

REGIONAL FREIGHT TRANSPORTATION PLAN UPDATE

FUTURE FREIGHT GROWTH



OCTOBER 30, 2023

Regional Freight Transportation Plan Update

Future Freight Growth

Prepared for



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1 INTRODUCTION

The Coastal Region Metropolitan Planning Organization (CORE MPO) region serves a gateway for global trade and for freight movement in the Southeast, due in large part to the Port of Savannah – the nation’s 4th largest container port. In addition to the Port of Savannah, the region contains a comprehensive multimodal network of freight railroads and railyards, major highways, cargo-serving airports, as well as a substantial warehousing/distribution/logistics industry to manage freight movements over that network. In addition, the region is an emerging manufacturing hub for businesses looking to create and ship a diverse portfolio of finished products to clients around the globe. Overall, goods movement in the Savannah region has a major impact on the regional and state economy.

In support of the region’s multimodal freight network and the people and businesses that rely on it, the CORE MPO is conducting an update of its Regional Freight Transportation Plan. The purpose of this technical memorandum is to estimate future trends, characteristics, and freight volumes by mode and commodity for the CORE MPO region. Understanding how goods will be moved throughout the region in the future will help identify the deficiencies and constraints to handling that growth. Furthermore, the analysis highlights aspects of freight demand that may change relative to the current baseline such as new freight activity centers or emerging modes.

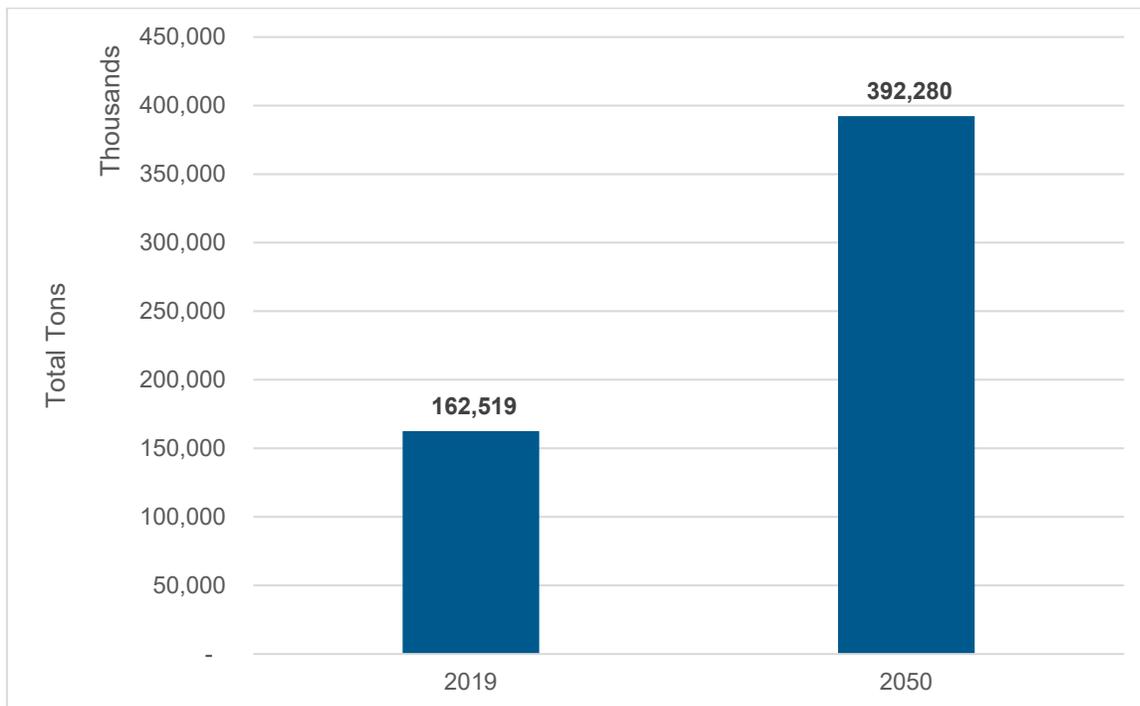
It is important to note that two data sources were used to complete this analysis: S&P Global’s TRANSEARCH and the U.S. Census Bureau’s USA Trade Online. TRANSEARCH was the primary data source. This database consists of commodity flows by mode for a 2019 base year and a 2050 horizon year. As TRANSEARCH only reports international trade between United States-Mexico-Canada Agreement (USMCA) nations, this data was supplemented with information from USA Trade Online. The U.S. Census Bureau’s USA Trade Online database contains information on all U.S. international trade and is compiled from multiple sources including the following: Electronic Export Information (EEI); automated data submitted through the U.S. Customs’ Automated Commercial System; and information compiled from import entry summary forms, warehouse withdrawal forms, and Foreign Trade Zone documents. Data on 2019 international trade via water and air for the CORE MPO region were collected and incorporated into the analysis. Since the USA Trade Online database contains current and historical trade data only, 2050 horizon year international commodity flow estimates for the study area were produced using commodity-specific growth rates derived from the TRANSEARCH database.

2 FUTURE FREIGHT GROWTH

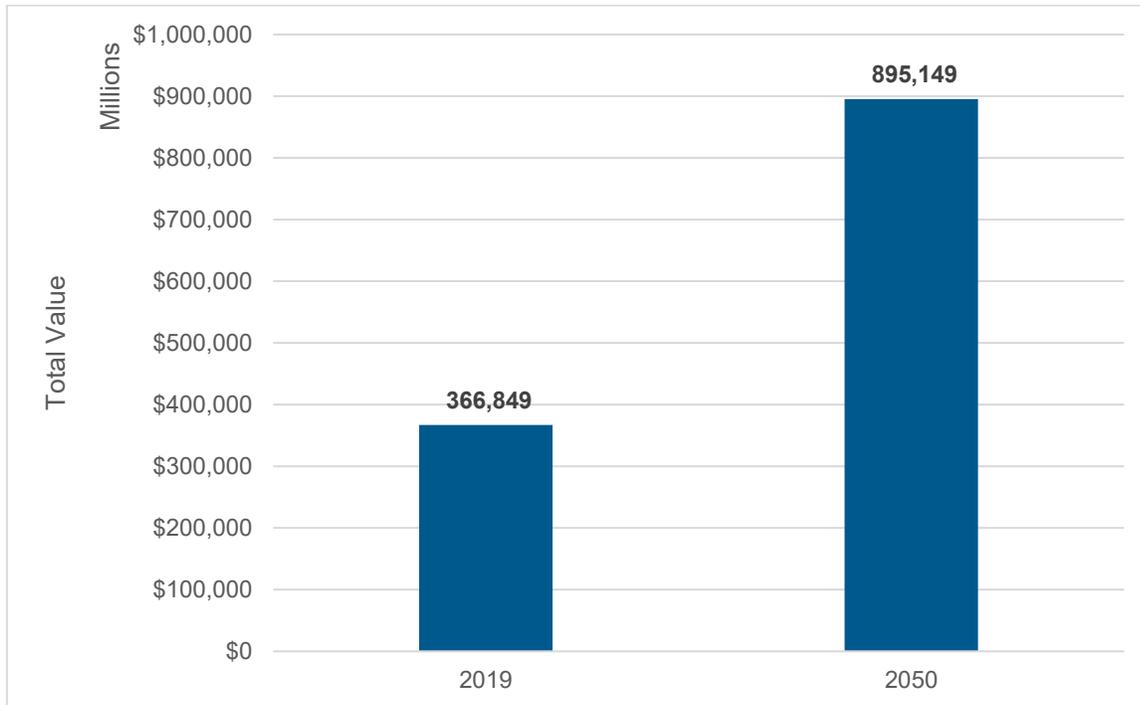
The needs of the Savannah region's freight system are driven by both the current and future demand for freight transportation. This section of the report examines the demand for freight transportation services in the region by analyzing the commodities flows underlying that demand. Overall, in 2019 nearly 163 million tons of freight worth \$367 billion were transported to, from, within, or through (i.e., truck and rail only) the CORE MPO Region as shown in Figure 2.1. This is projected to more than double in 2050 and grow to over 392 million tons worth \$895 billion as shown in Figure 2.2.

Future freight growth throughout the region will be driven by increased demand for several different types of goods. Examples of the key commodities driving increased demand include "food or kindred products" (e.g., meat, milk, fruits, vegetables), "pulp, paper, or allied products," "nonmetallic minerals" (e.g., gravel, sand), "clay, concrete, glass, or stone," "chemicals or allied products" (e.g., soap, paints, drugs), "waste and scrap materials," "farm products," and "secondary traffic" (e.g., shipments between warehouses and distribution centers). All of these commodities are projected to increase in magnitude through 2050. This ranges from about an 86 percent increase for "clay, concrete, glass, or stone" to a 404 percent for "waste and scrap materials." Furthermore, many of these commodities support major industry sectors in the coastal region and throughout Georgia such as forestry, paper products manufacturing, and chemical manufacturing.

FIGURE 2.1 CORE MPO TOTAL TONS, 2019 AND 2050



Source: TRANSEARCH; USA Trade Online; Cambridge Systematics, Inc. analysis.

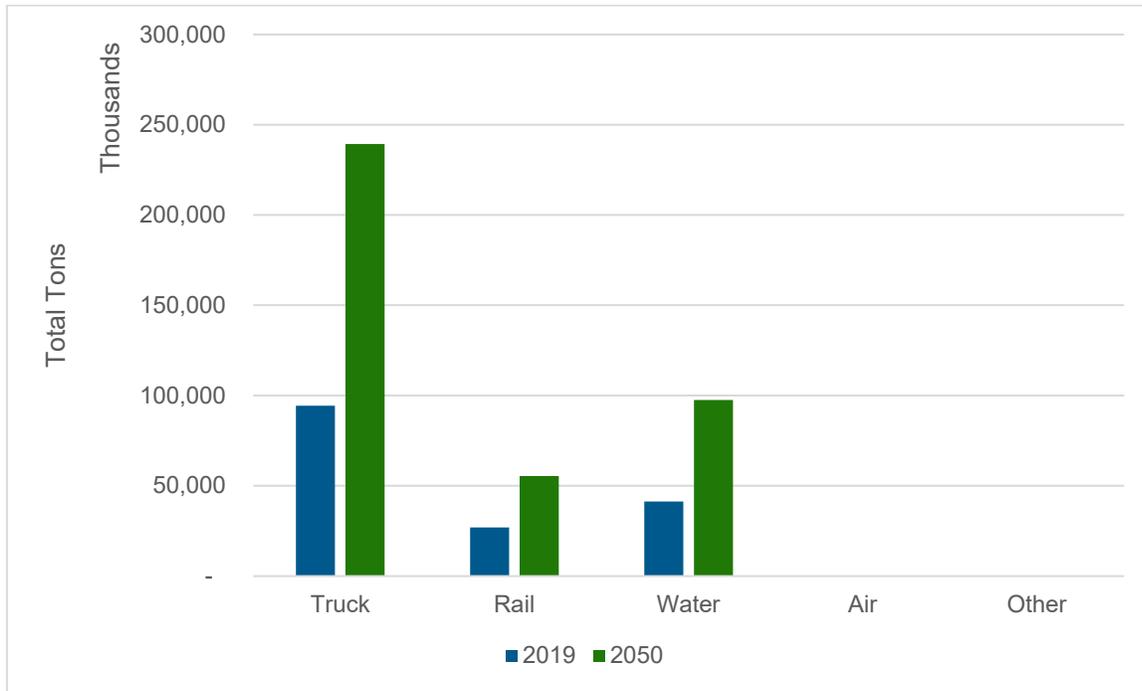
FIGURE 2.2 CORE MPO TOTAL VALUE, 2019 AND 2050

Source: TRANSEARCH; USA Trade Online; Cambridge Systematics, Inc. analysis.

Figure 2.3 shows the total tonnage by mode for 2019 and 2050. The majority of freight in the CORE MPO region is moved by truck – over 94.3 million tons (about 58 percent) in 2019. After trucking, the region’s ports and waterways accounted next largest share of total tons. In 2019, about 41.3 million tons (approximately 25 percent) of the region’s goods were transported by water. Rail was the next largest mode with nearly 27 million tons of goods – about 17 percent of the region’s total tonnage in 2019. Air and “other modes” account for small shares of the region’s freight activity, less than 10,000 tons combined.

Growth through 2050 is projected for all modes as shown in Figure 2.3. Trucking is projected to grow to about 239.3 million tons and increase its share of total goods moved throughout the region to about 61 percent. The region’s ports and waterways are estimated to transport over 97.5 million tons by 2050 while the rail network will handle about 55.4 million tons of goods. Air and “other modes” will continue to account for small shares of total tonnage and only handle about 20,000 tons of goods.

FIGURE 2.3 CORE MPO TOTAL TONS BY MODE, 2019 AND 2050

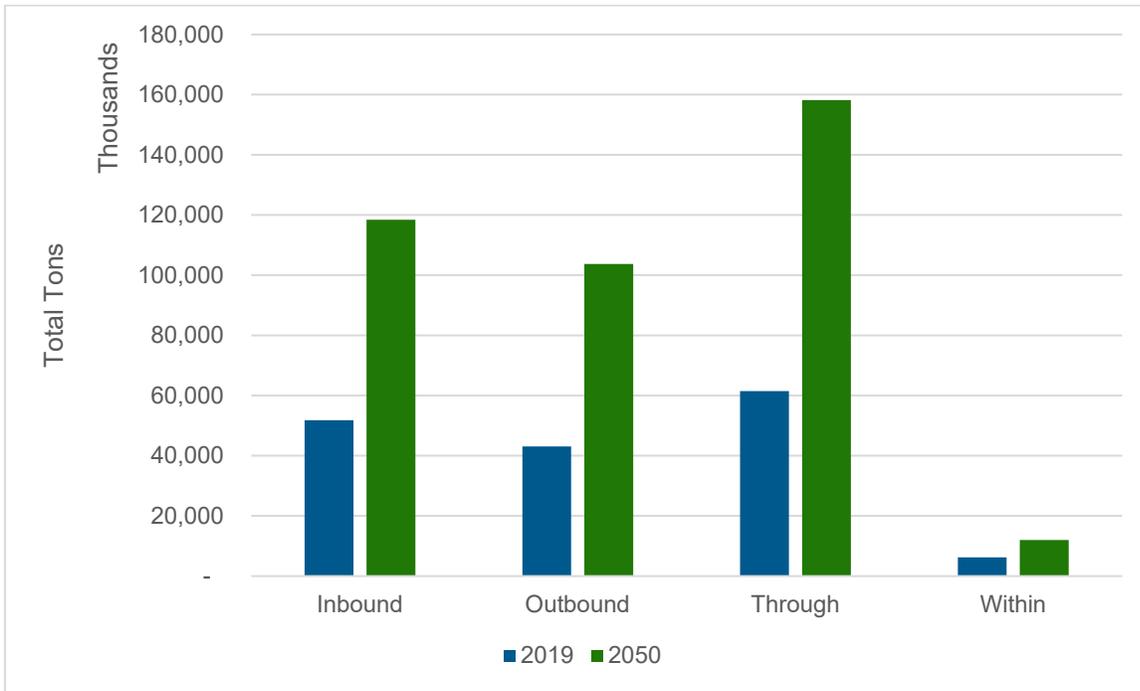


Source: TRANSEARCH; USA Trade Online; Cambridge Systematics, Inc. analysis.

In 2019, over 61.4 million tons (almost 38 percent of all freight tonnage) of freight moved through the region without making a stop as shown in Figure 2.4. Through movements, which are estimated for truck and rail only, accounted for the largest share of tonnage. Inbound shipments accounted for nearly 51.8 million tons in 2019 (about 32 percent of total tons) and outbound shipments were about 43 million tons (about 27 percent of total tons). Over 6.2 million tons of goods (about 4 percent) had an origin or destination within the region.

By 2050, rail and truck through movements will have grown to over 158.1 million tons (about 40 percent of total tons) as shown in Figure 2.4. Inbound and outbound shipments are projected to more than double to over 118.4 million tons and approximately 103.7 million tons, respectively. Freight shipments beginning and ending in the region are projected to remain the smallest movement with just over 12 million tons.

FIGURE 2.4 CORE MPO TOTAL TONS BY DIRECTION, 2019 AND 2050



Source: TRANSEARCH; USA Trade Online; Cambridge Systematics, Inc. analysis.

3 POTENTIAL FACTORS IMPACTING BASELINE FREIGHT DEMAND

While the previous section of the report examined the existing and future demand for freight transportation services in the region by analyzing the commodities flows underlying that demand, this section of the report investigates how future demand may be impacted other factors. Emerging freight modes, new freight activity centers, and changes in the growth trajectory for the Port of Savannah all have the potential to alter where and how goods move on the region's multimodal freight network. Understanding the potential for these factors to impact long-term growth is important for developing strategies and recommendations that hedge against the uncertainty of long-term forecasts.

3.1 Emerging Freight Modes

While freight modes such as trucks and trains have been in use for over a century, advancements in technology have begun to change available modes to include options such as drones, delivery robots, and connected and autonomous trucks deployed in platoons. This section of the report discusses these emerging modes and their potential to impact freight demand and operations.

Unmanned Aerial Vehicles and Delivery Robots

Drones are lightweight aircraft which operate remotely without a pilot physically onboard whereas a delivery robot is an automated robot which conducts deliveries on the ground. Drones must, however, be operated by a pilot registered with the Federal Aviation Administration (FAA).¹ Through 2021, over 850,000 drones have been registered with nearly 260,000 remote pilots receiving their certification.

¹ Code of Federal Regulations. Title 14, Chapter I, Subchapter F, Part 107 – Small Unmanned Aircraft Systems, § 107.12 Requirement for a remote pilot certificate with a small UAS rating. <https://www.ecfr.gov/current/title-14/chapter-I/subchapter-F/part-107>

FIGURE 3.1 EXAMPLE OF A DELIVERY DRONE

Source: Amazon; USA Today.

The concept of drone delivery for freight purposes began in 2013 with an announcement from Amazon that drones, also known as unmanned aerial vehicles (UAVs), would be used to deliver lightweight commercial products (see Figure 3.1).^{2 3} Since then, the FAA has set up Small Unmanned Aircraft Systems (UAS) test sites seven locations across the nation. While drones are not envisioned to fully replace trucks, they can offer an advantage for last-mile deliveries. This reduces vehicle miles traveled on the roadway and offers a solution to truck driver shortages for limited markets, although drone pilots are needed to operate the UAVs. The allowable use of drones has continued to evolve with night operations allowed as of April 2021.⁴ These changes to the FAA's UAS Rule, Part 107 also allowed for drones under 0.55 pounds to fly over people and moving vehicles. Such changes can allow for remote traffic monitoring and surveying to enhance traffic information. For flight operations over vehicles restrictions include either:

- The UAV must remain within a closed or restricted-access site, and all individuals inside any moving vehicle within the designated area must be on notice of the operation; or
- The UAV does not maintain sustained flight over moving vehicles.

Delivery robots (also called personal delivery devices) are being deployed mostly in urban markets (see Figure 3.2).⁵ Their adoption took off during the pandemic lockdowns, but regulation of the technology has been uneven. Nuro's R2 received USDOT and NHTSA autonomous vehicle exemption to operate on public

² BBC News. "Amazon Testing Drones for Deliveries." (December 2, 2013).

³ Light commercial products. Drone deliveries are limited by the carrying capacity of the UAVs. While most hobby drones can only carry a few pounds, professional drones may be able to transport upwards of 200 pounds. However, as the allowable payload increases, so too does cost. For example, a Dragon X12 U11 Drone has a recommended payload of up to 100 pounds and costs over \$30,000.

⁴ Code of Federal Regulations. Title 14, Chapter I, Subchapter F, Part 107 – Small Unmanned Aircraft Systems. <https://www.ecfr.gov/current/title-14/chapter-I/subchapter-F/part-107>

⁵ Gizmodo. (2021). "Domino's Has a New Pizza Delivery Robot That Lets You Track Your Order While It Drives It Over." <https://gizmodo.com/domino-s-has-a-new-pizza-delivery-robot-lets-you-track-1846710108>

roads without certain equipment required of passenger vehicles, such as side mirrors or a windshield.⁶ Refraction AI, a robotics company focused on last-mile deliveries, began operating in cities in 2021.⁷ California-based Coco launched food delivery within a two-mile radius, utilizing pedestrian routes.⁸

FIGURE 3.2 EXAMPLE OF A PERSONAL DELIVERY DEVICE



Source: Amazon.

In Georgia, state law was amended to account for the advent of personal delivery devices on the state's transportation network.⁹ House Bill 1009 was passed in 2022 which amended Title 40 (Motor Vehicles and Traffic) of the Official Code of Georgia Annotated to include personal delivery devices. Specifically, it allows personal delivery devices to be operated on bicycle lanes, sidewalks, shared use paths, and non-limited access highways. Additionally, House Bill 1009 established regulations for personal delivery devices pertaining to maximum operating speeds (4 miles per hour on sidewalks and shared use paths, 20 miles per hour on bicycle lanes and highways), weight limits (500 pounds unladen and 600 pounds loaded with cargo), and requirements for lights and prominently displayed contact and identification information, among others.

⁶ U.S. Department of Transportation, Automated Vehicles Comprehensive Plan, January 11, 2021, https://www.transportation.gov/sites/dot.gov/files/2021-01/USDOT_AVCP.pdf

⁷ KXAN. (June 2021). "Delivery Robots will be on the Road in Austin starting Monday." <https://www.kxan.com/news/delivery-robots-will-be-on-the-road-in-austin-starting-monday/>

⁸ Culture Map Houston. (March 2022). California Company Rolls into Houston with Robot Food Delivery in 15 Minutes. <https://houston.culturemap.com/news/innovation/03-22-22-coco-food-delivery-robots-houston/>

⁹ <https://www.legis.ga.gov/api/legislation/document/20212022/207968>

Connected and Autonomous Vehicles

Connected vehicle (CV) technology utilizes short-range communications (commonly referred to as V2X or vehicle-to-everything) to sense what other travelers are doing and to identify potential hazards. Vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) allow for vehicles to have an awareness of each other's location. Connected and autonomous trucks (see Figure 3.3) may be viewed as a distinct new freight mode, especially in the case of trucks deployed in platoons. Fleet operators that are able to deploy trucks in platoons can potentially realize fuel cost savings, labor cost savings, and greater operational efficiencies. Truck platoons use vehicle-to-vehicle (V2V) communications and autonomous vehicle control technology to electronically “tether” tractor-trailers together in a convoy formation. Platooning can yield greater fuel efficiency due to reduced aerodynamic drag on the following vehicle(s).¹⁰ It can yield labor cost savings if the following trucks in the convoy are not operated by humans, but instead are tethered to a lead truck with a human driver. Due to ongoing industry challenges to attract new drivers and the continued need to improve safety, the benefits of greater vehicle automation to the trucking industry are substantial. However, it should be noted that currently there are no viable commercial systems for fully autonomous trucks.

FIGURE 3.3 EXAMPLE OF A CONNECTED AND AUTONOMOUS HEAVY TRUCK



Source: TUSimple.

3.2 Emerging Freight Activity Centers

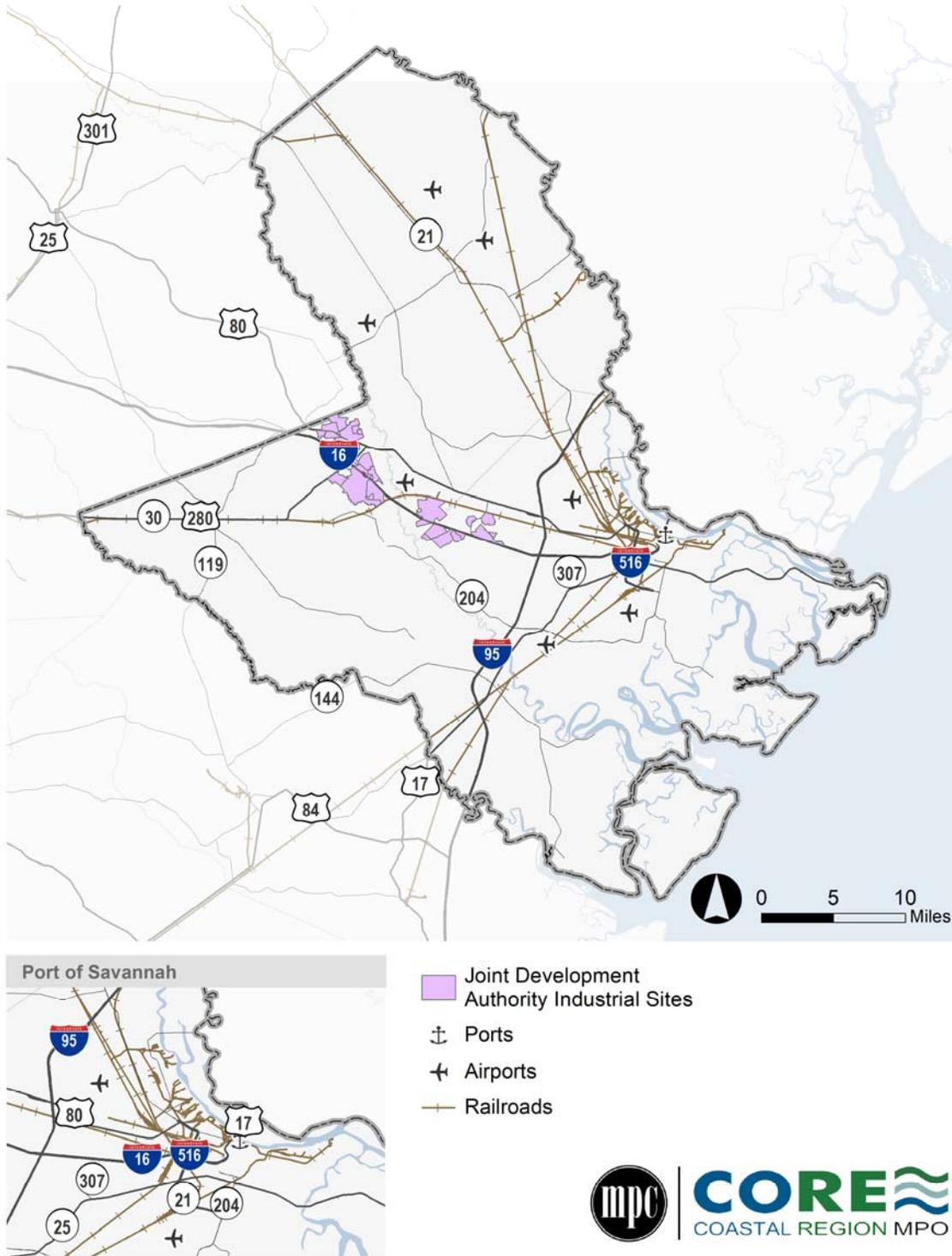
Data available from the region's various economic development agencies indicate that there are multiple emerging freight activity centers in the region. While historically the region's industrial and freight activity centered on areas adjacent to the Port of Savannah and east of downtown along President Street, new activity centers are being developed to the north (i.e., north Effingham County), south (i.e., Rockingham Industrial Park in Savannah and the Belfast Commerce Park in Bryan County), and west (i.e., West I-16) of the region's urban core. The emergence of these freight activity centers will impact freight traffic patterns throughout the region. As Hyundai Motor Company is currently developing a major assembly plant in the

¹⁰ Lammert, M., Duran, A., Diez, J., Burton, K. et al., "Effect of Platooning on Fuel Consumption of Class 8 Vehicles Over a Range of Speeds, Following Distances, and Mass," SAE Int. J. Commer. Veh. 7(2):2014, doi:10.4271/2014-01-2438.

region, the emergence of these freight activity centers will be hastened as automotive parts suppliers have already begun acquiring land within these areas in anticipation of the new plant.

The Savannah Harbor-Interstate 16 Corridor Joint Development Authority (JDA) includes the development authorities of Bryan, Bulloch, Chatham, and Effingham Counties. The JDA combines the resources of its member counties to attract and facilitate regionally significant projects. Figure 3.4 shows the JDA industrial sites throughout the CORE MPO region. These sites comprise over 13,000 acres of land that is likely to be developed to include substantial volumes of warehouse, distribution, and other logistics space. They include the Bryan County megasite that will contain the Hyundai Motor Company assembly plant. The development of the plant in the CORE MPO region has already begun to attract automotive parts suppliers who will consume some of the available land, which is a departure from warehousing/distribution center development which has historically been most prevalent in the region. As shown in Figure 3.4, these sites are concentrated along the I-16 corridor with much of the acreage being located in Bryan and Effingham Counties. It suggests that the west I-16 corridor is an emerging freight activity center.

FIGURE 3.4 JOINT DEVELOPMENT AUTHORITY INDUSTRIAL SITES IN THE CORE MPO REGION

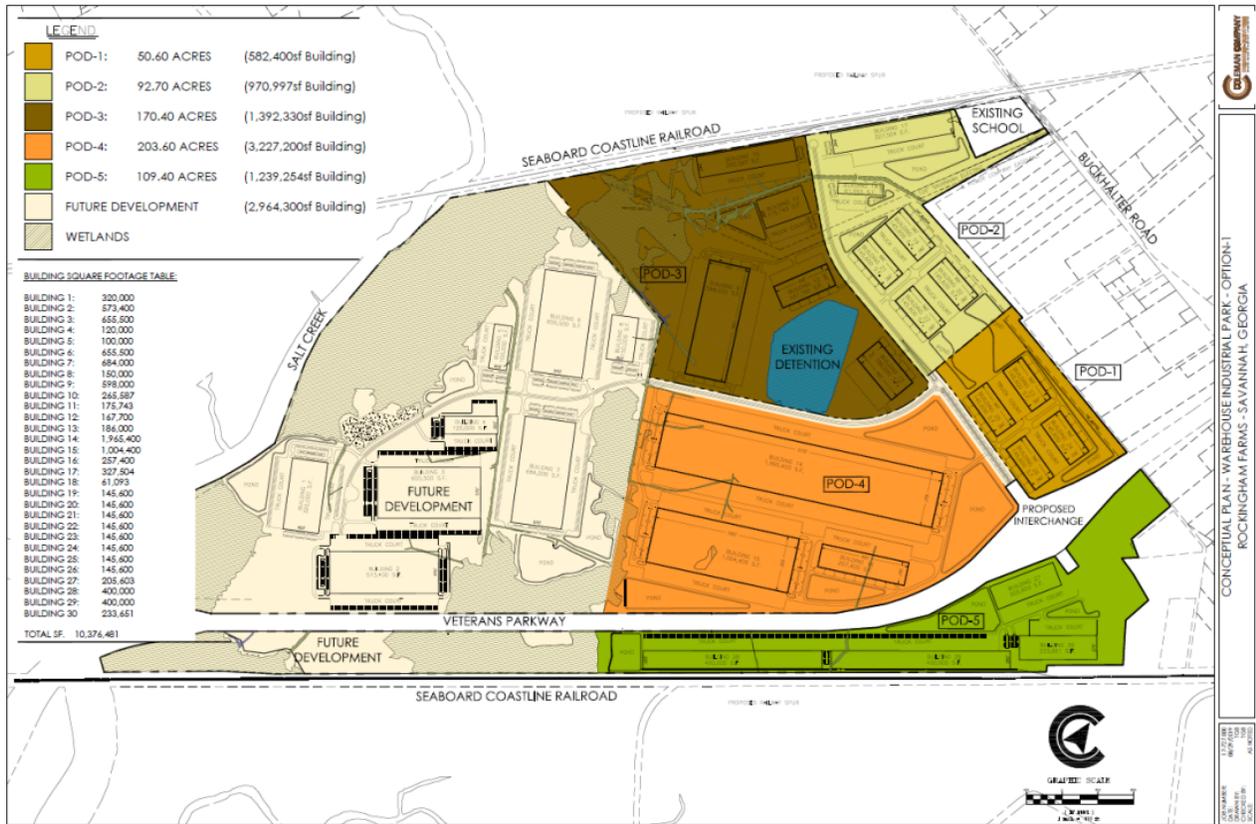


Source: U.S. Census Bureau, County Business Patterns; Cambridge Systematics, Inc. analysis.

To the region’s south, the Rockingham Farms Industrial Park is also an emerging freight activity center. The industrial park is currently under development along Veterans Parkway south of US 17 and east of a tributary

of the Ogeechee River. It will occupy approximately 1,125 acres with the capacity to build up to 10 million square feet of warehouses, distribution centers, factories, and other light industrial facilities as shown in Figure 3.5. The site is rail and highway-accessible with a new interchange under construction along Veterans Parkway to provide greater access.

FIGURE 3.5 ROCKINGHAM FARMS INDUSTRIAL PARK

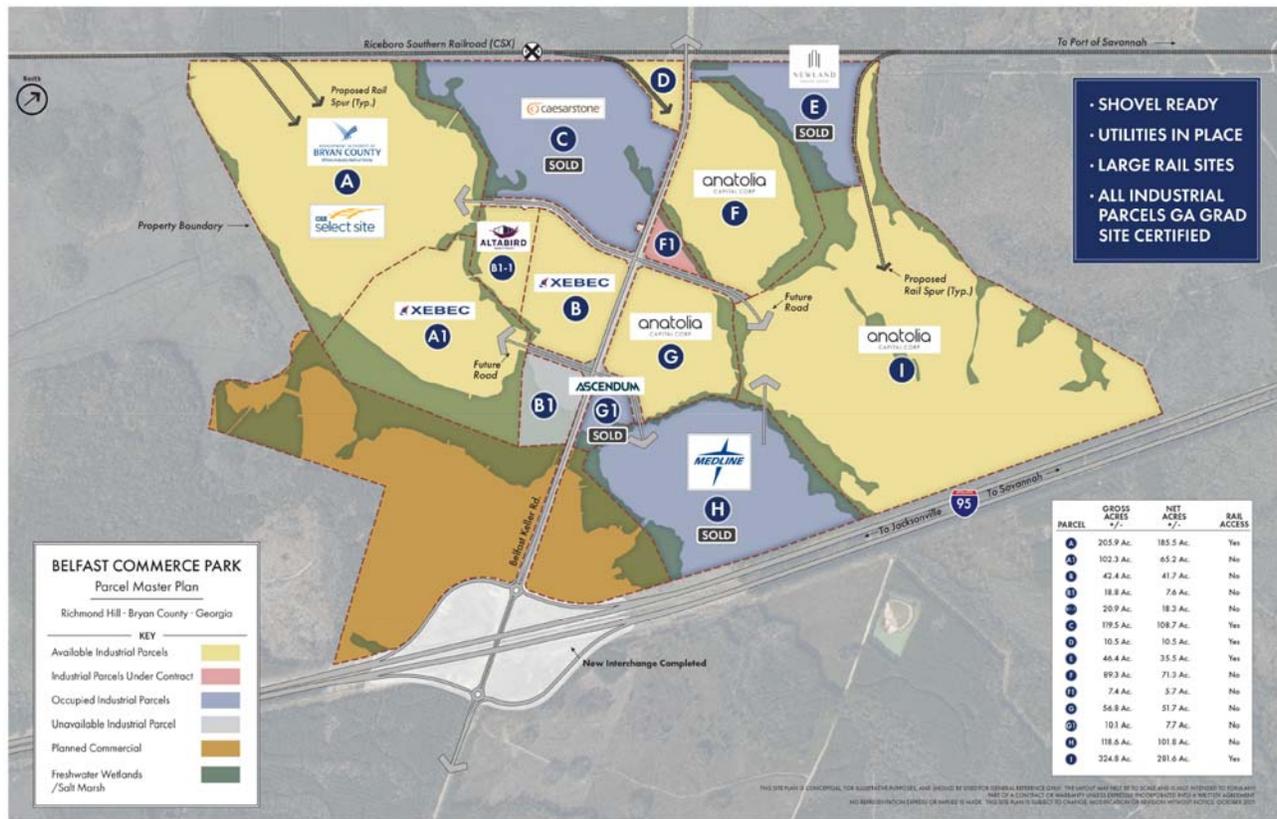


Source: City of Savannah.

Further south in Bryan County, the Belfast Commerce Park is another emerging freight activity center. The industrial park is currently under development along Belfast Keller Road near its interchange with I-95 in Bryan County. It will occupy approximately 1,174 acres and provide both highway and rail access as shown in Figure 3.6. A Federal Express (FedEx) distribution center has already been constructed on the site. In November 2022, automotive parts supplier Hyundai Mobis announced it will locate a 1.2 million square foot manufacturing facility in Belfast Commerce Park.¹¹ Together with the Rockingham Farms Industrial Park, the development of the Belfast Commerce Park will result in a new freight activity center to the region’s south.

¹¹ Snyder, F., “New Hyundai Mobis plan expected to bring 1,500 jobs to Richmond Hill,” WTOC 11, <https://www.wtoc.com/2022/11/28/new-hyundai-mobis-plant-expected-bring-1500-jobs-richmond-hill/>

FIGURE 3.6 BELFAST COMMERCE PARK



Source: Bryan County Economic Development Agency.

In Effingham County, large industrial developments are planned in the northern part of the county along McCall Road, Old Augusta Road, and SR 21.¹² Along McCall Road, the Savannah Gateway Industrial Hub occupies approximately 2,635 acres. The property has access to McCall Road, SR 21, and Class I rail service. The Grande View industrial site occupies about 448 acres and is located east of Old Augusta Road and south of the Georgia Pacific plant. The proposed Georgia International Rail Park sits on 1,416 acres and is located west of SR 21 and east of McCall Road near Rincon. The property has access to both the CSX and NS networks. The development of these properties would create a new freight activity center in the northern part of the CORE MPO region.

3.3 Port of Savannah Growth

Infrastructure expansion efforts currently underway at the Port of Savannah will grow its annual throughput capacity from 6 million twenty-foot equivalent units (TEUs) to approximately 10.7 million TEUs per year.¹³ Discussed in detail in the Task 2.4 technical memorandum, these investments include the following: an expansion of the Garden City West Terminal; a cross dock facility upriver from the Garden City Terminal; the Peak Capacity Project which expands the Port's footprint and adds container handling space; improvements to Berth 1 so that it may to simultaneously serve four 16,000-TEU vessels; the development of the Northeast Inland Port in Hall County; and the development of the Savannah Container Terminal which will be a new

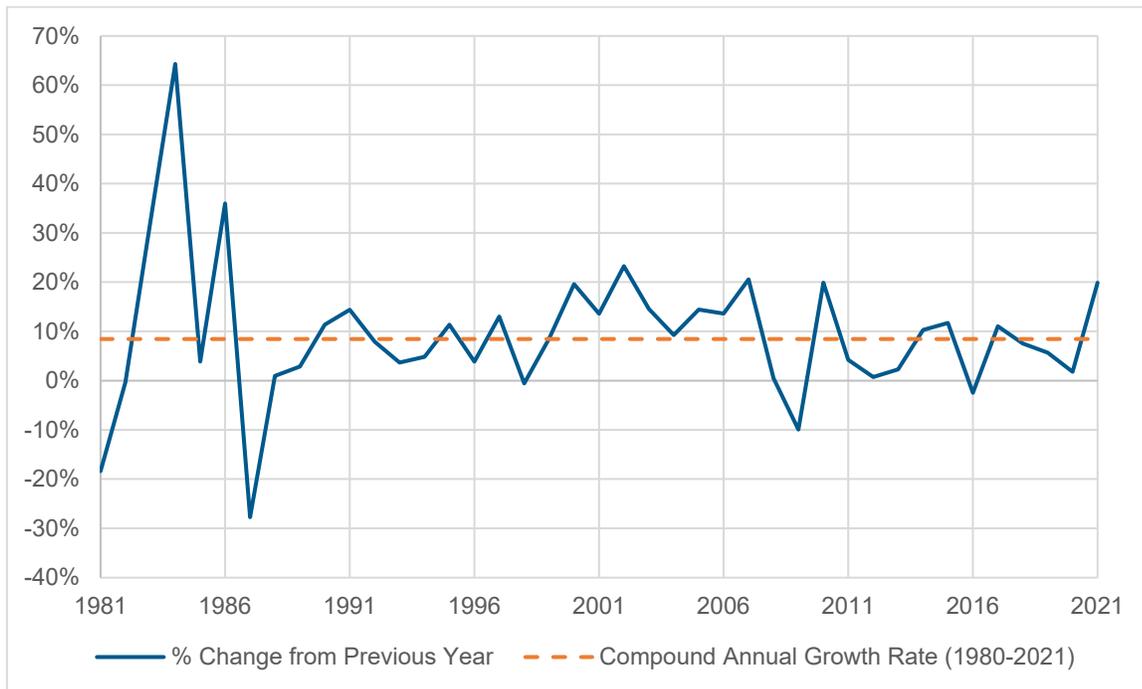
¹² <https://effinghamindustry.com/doing-business-here/available-properties/>

¹³ Georgia Ports Authority, 2021 Annual Report.

facility on Hutchinson Island.¹⁴ In addition, not included in the 6 million TEU capacity expansion is the proposed Jasper Ocean Terminal.¹⁵ This would be a new 7 million TEU marine container terminal along the north bank of the Savannah River in Jasper County, South Carolina – about 8 miles upriver from the Garden City Terminal. However, there is no current timeline for the development of this facility.

Given historical growth trends, the Port’s current infrastructure expansion efforts is expected to meet future demand. Historically, the Port of Savannah has experienced annual growth in container trade of about 8.5 percent based on 1980-2021 container volumes as shown in Figure 3.7.¹⁶ However, since the onset of the COVID-19 pandemic annual growth has been closer to about 10.5 percent based on 2019-2021 container volumes. Container traffic increased from nearly 4.6 million TEUs in 2019 to over 5.6 million in 2021. 2022 container volumes exceeded 2021 levels.¹⁷

FIGURE 3.7 PORT OF SAVANNAH CONTAINER TRADE (TEUS), 1980 - 2021



Source: Georgia Ports Authority; American Association of Port Authorities.

A key question is will growth return to the historical norm, or has the pandemic changed the trajectory of growth and represents a new normal. Returning to this historical rate of growth, the Port of Savannah would reach the limit of its published program of expanded capacity (i.e., 10.7 million TEUs) by 2029. Should the recent higher growth rate which has been experiences since the onset of the COVID-19 pandemic continue,

¹⁴ <https://gaports.com/press-releases/gpa-details-capacity-operations-expansion/>

¹⁵ <http://www.jasperoceanterminaleis.com/Project.aspx>

¹⁶ Georgia Ports Authority, “By the Numbers,” Total Annual Container Trade for Calendar Years 2017 through 2021, May 2022, <https://gaports.com/wp-content/uploads/2022/05/CY21-Annual-Container-Trade.pdf?1667954238>; American Association of Port Authorities, “Port Industry Statistics”, North America Container Traffic 1980-2018, <https://www.aapa-ports.org/unifying/content.aspx?ItemNumber=21048>.

¹⁷ Georgia Ports Authority, “Port of Savannah Total Annual Container Trade for Calendar Yeas 2018 through 2022,” <https://gaports.com/wp-content/uploads/2023/05/CY22-Annual-Container-Trade.pdf?1698369946>, Accessed October 26, 2023.

the port would reach the limit of its published program of expanded capacity by 2027. Given that the port generally prefers to maintain a 20 percent buffer between demand and capacity so that spikes in demand or other unforeseen challenges can be accommodated¹⁸, the higher growth rate would imply that the Port of Savannah would need to begin considering additional capacity expansions as soon as 2025. Very recent shipping indicators in October and November 2022 point to a return to normal or less than normal growth due to uncertainty in the U.S. and global economy.

3.4 Implications for Factors Impacting Baseline Future Demand

Overall, the various factors considered in this report have the potential to increase the baseline future demand for freight in the CORE MPO region. The implications of these factors by mode are summarized in Table 3.1. They are discussed in greater detail in the subsections that follow.

TABLE 3.1 IMPLICATIONS OF FACTORS FOR BASELINE FUTURE FREIGHT DEMAND

Aspect of Freight Demand	Description	Impact on Freight Demand
Emerging Freight Modes	Last-mile alternatives such as delivery bots and unmanned aerial vehicles (UAVs)	Truck ↓ (Minor to no effect) Rail ↔ (Minor to no effect) Port ↔ (Minor to no effect) Air ↔ (Minor to no effect)
	Connected and autonomous trucks deployed in platoons	Truck ↑ (Significant) Rail ↓ (Minor to moderate) Port ↔ (Minor to no effect) Air ↔ (Minor to no effect)
Emerging Freight Activity Centers	Emergence of new freight activity centers in the northern, southern, and western portions of the region	Truck ↑ (Significant) Rail ↑ (Minor to moderate) Port ↔ (Minor to no effect) Air ↔ (Minor to no effect)
Sustained Higher than Normal Growth at the Port of Savannah	Continuation of the recent higher growth rate experienced since the onset of the COVID-19 pandemic	Truck ↑ (Significant) Rail ↑ (Significant) Port ↑ (Significant) Air (Minor to no effect)

Source: Cambridge Systematics.

Note: ↑ = Increase in demand, ↓ = Decrease in demand, ↔ = No increase or decrease in demand.

Implications of Emerging Freight Modes

Emerging freight modes (such as drones, delivery robots, and connected and autonomous trucks deployed in platoons) have the potential to increase the demand for freight transportation services on the CORE MPO region's multimodal network. Regarding drones and robots, their use for freight delivery remains early in the testing and development stage. The continued adoption of drone and robot delivery systems would likely have a minor impact on freight demand. Specifically, the demand for that mode may reduce demand for smaller delivery trucks and step vans for making last-mile deliveries. Removing heavier delivery vehicles

¹⁸ Interview with Georgia Ports Authority, October 31, 2022.

from the roadway system would reduce vehicle miles traveled which in turn potentially reduce crashes, emissions, congestion, and roadway maintenance costs.

Regarding connected and autonomous trucks deployed in platoons, this emerging mode has the potential to increase demand for trucking and reduce demand for rail. This is because rail and trucking compete for many of the same types of freight traffic such as containerized cargo and moderate-value bulk goods. Competition may be enhanced in regions that contain both extensive rail and highway networks. On a per-mile basis, labor and fuel are the two highest operational costs for the trucking industry. Connected and autonomous trucks deployed in platoons would lower these costs for the trucking industry and make motor carriers more cost competitive for shipments that might have otherwise traveled by rail. As a result, the implication of this emerging mode for the CORE MPO region is that it could generate greater demand on the highway network while lowering demand on the rail network.

Implications of Emerging Freight Activity Centers

Regarding emerging freight activity centers, the implication is that these new centers can result in an increase in freight demand throughout the region especially on the highway and rail networks. This is because the facilities (e.g., warehouses, distribution centers, manufacturing plants) developed at these freight activity centers increase the region's capacity to handle and process goods. Increases in freight volumes are likely to be concentrated on the highway and rail networks with highways experiencing more significant increases. Furthermore, the increase in highway freight volumes will be more pronounced on regional freight routes (such as US 280, Veterans Parkway, and Belfast Keller Road) than on Interstate highways.

In addition, these new centers will alter where freight moves in the region. While historically the region's industrial and freight activity centered on areas adjacent to the Port of Savannah and east of downtown along President Street, new activity centers are being developed to the north (i.e., north Effingham County), south (i.e., Rockingham Industrial Park in Savannah and the Belfast Commerce Park in Bryan County), and west (i.e., West I-16) of the region's urban core. The emergence of these freight activity centers will impact freight traffic patterns throughout the region.

Implications of Sustained Higher than Normal Growth at the Port of Savannah

Sustained higher than normal growth at the Port of Savannah would substantially increase freight demand across all of the region's primary freight modes – trucking, rail, and ports/waterways. Goods imported or exported by water must also travel on the region's highway and rail networks. As a result, these modes would experience a significant increase in demand on par with increased growth at the Port of Savannah.

Another implication of sustained higher than normal growth at the Port of Savannah is that in addition to completing its published program of expanded capacity, the Georgia Ports Authority would have to begin considering other expansion opportunities. These could be expansions within the CORE MPO region or projects located outside the study area, such as additional inland ports in other parts of the state. Expansions within the region would alter existing land uses and impact freight activity patterns, primarily on the highway network. In the event that expansions occur outside the region in the form of inland ports or other facilities, the region is still likely to experience greater volumes on its rail network and impacts to at-grade crossings.

4 SUMMARY

This technical memorandum examined the future trends, characteristics, and freight volumes for the CORE MPO region. By understanding how goods will be moved throughout the region in the future, the region is better able to identify the deficiencies and constraints to handling that growth. Additionally, the analysis highlighted aspects of freight demand that may change relative to the current baseline and investigated the implications of those factors for future demand. Some key insights from the memorandum are summarized below.

- About 163 million tons of freight worth \$367 billion were transported to, from, within, or through the CORE MPO Region in 2019. By 2050, this is projected to more than double and grow to over 392 million tons of goods worth \$895 billion.
- Future freight growth will be driven by increased demand for several different types of goods. These include “food or kindred products” (e.g., meat, milk, fruits, vegetables), “pulp, paper, or allied products,” “nonmetallic minerals” (e.g., gravel, sand), “clay, concrete, glass, or stone,” “chemicals or allied products” (e.g., soap, paints, drugs), “waste and scrap materials,” “farm products,” and “secondary traffic” (e.g., shipments between warehouses and distribution centers). All of these commodities are projected to increase in magnitude through 2050, from about an 86 percent increase for “clay, concrete, glass, or stone” to a 404 percent for “waste and scrap materials.”
- Emerging freight modes, new freight activity centers, and changes in the growth trajectory for the Port of Savannah all have the potential to alter where and how goods move on the region’s multimodal freight network.
 - Emerging freight modes including drones, delivery robots, and connected and autonomous trucks deployed in platoons will potentially increase the baseline future demand for freight transportation services on the CORE MPO region’s multimodal network. As these technologies improve, they could yield increased operational efficiencies and reduced costs that make drones, personal delivery devices, and connected and autonomous trucks deployed in platoons viable shipping options.
 - While historically the region’s industrial and freight activity centered on areas adjacent to the Port of Savannah and east of downtown along President Street, new activity centers are being developed to the north (i.e., north Effingham County), south (i.e., Rockingham Industrial Park in Savannah and the Belfast Commerce Park in Bryan County), and west (i.e., West I-16) of the region’s urban core. The emergence of these freight activity centers will impact freight traffic patterns throughout the region. Furthermore, they may result in an increase in freight demand especially on the highway and rail networks.
 - Historically, the Port of Savannah has experienced annual growth in container trade of about 8.5 percent based on 1980-2021 container volumes. However, since the onset of the COVID-19 pandemic annual growth has been closer to about 10.5 percent based on 2019-2021 container volumes. A key question is will growth return to the historical norm, or has the pandemic changed the trajectory of growth and represents a new normal. Sustained higher than normal growth at the Port of Savannah would substantially increase freight demand across all of the region’s primary freight modes – trucking, rail, and ports/waterways.