

Trends Impacting Freight

As freight-related activity becomes an increasing part of the fabric of life and work in Middle Georgia, thoughtful planning is needed to ensure that the MATS area grows sustainably, with community and environmental health at the forefront of policy decisions and capital improvements. Freight transport is integral to economic growth, quality of life, and the provision of essential goods within the region. Given trends such as changing consumer behaviors and expansion of industry, the presence of freight moving into, out of, and through the MATS region is expected to continue to expand. However, aggressive growth should be balanced with awareness and mitigation of the adverse impacts of freight activity on vulnerable communities as well as ecologically and culturally significant assets within the region.

Freight and General Purpose Traffic on a Bridge in Macon



Vulnerabilities and Resiliency

The project team analyzed and assessed issues that pose risks to the MATS area freight network. This section reviews previous analyses of systemic vulnerabilities and resiliency plans produced for the area and assesses the risks posed to the regional freight network by a host of hazards. This assessment relies heavily on identifying disruptions to the freight network that are most likely to occur within the MATS region, drawing from both historical data and future anticipated conditions. Potential disruptions include environmental hazards, such as extreme heat and severe rain events, and social hazards like cyberattacks and vehicular crashes.

Freight Network Disruptors

The Georgia Department of Transportation (GDOT) has identified challenges for the freight and logistics network in Georgia, including commercial vehicle and rail safety, increased truck traffic impact on infrastructure, traffic congestion due to increased freight demand, and intermodal facilities connectivity. A Resiliency Committee was established to identify vulnerabilities and improvements. The Georgia Hazard Mitigation Strategy (GHMS) document, an update to the 2019 State of Georgia Hazard Mitigation Plan, serves as a blueprint for state and local hazard mitigation efforts. It ranks Macon-Bibb County highly in terms of vulnerability to natural disasters and power outages.

Notably, the plan ranks Macon-Bibb County highly relative to other Georgia counties in terms of the number of critical facilities exposed to high wind speeds, average annual power outages, number of potential displaced people and value of building losses in the event of a 100-year-flood, and state facility exposure to moderate to high wildfire risk.

The Macon-Bibb County Hazard Mitigation Plan Update (2020-2025) identifies several extreme weather events and technological hazards that threaten life and property. The project team reviewed recent events disrupting freight operations in various parts of the U.S. to help inform the assessment of impacts, likelihood, and duration. These include:

- Hurricane Helene (2024)
- Hurricane Milton (2024)
- Mississippi River Drought (2023-2024)
- Port of Seattle Cyber Attack (2024)
- Estes Express Lines Cyber Attack (2023)

HAZARDS AND POTENTIAL DISRUPTORS TO THE FREIGHT NETWORK

CRASHES

CYCLONES AND SEVERE STORMS

HEAT WAVES

SNOW AND ICE STORMS

CYBERSECURITY ATTACKS

PANDEMICS

WILDFIRES

After reviewing prior plans and recent disrupting events, the project team decided to focus on several key types of events that have potential to interrupt or significantly impact freight operations in the MATS planning area. These include: vehicular crashes, tropical cyclones and severe storms, heat waves (or extreme heat), snow and ice storms, cyberattacks, infectious disease pandemics, and wildfires.

The environmental and crash-related hazards can result in a variety of impacts, including damage to transportation network assets; congestion; power loss; and, in severe cases, catastrophic infrastructure failures. Anticipating and safeguarding against their potential impacts should be a high priority for policy makers.

Cyberattacks and pandemics are emerging sociological hazards to transportation systems. These hazards can change human behavior, impact traffic patterns, and disrupt the freight network's supply chain, among other impacts. Cyberattacks targeting public digital assets (i.e., municipal, state, or federal networks) and private digital assets of freight operators and others involved in the transportation industry are a particular concern from the lens of freight network disruptions.

The following sections briefly summarize potential disruptions to the freight network in the MATS region. Additional details on these events and their risks to freight in the MATS planning area are provided in the System Vulnerabilities & Resiliency technical memorandum included as an appendix to this plan.

Vehicular Crashes

Crashes can create bottlenecks and cause significant delays on the freight network. Crashes are most concentrated on the interstates (I-75, I-475, and I-16) and other high-volume routes like US 129. Due to the high volume of vehicles on freight-intensive routes, these corridors typically see the greatest number of crashes. In addition to slowing or stopping traffic, freight vehicles involved in a crash may be carrying hazardous materials, particularly on I-16 and I-75 between the Port of Savannah and Metro Atlanta. A hazardous material spill has the potential to disrupt traffic operations for a longer duration.

In assessing the overall impact of crashes, the team considered the effects of collisions not just between vehicles on roads and highways, but also collisions involving wildlife, trains, and airplanes.

- Collisions with wildlife are a threat in the MATS area, especially along routes that traverse wooded or less developed areas. While wildlife causes a lower frequency of collisions, compared to other crash contributors, the impact may be significant.
- Crashes at at-grade railroad crossings have a high potential to result in serious injury or fatality for the vehicle occupants, due to the extreme weight differential between trains and vehicles. Larger commercial trucks, due to their large size and low ground clearance, may become "stuck" on railroad tracks at at-grade crossings. If a large commercial vehicle and a train collide, this disrupts operations on two types of freight networks (roadway and railroad) and may require more extensive investigation and cleanup if hazardous materials are released.
- As noted elsewhere in this plan, four crashes occurred at the Macon Downtown Airport between 2014 and 2023. Each of these accidents occurred during general aviation flights conducted for personal or instructional purposes. While airplane crashes are uncommon, they typically require investigation and cleanup, potentially disrupting air cargo and other activities at the airport.

Because crashes have a high likelihood but result in a relatively short period of disruption, there is a moderate impact from crashes to the freight network.

Tropical Cyclones and Severe Storms

Tropical cyclones (hurricanes, tropical storms, and tropical depressions) and tornadoes can cause major disruption to transportation networks by knocking down power lines, scattering debris, and damaging transportation assets like traffic signals. Hazards associated with tropical cyclones – such as flooding, erosion, and high winds – present public safety concerns. The primary threat to the freight network in the MATS area from tropical cyclones is flooding. On roadways and other impervious surfaces, excessive stormwater runoff can quickly cause water to rise.

Typically, in the middle Georgia region, the greatest threat from tropical cyclones and severe storms is flooding. Storms may dump significant amounts of rain in a short period of time, overwhelming drainage systems, particularly in urban areas with more impervious surface.

While surface streets, railroad tracks, and industrial facilities are all at risk of potential flooding, low-lying infrastructure close to water bodies may be more at-risk. In the MATS planning area, most bridges are in good or fair condition; however, any overtopping of the bridges has the potential to close roads and may damage bridge infrastructure. This would have the largest negative impact for freight along US and state routes, and other roadways with heavier truck volumes.

Tornadoes can also have devastating effects, and are typically more unpredictable than tropical storms, making them more difficult for communities to prepare for. Due to their violent nature, tornadoes have the potential to cause significant damage to roadways, power lines, buildings, and other infrastructure, resulting in days or weeks of cleanup.

The FEMA National Risk Index (NRI)¹¹ indicates a “relatively low” risk of hurricanes and “relatively moderate” risk of tornadoes in the MATS area. The index provides relative “Risk Index” percentiles and ratings based on data for expected annual loss due to natural hazards, social vulnerability, and community resilience. Qualitative ratings describe the community in comparison to all other communities at the same level, ranging from “very low” to “very high”. Based on historical impacts, global climate trends, and the vulnerability of some transportation assets, cyclones and severe storms represent a moderately likely short-term vulnerability with the overall potential for high impacts to the freight network.

Heat Waves

The Fifth National Climate Assessment determined that heat waves are happening more frequently in the Southeastern United States. The assessment also determined that measures of thermal comfort based on factors such as temperature and humidity is trending upwards across the region and is expected to continue to increase throughout this century. As development increases and new areas begin to urbanize, the heat island effect may magnify the frequency and intensity of extreme heat.

Heat waves can damage critical components of transportation infrastructure such as the power grid, asphalt, train rails, and electronic components of traffic signal control cabinets and ITS technologies. The damage to infrastructure may require the closure of roads and rail lines for repair, disrupting freight operations. Infrastructure located near high-density, urbanized areas may be more at risk due to higher temperatures associated with the urban heat island effect. Heat waves can also result in power outages. As residents rely on air conditioning to stay cool, energy demands and the potential frequency of power outages increases. These events may disrupt supply chains if they cause work stoppages or if products spoil.

Heat waves present a public health concern for everyone, but certain groups – such as outdoor workers in the construction, service, and agricultural industries – are particularly at risk. This may result in supply chain disruptions and slower transportation project delivery if workers producing goods, loading

11 FEMA, National Risk Index, <https://hazards.fema.gov/nri/understanding-scores-ratings>

cargo, and doing roadway construction cannot work during extreme heat conditions.

The FEMA NRI notes that currently there is a “relatively moderate” risk of heat waves in the MATS area. Heat waves are projected to become more frequent and intense in the future, and they pose a threat to infrastructure, freight operations, and public health.

Snow and Ice Storms

Snow and ice storms are relatively infrequent in middle Georgia. When they do occur, however, they can be very disruptive. Prior to an anticipated snow or ice event, GDOT treats interstates and major state routes with solutions that help reduce the amount of ice build-up. However, roads are typically considered unsafe for travel by the general public, and truck drivers will likely delay deliveries to and from impacted areas. Bridges and overpasses can be especially dangerous for drivers due to their tendency to ice over more readily than other portions of the roadway. Ice can also accumulate on power lines, creating widespread power outages and closing businesses. In Georgia, snow and ice events typically are resolved within a few days once temperatures rise and the snow or ice melt.

Snow and ice storms are notoriously difficult to forecast in the southeastern U.S. The timing, type of precipitation, and areas impacted may be predicted with certainty only one or two type of precipitation, and areas impacted may be predicted with certainty only one or two. For this reason, it is essential for local and state agencies, representatives from railroads and airports, and major freight generating facilities to remain in close and continuous communication.

Snow Paralyzes the South

A rare winter storm glazed the South with snow and ice, choking traffic and stranding drivers in a part of the country unaccustomed to winter weather of any kind.



A man stands on the frozen roadway as he waits for traffic to clear along Interstate 75 Wednesday, Jan. 29, 2014, in Macon, Ga.

Source: NBC News / John Bazemore / AP (<https://www.nbcnews.com/storyline/deep-freeze/snow-paralyzes-south-n18436>)

The NRI rates ice storms as a “relatively high” risk and winter weather as a “relatively moderate” risk in the MATS area. While uncommon in middle Georgia, these events can cause significant impacts across all sectors, including the freight industry. Depending on the scope and duration of the event, roads may be closed for hours or days, and essential facilities may not be able to receive critical deliveries.

Cybersecurity Attacks

Information technology systems are a potential vulnerability in the freight system. Cyberattacks can directly impact the freight network by directly accessing intelligent transportation systems. For example, hackers could change variable-message signs or change traffic signal timing and cause chaos on the road if they access advanced traffic management systems (ATMS). Security breaches of software used for administrative functions can also delay freight operations or contribute to supply chain issues, even if physical transportation infrastructure is not directly compromised. For instance, the Colonial Pipeline ransomware attack on the company’s billing system led to closure of their pipeline for nearly a week, creating a fuel shortage in the southeastern states. Refer to Table 10 for more details about the Colonial Pipeline attack. Robust cybersecurity systems are essential for freight-related industries and agencies responsible for transportation systems to avoid cyberattacks and disruptions to freight movement.

Attacks that target municipalities can disrupt public transportation planning, engineering, construction, and operations activities. Attacks on individual freight operators are also a concern, as they could cause chaos on roadways and railroads and at freight distribution facilities and ports if their operating systems are compromised.

Cybersecurity represents a moderately likely vulnerability to the MATS region. While the duration may be relatively short, there is the potential for high and widespread impacts to the freight network, depending on the specific systems that are targeted.

Infectious Disease Pandemics

In March of 2020, the World Health Organization (WHO) declared COVID-19 a pandemic, due to its widespread impact on a global scale. In addition to the public health impacts, the outbreak of the pandemic had economic impacts and ramifications for freight patterns within the U.S. The freight industry as a whole did not anticipate the speedy recovery in demand for imports after the initial decrease at the onset of the pandemic. A combination of factors, such as shipping container and labor shortages as a direct result of the pandemic, manifested in canceled sailings and flights, port bottlenecks, and increased volatility throughout the freight network.

The COVID-19 pandemic accelerated the national consumer trend of favoring online shopping over brick-and-mortar retail, as many people avoided public spaces amid health-related fears. Despite the initial reduction in freight capacity and decreased consumer spending in 2020, e-commerce spiked dramatically.¹² In the years following, e-commerce has continued to grow, albeit at a slower pace than before or during the pandemic.

The short-term and lasting freight-related impacts of the COVID-19 pandemic serve as potent reminders of the potential consequences of future pandemics. Complex ripple effects on supply chains as well as human health and behavior can create volatility in the industry and stymie growth and efficiency. Infectious disease pandemics are rare events. However, as global trade and travel continues, pandemics will continue to pose a threat to freight operations in the MATS area. The potential for long-lasting and widespread impacts on freight patterns, the study area’s reliance on freight imports from coastal ports, and the potential for infectious diseases to precipitate labor shortages make pandemics a moderate threat to freight operations in the MATS area.

12 U.S. Bureau of Labor Statistics. 2021. Consumer expenditures in 2020, <https://www.bls.gov/opub/reports/consumer-expenditures/2020/>

Wildfires

Wildfires can cause supply chain disruptions and direct impacts to transportation infrastructure, such as roadways and bridges. Their occurrence is unpredictable in nature, but they typically break out during drier seasons. Although Macon-Bibb County requires new construction to adhere to hazard-resistant building codes, there are 15 historic districts containing over 6,000 historic buildings, primarily clustered within the old Macon city limits. These historic buildings, some of which are centuries old, were built before modern fire safety regulations were introduced. The presence of these older buildings increases the likelihood of wildfires to spread and damage infrastructure.

Eighty-seven percent of Macon-Bibb County's population resides within a zone classified as wildland-urban interface (WUI). The WUI is defined by the U.S. Fire Administration as a transitional zone where human development meets undeveloped wildland or vegetative fuels. These zones pose a unique threat to people and transportation networks due to the heightened risk of wildfires spreading to developed areas and damaging a variety of assets in these zones. Wildfires can disrupt the supply chain by damaging freight packing and distribution facilities and freight vehicles. They can also damage transportation assets and related infrastructure, warping, melting and incinerating infrastructure like railroad tracks, pavement, bridge decks, energy infrastructure, and more.

The FEMA NRI notes that there is a "very low" risk of wildfire in the MATS area. While the occurrence of wildfires may be rare, if one were to occur, it could have significant impacts to the freight network, depending on the size and duration of the fire, and proximity to critical assets. Although the majority of the MATS area is at higher risk of wildfire due to the wildland-urban interface, the likelihood of direct, extensive damage to the freight network due to wildfires is relatively low.

Table 10. Summary of Vulnerabilities to the MATS Freight Network

Event	Likelihood	Timeframe	Duration	Impact
Vehicular Crashes	High	Ongoing	Short	Moderate
Tropical Cyclones & Severe Storms	High	Ongoing	Moderate	High
Heat Waves	Moderate	Long-Term	Moderate	Low
Snow & Ice Storms	Low	Ongoing	Short	High
Cybersecurity Attacks	Moderate	Ongoing	Short	Moderate
Pandemics	Low	Unknown	Long	Moderate
Wildfires	Low	Ongoing	Moderate	Low

Mitigation Strategies

There are a variety of mitigation strategies that MATS and its partners can undertake to address some of the vulnerabilities identified for the freight network. The System Vulnerabilities and Resiliency technical memorandum details several cross-cutting mitigation strategies and their potential to address key vulnerabilities. Strategies cover a variety of categories, ranging from infrastructure improvements and intelligent transportation systems (ITS) solutions to improved coordination between agencies.

Safety Countermeasures

While crashes will continue to be a hazard, especially with projected traffic increases, there are specific infrastructure improvements that have been proven to help improve roadway safety. These include enhanced signage and warning systems at at-grade crossings; refreshed pavement markings at intersections; and improvements that could be implemented along freight-intensive corridors, such as access management (e.g., installation of medians, closure of redundant driveways), improved roadway lighting, and speed limit reduction.

Flood Mitigation

To mitigate the impact of flood events, there may be opportunities to improve drainage in low-lying areas that are susceptible to flooding, or consider elevating roadways or bridges that lie within flood zones. Installing green infrastructure such as landscaping and new trees can help to absorb and filter stormwater runoff.

Construction and Pavement Materials

Pavement binders can be added to asphalt mix to help roadways withstand higher temperatures, so they are less prone to rutting and other damage. Similarly, pavement can be given different types of coating to help them be cooler in high temperatures, making them more resilient to extreme heat. New roadways could be constructed from concrete, which is more heat-resistant than asphalt and less likely to become deformed due to prolonged high ambient temperatures as well as in a wildfire.

Equipment for Snow and Ice Clearing

Generally, GDOT would be responsible for clearing snow and ice on the most freight-intensive routes in the MATS area. However, area agencies may consider increasing the inventory of snow and ice clearing equipment to help mitigate impact on local roads, especially corridors that lead to hospitals and other critical facilities.

Advanced Traffic Management Systems

Advanced Traffic Management Systems (ATMS) are a form of intelligent transportation technology that allows workers in transportation management centers (TMC) to remotely monitor and respond to traffic events and deploy engineers and technicians as needed. ATMS opens up a variety of signal timing capabilities. Adaptive signal timing can automatically adjust the timing of the traffic signals in response to traffic volumes in real time, helping ease traffic congestion. Coordinated signals are synced to a master clock, creating more reliable trips by progressively giving vehicles green signals along key routes. If there is a crash, road closure, or another incident that disrupts traffic flow, ATMS can also allow for real-time modifications to help restore traffic operations.

Connected Vehicle Technology

Connected vehicle technology allows vehicles to communicate with other vehicles and surrounding infrastructure, providing drivers with valuable information. The most commonly used applications are for safety and operations. For example, drivers could receive notifications about incidents ahead on the roadway if a road is blocked, or if they are approaching a work zone or school zone.

Freight Fleet Automation

Freight fleet automation consists of the systems that freight providers use to automate and streamline their vehicle fleets. There are substantial benefits for both safety and operations. Automation can be used to track trucks in real-time, dispatch drivers, route vehicles around traffic congestion or incidents, and schedule needed maintenance.

Cybersecurity for ITS

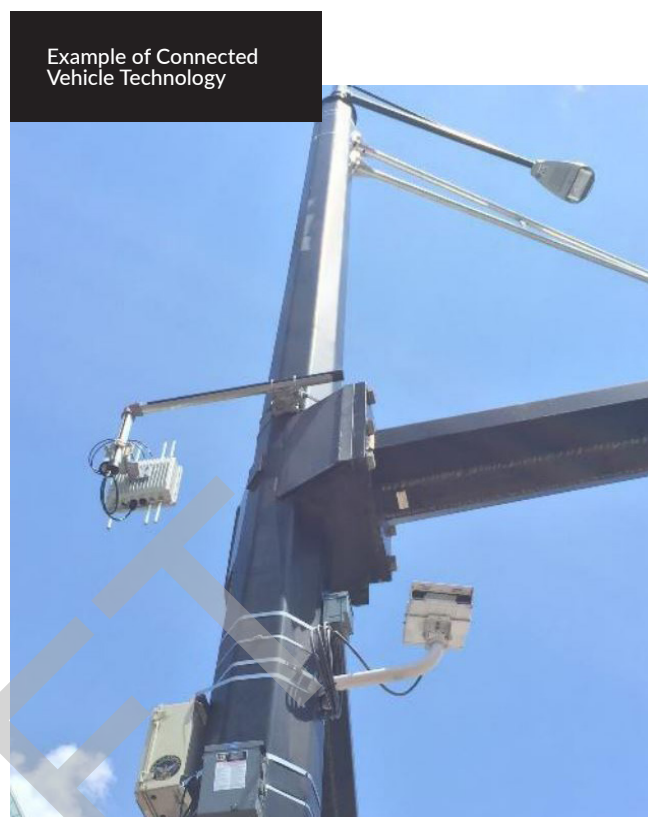
As ITS applications become more advanced and more widely used, there is an increased risk of cyberattacks.

The U.S. Department of Transportation, through the Office of the Chief Information Officer, has compiled resources for agencies to perform self-assessments as well as best practices for developing incident responses, stopping ransomware, security and privacy controls for information system, and more.¹³ In addition to these specifications, government agencies may develop cybersecurity incident plans to prepare for future potential cyberattacks.

Improved Coordination

Addressing vulnerabilities on the freight network requires coordination with local, state, and federal partners. Some coordination may occur on an ongoing or regular basis, while other agencies would be engaged primarily during emergencies or incidents. Coordination between public works, transportation, public health, information technology, police, fire and emergency management staff as necessary on a local level can help ensure that resources are deployed quickly and efficiently to mitigate transportation network disruptions when they occur.

Local agencies must also coordinate with state-level and federal agencies. As the MATS area becomes more urbanized, the Macon-Bibb Public Works Department may consider opening a traffic management center (TMC) with staff dedicated to monitoring conditions, modifying adaptive signals, and coordinating with GDOT as needed.



13 US DOT, Cybersecurity Resources, <https://www.transportation.gov/mission/office-secretary/office-chief-information-officer/cybersecurity-resources>

Growth in Freight Related Job Opportunities

The Economic Development Market Assessment (see Technical Memorandum #2 in the appendices to this plan) provides insight into potential future freight growth related to current and projected economic factors and the opportunities and challenges faced by industries that utilize or create freight. Freight-related industries are a key part of the MATS regional economy, employing a significant number of residents and generating much of the regional output, led by the manufacturing sector. The region experienced strong job growth in freight-related industries like manufacturing (24% increase) and transportation and warehousing (74% increase) since 2010. Recent investments by large manufacturers are expected to continue this growth.

Aligning with national trends, a large share of the industrial job growth since 2010 has been related to the rise of e-commerce. Transportation and warehousing was the fastest growing employment sector in the region and may have additional growth potential when compared to national trends. In addition to transportation and warehousing, manufacturing continues to be a leading sector in regional output, employment and quality of jobs.

While the regional economy is projected to continue growing, there are some challenges for new and existing businesses that may impact the MATS Region in the coming years. Growing the workforce by retaining talent and attracting skilled workers to the region is key. Continuing to leverage key resources and proximity to strong markets, particularly in Atlanta and Savannah, will help support freight-related industries in the coming years.

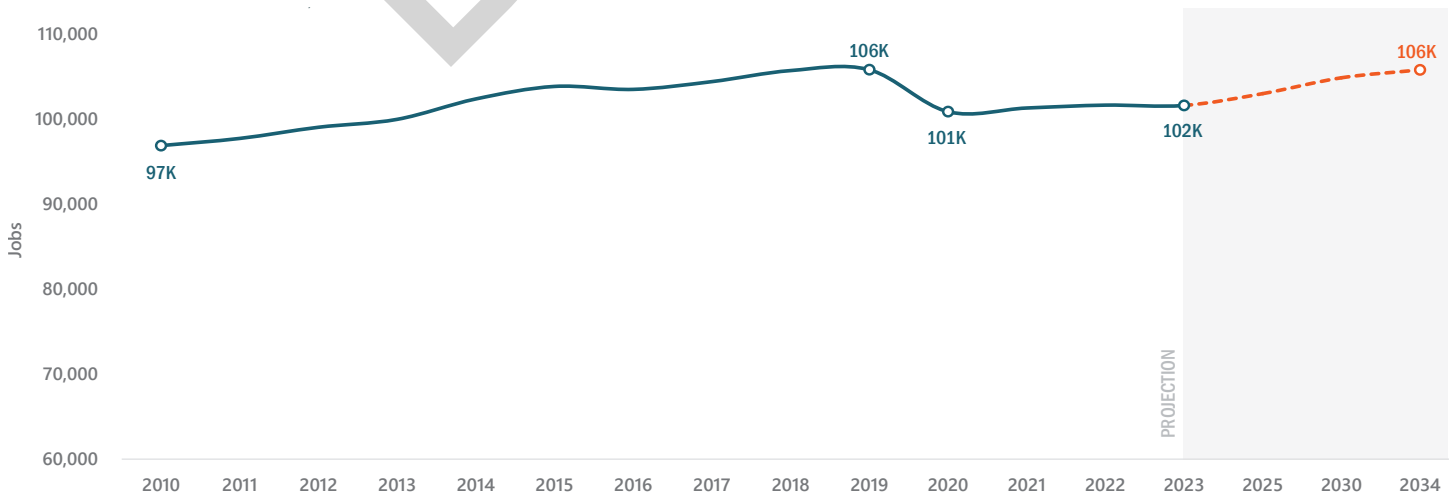


Figure 26. Employment Growth in MATS Region, 2010-2034

Source: Lightcast, SB Friedman

Population and Employment Trends

The MATS region is expected to add nearly 10,000 residents by 2050, growing at a rate of 0.12% annually, based on Woods and Poole projections. Growth is expected to be concentrated in Monroe and Jones counties. Total employment declined by nearly 5% in 2020 due to the COVID-19 pandemic and has not returned to pre-COVID levels as of 2023. Regional employment is expected to grow by approximately 0.37% per year through 2034, resulting in about 4,000 new jobs over the next ten years. The rate of job growth is projected to remain below the pre-COVID growth rate.

Currently, the three largest industries in the region are:

- Health Care and Social Assistance
- Public Administration, and
- Retail Trade

These three industries employ nearly 44,000 people, or 43% of the total workforce. The amount of public administration jobs has declined since 2010. The fastest growing industries in the region from 2010 to 2023 are transportation and warehousing (+1,930 jobs), accommodation and food services (+1,437 jobs), manufacturing (+1,335 jobs), and finance and insurance (+1,076 jobs). Overall, the growing sectors more than offset the shrinking industries, resulting in positive job growth since 2010, despite a significant decline in 2020 associated with the COVID-19 pandemic.

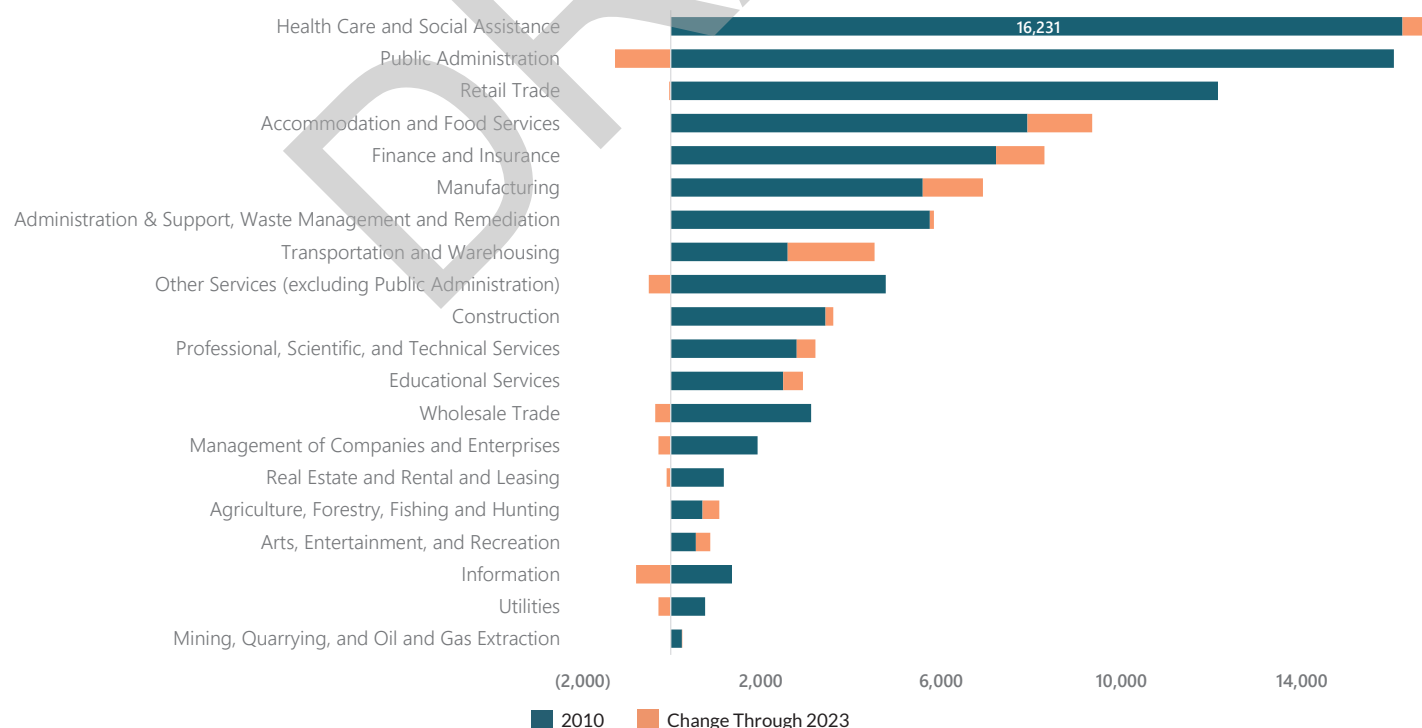


Figure 27. Job Change by Industry in MATS Region, 2010-2023

Source: Lightcast, SB Friedman

Freight-Related Employment and Workforce Trends

In 2021, about half of the jobs in the Macon-Bibb MSA were filled by workers living outside the region. Roughly 55% of the working-aged people living in the MSA also worked there and 45% worked outside the region, according to the latest LEHD data (see Figure 28). The majority of the commuting workers are coming from Peach, Houston and Baldwin counties. Around 8.4% of workers residing in the MATS region, or 7,300 people, commute to Warner Robins, Atlanta or Milledgeville for work. The commuting patterns highlight the rural nature of surrounding areas and the good road infrastructure.

The primary freight-related employers are retail trade, manufacturing, and transportation and warehousing, as shown in Figure 29. Despite a marginal decline in jobs, retail trade industries still account for 38% of all freight-related jobs in 2023. The shift to online sales has changed labor demand from jobs at and supporting traditional brick-and-mortar retailers to jobs focused on e-commerce distribution needs. The continued shift to online sales has resulted in substantial job growth in the transportation and warehousing sector, which has added nearly 2,000 jobs since 2010. Manufacturing industries also experienced substantial growth over that period, adding around 1,300 jobs, or 24% growth from 2010 employment levels.

Freight-related industries make up a large portion of the MATS Region's economy and employ approximately 29% of the workforce. The proportion of total jobs in freight-related industries has slightly declined since 2010, attributable to strong growth in large industries such as accommodation and food services and finance and insurance. According to Lightcast employment projections, the region is expected to add an additional 4,200 jobs by 2034, just over half of which will be in freight-related industries. Growth in manufacturing (+1,200 jobs) and transportation and warehousing (+800) industries is projected to continue over the next 10 years. By 2034, freight-related industries are expected to account for 32% of total employment, exceeding the previous high-water mark for freight-related jobs set in 2010.

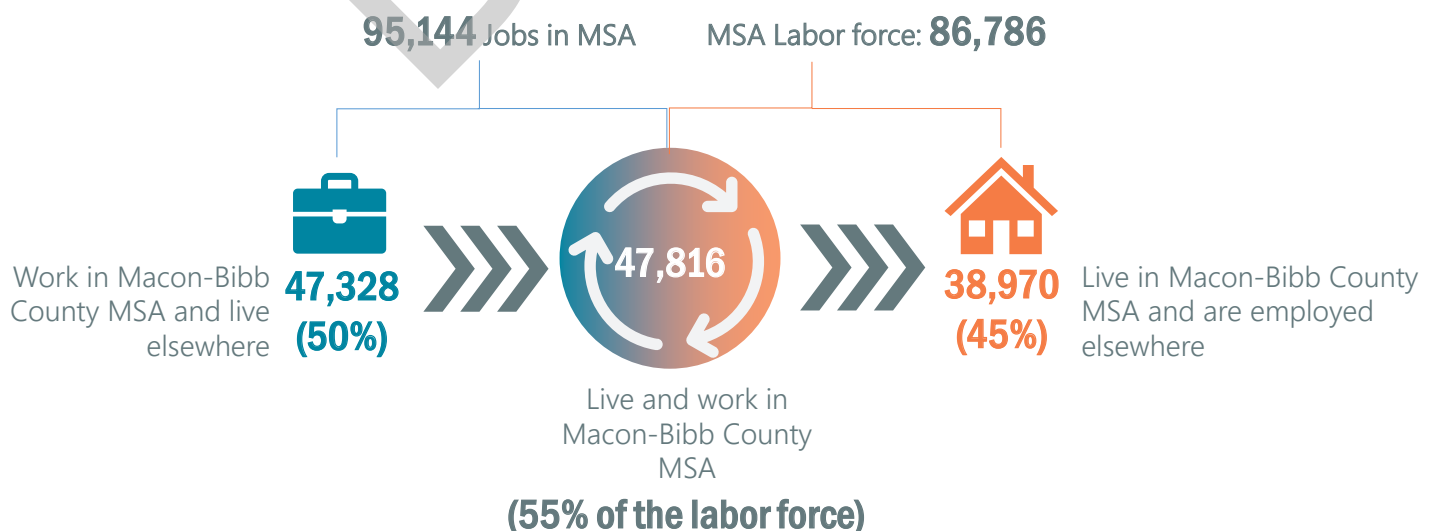


Figure 28. Inflow/Outflow of Jobs and Labor
Source: LEHD, SB Friedman



Figure 29. Freight-Related Job Changes in MATS Region, 2010-2034

Source: Lightcast, SB Friedman

The MATS Region has seen strong employment growth in manufacturing industries, though competition for skilled laborers has increased since the COVID-19 pandemic, contributing to higher turnover rates. To counter this, training and recruitment programs have improved the pipeline of workers from local high schools to industrial jobs. The Macon-Bibb Chamber of Commerce operates the Choose Macon program to connect employers to workers.

In addition to national workforce challenges, the MATS region is dealing with issues related to legacy business closures and struggles to attract and retain highly skilled laborers due to negative perceptions of the region. Efforts to market Macon's strengths are aimed at improving the attraction and retention of highly skilled workers.

Key Takeaways

Population growth in the MATS Region through 2050 is forecast to be limited, and may not meet future workforce needs of freight-related industries as they continue to grow. Attracting and retaining talent from surrounding counties, the rest of Georgia and nationwide will be important to meeting future employment needs. Freight-related jobs can provide high-quality employment opportunities and are expected to continue to support employment growth in the region. Aligning workforce development strategies with the future demand of growing freight-related industries is key for the MATS Region to maintain growth in freight-related industries.

Community Impacts

While beneficial for jobs and economic development, freight and related industries can also have unintended negative impacts on communities and natural resources within the surrounding environment. The 2050 Freight Plan sought to characterize the impacts of the freight and goods movement industries on communities and the environment within the MATS planning area (for details, see Technical Memorandum #2 in the appendices to this plan). Freight movements, such as truck traffic and rail operations, are often concentrated in specific areas along designated freight corridors and near freight generators, such as industrial and warehouse developments.

Freight activities affect the surrounding environment, including communities that live, work, and travel alongside freight movement and development. Residents and visitors in these communities may experience higher exposure to air pollution, noise, traffic congestion, and greater interactions and conflicts between personal vehicles and commercial vehicles, such as tractor-trailers. Many communities have a variety of characteristics that may make them more vulnerable to the adverse impacts of freight movements and developments. For example, high concentrations of airborne particulate matter produced by diesel trucks in a particular area may be a greater concern if a relatively high percentage of nearby residents have asthma. Freight planning processes should consider community and environmental impacts and be sensitive to ways in which unintended consequences may be reduced or prevented in the future. To better understand the impacts of freight on the MATS planning area, the project team assessed a variety of demographics of area residents and considered the location of natural and community resources in relationship to freight facilities and networks.

The team assessed data related to public health, transportation infrastructure and systems, economics, and demographics. Ultimately, a composite index was used to identify communities most susceptible to health and other impacts (noise, air pollution, traffic congestion, risk of crashes). This assessment looked at factors such as asthma rates, people diagnosed with diabetes, household vehicle ownership, household income, race and ethnicity, and proximity to freight and industrial facilities. Key considerations include:

- The percentage of adults with asthma is higher in the MATS region than the national or state averages. Areas where asthma is most prevalent among the population are located in the central and eastern portions of the MPO area, mostly concentrated within the urban core (roughly corresponding to the old Macon city limits). Populations most affected by asthma are mostly concentrated near interstates and other freight-intensive corridors such as US 80/Eisenhower Parkway and US 129/Gray Highway/Martin Luther King, Jr. Boulevard/Broadway.
- Most of the households that do not own a vehicle tend to be in the urban core, most prominently in census tracts in East Macon along I-75 (south of the I-16 / I-75 interchange) and along I-16 (just southeast of US 129/Gray Highway). The eastern portion of the urban core also has high traffic volumes and the highest exposure to diesel particulate matter.
- The percentage of the population living in poverty in the MATS area is more than double the United States average and significantly exceeds the Georgia average. Populations experiencing the greatest poverty are concentrated within the urban core and near interstates and other freight-intensive corridors such as US 80/Eisenhower Parkway and US 129/Gray Highway/Martin Luther King, Jr. Boulevard/Broadway.

- The percentage of the population living in poverty in the MATS area is more than double the United States average and significantly exceeds the Georgia average. Likewise, median family income in the MATS region is significantly lower than both the national and state averages. Populations experiencing the greatest poverty are concentrated within the urban core and near interstates and other freight-intensive corridors such as US 80/Eisenhower Parkway and US 129/Gray Highway/Martin Luther King, Jr. Boulevard/Broadway.

Unsurprisingly, residents of the core of the MATS region, in and around Downtown Macon as well as adjacent to interstate highways and major freight corridors like US 80, US 129, near Brosnan Yard and the airports, tend to experience the highest exposure to freight-related health and other impacts. An increase in freight traffic in the region could have negative health impacts on the population that lives near distribution centers or roadways with high traffic volumes. Significant numbers of heavy-duty vehicles traveling along key corridors may make it less comfortable for people to use non-driving modes of travel. Additionally, more freight on the road could cause safety issues for pedestrians and cyclists in the region, which may lead to more sedentary lifestyles as individuals choose to drive rather than pursue active modes of transport.

Many of the communities in close proximity to freight activity are also the least likely to own personal vehicles, meaning that the communities experiencing the brunt of adverse impacts associated with freight are also often less able to utilize and benefit from the transportation networks in the area. As freight developments spring up in other parts of the MATS area, measures should be taken to mitigate the adverse impacts of freight.

Increased freight activity in lower-income areas may drive property values down, exacerbating poverty in these communities. On the other hand, increased commercial freight operations may introduce job opportunities and help remediate the economic challenges that residents are facing.

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Development of a Composite Community Impact Score

Each census tract was assigned a composite community impact score according to its overall vulnerability to community impacts across the five categories of metrics. The categories include Lowest, Low, Moderate, High, and Highest. For example, a census tract categorized as “Low” had an overall low level of vulnerability to freight-related impacts at the time of this analysis. This composite scoring was developed using GIS to integrate all of the metrics. The composite results are shown in Figure 30, showing the areas most susceptible to potential impacts of freight activity.

To plan for freight in the future, areas with high community impact scores should be highly studied and thorough public outreach should occur to ensure these communities have a say in their future and that their qualities of life will not decrease with increased freight traveling through the region.

Ultimately, based on the analysis of public health, economics, transportation, environmental, and demographic metrics, as well as the composite measure map, it is clear that the areas that would be most affected by new or increased freight movements include the urban core, particularly the areas adjacent to the portion of I-75 connecting I-475 and I-16; surrounding US 129; as well as the eastern portion of Bibb County surrounding I-16.

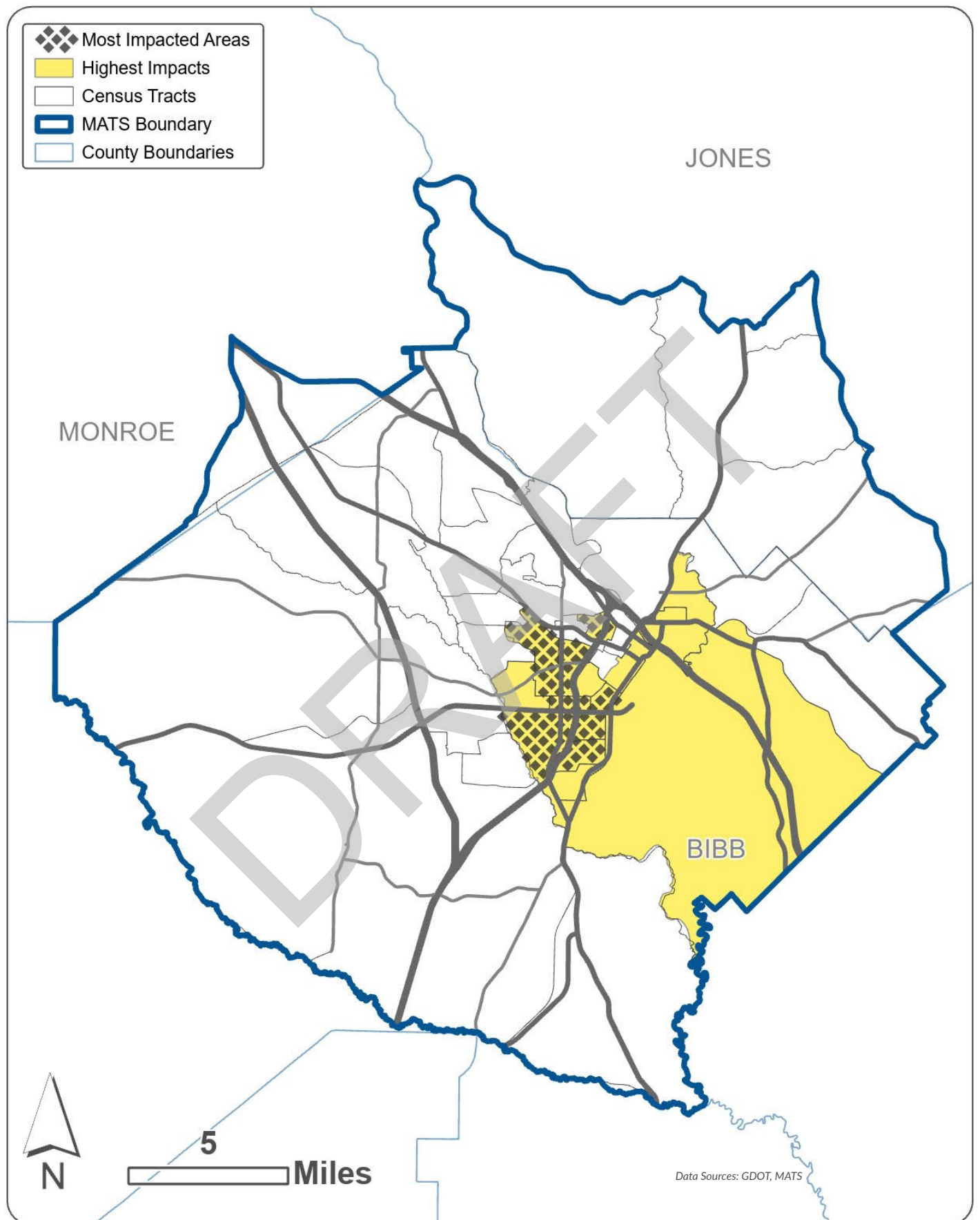


Figure 30. Areas Most Susceptible to Freight Impacts within MATS Planning Area

Environmental Considerations

To assess the potential effects of freight facilities and goods movement on the environment in the MATS region, a desktop screening and survey of significant resources and potential locations or environmentally-sensitive areas was also conducted to complement the assessment of potential impacts to populations and communities. This exercise identified community, historical, archaeological, and ecological resources in the MATS region and summarizes the impacts that may result from current freight activity and the potential expansion of freight facilities or increase in freight activity. Key considerations are summarized below.

- **Ecological Resources:** water bodies, parks, recreational facilities, and threatened and endangered species. These include but are not limited to the Ocmulgee River and Watershed, Bond Swamp National Wildlife Refuge and Lake Tobesofkee, and federally and state-listed threatened and endangered species.
- **Historical and Archaeological Resources:** buildings on the National Register of Historic Places, designated structures, Ocmulgee Mounds National Historic Park, and cemeteries of significant historical value.
- **Community Resources:** recognized resources and organizations, houses of worship, hospitals, schools, and cultural landmarks. These include, but are not limited to, St. Joseph Catholic Church, First Baptist Church of Christ, Atrium Health Navicent Medical Center, Coliseum Medical Centers, Rose Hill Cemetery, the Macon Black Heritage Trail, and Capricorn Sound Studios, among others.

The ecological, cultural, and historical resources of the MATS region are integral to its environmental health, biodiversity, and the history of Middle Georgia. Ephemeral and intermittent streams, wetlands, and open waters provide essential ecosystem services and habitats for a variety of species. Historical sites and places tell the important stories of Macon-Bibb County and the surrounding area. The presence of federally and state-listed threatened and endangered species as well as national landmarks and registered site underscore the need for conservation efforts. When advancing potential freight improvements or projects within the MATS region, agencies should account for coordination and mitigation efforts that will need to be associated with any impacts to the identified resources.

Potential Mitigation Strategies

When identifying projects and strategies to improve freight mobility, safety, and operations, it is important to also consider the effects of projects on public health, environmental quality, and economic competitiveness. For instance, improved truck operations can boost transportation efficiency by reducing queuing, which not only lowers emissions but also enhances economic productivity. Additionally, enhancements in rail operations may contribute to both transportation and economic efficiency. Furthermore, although not commonly thought of as a public health concern, some freight uses generate significant noise pollution, negatively impacting the health of nearby residents, who may suffer challenges related to lack of concentration, sleep deprivation, and other effects as a result of noise. Land use mitigation measures can also enhance public health while simultaneously improving environmental quality by reducing the prevalence of “brown” infrastructure,¹⁴ increasing buffers between residential areas and freight uses, and implementing measures to offset negative environmental impacts such as installing green infrastructure at freight generating facilities, wheel washing to reduce particulate matter generated by trucks driving off-site, and reducing fossil fuel consumption through the use of alternative fuels or green energy sources. Lastly, adopting emerging technologies in freight transportation could further enhance both economic and transportation efficiency.

¹⁴ The term “brown infrastructure” does not have a single consistent definition; however, it generally refers to the soil left behind in the wake of industrial and other development, similar to “green” (plant) and “blue” (water) infrastructures. Brown infrastructure is often subject to pollution, soil compaction, and mechanical work that requires remediation or improvement to support biodiversity.

Potential Passenger Rail

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 refine a range of possible service alternatives across the study area, and focus on financially feasible, practical solutions to implement passenger rail service. More information about the project can be found on GDOT's website for the project: <https://atlsavpassrail-gdot.hub.arcgis.com//>.

The study area includes multiple cities and rail corridors throughout a large swath of Georgia, from Atlanta to Savannah, encompassing Athens, Augusta, Macon, Statesboro, and other cities. Among the options being considered is the possible use of rail lines through the MATS area along Norfolk Southern tracks. As the study progresses, it will be important for MATS and its partners to keep abreast of findings and consider the impacts of the possible reductions in freight railcar volume to accommodate passenger rail service. As the Port of Savannah continues to grow, it is anticipated that some cargo moving through the state will be transported via rail, although the majority of new freight tonnage (87%) coming online between now and 2050 is forecast to be carried by trucks.

