Figure 7.13: Supply of Mental Health Professionals
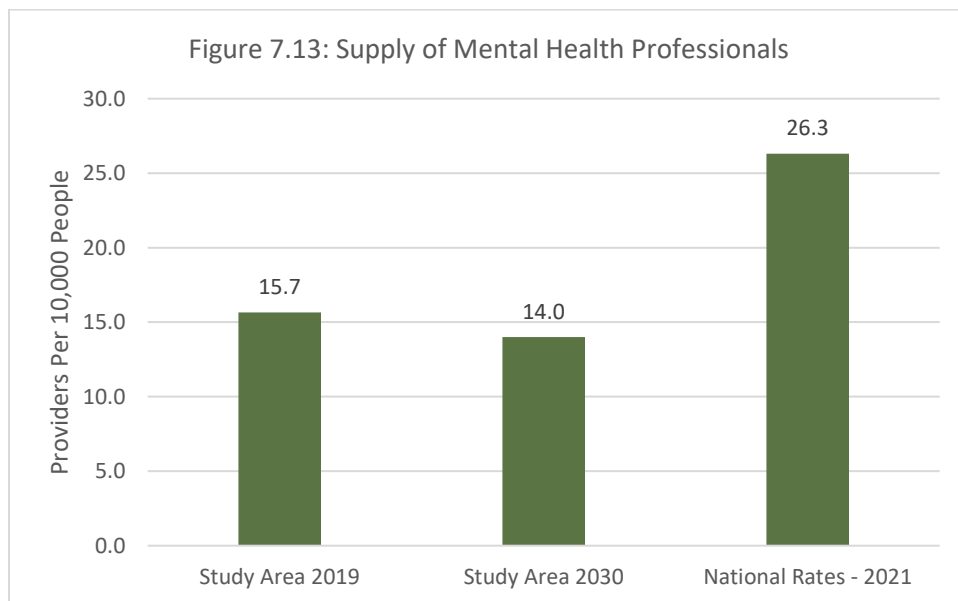
Source: countyhealthrankings.org, 2021

With a 2019 count of 180 mental health professional providers, the Study Area falls short of the current national rate by approximately 134 providers. Given the anticipated growth in the area, the Study Area would need approximately 158 new providers by 2030 to meet the current national average.

Note that due to a definitional change that obfuscates comparisons, 2013 baseline data is not presented for this group.

Table 7.5: Medical Specialization Physicians

	2020 Study Area		2018 Study Area		2018 National	
	Number	#/10,000	Number	#/10,000	Number	#/10,000
Allergy & Immunology	21	0.35	19	0.31	4,774	0.15
Anesthesiology	145	2.38	149	2.45	41,762	1.31
Cardiology	100	1.64	98	1.61	22,211	0.69
Dermatology	44	0.72	45	0.74	12,051	0.38
Emergency Medicine	166	2.73	161	2.65	42,348	1.32
Endocrinology	20	0.33	18	0.30	7,495	0.23
Internal Medicine	502	8.25	504	8.29	115,557	3.61
Neurology	87	1.43	119	1.96	13,717	0.43
Obstetrics & Gynecology	146	2.40	148	2.43	41,656	1.30
Oncology	70	1.15	66	1.09	12,423	0.39
Ophthalmology	67	1.10	70	1.15	18,817	0.59
Orthopedics	111	1.82	108	1.78	19,001	0.59
Pediatrics	228	3.75	216	3.55	58,435	1.83
Psychiatry	144	2.37	143	2.35	38,205	1.19
Radiology	135	2.22	135	2.22	27,719	0.87
Surgery	186	3.06	185	3.04	25,042	0.78
Urology	39	0.64	35	0.58	9,921	0.31

Source: CSRA and analysis of American Medical Association Mapper Data, 2021.

Table 7.5 shows that the numbers of specialists per capita has changed slightly over the past two years, and in all cases is larger than the corresponding ratios for the nation. All measures would remain over-indexed in 2030 even without growth in their numbers.

Table 7.6: Nursing Staff and Hospital Personnel

	Augusta Metro Area		USA	
	Number	#/10,000	Number	#/10,000
Registered Nurses	3,273	53.8	1,610,150	50.3
Licensed Practical Nurses	148	2.4	74,506	2.3
Total Personnel	8,832	145.2	5,314,958	166.1

Source: American Hospital Association Hospital Statistics (2019)

Similar to the specialist figures, nurses in hospitals are over-indexed compared to national figures (see Table 7.6). The measures would become slightly under-indexed in 2030 without growth in their numbers, requiring approximately 148 new nurses to maintain consistency with the national average. Total hospital personnel are currently under-indexed, and in light of current growth would require approximately 2,460 new personnel to meet the national average. Hospital capacity is shown in Table 7.7.

Table 7.7: Hospital Capacity

	Augusta Metro Area		USA	
	Number	#/10,000 Residents	Number	#/10,000 Residents
Community Hospitals	9	0.15	5,141	0.16
Hospital Beds	1,846	30.35	787,995	24.62
Admissions	79,321	1,304	34,078,100	1,065
Inpatient Days	440,921	7,249	185,149,928	5,786
Surgical Operations	84,371	1,387	28,368,697	887
Outpatient Visits – Emergency	335,990	5,524	143,432,284	4,482
Outpatient Visits - Total	1,480,811	24,344	785,235,256	24,539

Source: American Hospital Association Hospital Statistics (2019)

7.4 Recommendations

Over the course of the research, selected key areas of future need emerged that should be a priority for improvement, and which can benefit both the Installation and the community. While there are several areas identified in this section of the report, five appear to rise as being of particular interest. These are presented below in no particular order.

7.4.1 Issue 1

The number of primary care physicians exist falls below national average and may fall further behind as the area grows.

Why this is a priority: The Study Area is currently staffed at a rate below the national average of primary care physicians on a providers per 10,000 person basis. An estimated 22 new primary care physicians are needed now to rise to the national average, and 76 will be needed in 2030 relative to current ratios.

Potential partners and solutions: Working with the Medical College of Georgia to identify incentives to increase graduates' propensity to stay and practice in the local area. From both the literature review and in-depth interviews with local healthcare professionals, low access to healthcare was mentioned as being a major barrier to healthy individuals. The Study Area includes the flagship medical school of the University System of Georgia, the State's only public medical school, and one of the top 10 largest medical schools in the United States. The medical school supplies medical services to the surrounding communities through its academic health center Augusta University Health.

Despite having a medical school nearby, healthcare professionals interviewed noted that a shortage of primary care physicians exists because not enough of the medical school graduates choose to stay in the area. One reason for this is that salaries are higher elsewhere, which could be further exacerbated by the pressure of high student debt. This high debt also has a strong influence over whether graduates of public medical schools will choose family and primary care. As debt increased for public medical students, their odds of practicing family care or primary care decreases.

The State of Georgia could provide more funding to medical schools, particularly in the form of scholarships to encourage future doctors, nurses, and other health care services professionals (such as physicians and nurse aides) to remain in the Study Area. The Medical College of Georgia is the leading

provider of physicians in Georgia. More than 51% of its graduates remain in the State to practice, with an average retention rate of 39%. Currently, at the Medical College of Georgia, there are scholarships specifically geared towards retaining graduates. One scholarship is for a medical student who has matches into a primary care residency in Georgia. Another scholarship is geared towards addressing the physician shortages of rural Georgia. Similarly, future scholarships could require that medical students get matched into a primary care residency in the Study Area. An increase in funding and direct contribution to student scholarships in other colleges and technical schools would be beneficial. These include the University of South Carolina Aiken and Aiken Technical College to name a few.

South Carolina developed a Rural Health Action Plan in 2017 that addressed the need for recruiting and retention of various health professions into rural areas. While the scope does not reach the core of the Study Area, the recommendations are similar: innovate recruiting practices, broaden scholarship support, ensure sustainable pay relative to larger urban areas, and identify needs before they reach critical levels.

7.4.2 Issue 2

Gaps in pharmacy capacity may occur.

Why this is a priority: As shown in Table 7.2, the Study Area is currently notably understaffed among this profession relative to the national average ratio of pharmacists and pharmacy technicians, and population growth will exasperate the problem. The number of professionals in pharmacy and pharmacy tech would need to roughly double to meet the average presence of those degrees elsewhere in Georgia and South Carolina.

Potential partners and solutions: The solutions in this situation are similar to those discussed above for physicians.

7.4.3 Issue 3

Gaps in capacity may occur in a number of medical technician professions

Why this is a priority: As shown in Table 7.2, the Study Area is currently notably understaffed in numerous professions such as MRI, sonogram, radiologic, and laboratory technicians, and a notable population increase will increase the problem. The number of professionals in pharmacy and pharmacy tech would need to increase by anywhere from 25 percent to 100 percent in these various technical specialties to meet the average presence of these professions elsewhere in Georgia and South Carolina.

Potential partners and solutions: The solutions in this situation are similar to those discussed above for physicians. Also, given that selected other professions that require similar levels of education and training are overrepresented in the community, it would appear that increasing visibility of these specific career options in schools and other settings would be a good place to start.

7.4.4 Issue 4

Substance Abuse and Mental Health capacity will need to be expanded

Why this is a priority: Aside from being impacted by the accelerated growth, it is likely to be disproportionately impacted by the addition of military personnel whose age profile falls into a more vulnerable area.

Mental health providers, while a more broad field than substance abuse, may provide a proxy measure for current capacity, and that occupation is notably underrepresented in the Study Area compared to national averages. Increasing the number of mental health providers by nearly double (180 to 338) would meet current national ratios.

Potential partners and solutions: Working with Fort Gordon is an obvious solution to this issue. Substance abuse is also typically a high priority for public health departments. Expanding paramedic services, which was identified earlier as an area of shortage, could also assist with immediate health care needs. A recent article in the Journal of the Georgia Public Health Association also noted that Community Health Workers can be a valuable tool for mental health along with physical health issues and can also lessen burdens on other strategic issues identified in this report, such as hospital and physician capacity.

7.4.5 Issue 5

Added hospital capacity may be warranted.

Why this is a priority: Hospitals are currently over-indexed against national averages, which means that the Study Area has more hospitals per capita than the average American community. Growth will reduce that surplus but will not eliminate it.

However, the presence of the large medical teaching facilities may somewhat misrepresent capacity, particularly if those facilities draw out-of-area patients.

Based on anticipated growth rates, an additional capacity of approximately 1,585 hospital employees will be needed to maintain service levels at their current level in the face of increased growth. This generally translates into the equivalent of a new hospital of average size in the area and suggests demand for an additional hospital to be built in the area, or at least significant hospital expansion.

Potential partners and solutions: Informing local hospitals of the expected increased need will be informative so they can consider strategic expansions. Economic development officials can also be of service to inform healthcare companies of future increased demand. Expansion of Fort Gordon's medical capacity, both in terms of hospital capacity and urgent care, is also an obvious solution for part of the increased demand and will lessen burdens on other parts of the community.

7.5 Implementation Plan

The recommendations summarized above have been divided into a timeline. Short-term actions should be undertaken within 1-3 years; mid-term actions should be undertaken within 4-5 years, and long-term actions should be undertaken within 5+ years. Ongoing indicates activities that should be undertaken annually or regularly within the planning timeframe.

Funding requirements are indicated as low (time cost, but little or no funding), moderate (funds required) or high (significant funding required).

Potential leadership does not indicate that a particular group or organization has discussed this strategy with the research team or has committed to lead the strategy, but merely points out the types of organizations that typically lead similar efforts.

Identification of Issues, Goals, and Strategies		Responsible Party	Timeline
Increase the number of primary care physicians and pharmacy staff			
Goal	Add new primary care physicians to the local market		
Strategy 7.1	Develop partnerships with local employers for local residencies, internships, and other training.	Health care philanthropy, medical school	Short-term
Strategy 7.2	Calculate and promote true compensation by understanding and communicating cost of living differentials in the Study Area versus larger markets	Local economic development organization	Mid-term
Strategy 7.3	Increase use of incentives (e.g., loan forgiveness) for physicians graduating locally to stay in the area. Identify partners in this effort.	Health care philanthropy, local government	Long-term
Strategy 7.4	Work with employers to increase compensation or benefits in physician recruitment and pharmacy technician and pharmacist recruitment.	Health care philanthropy, local government	Long-term
Increase the supply of medical technicians			
Goal	Increase training and career paths in medical technology fields such as MRI, sonography, radiology, and lab tech fields.		
Strategy 7.5	Increase awareness of career opportunities out of high school	Local high schools, colleges with relevant programs	Short-term
Strategy 7.6	Offer financial aid or other incentives for students to pursue these fields. Identify partners in this effort.	Health care philanthropy, local government	Mid-term
Increase hospital capacity			
Goal	Increase hospital capacity by the equivalent of 1,000 new employees.		
Strategy 7.7	Communicate future needs to existing hospitals to assess current expansion planning.	Local economic development organization	Short-term
Strategy 7.8	If necessary, communicate needs to non-local hospital providers to inform them of upcoming growth opportunities.	Local economic development organization	Mid-term
Expand substance abuse and mental health capacity			
Goal	Expand capacity to prevent and treat mental health and substance abuse issues.		
Strategy 7.9	Join working partnerships with on-Installation resources and public health agencies to understand and leverage current capacity	Fort Gordon, local public health departments	Near-term
Strategy 7.10	Increase paramedic and first-responder capacity to address personal crisis situations, using similar strategies as seen above for increasing the supply of medical technicians and hospital capacity.	Local government, local public health departments, vocational training organizations	Mid-term

7.5.1 Summary of Near-Term Strategies:

Near-term strategies should focus on communications and identifying potential partners and partnership opportunities.

→ Communicate needs to ensure local employers and training/education partners can adjust their own plans.

→ Identify organizations with similar goals and missions to explore partnership opportunities. These might include topics such as local training opportunities and prevention efforts aimed at substance abuse and mental health.

→ Develop a marketing plan to promote careers in medical technology.

7.5.2 Summary of Mid-Term Strategies:

Mid-term activities should focus on filling gaps in local capacity, labor pipelines, and information.

→ If local hospitals are unable or uninterested in filling future capacity, work with economic development organizations to reach out to non-local hospitals that are looking for expansion opportunities.

→ Conduct a study of compensation versus cost of living to potentially inform physicians and pharmacists of the advantages of staying in the local area.

→ Address potential paramedic and first-responder shortages with help from partnerships identified in the near-term work.

→ Work with partners to identify financial incentives to encourage enrollment in medical technology fields (including pharmacy technology).

7.5.3 Summary of Long-Term Strategies:

Long-term activities should focus on attracting and retaining highly trained individuals.

Using the partnerships developed in the near-term strategies and the information developed in the mid-term strategies, develop incentive programs to attract and retain primary care physicians and pharmacists in the local area.

Chapter 8:

Housing Analysis
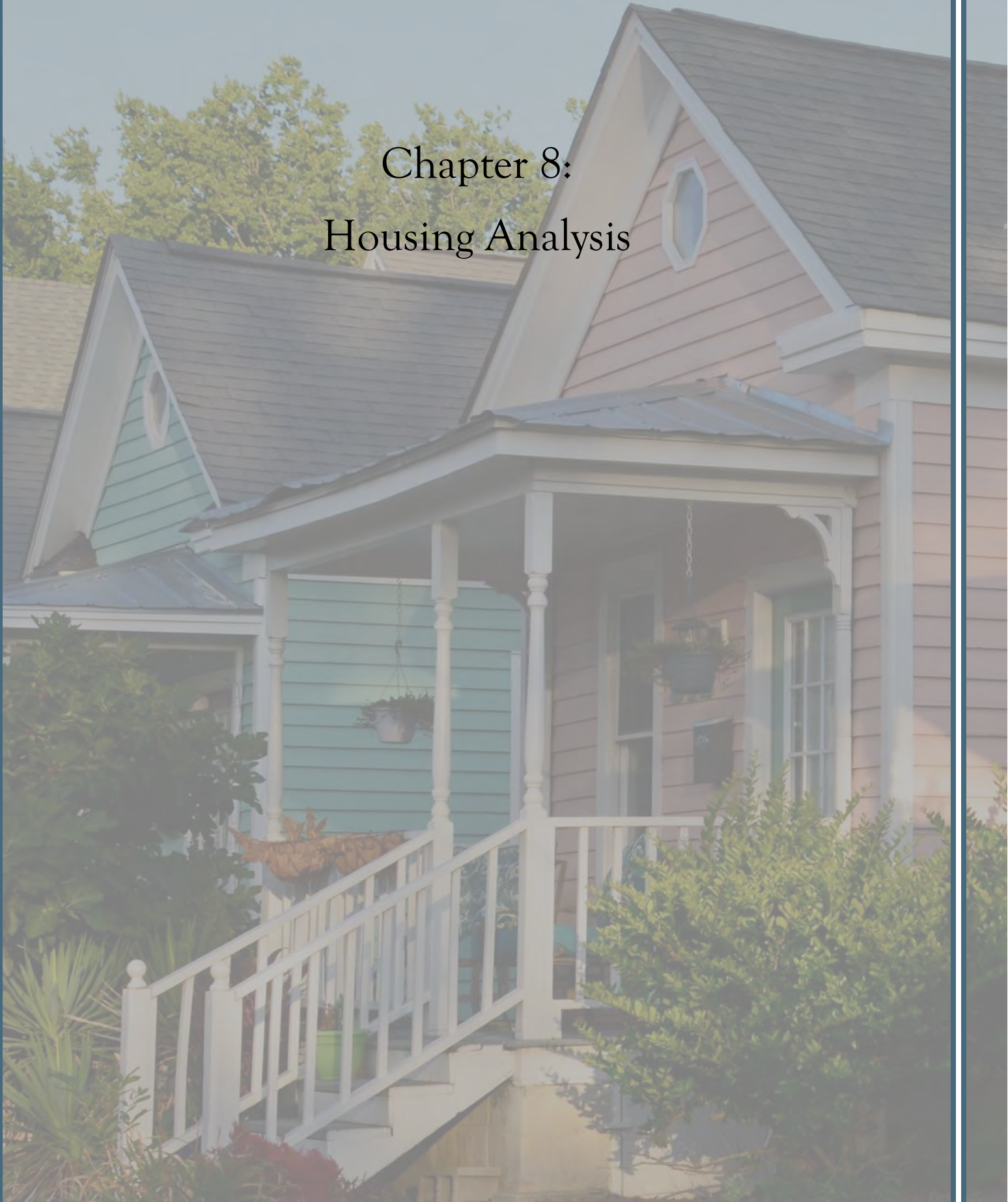
8 Housing Analysis

8.1 Overview

This chapter examines population, socioeconomic, and housing trends to better understand the needs and opportunities for future housing development. Housing development should adequately address the needs of new and existing residents as the Study Area experiences significant growth. Socioeconomic, demographic, and regional housing trends are analyzed using U.S. Census data, propriety data from Economic Modeling Specialists International (Emsi), and ESRI Business Analyst. This chapter also incorporates existing plans and market reports to understand existing housing conditions within the region.

8.2 Existing Conditions and Background Documents

Previously completed plans and studies were examined to inform existing conditions and ongoing housing related initiatives in the Study Area. To better understand the regional housing market, the following plans were reviewed, analyzed, and summarized:

→ HUD Comprehensive Housing Market Analysis: Augusts, Georgia-South Carolina
→ Aiken Rental Housing Market Study
→ Aiken, Columbia, and Richmond County Absorption Rates
→ Comprehensive Plans for all counties in the Study Area

According to the 2019 ACS data, the Study Area includes 258,018 housing units. 81% of housing units are occupied with 19% remaining vacant. Of those units that are occupied, 69% are owner-occupied and 31% are renter-occupied. Housing structures of these units consist of single unit (71.5%), multi-unit (14.7%), mobile homes (13.7%), and boat, RV, van, etc. (less than 1%). Please see Table 8.1 for an overview of housing characteristics for the Augusta-Richmond MSA.

Table 8.1: Study Area Housing Unit Characteristics

Units in Structure	2010 Estimate	2019 Estimates	Percent Change %
Total housing units	238,681	258,018	8.1
1-unit, detached	157,032	173,487	10.5
1-unit, attached	9,123	11,082	21.5
2 units	3,431	5,245	52.9
3 or 4 units	9,436	8,757	-7.2
5 to 9 units	11,938	10,524	-11.8
10 to 19 units	5,390	8,007	48.5
20 or more units	5,322	5,329	0.13
Mobile home	37,009	35,383	-4.4
Boat, RV, van, etc.	0	204	20,400

Source: ACS 2010 &2019

When compared to the national average, housing cost in the area are below average. The below average housing cost has led to a balanced sales and rental market in the area. Based on the HUD Comprehensive Housing Market analysis the sales and rental market are stable with vacancy rates of 2.5% and 5.5%, respectively.

Fort Gordon plays a significant role in the demand for housing in the Study Area. The Installation employs approximately 31,000 military personnel, civilians, and contractors. Family housing is offered on-Installation with approximately 1,000 family units available. For single service members, barracks housing is available. Of those housing units on the Installation, 762 units range in age of 49-61 years and are commonly called 'legacy' homes. With limited and aging housing units and options on-Installation, military personnel and their families must look to find adequate housing in surrounding communities. According to a 2020 housing market analysis of Fort Gordon, there is a housing gap of 331 for service members. Please see Table 8.2.

Table 8.2: Fort Gordon Housing by Type, 2020

Service Member Rank	2-Bdrm	3-Bdrm	4-Bdrm	Total
E1 – E6	237	163	513	913
E7 – E9	0	86	166	252
W1 – W5	7	18	5	76
O1 – O3	14	17	56	87
O4 – O5	0	42	11	53
O6	0	0	14	14
O7 & Above	0	0	8	8
Tenant Need	258	326	819	1,403
Current Inventory	52	463	557	1,072
Housing Gap	(206)	137	(262)	(331)

Source: Fort Gordon Housing Services Office, 2020

8.2.1 HUD Comprehensive Housing Market Analysis: Augusta, Georgia-South Carolina

The Augusta Housing Market Area (AHMA) Rental Housing Study, conducted in 2017, forecasted regional demand for both affordable and market rate housing units. Affordable housing in the region, defined as housing units with rent at or below affordability for a household earning 60% of the area's median income, is projected to necessitate 125 additional units to meet market demand through 2022. In addition, the study projects a need for 314 additional market rate units to meet market demands through the same timeline. Market rate units are defined as units that are sold or leased at levels comparable to similar housing units in the area, determined by free market fundamentals.

The seven-county Study Area has seen steady employment growth since 2010, with the Bureau of Economic Analysis reporting 284,786 jobs in the MSA in 2010 and 318,927 in 2020. Moreover, the AHMA has seen more resilience to national recessions primarily due to increases in military personnel at Fort Gordon. Growth at the Installation, combined with regional growth, has historically driven demand for housing, especially rental housing. This trend is expected to continue. Furthermore, the growth of service sectors, one of the largest regional employment sectors, has driven demand for more affordable housing, due to lower wages typically paid to workers in this sector.

Though economic and growth conditions may be driving demand for more affordable multi-family rental housing, the region also has strong homeownership rates. Homeownership outpaces national trends, but has decreased marginally since 2010, from 68.7% to 67.1%. This decrease could be due to increased demand for multi-family homes. These rates indicate a healthy mix of owner and renter-occupied housing and no over-reliance on one market.

In light of these findings from the HUD study, occupancy rates were examined for the Study Area and the United States to illustrate differences, as shown in Table 8.3.

Table 8.3: Housing Occupancy Rates

Year	Study Area		United States	
	Owner-Occupied	Renter- Occupied	Owner-Occupied	Renter-Occupied
2019	67.1%	32.9%	64.0%	36.0%
2015	67.3%	32.7%	63.9%	36.1%
2010	68.7%	31.3%	66.6%	33.4%

Source: Census ACS 5-year Estimates

The HUD study found that regional economic stability has contributed to strong homeownership rates and that the stability of the region's economy helped more homes to be purchased from 2013 to 2016. This demand caused an uptick in housing prices as well, as they increased 6% to around $134,300 on average through this same time period. This trend also reflected an increase in demand for living in the region. The Comprehensive Market Analysis also noted that the United States had a smaller percentage of housing growth compared to the region. Moreover, the U.S. average home price increased by 3.26% annually in that same time period. This suggests that there may have been a stronger demand for homes in the Study Area compared to the United States when the Comprehensive Market Analysis was completed.

8.2.2 Aiken Rental Housing Market

To provide additional context on the Aiken County housing market, *A Rental Housing Market Study of Aiken, South Carolina*, prepared by Novogradac in 2018, was reviewed. The study had two main findings that are critical for the context of this housing chapter about the demand for multifamily units throughout the region:

1) A large number of projected retirees from the Savannah River Site (SRS) nuclear facility over the next several years will bring in new, younger workers to the area.

2) The U.S government choosing Fort Gordon as the new ARCYBER headquarters is expected to have significant long-term impacts on the region.

Like the HUD report, this study identified employment growth in retail trade (12.8%), manufacturing (13.5%), and healthcare/social assistance (22.1%) sectors. The study noted that employees in these sectors often need more affordable housing options based on the average wage paid for these occupations. The report also noted that there was a potential for younger residents to be attracted to the region due to growth at the SRS. The study estimated that 3,000 to 5,000 workers will need to be replaced at SRS from 2018-2023 due to retirement. The report notes that these jobs could be filled by millennials or those born 1981 to 1996. Millennials tend to show preferences for rental or multi-family homes which could drive market demand for these products which could be another reason to emphasize the development of multifamily rental housing.

The study also projected that Aiken County is slated to experience an increase in total population, senior population, and the number of households through 2022. Findings expected those aged 70 to 74, 75 to 79, and 80 to 84 would grow at the fastest rate and those 60 to 64 would be the largest age cohort by

2022. To contextualize and supplement the findings from Novogradac's study, see Table 8.4 for additional information about Aiken County's historic population.

Table 8.4: Historic Population Demographics and Change in Aiken County

Age Cohort	2010 Population	2020 Population	Change	Percent Change	Percent of Cohort, 2020
Under 5 years	10,049	9,615	(434)	(4%)	5.56%
5 to 9 years	10,039	9,969	(70)	(1%)	5.77%
10 to 14 years	10,225	10,697	472	5%	6.19%
15 to 19 years	10,897	10,290	(607)	(6%)	5.95%
20 to 24 years	10,144	9,642	(502)	(5%)	5.58%
25 to 29 years	10,089	10,969	880	9%	6.34%
30 to 34 years	9,369	11,021	1,652	18%	6.37%
35 to 39 years	9,361	10,307	946	10%	5.96%
40 to 44 years	10,024	9,769	(255)	(3%)	5.65%
45 to 49 years	11,832	9,953	(1,879)	(16%)	5.76%
50 to 54 years	12,165	10,768	(1,397)	(11%)	6.23%
55 to 59 years	11,334	12,204	870	8%	7.06%
60 to 64 years	10,251	12,266	2,015	20%	7.09%
65 to 69 years	8,335	11,207	2,872	34%	6.48%
70 to 74 years	5,884	9,758	3,874	66%	5.64%
75 to 79 years	4,546	6,854	2,308	51%	3.96%
80 to 84 years	3,359	4,004	645	19%	2.32%
85 years and over	2,655	3,602	947	36%	2.08%
Total	160,558	172,895	12,337	8%	100.00%

Source: Emsi 2021.12

At a micro level for the region, the report found that there are no multifamily apartments in downtown Aiken. However, there are single-family rental homes, condominium rentals, and conversion rental units. The target tenancy for downtown rentals is young professionals and retirees/empty nesters. Populations of these two groups were projected to grow regionally and could create additional demand for rental housing. Downtown Aiken was cited as a prime location to accommodate new demand which should be considered for regional housing strategies when locating new housing products. The Novogradac study estimated that 50 to 200 rental units could be supported in the downtown area. The study also estimated the amount of rent that a downtown rental could achieve.

A one-bedroom unit could range from $950 to $1,683 with affordable rents from $900 to $1,100. Rent for two-bedroom units downtown could range from $750 to $1,100 with affordable rents from $750 to $1,100. Rent for three-bedroom units in downtown could range from $750 to $2,100 with affordable rents from $1,200 to $1,500. This data is important to consider as future apartment developments in downtown Aiken would likely be more highly priced. While this area may be prime for future multifamily development housing, it may not be ideal for more affordable multi-family developments.

8.2.3 Aiken, Columbia, and Richmond County Absorption Rates

Data were reviewed which detailed information on absorption rates for Aiken, Columbia, and Richmond Counties. This information provides historic context to the Study Area and more densely populated communities in the region.

As demonstrated in other documents provided for review, Aiken County experienced an increase in the average size and average sales price of homes, as average sales have risen by 22% between 2014 and 2018. The most in-demand homes tended to be valued between $100,000 to $200,000. New construction sales have grown as well, as the average home size has increased by 15% and the average sales price has risen by 30% with most homes being sold at a range between $150,001 to $250,000. This suggests that new homes were priced higher than the homes that were most in demand.

Columbia County had an average house size and sales grow at a slower rate compared to the region. Sales have risen 16% since 2014 and most homes were sold at a price range between $150,001 to $200,000 followed by $200,001 to $250,000. Similar to Aiken County, construction sales have risen, as the average house size has risen 17.2% from 2014 to 2018. This could suggest an increasing gap formed between what residents are able to afford and what is being built.

Augusta-Richmond County experienced increases in cost to build and sale price of homes as both increased 26% and 27% respectively. However, most sales have been in the $100,000 or less range, followed by $100,001 to $150,000. This again suggested strong demand for more affordable housing options. New construction rose as well, as the average price has increased by $14.50 per square foot and average sales of homes have increased 14% from 2014 to 2018, reflecting both growing demand and rising prices that could have created affordability challenges for residents.

Within the Study Area communities analyzed through absorption documents, housing prices and rental rates became more expensive which could drive a need for more attainable or workforce housing offerings to ensure the region's key workforce is able to live and work in the region.

8.2.4 Housing Conditions by County

Comprehensive plans for each county were reviewed to better understand policies concerning housing development. Communities aim to provide a range of housing choices in urban and rural areas that are both safe and economically feasible. Policies tended to address rehabilitation, additional housing supply, and variety and targeting the development of housing in areas of existing infrastructure.

Augusta-Richmond County

Augusta-Richmond County developed a Comprehensive Plan in 2008 and housing unit rates have been steadily rising since, as total housing units increased by 86,331 units (4.8%). The overall housing units in the area have only slightly increased during the time frame of 2000 to 2015. In 2016, over half of the county's occupied housing units are owner-occupied and 47% are renter-occupied, which represents a drop in homeownership and a rise in rental ownership from 2006.

In their 2018 Comprehensive Plan update, Augusta-Richmond County note that the homeless in the area had a need for emergency shelter, transitional homes, and permanent housing. The plan found that there was a need to expand emergency shelters in the area and that more transitional housing could help emergency shelters feel less burden. The plan also identified a need for permanent housing for those with mental disabilities. Overall, there was a need to serve the housing needs of underserved populations.

The Augusta Task Force for the Homeless (ATFH) is the leading county agency for helping the homeless. It consists of a coalition of many organizations that provide housing and services to the homeless. Housing options provided by the Task Force include emergency shelter, transitional housing, and sometimes

permanent housing. Organizations such as Augusta Housing Authority and St. Stephen's provide Section 8 housing vouchers to the homeless and transitional housing respectively.

The Comprehensive Plan noted that Augusta does provide some housing assistance for low-to-moderate-income persons. The City provides HOME funds and Community Development Block Grant (CDBG) funds for the following six housing assistance programs: (1) housing rehabilitation, (2) rental rehabilitation, (3) down payment assistance, (4) demolition, (5) code enforcement, and (6) demolition and clearance.

Columbia County

The Columbia County Comprehensive Plan, *Vision 2035: A Comprehensive Plan for Columbia County, Georgia*, has three housing-related goals within its Development Patterns Theme (DP). A part of the DP Goal 1 seeks to preserve rural development patterns. Goal 2 seeks to protect and enhance established neighborhoods. DP Goal 3 seeks to promote high quality new development and construction. Strategies for implementing these goals that are related to the provision of housing are as follows:

→ DP Goal 1 Strategies
  - Strategy 1.1: Implement county-wide Water and Wastewater Master Plans, using the Future Development map to guide planning for future sewer infrastructure expansion projects and directing growth to areas not designated as Rural.
→ DP Goal 2 Strategies
  - Strategy 2.4: Allow for appropriate uses along corridors as shown on the Development Strategy Map, especially where road projects have made the lots substandard or altered its residential character
  - Strategy 2.5: In areas designated as "In-Town Neighborhoods," allow development that includes varying residential densities and housing types to provide a transition between commercial development and single-family neighborhoods.
→ DP Goal 3 Strategies
  - Strategy 3.1: Amend regulations to incorporate common conditions of zoning that can ensure a high quality of residential development.
  - Strategy 3.2: Develop design standards for apartment and townhome projects that allow for a palette of options while maintaining quality.

These strategies are important to consider in the broader context of a regional housing plan which could incorporate similar ideas to preserve both rural and urban communities within the region.

Burke County

Burke County has a tight housing market due to the expansion project at the Alvin W. Vogtle Electric Generating Plant and nearly all housing units in Burke County are occupied. Whether housing units are single family, multi-unit, or simply an extra room for rent in someone's house, most are occupied. From 2000 to 2017, median home values rose by 22% ($109,694). The median rental rate has increased about 36% ($612 per month) from 2000 to 2016, which is significantly lower than Georgia's monthly rental of $907 in 2016.

The City of Waynesboro implemented an affordable housing program. Since 2006, the city has been awarded and has completed six CDBG and Community HOME Investment Programs (CHIP). The city also has staff members participating in UGA's Georgia Initiative for Community Housing to help develop a local housing plan. This program involves the team members in biannual retreats where training promotes

affordable housing practices. In addition, Waynesboro also has a Housing Action Plan that began in 2005 and an Urban Redevelopment Plan from 2017. These are the only housing related programs identified in the Burke County Comprehensive Plan so there may be a need for regional organizations to provide additional support to the County.

Lincoln County

Lincoln County saw a 6% rise in housing units from 2000 to 2015. Building permits rose between 2010 to 2014 from 350 to 512; the pace of building dropped in 2015 (496 building permits) but rose precipitously in 2016 (730 building permits). Between 2004-2008 there were 14 waterfront subdivisions created as a result of timber companies clear cutting land and selling it to developers. Infrastructure was brought to these sites by developers seeking investment properties. However, with the Great Recession, many of those waterfront subdivisions were never developed, leaving about 600 to 700 vacant lots.

There are three ongoing housing programs in Lincoln County:

→ Incentives to developers for providing a part of their new single or multi-family constructions at reduced prices to encourage more housing options at all income levels.
→ Engagement with the private sector for more affordable housing for lower income people.
→ Code revision and reinforcement.

The county also had many Community Works Programs, including applying for CHIP housing grants, rental housing initiatives, initiatives for the development of affordable housing subdivisions with units priced between $100,000 to $175,000, and ensuring infrastructure meets livability needs. The City of Lincolnton has the same goals, except for applying for the CHIP grant. The city does emphasize more urban downtown revitalization goals to promote the development of apartments and lofts.

McDuffie County

McDuffie County, like the other counties, has a tight housing market. However, in McDuffie, the quality and quantity vary from one jurisdiction to the other. As such, McDuffie County wants to make a more "whole" community where such unevenness does not exist. Moreover, housing is aging in McDuffie County, as many homes were built in the 1960s. About 87% of the housing stock is either single-family detached residents (65%) or mobile homes/trailers (21.5%) while multi-family development has lagged.

McDuffie County's Comprehensive Plan identified three goals for housing and two goals for land use. The housing goals are as follows: (1) create safe, efficient, and affordable housing for McDuffie County residents, (2) make downtown Thomson more vibrant by increasing residential use, and (3) support the restoration and maintenance of Thomson and Dearing historic housing stock.

The goals for land use are as follows: (1) maintain the rural and historic character of McDuffie County and (2) ensure McDuffie's natural resources and key environmental assets are protected from unplanned consequences of development.

McDuffie County's Comprehensive Plan also identifies the following five policies for housing: (1) expand opportunities for home ownership for low-and-moderate-income households, (2) ensure housing maintenance is a key part of Thomson's community redevelopment plans, (3) increase market-rate housing to expand housing options, (4) maintain historically and architecturally relevant homes, and (5) encourage the use of upper floors in downtown commercial buildings.

In 2005, the City of Thomson created a Redevelopment Area with McDuffie County. The Redevelopment Area was created to incentivize development in the city. Although the Redevelopment Area expired in 2019, the City of Thomson created a new Redevelopment Area within the Sills Branch Area. The purpose of these Redevelopment Areas is for rehabilitation, conservation, and redevelopment. There are four specific needs identified: (1) acquiring a slum and blighted property, (2) rehabilitation or demolition and removal of various buildings, (3) installation, construction, or reconstruction of streets, parks, utilities, and (4) making land available for development and redevelopment for private entities. Development was mostly concentrated in Strawberry Hills and Pitts Street.

McDuffie County, the City of Thomson, and the City of Dearing have Community Works Programs for housing. McDuffie County has four specific programs for housing: (1) increase housing developments for retirees and young professionals, (2) have an active adult/small lot subdivision in the Bell Meade area, (3) increase housing in medical districts, and (4) rehabilitate deteriorated housing with CDBG funding and Community HOME Investment Plans funds. The City of Thomson has 10 programs for housing. Some of these programs include:

→ Downtown buildings rehab programs accommodate mixed use residential areas
→ Community Development Block Grants and Community HOME Investment Plans funds for deteriorated housing
→ CHIP funds for Infill Housing.

The Town of Dearing looks to have rehabilitated deteriorated housing with Community Development Block Grants and Community HOME Investment Plans funds.

In 2008, the City of Thomson and McDuffie County became Communities of Opportunity, looking to improve housing stock through improving poor homes and neighborhoods. The City and the County created a Land Bank Authority and have a housing action plan completed for Thomson-McDuffie County.

Beginning in 2013, the City of Thomson began to examine the Sills Branch Area as a place for revitalization. They found that there is poverty, low-income housing, and a lack of housing options in the area. They stated that to improve housing in the Sills Branch Area, the city should prepare design standards, prepare a conceptual site plan, develop neighborhood street standards, and more.

Aiken County
Aiken County homes are primarily detached, site-built, single-family dwellings. The manufactured housing market has been growing, comprising 6% of the market in 2000 but growing to 23% in 2021. Housing values are lower than the state average. When compared to the State, there are 4.8% fewer homes valued at or above $200,000 in Aiken County. However, the county has a higher percentage of homes valued between $50,000 to $99,999.

The Aiken County Council identified housing as an area to focus on in the context of expected population increase, especially considering expected growth in the county's elderly population. Moreover, they found many people are going from urban to rural areas, and that poverty is an issue within the county. As such, six goals were created to address these challenges: (1) accommodate for the population increase in the county, (2) work to eliminate poverty in the area, (3) slow down urban sprawl and premature development of rural areas, (4) create an age sensitive environment, (5) raise educational attainment of all adults, and (6) decrease incidents of obesity and chronic diseases related to malnutrition.

The Aiken County Comprehensive Plan recommended the county restructure the Land Development Regulations in order to protect rural areas and natural resources. There are no land use regulations in rural areas.

To create a more age-sensitive environment, the Comprehensive Plan included three programs. These programs include the promotion of diversity in housing products, such as apartments, single-family residences, and manufactured homes. The second policy aims to promote public and private transportation linkages. This policy aims to address the lack of transportation linkages in an area for senior residents. The third policy recommended the county adapt to the changing needs of the elderly in a more focused manner. This could include senior housing development in addition to transportation support services.

Edgefield County

Edgefield County has seen significant growth along U.S Highway 25 and in North Augusta due to the high demand for living in the suburbs of Aiken and Augusta. The housing needs in the county are being addressed by agencies such as the Public Housing Authorities, community development programs, and more. This demand has caused housing prices to rise, and the costs are projected to rise even more in the next 20 years. The number of owner-occupied units increased by 6.8% between 2000 and 2010 while rental units increased by 17.9%. The plan suggested that this may indicate a future need for rental housing in the county for those who wish to postpone owning a home or need a temporary home. Owner-occupied houses were 76.1% (7,116) and rental units were 4.5% of the total available housing units. Edgefield also has a high vacancy rate (14%), as many homes are either abandoned or are in bad condition.

In Edgefield County, there are three primary goals for housing: (1) have a variety of homes at different costs to meet community needs, (2) encourage more residential development that preserves neighborhood identity and quality of life, and (3) protect public health and safety through limiting housing development in areas dangerous for public health. To accomplish these goals, six policies were recommended: (1) encourage a safe and clean environment, (2) coordinate the making of more infrastructure, (3) incorporate environmental needs, (4) create a comprehensive housing plan to create more housing units to meet needs, (5) encourage more residential development, and (6) ensure long-term quality housing through reviewing housing codes.

The Edgefield County Comprehensive plan provided more specific recommendations on how to reach those goals. They stated that housing activists should be included in how the housing plan is carried out and can help to understand the size of the current need. Moreover, they stated that the county should be the one to carry out housing policies because the housing needs go beyond each municipality and collective action is more effective than individual action. The Comprehensive Plan stated that Edgefield County Planning Commission can help to ensure that happens.

8.3 County Housing Comparison

The following section compares housing ownership, rental, and vacancy rates in the Study Area to build on findings from the document review and help provide an initial understanding of existing conditions. This analysis includes comparisons for both communities in the study area and the study area compared to state and national averages. The estimates from 2026 in this section are based on ESRI Business Analyst projections; in combining information from past trends and current events, ESRI extrapolates the data to

estimate future conditions. To ensure the most accurate projection, the estimates are limited to 5-year projections.

In Burke County, housing ownership has increased from 2010 to 2021 while renting and vacancy rates have dropped over this period. Higher home ownership generally corresponds to higher income levels and lower housing vacancy rates correspond to a higher demand for housing in a particular area. Counties such as McDuffie, Richmond, and Edgefield have experienced declining ownership rates and increases in rental and housing vacancy rates. More information can be found in Table 8.5 and Figure 8.1.
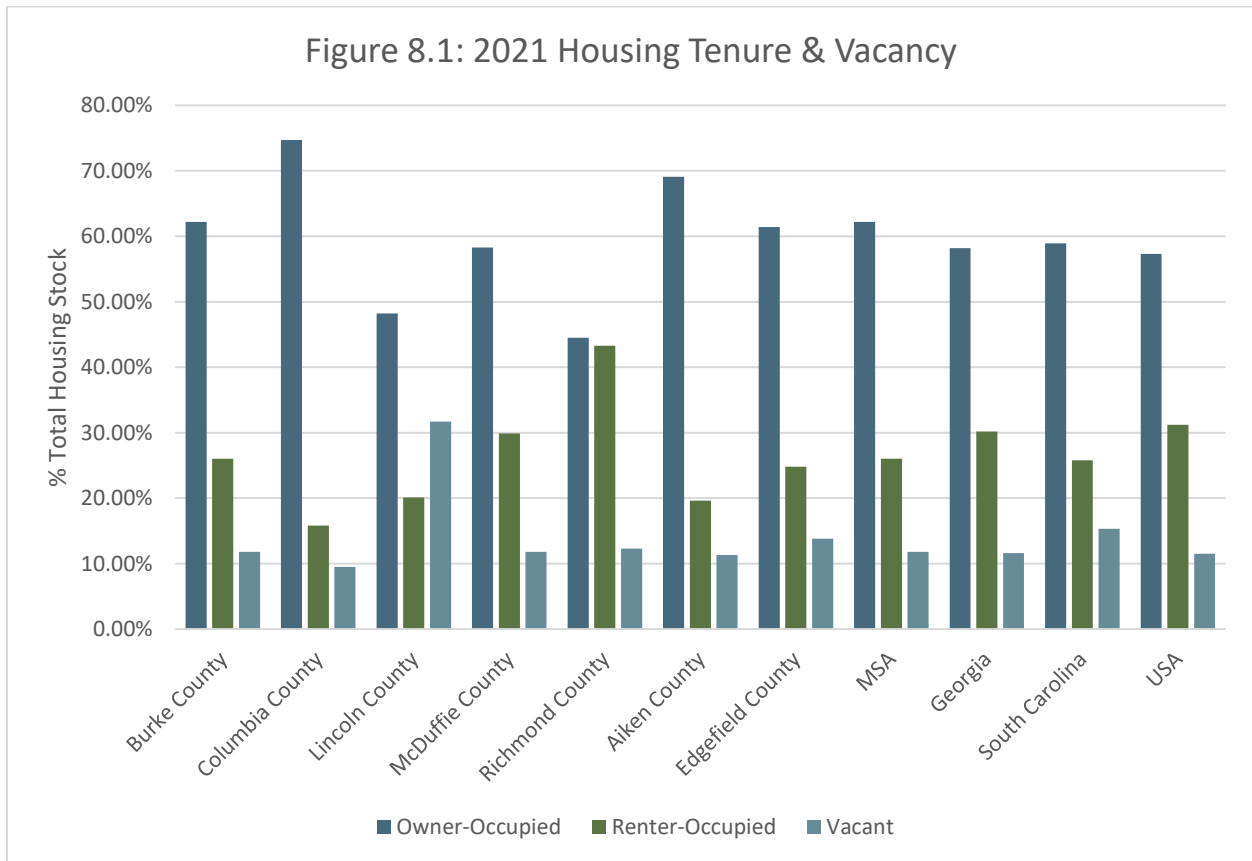
Figure 8.2: 2021 Housing Tenure & Vacancy. Source: Esri, 2021

Table 8.5: Study Area Housing Ownership, Rental, and Vacancy Rates

Area	2010 Owner %	2010 Renter %	2010 Vacant %	2021 Owner %	2021 Renter %	2021 Vacant %	2026 Owner %	2026 Renter %	2026 Vacant %
Burke	60.2%	26.3%	13.5%	62.2%	26%	11.8%	63%	25.2%	11.8%
Columbia	73%	19.4%	7.7%	74.7%	15.8%	9.5%	75.4%	15.6%	9%
Lincoln	51.9%	16.6%	31.4%	48.2%	20.1%	31.7%	48.5%	19.8%	31.7%
McDuffie	60.6%	28.3%	11.1%	58.3%	29.9%	11.8%	58.4%	29.3%	12.2%
Richmond	48.3%	40.8%	10.9%	44.5%	43.3%	12.3%	45%	42.5%	12.4%
Aiken	65%	23.9%	11.1%	69.1%	19.6%	11.3%	69.8%	18.9%	11.3%
Edgefield	67.4%	21.2%	11.5%	61.4%	24.8%	13.8%	62.1%	24.1%	13.8%
MSA	60.2%	26.3%	13.5%	62.2%	26%	11.8%	63%	25.2%	11.8%

Area	2010 Owner %	2010 Renter %	2010 Vacant %	2021 Owner %	2021 Renter %	2021 Vacant %	2026 Owner %	2026 Renter %	2026 Vacant %
Georgia	57.6%	30.1%	12.3%	58.2%	30.2%	11.6%	58.7%	29.6%	11.7%
South Carolina	58.4%	25.8%	15.7%	58.9%	25.8%	15.3%	59.3%	25.3%	15.3%
USA	57.7%	30.9%	11.4%	57.3%	31.2%	11.5%	57.7%	30.5%	11.8%

Source: Esri projection using 2010 U.S. Census data

While the Study Area has the highest home ownership rate in 2010, 2021, and 2026 compared to national and state averages, it also has the second highest vacancy rate among the four areas examined. However, housing ownership compared to rental ownership is relatively high in the Study Area.

Regional housing ownership rates have increased between 2010 to 2021 and are projected to continue this trend through 2026. Conversely, rental ownership and vacancy rates have decreased in the Study Area during the same periods. Additionally, the Study Area has higher ownership rates and lower renter rates and vacancies than the United States from 2010 to 2021. As shown in Table 8.5, the Study Area is projected to outperform the United States in these three areas through 2026.

8.4 Socioeconomic and Demographic Trends

8.4.1 Commuting Patterns

Commuting patterns can be an important measure of an area's housing affordability. If given the opportunity, workers will generally elect to live as close as possible to their place of work. An area with limited or unaffordable housing options will have greater inflows of workers who live outside of the region. Conversely, large outflows of workers might indicate limited job opportunities within the region. As Figure 8.2 illustrates, nearly 66,000 workers are employed outside of the Study Area and must commute beyond its limits for work. Conversely, about 55,000 workers live outside of the Study Area and travel to it for work. The net number of commuters who travel into the region for work is -10,611, that is, 10,611 workers are lost to employers outside of the Study Area. This indicates lost economic productivity in the Study Area. As the daytime population of the Study Area decreases, local businesses experience lower customer traffic rates. There are approximately 168,760 people who both live and work within the Study Area. Figure 8.3 shows the relative worker density.
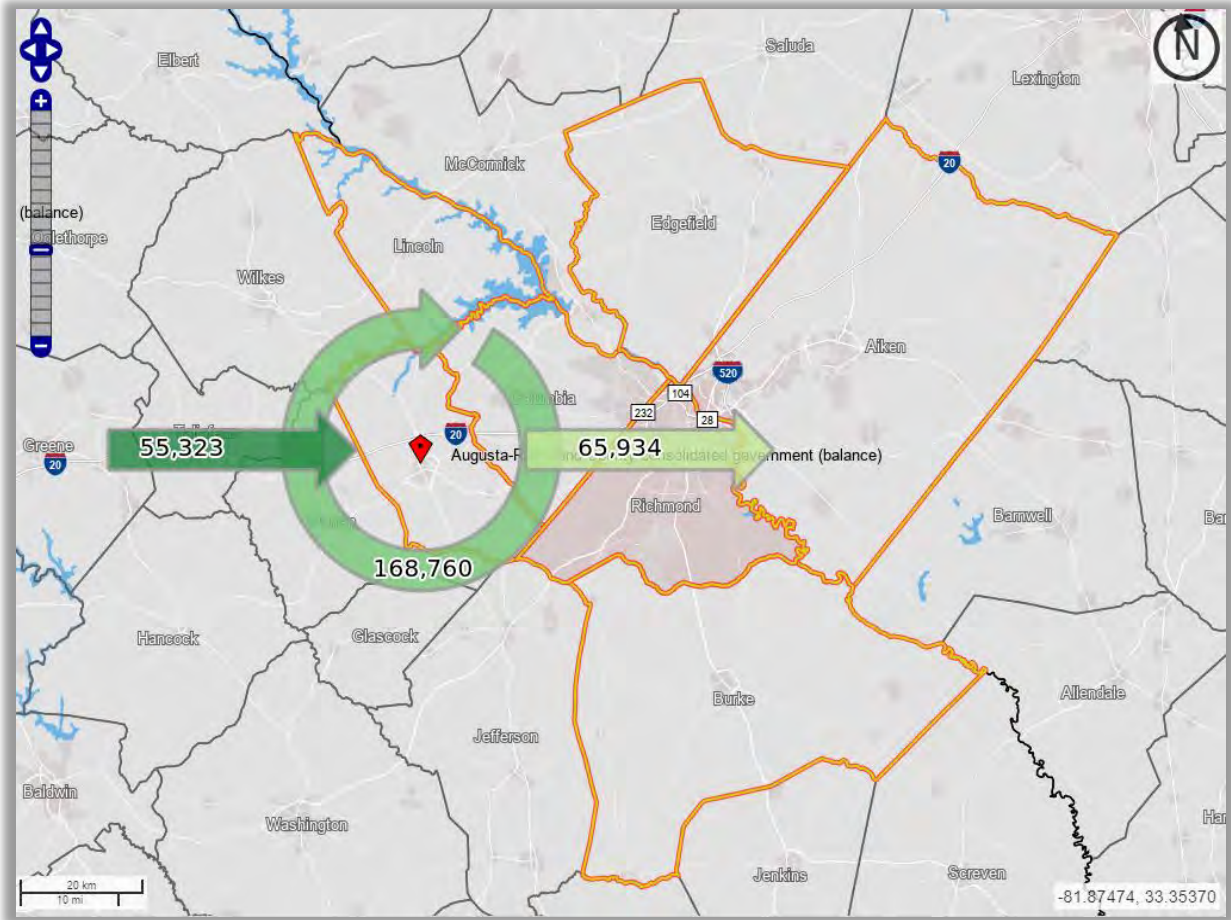
Figure 8.2: Study Area Commuting Patterns. Source: US Census Bureau, OnTheMap.com, 2018
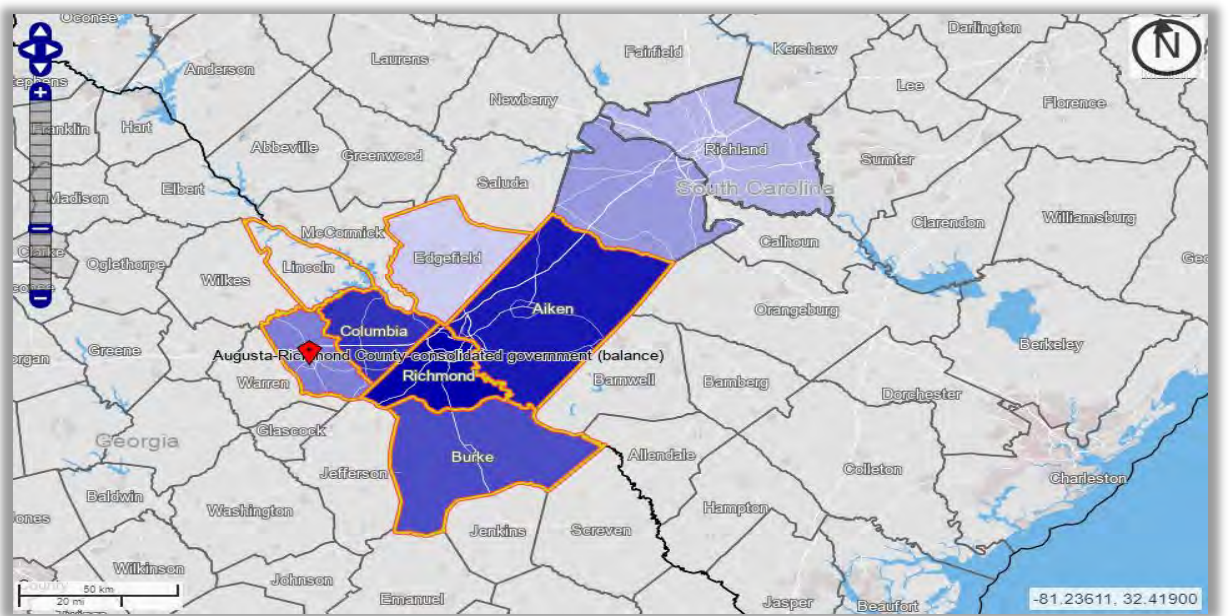
Figure 8.3: Worker Density within the Study Area. Source: US Census Bureau, 2018

Within the Study Area, workers are most heavily employed within Augusta-Richmond and Aiken Counties. Table 8.6 displays the places of work of the Study Area's residents. Columbia County employs 12% of all employees living in the Study Area. Edgefield County employs the fewest workers of all the counties within the Study Area and employs only 1.4% of the Study Area's population. Table 8.5, above, details the total number of workers employed in each county, as well as the percentage of Study Area residents that are employed there.

As Figure 8.4 indicates, nearly half of the residents of the region have a commute of less than 10 miles to work. Approximately 24% live more than 50 miles from their place of work. The remaining 25% of residents live between 10 and 50 miles from their place of work.

8.4.2 Population Trends

The Study Area's population has grown steadily over the last twenty years and is projected to maintain this growth in the coming years. The population increased by more than 100,000 people, or approximately 20%, since 2001. By 2030 the population is expected to increase by another 55,000 people.

Table 8.6: Counties Where Study Area Workers Are Employed

County	Worker Count	Share
Richmond County, GA	78,893	33.6%
Aiken County, SC	43,762	18.6%
Columbia County, GA	28,229	12.0%
Burke County, GA	8,926	3.8%
Fulton County, GA	6,560	2.8%
McDuffie County, GA	4,568	1.9%
Lexington County, SC	3,735	1.6%
Richland County, SC	3,719	1.6%
Edgefield County, SC	3,402	1.4%
Gwinnett County, GA	3,026	1.3%
All Other Locations	49,874	21.3%
All Counties	**234,694**	**100.0%**

Source US Census Bureau, 2018

Figure 8.4: Commute Distances for Residents and Workers
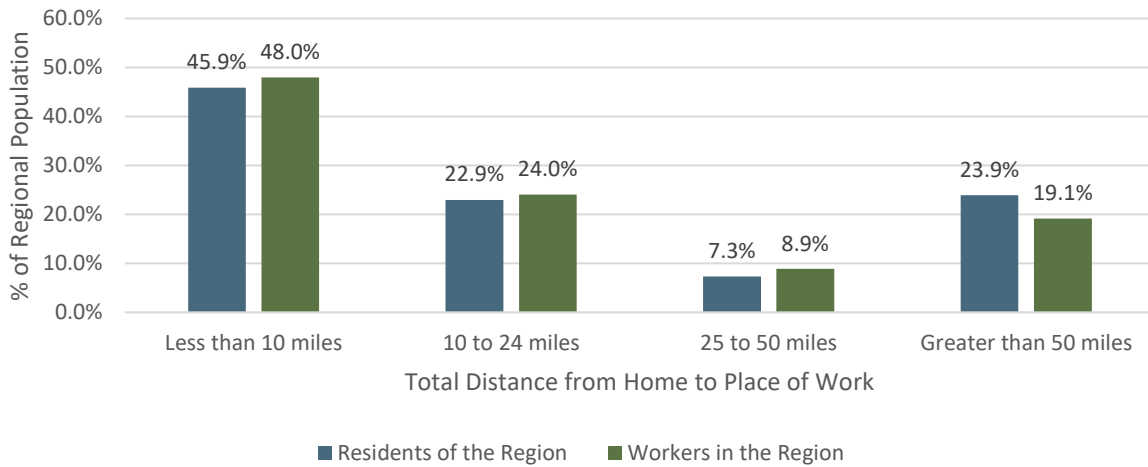
Source: US Census Bureau, 2018

Figure 8.5: Study Area Population (2000-2030)
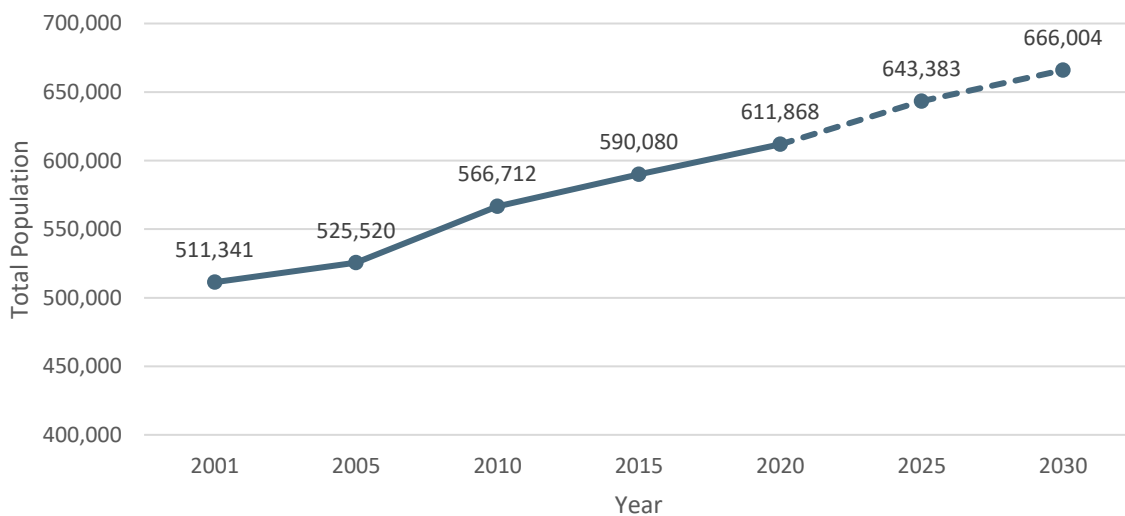
Source: EMSI and Stantec, 2021

The age distribution of the region aligns almost exactly with that of the United States as a whole. Unsurprisingly, Augusta-Richmond County has a slightly younger population, approximately 50% of the

Figure 8.6: Population by Age (2020)

	<10	10 to19	20 to 34	35 to 54	55 to 64	65+
U.S. Total	12%	13%	21%	25%	13%	17%
Study Area	12%	13%	21%	24%	13%	17%
Lincoln	10%	10%	17%	22%	16%	25%
Edgefield	8%	11%	19%	26%	15%	20%
McDuffie	13%	14%	18%	23%	14%	19%
Richmond	13%	13%	24%	22%	12%	15%
Aiken	11%	12%	18%	24%	14%	20%
Columbia	13%	14%	19%	27%	12%	14%
Burke	14%	14%	18%	23%	14%	17%
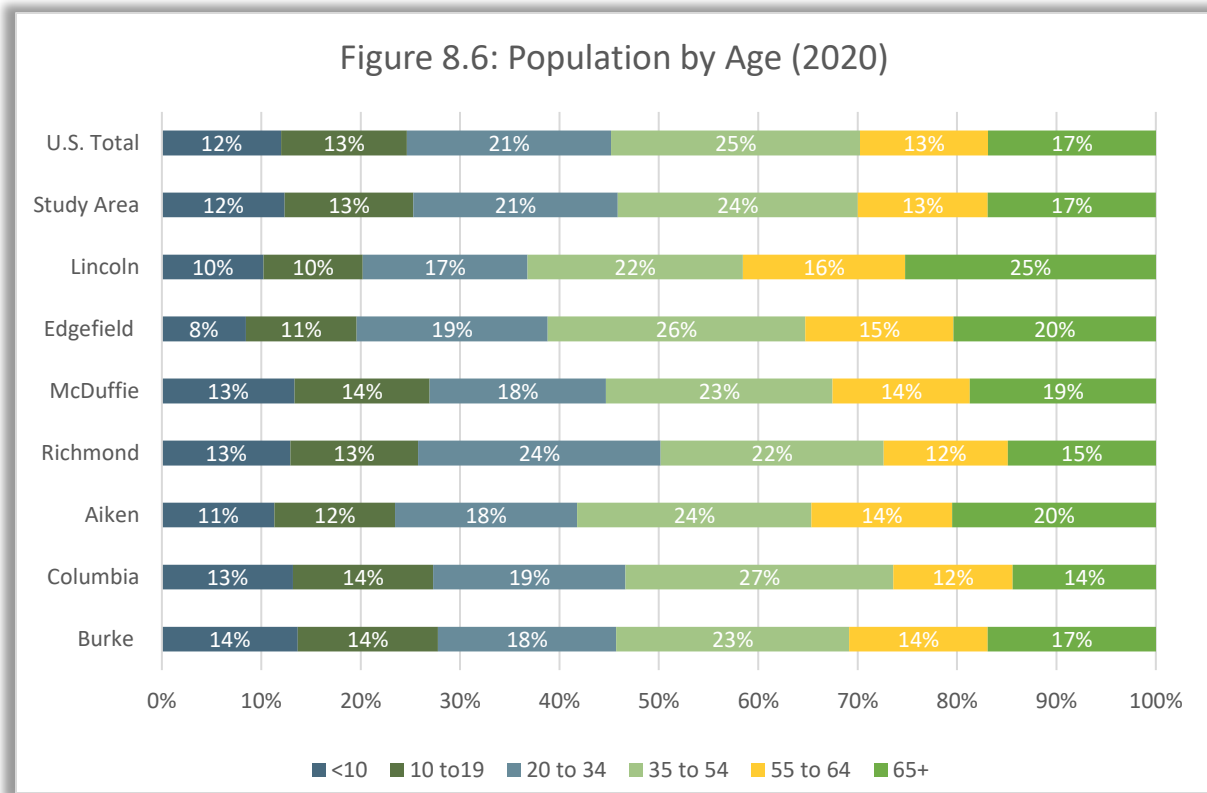
Source: EMSI, 2021

population is under 35 years old. Urban centers are more likely to attract younger populations due to work and leisure opportunities. In addition, the military population is comprised mostly of younger people. Lincoln County has the largest 65+ population; Aiken and Edgefield counties follow with 20% of their population above 65 years old. These counties will see increased rates of retirees in the coming years and should be prepared to provide suitable housing for this part of the population.

In 2021, the Study Area has slightly lower educational attainment rates than South Carolina, Georgia, and the United States, as about 88% of the population earned at least a high school diploma or a GED/alternative credential. About 28% of the Study Area population holds a bachelor's degree or higher compared to about 33% in Georgia, 30% in South Carolina, and 34% in the United States.

Figure 8.7: Educational Attainment (2021)

	Study Area	Georgia	South Carolina	U.S. Total
Less than 9th Grade	3.7%	4.5%	3.6%	4.7%
9th - 12th Grade, No Diploma	8.0%	7.3%	7.7%	6.4%
High School Graduate	24.9%	22.6%	23.7%	22.9%
GED/Alternative Credential	5.2%	4.6%	4.3%	4.0%
Some College, No Degree	21.1%	19.9%	20.4%	19.8%
Associate Degree	9.4%	8.1%	9.9%	8.7%
Bachelor's Degree	17.2%	20.2%	18.8%	20.6%
Graduate/Professional Degree	10.5%	12.9%	11.6%	13.0%

Source: ESRI, 2021

8.4.3 Income and Employment Trends

The median household income of the Study Area, while higher than that of South Carolina, is lower than the median for both Georgia and the United States. However, the median home value in the Study Area is substantially lower than both states' medians, as well as the national median; this can indicate greater housing affordability. The Housing Affordability Index, which measures whether a typical family earns enough to qualify for a mortgage loan on a typical home within the Study Area, demonstrates this. Approximately 56.4% of the households within the Study Area earn more than $50,000 per year. $50,000 was used as a benchmark because that is close to what the average United States salary was in 2021 according to the Bureau of Labor ($53,490). This is a lower percentage than that of Georgia or the United States, but slightly higher than that of South Carolina. Lower housing prices indicate that the Study Area is less expensive than Georgia and the United States, as higher home prices are driven by higher demand to live in a region, and higher demand to live in a region causes higher costs of living. Because housing affordability reflects the cost of living in a region, the median household income adjusted for using the housing affordability index was examined. This was calculated as (Median Household Income x Housing Affordability Index) / 100. According to the index, the Study Area would be the most affordable area to live in because it has a relatively high median household income and a relatively low housing affordability index. Because of this, residents in the Study Area are relatively more affluent compared to other areas in Georgia, South Carolina, and the United States. More information can be found in Table 8.6.

Figure 8.8 shows that the Study Area has the highest share of workers who would be considered "middle class", as 18.7% of workers earn the median distribution. However, the Study Area's share of residents who earn less than the median is greater than Georgia and the United States. Georgia has fewer residents earning more than the median income range than Georgia and the United States. This means that the Study Area is less affluent than Georgia and the United States but more affluent than South Carolina in terms of nominal wages.

Figure 8.8: Household Income (2021)
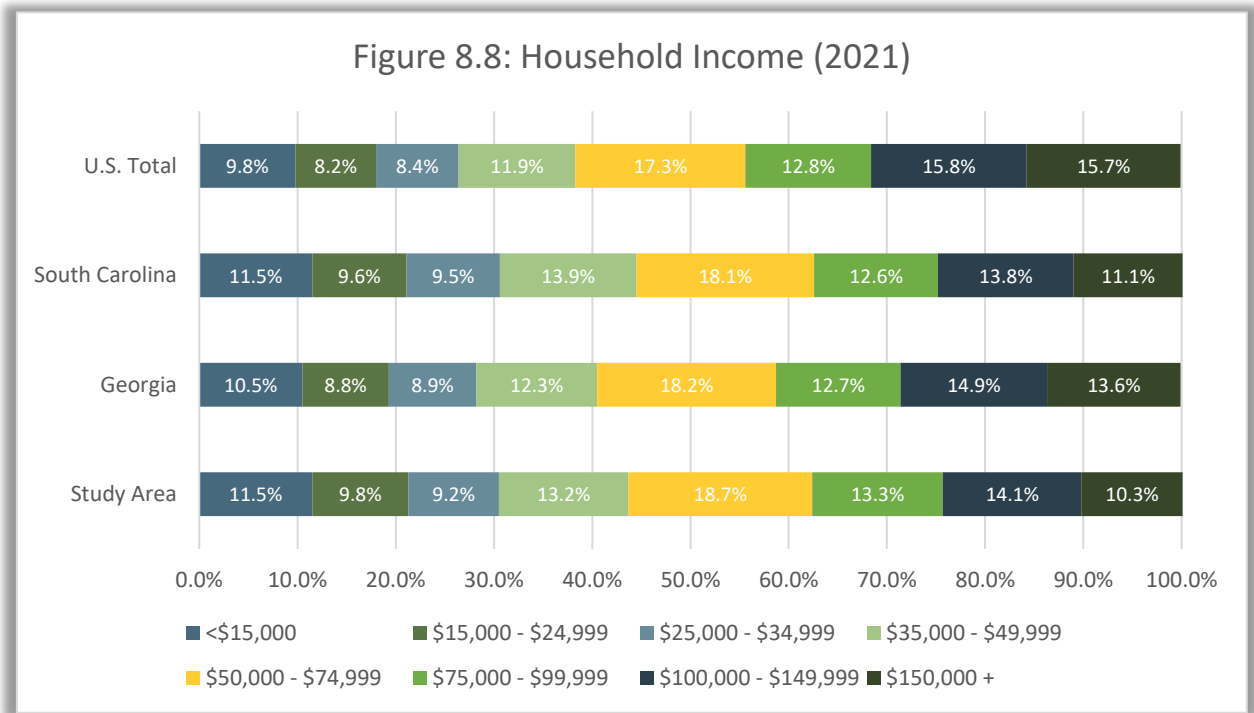
Source: ESRI, 2021

Table 8.7: Median Household Income, Median Home Value, HAI, and Median Age

	Study Area	Georgia	South Carolina	United States
Median Household Income	$56,361	$60,605	$55,711	$64,730
Median Home Value	$191,533	$224,301	$203,602	$264,021
Housing Affordability Index	163	149	161	130
Median Age	38.7	37.2	39.8	38.8
Median Household Income and Housing Affordability Index	$91,868.43	$90,301.45	$89,694.71	$84,149

Source: ESRI, 2021

Table 8.8 highlights occupations classified by Standard Occupational Classification codes, or SOC codes. This system is a federal standard for organizing worker data into defined occupational categories. The largest occupations by employment within the region are "Retail Salespersons", "Fast Food and Counter Workers", and "Cashiers." These occupations are important for the Study Area because they support a large part of the population. In 2020, the three occupations combined employed a total of 21,296 workers, over 8% of total employment. The occupation designation "Military-only occupation" came in fourth place, with 6,794 employed in 2020, about 2.6% of total employment. With the exception of

Registered Nurses, all of the largest occupations within the Study Area have median annual incomes that are relatively lower, which helps explain the Study Area's lower median household income. Many of the occupations listed above do not require much formal education and provide workers with relatively low wages.

Table 8.8: Study Area Top 10 Occupations by Employment

SOC	Description	2010 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	Median Annual Earnings
41-2031	Retail Salespersons	7,498	7,391	(108)	(1%)	$22,397.87
35-3023	Fast Food and Counter Workers	5,943	7,033	1,091	18%	$18,519.82
41-2011	Cashiers	7,007	6,872	(135)	(2%)	$20,414.94
55-9999	Military-only occupations	6,793	6,794	1	0%	$32,263.11
29-1141	Registered Nurses	5,569	6,577	1,008	18%	$75,221.42
43-4051	Customer Service Representatives	4,264	5,316	1,052	25%	$30,965.30
43-9061	Office Clerks, General	4,921	5,114	193	4%	$32,938.84
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	4,494	4,600	106	2%	$26,415.84
31-1128	Home Health and Personal Care Aides	2,780	4,263	1,483	53%	$21,844.22
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3,474	3,819	345	10%	$31,730.40

Source: EMSI, 2020

8.4.4 Housing Inventory

Most of the housing structures in the Study Area are owner-occupied. The percentage of owner-occupied housing structures is higher than those in Georgia and the U.S., but slightly lower than that of South

Figure 8.9: Owner and Renter Occupancy (2021)

	Study Area	South Carolina	Georgia	U.S. Total
Renter-Occupied	31%	30%	34%	35%
Owner-Occupied	69%	70%	66%	65%
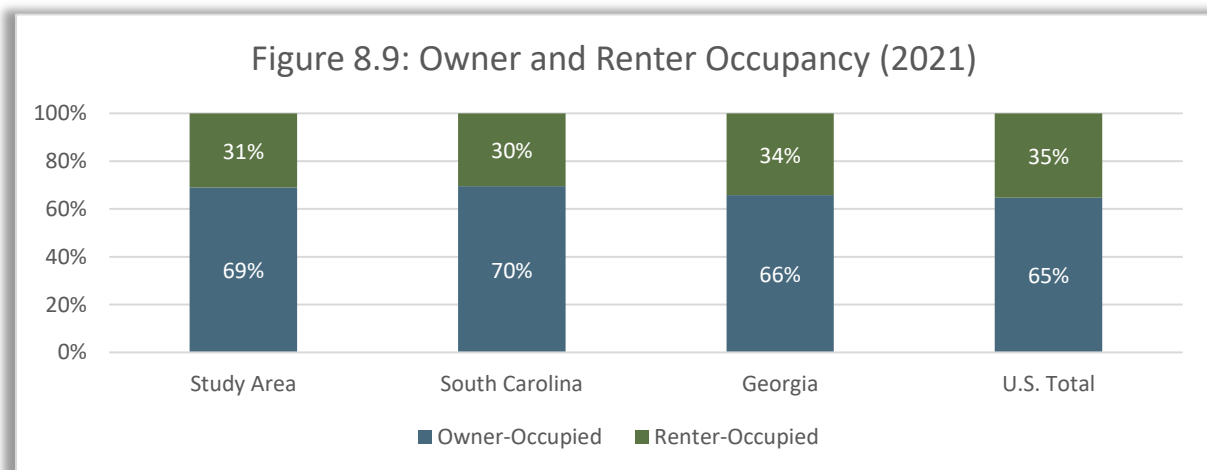
Source: ESRI, 2021

Carolina. Vacancy rates are consistent with those in the rest of the United States: 12% of housing units within the Study Area are vacant. South Carolina has the highest vacancy rate at 15%.

Approximately 42% of homes in the Study Area were built in 1990 or later. The percentage of newer homes is higher than the national percentage but lower than those of Georgia or South Carolina. The Study Area has a lower percentage of older homes, therefore, the potential for redevelopment of existing or historic housing structures is lower than in other areas. However, the higher percentage of newer housing developments indicates that the housing sector is more robust than the nation overall.

The distribution of household size within the Study Area is similar to those of Georgia, South Carolina, and the rest of the United States. Approximately 41% of households are home to one or two people; these are likely singles, younger couples, or retired empty-nesters; 59% of households are home to 3 or more people.

Figure 8.10: Occupied Households by Size (2010)

	Study Area	Georgia	South Carolina	U.S. Total
4+ Person Household	23%	26%	22%	24%
3 Person Household	18%	17%	17%	16%
2 Person Household	33%	32%	35%	33%
1 Person Household	26%	25%	27%	27%

Source: EMSI, 2021.

Figure 8.11: Housing Structures by Year Built (2019)

	Built 2010 or later	Built 1990-2009	Built 1970-1989	Built 1950-1969	Built 1949 or earlier
U.S. Total	5%	28%	29%	21%	18%
South Carolina	8%	38%	31%	16%	7%
Georgia	6%	42%	31%	15%	7%
Study Area	9%	34%	31%	18%	8%

Source: ESRI, 2021

Approximately 71.5% of housing structures in the Study Area are single-family units. This percentage is consistent with the rent-to-own ratio presented above. Approximately 69% of housing units are owned, which aligns with the number of single-unit detached structures within the region. It is also worth noting that the Study Area has a higher percentage of single-unit housing structures than South Carolina, Georgia, or the national average.

Approximately 67.2% of households in the Study Area are family-occupied, while 32.8% of households are classified as "nonfamily households." Of the 32.8% nonfamily households, 28.5% are occupied by one individual. This aligns with the owner/renter data presented previously that most of the single-occupant units are rented.

Less than 15% of the housing structures within the Study Area contain two or more units. The Study Area has fewer multi-unit housing structures by percentage than the rest of the United States in every category listed below. This could be due to limited demand for multi-unit structures. However, if the Study Area has similar housing needs to the rest of the United States, the population might be better served with more development of multi-unit housing structures. In addition to single and multi-unit homes, the Study Area has a large percentage of mobile homes compared to US and Georgia averages. The number of mobile homes in the region is less than the South Carolina average.

While the Study Area has fewer multifamily housing units than the national average, multifamily housing units tend to be more common in areas that are more populous and have greater demand for dwelling units. Every county within the Study Area scores below 100 on the Cost-of-Living Index according to bestplaces.net, indicating that they are all relatively inexpensive areas to live in.
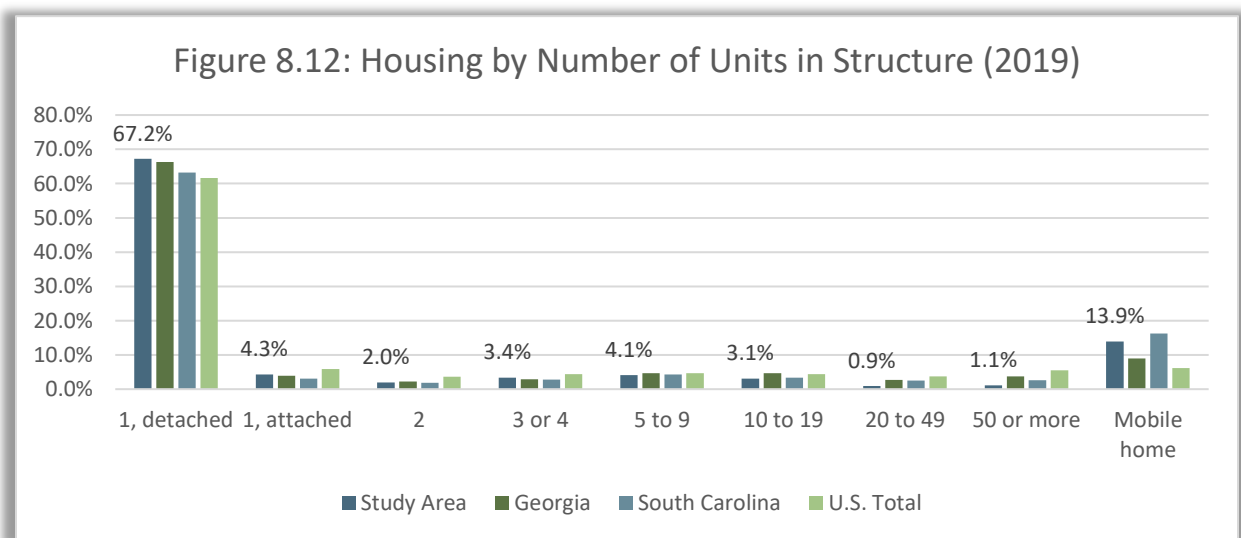
Figure 8.12: Housing by Number of Units in Structure (2019)

Nearly 70% of homes within the Study Area are worth less than $200,000. The percentage of homes below this threshold is higher than in Georgia, South Carolina, and the United States. The median home value within the Study Area is $191,533; the median home value for the United States is $264,021. The significant difference in home value is due to different housing demands. As demand for living in certain regions rises, housing costs rise as well. Table 8.9 shows that residents of Columbia County generally have

the most purchasing power of all residents in the Study Area due to the higher household incomes within the county. Moreover, Table 8.10 compares the household incomes of the Study Area to the Georgia, South Carolina, and the United States averages.

Table 8.9: Study Area Percentage of Households by Income by County

Value	Burke County, GA	Columbia County, GA	Lincoln County, GA	McDuffie County, GA	Richmond County, GA	Aiken County, SC	Edgefield County, SC
< $50,000	26.6%	3.2%	21.1	14.3%	11.2%	13%	17.3%
$50,000 to $99,999	27.3%	8.7%	19.6	31.2%	34.5%	17.4%	18%
$100,000 to $149,999	18.4%	17%	15.1	19.2%	22.9%	17.7%	19.8%
$150,000 to $199,999	13.9%	20%	17	12.3%	15.6%	19.7%	15.6%
$200,000 to $299,999	9.1%	29.7%	12.7	14.1%	9.3%	19.5%	16.1%
$300,000 to $499,999	3.1%	17.3%	10.1	7.1%	4.1%	9.5%	9.8%
$500,000 to $999,999	1.3%	3.5%	3.7	1.1%	1.9%	3%	3.2%
Over $1,000,000	0.3%	0.6%	0.7	0.6%	0.5%	0.3%	0.3%
Median	$88,700	$203,400	$127,700	$109,500	$108,000	$147,300	$129,300

Source: Emsi 2021

Table 8.10: Percentage of Households by Income

Value	Study Area	Georgia	South Carolina	United States
< $50,000	10.69%	8.2%	11.2%	6.9%
$50,000 to $99,999	21.45%	14.8%	16.7%	12%
$100,000 to $149,999	19.31%	16.5%	17.3%	13.3%
$150,000 to $199,999	17.88%	17.3%	16.5%	14%
$200,000 to $299,999	17.35%	19.6%	18.2%	19.6%
$300,000 to $499,999	9.94%	15.7%	13.1%	19.3%
$500,000 to $999,999	2.73%	6.7%	5.6%	11.4%
Over $1,000,000	0.62%	1.3%	1.4%	3.4%
Median	$146,944	$176,000	$162,300	$217,500

Source: Emsi, 2021

Figure 8.13 highlights that all four geographies follow the same kind of rental distribution. The average monthly rent falls between $1,000 to $1,249. The median rent in the Study Area is between $900 to $999 while for the United States, Georgia, and South Carolina, median rents fall between $1,000 to $1,249, $900 to $999, and $1,000 to $1,249, respectively.

Figure 8.13: Aggregate Monthly Gross Rent Payment (2019)
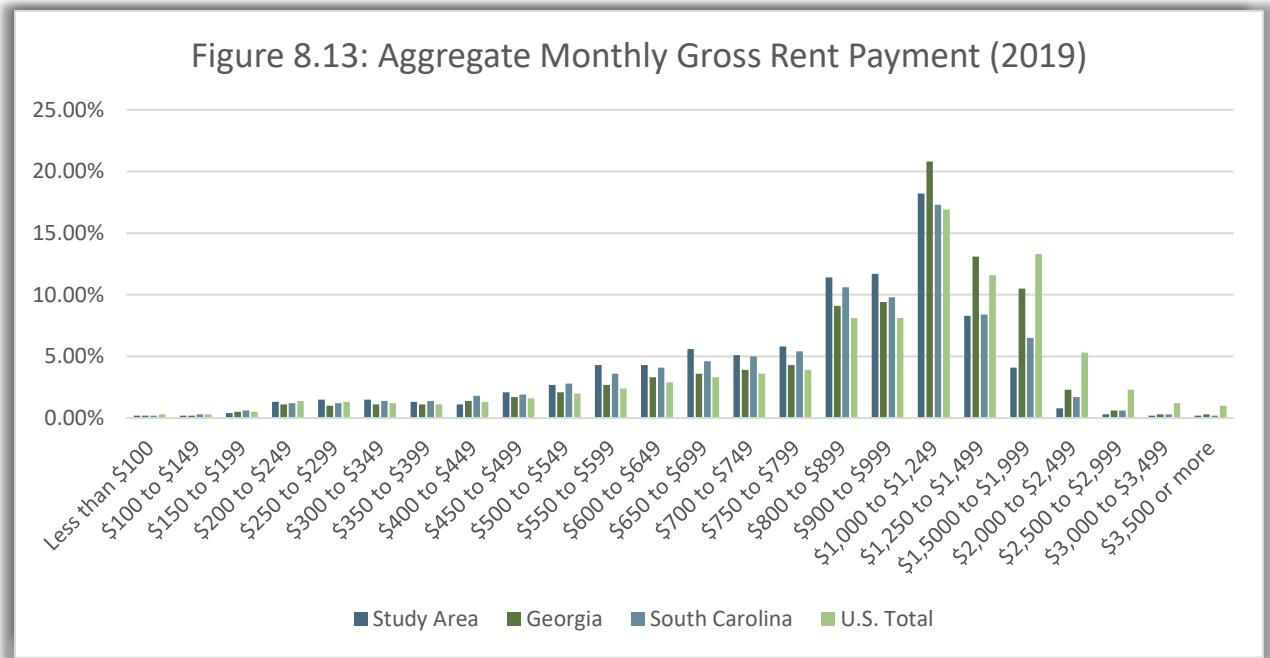
Source: ESRI, 2021

Table 8.11 Median Household Value, Rent, and Income

Geography	Median Household Value	Median Gross Rent	Median Household Income
United States	217,500	1,062	62,843
Georgia	176,000	1,006	58,700
South Carolina	162,300	894	53,199
Study Area	146,100	877	44,151
Burke County	88,700	616	53,269
Columbia County	203,400	1,149	82,339
Lincoln County	127,700	708	39,742
McDuffie County	109,500	695	43,468
Richmond County	108,000	888	42,728
Aiken County	147,300	819	51,339
Edgefield County	129,300	637	49,127

2019 ACS 5-Year Estimates

When comparing county-specific data to the Study Area, it is of note that the median rental rate in Augusta-Richmond County is significantly higher than in surrounding counties with similar median household values and incomes. This is likely due to the presence of Fort Gordon, where demand for rental

properties is higher to support a more transient population., as well as competitive military compensation rates through the Basic Allowance for Housing, which tend to increase rental rates in the area. Conversely, Burke, Columbia, and Edgefield Counties have lower median rental rates compared to their respective median household incomes. This suggests that while Augusta-Richmond County residents would benefit from lower priced rental properties, Burke, Columbia, and Edgefield Counties could support development with higher rental rates.

Additionally, when compared to the nation, Georgia, South Carolina, and the Study Area, Burke, Columbia, McDuffie, and Augusta-Richmond Counties all have a lower median household value relative to median household income, suggesting that the incomes in these counties would support the development of higher value homes.

8.5 Projected Demand

A housing demand model for the Study Area forecasts and quantifies annual demand over a five- and ten-year period. The Study Area Housing Demand Model reflects ESRI business analyst data that includes U.S Census data, population growth estimates from Chapter 2, and forecasts population statistics. Using this data, a Housing Demand Model for the Study Area's estimated population through 2030. Once persons living in group quarters are removed from the population projection, then an estimate for the population living in households can be made.

Housing unit occupancy rates remained consistent at around 89% from 2000 to 2021. The projected number of vacant homes is expected to fluctuate between 31,000 and 34,000 between 2021 and 2030. To calculate housing demand over the next ten years, vacancy and demolition rates are factored into the estimate of new housing development. Using population growth statistics, the net increase in housing unit demand can be estimated.

Based on current estimates, the Study Area will need an additional 14,520 housing units between 2021 and 2025 to accommodate population growth. As the Study Area continues to grow, an additional 11,852 units will be needed by 2030. This equates to the addition of 2,904 units annually between 2021 and 2025 and 2,370 units annually between 2026 and 2030.

Some of this growth is directly attributable to military growth. Since 2012, Fort Gordon has added approximately 11,000 military personnel, civilians, and contractors with an average household size of 2.54, and approximately 4,330 housing units in the Study Area are occupied by personnel that have become employed at the Installation since 2012. By 2024, the number of military jobs is expected to increase by 894; after accounting for dependents, the total military population is expected to increase by 3,183 by 2024. Assuming a constant average household size of 2.54, it can be expected that by 2024 approximately 1,253 of the new housing units developed for the entire population will be required to accommodate new military personnel.

Table 8.12: Study Area Projected Housing Demand

Demand for New Units	2010	2021	2026	2030
Total Based on Household Growth	26,627	20,976	9,409	6,602
Total New Units Needed (Including Units Lost)	31,053	25,894	14,520	11,852
Annualized Demand	3,105	2,877	2,904	2,370

Source: ESRI and Stantec, 2021

After calculating the total new units needed by 2026 and 2030, the projected housing tenancy can be determined. Using available renter and owner data, the number of for-rent and for-sale units to be demanded in the next ten years has been calculated. Between 2021 and 2030, an estimated 26,379 housing units will be required to keep up with the Study Area's growth. Between 2010 and 2019, the Study Area saw an additional 16,283 new housing units developed. Based on this housing demand model, the development will have to occur at a much faster rate over the next 10 years. If the development rate of the last 10 years is any indication of the private sector's ability to keep up with growth in the next 10 years, planning might be necessary to meet the growing population's housing needs. Considering current rental and ownership trends within the region, the expectation is that 18,469 of those units (70%) will be for sale while 7,903 units (30%) will be for rent.

Table 8.13: Study Area Housing Demand by Type

Unit Type	2021-2026 Annual Total	2021-2026 5-Year Total	2026-2030 Annual Total	2026-2030 5-Year Total	2021-2030 Total
Own	2,033	10,169	1,660	8,300	18,469
Rent	871	4,351	711	3,552	7,903
Total Units	2,904	14,520	2,371	11,852	26,372

Source: ESRI, 2021

8.5.1 County Breakdown

The tables in this section provide housing demand projections at the county level.

Aiken County

Based on current estimates, Aiken County will need an additional 5,776 housing units by 2030. This equates to an annual demand of 660 units between 2021 and 2026 and an annual demand of 495 units between 2026 and 2030.

Table 8.13: Aiken County Projected Housing Demand

Demand for New Units	2010	2021	2026	2030
Total Based on Household Growth	8,432	5,396	1,835	9,64
Total New Units Needed (Including Units Lost)	9,756	6,840	3,301	2,475
Annualized Demand	976	760	660	495

Source: ESRI and Stantec, 2021

In Aiken County, about 79% of homes are owner-occupied; about 21% are renter-occupied. This means that between 2021 and 2030, the county will need an additional 4,544 owner-occupied units and 1,231 renter-occupied units.

Table 8.14: Aiken County Housing Demand by Type

Unit Type	2021-2026 Annual Total	2021-2026 5-Year Total	2026-2030 Annual Total	2026-2030 5-Year Total	2021-2030 Total
Own	519	2,597	390	1,948	4,544
Rent	141	703	105	527	1,231
Total Units	660	3,301	495	2,475	5,776

Source: ESRI, 2021

Burke County

Based on current estimates, Burke County will need an additional 309 housing units by 2030. This equates to an annual demand of 35 units between 2021 and 2026 and an annual demand of 27 units between 2026 and 2030.

Table 8.15: Burke County Projected Housing Demand

Demand for New Units	2010	2021	2026	2030
Total Based on Household Growth	583	-301	9	-38
Total New Units Needed (Including Units Lost)	763	-128	176	133
Annualized Demand	76	-14	35	27

Source: ESRI and Stantec, 2021

In Burke County, about 71% of homes are owner-occupied; about 29% are renter-occupied. This means that between 2021 and 2030, the county will need an additional 221 owner-occupied units and 89 renter-occupied units.

Table 8.16: Burke County Housing Demand by Type

Unit Type	2021-2026 Annual Total	2021-2026 5-Year Total	2026-2030 Annual Total	2026-2030 5-Year Total	2021-2030 Total
Own	25	125	19	96	221
Rent	10	50	8	39	89
Total Units	35	176	27	133	309

Source: ESRI, 2021

Columbia County

Based on current estimates, Columbia County will need an additional 13,619 housing units by 2030. This equates to an annual demand of 1,499 units between 2021 and 2026 and an annual demand of 1,224 units between 2026 and 2030.

Table 8.17: Columbia County Projected Housing Demand

Demand for New Units	2010	2021	2026	2030
Total Based on Household Growth	13,529	14,722	6,108	4,711
Total New Units Needed (Including Units Lost)	14,435	15,911	7,497	6,122
Annualized Demand	1,444	1,768	1,499	1,224

Source: ESRI and Stantec, 2021

In Columbia County, about 83% of homes are owner-occupied; about 17% are renter-occupied. This means that between 2021 and 2030, the county will need an additional 11,285 owner-occupied units and 2,334 renter-occupied units.

Table 8.18: Columbia County Housing Demand by Type

Unit Type	2021-2026 Annual Total	2021-2026 5-Year Total	2026-2030 Annual Total	2026-2030 5-Year Total	2021-2030 Total
Own	1,242	6,212	1,015	5,073	11,285
Rent	257	1,285	210	1,049	2,334
Total Units	1,499	7,497	1,224	6,122	13,619

Source: ESRI, 2021

Edgefield County

Based on current estimates, Edgefield County will need an additional 496 housing units by 2030. This equates to an annual demand of 52 units between 2021 and 2026 and an annual demand of 47 units between 2026 and 2030.

Table 8.19: Edgefield County Projected Housing Demand

Demand for New Units	2010	2021	2026	2030
Total Based on Household Growth	969	345	58	26
Total New Units Needed (Including Units Lost)	1,162	553	260	236
Annualized Demand	116	61	52	47

Source: ESRI and Stantec, 2021

In Edgefield County, about 72% of homes are owner-occupied; about 28% are renter-occupied. This means that between 2021 and 2030, the county will need an additional 358 owner-occupied units and 139 renter-occupied units.

Table 8.20: Edgefield County Housing Demand by Type

Unit Type	2021-2026 Annual Total	2021-2026 5-Year Total	2026-2030 Annual Total	2026-2030 5-Year Total	2021-2030 Total
Own	38	188	34	170	358
Rent	15	73	13	66	139
Total Units	52	260	47	236	496

Source: ESRI, 2021

Lincoln County

Based on current estimates, Lincoln County will need an additional nine housing units by 2030. This equates to an annual demand of four units between 2021 and 2026. Because the county is experiencing population decline, it is possible that the county experience a surplus of housing between 2026 and 2030.

Table 8.21: Lincoln County Projected Housing Demand

Demand for New Units	2010	2021	2026	2030
Total Based on Household Growth	29	-20	-60	-98
Total New Units Needed (Including Units Lost)	116	68	22	-13
Annualized Demand	12	8	4	-3

Source: ESRI and Stantec, 2021

In Lincoln County, about 71% of homes are owner-occupied; about 29% are renter-occupied. This means that between 2021 and 2030, the county will need an additional six owner-occupied units and 3 renter-occupied units.

Table 8.22: Lincoln County Housing Demand by Type

Unit Type	2021-2026 Annual Total	2021-2026 5-Year Total	2026-2030 Annual Total	2026-2030 5-Year Total	2021-2030 Total
Own	3	16	-2	-9	6
Rent	1	6	-1	-4	3
Total Units	4	22	-3	-13	9

Source: ESRI, 2021

McDuffie County

Based on current estimates, McDuffie County will need an additional 352 housing units by 2030. This equates to an annual demand of 37 units between 2021 and 2026 and an annual demand of 33 units between 2026 and 2030.

Table 8.23: McDuffie County Projected Housing Demand

Demand for New Units	2010	2021	2026	2030
Total Based on Household Growth	311	-216	23	-6
Total New Units Needed (Including Units Lost)	480	-46	187	165
Annualized Demand	48	-5	37	33

Source: ESRI and Stantec, 2021

In McDuffie County, about 67% of homes are owner-occupied; about 33% are renter-occupied. This means that between 2021 and 2030, the county will need an additional 234 owner-occupied units and 118 renter-occupied units.

Table 8.24: McDuffie County Housing Demand by Type

Unit Type	2021-2026 Annual Total	2021-2026 5-Year Total	2026-2030 Annual Total	2026-2030 5-Year Total	2021-2030 Total
Own	25	125	22	109	234
Rent	13	63	11	55	118
Total Units	37	187	33	165	352

Source: ESRI, 2021

Richmond County

Based on current estimates, Richmond County will need an additional 5,810 housing units by 2030. This equates to an annual demand of 615 units between 2021 and 2026 and an annual demand of 547 units between 2026 and 2030.

Table 8.25: Richmond County Projected Housing Demand

Demand for New Units	2010	2021	2026	2030
Total Based on Household Growth	2,774	1,051	1,436	1,042
Total New Units Needed (Including Units Lost)	4,342	2,696	3,076	2,734
Annualized Demand	434	300	615	547

Source: ESRI and Stantec, 2021

In Richmond County, about 51% of homes are owner-occupied; about 49% are renter-occupied. This means that between 2021 and 2030, the county will need an additional 2,985 owner-occupied units and 2,825 renter-occupied units.

Table 8.26: Richmond County Housing Demand by Type

Unit Type	2021-2026 Annual Total	2021-2026 5-Year Total	2026-2030 Annual Total	2026-2030 5-Year Total	2021-2030 Total
Own	316	1,580	281	1,404	2,985
Rent	299	1,496	266	1,330	2,825
Total Units	615	3,076	547	2734	5,810

Source: ESRI, 2021

8.6 Spatial Analysis

The current distribution between owner-occupied housing and rental housing in the Study Area is mapped in Figures 8.14 and 8.15. In Figure 8.14, the darker shaded areas indicate a greater percentage of owner-occupied units and lighter areas demonstrate a greater percentage of renter-occupied units. While the Study Area has a higher owner occupancy rate than the nation, the concentration of rental housing is close to the Installation. This may be tied to housing preferences of military members and their families. In general, military families are more likely to rent, which is often more convenient due to the frequent moves typical of military personnel. The typical service member moves every three years, and while Fort Gordon has a longer dwell time of three to seven years, service members still fill available on-Installation housing likely due to its cost efficiency and ease of transition. Currently, the Installation's on-Installation housing is at or near capacity, and the proposed development of 30 units would replace existing housing stock, resulting in no net gain in housing availability.

The rural areas and outer edges of the Study Area have a greater percentage of owner-occupied housing units. A significant concentration of owner-occupied units exists around the City of Aiken. Based on these trends it may be beneficial to promote rental housing such as multifamily developments closer to the Installation to cater to military families. Infill development opportunities may exist to support these multi-family developments. Similarly, owner-occupied housing and single-family home development should be focused on infill development areas between the Installation and more rural and suburban portions of the region that are already served by utilities, which accommodate the growth of non-military residents that are more likely to remain in one place longer. Focusing on infill developments in urban and suburban areas

will help mitigate sprawl and would be consistent with recommendations from county comprehensive plans.
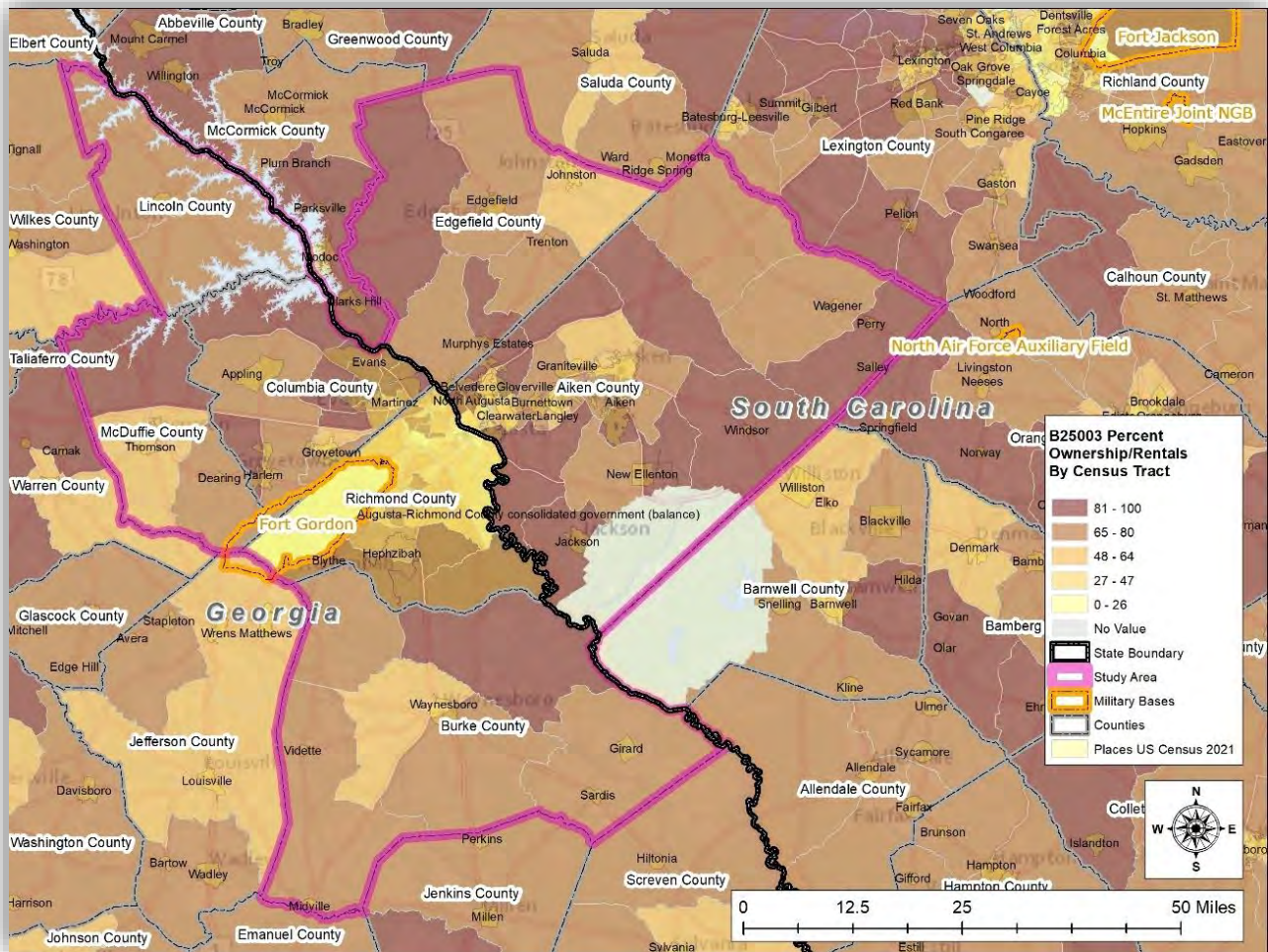
Figure 8.14: Percent Ownership/Rentals by Census Tract. Source: US Census Bureau and Geo Velo

Figure 8.15 demonstrates the concentration of owner-occupied housing units within the Study Area by census tract. This figure aligns with Figure 8.14 and highlights that a greater number of owner-occupied housing units are located farther from the Installation. The largest number of owner-occupied housing units are located southeast of the City of Aiken.

The number of renters occupied units was also examined in Figure 8.16. This figure demonstrates that most of the Study Area's rental units are concentrated near more urbanized areas as well as Fort Gordon. There is a higher concentration of rental occupied units near Augusta. There is a smaller concentration of rental units southwest of Fort Gordon and northeast of Aiken. This is consistent with typical land use patterns as rental and multifamily residential units tend to be concentrated in more urban areas.
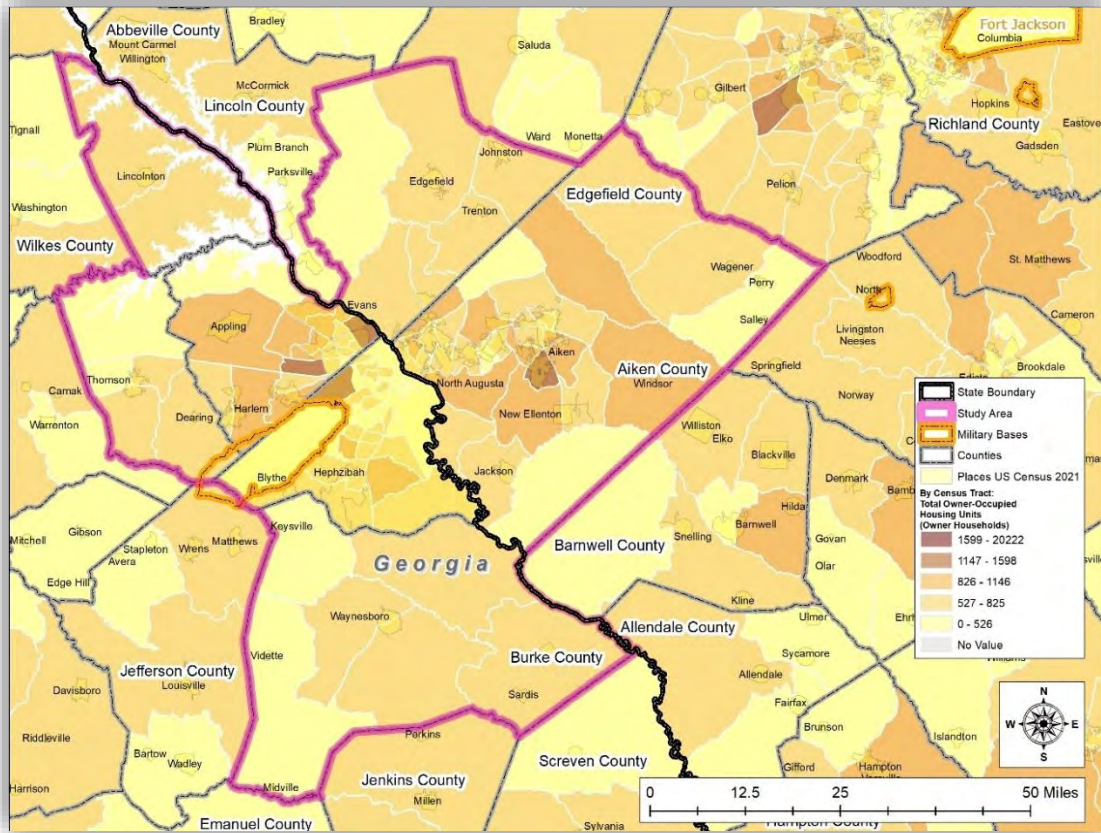
Figure 8.15: Total Owner-Occupied Housing Units. Source: US Census Bureau and GeoVelo
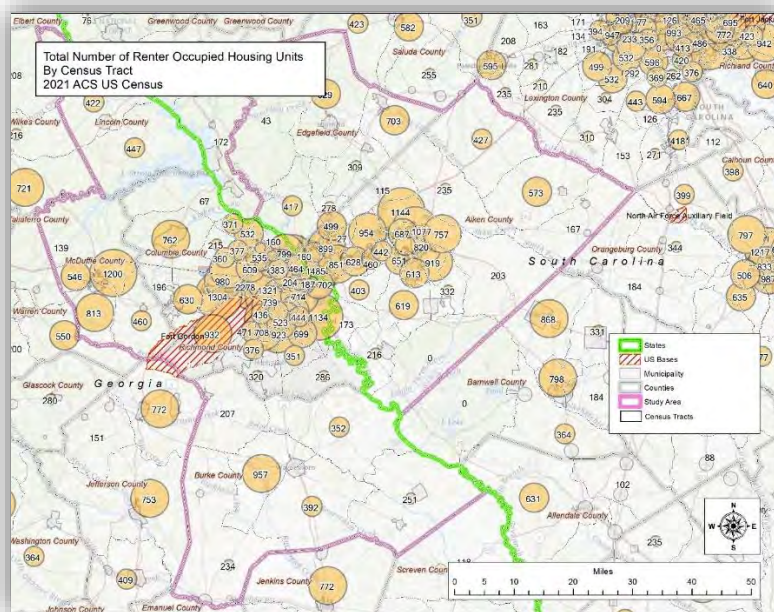
Figure 8.16: Number of Renter-Occupied Units by Census Tract. Source: US Census Bureau and GeoVelo

Figure 8.17 illustrates the median contract rent by census tract for the Study Area. The highest rents are predominantly located near Fort Gordon. This is likely due to the significant demand for rental housing created by military members and employees working at the Installation. This suggests there is a need for more affordable rental options near Fort Gordon, especially for military members. There is also a concentration of higher rents around the City of Aiken likely due to the limited availability of rental products. The lowest rents are concentrated around Augusta and in more rural parts of the Study Area.
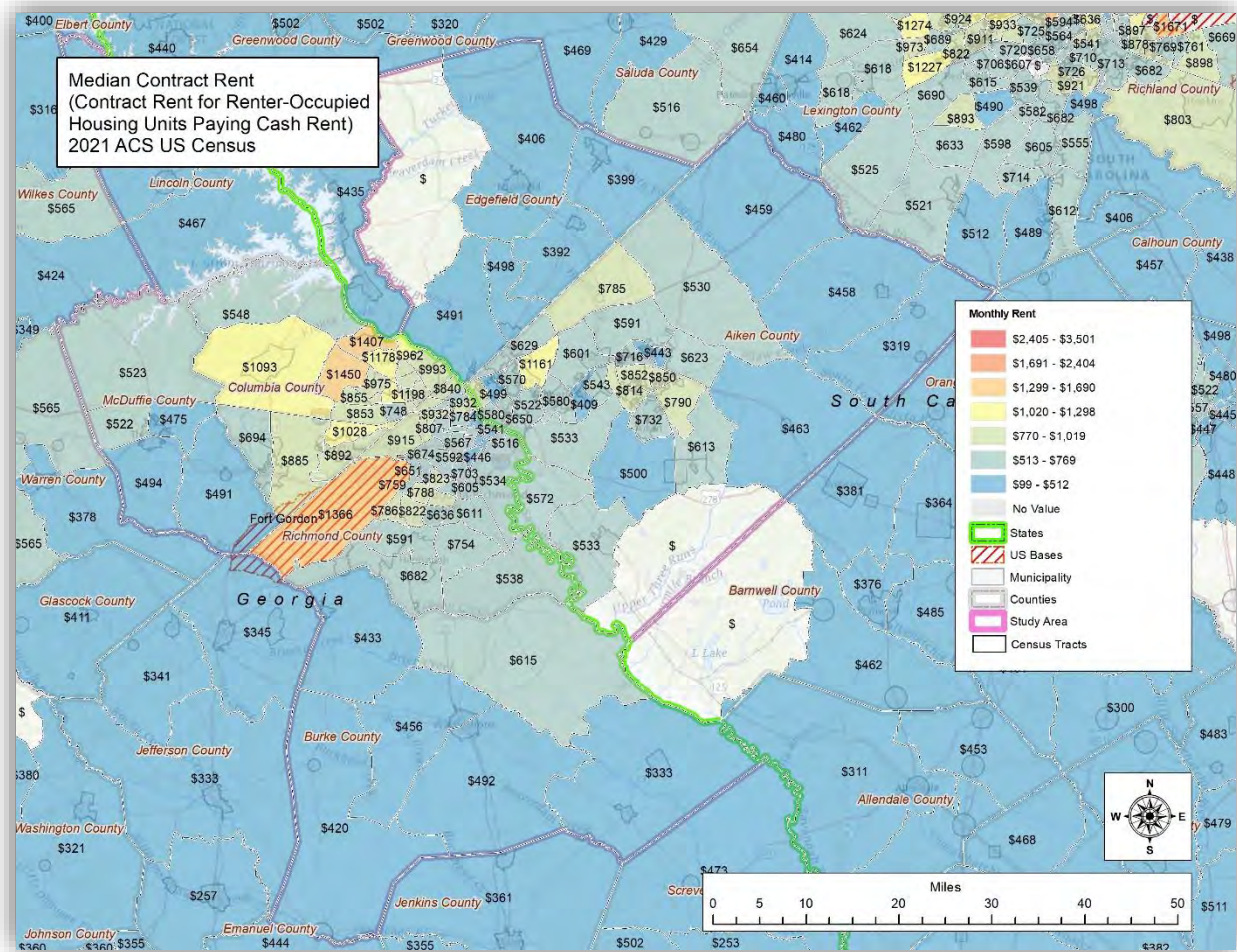
Figure 8.17: Median Contract Rent by Census Tract. Source: US Census Bureau and GeoVelo

The following strategies aim to address these development trends as well as demographic, socioeconomic, and housing trends identified earlier in this chapter. Implementation of strategies could promote the development of housing products that suit the needs of residents and military members while also encouraging improvements to residential zoning and planning to reduce sprawl and strain on utilities.

8.7 Recommendations

The following housing strategies address opportunities to promote housing development that caters to all residents are attainable and address the needs of a growing military population. It is important to note

that virtually every region of the United States is struggling to provide enough attainable housing for its residents and workforce. The rising cost of living and demand for housing in the Study Area may create additional challenges for accommodating growth and new residents. Attainable housing includes profitable, unsubsidized housing developments with price points that meet the needs of residents earning 80% or less of the area median income.

Attainable housing is important as the regional economy is shifting toward service-based industries that pay a livable wage but make it challenging to afford homes over $200,000. Furthermore, the high percentage of single family detached homes could limit opportunities for residents to live in the Study Area and create challenges for addressing growth. These strategies also consider how to address regional growth in a thoughtful manner to preserve the character of regional communities.

To engage in a more successful strategy, a series of three phases should be considered. Phase I: Engagement and Preparation, consisting of developer engagement and site selection, to prepare development opportunities and supply solutions to regional needs. Priorities will include the acquisition of properties near Fort Gordon and areas of high economic impact like downtowns and surrounding areas, where multi-family developments are of particular importance. Phase II will involve identifying and creating a regional housing development team with the objective to address pressing community issues, align goals with other community organizations, and create communication with local communities and governments to optimize resources and expedite processes. Phase III concludes with the establishment of Housing Transition Zones, where quality housing can be developed according to community needs and preferences as generations advance and consumer behavior shifts to lower maintenance, culturally rich environments while creating an alluring culture and environment to attract and retain professionals and young families.

8.7.1 Phase I

Identify and Create a Regional Housing Leadership Team

Most high priority community issues are aligned with county governments and/or non-profit agencies to address the given need (e.g., safety, education, economic development, etc.). In the Study Area, as with most regions, housing does not have an explicit leadership group assigned with maintaining and growing the Study Area's potential. While housing may be an issue that other regional organizations and local governments consider, there is currently no regional entity guiding overall housing efforts to promote the development of all housing types and accommodate growth. Given that this housing assessment is focused on a multi-county region with communities across state boundaries, the group should include expertise from both sides of the Georgia-South Carolina border and both urban and rural communities. Expertise could be leveraged from multiple stakeholders including military, real estate development, construction, finance, community, economic development, and landowner representatives. Given the broad geographic region of the Study Area, an organization that is separate from city and local government, but directly interfaces with these entities, would be the ideal structure. The CSRA Regional Commission or Alliance for Fort Gordon could spearhead this effort to ensure time and effort are dedicated to addressing housing needs driven by rapid regional growth. These organizations can also serve as a convener for a coalition between local government planning officials and developers.

Developer Engagement

The CSRA Regional Commission or the Alliance for Fort Gordon could convene with local planning officials, developers, and builders working in the region, as well as property owners. The goal of these

conversations between planners, landowners, real estate developers, and builders is to aid with property acquisition and catalyze multi-family development in regional areas where this is lacking. This could include areas near the Installation as well as downtown Aiken, which has no multi-family housing. Multi-family development near the Installation would likely be more attainable options accessible for military members and employees at the Installation. The military's basic housing allowance starts at $1,224 for a single private. It is, therefore, more likely that rental rates are higher in the areas where military families choose to live. Some may choose to be near the Installation, while others choose to have a longer commute to be in the area or school district of their choice.

During meetings with property owners, developers, and builders, focus could initially be placed on meeting individually with property owners of land in catalyst sites about potential developments and to gauge their interest in allowing property to be acquired. A catalyst site is a location where, if redeveloped, has the potential to spur additional development, like a high-traffic intersection located along a main corridor. If property owners indicate a willingness to dispose of land, meetings could be facilitated with these property owners and known developers who can deliver types of high-quality multi-family and workforce housing products to begin land acquisition processes. These conversations could lead to the acquisition of property by regional housing, development entities, and partners which could influence the development type of these sites. Ultimately, this could help promote the development of housing that caters to the needs of diverse growing populations.

Furthermore, the development of a coalition between local planners, developers, and builders can also allow for better communication between these groups. In addition to identifying potential areas to focus future development efforts, coalition meetings could also provide opportunities for these groups to address challenges regarding land use, zoning, development regulations, and the building process.

8.7.2 Phase II

Priority Land Set Aside

Building on conversations with property owners of priority properties, opportunities may arise to preserve tracts of land for development by proactive planning, land-use policy, and possibly strategic land acquisitions. Beyond just identifying zoning districts and boundaries, this task is about identifying land that can be specifically designated for the purpose of housing development, especially rental or multi-family developments that can better accommodate regional growth. Ideally, this strategy identifies property that is or could be owned by public entities. Public entities that own suitable properties would be encouraged to engage with developers to build attainable housing. This could be incentivized by transferring property to developers and builders.

Overlay Zoning is one method to direct the development of larger land set asides for denser housing. Acting on priority land set asides would allow regulatory agencies to make specific rules for these larger property tracts that do not necessarily apply outside of that zone, thereby significantly easing the entitlement and development process in that location. Areas like Grovetown may be good places to consider for overlay zoning as this area is in high demand due to its high-quality schools and quality of life offerings. Places like Grovetown could incorporate proactive planning methods like overlay zoning to ensure new growth enhances rather than detracts from community strengths and quality of life assets. Furthermore, these actions will help to guide the private market to align its development objectives with those of the broader region.

In addition to land set asides and overlay zoning, generally establishing land uses and zoning regulations that will promote multifamily housing is critical. Neighborhood plans that can be found in the Augusta-Richmond County Comprehensive Plan are good examples of planning for specific areas and promoting a specific type of development. These examples could be incorporated and used as guiding best practices throughout the region, especially in areas that lack well defined land use controls. Local governments should also consider allowing 'missing middle' housing to increase multifamily dwelling units within traditionally single-family residential areas.

Missing middle Housing includes buildings with multiple units that are compatible in scale with single-family houses. As this description indicates, these types of developments are scaled between single-family homes and mid-rise apartments and could include:

→ Duplexes
→ Triplexes
→ Fourplexes
→ Townhouses
→ Medium sized multiplexes

In many communities, this style and scale of housing is missing. This is likely the case for many communities in the region as Figure 8.13 demonstrates there is somewhat limited housing diversity, as the region mostly contains detached single-family homes. Missing middle housing can provide attainable options that creates additional housing diversty in the region and addresses the needs of a wider range of existing and future residents. Overlay Zoning and priority land set asides are tools that can be used to further this objective.

Attainable Housing Programming

Regionally, additional incentives could be used to enable builders and developers to pursue the middle- and lower-income housing markets. The costs associated with housing development, including land and site preparation, regulations, and labor and materials costs, serve to impede attainable housing development. Additionally, profit margins tend to be greater on larger detached single-family units. No one response will remedy what is a systemic market element that many communities across the United States are facing. Communities that have had some success addressing this issue have taken a multi-faceted and customized approach. The following Attainable Housing Programming elements should be considered to address the housing demand for middle- and lower-income residents.

1. Cost Reduction Program—Public policy that reduces the cost of developing attainable housing. This may include development line items such as permit fee reductions, impact fee waivers, and utility improvement and hook-up fee reductions. In some cases, the costs may be reduced or deferred until after the completion of the project, thus reducing the amount of debt required during the construction period.

2. Construction Loan Guarantee Program—For qualified contractors, this program provides a partial guarantee (up to 25%) of a construction loan for an attainable housing project. The guarantee will promote access to construction capital and reduce borrowing costs. Local government may not be able to provide loan guarantees, but partnerships with foundations, non-profits, and lending agencies may be helpful.

3. Land Cost Reduction—Land costs and preparation serve as a significant upfront cost. This cost often makes it difficult for attainable housing projects to be profitable. For land owned, or strategically acquired by active partners, reduction or deferral of the land and preparation cost burden could help encourage attainable housing projects. This can be achieved through various local government financing tools on various scales of development, to include grants, special-purpose local tax option sales tax, planned capital improvement projects, or incentives for developers to make land improvements in Enterprise Zones through property tax abatement.

4. Prioritize Incentives—Incentives that effectively reduce the equity/debt needed either to build or buy a house will help lower the bar of entry for attainable housing production. Programs such as fee waivers, tax abatement, and down payment assistance can be effective in encouraging housing production and home purchases.

5. Attainable Housing Builders' Tool Kit—Local communities could utilize the strategies listed in this section, and further build upon them, to provide a resource kit for local builders to better utilize state, federal, and local incentives to enable attainable housing developments.

6. Land Use and Zoning Regulations – Increased land-use regulation and zoning are associated with rising home prices across the country. Revising restrictive zoning language to allow for denser housing development like duplexes, attached townhomes, condominiums, and apartments will allow for the development of attainable housing. Changes could include reducing minimum lot size requirements, allowing for irregularly shaped lots to be developed for housing, increasing mixed-use zoning, and increasing development growth caps. Inclusionary zoning programs tie in affordable housing development to market-rate housing by requiring or incentivizing specific percentages of units to be affordable for established household incomes.

8.7.3 Phase III

Housing Transition Zones

It is important to consider a variety of housing types to meet the needs of the future population. A more rural setting, lower cost housing, less dense development, and tight-knit communities are appealing, and many residents are living and moving to more rural portions of the Study Area. Rural locations can be susceptible to lower quality development as smaller communities generally do not have the planning capacity of more urban locations. This could lead to the development of ad hoc housing and commercial real estate with inefficient land-use patterns due to the immense growth pressure facing the region. Ultimately, this unorganized development could detract from these rural settings. Furthermore, Study Area communities need to be mindful of growth that could encroach on the Installation, creating challenges for its mission. Substantial housing development near the Installation is not conducive for military operations.

The creation of planned and well-defined housing transition zones could help to attract families and growth to the Study Area's smaller communities while offering more attainable housing choices to the broader housing market. Transition zones would identify land that would be designated for housing development guided by rural land-use policies. The land-use policies would establish standards intended to improve the quality of housing to be developed, preserve open space, and make it easier to serve the

regional housing community with utilities and infrastructure. Land-use planning and development of these zones would be consider development constraints around the Installation.

Non-Traditional Housing Initiatives

It is recommended that the housing leadership team developed in Phase I consider non-traditional housing initiatives to address residential development challenges related to affordable, multi-family, and military housing. Potential strategies could leverage Opportunity Zones, New Market Tax Credits, and Low-Income Housing Tax Credits.

Opportunity Zones could be an incentive used to activate investment in more challenged and underserved markets within the region. With a well-conceived strategy, the region could leverage Opportunity Zones to promote investment in distressed census tracts. The incentive allows a deferral and reduction in capital gains allowing investment in business growth, housing improvements, and infrastructure updates. Opportunity Zones promote economic development by providing federal capital gains tax advantages for investments made in these areas. Investors can realize deferral and reduction of capital gains taxes in investments held for at least 5 years with additional incentives available for investments maintained in Opportunity Zones for 7 and 10 years. This incentive can help address funding gaps in residential projects in areas where residential markets are less established.

Low Income Housing Tax Credit (LIHTC) and New Market Tax Credits (NMTC) could help promote development in challenged areas with a significant need for more affordable housing products. The Low-Income Housing Tax Credit (LIHTC) program aims to create affordable rental housing for low and very low-income families. Residents qualify for LIHTC if their income is less than 60% of the Area Median Income (AMI). These credits ensure rent limits for low-income residents but also allow developers to sell credits and generate revenue for projects to address funding gaps created by offering affordable units. Rent limits for the LIHTC Program are determined so that a household would only pay 30% of their income. NMTC help with mixed use projects as they aim to stimulate business real estate investment in low-income communities in the United States. Projects that incorporate both commercial and residential uses can apply these credits to address funding gaps.

8.8 Implementation Plan

The recommendations summarized above have been divided into a timeline. Short-term actions should be undertaken within 1-3 years; mid-term actions should be undertaken within 4-5 years, and long-term actions should be undertaken within 5+ years. Ongoing indicates activities that should be undertaken annually or regularly within the planning timeframe.

Identification of Issues, Goals, and Strategies		Responsible Party	Timeline
PHASE I			
Goal	Identify and Create a Regional Housing Leadership Team		
Strategy 8.1	Identify and reach out to housing and land use experts from regional counties about serving on Housing Leadership Team	Alliance for Fort Gordon	Short-term
Strategy 8.2	After identifying members, formalize a housing leadership team spearheaded by the CSRA Regional	CSRA Regional Commission, Alliance for Fort	Short-term

	Identification of Issues, Goals, and Strategies	Responsible Party	Timeline
	Commission and Alliance for Fort Gordon to guide regional housing strategies	Gordon, Regional Housing Leadership Team	
Strategy 8.3	Conduct discussions with federal and state entities focused on housing to access funding	Regional Housing Leadership Team	Mid-term
Goal	Developer Engagement		
Strategy 8.4	Convene local government planning officials and private developers to streamline regulations and promote desirable housing development	Regional Housing Leadership Team	Mid-term
Strategy 8.5	Encourage and facilitate conversations between property owners and developers to promote the development of catalyst sites	Regional Housing Leadership Team	Mid-term
Strategy 8.6	Promote connections between local planners, developers, and builders to identify sites for future development and address challenges regarding land use, zoning, development regulations, and the building process.	Regional Housing Leadership Team	Mid-term
Phase II			
Goal	Develop priority land set aside program		
Strategy 8.7	Hold regional educational housing summits to communicate the importance of best practices around land use, zoning, and middle housing.	Regional Housing Leadership Team	Short-term
Strategy 8.8	Identify land that can be specifically designated for the purpose of housing development, especially rental or multi-family developments that can better accommodate regional growth	Regional Housing Leadership Team	Short-term
Strategy 8.9	Work with local governments and communities to implement overlay zoning	Regional Housing Leadership Team and Local Governments	Mid-term
Strategy 8.10	Review and reform existing land use and zoning regulation around best practices to promote the development of middle housing	Regional Housing Leadership Team and Local Governments	Mid-term
Goal	Work with regional communities to help them develop attainable housing programs		
Strategy 8.11	Work with regional communities to implement a cost reduction program for builders/developers	Local Governments	Mid-term
Strategy 8.12	Work with partners to implement strategic land cost reduction programs	Local Governments	Long-term

Identification of Issues, Goals, and Strategies		Responsible Party	Timeline
Strategy 8.13	Provide a resource kit for local builders to better utilize state, federal, and local incentives to enable attainable housing developments	Regional Housing Leadership Team	Short-term
Strategy 8.14	Identify opportunities to revise restrictive zoning language to allow for denser housing development like duplexes, attached townhomes, condominiums, and apartments	Regional Housing Leadership Team and Local Governments	Short-term
Phase III			
Goal	**Promote the development of housing transition zones**		
Strategy 8.15	Assess rural development areas and determine areas at risk or facing ad hoc housing and commercial real estate with inefficient land-use patterns	Local Governments	Mid-term
Strategy 8.16	Identify areas for rural housing transition zones for development guided by rural land use policies	Local Governments	Mid-term
Strategy 8.17	Establish rural land use policies in areas identified as transition zones	Local Governments	Long-term
Strategy 8.18	Ensure policies place considerable development constraints around the installation	Local Governments	Long-term
Goal	**Utilize nontraditional incentives to finance housing**		
Strategy 8.19	Identify opportunities to leverage nontraditional incentives to promote housing development like Opportunity Zones, New Market Tax Credits, and Low-Income Housing Tax Credits	Local Governments	Short-term
Strategy 8.20	Form strategies and plans around leveraging nontraditional housing incentives including the development of investment prospectuses	Local Governments	Mid-term
Strategy 8.21	Work with local and regional developers to encourage the use of New Market Tax Credits and Low-Income Housing Tax Credits	Local Governments	Mid-term

Chapter 9:

Child Care

9 Child Care

9.1 Overview

This chapter examines the impact of Fort Gordon expansion on child care in the Study Area. Richmond County is the core county that is home to the City of Augusta and Fort Gordon. However, 67 percent of the metropolitan area population is in the other six component counties, comprising one integrated economic and population center.

While recognizing that child care can constitute older children as well, the focus in on the core market of children under the age of six years old.

9.2 Demographic Overview

Historic population data shows an increase in the Study Area (see Figure 9.1). From 2010 through 2020, the population grew by 9.72 percent. From 2019 to 2025, the population is projected to grow by 8.1 percent, nearly double the rate largely attributable to growth at Fort Gordon. The growth rate then slows down again to a rate of 3.4 percent over the next five years through 2030.
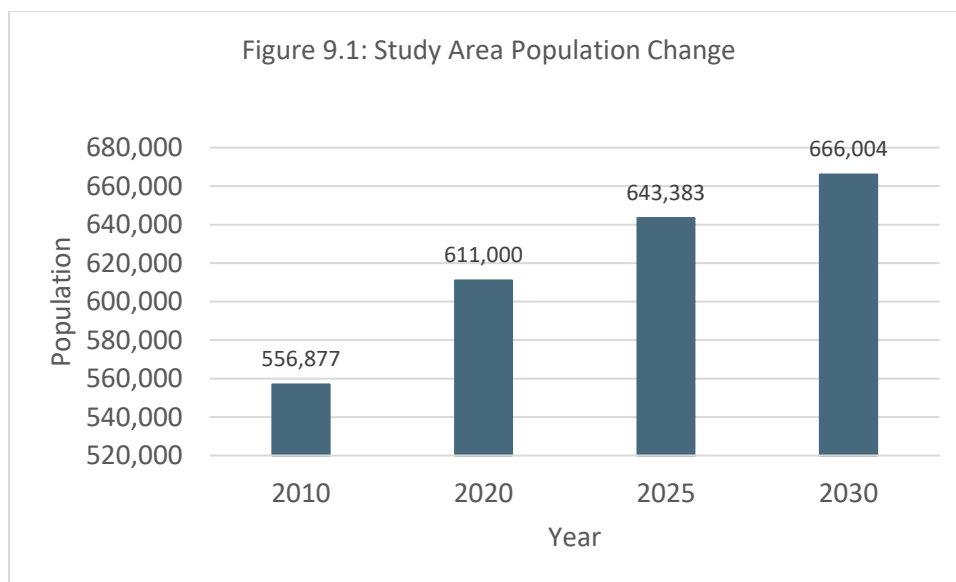
Figure 9.1: Study Area Population Change

Year	Population
2010	556,877
2020	611,000
2025	643,383
2030	666,004

Source: Governor's Office of Planning and Budget, Series 2020 (GA) and Revenue and Fiscal Affairs Health and Demographics Section (SC)

The population growth rate has two components: a natural growth rate that occurs in the community in general, and a military expansion growth rate associated with Fort Gordon's expansion. In terms of the natural growth rate, it appears that, despite overall population growth, local population dynamics will not generate an increase in the population of children under the age of six, as shown in Figure 9.2.

Figure 9.2: Study Area Natural Population Growth
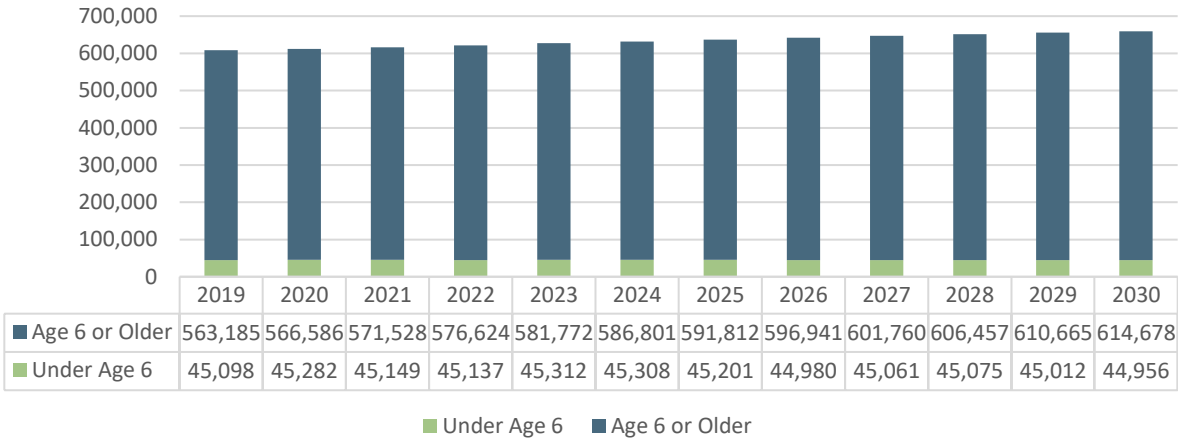
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Age 6 or Older	563,185	566,586	571,528	576,624	581,772	586,801	591,812	596,941	601,760	606,457	610,665	614,678
Under Age 6	45,098	45,282	45,149	45,137	45,312	45,308	45,201	44,980	45,061	45,075	45,012	44,956

Source: Governor's Office of Planning and Budget, Series 2020 (GA) and Revenue and Fiscal Affairs Health and Demographics Section (SC)

While the overall population is projected to increase by over 50,000 people, the population of children under the age of six will not increase, and in fact, is projected to show a very slight decrease. Without Installation growth, children in this age group will decline from 7.4 percent of the population to 6.8 percent of the population through the planning timeframe. However, Installation growth will create a notable increase in demand that counteracts this flat overall trend.

The military population tends to be concentrated in age groups that are more likely than average to be parents of young children, therefore, military households are more heavily concentrated with young parents and young children. Figure 9.3 shows the age profile of the military population and military households in the Study Area.

Figure 9.3: Study Area Military/Non-Military Age Profile
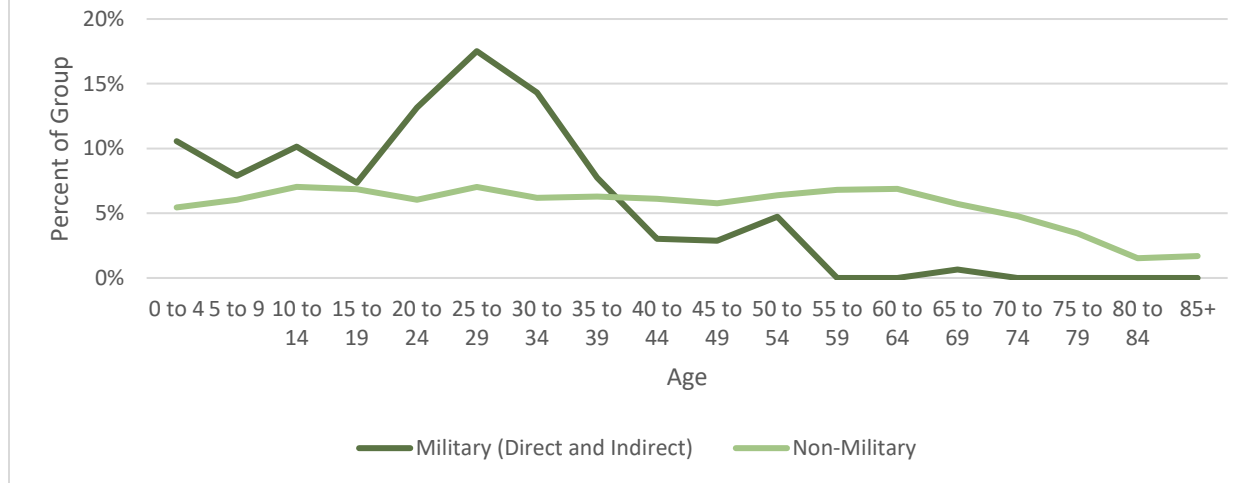
Source: American Community Survey, US Bureau of the Census, 2019

Children under the age of six constitute 12.1 percent of the population of military households in the Study Area. This is in line with national figures for military populations, which are notably more likely to have young children than are non-military populations. Figure 9.4 and Figure 9.5 show that 21 percent of military households nationwide have at least one child in this age range, compared to 16 percent of non-military households. Therefore, a disproportionately large proportion of young children is a likely expectation of new military households arriving in the area and not just a local phenomenon.

Figure 9.4: Nationwide Civilian Population by Number of Children

16%

56%

28%

- Presence of at least one child under 5 years
- Presence of a least one child 5 to 17 years only
- No children present
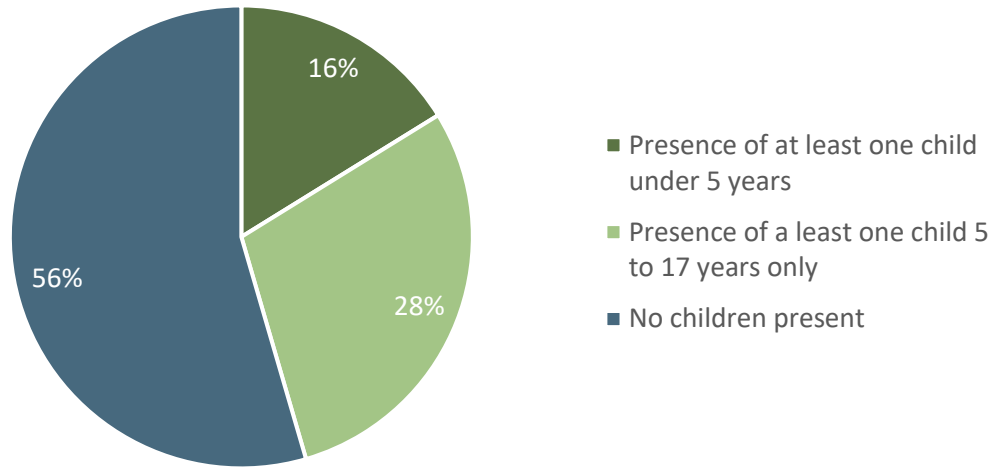
Source: American Community Survey, US Bureau of the Census, 2019

Figure 9.5: Active Duty Military

34%

38%

28%

- Presence of at least one child under 5 years
- Presence of at least one child 5 to 17 years only
- No children present
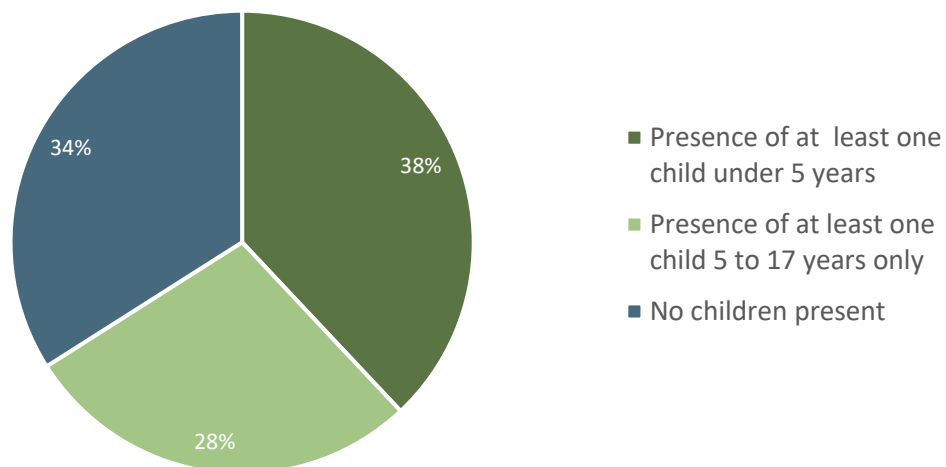
Source: American Community Survey, US Bureau of the Census, 2019

The addition of 6,370 military people and their households will add an estimated 773 children under the age of six into the local market. The number of new children will increase as the new population is phased in and will then theoretically decrease as those children age out of prime child care needs (although in practical terms a decrease is not anticipated to occur).

Figure 9.6 illustrates this pattern for an "expansion, no replacement" scenario. The number of young children in the Study Area will rise as Fort Gordon expands, peaking in 2024 at slightly more than 46,000 children. As the new influx of military children ages out of the 0-5 age group, the number of children will then revert back to the baseline long-term projections presented earlier.

Some populations such as military populations can include unique migration characteristics. Rather than moving into the area and aging in place, military populations often rotate in and out of locations. Therefore, households are often being replaced by other households that share the same demographic traits. In that case, there will be a consistent supply of new young children while military households rotate into and out of the area, and the demographic profile essentially remains constant. The result of this rotation is that the impact of Fort Gordon growth never drops to zero as children age out of child care but rather is maintained indefinitely as children rotate in and out. This is shown in Figure 9.6 in the "Expansion with replacement" scenario. In this scenario, a peak in 2024 that is maintained going forward with minor variation due to natural growth changes. This is the more likely scenario to occur. Some reduction of this pattern may occur if the military-related community growth does not rotate similarly to that of the military population.

Figure 9.6: Study Area Population Under Age 6

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
No Expansion	45,098	45,282	45,149	45,137	45,312	45,308	45,201	44,980	45,061	45,075	45,012	44,956
Expansion, no replacement	45,098	45,282	45,295	45,778	45,881	45,519	45,203	44,954	45,060	45,074	45,011	44,955
Expansion with replacement	45,098	45,282	45,295	45,827	46,160	46,081	45,974	45,753	45,834	45,848	45,785	45,729
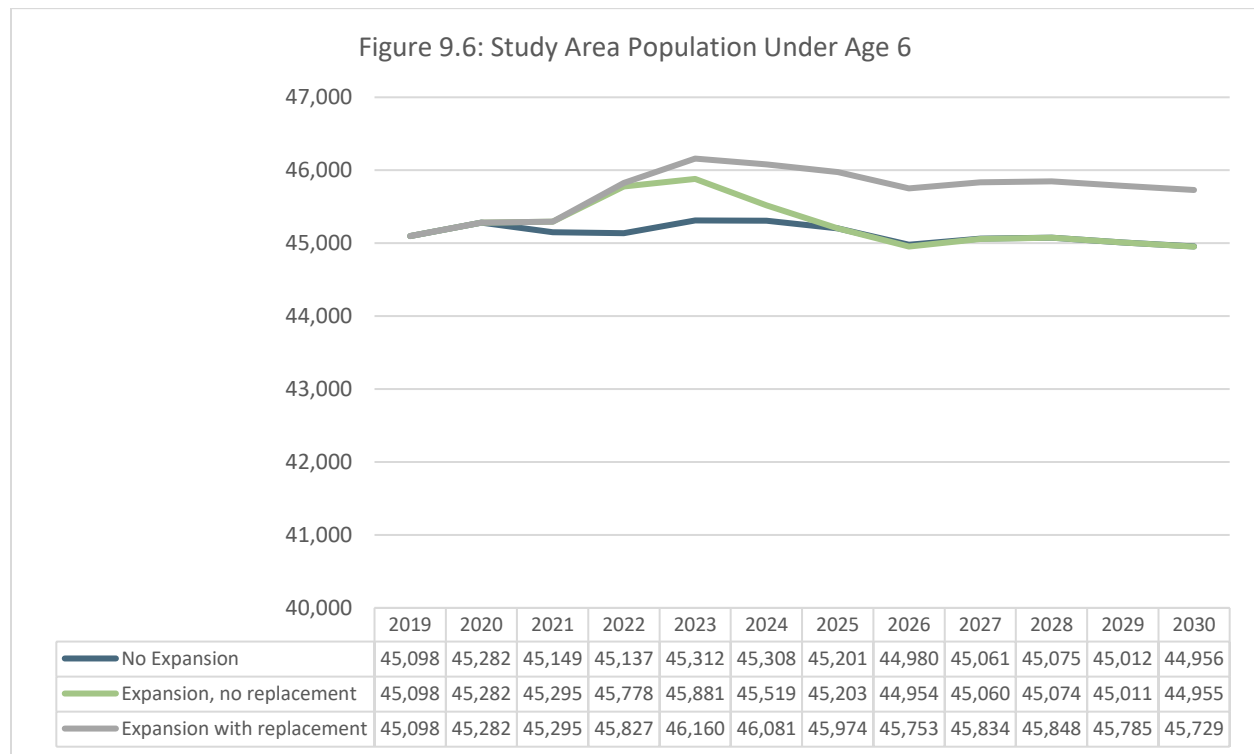
Source: Governor's Office of Planning and Budget, Series 2020

Of course, not all children will require child care. When considering capacity demand, a straightforward way of measuring demand is to examine the number of child care workers per 1,000 children in the Study Area. Recognizing that not all children will use child care, this technique will account for this factor and is examined in the following section.

9.3 Study Area Child Care Industry Analysis

Federal data shows the existence of 142 organizations whose main function is the activity of "Child Day Care Services" or "Child and Youth Services". This would not include unlicensed or informal child care services and excludes other types of services that might provide temporary child care, such as activity camps, after-school programs, "parents' day off" programs, supervised child care while a guardian is engaged on site (i.e., donating blood) and similar measures. A count including those types of programs would total 341 organizations that might provide some sort of child care.

All the dedicated child care organizations have fewer than 50 employees (see Figure 9.7).
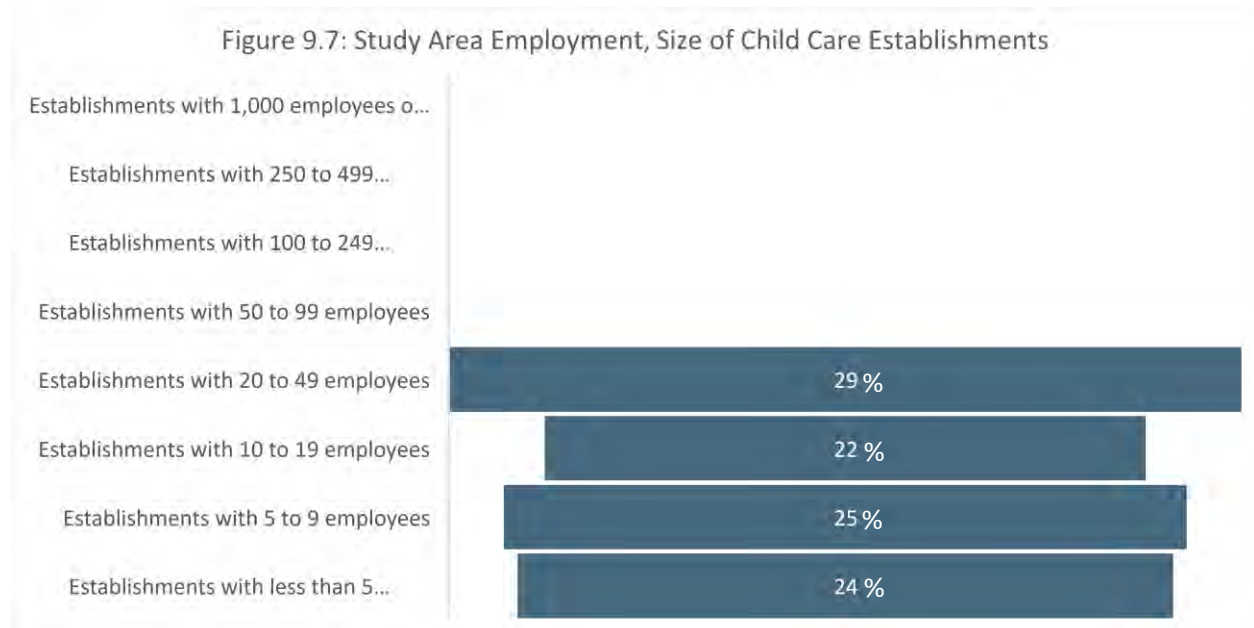
Figure 9.7: Study Area Employment, Size of Child Care Establishments

Establishments with 1,000 employees o...	
Establishments with 250 to 499...	
Establishments with 100 to 249...	
Establishments with 50 to 99 employees	
Establishments with 20 to 49 employees	29%
Establishments with 10 to 19 employees	22%
Establishments with 5 to 9 employees	25%
Establishments with less than 5...	24%

Source: U.S. Census Bureau (2019). All Sectors: County Business Patterns, including ZIP Code Business Patterns, by Legal Form of Organization and Employment Size Class for the U.S., States, and Selected Geographies: 2019

The child care sector employs a total of 4,126 people in the Study Area. When considering that there were 45,098 children under the age of six during the year in which this data was collected, that would show that a ratio of 91 child care workers per 1,000 children is sufficient to meet the demand for child care. (Note that this includes management, support staff, and others in addition to direct-care employees.) This ratio is on par with the two-state and national averages.

Table 9.1: Total Child Care Workers and Rate Per 10,000 Children

Industry	Study Area		Georgia-South Carolina		National	
	Workers	Per 10,000 Children	Workers	Per 10,000 Children	Workers	Per 10,000 Children
Child Care	4,126	915	97,634	868	2,124,849	910

Source: American Community Survey, US Bureau of the Census, 2019

Examining this ratio relative to the expected increase in child population implies that new child care capacity equivalent to (773 children*91 workers per 1,000 children), or 70 new child care workers. Since natural population growth is not anticipated to result in increases in the under 6 year old population, this represents a relatively small increase in relation to the Study Area's overall population growth.

Employment figures in Table 9.1 are self-reported. It is likely that the figures include unlicensed child care or unregistered child care workers, therefore some growth in demand will be met outside the licensed care industry, although the extent cannot be determined from available data.

The types of workers in child care organizations can cross a variety of occupations, including direct care workers, administrators, support workers, managers, and others. However, the majority are direct-care workers, as shown in Table 9.2.

Direct care workers (child care and preschool teachers) constitute more than half of all jobs in the sector and would make up the majority of the needed expansion to account for future growth. Most other jobs exist broadly in the economy and can easily be recruited, while these fields are more specialized to child care.

Table 9.2: Study Area Child Care Worker Distribution

Occupation	Working in Child Day Care Services in Study Area	Total in Labor Force in Study Area	Percent working in Child Day Care
Education and Child care Administrators	38	1,091	3%
Food Service Managers	54	1,431	4%
Social Workers, All Other	69	1,014	7%
Social and Human Service Assistants	231	874	26%
Religious Workers, All Other	41	328	13%
Preschool and Kindergarten Teachers	1,135	1,394	81%
Teaching Assistants	603	2,897	21%
Registered Nurses	102	9,274	1%
Personal Care Aides	41	1,662	2%
Cooks	39	7,617	1%
Food Preparation Workers	135	1,974	7%
Child care Workers	1,464	2,327	63%

Occupation	Working in Child Day Care Services in Study Area	Total in Labor Force in Study Area	Percent working in Child Day Care
Word Processors and Typists	150	292	51%
Total	4,102	32,175	13%

Source: Derived from in-depth analysis of American Community Survey, US Bureau of the Census, 2019

9.3.1 Study Area Child Care Past Patterns

Patterns of child care in the Study Area over the past several years were examined to understand overall staffing trends. The total number of business establishments in the 2011 to 2019 time frame by county are detailed in Table 9.3.

Table 9.3: Child Care Business Establishments by County, 2011 and 2019

	Number of Establishments	
	2011	2019
Burke, GA	6	3
Columbia, GA	25	29
Lincoln, GA	1	3
McDuffie, GA	8	8
Richmond, GA	56	64
Aiken, SC	31	31
Edgefield, SC	3	4
Total in Study Area	130	142

Source: US Department of Commerce County Business Patterns Data, 2011, 2019

Employment levels at child care business establishments are detailed in Table 9.4.

Table 9.4: Child Care Businesses Employment by County, 2011 and 2019

	Total Employment at Establishments	
	2011	2019
Burke, GA	36	40
Columbia, GA	462	599
Lincoln, GA	0	7
McDuffie, GA	75	59
Richmond, GA	712	936
Aiken, SC	231	287
Edgefield, SC	N/A	54
Total in Study Area	1,516	1,982

Source: US Department of Commerce County Business Patterns Data, 2011, 2019

The data show a slight increase in the licensed facilities as well as the number of employees in the child care field. While this rate of increase is not as high as the population growth with the Fort Gordon growth, it is encouraging that the field is trending upward rather than downward. It is important to note that the U.S Census Bureau will remove information from small communities in order to preserve business confidentiality.

To directly account for the impacts of Installation growth at the current level of service, the changes are nominal since no natural expansion of the young child population is predicted – 30 to 40 employees in Columbia County, 20 to 30 in Augusta-Richmond County, and fewer than 10 in Aiken County.

Employment at child care establishments is lower than the reported employment in the industry overall (4,126). This is likely due to a number of factors, which can include turnover (with people listing their last job on census forms even if they're not currently employed), unlicensed child care providers working in the industry, and organizations providing child care when child care is not the primary function of the business (i.e., a manufacturing firm providing on-site child care). Therefore, expanding the number of child care workers per child may not be as important as ensuring the quality standards of affordable child care.

9.4 Recommendations

Interviews were conducted with nine local child care practitioners and experts with the aim of understanding challenges and opportunities associated with growth at Fort Gordon. During these interviews, other challenges and opportunities were discussed that might impact the ability to meet increased demand for child care services.

9.4.1 Challenge 1 – Shortage of 24-hour capacity for military personnel

"We even provided night care overnight care in my home just so we could meet the needs of the family because they needed it. It's a vast need, you know?"

- *Grovetown Family child care provider*
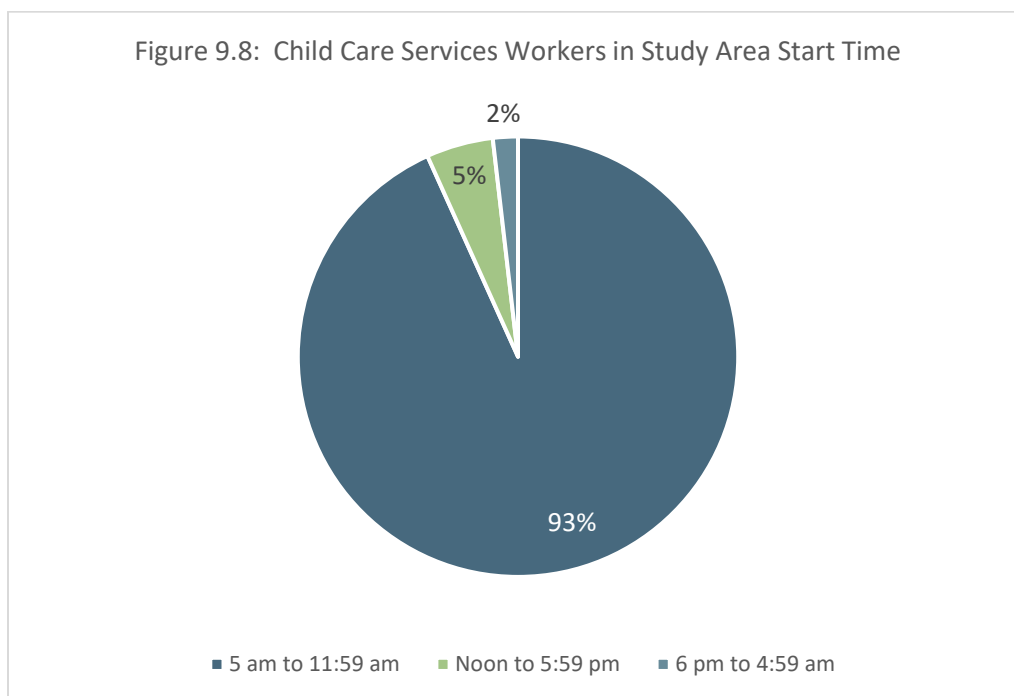
Figure 9.8: Child Care Services Workers in Study Area Start Time

- 5 am to 11:59 am
- Noon to 5:59 pm
- 6 pm to 4:59 am

Source: Derived from in-depth analysis of American Community Survey, US Bureau of the Census, 2019

Among the off-Installation family child care providers, all had military families enrolled in their care. Several providers mentioned shortages of 24-hour care for military families. There were no on-Installation

centers that offered 24-hour care or related accommodations for military personnel that worked early mornings or nights (see Figure 9.8). Some family child care providers would be flexible and work with each individual family's needs by being available for 5 am shifts and or even providing all night care to be as accommodating as possible.

To meet this need, several of the family child care providers sought to revive connections that they previously had with Fort Gordon as off-Installation family child care providers. One interviewee discussed expanding from her home to a brick-and-mortar center located near the Installation and wanted to develop a partnership with Fort Gordon to assist military families with their unique child care needs. Partnering with local child care centers and family child development centers to direct military personnel to them, especially in times of Covid closures, would be beneficial.

Several child care providers expressed concern about lack of communication with military families which also affected them. They noted that for families to be more adequately prepared, the military needed to give them more notice so they could find a child care provider and put their children on a waitlist if necessary. One local family child care provider also wanted parents to communicate temporary service needs to manage waitlists for an on-Installation child care center. She expressed that lack of overall communication was a problem.

9.4.2 Challenge 2 – Maintaining financial sustainability with COVID closures

"I think the daycares need a little bit more support from the state. You know, if we have more support, just like how we have quite a bit of support now because of the COVID relief funds and all that kind of stuff. But, you know, that was a big travesty that happened in order for us to even be recognized as an essential worker. But what about all the times that before the travesty, and after this is over… if we have more support from the state, recognizing our worth and our value on what we represent, [and] the importance of child development."

- Child care provider in the process of opening a center

Many providers interviewed considered themselves small businesses and like many others were highly impacted by COVID-19 pandemic closures. Child care providers received both Payroll Protection Program loans as well as other grants and subsidies specifically for child care providers throughout the pandemic, but they still currently need financial assistance. Child care providers anticipate the pandemic and resulting challenges lasting for months to come. Some of the direct costs that providers noted in interviews were the costs of purchasing Personal Protective Equipment and cleaning supplies to comply with guidelines. They also mentioned the decrease in subsidies and overall revenue from decreased attendance both from COVID containment guidelines, closures, and safety concerns from parents.

Closures were among the biggest concerns due to continued requirements to pay rent and other fixed costs. According to the 2020 Georgia Early Education Alliance for Ready Students report, approximately half of child care providers would be unable to reopen after being closed for two weeks. Pandemic-related nationwide shutdowns significantly reduced enrollment in child care facilities to 13% of previous levels, and although enrollment has recovered somewhat, overall numbers are still down due to attendance inconsistencies caused by COVID closures. All child care experts interviewed believe that providing financial assistance to locally owned child care businesses to sustain the industry through the enduring uncertainties of COVID is crucial. Keeping facilities operating by enacting policies and procedures that

keep providers resilient to COVID-related shutdowns or other types of disruptions is important to maintaining an adequate supply of child care facilities and services. In turn, a healthy child care industry can accommodate future population growth.

9.4.3 Challenge 3 – Affordability

Child care providers mentioned challenges in providing affordable child care for both the general population and military families. Even though there are programs that offer subsidies to help with the cost of child care such as Child care and Parent Services (CAPS), the eligibility requirements are too limited to help all the families that need it according to interviewees. Many families earn just above the income threshold needed to qualify for subsidies yet still need the assistance. As of October 2020, the CAPS threshold for initial eligibility is 50% of the state median income: $33,688 for a family of three and $40,105 for a family of four. According to one child care provider, another challenge is that even if families qualify under the CAPS threshold, they still need to afford the initial costs of settling into a facility and pay costs for a few weeks until CAPS or other financial assistance is processed. A provider recalled one military family that needed help but was unable to afford the initial cost of enrolling at a child care facility. Child care providers mentioned a lack of education among new military families on resources available to help them such as Child Care Aware of America, which will provide financial assistance to military families based on their income.

For Child Development Centers (CDCs) on-Installation, the cost of child care is usually based on the family's total income. Interviewees commented on how waitlists for on-Installation centers could be anywhere from a few weeks to several months, according to conversations they have had with parents. There are three CDCs on the Installation that care for children under 6 years old at Fort Gordon.

According to the U.S. Department of Health and Human Services (HHS), child care is affordable if costs are no higher than 7% of a family's income.

Interviewees noted that families that cannot afford the quality child care that is regulated will resort to finding options that may be subpar to the standards set by Quality Rated, and even more so the standards set by the military. Quality Rated is Georgia's system for managing child care quality ratings and improvements. The quality management system in South Carolina is called ABC Quality. Many of the providers did not know the specifics of unregulated child care in the area but were sure that it existed. The few interviewees that had more knowledge offered stories of local unregulated sitters that had upwards of a dozen children in their care and others that had alarmingly low daily rates.

According to the Economic Policy Institute, in Georgia the average annual cost of infant care is $8,530 or $711 per month. Child care for a 4-year-old costs $7,306, or $609 per month. In South Carolina, the average annual cost of infant care is $7,007 or $584. Child care for a 4-year-old is $6,006 or $500 per month. The estimated average cost of child care in the area is $160 per week per child with a higher cost for infants. The average income of a family with a child six years of age or younger in the study area is $45,186. If they are spending $160 a week on child care, 18% of the family's yearly income is spent on child care.

Even assuming the lowest cost above of $500 per month, only 21 percent of families with children under the age of 5 meet the threshold of affordability, spending 7 percent or less of their income on child care. At the high-end cost of $711 per month, the percent of families meeting the income threshold for affordability is only 10 percent.

9.4.4 Challenge 4 – Employee hiring and retention

"One of the biggest challenges in child care right now is workers and workers making enough money."

- Child care provider

Among the child care providers that had recent experience trying to hire staff all reported challenges in finding and retaining quality workers. This was more of a concern among the child care directors, with some directly attributed shortages in child care (e.g., long waitlists) due to a lack of eligible workers. One child care center director stated that she is short 2-3 teachers, and as a result, can only accept certain age groups and has a waitlist. Among child care experts that had recently hired or were going through the process, all stated that having higher wages combined with benefits would be the best way to attract high quality workers and retain them. All interviewees agreed on the importance of consistency for the children being cared for and having a high turnover of workers was a major quality concern. Child care providers recognize the importance of paying higher wages to compete with larger businesses but were unable to compete because it would directly increase the cost of their services. One child care center director that had not recently hired said it was because she has had the same teachers working with her for nearly two decades, which according to her was very uncommon.

The majority of family child care providers did not have experience with hiring staff because they either worked on their own or had help from household members. Family child care programs are operated by child care providers in their own private residential home and enroll between three to six children. A few of the family child care providers had previous experience working in child care centers, some even at on-Installation centers. Of those that had previously worked at centers, they recalled high turnover and retention problems as a result of low wages and lack of benefits. Family home child care providers generally kept the number of children in their care to limited enrollment and range of ages that was manageable for them even though they could have accommodated more. By keeping a manageable number, these providers avoided hiring help.

High turnover and retention challenges among child care workers are historical concerns nationwide. Policy experts suggest increasing wages of child care providers to at least those of teachers with similar education levels such as preschool and kindergarten teachers. Based on the profiles of the average teacher and child care worker, there is a difference of approximately $6,000 dollars in median yearly earnings with preschool teachers working a median of ten more hours a week. See Table 9.5 for a profile comparison between child care workers and preschool/kindergarten teachers.

Table 9.5: Profile of Child Care Industry Workers

	Preschool And Kindergarten Teachers	Child Care Workers
Median Age:	39 Years old	23 Years Old
Education:	52% have 2 year degree or higher	24% have college experience
Sex:	All or nearly all female	All or nearly all female
Median income:	18,000/year	$12,000/year
Median hours worked per week:	40 (40 percent are part-time)	30 (68 percent are part-time)
Average Annual Hourly Wage:	$13.19	$7.62
Health insurance Coverage:	81%	84%

Source: American Community Survey, US Bureau of the Census

9.4.5 Challenge 5 – Quality of Child Care

"I learned a lot from the military and the military base and their daycares and their procedures and they have the highest standards."

"I'm telling you, their [on base child care] policies and standards are higher than the state. We are state certified as well in our home, but the base, their standards and their policies are way higher than the state's standards and policies."

-   *Prior lead at on-Installation child care center*

Quality of child care is heavily influenced by the challenges noted above. For example, challenges in affordable child care can cause parents to seek out unregulated options that are more affordable. Accessibility challenges such as shortages caused by COVID-19 can also lead to an increased use of unregulated child care according to some interviewees. Family home child care providers noted that the military families and area residents in general needed more education on what quality child care looks like. Interviewees mentioned that families did not necessarily know about the difference between licensed and unregulated providers. A couple of interviewees mentioned that families had gone to child care providers who they thought were licensed but were not. Providers highlighted the importance of education and raising general awareness of resources available to families such as Georgia Department of Early Care and Learning (DECAL) Quality Rated, local Child Care Resource and Referral (CCR&R) agencies, and other military specific sources such as Child Care Aware of America.

Many professional development opportunities and resources are also available to current child care providers. There are also resources for residents with aspirations to become licensed providers. Scholarships and other financial assistance are available through state programs such as DECAL for current and future child care workers that want to be certified and/or acquire a college degree. Educating current babysitters/nannies or unlicensed providers about the benefits of becoming licensed and certified through working with Bright from the Start (also known as DECAL) to be quality rated would be beneficial to everyone.

According to interviewees that had worked with military child care noted the high-quality standards for providers and specific procedures for both parents and providers to follow. While DECAL's Quality Rated also has high standards, interviewees noted the newness of the program and implied that there was room for improvement. Respondents also noted the need for improved standards and practices in South Carolina.

The recommendations summarized above have been divided into a timeline. Short-term actions should be undertaken within 1-3 years; mid-term actions should be undertaken within 4-5 years, and long-term actions should be undertaken within 5+ years. Ongoing indicates activities that should be undertaken annually or regularly within the planning timeframe.

9.5 Implementation Plan

Identification of Issues, Goals, and Strategies		Timeline	Responsible Party
Increase the amount and coverage of child care			
Goal	Increase the number and coverage hours of child care in the community.		
Strategy 9.1	Incentivize the expansion of operating hours of current off-Installtion centers and/or on-Installation family child development centers to operate 24 hours (or to the needs of the parent).	Mid-term	Fort Gordon
Goal	Retain capacity of child care that is at risk.		
Strategy 9.2	Partner with other off-Installation centers and child care providers as "extensions" to military child care that have the same policies and regulations as onsite centers.	Short-term	Fort Gordon
Strategy 9.3	Inform local providers of upcoming demand increases so they can make growth decisions.	Short-term	Local Governments
Increase affordability and access of child care			
Goal	Increase the ability of families to afford child care.		
Strategy 9.4	Communicate with new arrivals to facilitate placement of children.	Short-term	Fort Gordon
Strategy 9.5	Consider pilot programs such as the In-Home Child Care Fee Assistance Pilot to help military families.	Long-term	Fort Gordon
Strategy 9.6	Educate and raise awareness to families that there are resources available to them to help them get quality affordable child care.	Short-term	Fort Gordon
Strategy 9.7	Increase CAPS threshold to allow more families to be eligible to receive help, including military families who are barely ineligible to receive help but need it.	Long-term	Federal Government/ U.S Army
Support staff hiring and retention			
Goal	Increase the sustainability of careers in child care to support having experience child care providers who earn sufficient wages.		
Strategy 9.8	Provide support for small businesses to increase competitiveness and retention.	Long-term	State/Local Governments
Strategy 9.9	Support the addition or enhancement of benefits for workers.	Mid-term	Fort Gordon

Identification of Issues, Goals, and Strategies		Timeline	Responsible Party
Strategy 9.10	Promote existing and/or enhanced state funded scholarships that will fully or partially pay for the education of child care workers.	Short-term	Fort Gordon
Increase quality of child care			
Goal	Ensure that families and providers are aware of quality issues.		
Strategy 9.11	Educate military families about quality child care differentiators, for example, licensed versus unlicensed providers.	Short-term	Fort Gordon
Strategy 9.12	Educate current babysitters/nannies or unlicensed providers about the benefits of becoming licensed and certified and working with Bright from the Start to be quality rated.	Short-term	Local Governments/ Child Care Industry

9.5.1 Summary of Near Term Strategies (1-3 years)

Near-term strategies should focus on communications and protecting current capacity related to COVID-19

- → Communicate upcoming growth so local providers can consider growth plans.
- → Provide support (technical and financial) to keep providers viable during COVID-19.
- → Develop an education plan to help families identify quality measures and to help providers move up the quality scale.
- → Encourage entry into the field through scholarships and other training support.
- → Communicate on-Installation standards and policies so off-Installation centers and collaborate.
- → Communicate affordability options to families.

9.5.2 Summary of Mid Term Strategies (4-5 years)

Mid-term activities should focus on filling gaps in local capacity and constraints to growth and/or sustainability.

- → Incentivize expansions of operating hours and on-Installation capacity.
- → Explore methods to improve career conditions for child care workers (pay and benefits)
- → Work with partners to identify financial incentives to encourage enrollment in medical technology fields (including pharmacy technology).

9.5.3 Summary of Long Term Strategies (More than 5 years)

Long-term activities should focus on building a strong business community and affordable provision of care.

- → Technical and business support for local providers.
- → Increase thresholds for financial assistance to families.

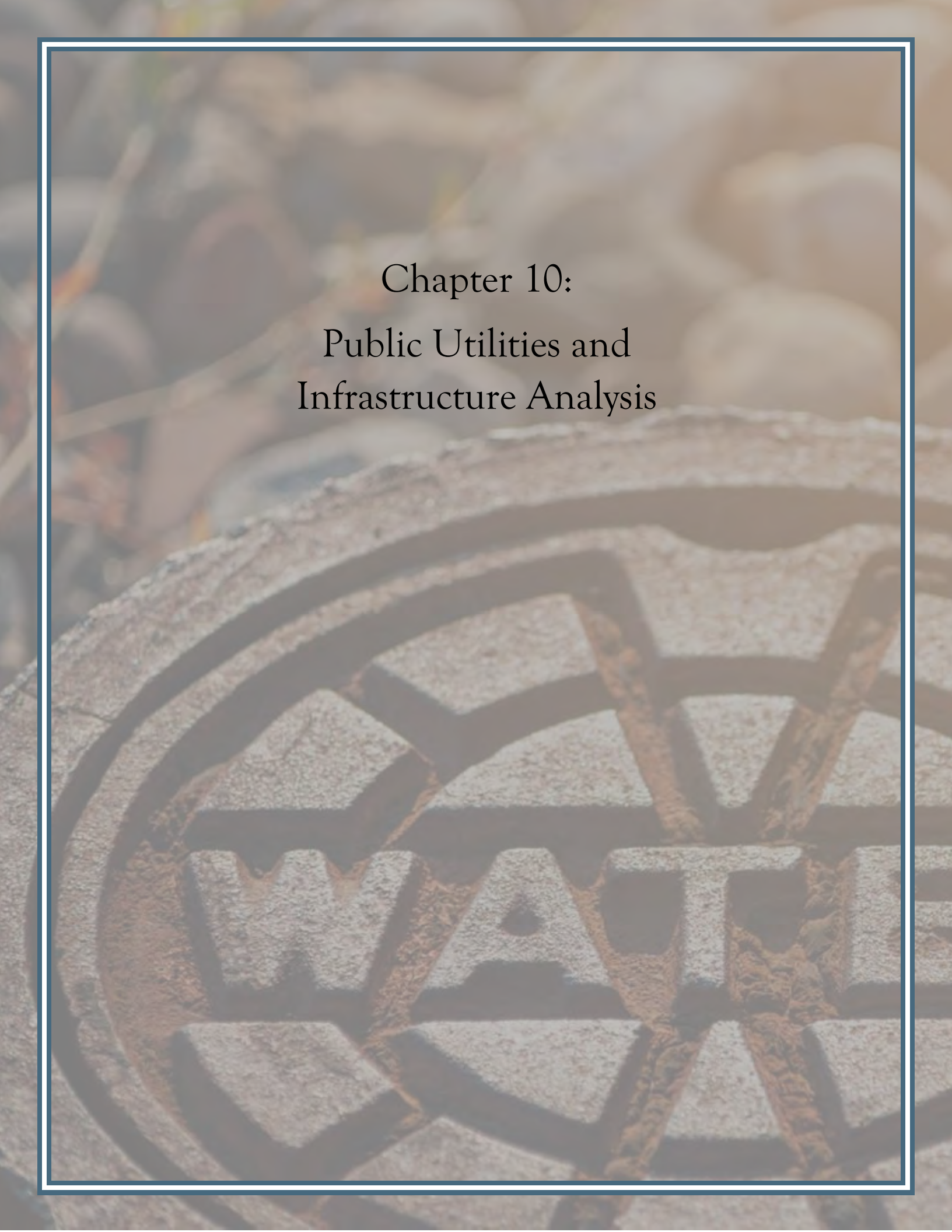## 9.5.4 Potential Partners and Funding Sources

Potential Partners

→ Georgia Early Education Alliance for Ready Students (GEEARS): GEEARS can help inform policy decisions. They conduct regular research on child care in Georgia.

→ Georgia Association for the Education of Young Children, District 4: Provides a variety of services and support to families with children ages 0-5 years old.

→ South Carolina Association for the Education of Young Children: Can provide a contribution similar to the Georgia Association for the Education of Young Children.

→ Child care Aware of America: Can contribute educational and financial resources both to families and child care providers. Child Care Aware of America provides up to date state level research on child care.

→ ABC Quality (South Carolina): Supports both child care providers and families. Families can receive information and referrals for child care.

→ SC Endeavors: Provides professional development for child care workers.

→ DECAL Bright from the Start – Georgia's Department of Early Care and Learning: Supports both child care providers and parents. Families can receive information and referrals for child care.

→ Quality Rated and DECAL Scholars: Professional development resources for child care providers.

→ CSRA Kids is an online community guide for kid/family activities and resources in the CSRA area. https://csrakids.com/: Can contribute by assisting CSRA families with information of local child care.

→ Child Care Resource and Referral of Central East Georgia – Augusta University/ Leap Early Learning Partners

Potential Funding Sources

→ The Community Foundation for the CSRA – (Local): The region's philanthropic partner, they connect donors and nonprofits. Community Grants program which provides funding for nonprofit projects and programs serving residents in Augusta-Richmond, Columbia, McDuffie and Burke counties in Georgia and Aiken and Edgefield County in South Carolina.

→ The Central Savannah River Area Economic Opportunity Authority, Inc. (CSRA EOA) – (Local): A Community Action Agency, a private non-profit, tax-exempt organization. The primary mission is the easing of human suffering and the elimination of poverty.

→ Georgia Early Education Alliance for Ready Students (GEEARS) – (State): A statewide advocacy organization that focuses on bridging the gap between Georgia's families, business community, and policy leaders as it promotes school readiness for young children.

→ SC Endeavors (South Carolina) – (State): The professional development system for South Carolina's child care workforce.

→ DECAL Bright from the Start – Georgia's Department of Early Care and Learning – (State): Georgia's agency for licensing and monitoring child care in the state. Bright from the Start Quality Rated is an optional program for child care providers. They offer a variety of professional development resources to current and aspirational child care providers. DECAL also provides resources to assist families in their search for child care and pre-k programs that meet their needs.

→ DECAL Scholars: A program that offers professional development resources to child care providers. They also offer scholarships and other programs to both current and aspirational students.

→ Georgia Department of Human Services Division of Family & Children Services - (State): investigates reports of child abuse; finds foster and adoptive homes for abused and neglected children; issues SNAP, Medicaid and TANF; helps out-of-work parents get back on their feet; and provides numerous support services and innovative programs to help families in need.

→ The Southern Early Childhood Association (SECA): Association is committed to improving the quality of care and education for young children and their families through advocacy and professional development.

→ South Carolina Department of Social Services – (State): Offers a COVID grant program COVID-19 Support Grants for Child Care Providers (scchild care.org)

→ Child Care and Development Fund (CCDF) program – (State/Federal): Federal funding for improving child care and providing subsidies for families with low income.

→ Federal (IRS) Earned Income Tax Credit (EITC) – (Federal): Helps low- to moderate-income workers and families get a tax break. Those who qualify can use the credit to reduce taxes owed – and maybe increase their refund.

→ American Rescue Plan Act (ARPA) funding – (Federal): Stimulus bill passed as a result of the COVID-19 pandemic to provide relief for Americans.

→ Child Care and Development Block Grant – (Federal): Federal funding for improving child care and providing subsidies for families with low income.

→ Child Care Stabilization Grants – (Federal): Part of the American Rescue Plan Act funding that targets child care.

Chapter 10:

Public Utilities and
Infrastructure Analysis

10 Public Utilities and Infrastructure

10.1 Overview

The purpose of the Public Utilities and Infrastructure chapter is to provide an analysis of the public infrastructure systems for the area surrounding Fort Gordon and to determine its ability to support existing and future demands, which are highly influenced by population growth. The Study Area is expecting growth over the next ten years related to the buildup of personnel at Fort Gordon and general growth unrelated to the Installation. The Public Utilities and Infrastructure Analysis will evaluate the impacts of projected growth and identify needed infrastructure improvements, including costs, timing, and phasing.

This chapter includes an analysis of the following infrastructure systems:

→ Water
→ Wastewater
→ Solid Waste Collection and Treatment
→ Electric Distribution Systems
→ Natural Gas

An assessment of existing and proposed infrastructure conditions within the Study Area is also undertaken.

10.2 Methodology

The methodology consists of a data collection phase and an analysis phase. The data collection phase included a combination of local government data, online research, and interviews. The analysis phase used the estimated population information to determine the impacts to each infrastructure system for the duration of the study period. Each system was evaluated to determine its existing capacity and to identify if the systems will be able to support future demands. These phases are described in more detail in the following subsections.

10.2.1 Data Collection Phase

The majority of the data was collected through online research of each county utility department and was supplemented with interviews with department employees. Information collected from county officials included confirmation of existing capacities, average daily use, and any planned expansions to each infrastructure system. This information is used as a basis for the analysis phase.

10.2.2 Analysis Phase

Using the data collected, each infrastructure system is evaluated for its capacity, current demand, and future demand based on the population projections. Infrastructure demand calculations are prorated based on the percentage of population growth. Where deficiencies are identified, proposed improvements for each utility were provided along with a timeline/phasing plan to ensure that the utility will be able to support the increased usage.

10.3 Water

Potable water used for consumption within the Study Area is sourced from surface water or collected from ground water wells and treated with chemicals to ensure the water is safe for drinking. Water is treated at water treatment facilities or at the source of the wells. The treatment capacity, average daily use, water source, and proposed improvements for each county in the Study Area are detailed in the following subsections.

10.3.1 Augusta-Richmond County, Georgia

The Augusta Utilities Department provides approximately 15.5 billion gallons of water per year for Augusta-Richmond County, including Fort Gordon. Water is sourced from surface water from the Savannah River and ground water wells. The treatment of surface water from the Savannah River occurs at two separate water treatment facilities – the Highland Avenue Water Treatment Plant and the N. Max Hicks Water Treatment Plant. The treatment of ground water occurs at two separate treatment facilities – Ground Water Plant Number 1 and 2. Refer to the map in Figure 10.2 in the Existing Service Area Section for the location of the water treatment facilities in Augusta-Richmond County.

Existing Facilities

The Highland Avenue Water Treatment Plant provides most of the water supply for Augusta-Richmond County. The facility withdraws raw water from the Savannah River at the Raw Water Pumping Station located off Riverwatch Parkway and stores it in two reservoirs adjacent to the plant, with a total volume of approximately 125 million gallons. Treated water is collected in underground sanitized tanks with a total volume of 11 million gallons, and then treated water is delivered by gravity pipes or pump stations through the water distribution network.

The N. Max Hicks Water Treatment Plant provides water to customers in South Augusta-Richmond County. The facility collects and stores up to 45 million gallons of raw water from the Savannah River in a storage reservoir that serves the facility. The water undergoes the treatment process, and clean water is then pumped to sanitized storage tanks to be distributed throughout South Augusta-Richmond County.

The Augusta Utilities Department supplements the surface water supply with ground water. Ground Water Plant Number 1 utilizes 14 wells to provide raw water for treatment, and 10 wells provide raw water to Ground Water Plant Number 2. There are at least 24 ground water wells in operation within the Augusta-Richmond County area. All wells draw from the Cretaceous Aquifer, which is located hundreds of feet below ground in the Study Area.

The capacity, average daily use, remaining capacity, measured in million gallons per day (mgd), and the water source for each water treatment facility in Augusta-Richmond County is shown in Table 10.1.

Table 10.1: Water Treatment Facilities in Augusta-Richmond County, Georgia

Water Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Water Source
Highland Avenue Water Treatment Plant	60	24	36	Savannah River

Water Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Water Source
N. Max Hicks Water Treatment Plant	15	3.5	11.5	Savannah River
Combined Ground Water Plants	20	15	5	Ground Water
Total	95	42.5	52.5	--

Source: Augusta Utilities Department, August 2021

Outside of the water treatment facilities, two communities within Richmond County obtain water from ground water wells, treated at the source. The communities include:

→ City of Blythe: The water supply is sourced from two ground water wells which draw from the Floridian Aquifer at a depth of 220 feet. The city also utilizes an elevated storage tank with a volume of 100,000 gallons.
→ City of Hephzibah: The water supply is sourced from a ground water well that draws from the Cretaceous Aquifer at a depth of 484 feet.

Existing Service Area

The Augusta Utilities Department provides water to a service area of approximately 230 square miles and a population of over 160,000. The water distribution system consists of approximately 1,200 miles of water mains. The map shown in Figure 10.1 identifies the water service area and the location of the water treatment facilities in Augusta-Richmond County.
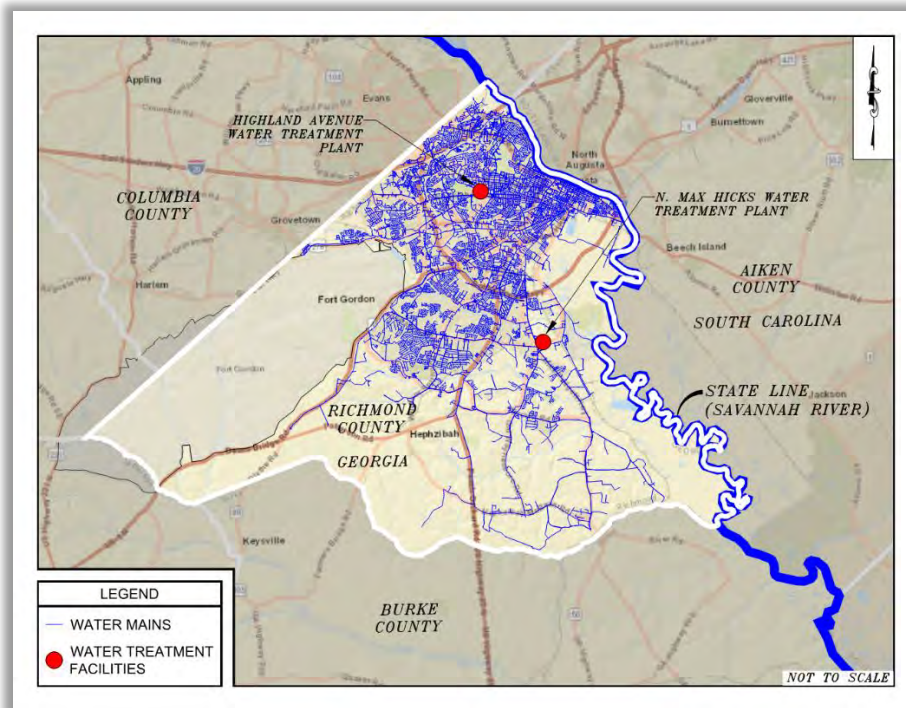
Figure 10.1: Water Service Area and Water Treatment Facilities in Augusta-Richmond County. Source: Augusta-Richmond County GIS, 2021.

Since the beginning of the study period in 2012, the Augusta Utilities Department has used transportation and stormwater projects as an opportunity to upgrade any existing aging water lines within Augusta-Richmond County.

Analysis of Future Demand

Augusta-Richmond County has a projected population increase of approximately 5.12 percent by the year 2030. The existing water utility is evaluated to determine its ability to support the projected demand due to the increased population. The water treatment capacity, current and projected average daily usage, and remaining capacity for the water treatment facilities in Augusta-Richmond County are summarized for each year of the study period in the Table 10.2.

Table 10.2: Projected Water Treatment Usage in Augusta-Richmond County, Georgia

Year	Water Treatment Capacity (mgd)	Current and Projected Average Daily Use (mgd)	Remaining Capacity (mgd)
2020	95	42.50	52.50
2021	95	42.76	52.24
2022	95	43.30	51.70
2023	95	43.60	51.40
2024	95	43.71	51.29
2025	95	43.89	51.11
2026	95	44.08	50.92
2027	95	44.27	50.73
2028	95	44.44	50.56
2029	95	44.57	50.43
2030	95	44.68	50.32

Source: Alfred Benesch & Company, 2021

The existing water treatment facilities in Augusta-Richmond County have adequate capacity for the anticipated population increase. However, as areas in the southern portion of the county grow, water mains and services may need to be extended to reach potential customers that would otherwise have to use private wells.

Proposed Infrastructure Improvements

Proposed projects are identified in Augusta-Richmond County to improve the existing water systems. More specifically, the City of Hephzibah has identified an extension of an existing water system along Corley Road to aid in development. This project is expected to be funded by a Special Purpose Local Option Sales Tax (SPLOST). The proposed projects, associated costs, and potential fund sources for the Augusta-Richmond County water utility improvements are displayed in Table 10.3.

Table 10.3: Water System Improvements in Augusta-Richmond County, Georgia

Estimated Construction	Project	Cost	Potential Fund Source
2022	City of Hephzibah – Water System Loop along Corley Road from Storey Mill Road to Farmers Bridge Road	$ 750,000	SPLOST
Ongoing 2022-2030+	Extending Septic to Sewer Conversions in unincorporated area of Richmond County	Varies	Department Funds/ SPLOST

Source: SPLOST 8 Project List, March 2021; Augusta Utilities Department, September 2021

10.3.2 Burke County, Georgia

Burke County is served by various water service providers:

→ City of Waynesboro
→ City of Sardis
→ City of Keysville
→ Town of Girard
→ City of Midville
→ City of Vidette

The City of Waynesboro, which is the largest city in Burke County, provides water service to residents within its jurisdictional territory, with approximately 5,813 customers. The water supply is sourced from surface water from Brier Creek and two ground water wells that withdraw water from the Midville/Cretaceous Aquifer. The treatment of the surface water occurs at the Water Treatment Plant located on Highway 56. The map shown in Figure 10.2 features the location of the water treatment facility in Burke County.
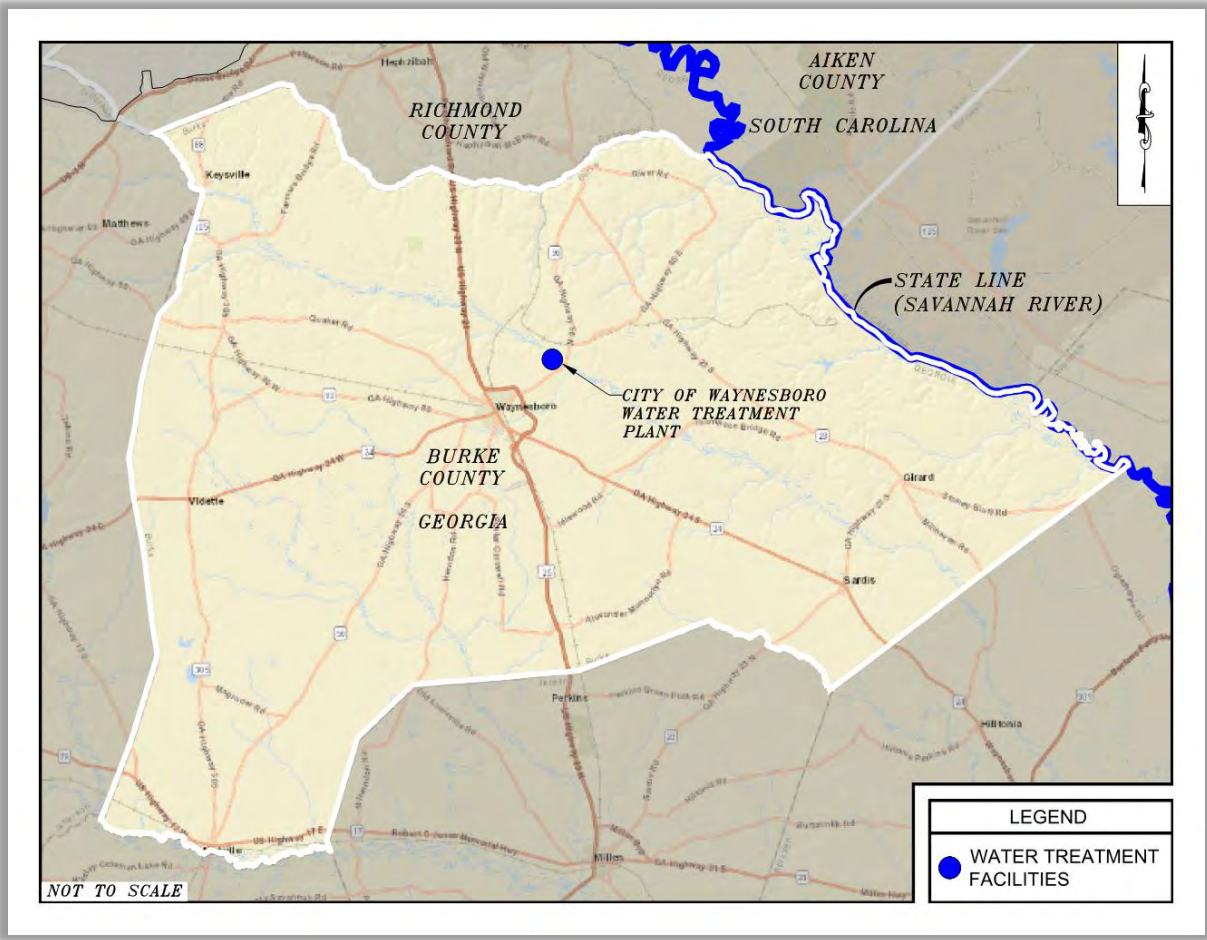
Figure 10.2: Water Treatment Facilities in Burke County. Source: Benesch, 2021.

Existing Facilities

The Water Treatment Plant in the City of Waynesboro withdraws raw water from Brier Creek. Treated water is then distributed throughout the city.

The capacity, average daily use, remaining capacity, and water source for the water treatment facility in Burke County was obtained from the current EPD Non-Farm Ground Water Withdrawal Permit list and is summarized in Table 10.4.

Table 10.4: Water Treatment Facilities in Burke County, Georgia

Water Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Water Source
City of Waynesboro – Water Treatment Plant and Ground Water	4.0	Not Reported	--	Brier Creek and Ground Water

Source: EPD Non-Farm Ground Water Withdrawal Permit List, November 2020

Outside of the water treatment facility, multiple communities within Burke County obtain water from ground water wells that withdraw raw water from the Floridian Aquifer. Ground water is treated at the source and then distributed throughout each community. The communities include:

→ City of Sardis: The City of Sardis provides water service to a population of approximately 1,159 customers. The water supply is sourced from ground water wells. Additional water tanks have recently been installed to increase the storage volume for the city.

→ City of Keysville: The City of Keysville provides water service to a population of approximately 400 customers. Water is supplied from one ground water well. The water system pumps ground water directly into an elevated storage tank with a total volume of 75,000 gallons. The city is in the process of installing a second ground water well for additional capacity.

→ Town of Girard: The Town of Girard provides water service to a population of approximately 125 customers. The water supply is sourced from ground water wells. Recent improvements include a new water system with increased capacity for residents, businesses, and additional customers.

→ City of Midville: The water supply is provided from one ground water well. The well system was recently repaired and upgraded with the installation of a new pump.

→ City of Vidette: The City of Vidette provides water service to a population of approximately 118 customers. The water supply is sourced from a ground water well. An additional well has been installed recently to increase capacity for the water system for residents and businesses.

Existing Service Area

Each city or town located in Burke County mostly provides drinking water to its jurisdictional territory. However, the Cities of Waynesboro, Midville, and Sardis offer limited water service outside of their city limits. Burke County does not operate a central water system. In the unincorporated areas of Burke County, individual households and industrial sites must obtain ground water wells.

Analysis of Future Demand

Currently, the demand for water services in Burke County is within the capacity provided. Projections for the county indicate a decrease in population of 0.46 percent by the year 2030. Therefore, the existing water utility has sufficient capacity for the current and projected populations in Burke County. However, there are areas within the county where water mains and services may need to be extended to provide water service to new customers that would otherwise have to use private wells for drinking water.

Proposed Infrastructure Improvements

In general, the communities within Burke County have identified the need to expand their water system throughout the unincorporated areas to attract and expand residential, commercial, and industrial development. Currently, there are not any projects developed to expand the water system. Ongoing projects within the county include replacing existing aging infrastructure. These projects will be expected to be SPLOST and the CDBG program. These improvements are expected to be funded by SPLOST or the Community Development Block Grant (CDBG) Program. The proposed projects, associated costs, and potential fund sources for the Burke County water utility improvements are presented in Table 10.5.

Table 10.5: Water System Improvements in Burke County, Georgia

Estimated Construction Date	Project	Cost	Potential Fund Source
Ongoing 2020 – 2030+	Replace existing aging infrastructure water lines and services in the incorporated areas of Burke County.	Varies	SPLOST/ CDBG

Source: Burke County Joint Comprehensive Plan, 2018-2028,
City of Waynesboro Sewer and Wastewater Department, December 2021

10.3.3 Columbia County, Georgia

Columbia County provides public utilities and infrastructure to all cities within the county, with the exception of the City of Grovetown. As of July 2021, the City of Harlem partnered with Columbia County to transfer the utility system to the county. The water supply for Columbia County is sourced from surface water from the Savannah River and the Clarks Hill Reservoir. The treatment of surface water occurs at two separate water treatment facilities – the Jim Blanchard Water Treatment Plant and the Clarks Hill Water Treatment Plant. Refer to the map shown in Figure 10.4 in the Existing Service Area Section for the location of the water treatment facilities in Columbia County.

Existing Facilities

The Jim Blanchard Water Treatment Plant and the Clarks Hill Water Treatment Plant provide the water supply for Columbia County. The Jim Blanchard Water Treatment Plant withdraws raw water from the Savannah River, while the Clarks Hill Water Treatment Plant collects raw water from the Clarks Hill Reservoir. Raw water undergoes the treatment process, and clean water is then distributed throughout Columbia County.

The permitted capacities of the plants are identified in the current EPD Non-Farm Surface Water Withdrawal Permit. Average daily use, remaining capacity, and water source for each water treatment facility in Columbia County were obtained from, and confirmed by, Columbia County Utilities. A summary of the capacity and usage is defined in Table 10.6.

Table 10.6: Water Treatment Facilities in Columbia County, Georgia

Water Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Water Source
Jim Blanchard Water Treatment Plant	45.9	14.5	31.4	Savannah River
Clarks Hill Water Treatment Plant	8.0	1.9	6.1	Clarks Hill Reservoir
Total	53.9	16.4	37.5	--

Source: EPD Non-Farm Surface Water Withdrawal Permit List, November 2020
Columbia County Development Authority, December 2021

Outside of the water treatment facilities, the City of Grovetown collects and treats raw water from a ground water well that withdraws from the Crystalline Rock Aquifer. Capacity from the well was not available, but according to Michael Woods, the Water, Wastewater, and Stormwater Superintendent for the City of Grovetown, it can account for approximately 5 percent of the drinking water in the city. The remaining 95 percent of the drinking water in the City of Grovetown is purchased from the Jim Blanchard Water Treatment Plant or the Clarks Hills Water Treatment Plant in Columbia County. Drinking water throughout the city is stored in three elevated water tanks with a total volume of 1.4 million gallons.

Existing Service Area

Columbia County generally provides water service to most of the county. The map shown in Figure 10.3 indicates the water service area and the location of the water treatment facilities in Columbia County.
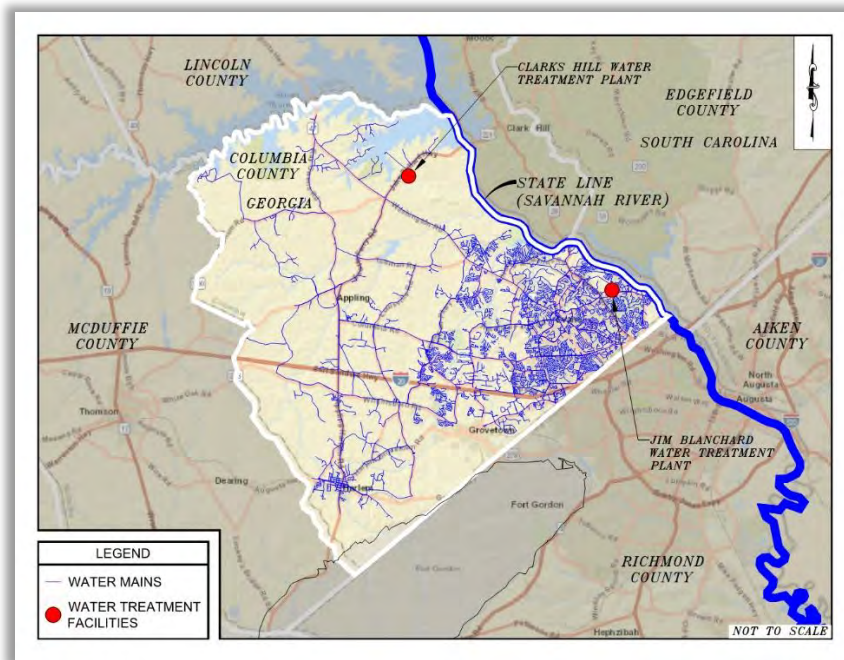

Figure 10.3: Water Service Area and Water Treatment Facilities in Columbia County. Source: Columbia County GIS, 2021.

Since the beginning of the study period in 2012, Columbia County has used road improvement projects within the county as an opportunity to extend its water distribution system in areas that are experiencing

rapid population growth. A new 12-inch water main has been installed along Lewiston Road, as a part of the Lewiston Road Widening Project, extending from Columbia Road to Interstate-20. This provides an additional 1.7 miles of water mains to serve the growing areas surrounding the City of Grovetown.

Analysis of Future Demand

Columbia County has a projected population increase of approximately 22.43 percent by the year 2030. The existing water utility is evaluated to determine its ability to support the projected demand due to the increased population. The water treatment capacity, current and projected average daily usage, and remaining capacity for the water treatment facilities in Columbia County are compared for each year of the study period in Table 10.7.

Table 10.7: Projected Water Treatment Usage in Columbia County, Georgia

Year	Water Treatment Capacity (mgd)	Current and Projected Average Daily Use (mgd)	Remaining Capacity (mgd)
2020	53.9	16.40	37.50
2021	53.9	16.78	37.12
2022	53.9	17.35	36.55
2023	53.9	17.77	36.13
2024	53.9	18.09	35.81
2025	53.9	18.44	35.46
2026	53.9	18.78	35.12
2027	53.9	19.12	34.78
2028	53.9	19.45	34.45
2029	53.9	19.77	34.13
2030	53.9	20.09	33.81

Source: Alfred Benesch & Company, 2021

The existing water treatment facilities in Columbia County have adequate capacity for the anticipated population increase. However, there are areas within the county where water mains and services may need to be extended to provide water service to new customers that would otherwise have to use private wells for drinking water.

Proposed Infrastructure Improvements

Proposed projects have been identified within Columbia County to improve the existing water systems. More specifically, within the near term, the City of Harlem has identified a project to upgrade the existing water system and storage tanks. They also have identified an ongoing project to replace the existing water main along Highway 25. Other water main upgrades have been identified along main corridors in Columbia County.

Although there is sufficient capacity within the existing water treatment plants, Columbia County has identified a long-range project as part of their Vision 2035 Comprehensive Plan to increase the treatment capacities of the Jim Blanchard Water Treatment Plant by expanding the current filters. Potential funding sources for these improvements include County Funds and SPLOST. Additionally, in April 2021, the Environmental Protection Agency (EPA) announced funding availability under the agency's Water Infrastructure Finance and Innovation Act (WIFIA) and State infrastructure finance authority WIFIA (SWIFIA) for water and wastewater infrastructure projects. These acts provide a total of $6.5 billion in

funding across the United States. The proposed projects, associated costs, and potential fund sources for the Columbia County water utility improvements are summarized in Table 10.8.

Table 10.8: Water System Improvements in Columbia County, Georgia

Estimated Construction Date	Project	Cost	Potential Fund Source
Ongoing 2021 to 2030+	Replace Water Lines Along Highway 78	$500,000	City Funds, Grants
2023	Upgrade Water System Along Wrightsboro Road	$600,000	SPLOST
2023	Upgrade Water System Along Newmantown Road, New Water Tower, and Line on Dodge Lane	$2,900,000	SPLOST, Water/Sewer Fund
2030	Upgrade and Expand Water Distribution System and Storage Tanks in the City of Harlem	$5,000,000	SPLOST, Loans, Bonds, WIFIA, SWIFIA
2030	Expanding Current Filters Increases the Capacity to 54 MGD for the Jim Blanchard Water Treatment Plant	$8,100,000	SPLOST, Loans, Bonds, WIFIA, SWIFIA

Source: Vision 2035 Columbia County Comprehensive Plan,
Harlem Comprehensive Plan 2021-2026, April 2021
Grovetown Comprehensive Plan 2021-2026, July 2021
Columbia County Utilities, Stacey Gordon, September 2021

10.3.4 Lincoln County, Georgia

Lincoln County is served by two water service providers:

→ City of Lincolnton
→ Lincoln County Water and Wastewater Division

The City of Lincolnton provides water service to approximately 900 residents within the city limits and wholesales water to Lincoln County to serve an additional 1,300 residents. Water is sourced from surface water from Clarks Hill Lake/Lake Thurmond and is treated at the James Reed Water Treatment Plant.

The Lincoln County Water and Wastewater Division provides drinking water to approximately 1,425 customers throughout Lincoln County. The water supply is sourced from four municipal ground water wells that withdraw water at 75 to 90 gallons per minute. Lincoln County supplements its water supply by purchasing up to 1 mgd from the City of Lincolnton. The treatment of raw water from the ground water wells occurs at the Lincoln County Filter Plant. The map shown in Figure 10.4 displays the location of the water treatment facilities in Lincoln County.
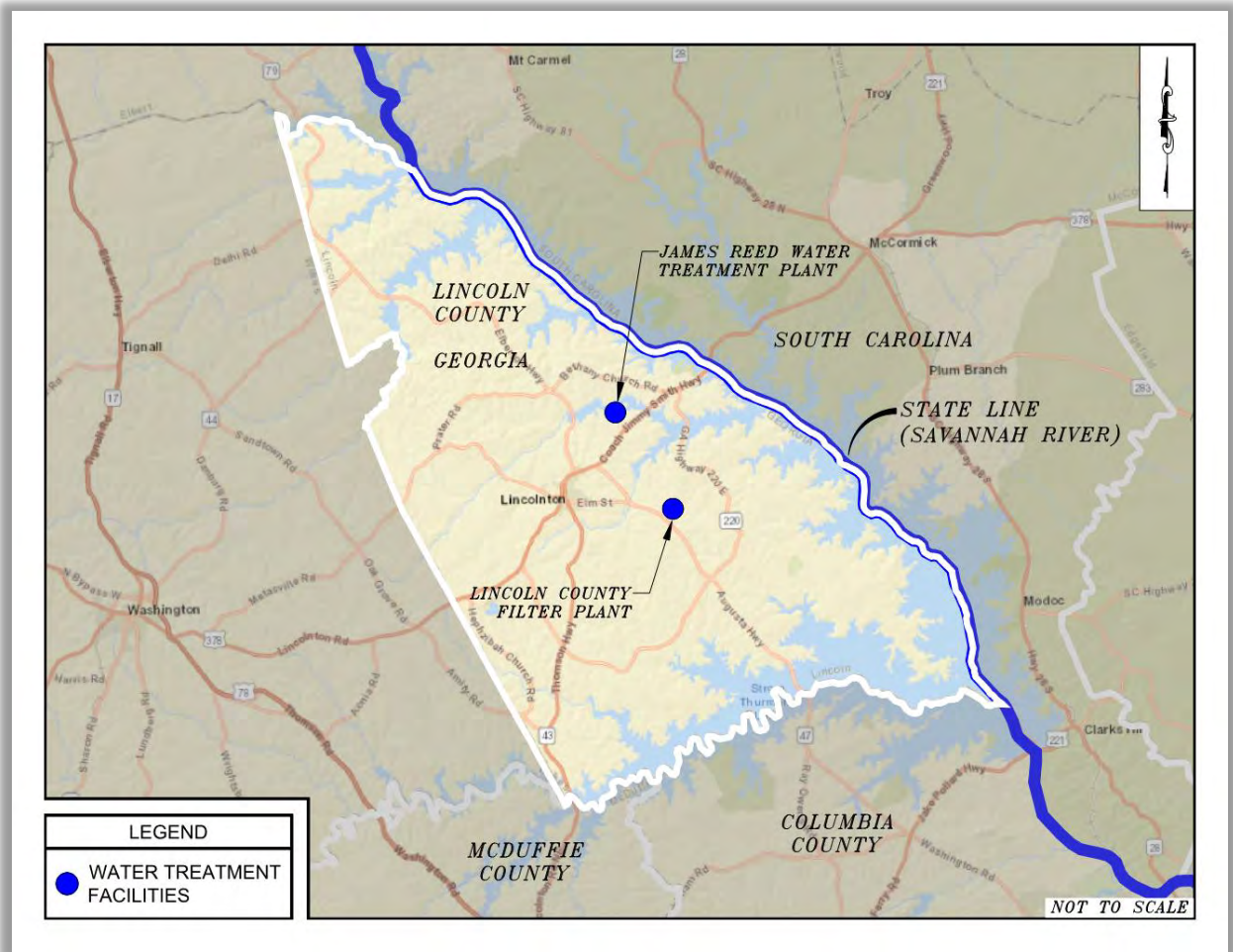
Figure 10.4: Water Treatment Facilities in Lincoln County. Source: Benesch, 2021.

Existing Facilities

The James Reed Water Treatment Plant is located on the Soap Creek Tributary and withdraws 0.36 mgd of raw water from Clarks Hill Lake/Lake Thurmond. Treated water is stored in a clear well and pumped throughout the City of Lincolnton and Lincoln County at a rate of 1,200 gallons per minute.

The Lincoln County Filter Plant provides treatment of raw water from the four ground water wells in Lincoln County. The county wells are capable of yielding 0.1 mgd in total and range in depth from 205 to 400 feet in the Piedmont Province Aquifer. Well water is pumped to the treatment facility and filtered for the removal of contaminants, such as iron and manganese. Then, chlorine disinfection and fluoride treatment are added to the raw water prior to distributing throughout Lincoln County. In addition to the treatment of ground water, the well sites are continuously monitored to prevent any contamination of the water source.

The capacity of the plants was obtained from the Lincoln County Public Works Department. The average daily use and water source for each water treatment facility in Columbia County were identified in the current EPD Non-Farm Surface Water Withdrawal Permit List and EPD Non-Farm Ground Water

Withdrawal Permit List. A summary of the capacity, average daily use, remaining capacity, and water source for each water treatment facility in Lincoln County is described in Table 10.9.

Table 10.9: Water Treatment Facilities in Lincoln County, Georgia

Water Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Water Source
James Reed Water Treatment Plant	2.00	0.63	1.37	Clarks Hill Lake/ Lake Thurmond
Lincoln County Filter Plant	0.46	0.35	0.11	Ground Water
Total	2.46	0.50	1.96	--

Source: EPD Non-Farm Surface Water Withdrawal Permit List, November 2020
EPD Non-Farm Ground Water Withdrawal Permit List, November 2020

In addition to the water treatment facilities in Lincoln County, the county has three small well systems in the Pointe Shores, Eagle Pointe, and Savannah Bay subdivisions. The Pointe Shores system consists of approximately two miles of water lines and two wells with a combined yield of 75 gallons per minutes. The ground water is then pumped to two pneumatic tanks. The Eagle Pointe water system consists of approximately 1.75 miles or water lines and two wells with a combined yield of 73 gallons per minute. The ground water is then pumped to one pneumatic tank. The Savannah Bay water system includes approximately 9,300 feet of water lines and three wells with a combined yield of 73 gallons per minute. The ground water is then pumped to a pneumatic tank.

Existing Service Area
The City of Lincolnton provides water service to approximately 40 percent of the county. The water utility system includes a total storage volume of 1.2 million gallons of water.

The Lincoln County Water and Wastewater Division supply waste service to 40 percent of the county residents in the unincorporated area of Lincoln County, while the other 60 percent rely on individual ground water wells. The water utility system consists of at least 130 miles of water lines, with water mains located along major roads and extending into some residential subdivisions. Lincoln County owns two elevated storage tanks with a total volume of 0.6 million gallons and one ground storage tank with a volume of 0.3 million gallons.

Analysis of Future Demand
Currently, the demand for water services in Lincoln County is within the capacity provided. Projections for the county indicate a decrease in population of 5.52 percent by the year 2030. Therefore, the existing water utility has sufficient capacity for the current and projected populations in Lincoln County. However, there are areas within the county where water mains and services may need to be extended to provide water service to new customers that would otherwise have to use private wells for drinking water.

Proposed Infrastructure Improvements
Currently, Lincoln County does not have any proposed projects to expand their water system. They have recently completed an extension of their water main to a new subdivision and connecting the water lines and wells to the County's water distributions system. Proposed systems may be extended as development occurs to provide water services to new customers. It is likely that these improvements would be joint funded by the developer and through the CDBG program.

Lincoln County has identified one proposed project for the existing water system. This project includes the expansion of the existing water utility and is expected to be funded by the CDBG program. The proposed project, associated cost, and potential fund source for the Lincoln County water utility improvement is shown in Table 10.10.

Table 10.10: Water System Improvements in Lincoln County, Georgia

Estimated Construction Date	Project	Cost	Potential Fund Source
Ongoing 2020 – 2030+	Expansion of water distribution system to new development	Variable	Developer Funded, CDBG

Source: City of Lincolnton Public Works, December 2021

10.3.5 McDuffie County, Georgia

The Thomson-McDuffie Water and Sewer Utility provides water service to residential, commercial, and industrial customers throughout the city and county. Water is sourced from surface water from Clarks Hill Reservoir and Usry's Pond. The treatment of surface water occurs at Big Creek Water Treatment Plant and Augusta Road Water Treatment Plant. The map shown in Figure 10.5 indicates the location of the water treatment facilities in McDuffie County.
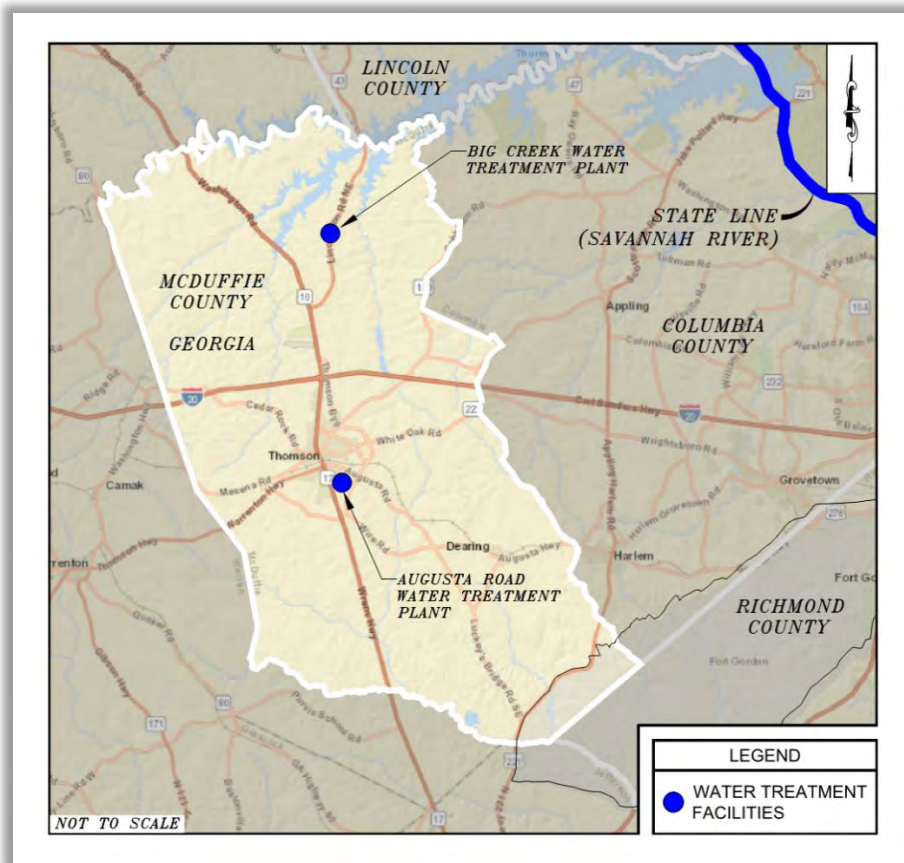
Figure 10.5: Water Treatment Facilities in McDuffie County. Source: Benesch, 2021.

Existing Facilities

The Big Creek Water Treatment Plant withdraws raw water from the Clarks Hill Reservoir, and treated water is distributed throughout the northern portion of the county.

The Augusta Road Water Treatment Plant withdraws raw water from Usry's Pond and filters out impurities to provide drinking water to the southern part of the county. The facility currently utilizes four filters to sort the water, with each being able to process 350 gallons per minute.

The capacity, average daily use, remaining capacity, and water source for each water treatment facility in McDuffie County was obtained from the current EPD Non-Farm Surface Water Withdrawal Permit list and confirmed with McDuffie County. The average daily use was only available from the Public Works Department as total usage from both plants. A summary of this information is presented in Table 10.11.

Table 10.11: Water Treatment Facilities in McDuffie County, Georgia

Water Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Water Source
Big Creek Water Treatment Plant	3.1	Total Not Separated	--	Clarks Hill Reservoir
Augusta Road Water Treatment Plant	1.5	Total Not Separated	--	Usry's Pond
Total	4.6	2.0	2.6	--

Source: EPD Non-Farm Surface Water Withdrawal Permit List, November 2020
Thomson-McDuffie Website – Public Works – Water, 2021

Existing Service Area

The water distribution system includes approximately 290 miles of water mains and six above ground storage tanks with a total volume of 1.8 million gallons. The Augusta Road Water Treatment Plant provides water service for approximately 15,000 McDuffie County residents, including Dearing. The average customer uses approximately 100 gallons of water per day. The map shown in Figure 10.6 identifies the water service area for McDuffie County.

Analysis of Future Demand

McDuffie County has a projected population increase of approximately 0.29 percent by the year 2030. The existing water utility is evaluated to determine its ability to support the projected demand due to the increased population. The water treatment capacity, current and projected average daily usage, and remaining capacity for the water treatment facilities in McDuffie County are defined for each year of the study period in Table 10.12.
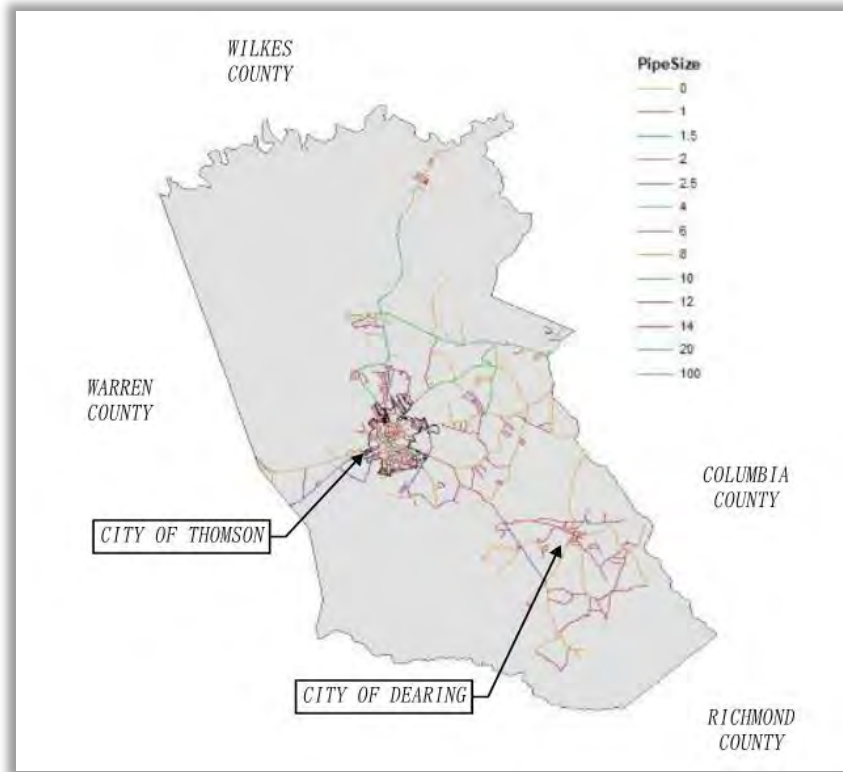
Figure 10.6: Water Service Area in McDuffie County. Source: McDuffie County Joint Comprehensive Plan, 2021.

Table 10.12: Projected Water Treatment Usage in McDuffie County, Georgia

Year	Water Treatment Capacity (mgd)	Current and Projected Average Daily Use (mgd)	Remaining Capacity (mgd)
2020	4.60	2.00	2.60
2021	4.60	2.00	2.60
2022	4.60	2.00	2.60
2023	4.60	2.00	2.60
2024	4.60	2.00	2.60
2025	4.60	2.01	2.59
2026	4.60	2.01	2.59
2027	4.60	2.01	2.59
2028	4.60	2.01	2.59
2029	4.60	2.01	2.59
2030	4.60	2.01	2.59

Source: Alfred Benesch & Company, 2021

The existing water treatment facilities in McDuffie County have adequate capacity for the anticipated population increase. However, there are areas within the county where water mains and services may need to be extended to provide water service to new customers that would otherwise have to use private wells for drinking water.

Proposed Infrastructure Improvements

Proposed projects have been identified in McDuffie County to improve the existing water system. More specifically, the projects include the installation of granular activated charcoal filtration systems at Big Creek Water Plant and Augusta Road Water Treatment Plant, and the expansion of the water distribution system to South McDuffie County. These improvements are expected to be funded by SPLOST, low interest loans, and grants from the EPA, such as the Water Infrastructure Improvements for the Nation (WIIN) Act. The proposed projects, associated costs, and potential fund sources for the McDuffie County water utility improvements are displayed in Table 10.13.

Table 10.13: Water System Improvements in McDuffie County, Georgia

Estimated Construction Date	Project	Cost	Potential Fund Source
2024	Installation of Granular Activated Charcoal Filtration Systems at Big Creek Water Treatment Plant and Augusta Road Water Treatment Plant to Ensure the Quality of the Water Produced at Both Plants	$3,000,000	Grants, Low Interest Loans
2025	Augusta Road Water Treatment Plant Improvements	$1,230,000	Grants, Low Interest Loans
2030	Expansion of the Water Distribution System to South McDuffie County, Including Approximately 75 Miles of New Water Mains	$9,000,000	Grants, SPLOST, Low Interest Loans

Source: Thomson-McDuffie – Public Works – Water, 2021

10.3.6 Aiken County, South Carolina

Aiken County is served by several water service providers:

→ City of Aiken
→ Breezy Hill Water and Sewer Company
→ City of North Augusta

The City of Aiken Government is the largest water provider within Aiken County. Water is sourced from surface water from Shaw's Creek, spring water, and ground water wells. The treatment of surface water occurs at the Shaw's Creek Water Treatment Facility, and the treatment of ground water occurs at four separate facilities: Pine Log Treatment Plant, Town Creek Treatment Plant, Silver Bluff Treatment Plant, and Shiloh Springs.

Breezy Hill Water and Sewer Company provides water to portions of Graniteville, North Augusta, and surrounding communities. Water is sourced from surface water from Clearwater Pond and ground water wells. The treatment of surface water occurs at the Breezy Hill/Charles A. Hilton Water Treatment Plant, and the ground water is treated at the source.

The City of North Augusta Utilities provides water to North Augusta, Belvedere, and surrounding communities. Water is sourced from surface water from the Savannah River and is treated at the North Augusta Water Treatment Plant. The map shown in Figure 10.7 highlights the location of the water treatment facilities in Aiken County.
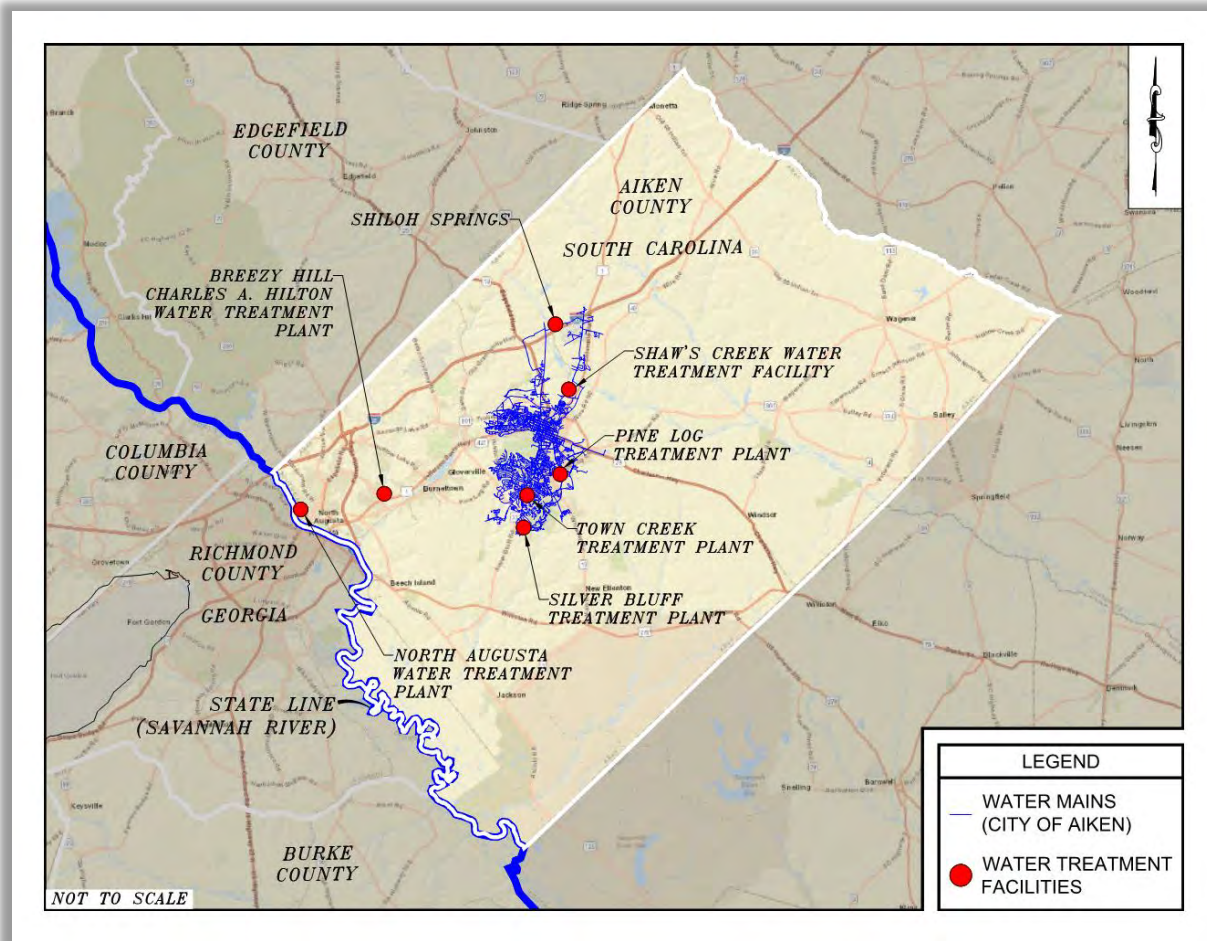
Figure 10.7: Water Treatment Facilities in Aiken County. Source: City of Aiken GIS, 2021.

Existing Facilities

The Shaw's Creek Water Treatment Facility withdraws raw water from Shaw's Creek and utilizes mixed media filters for treatment. The treated water is then conveyed throughout the City of Aiken. The facility is permitted for a capacity of 8.0 mgd but is currently operating at 6.0 mgd.

Pine Log Treatment Plant is composed of three ground water wells that are able to produce 1,000 gallons of water per minute. The facility includes two 500,000-gallon ground storage reservoirs and finished water pumping.

The Town Creek Treatment Plant consists of four ground water wells and a treatment facility. Each well has a capacity of 1,000 gallons per minute. The facility includes a 500,000-gallon ground storage reservoir and finished water pumping. There are a total of four vertical pumping units, with a capacity of 1,000 gallons per minute for each pump.

The Silver Bluff Treatment Plant is comprised of two groundwater wells, one located on-site and one off-site. The facility includes three booster pumps and a 750,000-gallon ground storage tank.

Shiloh Springs is the City of Aiken's oldest water treatment facility and collects spring water. The spring water is treated with chlorine and fluoride and then pumped into the water distribution system.

The Breezy Hill/Charles A. Hilton Water Treatment Plant withdraws raw water from Clearwater Pond and transports the water to the facility for treatment.

The North Augusta Water Treatment Plant withdraws raw water from the Savannah River at the intake site and stores it in a reservoir that can hold up to 30 million gallons of water. The reservoir is utilized when the water quality in the river is poor, and it serves as a secondary raw water source in the event of system emergencies. The treated water is distributed throughout the City of North Augusta.

The capacity, average daily use, remaining capacity, water source, and water provider for each water treatment facility in Aiken County is summarized in Table 10.14.

Table 10.14: Water Treatment Facilities in Aiken County, South Carolina

Water Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Water Source	Water Provider
Shaw's Creek Water Treatment Facility	6.0	6.0	0	Shaw's Creek	City of Aiken
Pine Log Treatment Plant	3.5	2.0	1.5	Ground Water	City of Aiken
Town Creek Treatment Plant	6.0	2.5	3.5	Ground Water	City of Aiken
Silver Bluff Treatment Plant	3.0	1.6	1.4	Ground Water	City of Aiken
Shiloh Springs	1.5	1.3	0.2	Spring Water	City of Aiken
Breezy Hill/ Charles A. Hilton Water Treatment Plant	4.7	3.3	1.4	Clearwater Pond	Breezy Hill Water and Sewer Company
North Augusta Water Treatment Plant	12.0	3.7	8.3	Savannah River	City of North Augusta
Total	36.7	20.4	16.3	--	--

Source: City of Aiken, Breezy Hill Water and Sewer Company Website, City of North Augusta, 2021

Outside of the water treatment facilities, multiple communities within Aiken County obtain water from ground water wells, treated at the source. Groundwater plays a significant role in the local water systems,

withdrawing an average of 15 mgd of ground water. The ground water from the aquifers in Aiken County is screened regularly and considered to be high quality. The communities include:

→ Bath Water and Sewer District: Water service is supplied to approximately 0.44 percent of the population of Aiken County. The water supply is sourced from two ground water wells.

→ Beech Island Rural Community Water District: Water service is served to about 4.67 percent of Aiken County. Water is sourced from seven ground water wells from the Tuscaloosa Aquifer. The raw water from the ground water wells is treated with chlorine and lime and then distributed throughout the area.

→ Burnettown Water District: Water service is provided to approximately 0.61 percent of Aiken County. Water is supplied from three ground water wells.

→ Clearwater Water and Sewer District: The water service is supplied to about 0.33 percent of the population of Aiken County. The water supply is provided through the purchase of groundwater from Valley Public Service Authority, which is described below.

→ College Acres Public Works District: Water service is provided to nearly 0.79 percent of Aiken County. Water is sourced from five ground water wells. The College Acres Public Works District withdraws approximately 0.15 mgd of ground water.

→ Jackson Water Department: Water service is delivered to about 2.13 percent of the population of Aiken County, and the water is supplied from two ground water wells.

→ Langley Water and Sewer District: The water service is served to about 0.44 percent of Aiken County. The water supply is provided by two ground water wells.

→ Monetta Water Department: Water service is supplied to nearly 0.56 percent of Aiken County. The water supply is sourced from ground water wells.

→ Montmorenci/Couchton Water District: The District serves water to about 2.16 percent of the population of Aiken County. The water supply is produced from three ground water wells in the Tuscaloosa Aquifer that withdraw approximately 0.30 mgd of ground water.

→ New Ellenton Public Works Commission: The water service is provided to approximately 3.52 percent of Aiken County. Water is supplied by four ground water wells which withdraw 0.75 mgd from the Middendorf Aquifer.

→ New Holland Water District: Water service is supplied to about 0.18 percent of the population of Aiken County. The water supply is sourced by two ground water wells.

→ Oak Hill Water Service: Water service is provided to nearly 0.14 percent of the population of Aiken County. The water supply is produced from ground water wells.

→ Perry Town Hall: Water is served to approximately 0.42 percent of Aiken County. Water is sourced from ground water wells.

→ Town of Salley: The water service is provided to about 0.26 percent of the population of Aiken County. Water is supplied from two ground water wells.

→ Talatha Rural Community Water District: Water service is supplied to approximately 1.01 percent of Aiken County. The water supply is provided from three ground water wells in the Tuscaloosa Aquifer. The water district also includes two elevated storage tanks with a total volume of 0.325 million gallons.

→ Valley Public Service Authority: Water is served to about 4.10 percent of the population of Aiken County. The water supply is sourced from five ground water wells which withdraw 1.00 mgd from

the Middendorf Aquifer. In addition, water is purchased from Trolley Run Station Development System which draws water from ground water wells and the Beech Island Water District, described above.

→ Wagener Water Department: Water is provided to nearly 0.63 percent of Aiken County and is supplied from ground water wells.

Existing Service Area

Approximately 75.9 percent of the population in Aiken County has access to a water system, and of those, approximately 29.5 percent is currently serviced by a water system that utilizes ground water wells. The remaining percent of the population in Aiken County require the installation of individual ground water wells.

The City of Aiken provides water service to approximately 26.15 percent of the population of Aiken County through the treatment of surface water and ground water. The water utility system includes four elevated storage tanks with a total volume of 2.6 million gallons and multiple ground level storage tanks with a total volume of 2.25 million gallons. The water distribution system consists of about 500 miles of water lines throughout the City of Aiken. The ground water wells withdraw approximately 7.00 mgd.

The Breezy Hill Water & Sewer Company supplies water service to nearly 10.43 percent of Aiken County. The company owns and operates 13 ground water wells, 11 tanks, and purchases water from two other neighboring entities through master meters. The neighboring entities are Edgefield Water and Sewer Authority and the City of North Augusta. However, the amount of purchased water was not reported. The Breezy Hill Water and Sewer Company's ground water wells withdraw approximately 1.10 mgd.

The City of North Augusta serves water to about 16.98 percent of the population of Aiken County. The water utility system includes five elevated storage tanks and one ground water tank with a total volume of 5.05 million gallons. The water distribution system consists of approximately 196 miles of water pipes, 10,690 meters, 1,673 valves, and 1,003 fire hydrants throughout the City of North Augusta.

The map shown in Figure 10.8 presents the general location of the water service areas in Aiken County. Since the beginning of the study period in 2012, the City of Aiken and the City of North Augusta have completed the most improvements to the water utility in Aiken County. Improvements from the City of Aiken include:

→ Maintenance, Replacement, and Expansion of Water Lines (Ongoing)

→ Pump Replacement at the Pine Log Treatment Plant (2018)

→ Replacement of the Valve Operators (2018), Online Turbidimeters (2018), and Electrical Panel (2020) at the Shaw's Creek Water Treatment Facility

→ Installation of the Radium Treatment System (2014) and Lime Slurry System (2021) at Shiloh Springs

→ Construction of the Silver Bluff Treatment Plant (2014)

Improvements from the City of North Augusta include:

→ Maintenance, Replacement, and Expansion of Water Lines to Provide a More Reinforced Distribution System and Improved Fire Protection (Ongoing)

→ Expansion of the North Augusta Water Treatment Plant and Construction of a 30-Million Gallon Raw Water Reservoir (2017)
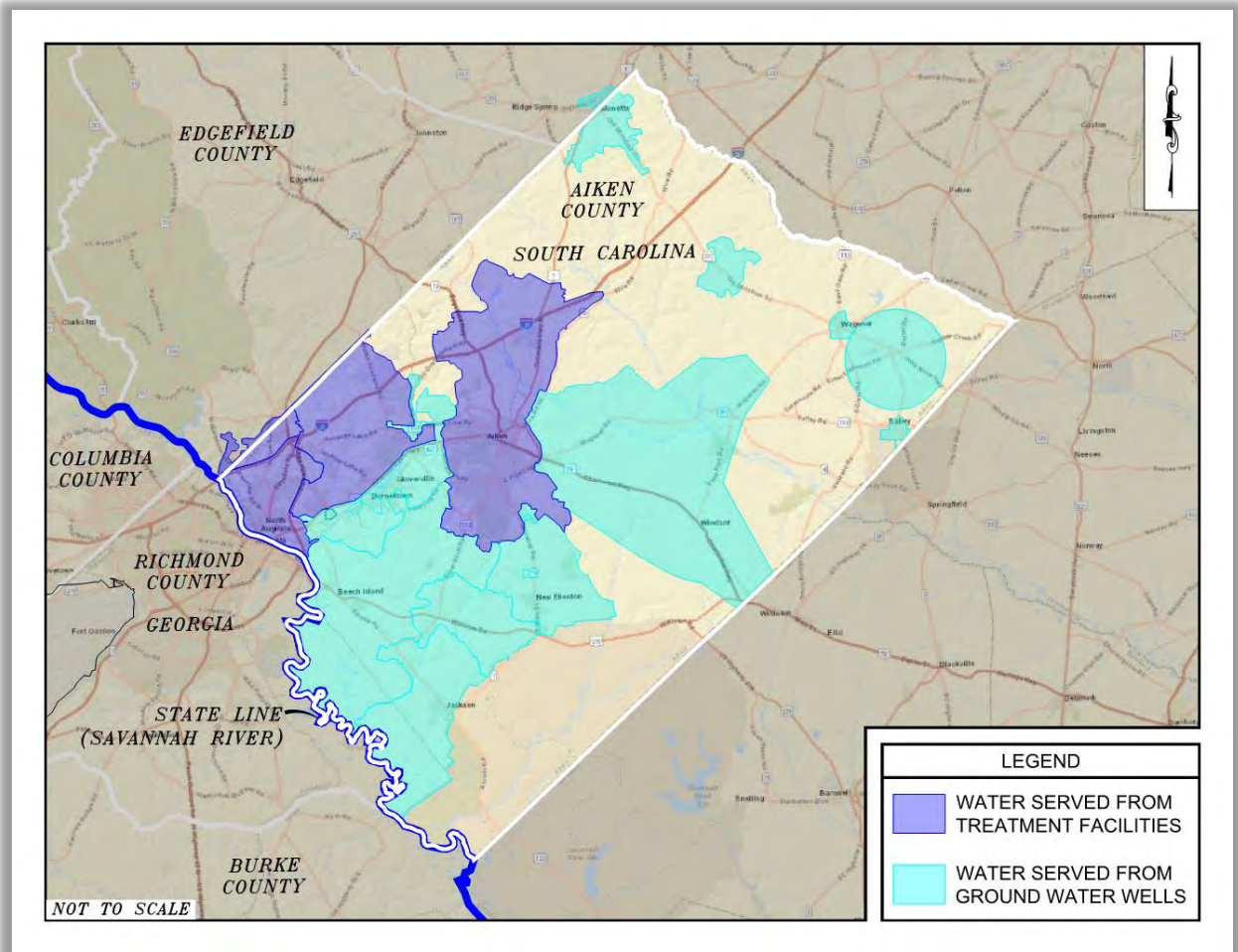
Figure 10.8: Water Service Areas in Aiken County. Source: Qpublic, Aiken County, South Carolina, 2021.

Analysis of Future Demand

Aiken County has a projected population increase of approximately 4.74 percent by the year 2030. The existing water utility is evaluated to determine its ability to support the projected demand due to the increased population. The water treatment capacity, current and projected average daily usage, and remaining capacity for the water treatment facilities in Aiken County are compared for each year of the study period in Table 10.15.

Table 10.15: Projected Water Treatment Usage in Aiken County, South Carolina

Year	Water Treatment Capacity (mgd)	Current and Projected Average Daily Use (mgd)	Remaining Capacity (mgd)
2020	36.7	20.40	16.30
2021	36.7	20.53	16.17
2022	36.7	20.70	16.00
2023	36.7	20.83	15.87
2024	36.7	20.91	15.79
2025	36.7	21.00	15.70
2026	36.7	21.08	15.62
2027	36.7	21.17	15.53
2028	36.7	21.26	15.44
2029	36.7	21.31	15.39
2030	36.7	21.37	15.33

Source: Alfred Benesch & Company, 2021

In general, the existing water treatment facilities in Aiken County have adequate capacity for the anticipated population increase. However, as the surrounding areas expand, the water districts may need to extend water mains and services to reach potential customers that would otherwise have to use private wells.

Proposed Infrastructure Improvements

Proposed projects have been identified in Aiken County to improve the existing water systems. More specifically, the projects include the construction of a new water treatment facility with an increased capacity of 8.0-12.0 mgd and additional elevated storage tanks with a total volume of 1.5 million gallons for the City of Aiken, the expansion of the water treatment facility from 4.7 mgd to 8.0 mgd for the Breezy Hill Water and Sewer Company, and the construction of an additional ground water well and storage tank for the Beech Island Rural Community District. Potential funding sources for the improvements include the Capital Project Sales Tax (CPST), the CDBG program, loans, and grants from the EPA, such as the WIFIA and SWIFIA. The proposed projects, associated costs, and potential fund sources for the Aiken County water utility improvements are displayed in Table 10.16.

Table 10.16: Water System Improvements in Aiken County, South Carolina

Estimated Construction Date	Project	Cost	Potential Fund Source
2022	Breezy Hill Water and Sewer Company – Expansion of the Existing Water Treatment Facility to 8.0 MGD	$4,000,000	CPST, Loans, WIFIA, SWIFIA
2025	City of Aiken – New Water Treatment Facility with 8.0-12.0 MGD Capacity	$12,000,000	CPST, Loans, WIFIA, SWIFIA
2025	Beech Island Rural Community District – Additional Well and Storage Tank Needed	$2,000,000	CDBG

Source: City of Aiken, Breezy Hill Water and Sewer Company Website, Beech Island Rural Community District, 2021

10.3.7 Edgefield County, South Carolina

The Edgefield County Water and Sewer Authority (ECWSA) provides water for Edgefield County and the southwestern corner of Aiken County. Water is sourced from surface water from the Savannah River at a site located in North Augusta and is transported to the Water Plant for treatment. The map shown in Figure 10.9 features the location of the water treatment facility in Edgefield County.
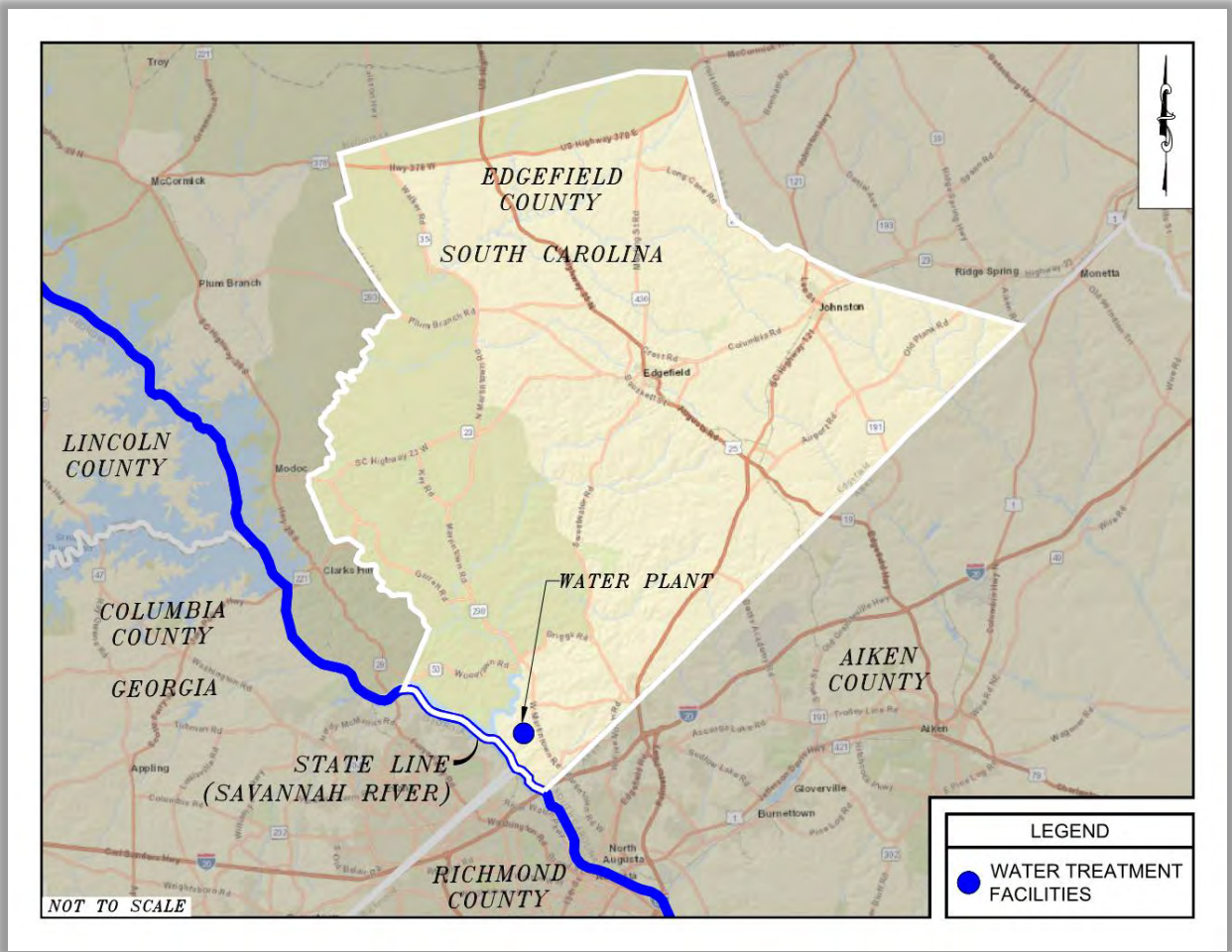
Figure 10.9: Water Treatment Facilities in Edgefield County. Source: Benesch, 2021.

Existing Facilities

ECWSA is currently permitted a withdrawal of 11.0 mgd by the U.S. Army Corps of Engineers. An Inter-Basin Transfer permit issued by DHEC's Bureau of Water states that ECWSA is authorized to withdraw a maximum of 11.0 mgd from the Savannah River basin to the Edisto River Basin. This inter-basin transfer permit is valid through July 1, 2025. The Water Plant in Edgefield County has a treatment capacity of 8.85 mgd. The treated water from this plant is distributed throughout Edgefield County.

The capacity of the water treatment plant was obtained from the Edgefield County Water and Sewer Authority. The average daily use was obtained from current, remaining capacity, and water source for the water treatment facility in Edgefield County is described in Table 10.17.

Table 10.17: Water Treatment Facilities in Edgefield County, South Carolina

Water Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Water Source
Water Plant	8.85	4.50	4.35	Savannah River

Edgefield County Sewer and Water Authority, December 2021

Existing Service Area

The Edgefield County Water and Sewer Authority provides water to over 9,000 customers. The water utility includes six elevated tanks with a combined volume of 2.8 million gallons and two ground level storage tanks with a combined volume of 3.2 million gallons. The ground level storage tanks are located at the Water Plant and are used to hold treated water pending distribution. The water distribution system consists of approximately 500 miles of supply lines throughout Edgefield and Aiken County. The map shown in Figure 10.10 identifies the water service area for Edgefield County.
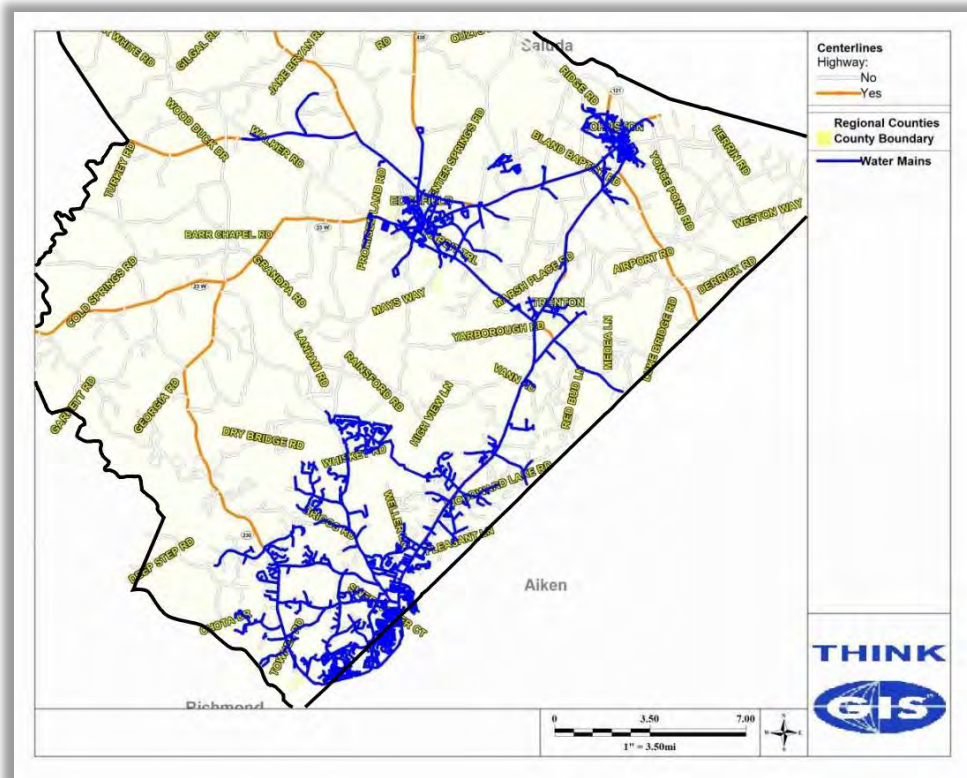
Figure 10.10: Water Service Area in Edgefield County. Source: Edgefield County Water and Sewer Authority, 2021.

Analysis of Future Demand

Edgefield County has a projected population increase of approximately 1.34 percent by the year 2030. The existing water utility is evaluated to determine its ability to support the projected demand due to the increased population. The water treatment capacity, current and projected average daily usage, and remaining capacity for the water treatment facility in Edgefield County are defined for each year of the study period in Table 10.18.

Table 10.18: Projected Water Treatment Usage in Edgefield County, South Carolina

Year	Water Treatment Capacity (mgd)	Current and Projected Average Daily Use (mgd)	Remaining Capacity (mgd)
2020	8.85	4.50	4.35
2021	8.85	4.51	4.34
2022	8.85	4.52	4.33
2023	8.85	4.53	4.32
2024	8.85	4.54	4.31
2025	8.85	4.54	4.31
2026	8.85	4.55	4.30
2027	8.85	4.55	4.30
2028	8.85	4.56	4.29
2029	8.85	4.56	4.29
2030	8.85	4.56	4.29

Source: Alfred Benesch & Company, 2021

The existing water treatment facility in Edgefield County has adequate capacity for the anticipated population increase. However, there are areas within Edgefield County that require extending water mains and services to more developed areas to provide water service to new customers that would otherwise have to use private wells.

Proposed Infrastructure Improvements

Edgefield County Water and Sewer Authority has initiated a long-term replacement and expansion of the existing water system. More specifically, the proposed improvements are to replace existing aging infrastructure and expand along the US25 corridor. These improvements are projected to be implemented as funding becomes available and are projected through 2030. Potential funding sources are Edgefield County funds, the CDBG program, the Edgefield County Water and Sewer Authority (ECWSA), and developer investment. The proposed project, associated cost, and potential fund source for the Edgefield County water utility improvement is shown in Table 10.19.

Table 10.19: Water System Improvements in Edgefield County, South Carolina

Estimated Construction Date	Project	Cost	Potential Fund Source
Ongoing 2020 – 2030+	Replace older systems and expand water lines around town and along US25 corridor	Varies	County Funds, CDBG, ECWSA, Developer Investment

Source: Edgefield County Sewer and Water Authority, December 2021

10.4 Wastewater

Wastewater produced from homes, businesses, and industries within the Study Area is conveyed to and treated at wastewater treatment facilities. The treatment capacity, average daily use, receiving stream, and proposed improvements for each county are detailed in the following subsections.

10.4.1 Augusta-Richmond County, Georgia

The Augusta Utilities Department provides wastewater treatment for Augusta-Richmond County. The treatment of wastewater occurs at two separate facilities – the J.B. Messerly Water Pollution Control Plant and the Spirit Creek Water Pollution Control Plant. Refer to the map shown in Figure 10.12 in the Existing Service Area Section for the location of the wastewater treatment facilities in Augusta-Richmond County.

Existing Facilities

The J.B. Messerly Water Pollution Control Plant and the Spirit Creek Water Pollution Control Plant collect and provide treatment for wastewater in Augusta-Richmond County. The J.B. Messerly Water Pollution Control Plant treats domestic wastewater from the surrounding community and several major industrial contributors. The facility conveys the treated wastewater into constructed wetlands before discharging into Butler Creek. The Spirit Creek Water Pollution Control Plant primarily serves the Spirit Creek basin in the southern part of the city and releases the treated water into Spirit Creek, while maintaining water quality standards.

The capacity, average daily use, remaining capacity, and receiving stream for each wastewater treatment facility in Augusta-Richmond County was obtained from the current EPD Permits and Reporting and is presented in Table 10.20.

Table 10.20: Wastewater Treatment Facilities in Augusta-Richmond County, Georgia

Wastewater Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Receiving Stream
J.B. Messerly Water Pollution Control Plant	46.10	36.13	9.97	Butler Creek
Spirit Creek Water Pollution Control Plant	2.24	0.34	1.90	Spirit Creek
Total	48.34	36.47	11.87	--

Source: Georgia EPD Permitting and Reporting, March 2019

Existing Service Area

The Augusta Utilities Department provides water to a service area of approximately 230 square miles and a population of over 160,000. The map shown in Figure 10.11 indicates the wastewater service area and the location of the wastewater treatment facilities in Augusta-Richmond County.

Since the beginning of the study period in 2012, the Augusta Utilities Department has used transportation and stormwater projects as an opportunity to upgrade any existing aging sewer lines within Augusta-Richmond County.

Analysis of Future Demand

Augusta-Richmond County has a projected population increase of approximately 5.12 percent by the year 2030. The existing wastewater utility is evaluated to determine its ability to support the projected demand due to the increased population. The wastewater treatment capacity, current and projected average daily usage, and remaining capacity for the wastewater treatment facilities in Augusta-Richmond County are summarized for each year of the study period in the Table 10.21
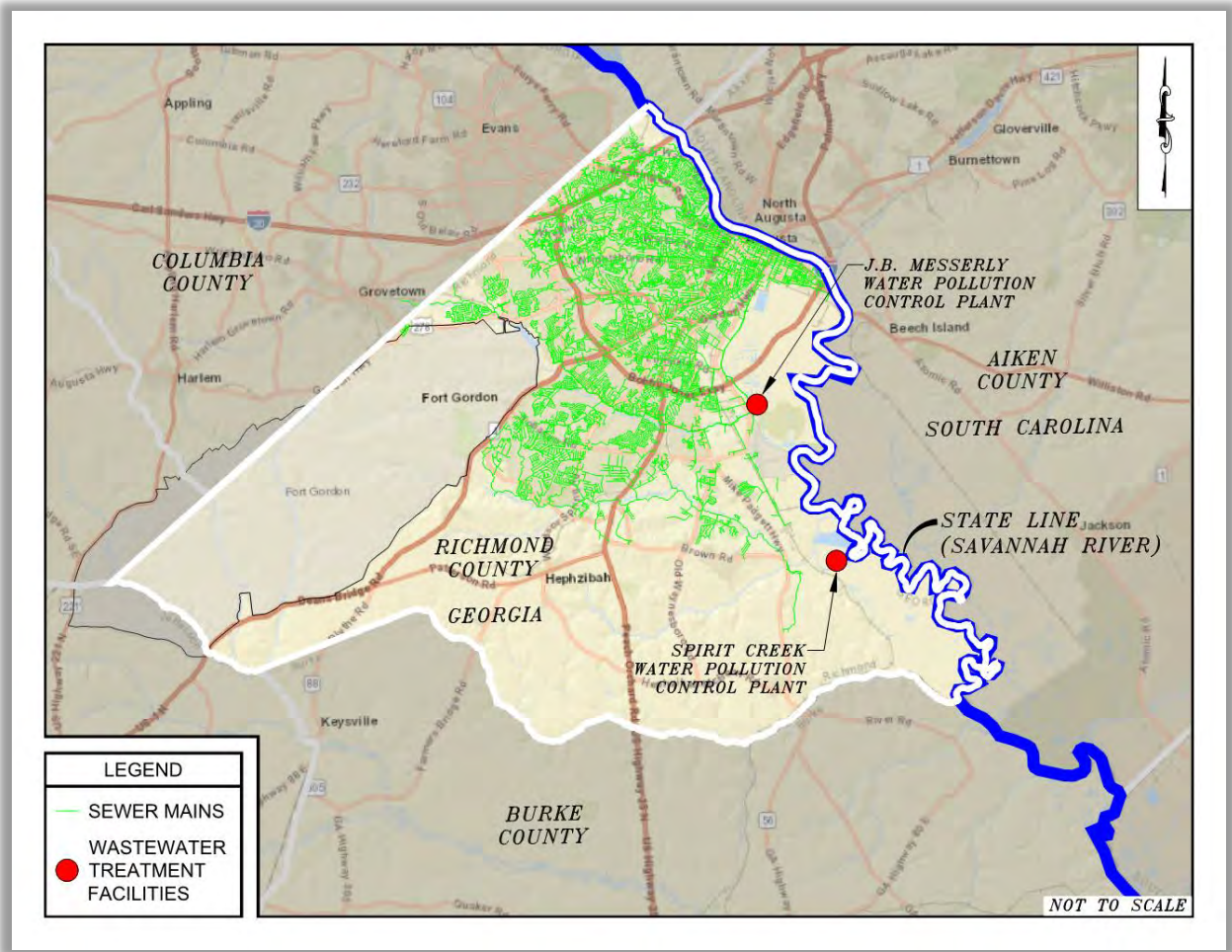
Figure 10.11: Wastewater Service Area and Wastewater Treatment Facilities in Augusta-Richmond County. Source: Augusta-Richmond County GIS, 2021.

Table 10.21: Projected Wastewater Treatment Usage in Augusta-Richmond County, Georgia

Year	Wastewater Treatment Capacity (mgd)	Current and Projected Average Daily Use (mgd)	Remaining Capacity (mgd)
2020	48.34	36.47	11.87
2021	48.34	36.69	11.65
2022	48.34	37.15	11.19
2023	48.34	37.40	10.94
2024	48.34	37.50	10.84
2025	48.34	37.65	10.69
2026	48.34	37.81	10.53
2027	48.34	37.98	10.36
2028	48.34	38.13	10.21
2029	48.34	38.24	10.10
2030	48.34	38.34	10.00

Source: Alfred Benesch & Company, 2021

The existing wastewater treatment facilities in Augusta-Richmond County have adequate capacity for the anticipated population increase. However, there are areas within the county where sewer mains and services may need to be extended to provide service to new customers that are currently using septic systems.

Proposed Infrastructure Improvements

The Augusta Utilities Department has identified one proposed project for the existing wastewater system. This project includes the extension of sewer mains to areas in the county where residents rely on septic systems. The improvement is expected to be completed in phases and funded through department budgets and the SPLOST program. The proposed project, associated cost, and potential fund source for the Augusta-Richmond County wastewater utility improvement is described in Table 10.22.

Table 10.22: Wastewater System Improvements in Augusta-Richmond County, Georgia

Estimated Construction Date	Project	Cost	Potential Fund Source
Ongoing 2020 – 2030+	Extend Sewer Service to Areas South of Tobacco Road and East of Windsor Spring Road	Varies	Department Budgets, SPLOST

Source: Augusta Utilities Department, 2021

10.4.2 Burke County, Georgia

Burke County is served by several wastewater service providers:

→ City of Waynesboro
→ City of Sardis
→ City of Keysville
→ City of Midville

The map shown in Figure 10.12 highlights the location of the wastewater treatment facilities in Burke County.

Existing Facilities

The City of Waynesboro Water Pollution Control Plant provide wastewater treatment for residents within the city limits. Treated water is discharged into McIntosh Creek.

The City of Sardis Wastewater Pollution Plant provides wastewater treatment for the residents within the city limits. Treated water is discharged into Brier Creek. The wastewater treatment facility was upgraded in 2019.

The capacity, average daily use, remaining capacity, and receiving stream for each wastewater treatment facility in Burke County were obtained from the current issued permits for each of the wastewater treatment plants is displayed in Table 10.23.
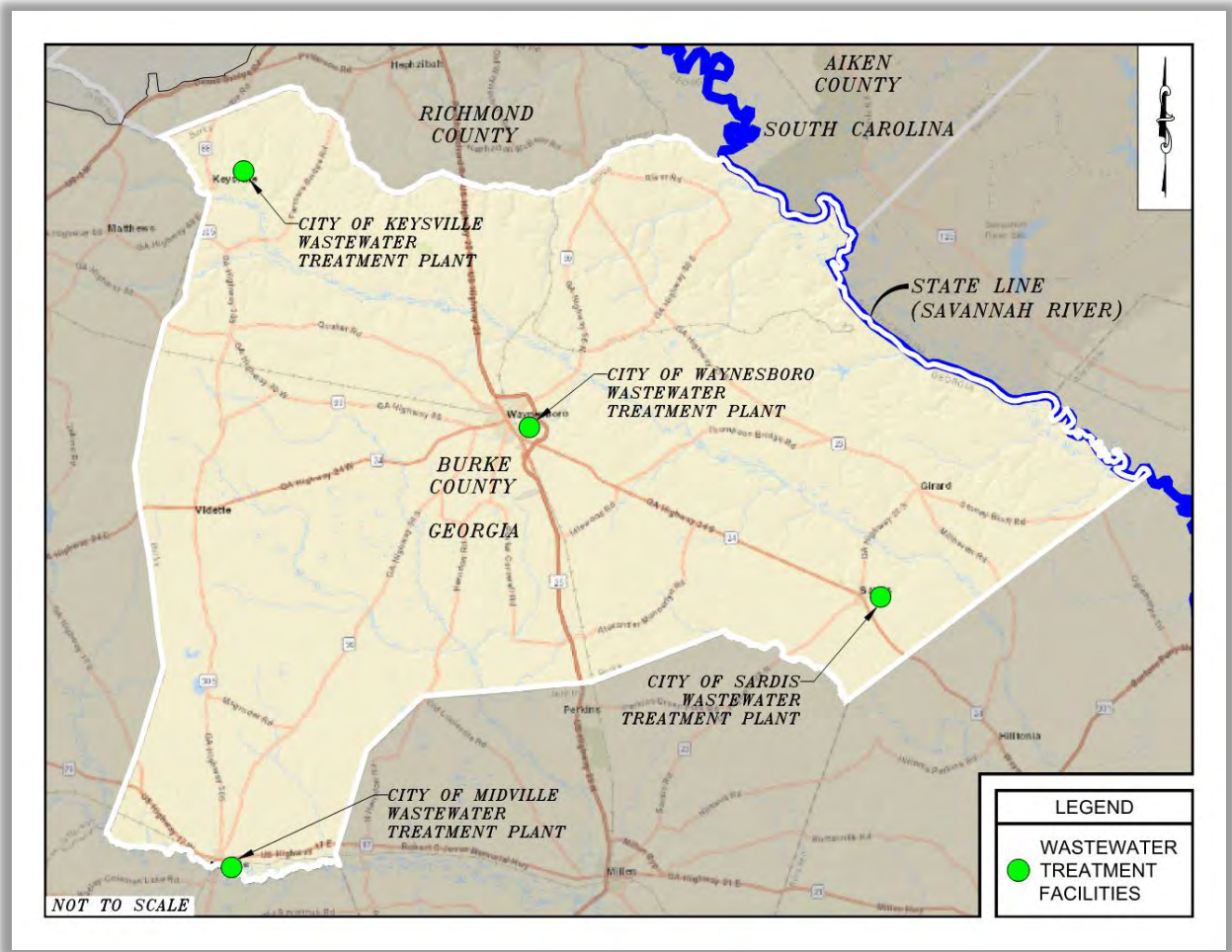
Figure 10.12: Wastewater Treatment Facilities in Burke County. Source: Benesch, 2021.

Table 10.23: Wastewater Treatment Facilities in Burke County, Georgia

Wastewater Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Receiving Stream
City of Waynesboro Water Pollution Control Plant	2.0	1.0	1.0	McIntosh Creek
City of Sardis Wastewater Pollution Plant	0.20	0.04	0.16	Chandlers Branch
City of Keysville Wastewater Treatment Plant	0.06	0.04	0.02	Spray Fields
City of Midville Wastewater Treatment Plant	0.17	0.01	0.16	Ogeechee River
Total	2.43	1.09	1.34	--

Source: Georgia EPD Permitting and Reporting, 2021

Existing Service Area

The City of Waynesboro, the City of Sardis, the City of Keysville, and the City of Midville only provide wastewater collection and treatment to residents within its jurisdictional territory. Burke County does not operate a central wastewater system. The City of Vidette, the Town of Girard, and unincorporated Burke County households have septic tanks.

Analysis of Future Demand

Currently, the demand for wastewater services in Burke County is within the capacity provided. Projections for the county indicate a decrease in population of 0.46 percent by the year 2030. Therefore, the existing wastewater utility has sufficient capacity for the current and projected populations in Burke County. However, there are areas within the county where sewer mains and services may need to be extended to provide service to new customers that are currently using septic systems.

Proposed Infrastructure Improvements

In general, the communities within Burke County have identified the need to expand their wastewater system throughout the unincorporated areas to attract and expand residential, commercial, and industrial development. Currently there are not project developed to expand the wastewater system. Ongoing projects within the county include replacing existing aging infrastructure. These projects are expected to be the SPLOST and the CDBG program. The proposed project, associated cost, and potential fund source for the Burke County wastewater utility improvement is presented in Table 10.24.

Table 10.24: Wastewater System Improvements in Burke County, Georgia

Estimated Construction Date	Project	Cost	Potential Fund Source
Ongoing 2020 – 2030+	Replace existing aging infrastructure wastewater sewer lines in the incorporated areas of Burke County.	Varies	CDBG

Source: Burke County Joint Comprehensive Plan, 2018-2028,
City of Waynesboro Sewer and Wastewater Department, December 2021

10.4.3 Columbia County, Georgia

Columbia County provides public utilities and infrastructure to all cities within the county, with the exception of the City of Grovetown. As of July 2021, the City of Harlem partnered with Columbia County to transfer the utility system to the county. The treatment of wastewater occurs at six separate wastewater treatment facilities – Little River Water Pollution Control Plant, Crawford Creek Water Pollution Control Plant, Kiokee Creek Water Pollution Control Plant, Reed Creek Water Pollution Control Plant, Grovetown Sewer Plant, and Harlem Water Pollution Control Plant. Refer to the map shown in Figure 10.14 in the Existing Service Area Section for the location of the wastewater treatment facilities in Columbia County.

Existing Facilities

The Little River Water Pollution Control treats wastewater from the Euchee Creek basin, and treated wastewater discharges into Little River. The Crawford Creek Water Pollution Control Plant primarily serves the area southwest of Belair and Columbia Roads and conveys treated water to Crawford Creek. The Kiokee Creek Water Pollution Control Plant provides wastewater treatment only for the immediate

surrounding area and releases the treated water into Kiokee Creek. The Reed Creek Water Pollution Control Plant treats the wastewater produced in the Reed Creek basin. The Little River Water Pollution Control Plant has been upgraded to allow for an increased capacity of 12 mgd. However, Columbia County is currently only permitted with the Georgia Environmental Protection Division (EPD) to treat 6 mgd. However, Columbia County is in the process of increasing its permitted capacity and is expected to receive EPD approval in early 2022.

The City of Grovetown recently completed construction on the new Grovetown Sewer Plant, which will treat all the wastewater produced within the City of Grovetown. The capacity of the new facility upgrades the City's capability from 0.5 mgd to 3.0 mgd. This is more than twice as much capacity as needed to treat the City's current demand of approximately 1.0 mgd.

The Harlem Water Pollution Control Plant provides wastewater treatment for the City of Harlem. Prior to the merger with Columbia County, this facility was at 80 percent capacity. Columbia County Utilities has adequate reserve capacity to treat the additional wastewater. However, the Harlem Water Pollution Control Plant will not be taken offline since it is currently permitted with the Georgia Environmental Protection Division.

The capacity, average daily use, remaining capacity, and receiving stream for each wastewater treatment facility in Columbia County is defined in Table 10.25.

Table 10.25: Wastewater Treatment Facilities in Columbia County, Georgia

Wastewater Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Receiving Stream
Little River Water Pollution Control Plant	12.0	4.0	8.0	Little River
Crawford Creek Water Pollution Control Plant	1.13	0.97	0.16	Crawford Creek
Kiokee Creek Water Pollution Control Plant	0.30	0.03	0.27	Kiokee Creek
Reed Creek Water Pollution Control Plant	4.60	3.18	0.42	Reed Creek
Grovetown Sewer Plant	3.0	1.0	2.0	Tributary of Mill Branch
Harlem Water Pollution Control Plant	0.25	0.20	0.05	Uchee Creek
Total	13.15	9.18	3.97	--

Source: Columbia County Development Authority, December 2021

Existing Service Area

Wastewater service in Columbia County is currently limited to the most densely populated areas in the southeastern part of the county. The map shown in Figure 10.13 identifies the wastewater service area and the location of the wastewater treatment facilities in Columbia County.
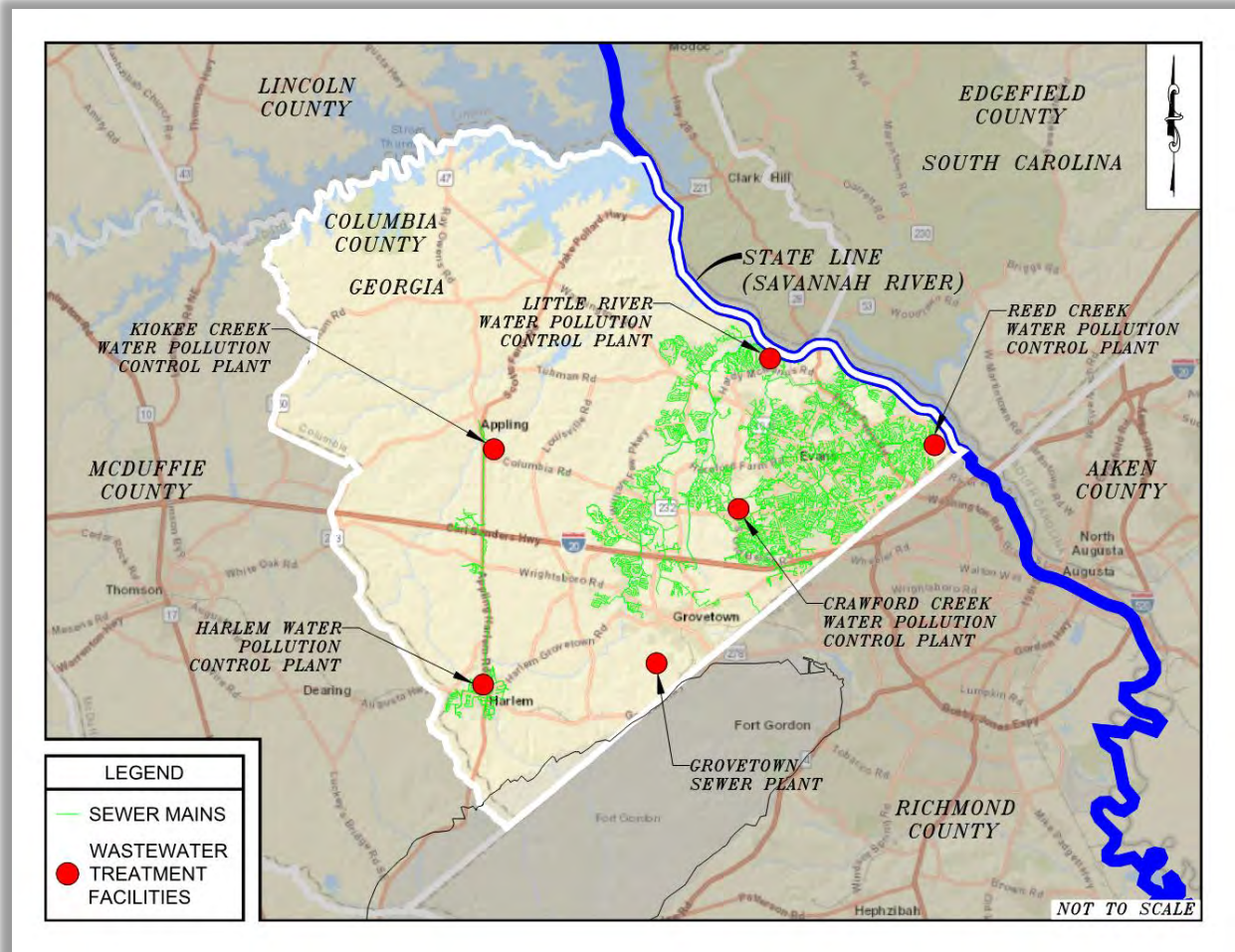
Figure 10.13: Wastewater Service Area and Wastewater Treatment Facilities in Columbia County. Source: Columbia County GIS, 2021.

Since the beginning of the study period in 2012, Columbia County has extended their sewer main system in accordance with the areas that experience rapid population growth. More recently, the sewer service has been extended to new residential developments in the City of Grovetown.

Analysis of Future Demand

Columbia County has a projected population increase of approximately 22.43 percent by the year 2030. The existing wastewater utility is evaluated to determine its ability to support the projected demand due to the increased population. The wastewater treatment capacity, current and projected average daily usage, and remaining capacity for the wastewater treatment facilities in Columbia County are compared for each year of the study period in Table 10.26.

Table 10.26: Projected Wastewater Treatment Usage in Columbia County, Georgia

Year	Wastewater Treatment Capacity (mgd)	Current and Projected Average Daily Use (mgd)	Remaining Capacity (mgd)
2020	13.15	9.18	3.97
2021	13.15	9.39	3.76
2022	21.65	9.71	11.94
2023	21.65	9.94	11.71
2024	21.65	10.13	11.52
2025	21.65	10.32	11.33
2026	21.65	10.51	11.14
2027	21.65	10.70	10.95
2028	21.65	10.88	10.77
2029	21.65	11.06	10.59
2030	21.65	11.24	10.41

Source: Alfred Benesch & Company, 2021

In general, the existing wastewater treatment facilities in Columbia County have adequate capacity for the anticipated population increase. However, there are areas within the county where sewer mains and services may need to be extended to provide service to new customers that are currently using septic systems.

Proposed Infrastructure Improvements

Proposed projects have been identified within Columbia County to improve the existing wastewater systems. More specifically, within the near term, the City of Harlem has identified a project to increase the capacity of the Harlem Sewer Treatment Plant, and upgrades to various lift stations around the city. Funding for the plant modification will be using city funds and private developer investment. Upgrades to the existing lift stations will be funded through private developer investment.

Although there is sufficient capacity within the wastewater treatment facilities, Columbia County has identified some long-range projects as part of their Vision 2035 Comprehensive Plan to increase the treatment capacities of the Kiokee Creek and the Reed Creek Water Pollution Control Plants. There is also a need to expand and upgrade the sewer mains in high growth areas of the county. Potential funding sources for these improvements include County Funds, SPLOST, the Transportation Investment Act (TIA), bonds, developers, and the Clean Water State Revolving Fund (CWSRF), which is provided by the EPA. The proposed projects, associated costs, and potential fund sources for the Columbia County wastewater utility improvements are summarized in Table 10.27.

Table 10.27: Wastewater System Improvements in Columbia County, Georgia

Estimated Construction Date	Project	Cost	Potential Fund Source
Ongoing 2022-2030+	Extending Septic to Sewer Conversions in Martinez and Evans	Varies	Department Funds/ SPLOST
2023	Expansion of the Harlem Sewer Treatment Plant to 1.125 MGD, New Drainage Basin Sewer Pump Station	$11,000,000	City Funds/Private Developer Investment
2023	Upgrading Sewer Lines along Wrightsboro Road	$600,000	SPLOST
2023-2025	Harlem – New Development Wastewater Lift Stations	$1,125,000	Private Developer Investment
2023-2025	Harlem – Upgrades to Lift Stations "A", "B", "C", "D", and "H"	$1,000,000	Private Developer Investment
2023	Upgrading Sewer Lines along Wrightsboro Road	$600,000	SPLOST
2030	Expanding the Capacity of the Kiokee Creek Water Pollution Control Plant to 0.6 MGD	$350,000	SPLOST, CWSRF
2030	Expanding the Capacity of the Reed Creek Water Pollution Control Plant to 7.5 MGD	$2,000,000	SPLOST, CWSRF

Source: Vision 2035 Columbia County Comprehensive Plan,
Harlem Comprehensive Plan 2021-2026, April 2021
Columbia County Utilities, Stacey Gordon, September 2021

10.4.4 Lincoln County, Georgia

The City of Lincolnton and the Lincoln County Water and Wastewater Division provide wastewater collection and treatment throughout most of Lincoln County. The treatment of wastewater occurs at the City of Lincolnton Water Pollution Control Plant. The map shown in Figure 10.14 features the location of the wastewater treatment facility in Lincoln County.

Existing Facilities

The City of Lincolnton Water Pollution Control Plant is owned and operated by the city and is located off Petersburg Road. The wastewater treatment facility was recently expanded in 2018 as a part of a $7.4 million USDA-funded project in order to increase the capacity for the wastewater system. Wastewater collection and treatment is provided by the city and county, and treated wastewater is discharged into Reedy Creek, a tributary of the Clarks Hill Reservoir.

The capacity, average daily use, remaining capacity, and receiving stream for the wastewater treatment facility in Lincoln County is summarized in Table 10.28.

Figure 10.14: Wastewater Treatment Facilities in Lincoln County. Source: Benesch, 2021.

Table 10.28: Wastewater Treatment Facilities in Lincoln County, Georgia

Wastewater Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Receiving Stream
City of Lincolnton Water Pollution Control Plant	1.04	0.52	0.52	Reedy Creek

Source: Georgia EPD Permitting and Reporting, March 2021

Existing Service Area

Lincoln County constructed its first sanitary sewer collection system in 2001 in order to eliminate problems, such as exposed raw sewage from failing septic systems. Currently, Lincoln County provides sewer service to approximately 160 customers. The existing sanitary sewer system is located within the county limits. Wastewater from the county's collection system is transported to the City of Lincolnton Water Pollution Control Plant for treatment. The wastewater collection system consists of 7.9 miles of force mains.

The City of Lincolnton currently provides sewer service to about 878 customers. The wastewater collection system is comprised of 3.6 miles of gravity lines, five pump stations, and approximately 7.9 miles of force mains. The USDA project replaced and increased the size for 4,825 linear feet of sewer main interceptors. Over half of the city's customers are served by four sewage pumping station that pump wastewater to the gravity system flowing to the treatment facility. The majority of the wastewater flows to Pump Station Number 4, which was replaced in 2009. Pump Station Number 3 was also replaced in 2009. Pump Stations Number 1 and Number 2 were replaced in 2017 as a part of the USDA funded project. In addition, the City of Lincolnton also received a 2016 CDBG grant for sewer improvements to replace 6,000 linear feet of sewer lines, completed in 2019.

Analysis of Future Demand

Currently, the demand for wastewater services in Lincoln County is within the capacity provided. Projections for the county indicate a decrease in population of 5.52 percent by the year 2030. Therefore, the existing water utility has sufficient capacity for the current and projected populations in Lincoln County. However, there are areas within the county where sewer mains and services may need to be extended to provide service to new customers that are currently using septic systems.

Proposed Infrastructure Improvements

Currently, Lincoln County is in the process of updating its latest joint Comprehensive Plan with the City of Lincolnton. Starting in 2018, they have completed an expansion to the existing wastewater treatment plant and have constructed new sewer facilities in a CDBG target area of Lincolnton, Kings Way, and Joan Way. The final phase will include the replacement of aging sewer lines in the downtown area of Lincolnton. This project expected to be funded by the CDBG program. The proposed project, associated cost, and potential fund source for the Lincoln County wastewater utility improvement is shown in Table 10.29.

Table 10.29: Wastewater System Improvements in Lincoln County, Georgia

Estimated Construction Date	Project	Cost	Potential Fund Source
2022	Replace aging sewer lines and infrastructure in downtown Lincolnton	$500,000	CDBG

Source: City of Lincolnton Public Works, December 2021

10.4.5 McDuffie County, Georgia

The Thomson-McDuffie Water and Sewer Utility provides wastewater service to residential, commercial, and industrial customers throughout the city and county. The treatment of wastewater occurs at one treatment facility – the Thomson Wastewater Treatment Plant and two Land Application Systems – Mattox Creek Land Application System and Dearing Land Application System. The map shown in Figure 10.15 highlights the location of the wastewater treatment facilities in McDuffie County.
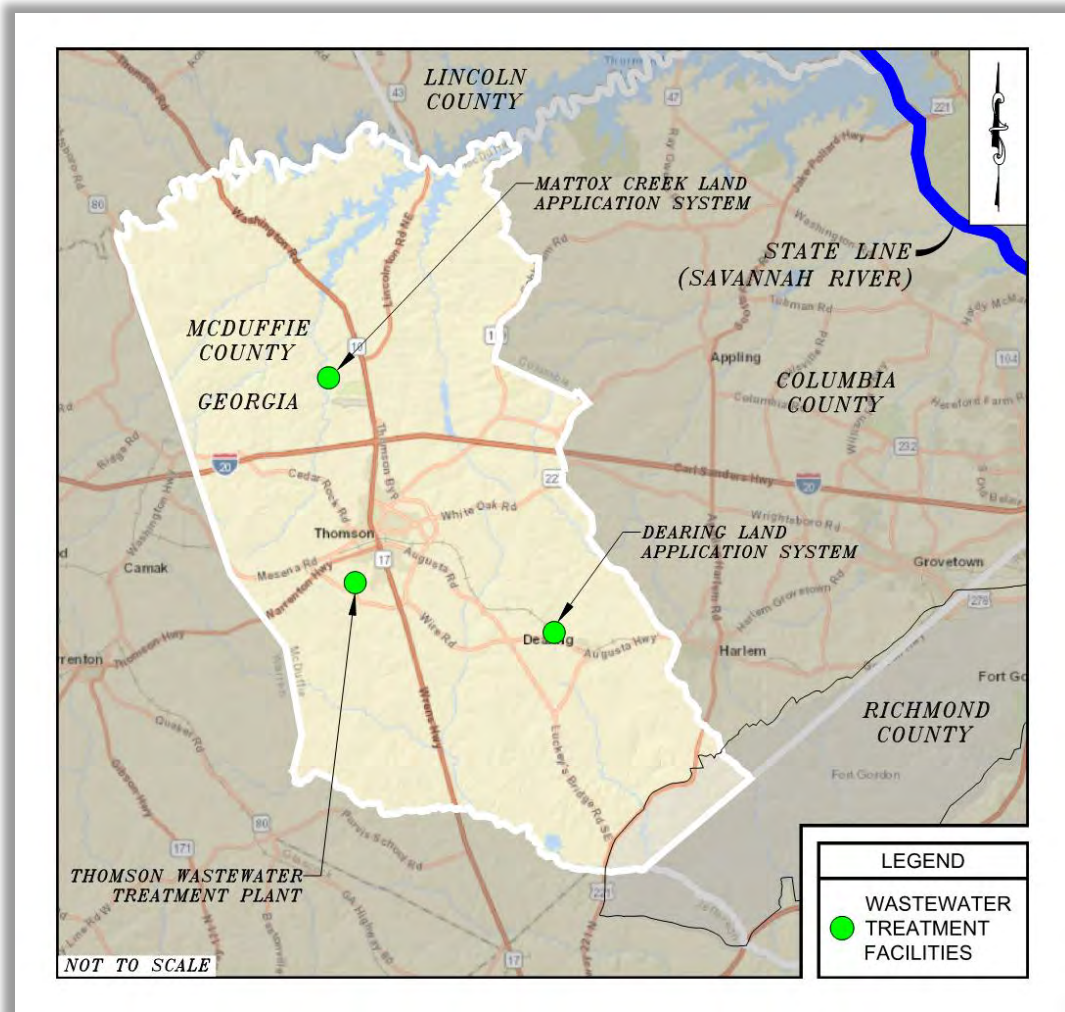
Figure 10.15: Wastewater Treatment Facilities in McDuffie County. Source: Benesch, 2021.

Existing Facilities

The Thomson Wastewater Treatment Plant is located off Central Road, in the southwest area of the city. The treatment process includes the use of microorganisms to remove solids from the wastewater and the addition of chemicals, such as chlorine, to kill bacteria. The chlorine is neutralized prior to discharging the treated water to Whites Creek.

The Land Application Systems allow solids to collect and deteriorate in settling ponds, and the surrounding soil and plant matrix provides filtration of water sprayed at prescribed flows. The Mattox Creek Land Application System is located on Stagecoach Road, and the Dearing Land Application System is located east of Dearing along Highway 278.

The capacity, average daily use, remaining capacity, and receiving stream for the wastewater treatment facilities in McDuffie County is described in Table 10.30.
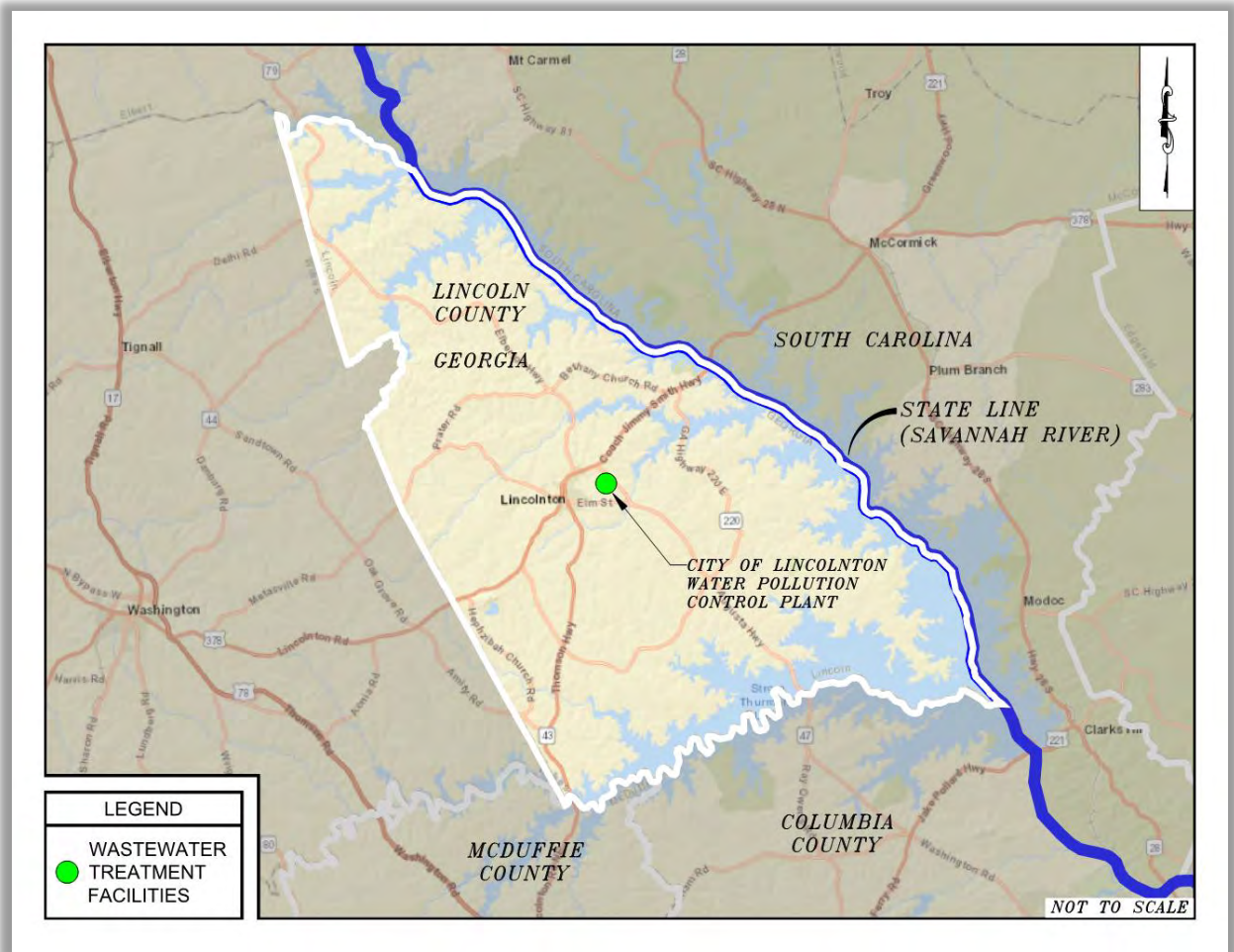
Table 10.30: Wastewater Treatment Facilities in McDuffie County, Georgia

Wastewater Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Receiving Stream
Thomson Wastewater Treatment Plant	2.50	1.49	1.01	Whites Creek
Mattox Creek Land Application System	0.200	0.171	0.029	Spray Field
Dearing Land Application System	0.12	0.09	0.03	Spray Field
Total	2.82	1.751	1.069	--

Source: Georgia EPD Permitting and Reporting, October 2020

Existing Service Area

Wastewater service in McDuffie County is currently limited to the most populated areas in the county. The map shown in Figure 10.16 indicates the wastewater service area in McDuffie County.
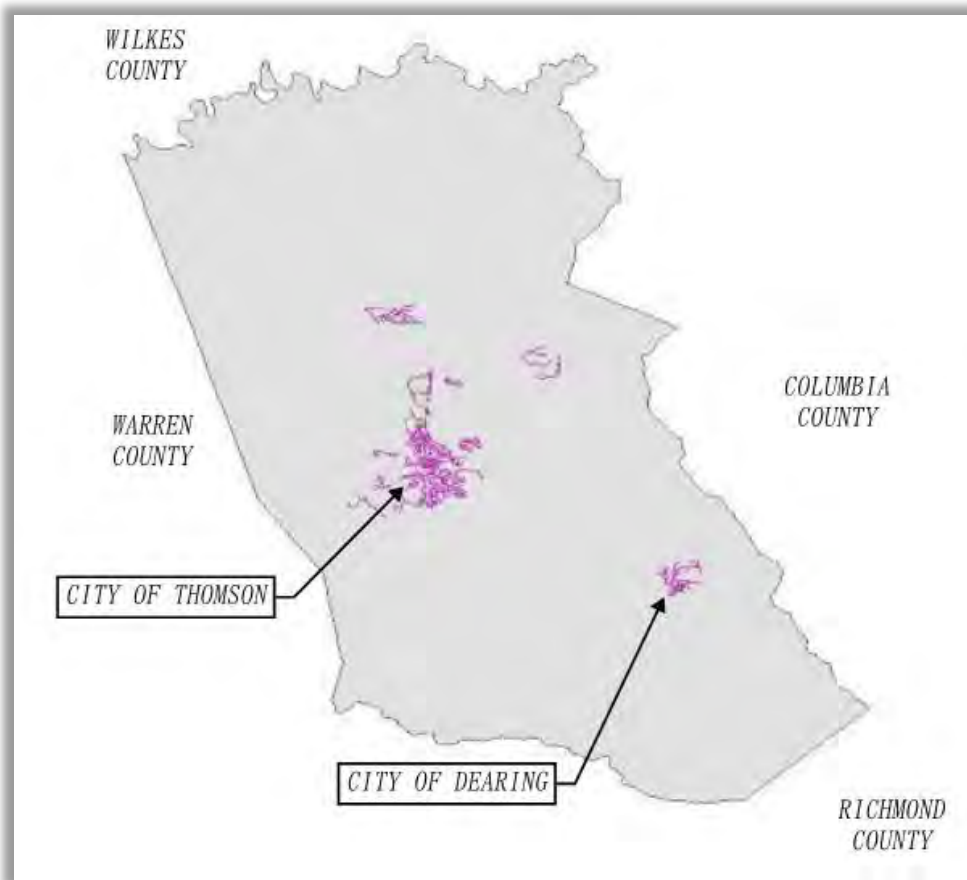
Figure 10.16: Wastewater Service Area in McDuffie County. Source: McDuffie County Joint Comprehensive Plan, 2021.

Analysis of Future Demand

McDuffie County has a projected population increase of approximately 0.29 percent by the year 2030. The existing wastewater utility is evaluated to determine its ability to support the projected demand due

to the increased population. The wastewater treatment capacity, current and projected average daily usage, and remaining capacity for the wastewater treatment facilities in McDuffie County are presented for each year of the study period in Table 10.31.

Table 10.31: Projected Wastewater Treatment Usage in McDuffie County, Georgia

Year	Wastewater Treatment Capacity (mgd)	Current and Projected Average Daily Use (mgd)	Remaining Capacity (mgd)
2020	2.82	1.75	1.07
2021	2.82	1.75	1.07
2022	2.82	1.75	1.07
2023	2.82	1.75	1.07
2024	2.82	1.75	1.07
2025	2.82	1.75	1.07
2026	2.82	1.75	1.07
2027	2.82	1.75	1.07
2028	2.82	1.75	1.07
2029	2.82	1.75	1.07
2030	2.82	1.75	1.07

Source: Alfred Benesch & Company, 2021

The existing wastewater treatment facilities in McDuffie County have adequate capacity for the anticipated population increase. However, there are areas within the county where sewer mains and services may need to be extended to provide service to new customers that are currently using septic systems.

Proposed Infrastructure Improvements

Proposed projects have been identified in McDuffie County to improve the existing wastewater system. More specifically, the projects include the expansion of the sewer distribution system, the rebuilding of older sewer lift stations, the rehabilitation of existing sewer mains, and improvements and rehabilitation at the Thomson Wastewater Treatment Plant. These improvements are expected to be funded by City Funds, SPLOST, grants, and loans. The proposed projects, associated costs, and potential fund sources for the McDuffie County wastewater utility improvements are displayed in Table 10.32.

Table 10.32: Wastewater System Improvements in McDuffie County, Georgia

Estimated Construction Date	Project	Cost	Potential Fund Source
2025	Rehabilitation of Existing Sewer Mains in Downtown Area	$1,000,000	City Funds, SPLOST
2030	Expansion of Sewer Distribution System to include Belle Meade, the Dallas Drive Area, and the Cobham Road/I-20 Interchange	$7,500,000	Grants, Loans, SPLOST
2030	Rebuilding of Older Sewer System Lift Station (19 in Total)	$2,000,000	SPLOST
2030	Improvements and Rehabilitation at Thomson Wastewater Treatment Plant	$1,000,000	SPLOST

Source: Thomson-McDuffie Website – Public Works – Sewer, 2021

10.4.6 Aiken County, South Carolina

The Aiken County Public Service Authority provides wastewater treatment to residents and businesses in Aiken County, in addition to portions of Edgefield County and Saluda County. The treatment of wastewater occurs at Horse Creek Wastewater Treatment Plant. The map shown in Figure 10.17 features the location of the wastewater treatment facility in Aiken County.
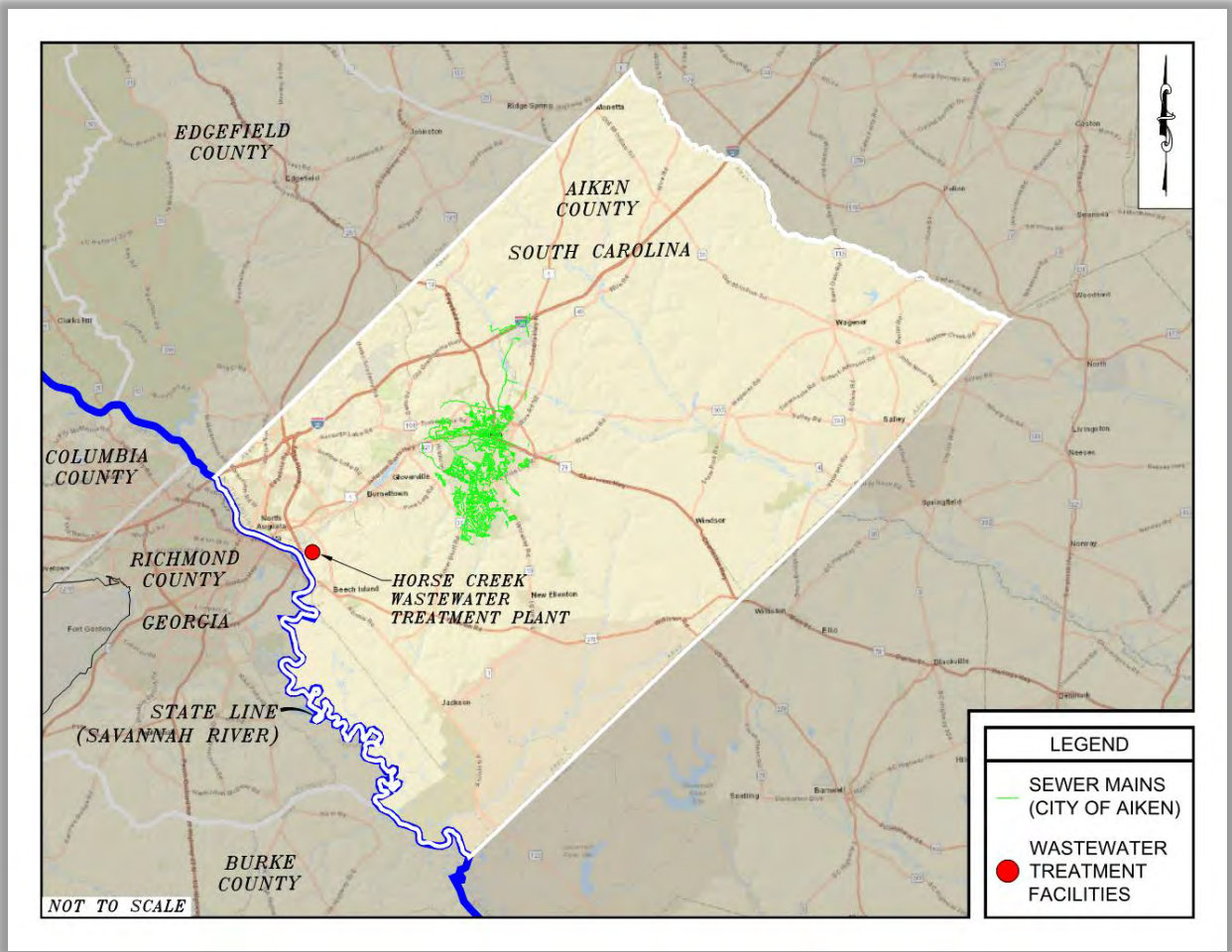
Figure 10.17: Wastewater Treatment Facilities in Aiken County. Source: City of Aiken GIS, 2021.

Existing Facilities

The Horse Creek Wastewater Treatment Plant is located at the confluence of Horse Creek and the Savannah River, providing sewer treatment for the Horse Creek basin. Wastewater from Aiken County undergoes physical, biological, and chemical treatment prior to begin released into the Savannah River for reuse downstream. Byproducts from the treatment of wastewater remain viable options for land application, resulting in 100 percent recycling of the wastewater.

The capacity, average daily use, remaining capacity, and receiving stream for the wastewater treatment facility in Aiken County is described in Table 10.33.

Table 10.33: Wastewater Treatment Facilities in Aiken County, South Carolina

Wastewater Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Receiving Stream
Horse Creek Wastewater Treatment Plant	20	13	7	Savannah River

Source: Aiken County Public Service Authority, 2021

Existing Service Area

The Aiken County Public Service Authority provides wastewater treatment to about half of the residents in Aiken County. Residents outside of the service area have septic tanks for wastewater. The map shown in Figure 10.18 identifies the wastewater service areas in Aiken County.
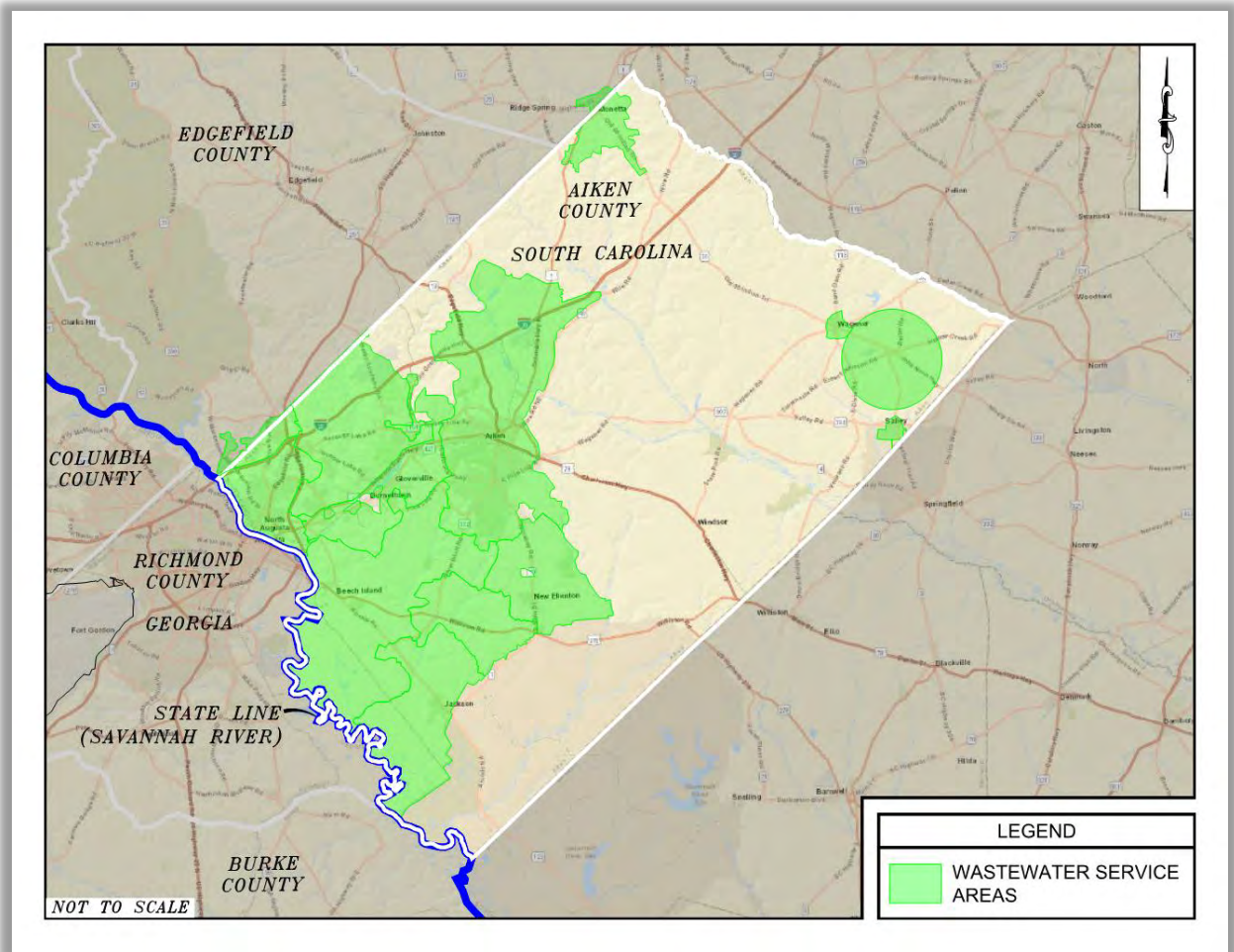
Figure 10.18: Wastewater Service Areas in Aiken County. Source: Qpublic, Aiken County, South Carolina, 2021.

Since the beginning of the study period in 2012, Aiken County has maintained, replaced, and expanded sanitary sewer lines and pump stations throughout the county.

Analysis of Future Demand

Aiken County has a projected population increase of approximately 4.74 percent by the year 2030. The existing wastewater utility is evaluated to determine its ability to support the projected demand due to the increased population. The wastewater treatment capacity, current and projected average daily usage, and remaining capacity for the wastewater treatment facility in Aiken County are compared for each year of the study period in Table 10.34.

Table 10.34: Projected Wastewater Treatment Usage in Aiken County, South Carolina

Year	Wastewater Treatment Capacity (mgd)	Current and Projected Average Daily Use (mgd)	Remaining Capacity (mgd)
2020	20	13.00	7.00
2021	20	13.08	6.92
2022	20	13.19	6.81
2023	20	13.27	6.73
2024	20	13.33	6.67
2025	20	13.38	6.62
2026	20	13.44	6.56
2027	20	13.49	6.51
2028	20	13.55	6.45
2029	20	13.58	6.42
2030	20	13.62	6.38

Source: Alfred Benesch & Company, 2021

The existing wastewater treatment facility in Aiken County has adequate capacity for the anticipated population increase. However, there are areas within the county where sewer mains and services may need to be extended to provide service to new customers that are currently using septic systems.

Proposed Infrastructure Improvements

Proposed projects have been identified in Aiken County to improve the existing wastewater system. More specifically, the projects include the expansion of the sewer mains and services at the development at Powderhouse Road and the expansion of the capacity for the Horse Creek Wastewater Treatment Plant. Potential funding sources for the improvements include the CPST, the CWSRF grant from the EPA, and developers. The proposed projects, associated costs, and potential fund sources for the Aiken County wastewater utility improvements are shown in Table 10.35.

Table 10.35: Wastewater System Improvements in Aiken County, South Carolina

Estimated Construction Date	Project	Cost	Potential Fund Source
2022	Expansion of Sewer Mains and Services at Development at Powderhouse Road	$2,500,000	CPST, CWSRF, Developers
2030	Expanding the Capacity of the Horse Creek Wastewater Treatment Plant to 26 MGD	$6,000,000	CPST, CWSRF, Developers

Source: Aiken County Public Service Authority, 2021

10.4.7 Edgefield County, South Carolina

Edgefield County has two wastewater providers:

→ Aiken County Public Service Authority
→ Edgefield County Water and Sewer Authority

The Aiken County Public Service Authority accepts wastewater from the Joint Regional Sewer System. The Joint Regional Sewer System consists of connections between the Edgefield County Water and Sewer Authority, the Saluda County Water and Sewer Authority, and the City of North Augusta wastewater collection systems. Wastewater is collected and transported to the Horse Creek Wastewater Treatment Plant, as described in the previous section.

The Edgefield County Water and Sewer Authority provides wastewater treatment to the Towns of Edgefield, Johnston, and Trenton. The treatment of wastewater occurs at three independent wastewater treatment facilities: the Edgefield Plant, the Johnston Plant, and the Trenton Plant. The map shown in Figure 10.19 displays the location of the wastewater treatment facilities in Edgefield County.
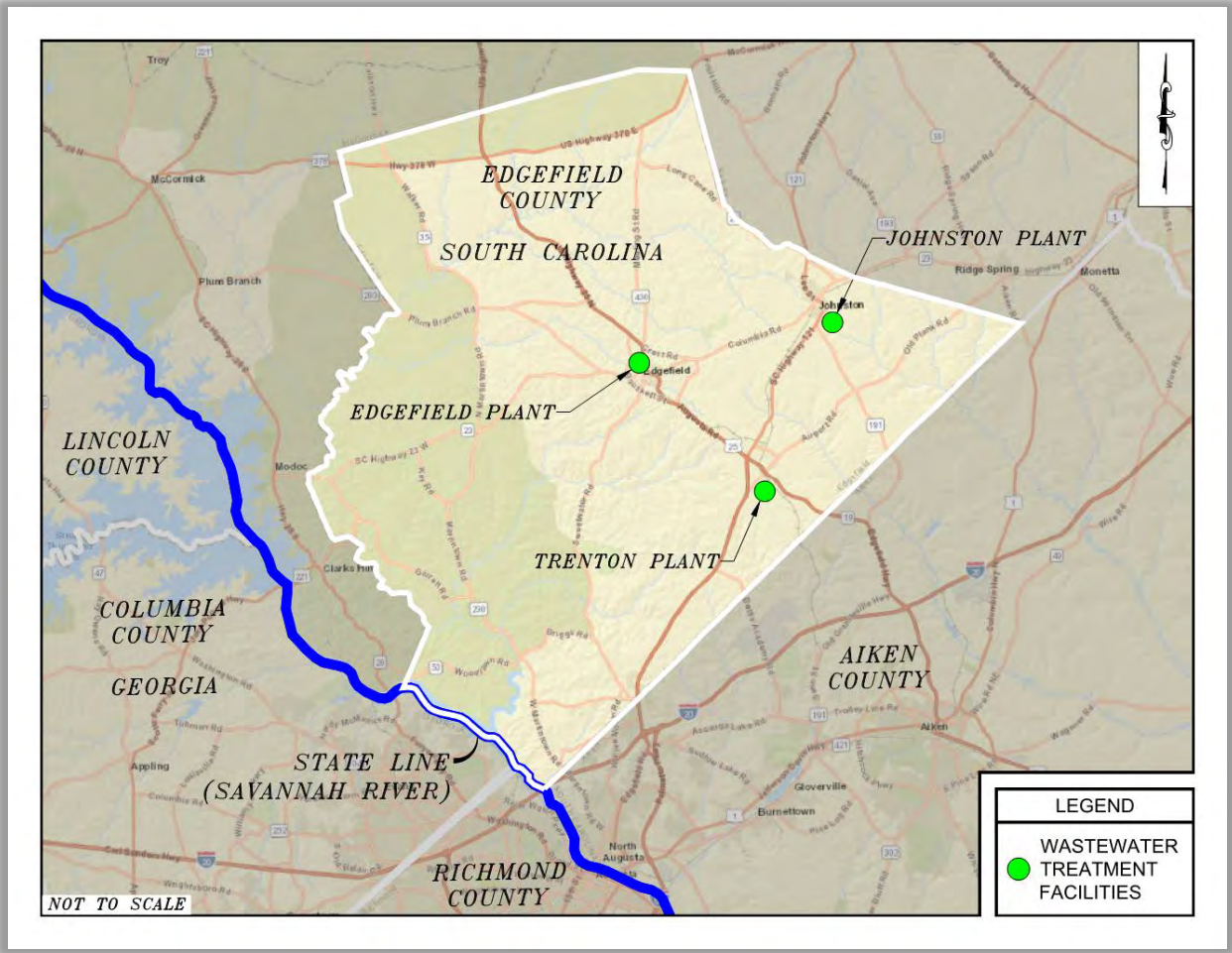
Figure 10.19: Wastewater Treatment Facilities in Edgefield County. Source: Benesch, 2021.

Existing Facilities

The Edgefield Plant, located on Brooks Street, provides wastewater treatment for the residents in the Town of Edgefield. The facility utilizes the sequencing batch reactor process and a form of activated sludge treatment. Treated water is discharged into Beaverdam Creek.

The Johnston Plant provides wastewater collection and treatment for the Town of Johnston. Upon arrival at the facility, the wastewater goes through coarse solids and grit removal. Then, the facility then utilizes an aerated lagoon treatment process, followed by disinfection. In addition, the Johnston Plant provides secondary treatment of combined domestic and light commercial wastewater. Treated water is conveyed to the South Fork Edisto River. The Johnston Plant is connected to the Joint Regional Sewer System pump station as a backup. This connection enables the Edgefield County Water and Sewer Authority to pump wastewater received at the Johnston Plant into the Joint Regional Sewer System if operational problems occur at the facility.

The Trenton Plant provides wastewater treatment to the residents in the Town of Trenton. The facility utilizes an aerated lagoon treatment process. The plant typically has no discharge because the wastewater is pumped directly into the Joint Regional Sewer System. Currently Edgefield County is permitted to for 0.4 mgd

The capacity, average daily use, remaining capacity, and receiving stream for each wastewater treatment facility in Edgefield County is summarized in Table 10.36.

Table 10.36: Wastewater Treatment Facilities in Edgefield County, South Carolina

Wastewater Treatment Facility	Capacity (mgd)	Average Daily Use (mgd)	Remaining Capacity (mgd)	Receiving Stream
Edgefield Plant	0.725	0.198	0.527	Beaverdam Creek
Johnston Plant	0.968	0.250	0.718	South Fork Edisto River
Trenton Plant / Pump Station	.400	0.073	0.327	Horse Creek Wastewater Plant
Total	2.093	0.521	--	--

Source: Edgefield County Comprehensive Plan 2019-2040, May 2019
Edgefield County Sewer and Water Authority, 2021

Existing Service Area

The Joint Regional Sewer System includes over 37 miles of force mains and several pump stations. The Joint Regional Sewer System flows from the Edgefield County Water and Sewer Service Area into the City of North Augusta service area collection system. North Augusta transports the wastewater flow to the Horse Creek Wastewater Treatment Plant.

The Edgefield County Water and Sewer Authority consist of gravity collection lines, force mains, and 39 pump stations. In addition, the Authority also operates and maintains over 34 miles of force mains and three lift station that are a part of the Joint Regional Sewer System.

The map shown in Figure 10.20 presents the wastewater service area for Edgefield County.
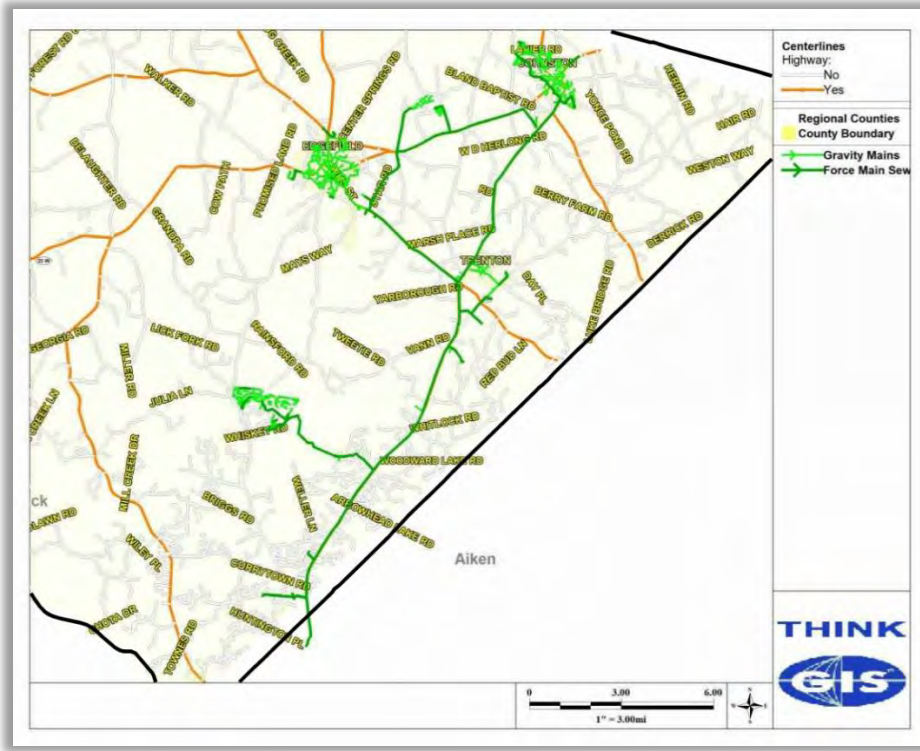
Figure 10.20: Wastewater Service Area in Edgefield County. Source: Edgefield County Water and Sewer Authority, 2021.

Analysis of Future Demand

Edgefield County has a projected population increase of approximately 1.34 percent by the year 2030. The existing wastewater utility is evaluated to determine its ability to support the projected demand due to the increased population. The current average daily use is estimated to be at 70 percent of the total capacity. The wastewater treatment capacity, current and projected average daily usage, and remaining capacity for the wastewater treatment facilities in Edgefield County are defined for each year of the study period in Table 10.37.

Table 10.37: Projected Wastewater Treatment Usage in Edgefield County, South Carolina

Year	Wastewater Treatment Capacity (mgd)	Current and Projected Average Daily Use (mgd)	Remaining Capacity (mgd)
2020	2.093	0.521	1.572
2021	2.093	0.522	1.571
2022	2.093	0.522	1.571
2023	2.093	0.523	1.570
2024	2.093	0.523	1.570
2025	2.093	0.524	1.569
2026	2.093	0.524	1.569
2027	2.093	0.525	1.568
2028	2.093	0.525	1.568
2029	2.093	0.526	1.567
2030	2.093	0.527	1.566

Source: Alfred Benesch & Company, 2021

The existing wastewater treatment facility in Edgefield County has adequate capacity for the anticipated population increase. However, there are areas within the county where sewer mains and services may need to be extended to provide service to new customers that are currently using septic systems.

Proposed Infrastructure Improvements

Edgefield County Water and Sewer Authority has initiated a long-term replacement and expansion of the existing wastewater system. More specifically, the proposed improvements are to replace existing aging infrastructure and expand along the US25 corridor. These improvements are projected to be implemented as funding becomes available through 2030. Potential funding sources are Edgefield County funds, the CDBG program, the Edgefield County Water and Sewer Authority (ECWSA), and developers. The proposed project, associated cost, and potential fund source for the Edgefield County wastewater utility improvement is presented in Table 10.38.

Table 10.38: Wastewater System Improvements in Edgefield County, South Carolina

Estimated Construction Date	Project	Cost	Potential Fund Source
Ongoing 2020 – 2030+	Replace older systems and expand wastewater sewer lines around town and along US25 corridor	Varies	County Funds, CDBG, ECWSA, Developers

Source: Edgefield County Sewer and Water Authority, 2021

10.5 Solid Waste Collection and Treatment

Solid waste within the Study Area is collected in landfills. Landfills are engineered facilities that are closely monitored to prevent contamination of the groundwater, air, and adjoining land areas. Standard landfill practices include the collection and treatment of the water that passes through the landfill (known as leachate) and the collection of methane gas that can be converted into various forms of energy.

Landfills are separated into three permit classifications depending on the type of material accepted:

→ Class 1: Land-Clearing Debris
→ Class 2: Construction and Demolition Debris
→ Class 3: Municipal Solid Waste, Construction and Demolition Debris, and Industrial Solid Waste

For the purpose of this study, Class 2 and Class 3 landfills are evaluated.

Class 2 Landfills accept waste generated from construction, renovation, repair, and demolition from houses, large structures, roads, and buildings, including wood, steel, concrete, plaster, metal, and asphalt. Class 2 Landfills keep approximately 15 to 20 percent of waste out of municipal solid waste landfills.

Class 3 Landfills accept all waste generated from homes, business, and industries. The process for handling waste includes receiving waste into a landfill, compacting the waste, and then covering the compaction with a layer of soil. As the waste decomposes over time, a liquid, known as leachate, is filtered through sand, and is collected in engineered low spots. From the engineered low spots, also called sumps, the leachate is pumped directly to the local wastewater treatment plant for biological treatment. Class 3 Landfills also have the capability to generate methane gas for use as an alternative energy source.

Another factor to consider when evaluating solid waste management is collection and transport. According to the Regional Solid Waste Management Plan developed by the Three Rivers Regional Solid Waste Authority, collection and transportation of municipal solid waste accounts for 80 percent of the overall costs associated with solid waste management. A vital part of the collection and transportation portion of solid waste management is the transfer station. Transfer stations are locations that collect municipal solid waste from collection sites or collection vehicles, then consolidate it for delivery to a final disposal facility. These are installed to reduce the hauling costs by providing centralized locations for waste management services from more distant sites. These improve the overall efficiency of the process by reducing travel times, which also reduce fuel consumption, maintenance costs, road wear, and traffic.

10.5.1 Georgia

Augusta Solid Waste provides facilities for recycling and the disposal of household waste, inert waste, construction waste, metal waste, and tires for Augusta-Richmond County, Burke County, Columbia County, Lincoln County, and McDuffie County. The waste produced in each county in Georgia within the Study Area is collected at transfer stations and transported to various landfills. Construction and demolition debris is deposited at one of the Class 2 Landfills within the Study Area. Municipal solid waste, as well as recyclable material and construction and demolition waste, generated in the Georgian counties in the Study Area is transported to the Augusta Solid Waste and Recycling Facility, which is a Class 3 Landfill located in the southern part of Augusta-Richmond County.

In addition, there are seven recycling centers in Augusta-Richmond County, Burke County, Columbia County, Lincoln County, and McDuffie County. Acceptable recyclable materials include household items, paper, plastic, and metal. The map shown in Figure 10.21 highlights the location of the transfer stations, recycling centers, construction and demolition facilities, and municipal solid waste facilities in the counties in Georgia within the Study Area.

Transfer Stations

Burke County, Columbia County, Lincoln County, and McDuffie County do not operate any municipal solid waste landfills. However, Augusta-Richmond County, Burke County, Columbia County, and McDuffie County have transfer stations that collect, compact, and transfer municipal solid waste to a Class 3 Landfill. The county and owner for each transfer station in Georgia is detailed in Table 10.39.

Augusta-Richmond County and Burke County transfer stations transport all collected waste to the Augusta Solid Waste and Recycling Facility. Columbia County transfer stations haul collected waste to either the Augusta Solid Waste and Recycling Center or the Waste Management Wolf Creek Landfill in Macon, Georgia. McDuffie County transfer stations transport collected waste to the Waste Management R&B Landfill in Homer, Georgia.

Municipal solid waste produced in unincorporated Lincoln County is collected by a private hauler, who takes the waste to the Wilkes County Transfer Station. From there, the waste is transferred to the Oak Grove Municipal Solid Waste Landfill in Winder, Georgia. The City of Lincolnton provides collection services and transports the collected waste to the Augusta Solid Waste and Recycling Facility.
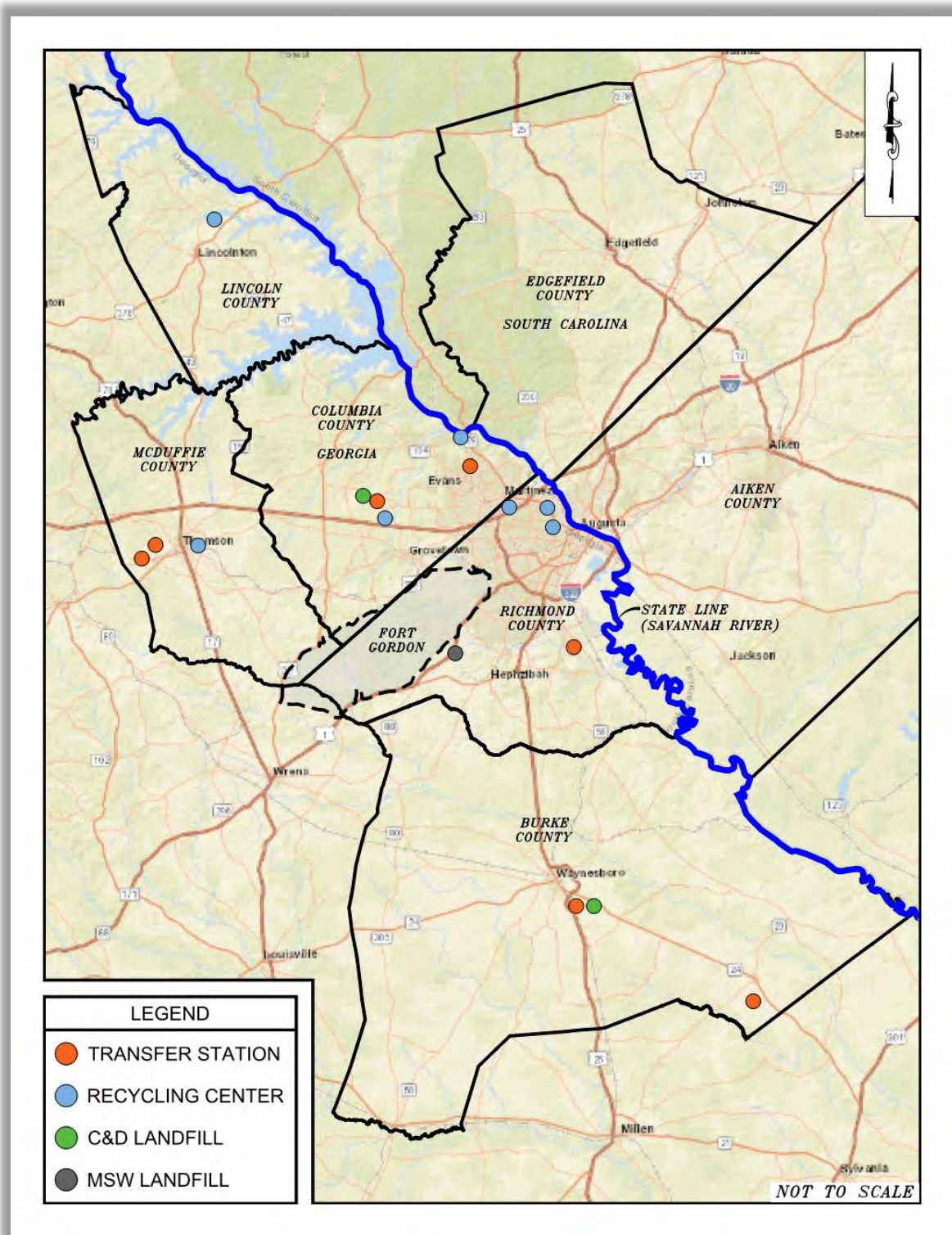
Figure 10.21: Transfer Stations, Recycling Centers, Construction and Demolition Facilities, and Municipal Solid Waste Facilities in Augusta-Richmond County, Burke County, Columbia County, Lincoln County, and McDuffie County. Source: Benesch, 2021.

Table 10.39: Transfer Stations in Georgia

Transfer Station	County	Owner
Waste Management of North Augusta-Aiken Transfer Station	Augusta-Richmond County	Waste Transfer
Burke County Transfer Station	Burke County	Burke Commissioners
Sunbelt Medical Services, Inc. Transfer Station	Burke County	Sunbelt, Inc.
Waste Management Grovetown Hauling and Columbia Road Transfer Station	Columbia County	Waste Management
Browning Ferris Industries of South Atlantic, Inc. Transfer Station	Columbia County	Browning Industries
Georgia Disposal and Recycling Inc. Transfer Station	McDuffie County	Not Reported
McDuffie County Transfer Station	McDuffie County	McDuffie County

Source: Georgia Environmental Protection, Regulated Solid Waste Facilities, 2020

Class 2 Landfill Facilities

The Fort Gordon C&D Landfill, located in Augusta-Richmond County, is operated by the Department of Defense and restricted to only disposal of waste generated within the limits of Fort Gordon.

The Burke County Solid Waste C&D Landfill, located in Burke County, is in the process of being closed. After the closure of the landfill, construction and demolition waste will be collected at the transfer stations and delivered to the Augusta Solid Waste and Recycling Facility.

The Sample and Son, Inc. C&D Landfill, located in Columbia County, is operated by Alfred Sample.

The remaining capacity, disposal amount, and the remaining life expectancy for the Class 2 Landfills in Georgia within the Study Area are displayed in Table 10.40.

Table 10.40: Class 2 Landfill Disposal and Estimated Remaining Life

Landfill	County	Remaining Capacity (cubic yards)	Disposal, 2020 (Tons)	Remaining Life (Years)
Fort Gordon C&D Landfill	Augusta-Richmond County	166,484	327.50	150
Sample and Son, Inc. C&D Landfill	Columbia County	2,757,495	52,427	31

Source: Georgia Environmental Protection, Regulated Solid Waste Facilities, 2020

Class 3 Landfill Facilities

The Augusta-Richmond County Environmental Services Department operates the Augusta Solid Waste and Recycling Facility, which is the largest Municipal Solid Waste Landfill in the Central Savannah River Area. The landfill is established on approximately 1,200 acres, with 303 acres currently permitted for municipal solid waste by the State of Georgia.

The Augusta-Richmond County landfill currently receives approximately 1,300 tons of waste daily and serves over 60,000 households. The Environmental Services Department has contracted two hauling companies, Inland Services and Waste Management to handle the waste collection. Inland Services collect for 36,000 residences, while Waste Management collects for 28,000 residences.

The Augusta-Richmond Solid Waste & Recycling Facility has maintained compliance with the regulatory requirements from the State of Georgia by routinely monitoring ground and surface water, stormwater, soil conditions, and methane gas.

In addition, the Augusta Solid Waste and Recycling Facility also accepts recyclable materials, including glass, household items, paper, plastic, metal recyclables, automotive fluids, electronics, and tires.

The remaining capacity, disposal amount, and the remaining life expectancy for the Class 3 Landfills in Augusta-Richmond County are summarized in Table 10.41.

Table 10.41: Class 3 Landfill Disposal and Estimated Remaining Life

Landfill	Remaining Capacity (Cubic Yards)	Disposal, 2020 (Tons)	Remaining Life (Years)
Augusta Solid Waste and Recycling Facility	60,661,877.2	511,712	104

Source: Georgia Environmental Protection, Regulated Solid Waste Facilities, 2020

Analysis of Future Demand

The growth projections for Augusta-Richmond, Burke, Columbia, Lincoln, and McDuffie Counties are evaluated together since most of the municipal solid waste generated in these counties are deposited at the Augusta Solid Waste and Recycling Facility. Augusta-Richmond, Columbia, and McDuffie Counties have a projected population increase of approximately 5.12 percent, 22.43 percent, and 0.29 percent, respectively from the anticipated growth at Fort Gordon. Burke and Lincoln Counties are expected to experience a decrease in population.

Using the projected population information and the per capita municipal solid waste generation rate provided by the Environmental Protection Division (EPD), the proposed future demand of municipal solid waste is analyzed to determine the available capacity for the landfill. From EPD reporting in 2018, the latest available data estimates a municipal solid waste generation rate of 4.9 pounds per person per day. This is the equivalent of 0.89 tons per person per year.

According to the Volume-to-Weight Conversion Factors, prepared by the Environmental Protection Agency (EPA) in April 2016, one cubic yard is equal to 1,700 pounds for a large compacted municipal solid waste landfill.

The available capacity within the landfill, the projected total demand over the next ten years, and the available capacity is defined in Table 10.42.

Table 10.42: Projected Municipal Solid Waste Disposal Rate

Landfill	Remaining Capacity (Cubic Yards)	Total Disposal Through 2030 (Tons)	Total Disposal Through 2030 (Cubic Yards)	Available Capacity (%)
Augusta Solid Waste and Recycling Facility	60,661,877.2	4,475,840	5,265,694	91.3%

Source: Georgia Environmental Protection, Regulated Solid Waste Facilities, 2020; Benesch, 2021

Projections indicate that the Augusta Solid Waste and Recycling Facility has adequate capacity for the expected population increase resulting from the growth at Fort Gordon.

Proposed Infrastructure Improvements

According to the Georgia Environmental Protection Regulated Solid Waste Facilities, a transfer station is proposed in Columbia County to provide additional transportation to Class 3 Landfills. The project is expected to be funded by waste management companies that service Columbia County. The proposed project, associated cost, and potential fund source for the solid waste improvement is presented in Table 10.43.

Table 10.43: Solid Waste Improvements in Georgia

Estimated Construction Date	Project	Cost	Potential Fund Source
2025	New Transfer Station in Columbia County	$6,600,000	Waste Management Companies

Source: Georgia Environmental Protection, Regulated Solid Waste Facilities, 2020

10.5.2 South Carolina

The Solid Waste Division of the Public Works Department of Aiken County provides facilities for recycling and the disposal of household, commercial, industrial, construction waste, and land clearing debris for Aiken County. These collections are then deposited at one of the three landfills within the county, depending on the material. Construction and Demolition (C&D) debris is taken to one of the two Class 2 Landfills in Aiken County: Barden C&D Landfill or Wagener C&D Landfill. Municipal Solid Waste (MSW), as well as C&D debris, is taken to Three Rivers Regional Municipal Solid Waste Landfill, which is a Class 3 Landfill located on the Department of Energy's Savannah River Site.

Edgefield County does not operate any public landfills within the county. All municipal solid waste is collected at the Tri-County Solid Waste Transfer Station, where it is then compacted and transferred to the Three Rivers Regional Municipal Solid Waste Landfill.

In addition, there are 18 convenience recycling centers that accept recyclable materials in Aiken and Edgefield Counties. The map shown in Figure 10.22 identifies the location of the transfer stations, convenience recycling centers, construction and demolition facilities, and municipal solid waste facilities that serve Aiken and Edgefield Counties.
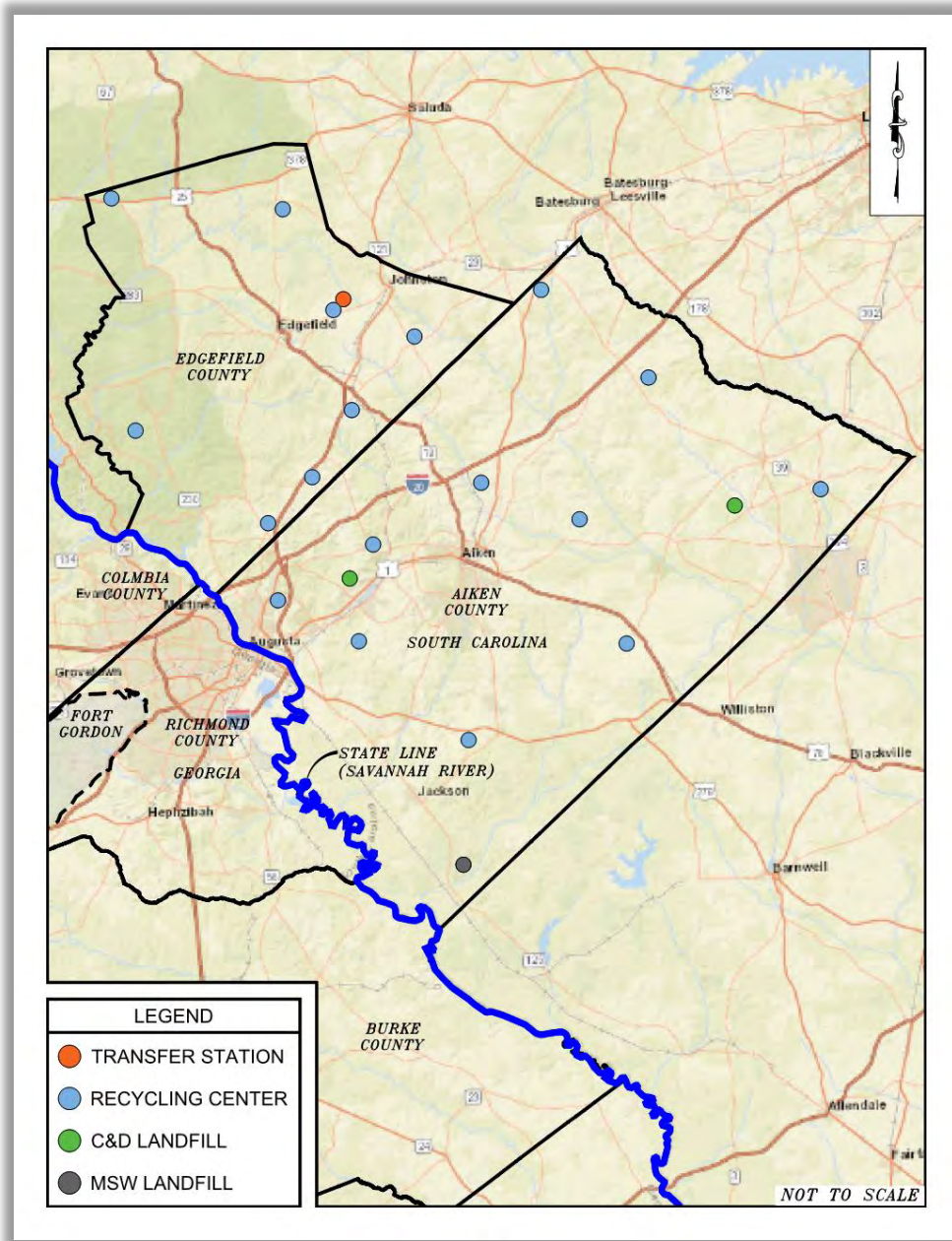
Figure 10.22: Transfer Stations, Convenience Recycling Centers, Construction and Demolition Facilities, and Municipal Solid Waste Facilities in Aiken County and Edgefield County. Source: Benesch, 2021.

Transfer Stations

There is one transfer station located in Edgefield County, known as the Tri-County Transfer Station, which collects municipal solid waste from Edgefield, McCormick, and Saluda Counties. Per the South Carolina Solid Waste Management Annual Report 2020, the Tri-County Transfer Station is permitted to handle 320 tons per day. The county and owner for the transfer station in South Carolina is shown in Table 10.44.

Table 10.44: Transfer Stations in South Carolina

Transfer Station	County	Owner
Tri-County Transfer Station	Edgefield County	Edgefield, McCormick, and Saluda Counties

Source: South Carolina Solid Waste Management Annual Report, 2020

Waste collected at the Tri-County Transfer Station is transported to the Three Rivers Regional Municipal Solid Waste Landfill in Aiken, South Carolina.

Class 2 Landfill Facilities

Barden C&D Landfill and Wagener C&D Landfill are operated by Aiken County and are restricted to dispose of waste generated within Aiken County. Acceptable materials include construction and demolition debris, furniture, land clearing debris, and yard waste. The permitted annual disposal rate capacity, disposal amount, and estimated remaining life expectancy for the C&D Landfills in Aiken County are described in Table 10.45.

Table 10.45: Class 2 Landfill Disposal and Estimated Remaining Life

Landfill	Permitted Annual Disposal Rate Capacity (Tons)	Disposal, 2020 (Tons)	Remaining Life (Years)
Barden C&D Landfill	80,000	71,000	16
Wagener C&D Landfill	134,766	3,800	42

Source: South Carolina Solid Waste Management Annual Report, Table 6,13, 2020

Class 3 Landfill Facilities

The Aiken County Government does not operate a public Municipal Solid Waste Landfill. However, the Three Rivers Solid Waste Authority was established in 1992 as a regional solid waste management agency, and their mission is to supplement local government solid waste management services to promote efficient waste handling and disposal. The Three Rivers Regional Municipal Solid Waste Landfill disposes of municipal solid waste, commercial waste, and industrial waste from nine counties in South Carolina:

→ Aiken County
→ Allendale County
→ Bamberg County
→ Barnwell County
→ Calhoun County
→ Edgefield County
→ McCormick County
→ Orangeburg County
→ Saluda County

The Three Rivers Regional Municipal Solid Waste Landfill is located off Highway 125 on the Department of Energy's Savannah River Site. It is situated on a 1,400-acre site and has a 300-acre footprint with remaining airspace of over 38 million cubic yards of waste. The landfill is responsible for the disposal of municipal solid waste, commercial waste, and industrial waste from the nine member counties mentioned above, as well as Hampton County, South Carolina and from neighboring counties in Georgia. Annual

disposal amounts, in tons, deposited at the Three Rivers Regional Municipal Solid Waste Landfill from each of the contributing counties is defined in Table 10.46.

Table 10.46: Three Rivers Regional Municipal Solid Waste Landfill Disposal Rates

County	Annual Disposal, 2020 (Tons)
Aiken	127,836
Allendale	6,860
Bamberg	11,285
Barnwell	15,078
Calhoun	4,260
Edgefield	11,972
McCormick	3,038
Orangeburg	60,921
Saluda	12,570
Newberry	3
Georgia Counties	34,674
Total Waste Disposal	288,497

Source: South Carolina Solid Waste Management Annual Report, Table 6.10, 2020

As described in the table above, Aiken and Edgefield Counties account for 48.5 percent of the total waste disposed at the Three Rivers Regional Municipal Solid Waste Landfill. The permitted annual disposal rate capacity, disposal amount, and estimated remaining capacity of the landfill is identified in Table 10.47.

Table 10.47: Class 3 Landfill Disposal and Estimated Remaining Capacity

Landfill	Permitted Annual Disposal Rate Capacity (Tons)	Disposal, 2020 (Tons)	Estimated Remaining Capacity of Facility (Tons)	Estimated Remaining Capacity for Aiken and Edgefield Counties (Tons)
Three Rivers Regional Municipal Solid Waste Landfill	500,000	288,497	35,322,083	17,117,370

Source: South Carolina Solid Waste Management Annual Report, Table 6.9, 2020

Analysis of Future Demand

The growth projections for Aiken and Edgefield Counties are evaluated together since all the municipal solid waste generated in these counties are deposited at the Three Rivers Regional Municipal Solid Waste Landfill. Aiken and Edgefield Counties have a projected population increase of approximately 4.74 percent and 1.34 percent, respectively, from the anticipated growth at Fort Gordon and background growth.

Using the projected population information and the per capita municipal solid waste generation rate provided by the EPD, the proposed future demand of municipal solid waste are evaluated to determine the short, mid, and long-range impacts. From EPD reporting in 2018, the latest available data estimates a municipal solid waste generation rate of 4.9 pounds per person per day. This is the equivalent of 0.89 tons per person per year. Based on the current disposal rates at each landfill facility, it is assumed that 57.8 percent of the Three Rivers Regional Municipal Solid Waste Landfill is designated for Aiken and Edgefield

Counties. The available capacity within the landfill and the projected total demand over the next ten years is summarized in Table 10.48.

Table 10.48: Projected Municipal Solid Waste Disposal Rate

Landfill	Available Remaining Capacity (Tons)	Total Disposal Through 2030 (Tons)	Available Capacity (%)
Three Rivers Regional Municipal Solid Waste Landfill	17,117,370	1,991,307	88.4%

Source: Benesch, 2021

Projections indicate that Aiken and Edgefield Counties will use 11.6 percent of their available capacity within the Three Rivers Regional Municipal Solid Waste Landfill by 2030.

Proposed Infrastructure Improvements

According to the Regional Waste Management Plan, prepared by the Three Rivers Solid Waste Authority, Aiken County is considering adding a transfer station to serve the rural population from the western portion of the county. The City of North Augusta may expand its recycling facility to act as a transfer station as well. The proposed projects, associated costs, and potential fund sources for the solid waste improvements are displayed in Table 10.49.

Table 10.49: Solid Waste Improvements in South Carolina

Estimated Construction Date	Project	Cost	Potential Fund Source
2030	New Transfer Station in Western Aiken County	$6,600,000	CPST
2030	City of North Augusta Transfer Station Expansion	$5,200,000	CPST

Source: South Carolina Solid Waste Management Annual Report, 2020

10.6 Electric Distribution System

Electricity is generated at power plants and distributed through a network of electric substations, power lines, and transformers before reaching the consumer. Local electricity grids are interconnected to form larger networks. The electrical system in the Study Area is a part of the Eastern Interconnection, which encompasses the area east of the Rocky Mountains and a portion of northern Texas. The network structure of the Eastern Interconnection helps maintain the reliability of power system by providing multiple routes for electricity to flow. This prevents transmission line or power plant failures from causing interruptions in the electrical service.

The electrical systems for Georgia and South Carolina are analyzed for the entire state. Electrical data for each state was provided through the United States Energy Information Administration. In addition, the electricity providers throughout the Study Area are discussed in the following subsections.

10.6.1 Georgia

Electricity in Georgia is produced at various power plants. The map shown in Figure 10.23 features the location of the power plants in Georgia within the Study Area.
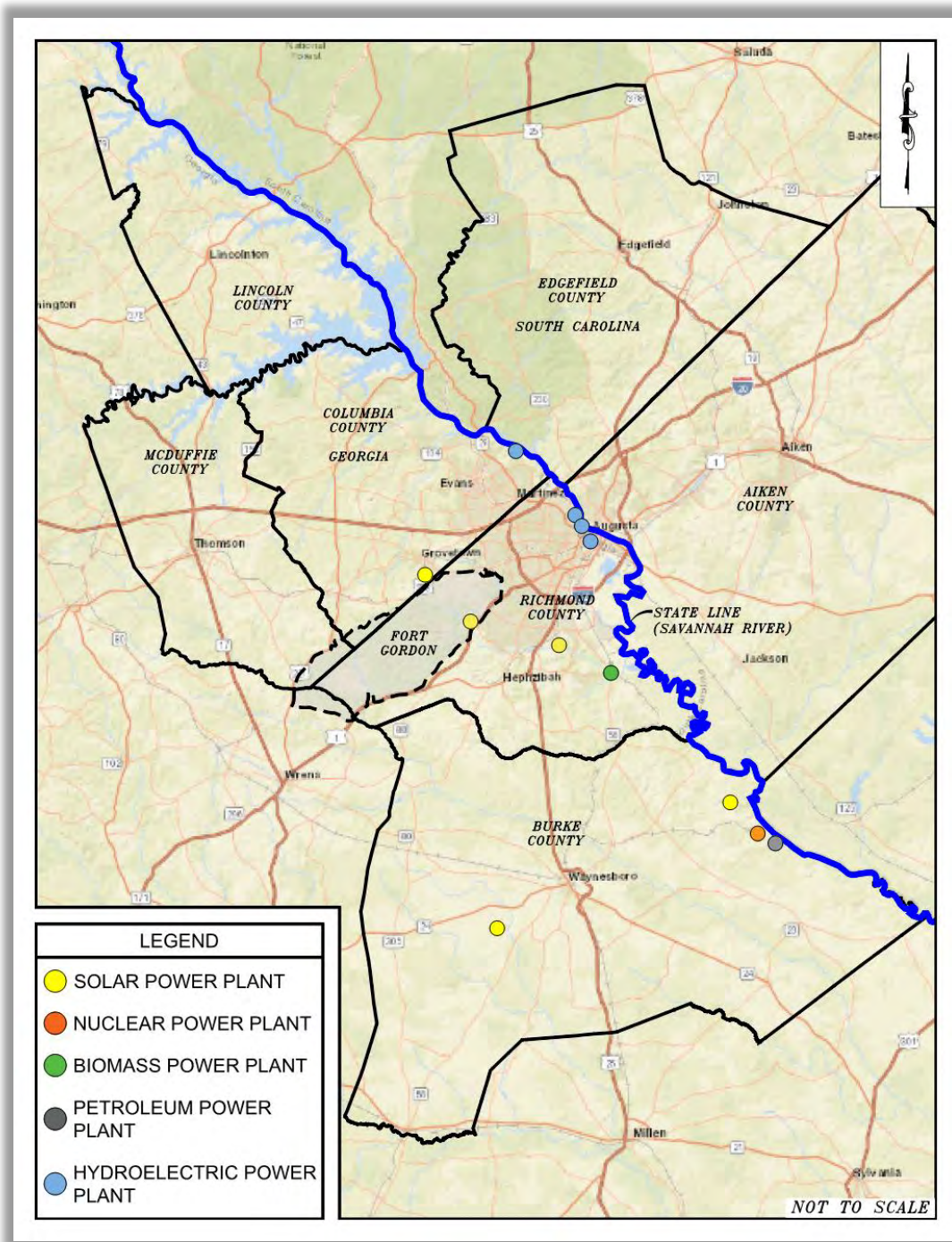
Figure 10.23: Power Plants in Augusta-Richmond County, Burke County, and Columbia County. Source: Benesch, 2021.

Existing Facilities

The county, utility owner, power source, and capacity, measured in megawatts (MW), for each power production plant in Augusta-Richmond, Burke, Columbia, Lincoln, or McDuffie Counties is presented in Table 10.50.

Table 10.50: Power Plant Capacity in Georgia within the Study Area

Power Plant Name	County	Utility Name	Power Source	Capacity (MW)
Fort Gordon Solar Facility	Augusta-Richmond County	Georgia Power Company	Solar	30
Richmond Hayes Solar	Augusta-Richmond County	Westbound Solar LLC	Solar	2.3
Graphic Packaging International Augusta Mill	Augusta-Richmond County	Graphic Packaging International – Augusta	Biomass Natural Gas	42.8 36.5
Sibley Mill	Augusta-Richmond County	Augusta Canal Authority	Hydroelectric	2.1
King Mill	Augusta-Richmond County	Augusta Canal Authority	Hydroelectric	2
Graniteville Enterprise Division	Augusta-Richmond County	Augusta Canal Authority	Hydroelectric	1
White Oak Solar, LLC	Burke County	White Oak Solar, LLC	Solar	76.5
Waynesboro Community Solar	Burke County	Waynesboro Community Solar	Solar	2.4
Vogtle	Burke County	Vogtle	Nuclear	2,302
Wilson	Burke County	Wilson	Petroleum	297.5
Columbia Bryson	Columbia County	Westbound Solar LLC	Solar	1.4
Stevens Creek	Columbia County	Dominion Energy South Carolina, Inc	Hydroelectric	12

Source: U.S. Energy Information Administration, Georgia State Profile and Energy Estimates, 2021

According to the U.S. Energy Information Administration, the primary source of energy for the State of Georgia is natural gas. The energy production is divided into two categories, including electric utilities and independent power producers (IPP) and combined heat and power (CHP) plants. Electric utilities are a corporation, person, agency, authority, or other legal entity that is aligned with distribution facilities for the delivery of electric energy for use primarily by the public, including municipal and state utilities, federal electric utilities, and rural electric cooperatives. An IPP is similar to an electric utility, except it is not owned by the public. A CHP plant is designed to produce both heat and electricity from a single heat source. The electric power capacity, measured in megawatts (MW), and the electric power generation, measured in megawatt-hours (MWh), for the electric utilities and IPP and CHP are detailed in the Table 10.51.

Table 10.51: Electric Power Capacity and Power Generation for the State of Georgia

Energy Source	Capacity (MW)	Power Generation (MWh)
Electric Utilities	27,253.3	96,522,566
IPP and CHP	10,025.6	23,603,435
Total	37,278.9	120,126,001

Source: U.S. Energy Information Administration, Georgia Electricity Profile, 2020

The power generated at the plants is sold to various customers throughout the State of Georgia. The retail sales, measured in MWh, retail customers, and average retail price, measured in cents per kilowatt-hour (cents/kWh), for each sector is described in Table 10.52.

Table 10.52: Retail Sales, Retail Customers, and Average Retail Price by Sector

Sector	Retail Sales (MWh)	Retail Customers	Average Retail Price (cents/kWh)
Residential	58,220,280	4,487,431	12.02
Commercial	44,301,529	592,220	10.08
Industrial	30,807,724	23,822	5.77
Transportation	140,609	1	5.39
Total	133,470,142	5,103,474	9.93

Source: U.S. Energy Information Administration, Georgia Electricity Profile, 2020

Analysis of Future Demand

For all the electrical systems in the State of Georgia, the amount of power and electricity sold to the public is greater than the power generation, measured in megawatt-hours. Since the electric grid for the eastern side of the United States is interconnected, electrical companies in Georgia are able to buy power and electricity from other power productions plants to supplement electricity needs.

Proposed Infrastructure Improvements

One major electrical project was initiated in Burke County in Georgia within the Study Area in 2008. More specifically, this project includes the construction and installation of the new nuclear Units 3 and 4 at Plant Vogtle. This project will increase the amount of power that is generated in the State of Georgia, resulting in a reduced amount of power and electricity required to be purchased to supplement the power needs of the public.

Plant Vogtle's Nuclear Unit 3 completed its critical testing cycle at the end of July 2021, and the construction is expected to be completed in January 2022. Unit 3 is projected to have an in-service date in the second quarter of 2022. Plant Vogtle's Nuclear Unit 4 is expected to have an in-service date in the first quarter of 2023. Units 3 and 4 are projected to have a combined capacity of 2,228 MW and will provide clean and reliable energy for more than 500,000 homes and businesses.

The proposed project, associated cost, and potential fund sources for the electrical system improvements in Georgia is displayed in Table 10.53.

Table 10.53: Electrical System Improvements in Georgia

Estimated Construction Date	Project	Cost	Potential Fund Source
2023	Burke County – Construction and Installation of New Nuclear Units 3 and 4 at Plant Vogtle	$25,000,000,000	Georgia Power, Georgia Public Service Commission, Stakeholders

Source: Georgia Power Website – Plant Vogtle, July 2021

Existing Service Providers

The electricity service providers and the areas they serve for the Georgia Counties in the Study Area are as follows:

→ Georgia Power Company
- Augusta-Richmond County
- Burke County
- Columbia County
- Lincoln County
- McDuffie County

→ Jefferson Energy Cooperative
- Augusta-Richmond County
- Columbia County
- McDuffie County

→ Planter's Electric Membership Corporation (EMC)
- Augusta-Richmond County
- Burke County

→ Rayle Electric Membership Corporation (EMC)
- Lincoln County

10.6.2 South Carolina

Electricity in South Carolina is produced at various power plants. The map shown in Figure 10.24 highlights the location of the power plants and their energy source for the South Carolina Counties within the Study Area.

Existing Facilities

The county, utility owner, power source, and capacity for each power production plant in Aiken or Edgefield Counties is defined in Table 10.54.

Table 10.54: Power Plant Capacity in South Carolina within the Study Area

Power Plant Name	County	Utility Names	Power Source	Capacity (MW)
Urquhart	Aiken	Dominion Energy South Carolina, Inc	Natural Gas	640
Savannah River Site Biomass Cogen	Aiken	Ameresco	Biomass	19
Shaw Creek Solar, LLC	Aiken	Shaw Creek Solar	Solar	74.9

Source: U.S. Energy Information Administration, South Carolina State Profile and Energy Estimates, 2021
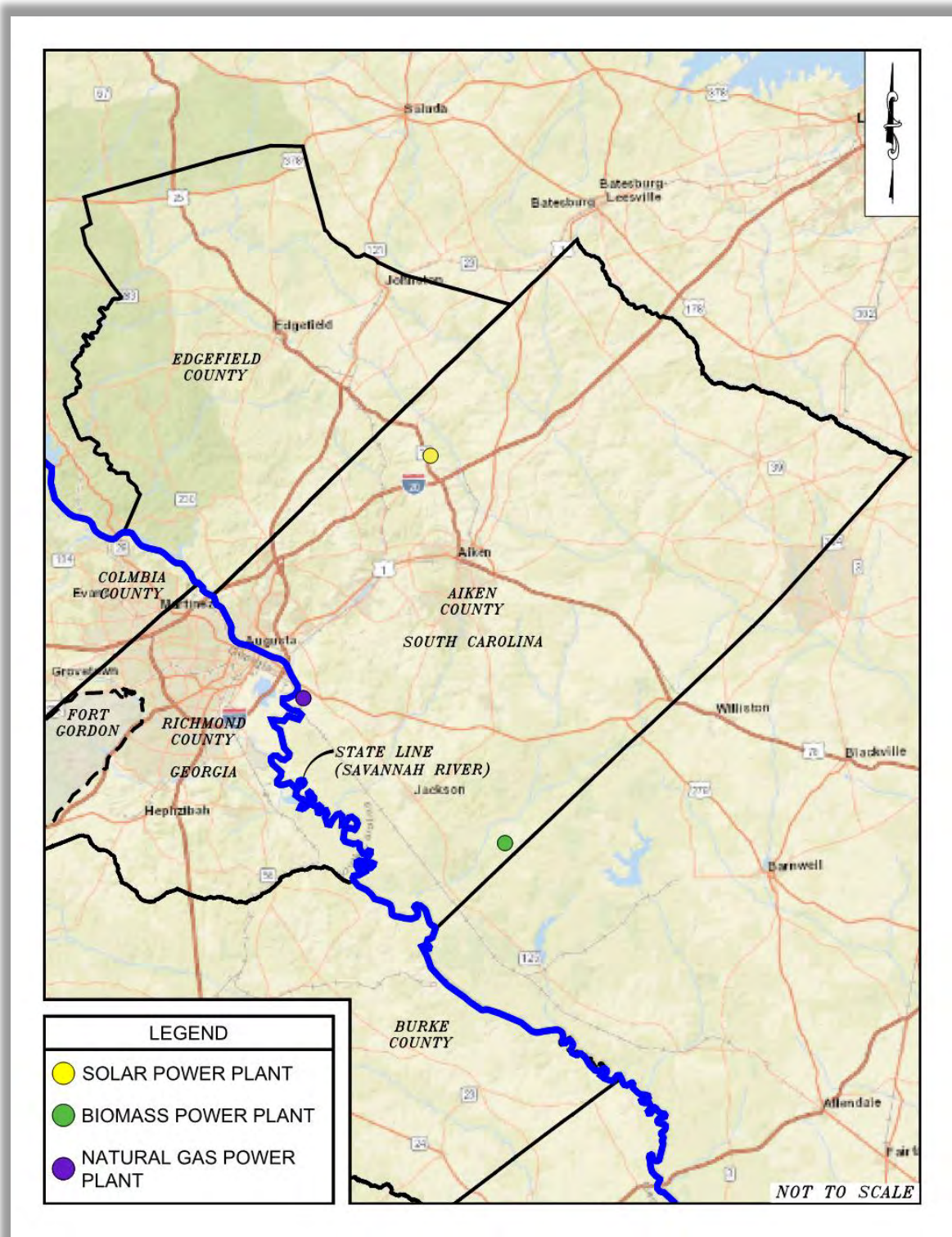
Figure 10.24: Power Plants in Aiken County. Source: Benesch, 2021.

According to the U.S. Energy Information Administration, the primary source of energy for the State of South Carolina is nuclear. The electric power capacity and the electric power generation for the electric utilities and IPP and CHP are detailed in the Table 10.55.

Table 10.55: Electric Power Capacity and Power Generation for the State of South Carolina

Energy Source	Capacity (MW)	Power Generation (MWh)
Electric Utilities	21,493.6	93,610,557
IPP and CHP	2,628.8	4,918,240
Total	24,122.4	98,528,797

Source: U.S. Energy Information Administration, South Carolina Electricity Profile, 2020

The power generated at the plants is sold to various customers throughout the State of South Carolina. The retail sales, retail customers, and average retail price for each sector is shown in Table 10.56.

Table 10.56: Retail Sales, Retail Customers, and Average Retail Price by Sector

Sector	Retail Sales (MWh)	Retail Customers	Average Retail Price (cents/kWh)
Residential	30,826,017	2,377,020	12.78
Commercial	20,834,372	395,288	10.35
Industrial	25,076,787	3,714	5.98
Total	76,737,176	2,776,022	9.90

Source: U.S. Energy Information Administration, South Carolina Electricity Profile, 2020

Analysis of Future Demand

For all the electrical systems in the State of South Carolina, the amount of power and electricity sold to the public is less than the power generation, measured in megawatt-hours. Since the electric grid for the eastern side of the United States is interconnected, electrical companies in South Carolina are able to sell power and electricity to other providers to supplement electricity needs.

Proposed Infrastructure Improvements

Proposed projects have been identified in the counties in South Carolina within the Study Area to improve the electrical systems. More specifically, these projects include upgrades to the Urquhart Power Plant and the installation of the Foreman Solar Photovoltaic Plant and the Jackson Solar Photovoltaic Plant. These projects will increase the amount of power that is generated in the State of South Carolina.

Dominion Energy is planning to upgrade some of the equipment at the Urquhart Power Plant, including, four vintage combustion turbines and one vintage natural gas boiler and turbine generator set. The vintage equipment will be replaced with two modern combustion turbines and is anticipated to enter the commercial operation in 2024 or 2025. Currently, the four vintage combustion turbines and the one vintage natural gas boiler and turbine generator set have a capacity of 193 MW, and the upgraded equipment will have a proposed capacity of 234 MW.

The Foreman Solar Photovoltaic Plant and Jackson Solar Photovoltaic Plant are expected to have a capacity of 6.4 MW and 14.0 MW, respectively. The anticipated completion date for these projects is 2026.

The proposed projects, associated costs, and potential fund sources for the electrical system improvements in South Carolina are summarized in Table 10.57.

Table 10.57: Electrical System Improvements in South Carolina

Estimated Construction Date	Project	Cost	Potential Fund Source
2025	Aiken County – Urquhart Power Plant Upgrades	$20,000,000	Dominion Energy Stakeholders
2026	Aiken County – Foreman Solar Photovoltaic Plant	$20,000,000	Dominion Energy Stakeholders
2026	Aiken County – Jackson Solar Photovoltaic Plant	$20,000,000	Dominion Energy Stakeholders

Source: Dominion Energy Integrated Resource Plan, August 2021; U.S. Energy Information Administration, South Carolina, 2020

Existing Service Providers

The electricity service providers and the areas they serve for the South Carolina Counties in the Study Area are as follows:

→ Aiken Electric Cooperative
- Aiken County
- Edgefield County

→ Dominion Energy (formerly known as South Carolina Electric and Gas)
- Aiken County
- Edgefield County

10.7 Natural Gas

Natural gas is withdrawn from natural gas and crude oil wells. The U.S. natural gas pipeline is a highly interconnected network that moves natural gas throughout the country. The pipeline network consists of approximately 3 million miles of mainline and other pipelines that link natural gas production areas and storage facilities with customers. Transmission companies operate the pipelines that link the gas fields to major consuming areas, and distribution companies are the local utilities that deliver natural gas to the consumer. The natural gas systems for Georgia and South Carolina within the Study Area are analyzed for the entire state. Natural gas data for each state was provided throughout the U.S. Energy Information Administration. In addition, the natural gas providers within the Study Area are discussed in the following subsections.

10.7.1 Georgia

Currently, there are no natural gas production plants within the Study Area in Georgia. However, the storage and consumption of natural gas for the entire State of Georgia are analyzed. The liquefied natural gas storage for the State of Georgia, measured in million cubic feet (MMcf), are identified in Table 10.58.

Table 10.58: Liquefied Natural Gas Storage for the State of Georgia

Liquefied Natural Gas Storage	Natural Gas (MMcf)
Additions	2,451
Withdrawals	810
Net Withdrawals	1,641

Source: U.S. Energy Information Administration, Georgia Natural Gas Summary, 2020

The consumption of natural gas, measured in MMcf, for each sector is listed in Table 10.59.

Table 10.59: Natural Gas Consumption for the State of Georgia

Consumption	Natural Gas (MMcf)
Total Consumption	759,276
Pipeline and Distribution Line	5,943
Delivered to Customers	753,334
Residential	119,833
Commercial	50,985
Industrial	152,810
Vehicle Fuel	1,588
Electric Power	428,117

Source: U.S. Energy Information Administration, Georgia Natural Gas Summary, 2020

Existing Service Providers

The natural gas service providers and the areas they serve for the Georgia Counties in the Study Area are as follows:

→ Atlanta Gas and Light
  - Augusta-Richmond County
  - Columbia County
→ Municipal Gas Authority of Georgia
  - The City of Waynesboro, Burke County
→ Scana Energy
  - Columbia County
→ Thomson Natural Gas Department
  - McDuffie County
→ Reed Propane Gas (Propane)
  - Lincoln County
→ Wilhoit Gas (Propane)
  - Lincoln County

10.7.2 South Carolina

Currently, there are no natural gas production plants within the Study Area in South Carolina. However, the storage and consumption of natural gas for the entire State of South Carolina are analyzed.

The liquefied natural gas storage for the State of South Carolina, measured in MMcf, are detailed in Table 10.60.

Table 10.60: Liquefied Natural Gas Storage for the State of South Carolina

Liquefied Natural Gas Storage	Natural Gas (MMcf)
Additions	571
Withdrawals	764
Net Withdrawals	-193

Source: U.S. Energy Information Administration, South Carolina Natural Gas Summary, 2020

The consumption of natural gas, measured in MMcf, for each sector is listed in Table 10.61.

Table 10.61: Natural Gas Consumption for the State of South Carolina

Consumption	Natural Gas (MMcf)
Total Consumption	335,075
Pipeline and Distribution Line	1,892
Delivered to Customers	333,183
Residential	29,111
Commercial	23,875
Industrial	95,145
Vehicle Fuel	103
Electric Power	184,948

Source: U.S. Energy Information Administration, South Carolina Natural Gas Summary, 2020

Existing Service Providers

The natural gas service providers and the areas they serve for the South Carolina Counties in the Study Area are as follows:

→ Dominion Energy (formerly known as South Carolina Electric and Gas)
- Aiken County
- Edgefield County

10.8 Recommendations

The public utilities systems within the Study Area are analyzed to determine the capacity, current service levels, and any planned expansions.

The water and wastewater utilities were determined to have adequate capacity for the anticipated increase in population. The planned expansions throughout the Study Area will increase the service areas and the total capacity for the treatment facilities.

Solid waste collection and treatment facilities and services were determined to have adequate capacity to support the population growth within the Study Area. The Counties within the Study Area have identified proposed projects to provide more transfer facilities in rural areas in order to increase efficiency and expand service areas.

The electric distribution systems within the Study Area appear to provide adequate supply for the demand created by the anticipated population growth. The addition of the two nuclear units at Plant Vogtle over the next two years will greatly increase the electricity provided to the Study Area and reduce demand on the power grid.

The natural gas systems in the Study Area appear to provide adequate supply for the demand created from the projected population growth. Natural gas is provided from pipelines that source natural gas from production plants in other areas of the country. Currently, there are no plans to construct any natural gas production plants within the Study Area.
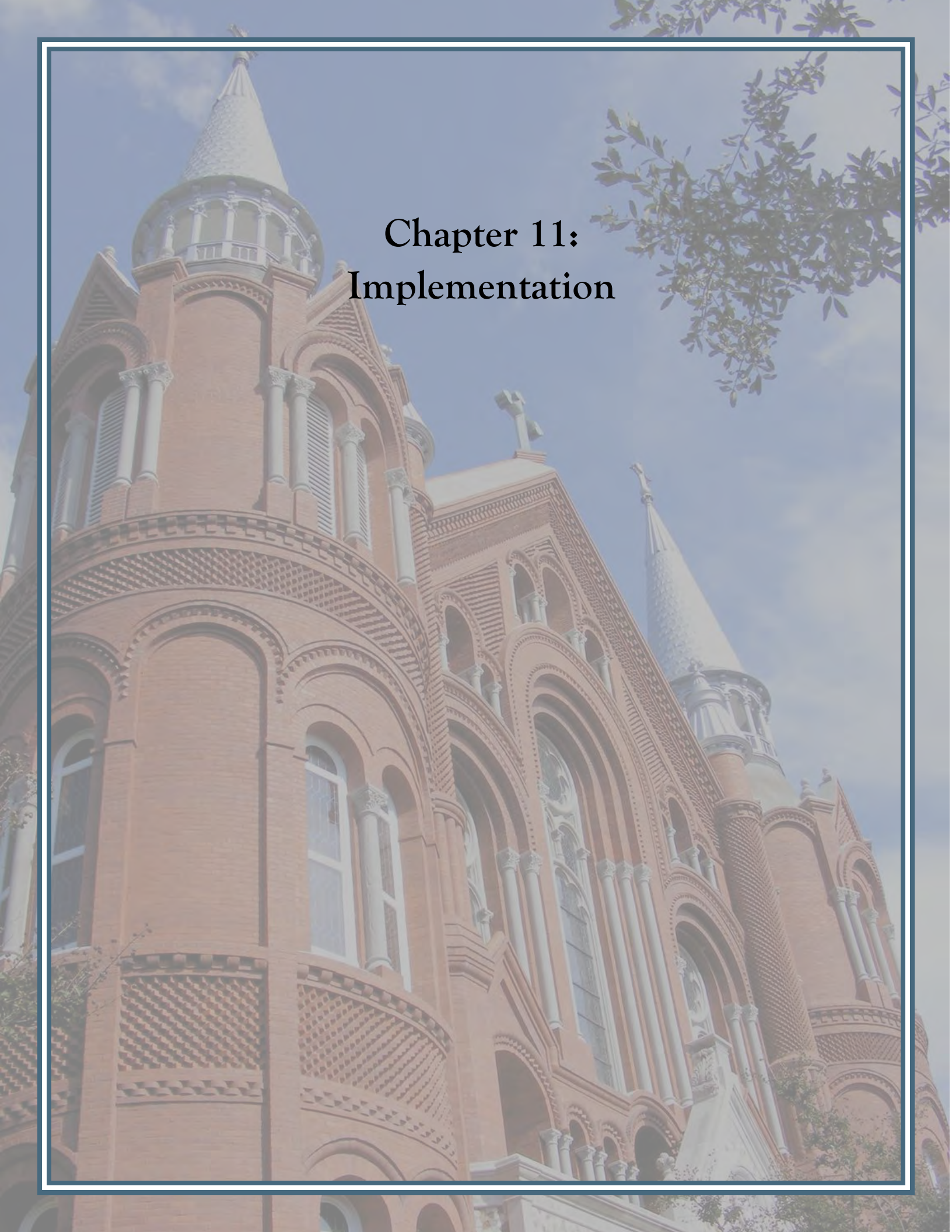
There is adequate capacity within the Study Area's infrastructure to serve future growth; however, this growth may occur in areas that are not currently served by the existing infrastructure. Infrastructure may

need to be extended to other areas in order to serve this future growth, particularly in the areas of potable water and sanitary sewer. Local governments within the Study Area that provide potable water and sanitary sewer should coordinate with the CSRA Regional Commission on funding for the expansion of infrastructure to serve future populations.

10.9 Implementation Plan

	Identification of Issues, Goals, and Strategies	Responsible Party	Timeline
Strategy 10.1	Work with communities within Augusta-Richmond, Burke, Columbia, Lincoln, McDuffie, Aiken, and Edgefield Counties to determine where areas of growth are to occur and develop potable water and sanitary sewer master plans to ensure that infrastructure is available where and when it is needed.	CSRA Regional Commission for Georgia Counties and Lower Savannah Council of Governments (LSCOG) for South Carolina Counties	Long-term
Strategy 10.2	Work with communities within Augusta-Richmond, Burke, Columbia, Lincoln, McDuffie, Aiken, and Edgefield Counties to identify and procure funding to support the potable water and sanitary sewer master plans.	CSRA Regional Commission for Georgia Counties and Lower Savannah Council of Governments (LSCOG) for South Carolina Counties	Long-term

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Chapter 11: Implementation

11 Implementation Strategy

The Fort Gordon Regional Growth Management Plan (GMP) evaluates the potential impacts of growth at Fort Gordon and assesses strategies to manage growth in a way that benefits both civilian and military communities. The recommendations in the previous sections provide a practical, coordinated approach to the continued success of the communities within the Study Area.

Each of the recommendations incorporates one or more actions that can be implemented to mitigate impacts on transportation facilities, fire and emergency services, police services, the Study Area's economy and employment, education, health care, childcare, housing, and infrastructure. The recommended strategies function as tools to aid the community in their goal of ensuring the continued sustainability of the military mission at the Installation and the efficient operation of the surrounding communities.

The question then becomes, "How do we implement the recommendations?" The process for implementation can be confusing and complicated. The recommendations themselves vary as well as the processes and procedures of the municipalities implementing them. However, if the recommendations remain as words in a report, the intent of the plan is not accomplished. Through actual implementation, the community and the military can fulfill the goal of the GMP and work together to create a thriving community while maintaining support for the mission at Fort Gordon.

11.1 Recommendation Implementation

The recommendations from Chapters 3 through 10 of the GMP were provided in a spreadsheet to members of the Advisory Group for their input on ranking and prioritization. Each member of the Advisory Group was asked to consider the importance of the recommendation and its achievability, and rank each of these factors on a scale of 1-4, with one being the most important or achievable and four being the least important or achievable. The average score for importance, achievability, and overall score for each recommendation was then calculated.

For most of the recommendations, the differences in average scores between importance and achievability were less than one. However, nine of the recommendations were seen as being more achievable than important, with differences in average scores of greater than one. There were no recommendations that were seen as being greatly more important than achievable.

The recommendations have been organized into three priority groups based on the average total score of the rankings. Priority Group One are those that are most achievable and important, Priority Group Two are those that are moderately achievable and important, and Priority Group Three are those that are least important and achievable.

11.1.1 Priority Group One

Transportation

3.6: Improvements to Avenue of the States/Tobacco Road (Gate 5)	
Responsible Party: Augusta MPO; County Government	**Priority:** Group One
Discussion: Install traffic signals at both ramp terminals	
Timeline:	Within 10 years
Estimated Costs:	$635,000 to $750,000
Financing Mechanisms:	Federal, State, and Local Transportation funds
Indicator:	Inclusion in the MPO's schedule of improvements or the CSRA T-SPLOST*

*Note: T-SPLOST requires 25% local discretionary funds to be provided by the County where the project is located.

Public Services – Fire and EMS

4.1: Advertise volunteer fire department opportunities with new Cyber Command elements moving into the area and identify qualified potential volunteers currently on Fort Gordon living in surrounding communities.	
Responsible Party: Local Fire Departments	**Priority:** Group One
Discussion: In order to increase participation in local volunteer fire departments, notify new personnel coming into the area about the opportunity to volunteer. Local fire departments should coordinate with the Installation to identify ways to notify potential recruits.	
Timeline:	Ongoing
Estimated Costs:	Costs for this recommendation should be minimal, limited to printing materials for sending out or time for sending out emails.
Financing Mechanisms:	Local Volunteer Fire Department's existing budgets
Indicator:	Number of new recruits.

4.4: Close gaps in fire service response times – use a drive-time analysis to identify areas that are not adequately served by existing fire stations to plan the locations of future fire stations to close service gaps.	
Responsible Party: Local Fire Departments	**Priority:** Group One
Discussion: Use a drive-time analysis to identify areas that are outside of the minimum response time window. Use these under-served areas to identify locations for future fire stations to improve fire service coverage.	
Timeline:	Ongoing
Estimated Costs:	Costs for this recommendation should be moderate, associated with hiring a consultant to perform the drive-time analysis and produce a report.
Financing Mechanisms:	Local regular and volunteer fire departments' existing budgets; additional funds, grants or fundraising may be needed.
Indicator:	Report identifying the locations of the gaps in service.

4.5: Apply for grants, including Federal Emergency Management Agency (FEMA) grants: Assistance to Firefighters Grants, FEMA Fire Prevention and Safety Grants, FEMA Staffing for Adequate Fire and Emergency Response Grant, and state grants for firefighting assistance	
Responsible Party: Local Fire Departments, CSRA Regional Commission	**Priority:** Group One
Discussion: Administered by the Federal Emergency Management Agency, these grant programs help firefighters and other first responders obtain critically needed equipment, protective gear, emergency vehicles, training, and other resources needed to provide fire and EMS services to the public, reduce injuries and prevent deaths related to fire hazards among the high-risk population, enhance fire department abilities to comply with staffing, response, and operational standards established by the National Fire Protection Association, and to increase firefighting capacity.	
Timeline:	Ongoing
Estimated Costs:	Costs for this recommendation should be minimal, as existing staff who apply for grants on behalf of local fire departments can add this grant to their activities. Additional grant writing fees potential does exist.
Financing Mechanisms:	If additional personnel or additional hours for existing personnel is needed, each department's typical source for salaries can be used.
Indicator:	Completed grant applications; amount of grant funding awarded

Public Services – Police

4.12: Expand recruitment efforts	
Responsible Party: Local Law Enforcement Agencies	**Priority:** Group One
Discussion: Having an online recruitment website (separate from the municipal website) that highlights the day-to day aspects of the job can bring in applicants..	
Timeline:	Ongoing
Estimated Costs:	Costs for this recommendation should be minimal, limited to the cost of creating and maintaining an additional website
Financing Mechanisms:	Typical revenue or grant funding
Indicator:	Website centered on recruitment of new officers

Employment, Economic Development, and Workforce Development

5.4: Leverage Existing Initiatives and Investments in Cyber at Fort Gordon	
Responsible Party: CSRA Alliance for Fort Gordon	**Priority:** Group One
Discussion: Fort Gordon is experiencing tremendous investment and growth due to the movement of U.S. Army Cyber Headquarters from facilities in Virginia, Maryland, and Washington, DC. This expansion includes over 80 major construction and renovation projects that will bring nearly $2 billion of investment over the next ten years. This development includes projects like the Cyber Center Schoolhouse and Army Cyber Headquarters. The Fort is in a tremendous position to continue leveraging these investments to promote future economic development. A working group within the CSRA Alliance for Fort Gordon could be formed to identify specific opportunities for public private partnerships that capitalize on the Fort's strengths. This includes Cyber and also energy related investments.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Funding for this initiative could be provided by the Economic Development Administration, FCC Universal Service Fund, as well as the Department of Agriculture. USDA grants that could be eligible include USDA Rural Development, USDA Telecommunications Infrastructure Loan Program, and USDA Community Connect Grant Program.
Indicator:	Establishment of a working group

Education

6.1: School boards annually track school facility needs including the need for new schools and facility renovations. Continue these efforts and collaborate with local planning departments to track new residential growth to identify where growth and demand will be highest.	
Responsible Party: School Board	**Priority:** Group One
Discussion: The location of future growth will determine where new schools are needed. School boards should coordinate with local planning departments to identify where new development is going to be located and determine what the future needs for schools will be.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Minimal
Financing Mechanisms:	Regular school board budget
Indicator:	Formalized coordination activities between the school board and local planning departments.

6.7: Work with community planners to identify upcoming large-scale residential developments, including large-scale residential rezoning applications. Partner with developers for the dedication of future school sites.	
Responsible Party: School Boards, Planning Departments	**Priority:** Group One
Discussion: When new large scale residential developments are being rezoned, partner with community planners and developers for the dedication of land for future school sites. This strategy has helped to provide land for a needed school in Dalton, Georgia in 2017. Donation of land for schools is supported by State of Georgia Code (GA Code §48-7-29.12) which provides a tax credit for the donation of real property to a governmental agency or a bona fide charitable nonprofit organization.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Minimal; coordination activities could be performed by existing school board staff.
Financing Mechanisms:	Regular school board budget, grants
Indicator:	Formal coordination mechanisms between the school board and planning departments.

Health Care

7.7: Communicate future hospital capacity needs to existing hospitals to assess current expansion planning.	
Responsible Party: Local economic development organizations, CSRA Regional Commission	**Priority:** Group One
Discussion: Hospitals are currently over-indexed against national averages, which means that the Study Area has more hospitals per capita than the average American community. Growth will reduce that surplus but will not eliminate it. However, the presence of the large medical teaching facilities may somewhat misrepresent capacity, particularly if those facilities draw out-of-area patients. Based on anticipated growth rates, an additional capacity of roughly 1,585 hospital employees will be needed to maintain service levels at their current level in the face of increased growth. This is roughly the equivalent of a new hospital of average size in the area and suggests demand for an additional hospital to be built in the area, or at least significant hospital expansion.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Low
Financing Mechanisms:	Health Care philanthropy, medical schools, grants
Indicator:	Communications plan

7.9: Join working partnerships with on-Installation resources and public health agencies to understand and leverage current capacity to expand capacity to prevent and treat mental health and substance abuse issues.	
Responsible Party: Fort Gordon, local public health departments	**Priority:** Group One
Discussion: Aside from being impacted by the accelerated growth, mental health and substance abuse issues are likely to be disproportionately impacted by the addition of military personnel whose age profile falls into a more vulnerable area. Mental health providers, while a broader field than substance abuse, may provide a proxy measure for current capacity, and that occupation is notably underrepresented in the Study Area compared to national averages. Increasing the number of mental health providers by nearly double (180 to 338) would meet current national ratios. Working with the base is an obvious solution to this program. Substance abuse is also typically a high priority for public health departments.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Low
Financing Mechanisms:	Fort Gordon, local public health departments
Indicator:	Expanded mental health and substance abuse treatment capacity

Housing

8.6: Promote connections between local planners, developers, and builders to identify sites for future development and address challenges regarding land use, zoning, development regulations, and the building process.	
Responsible Party: Regional Housing Leadership Team (which is to be formed by the Implementation Committee)	**Priority:** Group One
Discussion: Facilitating connections between those involved in the development of housing can lead to a streamlined process for development.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grants or regular staff time
Indicator:	Program for connecting builders and property owners

8.18: Ensure policies place considerable development constraints around the Installation.	
Responsible Party: Local Departments	**Priority:** Group One
Discussion: Development of housing for staff at the Installation must strike a delicate balance – close enough to minimize commute times and provide easy access, but far enough away that encroachment at the Installation is not a problem. Developing a series of policies that guide development around the installation can help with this challenge.	
Timeline:	Long-term
Estimated Costs:	Moderate (4-5 years)
Financing Mechanisms:	Grants or staff time
Indicator:	Development policies

8.19: Identify opportunities to leverage nontraditional incentives to promote housing development like Opportunity Zones, New Market Tax Credits, and Low-Income Housing Tax Credits.

Responsible Party: Local Housing Departments, Housing Authorities and/or Economic Development Authorities	**Priority:** Group One

Discussion: The housing leadership team should consider non-traditional housing initiatives to address residential development challenges related to affordable, multi-family, and military housing. Potential strategies could leverage Opportunity Zones, New Market Tax Credits, and Low-Income Housing Tax Credits.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grants or staff time
Indicator:	Identification of nontraditional incentive opportunities

8.21: Work with local and regional developers to encourage the use of New Market Tax Credits, and Low-Income Housing Tax Credits.

Responsible Party: Local Planning Departments	**Priority:** Group One

Discussion: Low Income Housing Tax Credit (LIHTC) and New Market Tax Credits (NMTC) could help promote development in challenged areas with significant need for more affordable housing products. The Low-Income Housing Tax Credit (LIHTC) program aims to create affordable rental housing for low and very low-income families. Residents qualify for LIHTC if their income is less than 60% of the Area Median Income (AMI). These credits ensure rent limits for low-income residents but also allow developers to sell credits and generate revenue for projects to address funding gaps created by offering affordable units. Rent limits for the LIHTC Program are determined so that a household would only pay 30% of their income. NMTC help with mixed use projects as they aim to stimulate business real estate investment in low-income communities in the United States. Projects that incorporate both commercial and residential uses can apply these credits to address funding gaps.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grants or staff time
Indicator:	Programs encouraging the use of LIHTC and NMTC

Childcare

9.3: Inform local providers of upcoming demand increases so they can make growth decisions.

Responsible Party: Fort Gordon; CSRA Regional Commission	**Priority:** Group One

Discussion: Work with local providers, perhaps through an industry working group, to provide input on expected personnel buildup and the projected number of children needing daycare. By working with providers ahead of time, they can take the steps necessary (additional space or employees) to provide childcare when new personnel arrives.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Low
Financing Mechanisms:	See Childcare chapter for potential funding sources.
Indicator:	Communication path to notify local childcare providers of expected increases in demand for services.

9.6: Educate and raise awareness to families that there are resources available to them to help them get quality affordable childcare.	
Responsible Party: Fort Gordon	**Priority:** Group One
Discussion: There is a lack of education among new military families on resources available to help them such as Childcare Aware of America, which will provide financial assistance to military families based on their income.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Low
Financing Mechanisms:	See Childcare chapter for potential funding sources.
Indicator:	Educational materials informing families of the options they have for childcare.

9.7: Increase CAPS threshold to allow more families to be eligible to receive help, including military families who are barely ineligible to receive help but need it.	
Responsible Party: Federal government/US Army	**Priority:** Group One
Discussion: Many families earn just above the income threshold needed to qualify for subsidies yet still need the assistance. As of October 2020, the CAPS threshold for initial eligibility is 50% of the state median income -$33,688 for a family of three and $40,105 for a family of four. Another challenge is that even if families that qualify under the CAPS threshold, they still need to afford the initial costs of settling into a facility pay costs for a few weeks until CAPS or other financial assistance is processed.	
Timeline:	Long-term (5+ years)
Estimated Costs:	High
Financing Mechanisms:	See Childcare chapter for potential funding sources.
Indicator:	Increase in the CAPS threshold

9.11: Educate military families about quality childcare differentiators, for example, licensed versus unlicensed providers.	
Responsible Party: Fort Gordon	**Priority:** Group One
Discussion: In general, military families and area residents need more education on what quality childcare looks like to avoid inadvertently sending their child to an unregulated facility. Providers highlighted the importance of education and raising general awareness of resources available to families.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Low
Financing Mechanisms:	See Childcare chapter for potential funding sources.
Indicator:	Education materials for families on childcare facilities

Implementation

11.1: Coordinate implementation activities with the Compatible Use Study and Quality of Life efforts.	
Responsible Party: CSRA Regional Commission	**Priority:** Group One
Discussion: Many of the implementation strategies outlined in this chapter overlap and complement implementation strategies being implemented through the Compatible Use Study and the Quality of Life. In order to eliminate duplication of efforts, the implementation of these strategies should be coordinated with the activities of both of those programs.	
Timeline:	Long-term (5+ years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grant funding
Indicator:	Coordination plan with Compatible Use Study Implementation Group and Quality of Life group; Implementation of recommendations

11.2: Monitor best practices in growth management planning.	
Responsible Party: –CSRA Regional Commission	**Priority:** Group One
Discussion: In order to ensure that the implementation of the Growth Management Plan is achieving the highest level of effectiveness, monitoring trends and innovations in growth management plan should be done. This monitoring will allow ideas and innovations to be included in the implementation of the plan and create the most effective changes within the Study Area.	
Timeline:	Long-term (5+ years)
Estimated Costs:	Low
Financing Mechanisms:	Grant funding
Indicator:	Designated staff person to monitor best practices in growth management planning

11.3: Develop partnerships with other growing installations.	
Responsible Party: Alliance for Fort Gordon/ CSRA Regional Commission	**Priority:** Group One
Discussion: Coordinate with the local governments around other growing installations to share strategies and learn from each other.	
Timeline:	Long-term (5+ years)
Estimated Costs:	Low
Financing Mechanisms:	Grant funding
Indicator:	Partnership plan, list of installations and surrounding local governments

11.4: Engage in continuous coordination and planning with local governments and organizations who lead in the various Growth Management Plan topics.	
Responsible Party: Alliance for Fort Gordon/ CSRA - RC	**Priority:** Group One
Discussion: Establish coordination procedures to work with local governments and organizations within the Study Area. A working group with these entities, broken down into smaller technical groups can keep the members informed, ensure that strategies are shared, and reduce duplication of efforts.	
Timeline:	Long-term (5+ years)
Estimated Costs:	Low
Financing Mechanisms:	Grant funding
Indicator:	Established working group for the Growth Management Plan

11.5: Prepare model Growth Management Plan language for local and regional plans.	
Responsible Party: Alliance for Fort Gordon/ CSRA Regional Commission	**Priority:** Group One
Discussion: Work with staff inside the CSRA – RC or hire a consultant to prepare model Growth Management Plan language for local governments in consider including in their plans. This model language will ensure that all local governments are working to meet the recommendations of the Growth Management Plan in a coordinated and uniform way.	
Timeline:	Short-term (5+ years)
Estimated Costs:	Low
Financing Mechanisms:	Grant funding
Indicator:	Report containing model language

11.6: Prepare and maintain a permanent GMP implementation website to serve as an information clearing house for stakeholders and the public.	
Responsible Party: CSRA Regional Commission	**Priority:** Group One
Discussion: A permanent website, hosted through the Alliance or CSRA-RC will allow easy access to all of the documents and videos created for the Growth Management Plan. It will also serve as a convenient way to reach the public and make documents created by implementation activities accessible to the public.	
Timeline:	Ongoing
Estimated Costs:	Low
Financing Mechanisms:	Grant funding and Local Government
Indicator:	Establish permanent website

11.7: Conduct recurring public engagement activities on the status of the GMP's implementation.	
Responsible Party: Alliance for Fort Gordon/ CSRA - RC	**Priority:** Group One
Discussion: Establishing a regular or milestone-based schedule for recurring public engagement will allow the public to keep up with the progress of the Growth Management plan, and it will allow those implementing the plan to obtain public input when needed.	
Timeline:	Long-term (5+ years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grants to hire consultants, or regular staff costs if done in-house
Indicator:	Number of public engagement activities

11.8: Develop an annual implementation status report.	
Responsible Party: CSRA Regional Commission	**Priority:** Group One
Discussion: Compiling an annual status report will serve two functions: it will keep stakeholders up to date on implementation progress, and it will serve as a record of what was accomplished in the implementation of the growth management plan. Both of these functions are important to the implementation efforts – notification of progress made can keep interest and motivation going, both of which will impact the plan's success.	
Timeline:	Ongoing
Estimated Costs:	Low
Financing Mechanisms:	Grant funding
Indicator:	Annual status report

11.9: Update the Growth Management Plan and Quality of Life data annually to measure progress.	
Responsible Party: CSRA Regional Commission	**Priority:** Group One
Discussion: Regular updates to selected metrics can provide an indicator of the Growth Management Plan's success. This data is important to see if the recommended strategies are having the desired effect within the Study Area and to keep tabs on trends in the area to determine if recommendations are still valid or need to be adjusted to meet changing needs.	
Timeline:	Ongoing
Estimated Costs:	Moderate, depending upon data gathered and its presentation
Financing Mechanisms:	Grant funding
Indicator:	Updated data as part of the status report in Strategy 11.8

11.1.2 Priority Group Two

Transportation

3.1 – 3.3: Improvements to Gordon Highway and Jimmie Dyess Parkway/7th Avenue (Gate 1)	
Responsible Party: Augusta MPO, County Government	**Priority:** Group Two
Discussion: Construct a third eastbound turn lane; extend the northbound left-turn lane by 300 feet; Convert the southbound right-turn lane to a free-flowing movement.	
Timeline:	Within 5 years
Estimated Costs:	$1,895,000 to $2,235,000
Financing Mechanisms:	Federal, State, and Local Transportation funds
Indicator:	Inclusion in the MPO's schedule of improvements or T-SPLOST*

*Note: T-SPLOST requires 25% local discretionary funds be provided by the County where the project is located.

3.4 – 3.5: Improvements to Gordon Highway and Gate 6	
Responsible Party: Augusta MPO; County Government	**Priority:** Group Two
Discussion: Construct a third westbound exclusive left-turn; Construct a new interchange and connector from I-20 to Gate 6	
Timeline:	Within 10 years
Estimated Costs:	$2,085,000 to $2,450,000
Financing Mechanisms:	Federal, State, and Local Transportation funds
Indicator:	Inclusion in the MPO's schedule of improvements or T-SLOST

Public Services – Fire and EMS

4.2: Conduct public service announcements and a public relations campaign in local media to advertise the needs of local volunteer fire departments.	
Responsible Party: Local Fire Departments	**Priority:** Group Two
Discussion: Create a campaign to get the word out about the local volunteer fire department's need for volunteers.	
Timeline:	Ongoing
Estimated Costs:	Costs for this recommendation should be minimal, limited to printing materials for sending out or time for sending out emails and talking to local media.
Financing Mechanisms:	Local volunteer fire department's existing budgets
Indicator:	Public service announcements or news stories about the local fire department's needs

4.3: Explore outreach to high schools and colleges to attract more students who may be interested in firefighting work.	
Responsible Party: Local fire departments	**Priority:** Group Two
Discussion: Create a curriculum that would allow local high school students to train as a fire fighter for school credit. These students, upon reaching the age of majority, would then be able to serve as a volunteer or attend firefighting training for a job with local fire departments.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Costs for this recommendation should be moderate, with costs associated with teaching staff and any materials needed.
Financing Mechanisms:	Local regular and volunteer fire departments' existing budgets; additional grant funds or fundraising may be needed.
Indicator:	For-credit curriculum in local high schools

4.6: Coordinate regional and local Fire Service Meetings to coordinate on community needs.	
Responsible Party: Local governments	**Priority:** Group Two
Discussion: Coordinate meetings to foster cooperative collaboration between fire departments.	
Timeline:	Ongoing
Estimated Costs:	Costs for this recommendation should be negligible, as staff responsible for scheduling meetings coordinates with other departments.
Financing Mechanisms:	If additional personnel or additional hours for existing personnel is needed, each department's typical source for salaries can be used.
Indicator:	Schedule of coordinated meetings.

4.7: Foster regional cooperative and collaborative meetings among the Fire Service and EMS providers to identify current and changing needs.	
Responsible Party: Local governments, CSRA Regional Commission	**Priority:** Group Two
Discussion: Use the regional commission to foster cooperative and collaborative meetings.	
Timeline:	Ongoing
Estimated Costs:	Costs for this recommendation should be negligible, as staff responsible for scheduling meetings coordinates with other departments, and these duties could be added to an existing staff member's duty.
Financing Mechanisms:	If additional personnel or additional hours for existing personnel is needed, each department's typical source for salaries can be used; grant funding.
Indicator:	Schedule of coordinated meetings.

4.8: Apply for grants, including the Community Policing Development Program Grant, the Community Policing Development Microgrant, the COPs hiring program grant, and the Local Law Enforcement Block Grant Programs.	
Responsible Party: Local law enforcement agencies; CSRA Regional Commission	**Priority:** Group Two
Discussion: Administered by the Department of Justice, the Community Policing Development Program Grant funds projects that develop knowledge, increase awareness of effective community policing strategies, increases the skills and abilities of law enforcement and community partners, and increases the number of law enforcement agencies using proven community policing practices. The Community Policing Development Microgrant Program, administered by the Department of Justice, offers grants to develop and test innovative policing strategies and build knowledge about best practices. The Community Oriented Policing Services (COPS) program at the Department of Justice provides grants to hire entry-level career law enforcement officers to preserve jobs, increase community policing capabilities, and support crime prevention efforts. The Local Law Enforcement Block Grant Programs provides fund to local governments to support projects that reduce crime and improve public safety.	
Timeline:	Annual opportunity to apply
Estimated Costs:	Costs for this recommendation should be minimal, as existing staff who apply for grants on behalf of local law enforcement agencies can add this grant to their actives.
Financing Mechanisms:	If additional personnel or additional hours for existing personnel is needed, each agency's typical source for salaries can be used; grant funding.
Indicator:	Completed grant application.

4.9: Partner with local colleges and universities to create more opportunities for experience to be accepted as college credit. Explore outreach to high schools and colleges to attract more students who may be interested in police work.	
Responsible Party: Local Law Enforcement Agencies	**Priority:** Group Two
Discussion: Rather than go through an involved process only for new employees to discover they don't like policing, ride-alongs and outreach to secondary schools and colleges can increase the likelihood of reaching candidates whose interest in the job would be maintained.	
Timeline:	Ongoing
Estimated Costs:	Costs for this recommendation should be minimal, as existing staff who perform community outreach can add these tasks to their duties.
Financing Mechanisms:	General revenues or grant funding
Indicator:	Outreach events and materials and identification of potential police recruits

4.10: Identify additional compensation or on-the-job perks that may help to retain officers.	
Responsible Party: Local Law Enforcement Agencies	**Priority:** Group Two
Discussion: Out-of-the-box benefits, such as student loan repayment, conversion of experience for college credit, and sign-on bonuses provide the opportunity to gain training without incurring debt. Relaxation of candidate qualifiers, such as allowing visible tattoos, may broaden the applicant pool. Coordination with local secondary education institutions will be necessary for the conversion of experience as college credit.	
Timeline:	Ongoing
Estimated Costs:	Costs for this recommendation should be moderate, consisting of repayment of student loans and sign-on bonuses. Relaxation of candidate qualifiers should require no additional costs.
Financing Mechanisms:	General revenues or grant funding
Indicator:	Programs concerning the repayment of student loans, conversion of experience for college credit, sign-on bonuses, and new candidate qualifiers.

4.11: Explore work-life balance initiatives that will attract and retain officers.	
Responsible Party: Local Law Enforcement Agencies	**Priority:** Group Two
Discussion: Work-life balance initiatives can include part-time work and training for those who are balancing childcare or other responsibilities and online training to remove the hardship of being away from home for weeks at a time. Non-monetary benefits, such as being able to bring a squad car home, having a uniform allowance, or allowing relaxed uniforms in appropriate circumstances can make the job more attractive.	
Timeline:	Ongoing
Estimated Costs:	Costs for this recommendation should be minimal to moderate, depending on the costs of developing or purchasing an online training program.
Financing Mechanisms:	General revenues or grant funding
Indicator:	Development of work-life balance initiatives for each agency

4.13: Perform a workload-based analysis to determine the right number of officers and the most efficient way to deploy them.	
Responsible Party: Local Law Enforcement Agencies	**Priority:** Group Two
Discussion: Perform a workload-based analysis to determine that the police department has the appropriate number of officers and that they are deployed effectively.	
Timeline:	Ongoing
Estimated Costs:	Costs for this recommendation should be moderate, depending on the costs of running the analysis
Financing Mechanisms:	General revenues or grant funding
Indicator:	Results of the analysis

Employment, Economic Development, and Workforce Development

5.1: Create a regional association for defense contractors	
Responsible Party: CSRA Alliance for Fort Gordon	**Priority:** Group Two
Discussion: Regional opportunities likely exist to connect large and small employers working cooperatively within the region to address industry challenges, supply chain gaps, and defense contracting needs. A regional association for defense contractors may have a similar function to the CSRA Alliance for Fort Gordon but could maintain a much broader mission that aims to work with defense contractors across all industry sectors.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Moderate
Financing Mechanisms:	The association for defense contractors could be partially funded through memberships and structured similarly to other local and state defense associations; grant funding.
Indicator:	Establishment of the regional association

5.2: Identify expansion opportunities for existing businesses	
Responsible Party: CSRA Alliance for Fort Gordon	**Priority:** Group Two
Discussion: Opportunities likely exist to work with local economic developers and build upon existing business retention and expansion programs (BRE) to help identify opportunities for suppliers within target industries. BRE programs help reduce the risk of businesses leaving or downsizing because these businesses typically have strong community ties.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Local funding for Economic Development, U.S. Department of Commerce, U.S. Department of Commerce International Trade Administration, U.S. Department of Labor, U.S. Small Business Administration, U.S. Small Business Administration Office of International Trade, Business Retention & Expansion International.
Indicator:	Plan to conduct business expansion activities

5.3: Develop or align a business attraction strategy focusing on target industries	
Responsible Party: CSRA Alliance for Fort Gordon	**Priority:** Group Two
Discussion: A business attraction strategy geared toward target industries could help build and diversify the region's economic base.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Local funding for economic development, local government, U.S. Department of Commerce, U.S. Department of Commerce International Trade Administration, U.S. Department of Labor, U.S. Small Business Administration, U.S. Small Business Administration Office of International Trade, Business Retention and Expansion International.
Indicator:	Report outlining the business attraction strategies and activities

5.5: Identify sector partnerships to align resources and promote collaboration.	
Responsible Party: CSRA Alliance for Fort Gordon; CSRA Regional Commission	**Priority:** Group Two
Discussion: Sector Partnerships are an employer-driven model for aligning resources and promoting collaboration among educational institutions, workforce service providers, and community-based organizations to meet the needs of business. They offer a way to simultaneously meet business' need for a robust and qualified workforce, while also expanding access to the skills that lead to jobs with family sustaining wages for workers.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Varies, depending upon projects
Financing Mechanisms:	Funding for projects, rather than the establishment of the partnership is recommended. Staff from the Alliance or the CSRA Regional Commission could fill in where needed to get the partnership off the ground. Additional funding could include Economic Development Authorities or the Alliance.
Indicator:	Establishment of a partnership group

5.6: Identify work-based learning activities that collaboratively engage employers and training providers in providing structured learning experiences.	
Responsible Party: CSRA Alliance for Fort Gordon	**Priority:** Group Two
Discussion: Work-based learning, referred to as WBL, is the "umbrella" term used to identify activities that collaboratively engage employers and training providers in providing structured learning experiences for individuals, particularly students. Types of work-based learning include internships, cooperative education, on-the-job training, work-experience, transitional jobs, pre-apprenticeships, and apprenticeships. These experiences focus on assisting individuals in developing broad, transferable skills for secondary and post-secondary education and the workplace; often translating into employment opportunities that offer livable wages.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Varies, depending upon projects
Financing Mechanisms:	Leverage state and federal grants with private and endowed funds
Indicator:	Development of a group of activities

Education

6.2: Raise performance on state and federal accountability scorecards by using the Georgia Department of Education model for improving supportive learning environments.	
Responsible Party: School Boards	**Priority:** Group Two
Discussion: One of the top criteria in attracting talent to support the Fort Gordon "Cyber District" is the availability of quality education. Families want to live in communities with higher performing schools. It is recommended that schools work towards increasing school performance. The Georgia Department of Education has a process to improve schools. This process includes identifying needs, selecting interventions, planning implementation, implementing the plan, and examining progress.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Varies, depending on interventions selected
Financing Mechanisms:	Regular school board budget, grants
Indicator:	Implementation plan

6.3: Foster collaboration between schools that have a cyber curriculum and those that don't to share how the model curriculum is taught.

Responsible Party: School Boards	**Priority:** Group Two

Discussion: While a Cyber curriculum is taught in many of the study area schools, it is not yet available in all of them. It is recommended that school districts consider expanding Cyber curriculum teachings to those schools that do not yet offer it in their curriculum to create easy access. This Cyber curriculum provides a head start for students wishing to pursue a Cyber career and also trains a future local Cyber workforce.

Timeline:	Short-term (1-3 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Regular school board budget, grants
Indicator:	Plan to increase cyber education offerings

6.4: During annual school facility plan reviews, review technology as upgrades can improve operational efficiency.

Responsible Party: School Boards	**Priority:** Group Two

Discussion: Invest in technology upgrades to improve operational efficiency.

Timeline:	Ongoing
Estimated Costs:	Moderate
Financing Mechanisms:	Regular School board budget, grants
Indicator:	Schedule of technology improvements included in school budgets

6.5: Continue to recruit teachers at in state and out of state teaching colleges.

Responsible Party: School Boards	**Priority:** Group Two

Discussion: According to efficiency reports, strategic plans, and interviews with school board staff, there is a need for additional teachers in the Study Area. Recommend the continuation of efforts to recruit teachers at in-state and out-of-state teaching colleges.

Timeline:	Short-term (1-3 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Regular school board budget, grants
Indicator:	Plans for recruitment of teachers

6.6: Raise awareness of all study area schools of available education support programs for military families, e.g., Purple Star school program.

Responsible Party: School Boards	**Priority:** Group Two

Discussion: Military families face unique circumstances with frequent moves resulting in lost credits, missed lessons, and impacts on grading and graduation requirements. Raise awareness in all Study Area schools of available education support programs for military families, e.g., Purple Star school program.

Timeline:	Short-term (1-3 years)
Estimated Costs:	Minimal
Financing Mechanisms:	Regular school board budget, grants
Indicator:	Plan for education of local schools on military programs

6.8: Apply for charitable foundation and organization grant opportunities that support education-related objectives. Beyond standard federal funding, search for additional grant opportunities.

Responsible Party: School Boards	**Priority:** Group Two

Discussion: Thousands of private foundations, corporations, and associations are dedicated to education-related objectives. Among the multitude of resources for searching is the website https://www.instrumentl.com/. These grants can be used to obtain additional educational materials that may not be included in a typical school budget. Beyond Department of Education Funding, the federal CARES Act, and additional grants are available. The following is a website that provides information on such programs https://www.grants.gov/.

Timeline:	Short-term (1-3 years)
Estimated Costs:	Minimal; search for potential resources could be performed by existing school board staff.
Financing Mechanisms:	Regular school board budget, grants
Indicator:	Applications for grants for educational materials

Health Care

7.1: Develop partnerships with local employers for local residencies, internships, and other training.

Responsible Party: Health Care philanthropy, medical schools	**Priority:** Group Two

Discussion: The Study Area is currently staffed at a rate below the national average of primary care physicians on a provider per 10,000-person basis. We estimate that 22 new primary care physicians are needed now to rise to the national average, and 76 will be needed in 2030 relative to current ratios. (Note that this is primary care physicians only; by contrast, specialists are overindexed in the local area.)

Timeline:	Short-term (1-3 years)
Estimated Costs:	Minimal
Financing Mechanisms:	Grants, administered through local medical learning institutions
Indicator:	Increase in the number of primary care physicians in the Study Area

7.2: Calculate and promote true compensation by understanding and communicating cost of living differentials in the Study Area versus larger markets.

Responsible Party: Local economic development organizations	**Priority:** Group Two

Discussion: Despite having a medical school nearby, healthcare professionals interviewed noted that a shortage of primary care physicians exists because not enough medical school graduates choose to stay in the area. One reason for this is that these graduates could be getting paid more if they went to other areas of the country, and this could be further exacerbated by the pressure of high student debt. This high debt also has a strong influence over whether graduates of public medical schools will choose family and primary care. As debt increases for public medical students, their odds of practicing family care or primary care decreases. Raising awareness about the area's low cost of living could attract more physicians.

Timeline:	Mid-term (4-5 years)
Estimated Costs:	Minimal
Financing Mechanisms:	Existing economic development organization budgets for recruitment
Indicator:	Increase in the number of primary care physicians in the Study Area

7.3: Increase use of incentives (e.g., loan forgiveness) for physicians graduating locally to stay in the area. Identify partners in this effort.

Responsible Party: Health Care philanthropy, local governments	Priority: Group Two
Discussion: At the Medical College of Georgia, there are scholarships specifically for keeping students in Georgia. One scholarship is for a medical student who has matched into a primary care residency in Georgia. Another scholarship has the main goal of addressing the physician shortages in rural Georgia. Similarly, future scholarships could require that medical students get matched into a primary care residency in the Study Area. An increase in funding and direct contribution to student scholarships in other colleges and technical schools would be beneficial. These include the University of South Carolina Aiken and Aiken Technical College to name a few.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grants, local partners
Indicator:	Increase in the number of primary care physicians in the Study Area

7.4: Work with employers to increase compensation or benefits in physician recruitment and pharmacy technician and pharmacist recruitment.	
Responsible Party: Health Care philanthropy, local government	Priority: Group Two
Discussion: The Study Area is currently notably understaffed relative to the national average of pharmacists and pharmacy technicians on a basis of providers per 10,000 people, and a notable population increase will increase the problem. The number of professionals in pharmacy and pharmacy tech would need to roughly double to meet the average presence of those degrees elsewhere in Georgia and South Carolina. Increasing compensation for pharmacy technicians and pharmacists could help attract more of these professionals to the Study Area. The same strategies used to attract pharmacists and pharmacy technicians can be used to attract physicians.	
Timeline:	Long-term (5+ years)
Estimated Costs:	High
Financing Mechanisms:	Grants, local partners
Indicator:	Increase in the number of physicians, pharmacists, and pharmacy technicians in the Study Area
7.5: Increase awareness of health care career opportunities out of high school.	
Responsible Party: Local High schools, and colleges with relevant programs	Priority: Group Two
Discussion: In addition to being a doctor, there are a number of medical professional career paths. Young people with an interest in a health care career may not be aware of all the potential paths available to them. Increasing awareness of potential careers can lead to more people filling technician and other needed positions. The Study Area is notably understaffed in numerous professions such as MRI, sonogram, radiologic, and laboratory technicians, and a notable population increase will increase the problem. The number of professionals in pharmacy and pharmacy tech would need to increase by anywhere from 25 percent to 100 percent in these various technical specialties to meet the average presence of those degrees elsewhere in Georgia and South Carolina.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Low
Financing Mechanisms:	Health Care philanthropy, medical schools
Indicator:	Increase in the number of medical technology fields such as MRI, sonography, radiology, and lab tech fields.

7.8: If necessary, communicate needs to non-local hospital providers to inform them of upcoming growth opportunities.

Responsible Party: Local economic development organization	**Priority:** Group Two

Discussion: Informing local hospitals of the expected increased need will be informative so they can consider strategic expansions. Economic development officials can also be of service to inform healthcare companies of future increased demand. Expansion of Fort Gordon's medical capacity, both in terms of hospital capacity and urgent care, is also an obvious solution for part of the increased demand and will lessen burdens on other parts of the community.

Timeline:	Mid-term (4-5 years)
Estimated Costs:	Low
Financing Mechanisms:	Health Care philanthropy, medical schools, grants
Indicator:	Communication plan

7.10: Increase paramedic and first-responder capacity to address personal crisis situations, using similar strategies as seen in Strategy 7.9 for increasing the supply of medical technicians and hospital capacity.

Responsible Party: Local government, local public health departments, vocational training organizations	**Priority:** Group Two

Discussion: Expanding paramedic services, could also assist with immediate health care needs. A recent article in the Journal of the Georgia Public Health Association noted that Community Health Workers can be a valuable tool for mental health, along with physical health issues, and can also lessen burdens on other strategic issues identified in this report, such as hospital and physician capacity.

Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Local government, local health departments
Indicator:	Expanded mental health and substance abuse treatment capacity

Housing

8.1: Identify and reach out to housing and land use experts from regional counties about serving on Housing Leadership Team.

Responsible Party: CSRA Regional Commission	**Priority:** Group Two

Discussion: In the Study Area, as with most regions, housing does not have an explicit leadership group assigned with maintaining and growing the region's potential. While housing may be an issue that other regional organizations and local governments consider, there is not one regional entity guiding overall housing efforts to promote the development of all housing types and accommodate growth. Given that the housing assessment is focused on a multi-county region with communities across state boundaries, the group should include expertise from both sides of the Georgia-South Carolina border and both urban and rural communities. Expertise could be leveraged from multiple stakeholders including military, real estate development, construction, finance, community, economic development, and landowner representatives. Also, given the broad geographic region, an organization that is separated from city and local government, but directly interfaces with these entities, would be the ideal structure. The CSRA Regional Commission or Alliance for Fort Gordon could spearhead this effort to ensure time and effort is dedicated to addressing housing needs driven by rapid regional growth.

Timeline:	Short-term (1-3 years)
Estimated Costs:	Minimal; staff from the CSRA Regional Commission could add organization to their duties
Financing Mechanisms:	If additional staff time of a position is needed, regular source of staff salaries or grants
Indicator:	Outreach to housing and land use experts

8.2: After identifying members, formalize a housing leadership team spearheaded by the CSRA Regional Commission and Alliance for Fort Gordon to guide regional housing strategies.	
Responsible Party: CSRA Regional Commission, Alliance for Fort Gordon, Regional Housing Leadership Team	**Priority:** Group Two
Discussion: See discussion in Strategy 8.1.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Minimal; staff from the CSRA Regional Commission could add organization to their duties
Financing Mechanisms:	If additional staff time of a position is needed, regular source of staff salaries or grants
Indicator:	Formation of a Regional Housing Leadership Team

8.3: Conduct discussions with federal and state entities focused on housing to access funding.	
Responsible Party: Regional Housing Leadership Team	**Priority:** Group Two
Discussion: The regional housing leadership team should coordinate with state and federal entities to identify possible sources of funding for housing projects.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Minimal; staff from the CSRA-RC could add organization to their duties
Financing Mechanisms:	If additional staff time of a position is needed, regular source of staff salaries or grants
Indicator:	Outreach to state and federal housing entities

8.4: Convene local government planning officials and private developers to streamline regulations and promote desirable housing development.	
Responsible Party: Regional Housing Leadership Team	**Priority:** Group Two
Discussion: After the creation of the housing leadership team, regular meetings should be convened to develop strategies to streamline regulations that may be making developing housing more difficult. By enlisting planning officials and private developers, consensus can be reached on where regulations can be refined to allow housing to be developed while also avoiding the potential negative outcomes that the regulations are intended to prevent.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grant funding, or regular staff costs.
Indicator:	Meeting of local government officials and private developers

8.5: Encourage and facilitate conversations between property owners and developers to promote development of catalyst sites.

Responsible Party: Regional Housing Leadership Team	Priority: Group Two

Discussion: During meetings with property owners, developers, and builders, focus could initially be placed on meeting individually with property owners of land in catalyst sites about potential developments and to gauge their interest in allowing property to be acquired. A catalyst site is a location where, if redeveloped, has the potential to spur additional development, such as a high-traffic intersection located along a main corridor. If property owners indicate a willingness to dispose of land, meetings could be facilitated with these property owners and known developers who can deliver types of high-quality multi-family and workforce housing products to begin land acquisition processes. These conversations could lead to acquisition of property by regional housing, development entities and partners, which could influence the development type of these sites. Ultimately this could help promote development of housing that caters to needs of diverse growing populations.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grant funding, or regular staff costs.
Indicator:	Meeting of property owners and developers

8.7: Hold regional educational housing summits to communicate importance of best practices around land-use, zoning, and middle housing.

Responsible Party: Regional Housing Leadership Team	Priority: Group Two

Discussion: Communication of the best practices of housing development, land use, zoning, and housing types to entities in the housing industry can lead to more efficient development of the types of housing that is needed in the area. Communicating what is possible and what is needed can lead to the development of a variety of housing types at different price points.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grants or regular staff time
Indicator:	Series of housing summits

8.8: Identify land that can be specifically designated for the purpose of housing development, especially rental or multi-family developments that can better accommodate regional growth.

Responsible Party: Regional Housing Leadership Team	Priority: Group Two

Discussion: The identification of land that can be developed with needed housing types can help to streamline the development process. Notifying property owners and housing developers of the land can lead to additional housing development.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Low
Financing Mechanisms:	Grants or regular staff time
Indicator:	Portfolio of land available for different types of housing development

8.9: Work with local governments and communities to implement overlay zoning.

Responsible Party: Regional Housing Leadership Team and Local Governments	**Priority:** Group Two

Discussion: Overlay zoning is one method to direct development of larger land set asides for denser housing. Acting on priority land set asides would allow regulatory agencies to make specific rules for these larger property tracts that do not necessarily apply outside of that zone, thereby significantly easing the entitlement and development process in that location. Density bonus programs is another option.

Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grant funding or regular staff costs
Indicator:	Draft overlay zoning for local governments

8.10: Review and reform existing land use and zoning regulation around best practices to promote development of middle housing.

Responsible Party: Regional Housing Leadership Team and Local Governments	**Priority:** Group Two

Discussion: Missing middle housing includes buildings with multiple units that are compatible in scale with single family houses. Types of developments are scaled between single family homes and mid-rise apartments and could include duplexes, triplexes, fourplexes, townhouses, and medium-sized multiplexes. In many communities, this style and scale of housing is missing. This is likely the case for many communities in the region because there is somewhat limited housing diversity, given that the region mostly contains detached single-family homes. Missing middle housing can provide attainable options that creates additional housing diversity in the region and addresses the needs of a wider range of existing and future residents.

Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grants or regular staff time
Indicator:	Draft land use and zoning regulations for local governments

8.12: Work with partners to implement strategic land cost reduction programs.

Responsible Party: Local Governments	**Priority:** Group Two

Discussion: Land costs and preparation serve as a significant upfront cost. This cost often makes it difficult for attainable housing projects to be profitable. For land owned, or strategically acquired by active partners, reduction or deferral of the land and preparation cost burden could help encourage attainable housing projects. This can be achieved through various local government financing tools on various scales of development, including grants, special-purpose local tax option sales tax, planned capital improvement projects, or incentives for developers to make land improvements in Enterprise Zones through property tax abatement.

Timeline:	Long-term (5+ years)
Estimated Costs:	High
Financing Mechanisms:	Grants or tax revenues
Indicator:	Implemented land cost reduction program

8.13: Provide a resource kit for local builders to better utilize state, federal, and local incentives to enable attainable housing developments.	
Responsible Party: Regional Housing Leadership Team	**Priority:** Group Two
Discussion: Local communities could utilize these strategies, and further build upon them, to provide a resource kit for local builders to better utilize state, federal, and local incentives to enable attainable housing developments.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Low
Financing Mechanisms:	Grants or staff time
Indicator:	Completed resource kit

8.14: Identify opportunities to revise restrictive zoning language to allow for denser housing development like duplexes, attached townhomes, condominiums, and apartments.	
Responsible Party: Regional Housing Leadership Team and Local Governments	**Priority:** Group Two
Discussion: Increased land-use regulation and zoning are associated with rising home prices across the country. Revising restrictive zoning language to allow for denser housing development such as duplexes, attached townhomes, condominiums, and apartments will allow for the development of attainable housing. Changes could include reducing minimum lot size requirements, allowing for irregularly shaped lots to be developed for housing, increasing mixed-use zoning, and increasing development growth caps. Inclusionary zoning programs tie in affordable housing development to market-rate housing by requiring or incentivizing specific percentages of united to be affordable for established household incomes. Density bonus programs are another option.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grants or staff time
Indicator:	Draft revisions to zoning language

8.15: Assess rural development areas and determine areas at risk or facing ad hoc housing and commercial real estate with inefficient land-use patterns.

Responsible Party: Local Departments	Priority: Group Two

Discussion: It is important to consider a variety of housing types to meet the needs of the future population. A more rural setting, lower cost housing, less dense development, and tight-knit communities are appealing, and many residents are living and moving to more rural portions of the region. Rural locations can be susceptible to lower quality development because smaller communities generally do not have the planning capacity of more urban locations. This could lead to the development of ad hoc housing and commercial real estate with inefficient land-use patterns due to the immense growth pressure facing the region. Ultimately, this unorganized development could detract from these rural settings. Furthermore, Study Area communities need to be mindful of growth that could encroach on the Installation, which would create challenges for its mission. Substantial housing development near the Installation is not conducive for military operations.

Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grants or staff time
Indicator:	Report identifying at-risk areas

8.16: Identify areas for rural housing transition zones for development guided by rural land use policies.

Responsible Party: Local Departments	Priority: Group Two

Discussion: The creation of planned and well-defined housing transition zones could help to attract families and growth to the region's smaller communities while offering more attainable housing choices to the broader housing market. Transition zones would identify land that would be designated for housing development guided by rural land-use policies.

Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grants or staff time
Indicator:	Report identifying transition zones

8.17: Establish rural land use policies in areas identified as transition zones.

Responsible Party: Local Departments	Priority: Group Two

Discussion: Rural land-use policies would establish standards intended to improve the quality of housing to be developed, preserve open space, and make it easier to serve the regional housing community with utilities and infrastructure. Land-use planning and development of these zones would consider development constraints around the Installation.

Timeline:	Long-term (5+ years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grants or staff time
Indicator:	Draft land use policies

8.20: Form strategies and plans around leveraging nontraditional housing incentives including the development of investment prospectuses.

Responsible Party: Local Departments	Priority: Group Two

Discussion: Opportunity Zones could be an incentive used to activate investment in more challenged and underserved markets within the region. With a well-conceived strategy, the region could leverage Opportunity Zones to promote investment in distressed census tracts. The incentive allows a deferral and reduction in capital gains thus facilitating investment in business growth, housing improvements, and infrastructure updates. Opportunity Zones promote economic development by providing federal capital gains tax advantages for investments made in these areas. Investors can realize deferral and reduction of capital gains taxes in investments held for at least 5 years with additional incentives available for investments maintained in Opportunity Zones for 7 and 10 years. This incentive can help address funding gaps in residential projects in areas where residential markets are less established.

Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grants or staff time
Indicator:	Identification of strategies and plans

Childcare

9.1: Incentivize the expansion of operating hours of current off-post centers and/or on-base family child development centers to operate 24 hours (or to the needs of the parent).

Responsible Party: Fort Gordon	Priority: Group Two

Discussion: Some military families work early morning or overnight shifts, when most childcare centers are closed. This is a need that is not currently being met within the Study Area.

Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	See Childcare chapter for potential funding sources.
Indicator:	Incentive programs for extended childcare hours, on-Installation and off.

9.2: Partner with other off-post centers and childcare providers as "extensions" to military childcare that have the same policies and regulations as onsite centers.

Responsible Party: Fort Gordon	Priority: Group Two

Discussion: Waitlists for on-post centers could be anywhere from a few weeks to several months. There are three CDCs on the Installation that care for children under 6 years old. Policies and standards of care for on-installation childcare facilities are higher than those of the state. Partner facilities would have to meet these requirements.

Timeline:	Short-term (1-3 years)
Estimated Costs:	Low
Financing Mechanisms:	See Childcare chapter for potential funding sources.
Indicator:	Partnership plan for working with off-installation childcare facilities.

9.4: Communicate with new arrivals to facilitate placement of children.	
Responsible Party: Fort Gordon	**Priority:** Group Two
Discussion: For child development centers (CDCs) on-post, the cost of childcare is usually based on the family's total income. Interviewees commented on how waitlists for on-post centers could be anywhere from a few weeks to several months, according to conversations they have had with on-post parents. Families should also be made aware of licensed facilities in the area.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Low
Financing Mechanisms:	See Childcare chapter for potential funding sources.
Indicator:	Process for working with new families to help them find childcare in the area

9.5: Consider pilot programs such as the In-Home Childcare Fee Assistance Pilot to help military families.	
Responsible Party: Fort Gordon	**Priority:** Group Two
Discussion: The DoD In-Home Childcare (IHCC) Fee Assistance Pilot Program is a program that serves military families whose full-time childcare needs are best met by an in-home childcare provider. For qualifying families and providers offered enrollment, the IHCC pilot program will provide fee assistance towards full-time in-home childcare costs for a minimum of 30 hours to a maximum of 60 hours of childcare weekly. Eligible families are responsible for finding and employing their in-home childcare provider to care for their children. This program is not currently available at Fort Gordon.	
Timeline:	Long-term (5+ years)
Estimated Costs:	Moderate
Financing Mechanisms:	See Childcare chapter for potential funding sources.
Indicator:	Creation and trial of pilot programs.

9.8: Provide support for small businesses to increase competitiveness and retention.	
Responsible Party: State/Local Governments	**Priority:** Group Two
Discussion: Childcare allows households with two working parents to function. Supporting small businesses meeting this need is important to the area's economy and quality of life. Programs offering training, grants, and other financial incentives are needed.	
Timeline:	Long-term (5+ years)
Estimated Costs:	High
Financing Mechanisms:	See Childcare chapter for potential funding sources.
Indicator:	Plan to assist small businesses

9.9: Support the addition or enhancement of benefits for workers.	
Responsible Party: Fort Gordon	**Priority:** Group Two
Discussion: High turnover and retention challenges among childcare workers are historical concerns nationwide. Policy experts suggest increasing wages of childcare providers to at least those of teachers with similar education levels at preschool and kindergarten levels. Based on the profiles of the average teacher and childcare worker, there is a difference of approximately $6,000 dollars in median yearly earnings, with preschool teachers working a median of ten more hours a week.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	High
Financing Mechanisms:	See Childcare chapter for potential funding sources.
Indicator:	Plan for providing support

9.10: Promote existing and/or enhanced state funded scholarships that will fully or partially pay for the education of childcare workers.	
Responsible Party: Fort Gordon	**Priority:** Group Two
Discussion:	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Low
Financing Mechanisms:	See Childcare chapter for potential funding sources.
Indicator:	Plan for promotional activities and materials

9.12: Educate current babysitters/nannies or unlicensed providers about the benefits of becoming licensed and certified and working with Bright from the Start to be quality rated.	
Responsible Party: Local Government/Childcare Industry	**Priority:** Group Two
Discussion: Many professional development opportunities and resources are available to current childcare providers. There are also resources for residents with aspirations to become licensed providers. Scholarships and other financial assistance are available through state programs such as DECAL for current and future childcare workers that want to be certified and/or acquire a college degree. Educating current babysitters/nannies or unlicensed providers about the benefits of becoming licensed and certified through working with Bright from the Start (also known as DECAL) to be quality rated would be beneficial to everyone.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Low
Financing Mechanisms:	See Childcare chapter for potential funding sources.
Indicator:	Education materials for unlicensed providers

Infrastructure

10.1: Work with communities within Augusta-Richmond, Burke, Columbia, Lincoln, McDuffie, Aiken, and Edgefield Counties to determine where areas of growth are to occur and develop potable water and sanitary sewer master plans to ensure that infrastructure is available where and when it is needed.	
Responsible Party: CSRA Regional Commission for Georgia Counties and Lower Savannah Council of Governments (LSCOG) for South Carolina Counties	**Priority:** Group Two
Discussion: Coordinate with local governments in the relevant counties to ensure that there is adequate potable water and sanitary sewer capacity to serve expected population growth.	
Timeline:	Long-term (5+ years)
Estimated Costs:	Low
Financing Mechanisms:	Infrastructure grants and regular infrastructure funding sources
Indicator:	Coordination plan for local government utility providers

10.2: Work with communities within Augusta-Richmond, Burke, Columbia, Lincoln, McDuffie, Aiken, and Edgefield Counties to identify and procure funding to support the potable water and sanitary sewer master plans.	
Responsible Party: CSRA Regional Commission for Georgia Counties and LSCOG for South Carolina Counites	**Priority:** Group Two
Discussion: Coordination with local governments in the relevant counties is needed to ensure that there is adequate funding to assist in implementing potable water and sanitary sewer master plans.	
Timeline:	Long-term (5+ years)
Estimated Costs:	High
Financing Mechanisms:	Infrastructure grants and regular infrastructure funding sources
Indicator:	Coordination plan for local government utility providers

11.1.3 Priority Group Three

Transportation

3.7: Construct a new connector roadway from I-20 to Gate 6	
Responsible Party: Augusta MPO; County Government	**Priority:** Group Three
Discussion: Columbia County has determined that a new interchange and connector road between I-20 and Gate 6 is a way to eliminate traffic congestion at that gate.	
Timeline:	Long-term (5+ years)
Estimated Costs:	High
Financing Mechanisms:	GDOT, USDOT
Indicator:	Constructed connector roadway between exit described in Recommendation 3.5 and Gate 6

Health Care

7.6: Offer financial aid or other incentives for students to pursue medical technician fields. Identify partners in this effort.	
Responsible Party: Health Care philanthropy, local government	**Priority:** Group Three
Discussion: In addition to being a doctor, there are a number of medical professional career paths. Young people with an interest in a health care career may not be aware of all the potential paths available to them. Increasing awareness of potential careers can lead to more people filling technician and other needed positions. the Study Area is currently notably understaffed in numerous professions such as MRI, sonogram, radiologic, and laboratory technicians, and a notable population increase will increase the problem. The number of professionals in pharmacy and pharmacy tech would need to increase by anywhere from 25 percent to 100 percent in these various technical specialties to meet the average presence of those degrees elsewhere in Georgia and South Carolina.	
Timeline:	Short-term (1-3 years)
Estimated Costs:	Low
Financing Mechanisms:	Health Care philanthropy, medical schools, grants
Indicator:	Increase in the number of medical technology fields such as MRI, sonography, radiology, and lab tech fields.

Housing

8.11: Work with regional communities to implement a cost reduction program for builders/developers.	
Responsible Party: Local Governments	**Priority:** Group Three
Discussion: A cost reduction program is a public policy program that reduces the cost of developing attainable housing. This may include development line items such as permit fee reductions, impact fee waivers, and utility improvement and hook-up fee reductions. In some cases, the costs may be reduced or deferred until after the completion of the project, thus reducing the amount of debt required during the construction period.	
Timeline:	Mid-term (4-5 years)
Estimated Costs:	Moderate
Financing Mechanisms:	Grants or regular staff time
Indicator:	Implementation of a cost reduction program

11.2 Monitoring Plan

To ensure that Study Area communities continue to thrive, the recommendations within this chapter need to be implemented. Advisory Group members are ideally suited to serving in an important capacity to implement these recommendations. Composed of members from the CSRA Regional Commission, the Alliance for Fort Gordon, and other stakeholders, the Advisory Group can transition to an Implementation Group after the GMP is finalized and adopted. This group is tasked with implementation activities and ensures that implementation stays on track.

The Implementation Group can also function as a forum for continued communication and sharing of information and current events associated with the GMP after it is completed. As part of its activities, the Implementation Group can formalize the existing channels of communication and add additional ones to

increase effectiveness and ensure that the channels remain open in the event of a change of staff at either the CSRA Regional Commission or local governments. Additional areas of communication could include websites, social media links, a list of points of contact for both the commission and local governments, and standardized methods of contact and response times. A communication guide could provide new personnel with the tools needed to ensure continued communication. Implementation recommendations are included in Priority Group I (section 11.1.1 of this chapter) and include the formation of an Implementation Group as well as data gathering and coordination activities.

11.3 Metrics

To monitor the success of the GMP and to keep track of trends in the Study Area, key metrics to gauge the health of the community should be monitored. For example, keeping track of school capacity and performance metrics at Study Area schools would enable the Implementation Group to measure the community's school's ability to serve the population. Metrics should be publicly available and easily accessible. Staff at the CSRA Regional Commission, serving as staff to the GMP Implementation Group, could be charged with obtaining these metrics and providing an annual report to the Implementation Group. Included in Priority Group I (Section 11.1.1 of this chapter) is recommendation 11.9: Update Growth Management Plan and Quality of Life data annually to measure progress. While the exact metrics and their sources should be defined by the Implementation Group after their formation, with input from staff regarding what is available and accessible, a list of potential metrics and their sources is included in Table 11.1, below.

Table 11.1: Potential Metrics for GMP Implementation Monitoring

Metric	Source	What is being measured
Population		
Base Personnel	Fort Gordon	Factors related to population growth
MSA Population Estimates	American Community Survey	Population growth
Transportation		
Traffic Counts	Surveying Service	Traffic volume
ARTS Long Range Transportation Plan	ARTS MPO	Planned transportation improvements
Public Services		
Fire station drive time analysis	Staff GIS analysis	Gaps in response time coverage
Number of police officers	Local police departments	Maintenance of existing officer ratios
Employment, Economic Development, and Workforce Development		
Current Jobs by NAICS codes	Economic modeling statistics consultants	Changes in economic base
Jobs in targeted industry groups	Economic modeling statistics consultants	Growth in targeted Industries
Education		
CCRPI Scores	Georgia School Districts	College preparedness
School Report Cards	South Carolina Board of Education	Student performance
Available Instructional Spaces	School Districts	School Capacity
Health Care		

| Metric	Source	What is being measured
Health Care Professionals by type per 10,000 people for Study Area, Georgia, South Carolina, and the US	American Community Survey	Density Index of health care professionals
Housing		
Number of housing units by type	American Community Survey	Housing stock
Vacancy rates	American Community Survey	Vacant housing
Occupancy type	American Community Survey	Housing characteristics
Mortgage and rent costs	American Community Survey	Housing costs
Income	American Community Survey	Housing affordability
Childcare		
Number of childcare businesses	American Community Survey	Retention and expansion of childcare industry in Study Area
Number of childcare workers	American Community Survey	Estimation of childcare capacity
Infrastructure		
Capital Improvements Plans	Study Area local governments	Potable water and sanitary sewer expansion projects

Appendices

APPENDIX A
PUBLIC FACILITIES STATISTICAL INFORMATION

Excerpt of the Fire Marshall Portal of Services Dashboard for Aiken County[1]

Source: South Carolina State Fire

Excerpt of the Fire Marshall Portal of Services Dashboard for Edgefield County[2]
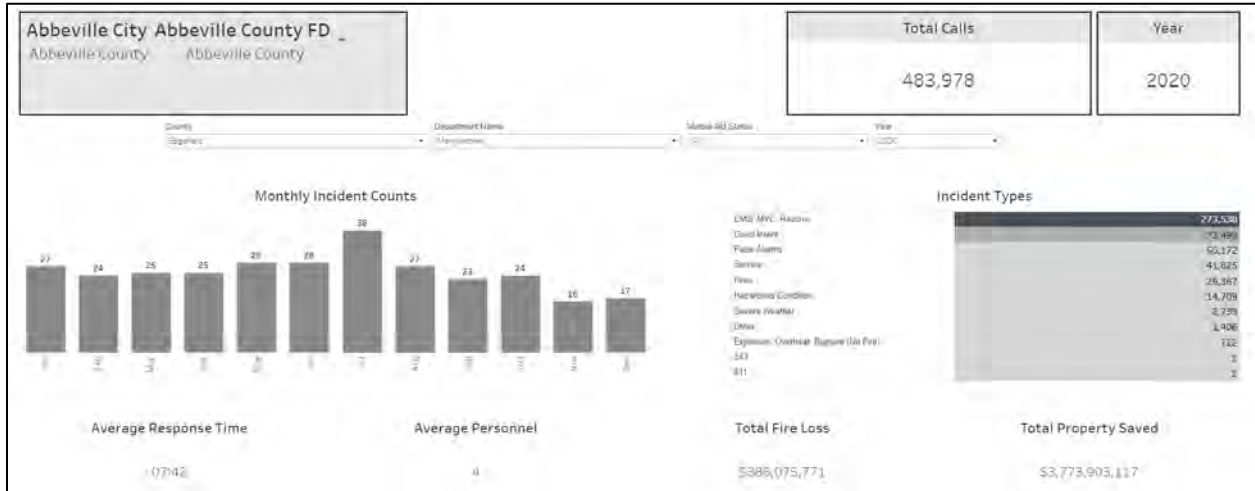
Source: South Carolina State Fire

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[1] Fire Marshall Portal of Services. https://fire.llr.sc.gov/Portal/OnePercentReporting.aspx/. Retrieved June 14, 2021.
[2] Fire Marshall Portal of Services. https://fire.llr.sc.gov/Portal/OnePercentReporting.aspx/. Retrieved June 14, 2021.

	2018	2019	2020	Grand Total
Aiken	**4577**	**5037**	**5521**	**15135**
Fires	577	587	518	1682
Overheat/Explosion	6	6	12	24
Medical Calls/MVC	2521	2973	3337	8831
Hazardous Conditions	143	147	140	430
Service Calls	172	118	190	480
Good Intent	431	508	631	1570
False Alarms	680	663	649	1992
Severe Weather	42	25	30	97
Special	3	9	14	26
(blank)	2	1		3
Edgefield	**373**	**267**	**267**	**907**
Fires	35	30	19	84
Overheat/Explosion			1	1
Medical Calls/MVC	189	132	129	450
Hazardous Conditions	40	28	18	86
Severe Weather	10	14	13	37
Good Intent	42	31	36	109
False Alarms	46	32	29	107
Severe Weather	10		22	32
(blank)	1			1
Grand Total	**4950**	**5304**	**5788**	**16042**

Property Loss Totals for each Aiken and Edgefield County

	2018	2019	2020
Aiken	2,584,235	3,609,522	1,943,559
Edgefield	407,700	150,000	105,335

Civilian Injuries in Fire

	2018	2019	2020
Aiken	3	5	10
Edgefield	1	1	1

Civilian Fire Deaths

	2018	2019	2020
Aiken	6	1	5
Edgefield	1	0	3

APPENDIX B
PUBLIC FACILITIES STAKEHOLDER LIST

County/State Agency	Contact	Title
Augusta-Richmond	Jason DeHart	Public Information Officer
Burke	Steve Mathews	Fire Chief
Burke	Amylia Mobley-Lester	Public Information Officer & Chief Administrative Officer
Columbia	Jeremy Paschal	Deputy Fire Chief
Lincoln	Casey Broom	Director of Office of Emergency Services
McDuffie	John Thigpen	Deputy Fire Chief
Aiken	Fred Wilhite	Deputy Emergency Manager
Edgefield	Susie Spurgeon	EMA Director
Georgia Fire Fighting Standards & Training	David Cummings	Compliance Manager
State Fire – South Carolina	Samantha Quizon	SC State Fire Program Manager
City of Harlem	Matthew Perkins	Deputy Chief of Police/Operations Manager

Pareto Principle

Largest Industries and Firms

The Pareto Principle was applied to see what the concentration of jobs were in 2020 by industry. The Pareto Principle seems to be satisfied here, as there is an extremely strong concentration of jobs being chosen. The largest industry was Federal Government (Military), and this is to be expected.
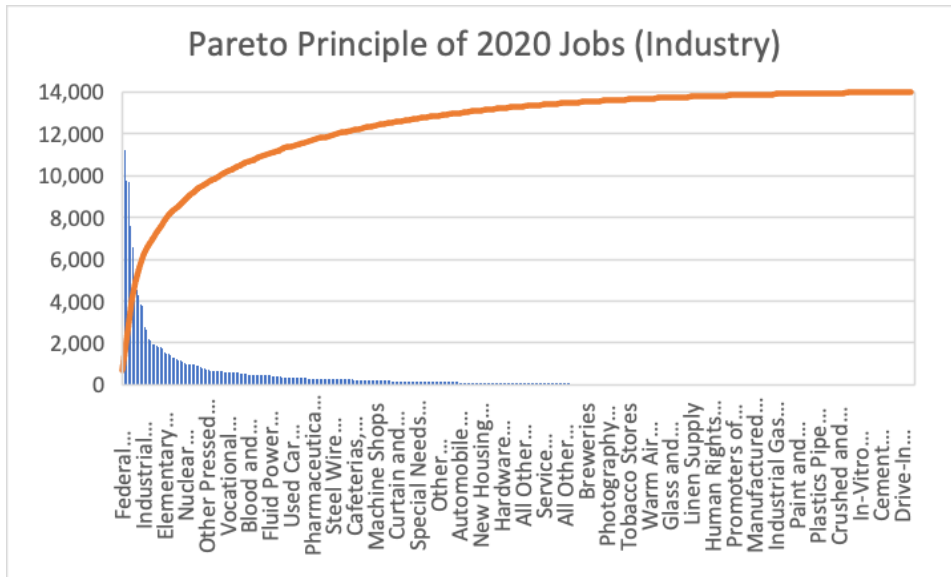
Figure 5.3: Pareto Principle of 2020 Jobs. Source Emsi 2021.3, August 2021

Among growing and shrinking sectors, the Pareto Principle applies as well, as there is a concentration in growing sectors. In shrinking sectors, the same pattern holds true. These indicate that the growth and decline of jobs in an industry is concentrated among a select few industries. However, this concentration is not as strong in the shrinking sectors. This could present problems for Fort Gordon when there is economic growth, as growth means that a handful of industries reap the benefits. This is also an issue for economic contractions, as a handful of industries would be hurt immensely by the contraction.
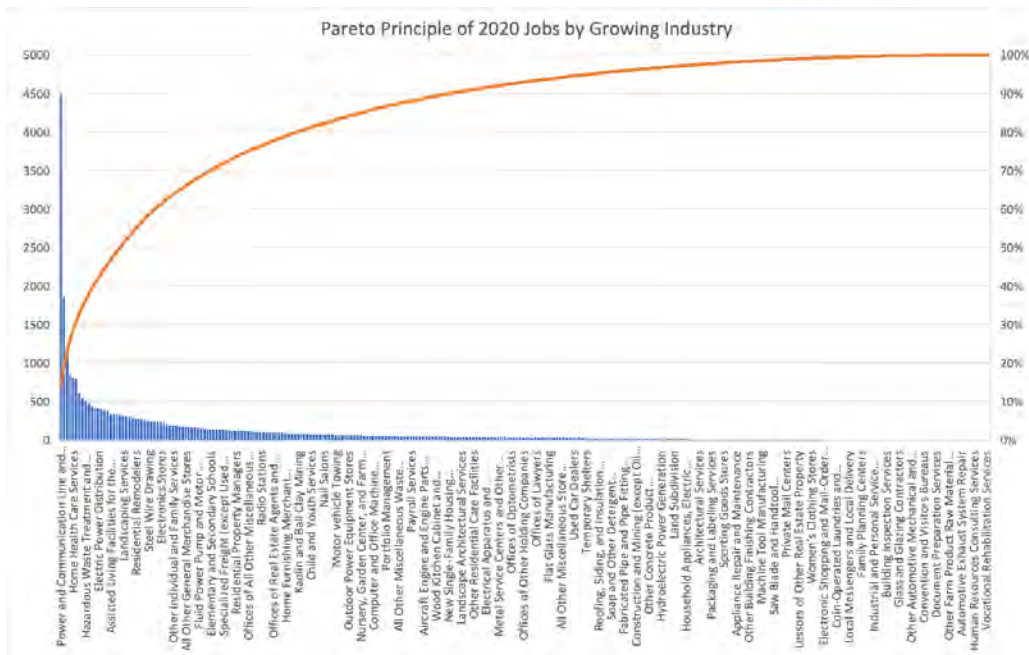
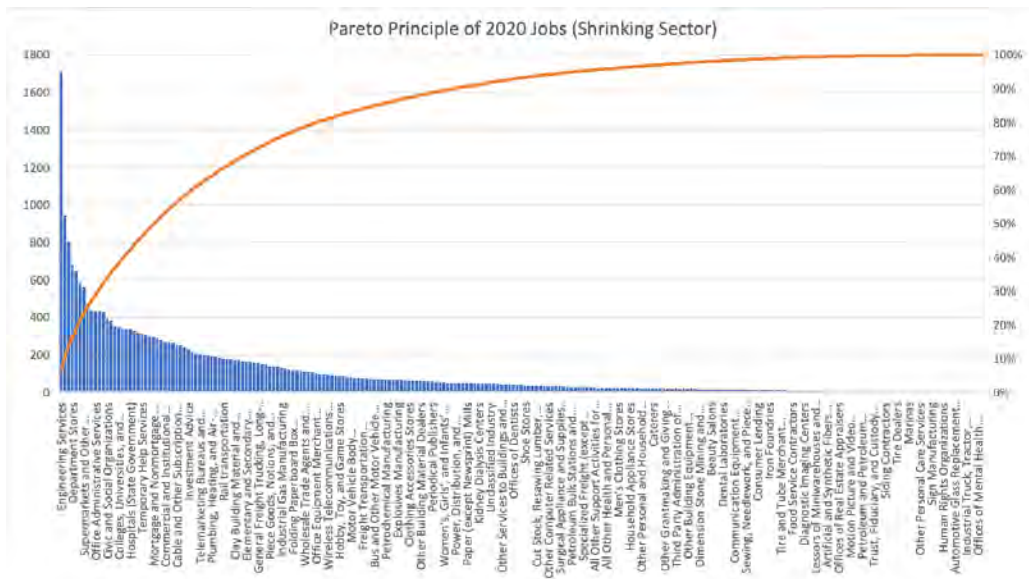*Figure 5.4: Pareto Principle among Growing Sectors 2020 to 2030. Source Emsi 2021.2, August 2021*

Figure 5.5: Pareto Principle among Shrinking Sectors, 2020 to 2030. Source Emsi 2021.3, August 2021

The concentration of jobs and job growth by industry could represent an issue in the future if the most popular industries are also the ones that are growing the most, as the region can become too heavily dependent upon a single industry or employer. A regression was run to see if 2015 jobs had any effect on job growth; 2015 jobs was used as a proxy for the size of the industry. The results indicate that there is no relationship, meaning that neither smaller firms nor larger firms are growing at a slower or faster rate. This means that there will not be any inequality among industries in the near future.
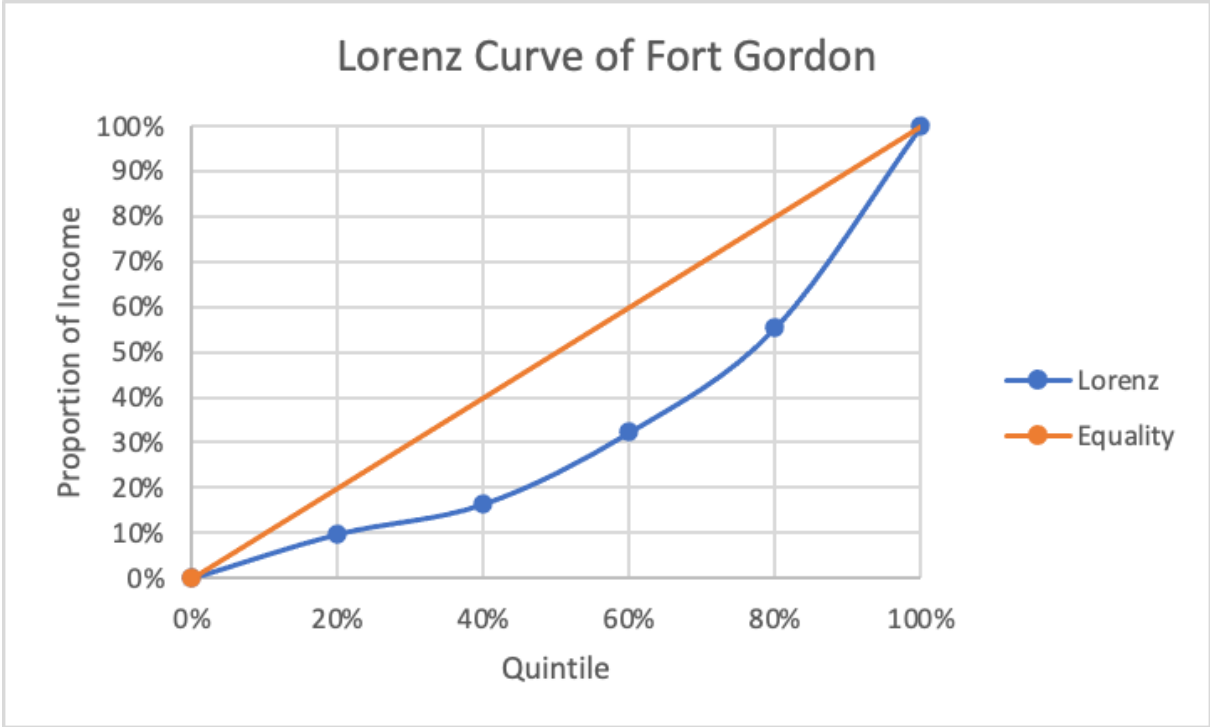
Lorenz Curve of Fort Gordon

Figure 5.6: Lorenz Curve for Income Inequality. Source Emsi 2021.3, August 2021

Interviews were conducted with local health care professionals, a portion of which had military backgrounds. Of the physicians interviewed, two are also professors at the Medical College of Georgia. Another interviewee had extensive experience nursing in the Augusta area. Among the health care professionals there were concerns of shortages in the availability of health care professionals and services. While the COVID-19 pandemic has certainly contributed, with one physician stating that there are not enough hospital beds due to the pandemic and that the three area hospitals are going on diversion every week, it is apparent that this is a historical problem. The health care worker reported that Georgia typically ranks at about 45 in the nation for healthcare and even lower for psychiatric care. All health care professionals interviewed agreed that mental health was a major problem in the area that needed to be addressed.

The consensus among the physicians was that there was a primary care shortage in the study area. One interviewee who had recently moved to the area and happened to be on TRICARE, noted that he spent a significant amount of time calling to find a provider. Once he was able to secure an appointment for a primary care provider, the wait was about three months out. He went on to say that some residents will have to wait up to six months when it should not be more than a thirty day wait to see a new provider. With this shortfall already existing in the population as it is, these health experts say that an increase in population would exacerbate the problem since Fort Gordon does use the surrounding medical providers to meet their needs.

The nursing expert described the nationwide nursing shortage as a nursing retention problem. She believes that it is highly important to offer nurses better compensation to make them want to stay at their place of work and in the Augusta area. This can be a challenge because traveling nurses and nurses in other states get paid more. The interviewee also suggested that hospitals stop contracting traveling nurses and work harder to retain local nurses.

The health care professionals noted the importance of social determinants of health. All of them mentioned the importance of nutrition, with the subject of local food deserts in the Augusta area being prominent. People did not have access to fresh food options and had to resort to buying meals from dollar and convenience stores. Public transportation in the Augusta metro area was described as rudimentary and a contributor to problems with access to care. Ultimately, experts agreed that better preventative care was necessary to lessen the health concerns that were prominent in the area with chronic diseases such as diabetes and heart disease. Having primary care to help manage these diseases was important so that people did not end up in already overcrowded emergency departments. Misuse of emergency rooms was also a major concern; it was stated that many residents used the ER as a walk-in clinic.

Suggestions offered by these health experts to help lessen some of these concerns, especially in light of expansion at Fort Gordon, which will increase the population are building a new urgent care clinic on base. This would help keep the emergency departments at the surrounding hospitals from overcrowding. It was also suggested that the installation expand the health services that they offer on post instead of outsourcing to the surrounding areas. To address the shortage of primary physicians, partnerships with the local medical colleges were suggested. One expert suggested providing more scholarships and residencies to encourage local medical school graduates to stay in Georgia and more specifically in the Study Area.

LITERATURE REVIEW PROCESS

For each health topic, our approach was to review all the relevant literature we could find focusing on research published in 2015 or later. We used a variety of search terms, and then identified the reports and articles that are the most relevant to our needs. These reports and articles were read in-depth, and we produced a write up review of how these findings are relevant to barriers and opportunities to growth in healthcare services going forward for Study Area. Findings that are relevant to the campaign development going forward are summarized in this document.

COMMUNITY HEALTH NEEDS

Georgia's Primary Care Dashboard Update 2016

Year	2016
Study purpose	To determine Georgia's position in relation to other states primary care services in 2016, how much has changed from past years, and determine what needs to be done to meet the goal of increasing the ratio of primary care physicians to 100/100,000 by 2020.
Summary	- Overview of primary care medical pipeline model that encourages students to pursue medical careers from an early age. 2020 Estimates: the U.S. will face a shortage of 45,000 primary care physicians and 46,100 surgeons and medical specialists. - In 2015: Physician to population ratio: 220.9/100,000 (rank-39 in U.S.) - In 2015: Primary Care Physician to population ratio: 77.8 (rank – 41in U.S.) - In 2015: Percent of Physicians aged 60 or older: 21.3% (rank-40 in U.S.)
Link to study	Georgia's Primary Care Dashboard (augusta.edu)
Authors	AHEC Network
Publication	Georgia Statewide AHEC Network

Georgia's Health Care Workforce Data (select counties) 2021

Year	2020
Study purpose	To determine the combined number of physician and primary care services in 2019-2020 the Richmond, McDuffie, Columbia, Lincoln, and Burke counties in Georgia.
Statistics	• Family Medicine Physician: 50.3 PHYS / 100K people • Internal Medicine Physician: 57.3 PHYS / 100K people • Emergency Medicine Physician: 31.2 PHYS / 100K people • Nurses: 1,822.1 NURSES / 100K people • Physician Assistants: 51 PAS / 100K
Source	Georgia Board of Healthcare Workforce
Link to Source	Health Care Workforce Data | Georgia Board of Health Care Workforce

CSRA Community Needs Assessment Report

Year	2018
Study purpose	A community needs assessment for the Central Savannah River Area.
Main Concerns	One key health care finding states that drug and alcohol abuse is a major cause of poverty. This indicates that resources may be needed to provide support and alleviate the existing substance abuse problems. The CSRA is currently working with local mental health, substance abuse and general health providers to refer people in need of assistance.
Other Concerns	Lack of transportation was mentioned in the context of residents being unemployed and contributing to poverty. Lack of transportation was also a challenge in accessing health care for individuals. There is a need to find solutions to better provide transportation whether it be expanding the public transportation system or offering more creative solutions.
Analysis	Interviews with local health care professionals confirmed that this was also a challenge to residents in Metropolitan areas that have public transportation not only in rural communities which lack the infrastructure. Suggestions included expanding public transportation and also creative solutions such as programs incorporating ride sharing.
Link to study	CSRA Community Needs Assessment (csraeoa.org)

UNIVERSITY HOSPITAL Community Health Needs Assessment

Year	2019
Study purpose	To identify the health needs of the community surrounding the University Hospital which primarily serves the Richmond and Columbia counties in Georgia and Aiken County in South Carolina.
Summary of Findings	• There is an aging population to plan for, in all counties, the number of seniors (65+) will be growing. • The leading causes of death in all the counties are cancer and heart disease. • Death rates for lung, colorectal, and breast cancer are higher in many counties than national and state rates, while screening rates are lower. • Among University Hospital patients, African American people tend to get cancer diagnoses at later stages than white people. This is more pronounced here than it is in national or state data. • Richmond County has a good ratio of providers to people compared to top-performing counties nationally.
Main Concerns of Community	From community listening sessions: What are the major health problems in McDuffie County? Cancer, hypertension, obesity, poor nutrition, diabetes, heart disease, substance abuse, opioid abuse, STDs, arthritis, mental health including: depression, anxiety, and bullying among youth, sedentary lifestyle What is causing these problems? *Social determinants:* Poverty underlines all these problems and magnifies every illness, lack of access to medication, to primary care, to mental health resources, exposure to violence, neglect of seniors, access to transportation, limited hours to visit providers, no gym to exercise, people eating at gas stations *Education:* lack of education in the form of low medical IQ, "Southern" cooking - which is considered unhealthy, health care in general is discouraging for people
Other Noteworthy Comments	"People don't believe in preventive care; only seek healthcare when sick; respond to sentinel events such as a shingles outbreak or a family member having a heart attack" **Tobacco use – community members noted that smoking is prevalent in the military and among millennials**
Link to study	chna-2019-main-final.pdf (universityhealth.org)

University Hospital McDuffie Community Health Needs Assessment

Year	2016
Study purpose	To identify the health needs of the community surrounding the University Hospital McDuffie which primarily serves McDuffie County Georgia.
Summary of Findings	• The percentage of adults without insurance has slowly been increasing. • Very low number of mental health providers. • Cancer mortality is relatively high, especially for colorectal and lung cancer. • Diabetes is a significant problem in McDuffie County. There is a high death rate, and a higher incident rate of diabetes than in neighboring counties. Experts hypothesize that this is the result of a genetic disposition.
Main Concerns of Community	From community listening sessions: What are the major health problems in McDuffie County? "Heart disease, diabetes including the rise of juvenile and early onset diabetes, mental health problems, increase in dental problems" What is causing these problems? *Access to care*: "Adults and youth are lacking primary care physicians, there is a lack of insurance, a general lack of understanding the importance of preventative care - people will not see a physician until there is a problem that needs to be addressed, there are a low number of providers in area, physicians are unwilling to accept Medicaid patients which causes a backlog of patients waiting to be seen, there are long waiting periods to see a physician, transportation is an issue and more generally access to care, cost of services, fear among illegal immigrants to seek care" *Education*: "Language and environment of healthcare is intimidating and confusing, health literature is written above the appropriate reading level which is causing illiteracy, increasing poverty every year, there is a lack of resources to educate parents living in poverty, grandparents are often heads of household and they have a different view of healthcare in that they are not inclined to go to the doctor" *Mental health*: "Diminished mental health resources; nowhere to refer patients for care; patients bounce between emergency departments and jail, difficulty accessing mental health resources for those without transportation to neighboring metropolitan areas such as Augusta" "Genetic factors, alcohol/drug use by parents, and environment are considered underlying causes to mental health problems "
Other Noteworthy Concerns	Poor diet caused by learned eating habits and higher ratio of unhealthy food options to healthy options.
Link to study	uhm chna.pdf (universityhealth.org)

IMPLEMENTATION STRATEGIES AND ACTION PLANS

South Carolina's Rural Health Action Plan

Year	2017
Study purpose	A framework to implement strategies to improve rural health over the course of the next 3-5 years in rural South Carolina. This includes areas of Edgefield and Aiken Counties.
Health Action Steps	Notable Steps Include: • Supporting and expanding efforts that innovate recruiting and retaining health care professionals. • Broadening existing scholarships and creating new health profession scholarships along with programs for students. Use opportunities like summer internships to create a pipeline of students entering health professions. • Providing sustainable pay for new health care workers. Specifically in roles such as community health workers and community paramedics. This also includes providers like clinical pharmacists, social workers, and care managers. • Defining the current and future need for emerging health professions including community health workers and community paramedics to increase recruitment in rural areas.
Analysis	Despite focusing on rural health, this action plan has many points that are also applicable health care in metropolitan areas. Recruiting and maintaining health care professionals was a widely mentioned subject in the literature and among interviews with local health care professionals.
Link to study	Rural Health Action Plan Recommendations | Affordable Housing | Health Professional (scribd.com)

University Hospital Community Health Needs Assessment Implementation Strategy

Year	2019
Study purpose	Outline to address health needs derived and chosen from 2019 Community Health Needs Assessment.
Main Health Concerns	• Heart disease and stroke • Diabetes • Maternal health
Overview of Action Steps	Women's Wellness on Wheels to screen for cardiovascular disease and diabetes. They will help develop a prevention plan by providing health education and connections to primary care. A Diabetes Prevention Program will be launched by University Hospital to provide education that promotes general wellbeing measures such as healthy eating and exercise. This will be offered to those at risk of developing type 2 diabetes. Maternal Mortality and Morbidity will be addressed by placing an emphasis on POST-BIRTH warning signs. Internal staff will be trained, and a public campaign will be created to raise awareness of this concern in the public. New mothers will also receive information at the hospital about these warning signs.
Link to study	chna-is-2019-main-final2.pdf (universityhealth.org)

University Hospital McDuffie Community Health Needs Assessment Implementation Strategy

Year	2016
Study purpose	Outline to address health needs derived and chosen from 2016 Community Health Needs Assessment.
Main Concerns	- Diabetes - Cancer - Heart disease and stroke - Health literacy
Overview of Action Steps	- Support groups for health literacy - Classes teaching about heart disease and strokes - Cardiovascular screening program for diabetes, heart disease, and stroke - Educational outreach to primary care providers for diabetes - Webinars to promote awareness of diabetes and health literacy - Arranging community screening opportunities at local community events for cancer - Community fairs to screen and increase awareness of the main concerns identified.
Link to study	uhm implementation strategy.pdf (universityhealth.org)

Fight Substance Abuse, Improve Mental Health Care to Help More Georgians

Year published	2017
Study purpose	Georgia has a need to improve mental health care to fight the rising substance abuse rates.
Key findings	- In 2016, 32% percent of Georgia adults reported poor mental health. Those with a mental illness are more likely to engage in substance abuse than people without. - Between 2012 - 2016 the number of drug overdoses increased by 35%. - Approximately 69% of drug overdose deaths in 2016 were related to opioids and synthetic drugs. - Investing in early intervention and prevention is key. Programs that promote mental health are needed for school aged children as well. - Expanding access to care is needed, particularly with health insurance to ensure that more mental health services are covered. This can be done through telehealth services especially in areas that have health care provider shortages. - Other social determinants of health are important to consider such as quality and affordable housing options.
Analysis	Mental Health and substance abuse were issues mentioned the community assessments of the Augusta area hospitals. Both this policy report and the CHNA's mention that the substance abuse problems are more pronounced in rural areas.
Link to study	Fight-Substance-Abuse-Improve-Mental-Health-Care-1.pdf (gbpi.org)
Authors	Laura Harker, Policy Analyst
Publication	Georgia Budget and Policy Institute

Making the Case for Community Health Workers in Georgia

Year published	2020
Study purpose	To promote the effectiveness of Community Health Workers in helping reduce mortality and morbidity of chronic diseases which much of Georgia's population are at high risk of acquiring.
Key findings	There is significant evidence that Community Health Workers and Community Health Worker programs are effective and beneficial. Georgia should maintain formal efforts to train and establish a lasting workforce of community health workers.
Methodology overview	Scan of Community Health Worker topics including research studies, programs, and other projects. Community Health Workers' current and past efforts in Georgia were also reviewed.
Analysis	Community Health Workers go by a variety of names and have been helping the community for several years. There is evidence that Community health workers are effective and a good return on investments. They help connect medical and social resources to allow patients, especially those from vulnerable populations, to receive the care they need. Community health workers have been proven to reduce visits to Emergency Departments and other unnecessary hospitalizations that result from chronic diseases.
Link to study	https://doi.org/10.20429/jgpha.2020.080116
Authors	Gail G. McCray, MA, MCHES , Berneta L. Haynes, JD , Adrianne S. Proeller, BA, Christopher E. Ervin, MD, and Arletha D. Williams-Livingston, PhD, MPH, MBA
Publication	Journal of the Georgia Public Health Association

The Relationship Between Food Deserts, Farmers' Markets and Food Assistance in Georgia Census Tracts

Year published	**2016**
Study purpose	To explore the relationship in Georgia between food deserts, farmers' markets, and the availability of food assistance programs.
Key findings	20% of Georgia's census tracts are food deserts and of these food deserts, 7.2% have a farmers' market within their boundaries. • 3.2% Famers' Market Nutrition Program (FMNP) coupons • 9.6% accept Women, Infants, and Children Fruit and Vegetable Checks (WIC-FVC) • 21.6% accept Supplemental Nutrition Assistance Program (SNAP) benefits.
Methodology overview	2014 USDA Food Desert Atlas and the USDA Farmers' Market Directory data was used. From this data, farmers' market locations were geocoded in ArcGIS. Spatial visualization and descriptive statistics were used to explore the relationships.
Analysis	Less than 10% of farmers' markets in Georgia are located in food deserts, and even fewer accept food assistance programs. As a result, fresh food remains inaccessible to low-income residents in these areas and residents in general. A lack of access to fresh food is associated with poor nutrition and can lead to diet related diseases such as obesity. Increasing the availability of farmers' markets that can accept food assistance and farmers' markets in general would be beneficial. This research has further implications in accessible public transportation.
Link to study	https://doi.org/10.20429/jgpha.2016.050309
Authors	Andrea M. Brace, PhD, CHES, Todd L. Matthews, PhD, Bobbi Finkelstein, and Daniela Beall
Publication	Journal of the Georgia Public Health Association

Prescribing Remedies for Georgia's Medical Provider Shortage

Year published	2016
Study purpose	To investigate where in the state of Georgia healthcare provider shortages exist and to provide solutions to address these shortages with policy tools.
Key findings	- Approximately two-thirds of Georgia's counties fall below the statewide average number for the following healthcare professionals: nurses, physician assistants, primary care doctors and total doctors per 100,000 residents. - Shortages exist primarily in rural regions, but they are also seen in more metropolitan areas. - Lincoln, McDuffie, and Burke Counties all had below average rates of providers per capita with doctors, primary care physicians, nurses, and physician assistants. - Columbia County had below average rates of providers per capita with nurses and physician assistants. - Richmond County remained at an average rate of providers per capita or better for all providers. - Non-physician providers (such as community health workers) can be a valuable resource in areas where physician shortages are the highest. - Georgia produces more medical school students than it has the residency spots required for them to graduate. Georgia is creating alternative methods to fund new residencies.
Analysis	From conducting interviews with local health care professionals, the topic of primary care doctor shortages and nurse shortages was a persistent one. One interviewee noted that while there were plenty of students graduating with nursing degrees, what was lacking was practicums and internships for students to be placed into. Similarly, this report states that the number of federally funded residency spots has remained the same since the 1990's.
Link to study	Medical-Provider-Shortage.pdf (gbpi.org)
Authors	Tim Sweeney, Director of Health Policy
Publication	Georgia Budget and Policy Institute

<div align="center">Other Sources:</div>

Elements of Access to Health Care. Content last reviewed June 2018. Agency for Healthcare Research and Quality, Rockville, MD.
https://www.ahrq.gov/research/findings/nhqrdr/chartbooks/access/elements.html

Social Determinants of Health. Content last reviewed June 2021. Office of Disease Prevention and Health Promotion, HealthyPeople.gov.
https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health

Health Care Supporting Documentation – Information on Major Local Health Care Providers

The following overviews of medical providers are reproduced from information supplied to the research team by the Central Savannah River Area Regional Commission.

Medical Facilities Descriptions: Augusta Area Federal

Eisenhower Army Medical Center

The Dwight D. Eisenhower Army Medical Center (EAMC) is a 93-bed medical treatment facility located on-site at Fort Gordon. Active-duty personnel and their TRICARE beneficiaries use the medical center and clinics for their primary health care. Numerous military retirees in the Augusta area also use the medical center's facilities and pharmacy.

EAMC serves as a training hospital for military doctors, and partners with the Medical College of Georgia and the Augusta Veterans Affairs Medical Center in training programs and patient care. For example, TRICARE dependents in need of obstetrics services are sent to University Hospital, while the Augusta VA runs a spinal-cord rehabilitation unit and an active-duty rehabilitation unit. In return, civilian, non-TRICARE dependent patients are often sent to Eisenhower for use of its hyperbaric chamber.

The hospital offers a comprehensive set of services, including:

- Allergy
- Audiology / Speech Pathology
- Cardiology
- Chiropractic
- Dental
- Dermatology
- Dietetics
- Emergency Services
- Family Medicine
- Gastroenterology
- Infectious Disease
- Internal Medicine
- Mental Health
- Nuclear Medicine
- OB/GYN

- Occupational Therapy
- Ophthalmology
- Optometry
- Orthopedics
- Otolaryngology
- Physical Therapy
- Podiatry
- Primary Care
- Psychiatry
- Psychology
- Pulmonology
- Social Work
- Surgery
- Traumatic Brain Injury
- Urology

Charlie Norwood Veterans Affairs Medical Center

Operated by the United States Department of Veterans Affairs, the Augusta VA Medical Center (CNVAMC) is a major, multipurpose veterans' hospital which provides a range of medical services. CNVAMC includes two divisions in Augusta and 3 community-based outpatient clinics in Athens and Statesboro, GA, and Aiken, SC. The medical center employs about 2,500 staff and welcomes about 46,000 veterans each year with a budget of nearly $600 million. As a level-1a health care system, CNVAMC is categorized as a high-complexity hospital system and provides tertiary care in medicine, surgery, neurology, psychiatry, rehabilitation medicine, and spinal cord injury.

CNVAMC's Downtown Division is authorized for 156 beds (58 medicine, 27 surgery, and 71 spinal cord injury), while the Uptown Division, located approximately three miles away, is authorized 82 beds (57 psychiatry, 15 blind rehabilitation and 10 rehabilitation medicine). In addition, a 132-bed Restorative/Nursing Home Care Unit and a 60-bed Domiciliary are located in the Uptown Division. These facilities are part of Veterans Integrated Service Network, located in Atlanta, along with seven other VA Medical Centers across Alabama, Georgia, and South Carolina.

Specialty programs available at CNVAMC include:

- Ambulatory Surgery
- Audiology
- Blind Rehabilitation Center
- Cardiac Catheterization Laboratory
- Cardiopulmonary Rehabilitation
- Domiciliary
- Home Based Primary Care
- Hospice
- Intensive Psychiatric Community Care
- Long-term Psychiatric Care
- Neurosurgery

- Open Heart Surgery
- Post-Traumatic Stress Disorder
- Pulmonary Function Laboratory
- Respiratory Therapy
- Respite Care
- Sleep Laboratory Program
- Speech Pathology
- Spinal Cord Injury Center
- Stroke Rehabilitation
- Substance Abuse Treatment Program
- Women's Health Clinic

Medical Facilities Descriptions: Augusta Area Non-Federal

Augusta University Medical Center

Augusta University Medical Center is an academic medical center and health care network that offers primary, specialty and sub-specialty care in the Augusta area and throughout the Southeastern United States. The Center encompasses:

- 478-bed medical center (Medical College of Georgia).
- 154-bed children's hospital (Children's Hospital of Georgia).
- Medical office building with more than 80 outpatient practice sites.
- Regional Level I Trauma Center and Regional Level II Pediatric Trauma Center.
- Cancer Center, including a freestanding outpatient clinic, radiation oncology building and the M. Bert Storey Cancer Research Building.

- Satellite locations throughout the area and various freestanding clinics for specialty and subspecialty care.
- Partnerships with rural hospitals across Georgia to improve access to advanced health care options.

Medical College of Georgia

The Medical College of Georgia (MCG) is the health sciences school for the University System of Georgia and one of the top 10 largest medical schools in the United States. MCG is the state's leading provider of physicians, graduating the largest number of physicians of the four Georgia-based medical schools, and offers the most comprehensive primary and specialty care in the region. MCG encompasses 930 medical students, 576 residents in 51 programs, 791 full and part-time faculty, 3,047 volunteer faculty, and 866 full and part-time staff. The expert health care team and state-of-the-art facilities combine to provide residents throughout the Southeast with the most advanced medical care available.

The MCG Medical Center complex forms the core of MCG facilities and includes a 478-bed adult hospital, an Ambulatory Care Center with more than 80 outpatient clinics in one convenient setting, a Specialized Care Center housing, and a 13-county Level I regional trauma center. MCG also includes a variety of dedicated centers, such as the off-site Sports Medicine Center and Senior Health Center.

In addition to providing care in the Augusta area, MCG's physicians travel to over 80 satellite clinics throughout Georgia. MCG works closely with patients' primary physician via the MCG Telemedicine Center, which allows patients and their hometown doctors to interact directly with MCG physicians using cameras, voice systems and electronic diagnostic devices.

Specialty programs available at MCG include:

- Blood Disorders
- Cancer Treatments
- Children's Health
- Cystic Fibrosis
- Dermatology
- Diabetes Care
- Digestive Health
- Emergency Health
- Eye Services
- Family Medicine
- Heart Services
- Infectious Diseases

- Mental Health
- Neuroscience
- Orthopedic Services
- Otolaryngology
- Plastic Surgery
- Rehabilitation Services
- Respiratory Disorders
- Sports Medicine
- Surgery
- Trauma
- Urology
- Women's Health

Children's Hospital of Georgia

The Children's Hospital of Georgia (CHOG) is a 154-bed academic children's hospital and the only children's hospital in the Augusta area. The hospital is among the largest pediatric facilities in the United States. CHOG provides neonatal intensive care and pediatric intensive care available as defined by the American

Academy of Pediatrics. It is staffed by a team of pediatric specialists who deliver inpatient and outpatient care for everything from common childhood illnesses to life-threatening conditions such as neurological conditions and cancer.

CHOG has an award-winning Extracorporeal Membrane Oxygenation (ECMO) program, which is considered a pioneer in this area, having started the first program in the Southeast in 1985, and designated a Center of Excellence in 2012.

University Hospital Care System

University Hospital Care System (UHCS) is a private, non-profit 581-bed hospital system located in downtown Augusta and the surrounding area, which serves a 25-county region in Georgia and South Carolina through a network of facilities. UHCS's presence in Augusta dates back two hundred years and has grown into one of the largest, most comprehensive healthcare providers in Georgia. Care is provided through three hospitals, comprehensive inpatient and outpatient services, nursing facilities, home health services, prompt care facilities, primary care and specialty physicians, and rehabilitative care programs. One of the newest additions to UHCS is a 25-bed medical center located in McDuffie County, which offers medical and health services for people of the surrounding area.

UHCS medical staff includes nearly 500 primary care physicians and specialists that provide services ranging from routine preventive and diagnostic care to comprehensive cardiovascular and oncology services. University performs a broader spectrum of surgeries, treats more patients, and delivers more babies than any other area hospital.

To render health care more accessible, UHCS also offers the following special programs and services:

Satellite medical centers in 16 locations.

- University Health Link, a physician-hospital partnership that works with local companies to provide more than 118,000 employees and their family members access to medical care.
- University Home Health, which provides physician-directed in-home care, including skilled nursing, cardiac therapy, IV therapy, wound and pulmonary care, diabetes management, and physical and speech therapy.
- The ASK-A-NURSE program, which makes available registered nurses 24 hours a day, 7 days a week, to provide callers with health information and physician referrals.

Major health care services provided at UHCS include:

- Bariatric Surgery/Bariatrics Management
- Cancer Treatment
- Diabetes Treatment
- Emergency & Prompt Care
- Emergency Services
- Endocrinology
- Gastroenterology
- Heart, Vascular and Pulmonary Rehabilitation
- Maternity Care
- Medical Records
- MRI and Open MRI
- Neuroscience

- Nutrition Services
- Occupational Health
- Oncology
- Orthopedics & Spine
- Palliative Care
- Pediatric Services
- Pediatrics
- Prompt Care
- Radiology Services
- Rehabilitation & Therapy

- Rheumatology
- Speech and Hearing
- Sports Medicine
- Stroke Unit
- Surgery
- Vein Center
- Women's Health
- Women's Health - Breast Health Center
- Wound & Hyperbaric Center

University Hospital Summerville

University Hospital Summerville (UHS, formerly St Joseph Hospital), is a 231-bed, acute-care facility that has served the Augusta area since 1952, and provides general medical and surgical care as well as inpatient, outpatient, and diagnostic services. UHS became known for pioneering many medical discoveries, including cochlear hearing implants, stereotactic mammography, and a unique treatment program for hip and knee replacement.

Hospital services include:

- Allergy/Immunology
- Anesthesiology
- Dermatology
- Endocrinology
- Family Practice
- Gastroenterology
- Hematology
- Hospice
- Infectious Disease
- Internal Medicine
- Nephrology

- Neurology
- Oncology
- Otolaryngology
- Podiatry
- Psychiatry
- Pulmonology
- Radiation Oncology
- Radiology
- Rheumatology
- Urology
- Wound Care

Doctors Hospital

Doctors Hospital is a 350-bed full-service tertiary care center and a leading provider of in robotic surgery, advanced orthopedic services, and emergency care.

Doctors is certified as a Primary Stroke Center, as well as an Accredited Chest Pain Center, and was recently the first hospital in the area to be designated a Center of Excellence in Women's Health Surgery. Doctors is also home to the nationally acclaimed Joseph M. Still Burn Center. The Center is one of the largest in the United States and serves as a primary burn care center for the Southeastern United States. The 70-bed unit sees admission of more than 3,000 inpatient admissions annually, one-third of them pediatric patients. The Center maintains a Burn Team of specialists including plastic surgeons, general and

trauma surgeons, maxillofacial surgeons, pediatricians, and psychiatrists, along with nurses, physician's assistants, occupational and physical therapists, and social workers.

Major services provided at Doctors include:

- Aquatic Therapy
- Bariatrics
- Burn Center
- Cancer Treatment
- Cardiac Services
- Cardiopulmonary
- Digestive Disease Treatment
- Disk Degeneration
- Emergency Care
- Endoscopy
- Maternity Care
- Occupational Therapy

- Pediatric Care
- Physical Therapy
- Pulmonary
- Radiation Therapy
- Rehabilitation Services
- Spine Surgery
- Sports Medicine
- Stroke Recovery
- Surgery
- Vascular Services
- Women's Services

Walton Rehabilitation Hospital

Walton Rehabilitation is a 60-bed non-profit physical medicine and rehabilitation hospital. The hospital cares for more stroke patients than any other hospital in Georgia and offers acute and sub-acute adult and pediatric inpatient and outpatient programs for persons recovering from stroke, head injuries, chronic pain and other disabling illnesses and injuries. The hospital includes the Children's Rehabilitation Center, outpatient rehabilitation, transitional living center, physician services, and independent living services. Walton Options for Independent Living offers accessible housing, employment, assistive technology, alternative formats and advocacy.

Major services provided at Walton Rehabilitation include:

- Amputation
- Arthritis
- Balance and Vestibular Rehabilitation
- Brain Injuries
- Cardiac Care
- Diabetes
- Hip Fracture
- Joint Replacement

- Neurological Disorders
- Oncology
- Parkinson's Disease
- Pulmonary Treatment
- Spasticity Management
- Spinal Cord Injury
- Stroke
- Wound Care

East Central Regional Hospital at Augusta

The East Central Regional Hospital at Augusta (ECRH) consists of two campuses which provide mental health and developmental disabilities services for a 33-county area in eastern Georgia. Operated by the Georgia Department of Behavioral Health & Developmental Disabilities, the 390 bed facilities are

designated as Emergency Receiving Facilities and employ nearly 1,400 medical professionals and support staff.

Major services provided at ECRH include:

- Activity Therapy
- Behavioral Management
- Dietary Services
- Discharge Planning and Placement
- Forensic Services
- Individual and Group Counseling
- Inpatient Treatment
- Integrated Recovery Plans
- Laboratory Services

- Medication Management
- Occupational Therapy
- Physical Therapy
- Psychiatric and Psychological Evaluation
- Social Work
- Speech Therapy
- Transitional Services
- Work Therapy

Select Specialty Hospital Augusta

Select Specialty Hospital Augusta (SSH) is a long-term acute care hospital offering a wide range of critical illness recovery treatment services. The 80-bed hospital is designed to provide comprehensive, specialized care for high-acuity patients who need more time to recover.

Major services provided at SSH include:

- Amputations
- Arterial & Vascular Ulcers
- Brain Injuries
- Cancer Treatments
- Cardiac & Heart Failure
- Chronic Lung Disease
- Diabetes
- Infectious Diseases
- Kidney & Dialysis Treatments
- Neurology
- Neuromuscular Disorders
- Post-Trauma Recovery
- Pulmonary and Ventilator Treatments
- Spinal Cord Injuries
- Stroke
- Wound Care

Aiken Regional Medical Centers

Aiken Regional Medical Centers (ARMC) is a 273-bed acute care hospital that has serviced Aiken and surrounding communities since 1917. The hospital offers a comprehensive range of medical services, including specialty programs such as a cardiovascular center, cardiovascular imaging, cancer care institute, 24/7 emergency department, joint academy, women's center, wound healing institute, pediatric center, behavioral health center, neurosurgery and rehabilitation therapy. The 14-bed Inpatient Rehabilitation Unit opened its doors in Fall of 2017, and the hospital added 14 outpatient surgery beds in summer of 2018.

Major services provided at ARMC include:

- Behavioral Health
- Cancer Treatment
- Cardiology
- Cardiopulmonary Services
- Cardiovascular Services
- Critical care (ICU / PCU)
- Diabetes
- Dialysis
- Emergency Medicine
- Enterostomal therapy
- Gynecology
- Hematology / Oncology
- Inpatient Rehabilitation
- Neuroscience
- Outpatient Surgery
- Orthopedic Care
- Pediatrics
- Physical therapy
- Radiology
- Rehabilitation Therapy
- Respiratory Services
- Sleep Disorder Treatment
- Social Services
- Stroke Care
- Urology
- Vascular Care
- Women's LifeCare Center
- Wound Care

Little local-specific existing research was identified, so the literature review concentrated more on understanding child care challenges and opportunities in general, to better inform question development and discussions during interviews.

ADVANCING OPPORTUNITY: Parents' Solutions to Georgia's Child Care Challenges

Recommendations for Policymakers, Employers, and Higher Education

Year	**2019**
Study purpose	Focus groups of metropolitan Georgia residents conducted for the purposes of understanding the challenges surrounding child care for parents and their proposed solutions to these challenges.
Summary	**Child care challenges:** • Lack of affordable child care – participants noted the high cost of daycare compared to their total income. Parents commented on the limited availability of programs that offered subsidies to help pay for child care. • Lack of accessible child care – long waitlists, distance, low quality, safety concerns, few programs that meet the specific needs of the family. **Challenges experienced by parents related to child care:** • Lack of flexibility in the workplace • Unable successfully carry out a job search due to lack of child care. **Recommendations from parents:** • Policy based solutions could potentially have a multigenerational impact for families. • General agreement among parents that expanding CAPS by increasing the threshold for eligibility would help families that make slightly too much to qualify for CAPS yet they still cannot afford child care. • Make improvements to pre-k education by decreasing class size and the number of children on waitlists. • Parents wanted more recognition of the importance of infant and toddler care in two ways, one that there be increased public funding and the second being that more child care providers be incentivized to provide care for infants and toddlers. • Support Quality Rated from DECAL and encourage child care providers to participate. • Raise awareness among parents of the online tool provided by Quality Rated to find child care that fits their families' needs. • Increased incentives for the retention of child care workers in the form of higher wages, financial benefits, and scholarships. • Offsetting costs of child care for families with tax credit programs such as the Child and Dependent Care Tax Credit (CDCTC), Earned Income Tax Credit (EITC), and Child Tax Credit (CTC) • Offering paid family leave to address child care concerns cause by lack of flexibility in the workplace.

	• Parents in the focus group wanted on-site or near site child care. For employers not able to offer this, parents suggested they partner with nearby business to share the cost of child care with parents. • Pushing employers to create more family friendly policies.
Analysis	Even though the report is based in the Atlanta area with focus group participants from both Atlanta and Columbus, similar issues with child care exist both statewide and nationwide just to varying degrees. Augusta area interviewees confirmed that similar child care challenges exist locally among both civilian and military families. Like the parents in the focus groups, Augusta providers also thought partnerships with the base would be beneficial to maintaining child care capacity.
Link to study	http://geears.org/wp-content/uploads/Advancing-Opportunity-FINAL-1.pdf
Authors	Georgia Early Education Alliance for Ready Students and Metro Atlanta Chamber
Publication	geears.org

How States Can Improve Child Care Facilities & Physical Spaces Using Federal Relief Dollars

Year	2021
Study purpose	Identify strategies to improve the safety and quality of child care going forward using relief money provided to child care facilities because of the pandemic.
Summary	Background information and uses for each of the relief programs created during the COVID-19 pandemic and other programs that assist child care facilities. • Child Care & Development Block Grant • Child Care Stabilization Fund • Coronavirus Capital Project Fund • Head Start • State Small Business Credit Initiative • State & Local Fiscal Recovery Funds Ultimately the goal is to leverage this relief, that was needed even before the pandemic, to improve child care facilities by investing in long term infrastructure sustainability.
Analysis	If a permanent federal financing program was created for child care facilities, it would alleviate current issues in child care such as quality of programs and high turnover/retention problems of child care workers. Local resources could be more directed to ensuring child care workers receive competitive compensation and general benefits while also promoting and maintaining quality in child care programs. In interviews conducted locally, there was a general consensus among child care professionals that their facilities and child care in general needed more funding and support from all levels of government. Support was needed before the pandemic and even more so now with many child care facilities being small locally owned businesses that have strict procedures to follow with the spread of COVID-19.
Link to study	https://nafcc.org/wp-content/uploads/2021/05/UsingReliefDollarsforChildCareFacilities.pdf
Authors	Olivia Barrow, Lanette Dumas, Danielle Ewen, Angie Garling, Lauren Hogan, Christine Johnson-Staub, Cindy Larson, & Mary Beth Salomone Testa
Publication	National Association for Family Child Care

2020 GEEARS Annual Report

Year	2020
Study purpose	Annual report done by the Georgia Early Education Alliance for Ready Students.
Summary	The 2020 report was majorly influenced by the COVID-19 pandemic. The child care industry was one of the hardest hit by the pandemic, closures combined with declining enrollment have taken a toll especially on the small locally owned child care facilities. **Some notable facts from the report include:** • Only 13% (70% before pandemic) of respondents reported using formal child care (such as family child care homes or child care centers) as their arrangement now. • Of the child care centers that were surveyed, 49% stated that they would not be able to open again if they had to close for two weeks. 55% of family child care homes stated the same **Among Georgians surveyed:** • 85% support funding that increases the availability and quality of child care • 91% support the state's pre-K program which is voluntary and lottery-funded • 88% support funding that helps with child care affordability among families low to moderate income • 86% support targeted financial assistance in the child care industry
Analysis	From this report we see that there is strong public support in Georgia to provide financial help to child care workers and facilities. The interviews among child care professionals in Augusta had similar themes. All child care professionals interviewed supported more funding being provided to child care facilities. They viewed it as a necessity for their small businesses to stay open, especially if they needed to close for any amount of time.
Link to study	http://geears.org/wp-content/uploads/GEEARS-AnnualReport-2020-Final.pdf
Publication	geears.org

Child Care Data Center & State Fact Sheets – Georgia and South Carolina

Year	2020 - 2021
Study purpose	Provide state level data of child care to determine current state of child care system. Break down of child care supply and utilization as well as policy recommendations on a nationwide level.
Summary	**Supply of child care:** • Enrollment and attendance of child care facilities is down and as a result, many programs are struggling to stay in business. • Low availability of child care due to qualified child care worker shortage • Declining child care workforce due to low wages in industry • Anticipation that shortages will only worsen when the pandemic subsides, and parents return to in person work. **Recommendations:** • Support the child care workforce – one of the most effective ways to retain workers if by using federal relief to increase wages and provide benefit. • Other recommendations to support child care workforce include providing funding to Child Care Resource and Referral (CCR&R) agencies to allow them to support local workforces with resources and professional development • Building up the supply of child care providers by creating grants for new child care businesses and well as funds directed to renovating existing child care facilities • Prioritizing approaches that will help cover the fixed costs of running a child care business will ensure that providers can stay open when attendance of children is uncertain. Approaches include considering enrollment numbers versus attendance for subsidies and increasing general reimbursement. Other approaches are offering more stabilization grants to help cover cost of supplies and rent when closures occur.
Analysis	Child care professionals agreed that basing subsidy on enrollment versus attendance is a necessary change. They also agreed on the importance of retention of child care workers, especially for the impact high turnover had on the children.
Link	https://www.childcareaware.org/our-issues/research/ccdc/
Publication	Child Care Aware of America

CCR&R Response to the Coronavirus

Year	2020
Study purpose	To detail what the responses to the pandemic were of Child Care Resource and Referral (CCR&R) agencies across the country. They also collected information on the

	experiences of child care workers in the field. This survey was conducted by Child care Aware of America
Summary	Child care providers had general concerns about reductions in enrollment based subsidies due to restrictions caused by COVID. Resources are also needed to assist providers with creating plans on when and how to reopen their facilities. This was recorded as the most widespread concern among child care providers (heard from 71%) and only 57% of CCR&R agencies were reported to be providing support. There was also widespread need for assistance with PPE loans (69%) and other financial assistance resources (63%) among providers. Only 53% and 42% of CCR&R agencies respectively provided support. **Concerns heard from child care providers:** • Increased use of unregulated/unlicensed child care (36% of those surveyed were concerned about this) • Less capacity (caused by restrictions, 56%) • Diminished need for child care (69%) • Loss of child care providers (72%) • (Anticipated) Fear of returning for parents (74%) **Concerns heard from parents**: • Safety of child care environment • Financial/subsidy assistance while unemployed • Access to child care when it is needed • Care for school aged children while school is closed • Teleworking/telecommuting with children at home • Other closures, openings, and general guidelines for COVID
Analysis	Partnerships with Child Care Resource and Referral (CCR&R) agencies would be beneficial to help connect local child care providers to resources they need such as help paying for personal protective equipment. CCR&R agencies may also help with educating and raising awareness among all families about quality, safe, child care. Paying for PPE was a cost that nearly all interviewees mentioned as well as the sunk cost of purchasing food for children only to have it go to waste if a child does not come in anymore or they need to temporarily close.
Link to study	https://info.childcareaware.org/hubfs/ccrr-survey-pdf.pdf
Authors	Child Care Aware of America

More than half a million child care workers would benefit from a $15 minimum wage in 2025

Year	2021
Study purpose	To advocate the benefits of increasing the pay of child care workers through the Raise the Wage Act of 2021.
Summary	• A wage increase would benefit women, especially African American and Hispanic women. • Southern states tend to have especially high numbers of child care workers who would benefit from a wage increase

	• 66.3% of child care workers in Georgia would be affected by a wage increase to $15. • Contrary to what many believe, keeping wages low does not help with the affordability challenges of child care.
Analysis	All local child care providers interviewed agreed on the need to increase the pay of child care workers. Several made the comparison between the starting pay offered by major companies in the area and the pay for new child care workers, it was often a difference of more than $5 per hour.
Link to study	https://www.epi.org/publication/child-care-workers-min-wage/
Authors	Julia Wolfe and Ben Zipperer
Publication	Economic Policy Institute

The cost of child care in Georgia and South Carolina

Year	**2020**
Study purpose	Determine the cost of child care in each state and whether it is affordable for each family.
Summary	Child care is affordable if it costs 7% or less of a family's income according to the U.S. Department of Health and Human Services (HHS). The Economic Policy Institute advocates for meaningful child care reform that would cap child care costs to families at 7% of that family's income. They state that this would save families a great deal of money and allow more parents to enter the workforce which would in turn expand the economy of each state. **Georgia:** • The average monthly cost of child care is $711 per month for infants. • Child care for a 4-year-old costs on average $609 per month • Care for one infant would take up 15.5% of a median family's income. • A median child care worker would have to spend 43.4% of her own yearly earnings to put her own infant in child care. **South Carolina:** • The average monthly cost of child care is $584 per month for infants • Child care for a 4-year-old costs on average $500 per month • Care for one infant would take up 13.5% of a median family's income.
Link to study	https://www.epi.org/child-care-costs-in-the-united-states/#/SC https://www.epi.org/child-care-costs-in-the-united-states/#/GA
Authors	Economic Policy Institute