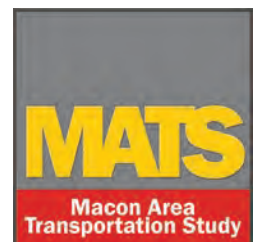


Freight Needs Assessment

Existing Conditions and Future Freight Movement

Chapter 5 Future of Freight and Needs Assessment



Introduction

The world of freight and logistics is evolving quickly. The industry has come a long way since the days of shipping goods on fixed rails via coal-fired trains. Looking to the future in terms of broader industry trends as well as specific local demands and infrastructure conditions can help a community better prepare for what is to come. This section provides a high-level overview of several factors that will potentially impact the future of freight and offers several overarching policy considerations that may be relevant to the Macon region, MATS, and its partners.

Future of Freight

Potential Factors Impacting Freight

Over the course of the next twenty years, freight and industrial market trends are likely to greatly impact the Macon Area Transportation Study's (MATS) planning area. The causes of these trends are multifaceted, but can generally be divided into two categories, and be spread across several regions. Trends are generally either technology driven or policy driven; while their impacts can be felt globally, nationally, and locally.

Artificial Intelligence

On a macroeconomic level, the global industrial and freight transport markets are set to experience significant disruptions within the next twenty years due to the profound impact technological advancements will have on these sectors. While technology is likely to advance across all aspects of the freight-adjacent economy, artificial intelligence (AI) is the most likely to impact markets on a global scale. For example, AI is likely to greatly reduce the amount of time freight shipments spend in-house (prior to entering the transit process). Integrating AI and robotics into existing workforces is likely to streamline productivity and fill critical gaps in the workforce driven by continued post-COVID labor shortages. Already, by the end of 2024, market analysts predict that “robots will be used in just under half of medium to large operators of warehouses and fulfillment centers in the US”.

Decarbonization

When it comes to global economic trends, climate change is by far the greatest influence on macroeconomic policy decisions that impact freight-intensive sectors of the economy. The long-term decarbonization of the freight transport industry has been identified as a priority by the United Nations and most advanced economies as demand for freight transport is expected to double globally by 2050. Policy initiatives that have gained traction and look to become more widespread over the next 20 years include a universal carbon tax (which has been shown to result in modest reductions in freight energy consumption and CO2 emissions) or policy-mandated universal CO2 emissions standards. Other policy initiatives, such as subsidies to provide companies with greater elasticity in modal options for freight travel (e.g., subsidizing rail vs. road, rail vs. air, etc.). The policy reactions likely to arise from the climate crisis, such as those discussed here, will have significant impact both on how freight is moved (mode), and where freight is moved (decreases or increases in hyper-localization).

Last-Mile Delivery

The United States, while subject to the same macroeconomic trends as every other advanced economy, is also likely to experience country-specific impacts that other advanced economies may not (or at least not on the same timeline). For the US, technological advancements (including AI integration) in the freight-related economy are likely to have a significant impact on last mile delivery (LMD) systems. Already, autonomous delivery robots are not uncommon in some US markets, and are only expected to grow in utilization in the coming decades. AI-integrated autonomous navigation is likely to have significant impacts on rail, air and sea cargo operations as well.

National and Statewide Policy

National freight-related policy initiatives are also likely to arise over the course of the coming decades, with market analysts predicting greater safety and environmental oversight as two key policy goals. Partly in response to the 2023 East Palestine Train Derailment, the Federal Railroad Administration proposed new rules outlining minimum train crew sizes depending on type of rail operation. Additional updates to FRA rules and regulations are likely as the freight industry continues to cope with the impacts of climate change and demands for increased safety.

A unique set of freight-specific trends and market impacts are also expected at the local and statewide scale over the next 20 years. Georgia lawmakers help maintain a “freight-friendly” business environment through a series of specific policy initiatives. Statewide subject matter experts maintain that these policies are a key reason why Georgia is able to handle and haul more than \$900 billion of cargo each year.

Transportation and warehousing are growing industries in Middle Georgia, which is a prime region for access to major freight corridors and destinations. Several ongoing and proposed transportation improvements will support that projected growth, including several within the MATS planning area - namely the I-75/I-16 interchange, the proposed I-14 project (which would connect Augusta, Macon, and Columbus), and I-75 commercial vehicle lanes. Additionally, other improvements like the Savannah Harbor Expansion Project Network, the Georgia Inland Port Initiative and expansion projects at regional airports will increase the need for freight handling and capacity in the Macon area.

A recent policy priority for the Georgia legislature was an increase in weight maximums for freight trucks on state and local roads (from 80,000 lbs to 88,000 lbs) – part of a suite of policy initiatives the state first rolled out in response to the increase in freight demand seen during the COVID pandemic. Policy initiatives and trends at the statewide and microeconomic level are likely to include fewer environmental and safety regulations than those seen at national and macroeconomic levels.

Potential Passenger Rail Service

In late 2023, GDOT was awarded a \$500,000 grant from the Federal Railroad Administration (FRA) to continue studying the potential for passenger rail service between Savannah and Atlanta. Part of a larger set of grants awarded as part of the Bipartisan Infrastructure Law, this recent funding will allow GDOT to continue building upon a service development plan started by a previous FRA grant. The idea for an Atlanta-to-Savannah passenger rail service was included in prior plans, including the Georgia State Rail Plan and the Southeast Regional Rail Plan.

The project, referred to as the *Atlanta - Savannah Intercity Passenger Rail Project* by GDOT, will evaluate the benefits and costs of passenger service between the two cities, identify and narrow a range of possible service alternatives across the study area, and focus on financially feasible, practical solutions to implement passenger rail service. The study area encompasses multiple cities and rail corridors throughout a large swath of Georgia, from Atlanta to Savannah, encompassing Athens, Augusta,

Macon, Statesboro, and others. More information about the project can be found on GDOT's website for the project: <https://atlsavpassrail-gdot.hub.arcgis.com//>. The planning process is a multi-year effort; as of June 2024, the key phases include:

- **Alternatives Analysis (2023-2025):** Identify alternative routes based on the Need and Purpose and other relevant factors.
- **Transportation Planning (2023-2025):** Refine identified alternatives through qualitative and quantitative transportation planning process.
- **Environmental Planning (2023-2025):** Collect environmental data and assess potential impacts of the project.
- **Financial Planning (2026):** Evaluate benefit-cost analysis (BCA) and identify potential funding sources.
- **Governance (2026-2027):** Identify potential strategies of operating and maintaining the service.
- **Phased Implementation Plan (2026-2027):** Develop an implementation plan with specific projects and cost estimates. Consider a phased approach to implementing the corridor.
- **Environmental Impact Statement (2028):** Prepare the Environmental Impact Statement to satisfy the National Environmental Policy Act (NEPA).

Table 18. Anticipated Trends in Freight and Logistics

Trend	Category	Geography	Impact
Increased AI Integration	Technology	All	-Faster shipment times
			-Increased productivity
			-Increased automation
Freight Decarbonization	Policy	Macro-	-Increased costs per freight movements
			-Budget impacts associated with new taxes (carbon tax, etc.)
			-A push to “greener” modes (rail vs. road; rail vs. air)
Improvements to Last-Mile Delivery Systems	Technology	Micro-	-Faster delivery times
			-Increased automation (workforce disruptions)
			-Decreases in shipment costs
Increased Regulatory Oversight	Policy	Macro-	-Reduced environmental impacts
			-Decreased risk of harm (for both operators and third parties)
			-Increased costs per freight movement (regulatory costs)
			-Safer/cleaner freight network
“Freight-Friendly” Business Environments	Policy	Micro-	-Increased local employment in freight-related industries
			-Increased infrastructure impacts
			-Increased tax receipts

E-Commerce

Each year, fewer and fewer people are shopping in physical, brick and mortar stores. Online shopping and ordering of products to be delivered directly to your home is the new model. Online shopping statistics show these recent increases are not just short-term trends. Online shopping is here to stay. The global e-commerce market has exploded in recent years with growth anticipated to continue at a fast pace over the next several years. The US Census Bureau announced earlier this year that the estimate of US retail e-commerce sales for the first quarter of 2024 was \$289.2 billion - an increase of 2% over the fourth quarter of 2023.¹ By the year 2027, some experts predict that as much of 22.6% of retail sales will be conducted online.² The impact of this tremendous growth in e-commerce means increased demand for shipments of goods, not only to reach purchasers homes, but to be brought to warehouse and distribution centers, for quicker and more efficient delivery to homes and businesses.

Many companies are switching to fulfillment models where goods are not shipped directly from manufacturers or producers to consumers or businesses, but rather sent to a warehouse or distribution center for sorting, processing, and shipping. This means more smaller-sized delivery vehicles on roads, more competition for parking and curb space, and increased demand for the latest technological advancements to refine operations and streamline processes. The evolution and shifts in e-commerce sales and distribution will continue to shape the freight and logistics industry. Technologies like automation of delivery vehicles, drone technology, and integration of Artificial Intelligence (AI) will continue to affect how companies operate. As e-commerce and remote work policies continue to shift the way people interact with their built environments, and as there are a greater number of goods, and vehicles transporting those goods, on roadways, it will be crucial for local agencies to take a proactive and thoughtful approach on how to best consider and prepare for these challenges.

Electrification

The USDOT's National Electric Vehicle Infrastructure (NEVI) Formula Program provides funding to states to strategically deploy electric vehicle charging stations and to establish an interconnected network of stations that can facilitate data collection, access to charging, and reliability.³ Enacted in November of 2021, under the BIL, the program provides funding for up to 80% of eligible project costs. To receive funding, states must submit plans to the FHWA and Joint Office of Energy and Transportation for review. Additionally, 10% of NEVI Formula funding is set aside for each fiscal year for DOT to award grants for states and localities requiring additional assistance to deploy charging stations under this program.

Georgia's allotment of NEVI funds under its deployment program is approximately \$135 million.⁴ The money will be used to develop its portion of the national network. The Georgia Electric Vehicle Infrastructure Deployment Plan, completed in August 2022, outlines how Georgia intends to invest FY2022-2023 funding and the state's strategy for the remaining fiscal years of the program. GDOT has created a project website that provides information on the NEVI Deployment Program, which can be accessed at www.nevi-gdot.hub.arcgis.com.

As of July 2024, GDOT has awarded five project sites under the Georgia NEVI Deployment Program, Round 1. Round 1 projects include design and construction of charging centers in Tifton, Fort Valley, Dublin, Metter, and Brunswick. Round 2 is currently in procurement.

The state currently has ten alternative fuel corridors (AFCs) for electric vehicles. These include I-16 from Macon to Savannah and I-75 from the Tennessee line to the Florida line. Currently there are no NEVI-Compliant DC fast chargers (DCFCs) within one mile of Georgia's AFCs in the Macon area. Nearby DCFC locations include Forsyth and Cordele, as shown in Figure 67.

GDOT has a programmed project to build an electric vehicle (EV) charging station near Exit 3 (US 80) on I-475 (GDOT PI #0020345). In 2024, Macon-Bibb amended the 2050 MTP and FY2024-2027 TIPs to include the project. While electrification of large fleets for long-haul, heavy duty trucks is a long way off (current research indicates that hydrogen fuels may be more viable for these heavy vehicles), there are many fleets of smaller, more compact delivery vehicles switching to electric vehicles. Examples include Amazon, FedEx, and UPS, as well as smaller companies. Electrification will continue to be an important component of the discussion surrounding the future of freight, especially as communities work toward reducing their environmental impact and meeting goals for mitigating climate change.

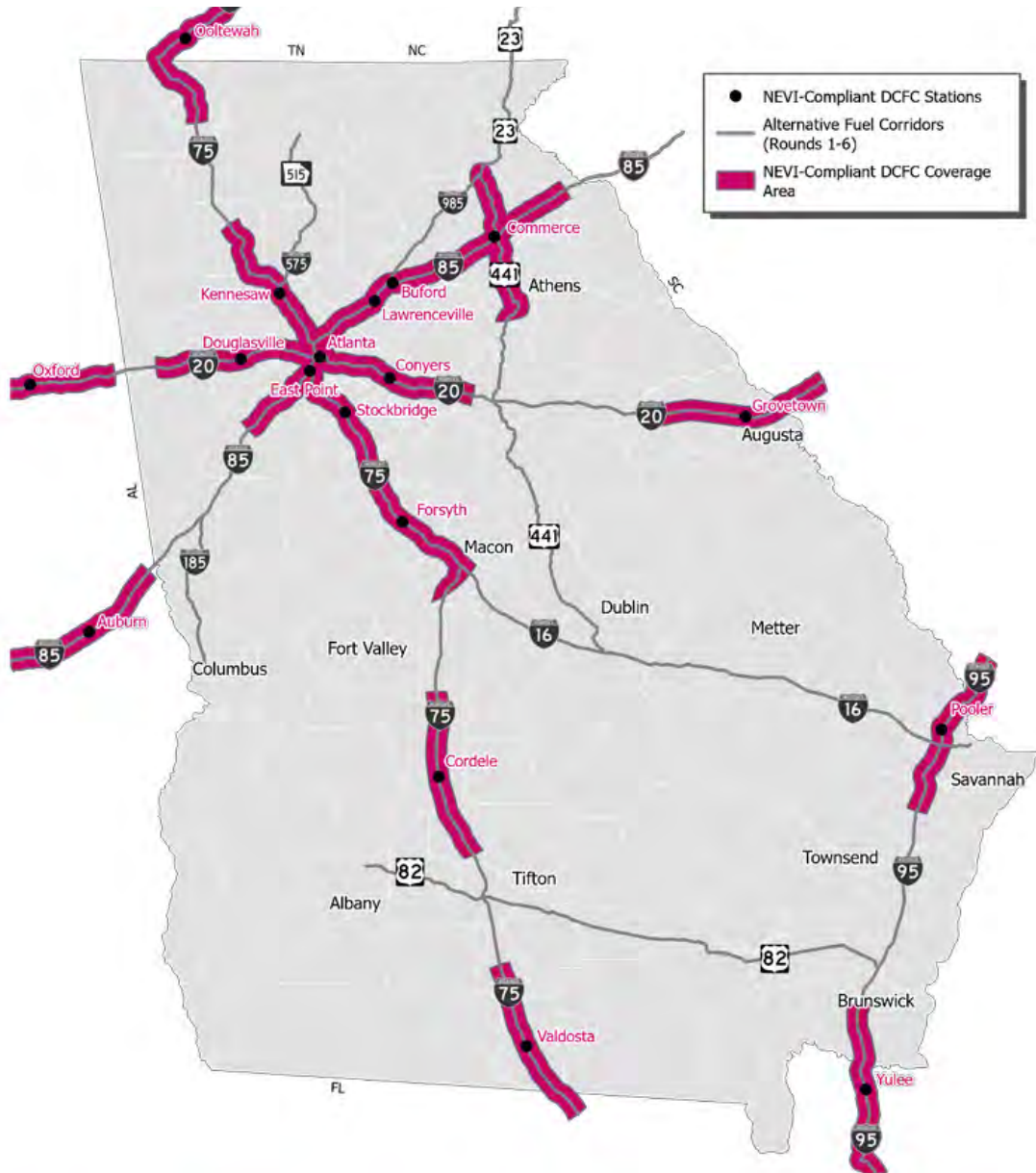


Figure 16: Existing NEVI-Compliant DC Fast Chargers in Georgia

Source: Plugshare.com

Figure 67. Existing NEVI-Compliant DC Fast Chargers and Coverage Area in Georgia

Source: GDOT NEVI Deployment Plan.

Policies and Strategies for the Future

In addition to the traditional solutions of increasing capacity, improving operations at key intersections, and improving safety to reduce the frequency and severity of crashes, there are a number of strategies that should be considered as part of a holistic freight plan. This section summarizes a few potential ideas for consideration to help maintain an efficient and viable freight system in the MATS region.

Corridor Management

Corridor management is an important component of planning that considers managing and maintaining corridors at both the individual corridor and collective network levels. With the rise of ITS technology, corridor management strategies have the potential to be integrated, and collaboration among various agencies allows planners to look at a corridor as a part of a system rather than an individual asset. More and more agencies are turning to corridor management - helping synchronize traffic signals, maintain reasonable flow of vehicles, and even giving priority to certain vehicles.

As noted in previous sections, several segments of the non-interstate NHS in the MATS region could benefit from corridor management strategies, including portions of US 80, US 23, and US 129, among others. Recognizing that the I-16/I-75 interchange is currently under construction, it is anticipated that these corridors will benefit from improved operations and reduced travel delays over the next several years. Along other corridors, opportunities for improvement of capacity, operations, and safety will be reviewed alongside prior recommendations from the MATS 2050 MTP.

Technologies such as connected vehicles (CVs), which are equipped with applications, services, and technologies to connect vehicles with other vehicles or with surrounding infrastructure, are changing how communities manage their road networks, including freight corridors. GDOT is working with the Atlanta Regional Commission on a Regional Connected Vehicle program to install CV technology at over 1,000 intersections. The agency also worked with the Georgia Ports Authority to conduct a freight pilot involving the installation of roadside units at signalized intersections around the port and at key entrances and exits. These roadside units could broadcast traveler information on roadway conditions or incidents, and communicate with traffic signals to give priority to freight vehicles equipped with the appropriate technology.

Industrial Development and Workforce Retention

Communities with a significant base of light and heavy industry and warehouses/distribution facilities experience a number of benefits, including: jobs that are generally higher paying and often do not require a college diploma or other advanced education; increased tax revenues and a consistent tax base with longer-term leases on property; and a dynamic and diversified economy that is more resilient during periods of economic downturn. At the same time, industrial uses, particularly heavy industry, is sometimes “vilified” because of the ensuing impacts to air quality and noise as well as increased truck traffic. These conflicts tend to be more common in urban areas where diverse, and sometimes competing or incompatible, land uses coexist in close proximity to one another.

As cities look to accommodate population growth, freight-intensive and industrial land uses can come under pressure from residential or commercial development. While these development pressures can be positive – more people wanting to live closer to jobs and other amenities – preserving industrial and freight-generating land uses is critical to economic competitiveness, maintaining extant businesses, good jobs, and being able to serve local businesses.

Carving out spaces where industrial and freight-related businesses can thrive is important. Counties in the MATS planning area have identified future industrial land uses through comprehensive planning efforts. The area is already home to major leading industries in aerospace, food processing, warehousing and distribution, among others. The Macon-Bibb County Industrial Authority (MBCIA) offers resources and helps attract new business investment to the area, encourage expansion of industries, and improve quality of life in the Macon-Bibb County area.⁵ The authority works with partners to create jobs and expand the tax base of the area. In this role, MBCIA produces annual reports summarizing accomplishments and works to identify suitable properties for new businesses or those seeking to relocate.

As of July 2024, MBCIA currently lists 57 properties with available space throughout Macon-Bibb County. These include properties near the Middle Georgia Regional Airport, at the I-75 Business Park, along Weaver Road, and at the Macon Logistics Center - a 108-acre industrial development site offering industrial flex space on Cavalier Drive. Policies and programs to incentivize businesses, help workers, and create a place people want to be will go a long way toward helping retain industrial businesses and local workers.

Resilience and Vulnerability

Vast swaths of the Macon region are susceptible to flooding due to heavy rain events, tropical storms, and tropical depressions. The Ocmulgee River runs through the heart of Macon and several freight corridors are adjacent to the river, while others cross over it. The roads on the east side of the region are particularly vulnerable, due to their proximity to flood hazard areas, or floodplains, and wetlands. Interstate 75 is a designated evacuation route and should continue to be prioritized for maintenance and upkeep.

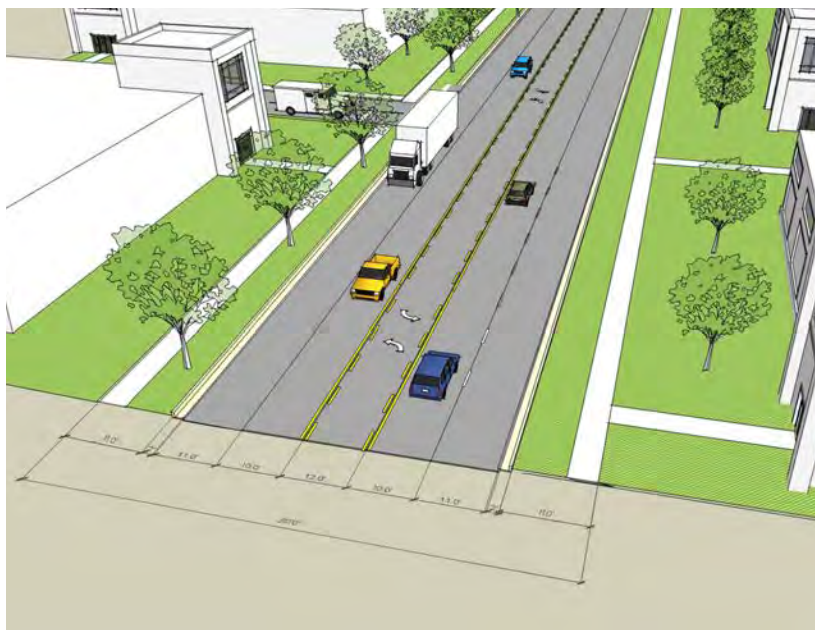
Disruptions and vulnerabilities also take the form of incidents on area roadways. Crashes are among the top contributors to bottlenecks and reduced travel time reliability. Improving safety on freight corridors will go a long way toward reducing the frequency of crashes, thereby improving the performance of the freight network.

Technology and IT infrastructure is also subject to potential vulnerabilities. Threats such as cyber attacks can cripple computer systems used to manage traffic signals, changeable message signs, and other critical infrastructure. These types of issues pose a less direct threat on the freight network and infrastructure than physical damage or blockages, such as from natural disasters, extreme weather, or traffic incidents; however, should cyber attacks or failures of computer systems occur, they have the potential to significantly impact freight operations. Disruptions to the freight network could have cascading effects on supply-chain, military operations, and other freight-dependent systems.

Design for Multimodal Environments

The mixing of freight, industry, and growing multimodal networks can help workers get to and from jobs more easily, offering choices other than driving; however, the mixing of freight and non-motorized traffic can present challenges in terms of safety. In some areas, specific technologies are being tested to alert truck drivers to the presence of pedestrians and cyclists. Other communities are taking an approach that prioritizes street design that emphasizes safety over throughput and “right-sizing” roads in ways that can accommodate heavy trucks, tractor trailers, and other freight vehicles. As an example, the City of Atlanta “Street Atlanta” Design Guide⁶ lays out design principles, with safety among the top priorities. It has specific design guidance for truck route, as well as suburban and rural “production” corridors that run through designated Urban, Suburban, Production, and Growth character areas. Guidance includes designing 11-foot travel lanes along truck routes, six-foot-wide sidewalks with five-foot-wide planting or furniture zones, and requiring vehicle/street lighting. Medians are recommended to be 12 feet wide and bicycle facilities are typically kept separate from truck routes. An example of design guidance for Suburban and Rural/Production Arterials is shown in Figure 68.

SUBURBAN AND RURAL/PRODUCTION ARTERIAL



Design Element	Typical
Travel Lane Dimensions	10'-0"
Number of Travel Lanes (per direction)	Maximum 2
Bicycle Facilities ¹	None
Planting/Furniture Zone	5'-0"
Sidewalks/Clear Zone	6'-0"
Supplemental Zone	None
Lighting	Vehicle/street required. Minimum horizontal clearance from back of curb should be 1'-6"
On-Street Parking	None
Median	Shared left-turn lane, 12'-0"
Cross Section Total	80'-0"
Curb Type	Concrete with gutter, 2'-0"

¹ Bicycle facilities on local streets should be designed as Neighborhood Greenways if recognized in a City adopted plan

Figure 68. Example of Design Guidance for Production Corridors

Source: City of Atlanta. Streets Atlanta

Summary and Conclusions

The state of freight and goods movement in the Macon region is generally healthy and is also in flux. While there are some segments of key freight corridors that experience regular congestion, bottlenecks and are less reliable when it comes to travel time, there are a significant number of trucks traveling into and out of the MATS planning area carrying key commodities and helping meet the increasing demand for e-commerce and online shopping. The ongoing reconstruction of the interchange at I-75 and I-16 is likely causing short-term challenges with congestion and delays; however, the long-term benefits are likely to include reduced travel time through the Macon area, less congestion, and fewer bottlenecks in the future. Likewise the increased capacity of the interchange will allow more freight traffic to move through the area. Similarly, the ongoing work to replace bridges over area roadways and railroads will help keep freight moving smoothly into the future.

Comprehensive plans and the work of economic development agencies and the Macon-Bibb County Industrial Authority are already helping set the stage for continued attraction and retention of freight, logistics, and industry-related businesses. Allowing those businesses to locate and grow in the Macon region will strengthen job growth, increase the local tax base, and make the region more attractive to other related industries in the future. While the Macon area has not regained pre-pandemic job numbers yet, the region has seen steady growth over the past few years - a topic that will be explored more in a subsequent technical memorandum as part of the 2050 Freight Plan. Tying transportation investments to land use decisions is critical to the overall success of the region. Targeting future expansion of industrial and freight businesses to areas that are already equipped for such facilities will help preserve environmentally sensitive and residential areas, while better serving industry through existing and improved or forthcoming infrastructure.

Targeted safety improvements along corridors like US 129 and SR 74 will help reduce the severity and likelihood of crashes, thereby also improving travel time and reliability through these corridors. Recommendations should be explored that examine opportunities to improve travel time and efficiency through capacity, operations, and safety improvements along corridor such as US 23, US 41, US 80, and US 129.

Collectively, projects already underway combined with potential future improvements - to be identified through this and other planning efforts - will help ensure that the MATS area can continue to serve freight companies, manufacturers, and other industrial type businesses. As investments in transportation systems and infrastructure are evaluated, it will be important to consider the impacts of these improvements on the overall community, including the environment, community health, equity, and safety. Creating a welcoming environment that fosters continued investment in industry, the local economy, and job creation is important, but so is creating a welcoming, thriving community where people want to live, work, play, spend money, spend time, and call home. Designing projects that enable continued economic development, accommodate freight growth, and make the Macon region an attractive place to live and work will be critical to the success of the region over the next 25 years.

Chapter 5 Endnotes

- 1 US Census Bureau. 2024, May 17. Quarterly Retail E-Commerce Sales., <https://www.census.gov/retail/ecommerce.html>
- 2 EMARKETER (formerly Intelligence Insider), cited in Forbes Advisor. Snyder, K. 2024, March 28. 35 E-Commerce Statistics of 2024. https://www.forbes.com/advisor/business/ecommerce-statistics/#sources_section
- 3 US Department of Energy. Alternative Fuels Data Center. <https://afdc.energy.gov/laws/12744>
- 4 Georgia Department of Transportation. Georgia National Electric Vehicle Infrastructure Deployment Program. <https://nevi-gdot.hub.arcgis.com/>
- 5 Macon-Bibb County Industrial Authority. <https://mbcia.com/about/>
- 6 City of Atlanta, Atlanta's Transportation Plan. 2018. Streets Atlanta - A Design Manual for Multimodal Streets. <https://www.atlantaga.gov/home/showpublisheddocument?id=48107>